

PREFERRED SHARK MITIGATION MEASURES OF

NSW coastal councils and their communities

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EXECUTIVE SUMMARY

In February and March 2021 the NSW Department of Primary Industries held a series of eight Shark Management Strategy (SMS) online information sessions targeting coastal Councils and other key stakeholders in different geographic regions of New South Wales. Each information session presented an overview of the SMS since 2015, including mitigation measures used, trials, results, and findings from research. After the online information sessions, Coastal Councils, other stakeholder organisations, and individuals were invited to complete a survey expressing their preferences for shark management into the future. All 25 Coastal Councils, 40 stakeholder organisations, and 4023 individual Community members completed the survey.

Patterns in Council thinking and preferences

There were some common patterns in Council thinking concerning shark mitigation measures:

- It is important to protect humans from interactions with potentially dangerous sharks, and many believe this is best achieved through alignment of mitigation measures that detect sharks and deliver localised alerts and warnings to swimmers and surfers most at risk.
- It is important to reduce harm to sharks and other marine life. This should be achieved with measures that are more targeted, less invasive, and non-lethal.
- It is important to collect evidence about shark movements and behaviour patterns and make it more available, to help the Community make informed decisions about when and where to use the ocean more safely.

Salient patterns in Council preferences for shark mitigation measures were:

“The use of drones provides local ‘real time’ search and surveillance capabilities, and when used in conjunction with local listening stations presents a more enhanced feeling of safety for lifeguards and beach goers.”

- Preference for newer technology-enabled Drones and Shark Listening stations linked to the SharkSmart App. These measures are perceived to both protect humans in real-time, and reduce harm to sharks and marine life.
- Less support for traditional mitigation measures such as Shark mesh nets because of indiscriminate harm caused to sharks and other marine life, and ineffectiveness in protecting humans. Helicopters were also less preferred due to higher costs and being less responsive to local needs (relative to Drones).
- Preference for measures that help people to make informed decisions and reduce risk of harm for both sharks and beach users (for example Research and Community education using beach signage, social media, SharkSmart App and information targeting user groups).

The thinking and preferences reported here are consistent with studies of Community and ocean user shark management attitudes and preferences conducted since 2015, by NSW Department of Primary Industries and others (see Gibbs & Warren 2015; Gray & Gray 2017; Simmons & Mehmet 2018; Mehmet & Simmons 2019; Stokes et al. 2020; Simmons et al. 2021).

“Shark Nets are no longer suitable as a shark bite risk mitigation measure due to their inability to protect ocean-users, the impact on marine wildlife and their resultant unpopularity. Alternative measures can actually reduce the risk via detection (drone surveillance) and deterrence (personal shark deterrents, SMART drumlines, etc.) without the cost to marine wildlife.”

Key preference findings for NSW

- The highest average preference scores (out of a possible 10) across NSW Coastal Councils were for Shark listening stations (8.5), followed by Drones (8.4), Research (8.4), Community education (8.0) and Personal responsibility (7.7).

[SMART] “Drum lines and increased numbers of listening stations will allow the NSW government to inform local beach goers of the presence of sharks via modern social media platforms. Their use also provides an opportunity for greater insight into the movement and behaviours of sharks.”

- Twenty-two Councils did not support use of Shark mesh nets.
- There were lower average preference scores for Shark mesh nets (1.8), Helicopters (6.0), Personal shark deterrents (6.3), and SMART drumlines (6.8).

Table 1 Council and Community response means for NSW

Preferences	NSW Council mean (n=25)	Community mean (n=4023)
Shark Listening stations linked to the SharkSmart app	8.5	7.5
Drones	8.4	8.4
Research to learn more about sharks and mitigation technologies	8.4	8.3
Community Education (e.g. signs, mobile education and pop-ups)	8	7.8
Personal responsibility (self-education and risk analysis)	7.7	8.4
SMART drumlines	6.8	4.6
Personal shark deterrent devices	6.3	6
Helicopters	6	6.7
Shark mesh nets	1.8	2.5

- Table 1 shows the combined mean preference scores for all NSW Coastal Councils and NSW Community individuals that participated in this study. There was a close alignment between Community and Council responses. Further, the findings show that within each Local Government Area (LGA) most Councils and their Community's preferences were aligned.
- The largest difference between Council and Community was in the Community's lower preference scoring of SMART drumlines. This may be due to the lower level of awareness of the role that SMART drumlines play in NSW in tagging sharks, which is necessary for Shark Listening stations to detect their presence. It may also indicate prevailing bias against traditional 'drumlines' which are believed to harm sharks.
- Tables 2 to 6 show preferences for NSW Coastal Councils, grouped by region. They show some clear consistencies across the coastal regions of NSW.

Preferences for North Coast Councils

Table 2 Preferences for North Coast Councils

North Coast Councils	Tweed Shire Council	Byron Shire Council	Ballina Shire Council	Richmond Valley Shire Council	Clarence Valley Shire Council
When to mitigate	All Year	Sept - April	All year	All Year	Sept - April
Preferences					
Drones	10	10	10	10	9
Shark listening stations	8	10	10	10	10
SMART drumlines	Not supported	10	10	10	8
Community education	10	Supported but not preferred (4)	8	8	10
Research	10	Supported but not preferred (4)	8	6	10
Personal responsibility	10	Not preferred (4)	5	5	10
Personal shark deterrents	6	Supported but not preferred (4)	8	5	10
Helicopters	Not supported	10	Not supported	Not supported	7
Shark mesh nets	Not supported	Not Supported	Not supported	Not supported	Not supported

Preferences for Mid North Coast Councils

Table 3 Preferences for Mid North Coast Councils

Mid North Coast Councils	Coffs Harbour City Council	Bellingen Shire Council	Nambucca Shire Council	Kempsey Shire Council	Port-Macquarie Hastings Shire Council
When to mitigate	All Year	September-April	All Year	All Year	All Year
Preferences					
Drones	5	10	8	8	10
Personal responsibility	10	10	8	5	8
Shark listening stations	9	9	5	7	10
Research	9	10	5	6	10
Community education	9	7	5	6	10
SMART drumlines	7	9	8	Supported but not preferred (4)	10
Personal shark deterrents	10	5	8	Supported but not preferred (4)	10
Helicopters	Not supported	Not supported	6	7	10
Shark mesh nets	Not supported	Not supported	5	5	Not supported

Preferences for Hunter Councils

Table 4 Preferences for Hunter Councils

Hunter Councils	Mid Coast Council	Port Stephens Council	City of Newcastle Council	Lake Macquarie Council	Central Coast Council
When to mitigate	All Year	All Year	All Year	All Year	All Year
Preferences					
Community education	10	10	10	8	8
Personal responsibility	10	10	7	10	8
Drones	8	10	10	8	8
Research	8	7	10	8	8
Shark listening stations	6	5	7	10	8
Personal shark deterrents	8	10	8	Not supported	7
Helicopters	6	5	5	10	Not supported
SMART drumlines	6	Not supported	5	8	8
Shark mesh nets	Not supported	Not supported	Not supported	Not supported	Not supported

Preferences for Sydney Councils

Table 5 Preferences for Sydney Councils

Sydney Councils	Northern Beaches Council	Sutherland Shire Council	Randwick City Council	Waverley Council	Wollongong City Council
When to mitigate	All Year	Sept-April	All Year	All Year	Sept-April
Preferences					
Research	10	10	10	7	10
Shark listening stations	10	10	9	7	10
SMART drumlines	8	9	8	5	10
Community education	10	8	10	5	6
Drones	10	10	10	Supported but not preferred (2)	9
Personal responsibility	10	8	6	7	7
Helicopters	10	7	7	Supported but not preferred (3)	10
Personal shark deterrents	10	Not supported	6	Not supported	7
Shark mesh nets	Not supported	Not supported	5	Not supported	Not supported

Preferences for South Coast Councils

Table 6 Preferences for South Coast Councils

South Coast Councils	Shellharbour City Council	Kiama Municipal Council	Shoalhaven City Council	Eurobodalla Shire Council	Bega Valley Shire Council
When to mitigate	All Year	Sept-April	All Year	Sept-April	Sept-April
Preferences					
Research	9	10	7	8	9
Shark listening stations	9	10	6	8	9
Community education	9	7	7	5	9
Drones	7	8	6	5	9
Personal responsibility	9	Not preferred (1)	5	10	9
Helicopters	6	6	Supported but not preferred (4)	8	5
SMART drumlines	7	5	Not supported	5	9
Personal shark deterrents	5	Not supported	6	5	6
Shark mesh nets	Not supported	Not supported	Not supported	Not supported	Not supported

Towards an ideal shark management strategy

One 'ideal' envisioned for the future of shark management includes systems for detecting the presence of potentially dangerous sharks near areas where people are in the water. Such detection might involve in-water or aerial systems that trigger an alert that is instantly relayed as a warning to those in the water. In this vision people continue their swimming and surfing and other ocean recreation, confident that they will be alerted to the presence of any sharks in time to avoid an interaction, and confident that sharks and other marine life are not harmed.

“Education can help limit the windows in which people are exposed to risk. The marine environment is to be respected and people need to know how they can co-exist with shark

For many the key to a better future of shark management is improving the technologies that detect, deter, and instantly and effectively warn those who might be in danger from sharks.

Some Councils and Community members perceive these technologies are already in operation, or are being trialled and improved through the NSW SMS. Listening stations are detecting tagged sharks in the water and instantly conveying alerts to Apps and social media. Drones survey the waters from the air with ever-improving vision and sensitivity, ready to relay alerts to swimmers and surfers. Research into shark movements and detection and deterrents is underway, to find better and safer ways to prevent harmful interactions.

“We are fully supportive on the use of drones as they are cost effective and feedback to lifeguards also shows the public feel safer in the water when a drone is undertaking regular flights.”

This ideal and the trends identified in Council and Community preferences indicate close alignment with the NSW SMS ambition “to increase protection for bathers from shark interactions while minimising harm to sharks or other animals.”*

“The most important advancement in shark mitigation is technology and research. The need for review of traditional methods such as nets needs to be replaced by other "smart" approaches due to the collateral impact to other marine life. Drone technology as well as other water based detection systems, with appropriate and reliable message deployment capability to lifeguard teams and surf clubs will provide the necessary warnings to enable the removal of people from the water.”

* https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/581694/nsw-shark-management-strategy-factsheet.pdf

2 BACKGROUND

The majority of the 8.1 million people who live in NSW reside on or near the 2137 kilometre coastline (ABS 2020). The NSW coast is important for its natural environment, ports, tourism, and for recreation. There are hundreds of beaches along the coast where people swim and otherwise enjoy a wide range of activities all year round, particularly in the warmer summer months. This inevitably leads to encounters with potentially dangerous sharks, and sometimes serious injuries and fatalities occur to the people involved. Such incidents cause harm not only to those directly affected, but cause concern to whole communities.

The NSW Government developed the 5year NSW Shark Management Strategy (SMS) in 2015 to complement the Shark Meshing (Bather Protection) Program (SMP) and other awareness campaigns. The aim of the SMS was to increase protection for bathers from shark interactions, while minimising harm to sharks and other marine life. The strategy spanned the length of the NSW coastline. It trialled a range of approaches and technologies to protect bathers and increase awareness about shark movements and ecology, especially White, Tiger and Bull sharks.

The SMS involved a range of Community education and shark- alert measures such as beach signage, and the SharkSmart App. Aerial surveillance measures were used such as Helicopters and Drones, as well as in-water measures including SMART drumlines, Shark listening stations and Shark mesh nets. The SMS also drove a range of research intended to improve knowledge about technologies and shark movements, and increase protection of beachgoers. The five-year SMS ended on 30 June 2020.

Policy works most effectively when those involved and affected understand and support its implementation. We and others have completed a number of studies of beach and ocean users in NSW since 2015, exploring their attitudes towards different approaches available for managing sharks. In the previous century a common approach to reducing the possibility of harm from sharks to humans was to reduce the number of sharks. More recently researchers have identified a trend

towards favouring non-lethal approaches to mitigation, increased surveillance (especially by Drones) and instant alert systems on beaches, and to increased individual responsibility through research and Community education (see Gibbs & Warren 2015; Gray & Gray 2017; Simmons & Mehmet 2018; Mehmet & Simmons 2019; Stokes et al. 2020; Simmons et al. 2021). There is also considerable optimism and expectation that technologies will in the future better enable human recreation; and the protection for marine life, including sharks.

Until now there has not been a formal collection of feedback about shark mitigation preferences from all NSW coastal Councils. This research project sought to share the findings of the SMS with local Councils and other important stakeholder organisations and communities along the coast of NSW. Input was then sought from Councils and key stakeholders to assist plans for future shark mitigation in NSW. The 25 NSW coastal Councils, other stakeholder organisations, and Community members were invited to complete a survey and express their preferences for shark mitigation into the future. This report explains the process and findings of the survey.

3 AIM AND RESEARCH QUESTIONS

The aim of the project was to determine local government and Community preferences for shark mitigation measures in NSW. The main research questions:

1. Which mitigation options are supported and not supported?
2. Which mitigation options are preferred?

Three main stakeholder groups were surveyed:

1. NSW Coastal Councils
2. Non-Council stakeholder organisations
3. NSW Community

The report includes summaries of support and preferences (Council, non Council stakeholder organisations, Community) for all NSW Coastal Local Government Authority areas (North Coast; Mid North Coast; Hunter; Sydney; South Coast).

The complete survey submissions returned from each Council and non-Council organisation are included as appendices.

4 RESEARCH METHODS

4.1 SMS information sessions

An important part of the consultation process was ensuring that stakeholders had access to current and comprehensive information about sharks and the NSW Shark Management Strategy since 2015 (see Appendix A for Engagement Program and Information Session schedule).

This information was shared with stakeholders through a series of Online information sessions, including recordings, live commentary and other information managed and delivered by a DPI team.

Information sessions were scheduled for 120 minutes with DPI staff to explain the NSW strategy and results. Each session covered:

1. Overview of Shark Management Strategy
2. The Results of testing and trialling a suite of shark mitigation measures
3. The science of sharks – While, Bull and Tiger movements and behaviour
4. Social research findings – What the NSW Community thinks about sharks and mitigation
5. Request to complete survey. (See Appendix B for detailed information session program).

The eight multimedia online information sessions were livestreamed over three weeks in February and March;

Table 7 Online information sessions

Northern Rivers Councils	Tweed, Byron, Ballina, Richmond Valley, Clarence Valley	Tuesday 23 February 2021
Sydney Coastal Councils	Northern Beaches, Waverley, Randwick, Sutherland, Woollahra, Sydney Coastal Councils Group	Wednesday 24 February 2021
Mid-North Coast Councils	Coffs Harbour, Bellingen, Nambucca, Kempsey, Port Macquarie	Monday 1 March 2021
Hunter Councils	MidCoast, Port Stephens, Newcastle, Lake Macquarie, Central Coast	Tuesday 2 March 2021
Illawarra Shoalhaven	Wollongong, Shellharbour, Kiama, Shoalhaven, Eurobodalla, Bega	Wednesday 3 March 2021
Lifesavers and emergency services	Surf Life Saving NSW, Australian Professional Lifeguards Association, Marine Rescue Marine Area Command	Monday 8 March 2021
2015 Shark Summit attendees	2015 Shark Summit Attendees	Tuesday 9 March 2021
Bite Club	People, rescuers and their families impacted by sharks	Wednesday 10 March 2021

An education trailer also visited for two days at each of Tweed and Kingscliff SLSC and Ballina and Wooli SLSC.

4.2 Data collection

An online survey (see Appendix C) was developed to determine local Council and other stakeholder preferences for future shark mitigation. The survey was created using Qualtrics software and was approved by the Charles Sturt University Ethics in Human Research Committee (H18272).

The survey collected information about:

1. Perceptions of shark harm mitigation needs and priorities, including;
 - 1.1. Education and alert preferences
 - 1.2. Aerial surveillance preferences
 - 1.3. In-water measure preferences
 - 1.4. Research preferences.

Respondents were required to identify whether they were making the submission as an organisation or an individual. Most of the questions were the same for organisations and individuals. However there were some differences.

2. Organisations were required to provide the organisation name, a contact name, and email or postal address. Individuals were asked to nominate which NSW Local Government Authority they lived in, and give their age, gender and main beach activity, but individual responses were anonymous.
3. Organisations were asked what time of the year shark mitigation measures should be deployed, and then were required to indicate whether they supported a range of education, aerial surveillance, in-water, and research options. They were then asked to rate their level of preference for the different options, and explain (open-ended question with a word limit) the reason for their ratings, based on the needs of their local area. Organisations were also invited to offer other comments and suggestions (open-ended question with a word limit) for the NSW Government regarding shark mitigation, and any local factors they felt should be considered.
4. Individuals were asked to indicate the extent to which they were personally concerned about encountering a shark at a beach in NSW, and then were required to indicate whether or not they supported a range of education, aerial surveillance, in-water, and research options. Individuals were then asked to rate their level of preference for the different options.

4.3 Sample recruitment

There were several strategies used to recruit participation in the online information sessions, and to express preferences for shark mitigation by completing the online survey.

Online Information Sessions

Invitations to attend the online information sessions were sent by email in the week beginning 25 January 2021 (see sample invitation Appendix D). NSW Coastal Councils were invited to a session dedicated to the Councils in their geographic region (eg Northern Rivers Councils; Sydney Coastal Councils). Other stakeholder organisations were targeted and invited by email to thematically focussed sessions (eg *2015 Shark Summit attendees; People, rescuers and their families impacted by sharks; Lifesaving and Ocean Safety Services*).

The online information sessions were designed to help organisations make informed assessments concerning shark mitigation, and to motivate them to make submissions expressing their preferences through completion of the survey.

Online Survey

After the online information sessions, Councils were sent a series of email reminders with the survey URL, and encouraged to complete the survey by the end of April deadline.

Councils were also invited to distribute the link to the survey and promote completion of the survey to constituents in their Local Government Area (LGA). The deadline for individual survey submissions was 31 March 2021. Information about Council promotion of the survey was not obtained.

A Facebook advertising campaign was used to increase the size of the sample and encourage participation by individuals from all LGAs. A URL to the survey was sent to people aged 18 and over along the length of the NSW coast. To better target beach and ocean users key terms used were snorkelling, Surf Life Saving Australia, spearfishing, bodysurfing, surfing, kayaking, Surf Life Saving Club, scuba diving, surf ski, surf, sea kayak, surf kayaking, bodyboarding, beaches, kiteboarding, open water swimming, lifeguard, surf lifesaving, or stand-up paddle boarding.

4.4 Analysis and reporting

The following sections present and discuss the findings for each LGA. These LGA sections commence with a summary table enabling ready comparison of preferences of Council, Community, and other local organisations that made submissions (including local surf life saving clubs in the case of Tweed and Ballina Shires), at the LGA level.

Stakeholder organisations are grouped and summarised in tables in the Findings section, with subsections for *Other Council, Environment and Advocacy, Sport, Recreation and Ocean Experience* (including tourism) and *Surf Life Saving NSW Branches*. These tables enable comparison across organisations.

4.1.1 Key to reading responses in summary tables:

- Where Councils and other organisations ticked 'No, not supported' and rated preference below 5, their attitude to that measure is reported as: **Not supported**
- Where Councils and other organisations ticked 'Yes, supported' and rated preference below 5, their attitude to that measure is reported as: **Supported but not preferred (preference score)**
- Community scores are a mean or average (out of 10) of all the individual responses for the LGA. Scores 5 and above are presented to one decimal place, scores under 5 are reported as **Not preferred**.

- The preference question reporting a mean for individual responses has been revalued because responses were coded from 0 to 10 (not 1 to 10). As a score of 0 would not allow an effective calculation of an average, revaluing the responses from 1-11 and then scaling to a score out of 10 has addressed this analysis problem and enabled direct comparison.
- All respondents were asked to indicate whether they supported different mitigation measures, and then to score their preferences for the different measures. Personal responsibility was only scored alongside other preferences, and is therefore reported as a preference.

5 FINDINGS

The findings chapter is divided into five regional area sections and a section for stakeholder organisations.

- The 25 Coastal LGAs are presented in the five regional area sections from the north of NSW to the south;
 - North Coast
 - Mid North Coast
 - Hunter
 - Sydney
 - South Coast

For each LGA a summary table is included to enable a comparison of the Council, Community (summary of surveys completed by individuals), and any non-Council organisation responses from that LGA.

Stakeholders are divided into four categories.

- Stakeholder organisations
 - Other Council
 - Environment and advocacy
 - Sport, Recreation and Ocean Experience
 - Surf Life Saving NSW Branches.

Complete organisation responses, and collations of individual responses for each LGA, are included in the Appendices section.

5.1 North Coast

5.1.1 Tweed Shire

Table 8 Tweed Shire LGA preferences

Tweed Shire	Council	Community (mean out of 10) (n=205)	Kingscliff Boardriders Club	SALT SLSC
When to mitigate	All Year	NA	All year	All year
Preferences				
Community education	10	7.4	Supported but not preferred (1)	Supported but not preferred (0)
Helicopters	Not supported	7.1	9	10
Drones	10	8.6	7	10
SMART drumlines	Not supported	5.3	10	10
Shark mesh nets	Not supported	Not preferred	Not supported	10
Shark listening stations	8	7.7	9	10
Personal shark deterrents	6	6.1	5	10
Personal responsibility	10	7.7	Not preferred (1)	Not preferred (0)
Research	10	8.1	5	Supported but not preferred (0)

Summary of findings

There was general alignment between Council, Community and other organisations on support for Listening stations and Drones.

Council, Community and Boardriders Club all opposed Shark mesh nets, and expressed some support for Personal shark deterrents. Council opposed use of SMART drumlines.

Council and Community expressed high or strong support for Education and Research, but Boardriders and SALT SLSC did not.

SALT SLSC supported active mitigation interventions provided by authorities, and did not support Education, Personal responsibility and deterrents, or Research.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Drones are non-invasive and relatively effective for warning beachgoers of the danger. Education can help limit the windows in which people are exposed to risk. The marine environment is to be respected and people need to know how they can co-exist with shark species.”

5.1.2 Byron Shire

Table 9 Byron Shire LGA preferences

Byron Shire	Council	Community (mean out of 10) (n=125)	BB Dive Centre	Soul Surf School
When to mitigate	Sept-April	NA	All Year	All Year
Preferences				
Community education	Supported but not preferred (4)	8.2	10	5
Helicopters	Not Supported	6.7	6	5
Drones	10	8.6	10	10
SMART drumlines	10	Not preferred	Not Supported	10
Shark mesh nets	Not Supported	Not preferred	Not Supported	Not Supported
Shark listening stations	10	7.9	10	10
Personal shark deterrents	Supported but not preferred (4)	5.8	Not Supported	10
Personal responsibility	Not preferred (4)	8.6	10	10
Research	Supported but not preferred (4)	8.7	10	10

Summary of findings

There was close alignment between Council and all others supporting Drones and Listening stations, while opposing Shark mesh nets.

Council preferred most active interventions provided by authorities, and, although supported, rated Community education, Research and Personal responsibility and Personal shark deterrents much lower.

The Community and non-Council organisations strongly supported Personal responsibility and Research.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Council has consistently resolved over the preceding years for the following initiatives to be implemented to enhance water surveillance and beach safety:

1. Shark Listening Devices (such as real time sonar detection buoys).
2. The implementation of an aerial surveillance program including the use of:
3. Gyrocopters, and
4. Drone surveillance
5. Land based, shark tower spotting program

Council has previously requested DPI for the trial of Smart Drumlines to be installed within the Marine Park (outside of Sanctuary Zone) and outside of the whale migration season.

Other mitigation measures such as Community educational initiatives, research and technology improvement (i.e. personal shark deterrent devices) are also supported but to a lesser extent. ‘

Council does not support the use of Shark Mesh Nets due to the impact on non-target animals. Shark nets are lethal and intrusive as shown by a 40% survival rate on non-target animals.”

5.1.3 Ballina Shire

Table 10 Ballina Shire LGA preferences

Ballina Shire	Council	COMMUNITY (mean out of 10) (n=126)	Ballina Surf School	BLL SLSC
When to mitigate	All Year	NA	All year	All year
Preferences				
Community education	8	6.6	10	8
Helicopters	Not supported	7.0	10	9
Drones	10	8.6	10	9
SMART drumlines	10	5.6	10	9
Shark mesh nets	Not supported	Not preferred	5	Supported but not preferred (0)
Shark listening stations	10	7.0	10	9
Personal shark deterrents	8	6.0	10	Supported but not preferred (2)
Personal responsibility	5	7.3	10	9
Research	8	7.5	10	9

Summary of findings

There was clear alignment on preference and support for most mitigation measures. Council, Community and organisations supported Community education, Drones, SMART drumlines, Listening stations and Research.

There was strong support for active interventions, education, research and surveillance, especially Drones. Council did not support Helicopters, however, the Community expressed moderate preference for them, as did the Surf School and SLSC.

There was mixed support for Personal shark deterrents, they were rated as very low preference by the SLSC but highly by the Surf School

For details and complete submissions, see the appendices section.

Council explanation of preferences

“A high number of shark mitigation measures have been trialled within Ballina and the North Coast region. Information and updates on the performance of individual mitigation measures have been continually provided to the Shark Management Strategy Stakeholder Group, culminating in the recently presented forum to Council. Additionally, throughout the strategy the DPI have undertaken Community consultation to both gauge Community sentiment and educate the Community on these different mitigation measures. A combination of experience, Community survey results to date and acknowledgement of the presented results have informed the provide preferences.”

5.1.4 Richmond Valley

Table 11 Richmond Valley LGA preferences

Richmond Valley	Council	COMMUNITY (mean out of 10) (n=19)	Evans Head Spearfishers Club
When to mitigate	All Year	NA	Winter, Spring
Preferences			
Community education	8	7.7	Not Supported
Helicopters	Not supported	7.6	Not supported
Drones	10	9.2	Not supported
SMART drumlines	10	5.9	9
Shark mesh nets	Not supported	Not preferred	Not supported
Shark listening stations	10	7.9	Not supported
Personal shark deterrents	5	5.2	Not supported
Personal responsibility	5	7.8	5
Research	6	8.4	Supported but not preferred (1)

Summary of findings

Council supported mitigation all year round, but the Evans Head Spearfishers Club supported mitigation only in Winter/Spring.

There was clear alignment across Council, Community and organisations in rejection of Shark mesh nets. There was alignment on most mitigation measures between Council and Community, with Drones highly preferred, and strong support for Listening stations and Community education.

The Community gave higher preference to Research and Personal responsibility, Council gave stronger support for SMART drumlines.

The Spearfishers Club supported only SMART drumlines, and moderately preferred Personal responsibility.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Each year Richmond Valley Councils coastal village of Evans Head has over 50,000 visitors, most whom come to enjoy our pristine beaches and well known surf spots. Council supports shark mitigation in Evans Head and will continue to fund the shark alarm at the Evans Head Surf Club in our yearly budget. This is in addition to the \$57,000 per year spent on lifeguard patrols for the extended summer months as well as the endless amounts of volunteer hours spent operating drones in order to keep our beach patrons safe.

The results from the use of drumlines from December 2016 to June 2020 in this location shows 202 targeted sharks tagged and released and 61 non target in by-catch of which 59 were of shark species, with only one animal reported as deceased in 2017. Whilst more expensive and labour intensive, Council supports the continuation of the drum lines as they provide benefit for research purposes and are less harmful than other mitigating measures like shark nets.

From the various investigations into shark movements recorded, there is still a large amount of uncertainty around water safety on beaches that do not have any shark mitigation measures. In the last 12 months, there were 6 fatal shark attacks in Australia, 3 of these fatalities were within 100km of Evans Head on beaches without drumlines and outside of this program.

The NSW Shark Program provides a sense of safety in our Community and for our visitors. Our tourism relies heavily on safe beaches which would be substantially impacted should the funding for the delivery of this program cease beyond June 2021.”

5.1.5 Clarence Valley Council

Table 12 Clarence Valley LGA preferences

Clarence Valley	Council	COMMUNITY (mean out of 10) (n=58)
When to mitigate	September-April	NA
Preferences		
Community education	10	7.1
Helicopters	7	6.1
Drones	9	8.3
SMART drumlines	8	5.3
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	7.0
Personal shark deterrents	10	6.1
Personal responsibility	10	7.9
Research	10	8.2

Summary of findings

There was general alignment between Council and the Community in support and preferences.

Council want mitigation all year (noting a large proportion of their Community expressed concern or extreme concern about encountering sharks), and were highly supportive of nearly all measures. They reported less support for Helicopters.

The average preference scores reported by Community participants indicated support of most measures.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Drones - effective at local patrolled and popular surf beaches as a technology that can assist with local and surf club SLS surveillance. We are aware that some boardrider clubs, and just groups of surfers, use drones as part of their event monitoring.

SMART Drumlines - selected so long as sharks are released within 30minutes and they are tagged to enhance data collection. From the briefing appears that this is the primary way we collect data on shark movements and patterns with low level of fatality provided that this is done within a 30min response time. Improving data on shark numbers, patterns of movement and their feed species is what will help the Community understand high risk times and areas.

Community Education - awareness is a fundamental requirement and with digital technology can be done easily and cheaply.

Shark Mesh Nets - we have a small shark net at Iuka Bay for a small swimming area. For off shore nets wouldn't support them as an effective tool due to off target species being affected and their efficiency for our LGA.

Personal responsibility - we all need to be aware and do our assessment before entering the water.
Helicopters - high costs but perhaps necessary tool for popular areas for swimmers and surfers that can cover a large area.

Personal Devices - can we have more education about what works and what doesn't based on latest research?

Shark Listening stations - support more stations at popular surf beaches.

Research - can not do enough and highly recommended.”

5.2 Mid North Coast

5.2.1 Coffs Harbour City

Table 13 Coffs Harbour City LGA preferences

Coffs Harbour City	Council	COMMUNITY (mean out of 10) (n=80)
When to mitigate	All Year	NA
Preferences		
Community education	9	7.8
Helicopters	Not supported	6.2
Drones	5	8.1
SMART drumlines	7	5.0
Shark mesh nets	Not supported	Not preferred
Shark listening stations	9	7.5
Personal shark deterrents	10	6.4
Personal responsibility	10	8.8
Research	9	8.1

Summary of findings

Community rated Personal responsibility as highest preference, Council rated Personal responsibility equally highest with Personal shark deterrents. Both also rated Research and Community education very highly. Council rated Listening stations high preference. Neither supported Shark mesh nets.

Council did not support use of Helicopters, and gave a moderate preference to Drones. Community support was strong for Drones and moderate for Helicopters.

There was moderate support for SMART drumlines.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Community education is essential to further inform users of the real issues surrounding sharks and mitigation. With regards to helicopter use, very expensive and although they cover a wide area, they only get a snapshot. Drones are a good tool, however also limited. Weather, turbidity of water affect

use, however for events, (surf carnivals, surfing events), use of drones could be very effective. Technologies and research into personal protective devices is the preferred method of mitigation, education into assisting people understand the importance of sharks within the environment is also essential. Educate the media as well.

The use of nets is not supported due to the environmental damage they cause, by-catch is uncontrolled and most species caught appear to perish.

Smart drumlines are somewhat supported, however members of the Community are hesitant with regards to these as well as there is a perception that they attract sharks to the area.

Tagging and monitoring with the use of listening stations is supported.”

5.2.2 Bellingen Shire

Table 14 Bellingen Shire LGA preferences

Bellingen Shire	Council	COMMUNITY (mean out of 10) (n=17)
When to mitigate	September-April	NA
Preferences		
Community education	7	8.3
Helicopters	Not supported	7.4
Drones	10	8.1
SMART drumlines	9	5.6
Shark mesh nets	Not supported	Not preferred
Shark listening stations	9	7.7
Personal shark deterrents	5	7.5
Personal responsibility	10	8.9
Research	10	9.2

Summary of findings

Council preferred mitigation to be deployed between September and April when people swim in the ocean.

Council and Community were generally in close alignment. They rated Research, Personal Responsibility, Drones, Community education and Listening stations among their highest preferences. Neither supported use of Shark mesh nets.

Council did not support Helicopters and gave moderate support for Personal shark deterrents. The Community supported Helicopters and gave higher preference to Personal shark deterrents.

Council were highly supportive of SMART drumlines, the Community moderately supportive.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“The drone trials undertaken from 2017 to 2020 demonstrated an effective observation strategy from safety, cost and environmental perspectives. With strong social support from the Community, including Surf Life Saving NSW, the program allowed lifesavers to identify risks and immediately act to protect beachgoers. It was reassuring to hear that privacy concerns raised by the public were alleviated when drone operators were clearly identifiable, by uniform, as holding the trusted role of surf lifesavers.

Smart drumlines and listening devices would provide additional reassurance in areas of particularly high target species activity and/or where coastal conditions do not provide a safe environment for drone operators. Whilst these treatments have the potential to have a negative effect on marine species, it is acknowledged that the tagging process provides important data regarding the movement patterns of white, bull and tiger shark species.”

5.2.3 Nambucca Valley

Table 15 Nambucca LGA preferences

Nambucca Valley	Council	COMMUNITY (mean out of 10) (n=23)
When to mitigate	All Year	NA
Preferences		
Community education	5	8.0
Helicopters	6	6.4
Drones	8	7.6
SMART drumlines	8	Not preferred
Shark mesh nets	5	Not preferred
Shark listening stations	5	6.3
Personal shark deterrents	8	5.2
Personal responsibility	8	8.9
Research	5	8.1

Summary of findings

Council support mitigation measures all year round.

The closest alignment between Council and Community was on their level of support for Drones and Personal responsibility, and moderate support for Helicopters. The greatest differences were in the Community giving higher preference to Community education and Research.

Council's most preferred measures were Drones, SMART drumlines, Personal shark deterrents and Personal responsibility. Council expressed moderate preference for Community education, listening stations, Research, and Shark mesh nets.

The Community expressed highest preference for helping the Community make informed and safe decisions around water through Personal responsibility, Community education, and Research. The Community's least preferred measures were SMART drumlines and Shark mesh nets.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“The Nambucca Valley Council considered the questions at their meeting on 25 March 2021. The consensus was shark mesh nets are the least preferred strategy because of the by-catch, but it is understood that these have been in place in Newcastle, Sydney and Wollongong since the 1930's and their continuation or otherwise is not a matter for this Council. However the Council would not be keen on their introduction to beaches in our LGA. The consensus of the Council was that shark management strategies should be more targeted and have less impact on other marine life.”

5.2.4 Kempsey Shire

Table 16 Kempsey Shire LGA preferences

Kempsey Shire	Council	COMMUNITY (mean out of 10) (n=28)	South West Rocks Figtree Descendants Aboriginal Corporation
When to mitigate	All Year	NA	All year
Preferences			
Community education	6	6.7	10
Helicopters	7	6.5	5
Drones	8	7.8	6
SMART drumlines	Supported but not preferred (4)	Not preferred	7
Shark mesh nets	5	Not preferred	Not supported
Shark listening stations	7	6.4	Supported but not preferred (4)
Personal shark deterrents	Supported but not preferred (4)	5.5	10
Personal responsibility	5	8.4	10
Research	6	8.1	9

Summary of findings

Council prefer mitigation to be all year round.

There was general alignment in preferences for Helicopters, and more preferred, Drones. The Community and the Descendants Aboriginal Corporation gave higher preference scores to Personal responsibility, Research and Community education than Council.

The Descendants Aboriginal Corporation were most strongly supportive of Community education, Personal responsibility, Personal shark deterrents, and Research. They also supported but did not prefer Listening stations.

Council alone supported and moderately preferred Shark mesh nets. Council supported but did not prefer Personal shark deterrents.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“N/A”

5.2.5 Port-Macquarie Hastings

Table 17 Port-Macquarie Hastings LGA preferences

Port-Macquarie Hastings	Council	COMMUNITY (mean out of 10) (n=72)
When to mitigate	All Year	NA
Preferences		
Community education	10	7.2
Helicopters	10	6.2
Drones	10	8.2
SMART drumlines	10	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	7.1
Personal shark deterrents	10	6.6
Personal responsibility	8	8.4
Research	10	7.8

Summary of findings

Council prefer mitigation to be all year round.

Council gave maximum preference to all in-water, aerial surveillance, education/research and alert measures, except Shark mesh nets which they did not support. Council also indicated high preference for Personal responsibility.

Community supported most measures except Shark mesh nets and SMART drumlines, and thus there was general alignment with Council. However, Community most preferred Personal responsibility, followed by Drones, Research and Community education.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“In general, we believe the shark nets are not appropriate for our area, nor do we believe the public would be supportive of any netting due to the harm to marine life.

We are fully supportive on the use of drones as they are cost effective and feedback to lifeguards also

shows the public feel safer in the water when a drone is undertaking regular flights.

The helicopter has proved very valuable over the years, and although an expensive operation, the helicopter covers the whole coastline and surfers and swimmers seem to acknowledge and obey the evacuation sirens they sound when a shark is close by.

The ability for swimmers and surfers to utilise the SharkSmart app is also great. Whether people choose to receive the alerts for sharks in the area or not, it is great that any person has the option to use the app to keep informed or not. The alerts also assist our lifeguards and lifesavers during patrols so they know when to increase or change their type of surveillance whilst there is shark activity.

We would support a combination of all of the listed Community education and shark alert measures that DPI deliver to communities to raise awareness with beachgoers.”

5.3 Hunter

5.3.1 Mid-Coast

Table 18 Mid Coast LGA preferences

Mid-Coast	Council	COMMUNITY (mean out of 10) (n=83)
When to mitigate	All Year	NA
Preferences		
Community education	10	7.6
Helicopters	6	6.6
Drones	8	8.6
SMART drumlines	6	5.3
Shark mesh nets	Not supported	Not preferred
Shark listening stations	6	7.8
Personal shark deterrents	8	6.1
Personal responsibility	10	8.7
Research	8	8.1

Summary of findings

Council prefer mitigation to be deployed all year round.

Council and Community were aligned in attitude to nearly all measures. The least preferred measure for Council and Community was Shark mesh nets.

The most preferred measures included Personal responsibility, Drones, Community education and Research. Helicopters and SMART drumlines were less preferred.

Council strongly preferred Community education and Personal shark deterrents compared to the Community. The Community demonstrated a stronger preference for Listening stations than Council.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Ultimately at the end of the day it is up to the individual to conduct a risk assessment and determine if they wish to swim in the ocean, river or estuary. All other measures are to be delivered within available resources at that time.”

5.3.2 Port Stephens

Table 19 Port Stephens LGA preferences

Port Stephens	Council	COMMUNITY (mean out of 10) (n=69)
When to mitigate	All Year	NA
Preferences		
Community education	10	7.7
Helicopters	5	6.9
Drones	10	9.1
SMART drumlines	Not supported	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	5	8.4
Personal shark deterrents	10	5.9
Personal responsibility	10	8.9
Research	7	8.4

Summary of findings

Council would prefer mitigation be deployed all year round.

Council and Community reported Drones as their highest preference. Council also gave maximum preference to Community education, Personal shark deterrents and Personal responsibility. Personal responsibility, Research, and Listening stations were the next highly rated measures for the Community.

Both Council and Community rated SMART drumlines and Shark mesh nets as their least preferred measures.

Helicopters were a moderate preference for both Council and Community; while Listening stations were a moderate preference only for Council.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Port Stephens Councils preference is to support non lethal shark management strategies and we currently don't have any of the lethal measures i.e. drumlines or shark nets located in Port Stephens. This view is supported by the Port Stephens Community. Council would prefer to promote tourist and Community education around shark and swimmer safety.”

5.3.3 Newcastle City

Table 20 City of Newcastle LGA preferences

Newcastle City	Council	COMMUNITY (mean out of 10) (n=180)
When to mitigate	All Year	NA
Preferences		
Community education	10	7.8
Helicopters	5	7.0
Drones	10	8.4
SMART drumlines	5	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	7	7.5
Personal shark deterrents	8	5.8
Personal responsibility	7	8.3
Research	10	8.2

Summary of findings

Council prefers mitigation to be deployed all year round. Council's most preferred mitigation measures were Drones, Community education, and Research. They did not support use of Shark mesh nets, and gave moderate preference scores to Helicopters and SMART drumlines. The Community's highest preference was for Drones, followed by Personal responsibility, Research, and Community education. The Community's least preferred mitigation measures were also Shark mesh nets, followed by SMART drumlines.

Council and Community also strong or firm preference for Listening stations. The Community gave relatively higher preference to Helicopters, and lower preference for Personal shark deterrents.

For details and complete submissions, see the appendices section.

Council explanation of preferences

"Shark Nets are no longer suitable as a shark bite risk mitigation measure due to their inability to protect ocean-users, the impact on marine wildlife and their resultant unpopularity. Alternative

measures can actually reduce the risk via detection (drone surveillance) and deterrence (personal shark deterrents, SMART drumlines, etc.) without the cost to marine wildlife.”

5.3.4 Lake Macquarie City

Table 21 Lake Macquarie LGA preferences

Lake Macquarie City	Council	COMMUNITY (mean out of 10) (n=130)
When to mitigate	All Year	NA
Preferences		
Community education	8	7.8
Helicopters	10	7.1
Drones	8	8.8
SMART drumlines	8	5.0
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	7.5
Personal shark deterrents	Not supported	6.5
Personal responsibility	10	8.3
Research	8	8.6

Summary of findings

Council prefer mitigation to be deployed all year round.

There was general alignment on preference for mitigation measures by both Council and Community – which both indicating Shark mesh nets as their least preferred.

There were some differences in emphasis that deserve noting. Council gave highest preference scores to Helicopters, Listening stations, and Personal responsibility; the Community also supported these measures, but gave highest preference to Drones, followed by Research. Council did not support Personal shark deterrents while the Community indicated a moderate preference.

Council support replacing Shark mesh nets with SMART drumlines, but Community were less favourable towards SMART drumlines, rating them only as a moderate preference.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Community education, personal responsibility and research indicatives

Council staff support all proposed approaches

Surveillance Measures

Council staff support helicopter surveillance and listening stations

Council has undertaken trial programs with drone surveillance and found some limitations including short flight time, and potential safety impacts on beach users. We have also found it difficult to include drone operation as a part of Council Lifeguard duties due to the other roles Council Lifeguards are required to perform.

Shark Interception

Council staff support a change in shark interception measures from Mesh Nets to Smart Drumline. This is based on the evidence provided indicating the Smart Drumlines are more effective at intercepting target species, and have minimal ecological impact through reduced bycatch.”

5.3.5 Central Coast

Table 22 Central Coast LGA preferences

Central Coast	Council	COMMUNITY (mean out of 10) (n=216)	Australian Seabird Rescue Central Coast	Brisbane Water Aqualung Club
When to mitigate	All Year	NA	Never	Never
Preferences				
Community education	8	8.2	10	10
Helicopters	Not supported	7.0	10	10
Drones	8	8.8	10	10
SMART drumlines	8	Not preferred	10	Not supported
Shark mesh nets	Not supported	Not preferred	Not supported	Not supported
Shark listening stations	8	7.9	10	10
Personal shark deterrents	7	6.3	10	10
Personal responsibility	8	8.7	10	10
Research	8	8.3	10	10

Summary of findings

Council preferred mitigation measures to be deployed all year round, especially September-April when most people swim.

Across the organisations and Community there was agreement about support and preference for most mitigation measures. Community education, Drones, Personal responsibility, Research, Listening stations were all scored as high or strong preferences; and Shark mesh nets were the lowest preference. Seabird rescue and Aqualung Club did not support use of SMART drumlines. All organisations except Council scored Helicopters as high preference, Community scored them as a firm preference.

Personal shark deterrents were a firm preference for Council and Community, and the highest preference for Seabird rescue and Aqualung Club.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Central Coast Council supports the removal of shark nets and is in favour of more modern technology based alternatives and offer the following recommendations to the survey for your consideration.

Community & Education

Council supports the promotion of Shark Smart safety tips to the Central Coast Community prior to and throughout the Beach Safety season each year.

The education and outreach about shark behaviour are fundamental in helping protect swimmers when sharks are active in certain places and certain times throughout day.

Council recommends that DPI provide Councils Communications team the relevant Shark Smart information package prior to summer season and that Council promote these Safety tips at start of and throughout the Summer season throughout our local Community with its Beach Safety messaging tips.

Council recommends that DPI provide Shark Smart education packages for different users groups to Council who can then distribute these at its Beach safety area throughout the summer period.

Council believes that by introducing a broader Community & Education package to the beach users this will also assist in promoting personal responsibility and self-education with the associated risk of swimming at certain times throughout day and the dangers.

Shark Listening Stations Linked to Shark Smart App

The Central Coast region was not previously included in the trial for Shark listening devices and Council recommends that the Central Coast region be included in placing of selected shark listening devices at a number of beach locations within the Central Coast Council region.

Consultation with Council Beach Safety team and SLSCC occur with location of these devices prior to rollout. DPI consider linking these shark listening devices to adjoining beach site location with an alarm through PA systems advising public within patrol hours at respective beach location.

These Shark Smart listening stations should be linked to Shark Smart app Cons with CLS”

5.4 Sydney

5.4.1 Northern Beaches

Table 23 Northern Beaches LGA preferences

Northern Beaches	Council	COMMUNITY (mean out of 10) (n=547)
When to mitigate	All Year	NA
Preferences		
Community education	10	7.6
Helicopters	10	6.4
Drones	10	8.4
SMART drumlines	8	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	7.5
Personal shark deterrents	10	5.8
Personal responsibility	10	8.2
Research	10	8.3

Summary of findings

Council supported deployment of mitigation measures all year round.

Council gave the highest possible preference scores to all mitigation measures except SMART drumlines which they scored as high preference, and Shark mesh nets which they did not support.

Community preferences were similar in most respects, highest Community preferences were for Drones, Research, and Personal responsibility. Lowest preferences for Community were also for Shark mesh nets, as well as SMART drumlines.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Northern Beaches Council is satisfied with the program as implemented by DPI Fisheries and currently participates in the implementation of this program by providing additional shark detection and closing beaches when necessary.

DPI Fisheries funded programs or technology that result in lower shark &/or non-target bycatch mortality, whilst maintaining or improving the safety of recreational users of our waterways, are supported.

DPI Fisheries is, and should continue to be, the agency with the expertise and responsibility for designing and implementing shark bite mitigation strategies in NSW. In practice a combination of the measures above will be applied at each location based on site specific factors. It is requested that:

- DPI Fisheries confirm the most efficient detection strategy or combination of strategies for the Northern Beaches
- DPI Fisheries develop and provide additional information on the effectiveness and cost associated with alternative shark bite mitigation measures relative to shark nets.”

5.4.2 Sutherland Shire

Table 24 Sutherland LGA preferences

Sutherland Shire	Council	COMMUNITY (mean out of 10) (n=149)
When to mitigate	September-April	NA
Preferences		
Community education	8	7.3
Helicopters	7	6.8
Drones	10	8.3
SMART drumlines	9	5.3
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	7.4
Personal shark deterrents	Not supported	5.8
Personal responsibility	8	8.0
Research	10	8.0

Summary of findings

Council supported shark mitigation measures to be deployed between September and April when people swim in the ocean.

Council supported all measures except Personal shark deterrents and Shark mesh nets. Council reported the highest preference scores for Drones, Listening stations, and Research, followed by SMART drumlines, Community education, and Personal Responsibility.

The Community also gave their highest preference to Drones, followed by Personal responsibility and Research, and their lowest preference to Shark mesh nets. Community expressed strong preference for Listening stations.

Council more highly preferred SMART drumlines than the Community, for whom they were a moderate preference.

For details and complete submissions, see the appendices section.

Council explanation of preferences

Drum lines and increased numbers of listening stations will allow the NSW government to inform local beach goers of the presence of sharks via modern social media platforms. Their use also provides an opportunity for greater insight into the movement and behaviours of sharks. This information is invaluable for future decisions regarding shark mitigation measures in NSW. Understanding movements and behaviours can result in more targeted funding for research or education programs. Monitoring the movement of sharks in conjunction with other ocean parameters including, but not limited to, oceans currents, weather systems (El Niño and La Nina) and fish movements can provide insights to the ecology of one of the oceans top predators and increase understanding of ocean food webs.

Drum lines are preferred to mesh nets based on survival rates of both targeted and non-targeted species, plus the added ability to learn from tagged sharks.

The use of drones provides local 'real time' search and surveillance capabilities, and when used in conjunction with local listening stations presents a more enhanced feeling of safety for lifeguards and beach goers.

5.4.3 Randwick City

Table 25 Randwick LGA preferences

Randwick City	Council	COMMUNITY (mean out of 10) (n=90)
When to mitigate	All Year	NA
Preferences		
Community education	10	7.7
Helicopters	7	6.5
Drones	10	8.5
SMART drumlines	8	Not preferred
Shark mesh nets	5	Not preferred
Shark listening stations	9	7.3
Personal shark deterrents	6	5.4
Personal responsibility	6	8.1
Research	10	8.2

Summary of findings

Council prefer shark mitigation to be deployed all year round.

They supported all mitigation measures. They most preferred less invasive measures, Community education, Drones and Research. They gave moderate preference scores to Personal shark deterrents and Personal responsibility, and their least preferred measure, Shark mesh nets.

The Community most preferred Drones, followed by Research and Personal responsibility. Community education and Listening stations were also strongly preferred. However, the Community least preferred Shark mesh nets and SMART drumlines.

Council and Community gave firm preference scores for Helicopters, and moderately preferred Personal shark deterrents. Council were more in favour of Listening stations than the Community.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Randwick City Council's (RCC's) strongest preference in regard to shark mitigation technologies is in drones, SMART Drumlines and VR4G listening stations. RCC now has drones and can fly frequently, 365 days of the year to help quickly identify sharks in the water and clear the beaches if required. Drones are relatively low cost, can be rapidly deployed over the beaches, have no impact to sharks or other marine animals and provide an effective way to quickly observe/identify various marine life in the water.

In regard to the SMART Drumlines, the data published by DPI from other NSW regions looks favourable in relation to the percentage of target species caught and also the relatively low impact across all marine species. With increased tagging of target sharks through the SMART Drumline program, this will then increase the effectiveness of the VR4G listening stations.

Trialling these technologies along the RCC coastline will hopefully yield similar results to other NSW regions, justifying their long-term inclusion as part of the Shark Mitigation strategy across RCC beaches.

While Shark Meshing statistics are not as favourable in regard to target species caught and the volume of marine life found dead, RCC recommends retaining this long-standing shark mitigation tool while a successful trial of the above technologies is conducted along the RCC coastline. Any proposed changes, however, should only be considered after significant Community consultation and engagement with the local Community.

Equally important is continued research and education. While it is very important to gain a better understanding of sharks and their behaviours, extensive education will go a long way to ensuring the Community have accurate and up-to-date information about the various marine life and shark mitigation tools.”

5.4.4 Waverley

Table 26 Waverley LGA preferences

Waverley	Council	COMMUNITY (mean out of 10) (n=82)	Dive Centre Bondi
When to mitigate	All Year	NA	Never
Preferences			
Community education	5	7.3	9
Helicopters	Supported but not preferred (3)	6.8	7
Drones	Supported but not preferred (2)	8.6	9
SMART drumlines	5	Not preferred	Not supported
Shark mesh nets	Not supported	Not preferred	Not supported
Shark listening stations	7	7.7	9
Personal shark deterrents	Not supported	5.9	Not supported
Personal responsibility	7	8.2	10
Research	7	8.2	8

Summary of findings

Council preferred mitigation measures to be deployed all year round. They most preferred Listening stations, Personal responsibility and Research, and did not support Shark mesh nets. The clearest alignment with Community and Dive Centre Bondi was in their preference for Personal responsibility, Research, and Listening stations; and rejection of Shark mesh nets. Personal shark deterrents were not supported by Dive Centre Bondi and Council, and only moderately preferred by the Community.

The Community and Dive Centre Bondi were closely aligned. Community gave highest preference to Drones, followed by Personal responsibility and Research and Listening stations. The Dive Centre preferred Personal responsibility, followed by Community education, Drones, and Listening stations.

The Council gave a moderate preference score to SMART drumlines and low scores for aerial measures, but otherwise Council, Community and Dive Centre all gave lowest preference to Shark mesh nets and SMART drumlines.

The main points of difference were that the Council gave lower preference to aerial surveillance measures Drones and Helicopters than Community and Dive Centre Bondi; and the Council more strongly supported SMART drumlines compared to them.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Waverley Council understands that there is a very low swimmer safety risk to bather safety from sharks and that this risk is lower in Sydney than on the North Coast of NSW. This is reflected in the comparatively low number of sharks detected at Bondi by the listening station.

From the research presented, the very significant impact of shark meshing on marine biodiversity, including dolphins, a dugong and a diverse number and quantity of rays and sharks is unacceptable. Shark meshing is identified as a key threatening process under the NSW Threatened Species Act, with impacts on threatened species such as Grey Nurse sharks and impacts on other species such as seals could be avoided by their removal. It also appears that the effectiveness of this management option is very limited in improving bather safety. The lack of actual beach protection provided by the meshing and the migratory nature of White, Tiger and Bull sharks and the significant impact on marine biodiversity mean that DPIE should strongly consider discontinuing shark meshing in future shark management options.

Waverley Council considers SMART drumlines to be a moderate preference option, although they are not supported in the Waverley coast. Options to minimise impact on sharks caught on drumlines should be pursued. The listening station at Bondi is supported and relies on shark tagging from the SMART drumlines.

The use of drones to detect the presence of sharks is noted. Council sees the use of drones as complementary to other management options. They could be a useful tool for Waverley lifeguards who would be able to utilise them year-round for a range of uses. They are limited in terms of weather conditions, aerospace, launching from crowds, and not as a permanent observation control but may be useful on as needs basis.”

5.4.5 Wollongong City

Table 27 Wollongong City LGA preferences

Wollongong City	Council	COMMUNITY (mean out of 10) (n=194)
When to mitigate	September-April	NA
Preferences		
Community education	6	7.7
Helicopters	10	6.6
Drones	9	7.9
SMART drumlines	10	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	7.1
Personal shark deterrents	7	5.5
Personal responsibility	7	8.4
Research	10	8.2

Summary of findings

Council preferred mitigation measures to be deployed between September and April when people swim in the ocean.

Council and the Community preferences broadly aligned, although Council more highly preferred Helicopter aerial surveillance, and the Community more highly preferred Drones.

The main difference between Council and Community was that Council gave the highest preference score to SMART drumlines, which the Community did not prefer. Council also strongly preferred Helicopters, Listening stations, and Research, followed by Drones. They, however, did not support Shark mesh nets.

The Community most preferred Personal responsibility and Research, followed by Drones and Community education. The Community also did not prefer Shark mesh nets.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“SMART drum lines and aerial surveillance technology were rated the highest preference for mitigation measure being considered a more suitable and ecologically sound alternative in addressing the need to protect users of our beaches and surfing locations especially in the Wollongong LGA and the Illawarra. Helicopter surveillance was given a slightly higher preference above drones due to the specific need to monitor a high number of patrolled beaches in the Illawarra (including those not currently netted).

Continuing research to learn more about shark patterns and behaviours and mitigation measures was also given the highest preference recognising the importance of the role of research in minimising environmental harm whilst maximising swimmer safety. Continuing investment in this research will also contribute to world leading shark research.

Individual mitigation measures (personal responsibility and personal shark deterrent devices) were given a slightly lower preference (although still high at 7) due to the potential equity issues with lower income residents unable to afford such devices, and the diversity of beach goers who may not speak or read English or a good understanding of the beach. This is particularly pertinent for Wollongong being home to a large international student population and an area popular with persons visiting from Western Sydney, an area with high cultural and linguistic diversity.

Community education (signs, mobile education, pop ups) was given a preference of 6 being important but playing a more supporting role in an integrated approach.

Shark netting was given the lowest preference for all mitigation measures noted due to the association with harm to marine wildlife and ineffectiveness of technology targeting target shark species. However, there is likely continuing support from some Community members and swimmers who believe that shark nets allow use of the ocean without the fear of risk of shark interactions.”

5.5 South Coast

5.5.1 Shellharbour City

Table 28 Shellharbour City LGA preferences

Shellharbour City	Council	COMMUNITY (mean out of 10) (n=45)
When to mitigate	All Year	NA
Preferences		
Community education	9	7.7
Helicopters	6	7.1
Drones	7	8.6
SMART drumlines	7	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	9	7.3
Personal shark deterrents	5	6.6
Personal responsibility	9	8.5
Research	9	8.3

Summary of findings

Council supported deployment of mitigation measures all year round.

Council and Community preferences were in general alignment, except that Council had firm preference for SMART drumlines, and the Community scored them as a much lower preference. Both Council and the Community scored Shark mesh nets as lowest preference.

Council most highly preferred non-invasive measures including Community education, Listening stations, Personal responsibility, and Research; but did not support Shark mesh nets.

The Community most preferred Drones, followed by Personal responsibility and Research.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“SCC has had no mitigations in place other than drone monitoring over 2020-2021 summer season. Preferred methods are those that reduce/minimise harm to sharks and other animals (e.g. education,

monitoring, and research preferred over drumlines, and drumlines preferred over nets), increase knowledge and awareness (research & monitoring), and are most resource-efficient (e.g. drones preferred over helicopters). We also prioritise personal responsibility due to usage outside of patrolled times (off-season, pre & post patrol hours, etc.).”

5.5.2 Kiama Municipal

Table 29 Kiama Municipal LGA preferences

Kiama Municipal	Council	COMMUNITY (mean out of 10) (n=51)
When to mitigate	September-April	NA
Preferences		
Community education	7	7.4
Helicopters	6	5.9
Drones	8	8.1
SMART drumlines	5	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	10	6.9
Personal shark deterrents	Not supported	5.4
Personal responsibility	Not preferred	8.0
Research	10	7.8

Summary of findings

Council preferred mitigation measures to be deployed between September and April when most people swim.

On most measures Council and Community preferences were aligned – with both reporting the lowest preference for Shark mesh nets.

The main differences were that Personal Responsibility and Personal shark deterrents were not preferred by Council, and SMART drumlines were scored as moderate preference. The Community rated Personal responsibility its second highest preference after Drones and scored Personal shark deterrents as a moderate preference; but did not prefer SMART drumlines.

That said, Council are optimistic about the prospect of technology driving improvements to shark detection and warning systems, and rated Research, and Listening stations as highest preference.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“The most important advancement in shark mitigation is technology and research. The need for review of traditional methods such as nets needs to be replaced by other "smart" approaches due to the collateral impact to other marine life. Drone technology as well as other water based detection systems, with appropriate and reliable message deployment capability to lifeguard teams and surf clubs will provide the necessary warnings to enable the removal of people from the water.”

5.5.3 Shoalhaven City

Table 30 Shoalhaven City LGA preferences

Shoalhaven City	Council	COMMUNITY (mean out of 10) (n=108)
When to mitigate	All Year	NA
Preferences		
Community education	7	8.2
Helicopters	Supported but not preferred (4)	6.9
Drones	6	8.1
SMART drumlines	Not supported	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	6	7.5
Personal shark deterrents	6	6.4
Personal responsibility	5	9.1
Research	7	8.5

Summary of findings

Council staff supported deployment of mitigation measures all year round.

Council scored Personal responsibility, aerial surveillance, Community education and Research as being of lower preference than the Community. Neither Council nor Community preferred Shark mesh nets or SMART drumlines. Other alignments were Community education, and Research both of which had a high preference.

Council reported the highest preference for Community education and Research. The Community gave highest preference to Personal responsibility, Research, and Community education.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Drumlines and Shark mesh nets are a political topic that would need more engagement before they could possibly be endorsed. Being a regional Council on the South Coast, Council would favour cost effective/efficient solutions as we would be historically be considered lower risk compared to Council's on the States North Coast.”

Note:

“This survey has been responded to by Shoalhaven City Council at a staff level, not endorsed by the General Management or sitting Council. This needs to be reflected in the research paper in order for Council's response to be considered.”

5.5.4 Eurobodalla Shire

Table 31 Eurobodalla Shire LGA preferences

Eurobodalla Shire	Council	COMMUNITY (mean out of 10) (n=48)
When to mitigate	September-April	NA
Preferences		
Community education	5	7.8
Helicopters	8	6.3
Drones	5	7.9
SMART drumlines	5	Not preferred
Shark mesh nets	Not supported	Not preferred
Shark listening stations	8	7
Personal shark deterrents	5	5.9
Personal responsibility	10	8.6
Research	8	8.3

Summary of findings

Council preferred mitigation measures to be deployed between September and April when most people swim.

Council and the Community preferences aligned on most measures. Both gave lowest preference to Shark mesh nets, and highest preference scores to Personal responsibility followed by Research. Council also gave high preference to Helicopters, while the Community scored Drones more highly than Council.

Council scored SMART drumlines as moderate preference, they were not preferred by the Community.

The Community scored Community education as higher preference than Council.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Sharks are a known risk when swimming and surfing therefore, the public needs to take responsibility such as not swimming early morning late afternoon etc.”

5.5.5 Bega Valley Shire

Table 32 Bega Valley Shire LGA preferences

Bega Valley Shire	Bega Valley Shire Council	COMMUNITY (mean out of 10) (n=41)	Merimbula Marina	Potoroo Palace Native Animal Education sanctuary	Sustainable Water Actions for Merimbula and Pambula
When to mitigate	September-April	NA	Never	Never	All year
Preferences					
Community education	9	7.5	10	5	10
Helicopters	5	5.6	Not supported	Supported but not preferred (4)	10
Drones	9	8.6	Not supported	10	10
SMART drumlines	9	Not preferred	Not supported	Not supported	10
Shark mesh nets	Not supported	Not preferred	Not supported	Not supported	Not supported
Shark listening stations	9	7.3	Not supported	Supported but not preferred (3)	10
Personal shark deterrents	6	5.9	Not supported	Supported but not preferred (1)	10
Personal responsibility	9	8.7	10	Not preferred	10
Research	9	7.9	10	Supported but not preferred (0)	10

Summary of findings

Council preferred mitigation measures to be deployed between September and April when most people swim, especially over summer.

All were agreed on Shark mesh nets. None of the organisations supported Shark mesh nets and they were the lowest preference for the Community.

Council scored other measures as high preference, except Helicopters and Personal shark deterrents, which it scored as moderate preference.

Community education scored high on preferences for all, except the Native Animal Education Sanctuary, where it was supported, but scored only moderate preference. Personal responsibility was the highest preference for all except the Native Animal Education Sanctuary, where it was not preferred.

Drones was also the highest preference for Council, the Native Animal Education Sanctuary, and Sustainable water Actions, and second highest for Community, but was not supported by Merimbula Marina.

For details and complete submissions, see the appendices section.

Council explanation of preferences

“Hi priority items reflect research findings to date. Some merit in helicopter use however cost will be an issue and seems to be better cost benefits outcomes through other means. Ongoing research into personal deterrents worthwhile.”

5.6 Stakeholder Organisations

5.6.1 Other Council

Table 33 Other Council - Woollahra preferences

Woollahra Council	Council
When to mitigate	All Year
Preferences	
Community education	10
Helicopters	10
Drones	10
SMART drumlines	Supported but not preferred (4)
Shark mesh nets	Not supported
Shark listening stations	10
Personal shark deterrents	10
Personal responsibility	10
Research	10

Woollahra Council was highly supportive of all mitigation measures except SMART drumlines and Shark mesh nets.

For complete submission, see the appendices section.

5.6.2 Environment and advocacy

Table 34 Environment and advocacy organisation preferences

	Australian Marine Conservation	Australian UAV Service	Assocciacio LAMNA	Djuyalgu Wakulda	Earth Garden Foundation	Envoy
When to mitigate	Sept-April	All year	Never	Never	Never	All year
Preferences						
Community education	7	8	10	10	10	10
Helicopters	Supported but not preferred (3)	5	Not supported	9	5	Not supported
Drones	5	10	7	10	10	10
SMART drumlines	Not supported	7	Not supported	Not supported	Not supported	6
Shark mesh nets	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
Shark listening stations	Not supported	7	6	8	10	7
Personal shark deterrents	Not supported	Supported but not preferred (2)	Not preferred (4)	10	10	10
Personal responsibility	10	7	10	10	5	10
Research	Supported but not preferred (0)	8	10	9	10	9

	Humane Society International	Migaloo 2 Foundation	Ocean Future Fund	Our Blue Hands	Sentient	Shark Conservation Australia
When to mitigate	All year	All year	Summer	All year	Sept-April	Never
Preferences						
Community education	10	10	10	9	10	10
Helicopters	5	Not supported	Not supported	8	Supported but not preferred (4)	10
Drones	10	10	Supported but not preferred (4)	9	10	10
SMART drumlines	7	Not supported	Not supported	Not supported	Not supported	10
Shark mesh nets	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
Shark listening stations	7	7	Supported but not preferred (4)	Not supported	8	10
Personal shark deterrents	10	9	10	Not supported	Supported but not preferred (4)	10
Personal responsibility	7	10	10	9	10	10
Research	10	10	Supported but not preferred (4)	9	10	10

Environmental and advocacy organisations have various focus and goals, but generally supported less invasive measures, and did not support invasive, in-water measures.

They all preferred Community education and Personal responsibility, and did not support Shark mesh nets. All supported Drones, and eight scored Drones as a high preference.

All supported Research and nine organisations scored Research as strong or high preference.

Nine supported Listening stations, but only three supported SMART drumlines.

For details and complete submissions, see the appendices section.

5.6.3 Sport, recreation and ocean experience

Table 35 Sport, recreation and ocean experience organisation preferences

	Balance Tri Club	Hunters Hill Sailing Club	SALTY swims	Surfing maps	Surfrider Foundation South Coast
When to mitigate	Never	All year	September - April	All year	Never
Preferences					
Community education	10	8	10	10	10
Helicopters	5	6	9	10	10
Drones	10	10	9	10	10
SMART drumlines	Not supported	10	Not supported	Not supported	Not supported
Shark mesh nets	Not supported	10	Not supported	Not supported	Not supported
Shark listening stations	10	8	10	10	10
Personal shark deterrents	Not supported	Not supported	9	10	10
Personal responsibility	10	7	10	10	10
Research	10	9	10	10	10

A large majority of Sport, recreation and ocean experience organisations preferred non-invasive measures to in-water measures.

All highly preferred Research and Drones, followed by Community education and Listening stations. Personal responsibility was also rated as a strong preference for all organisations.

Only the sailing Club supported SMART drumlines and Shark mesh nets.

For details and complete submissions, see the appendices section.

5.6.4 Surf Life Saving NSW Branches

Table 36 Surf Life Saving NSW Branches preferences

	Far North Coast	Far South Coast	Hunter	Illawarra
When to mitigate	All year	September - April	September - April	September - April
Preferences				
Community education	7	5	8	10
Helicopters	Not supported	9	10	7
Drones	10	9	10	9
SMART drumlines	9	7	10	Not Supported
Shark mesh nets	Not supported	Not supported	10	Not Supported
Shark listening stations	7	9	10	7
Personal shark deterrents	Not supported	6	8	Supported but not preferred (2)
Personal responsibility	8	5	8	5
Research	7	8	8	5

	Mid North Coast	Lower North Coast	Sydney	Sydney Northern Beaches
When to mitigate	All year	All year	All year	All year
Preferences				
Community education	Supported but not preferred (1)	10	10	9
Helicopters	8	Not supported	10	9
Drones	8	8	10	9
SMART drumlines	Not supported	10	10	9
Shark mesh nets	8	Supported but not preferred (1)	7	Not supported
Shark listening stations	5	7	10	9
Personal shark deterrents	7	Supported but not preferred (1)	Supported but not preferred (3)	5
Personal responsibility	Not preferred	5	10	7
Research	Supported but not preferred (4)	8	5	9

For details and complete submissions, see the appendices section.

6

CONCLUSION AND SUMMARIES

6.1 Council responses

All 25 NSW Coastal Councils completed the survey. The main trends in survey responses derive from preference for mitigation measures that respond to local needs, are non-lethal to sharks and other marine life, and are cost-effective. There is strong support for research and education that help beach and ocean users to make informed decisions about entering the water, and local measures that enable real-time alerts and rapid advice to people in the water, if risk escalates.

Support for all measures, all year, except Shark mesh nets

Seventeen Councils preferred mitigation to be deployed all year, eight between September and April when most people swim. Most Councils indicated support for all measures, except Shark mesh nets. Several Councils said that although Shark mesh nets have been superseded by improved measures, their removal might be resisted by some Community members who believe Shark mesh nets provide protection to ocean users, and support their continued use.

Preference for newer technologies

Council survey responses indicate strong support for newer technologies playing an increasingly important role in mitigating harm from human-shark interactions. Belief in advances already made is reflected in support for Listening stations linked to the SharkSmart App, Drones, and SMART drumlines, which were preferred to traditional Shark mesh nets and Helicopters. Further, there is widespread optimism that technological advances will continue, leading to better in-water and aerial detection of sharks, and deterrents that are not only more effective in deterring human-shark interactions, but avoid harm to sharks and other marine life. For example, there is an expectation that future Drones will fly longer and be better able to work in all weathers and conditions. This optimism about improving technologies partly accounts for strong support among Councils for research.

Higher preference for responsive and non-invasive measures

All Councils supported, and most gave high preference scores to, measures that minimise harm to sharks and other marine life such as: Listening stations, Research, Drones, and Community education. Accordingly, the highest average preference scores (out of a possible 10) across NSW Coastal Councils were for Listening stations (8.5), followed by Drones (8.4), Research (8.4), Community education (8.0) and Personal responsibility (7.7).

Listening stations are valued for links to the SharkSmart App and social media, providing beachgoers and lifesavers with an opportunity to receive alerts, and for teaching us about patterns in shark movement. This is consistent with strong support for Personal responsibility, and enabling beach and ocean users and professionals to make informed risk decisions.

Drones are valued for their lower costs, effective detection and real time warnings about sharks without harming marine life; as well as their capacity for providing other surveillance and assistance to people in the water. Drones are considered to be more low cost and locally focused than other aerial surveillance, generally operated by people familiar with the locale, and well suited for use at special events and surf carnivals. Drone surveillance above also provides reassurance to people in the water. However, there were several Councils that noted they have limited effectiveness if weather condition and water clarity is poor.

Research is considered important for improving understanding about shark movement patterns and behaviours, as well as developing technologies for minimising risk of harm arising from human and shark interactions. A better understanding of patterns in shark behaviours and human-shark interactions will enable more accurate information to be disseminated, and the development of approaches that are less invasive to marine life.

Community education was supported by all Councils, to ensure the best available information is widely known; enabling ocean users to make better decisions about water use. Community education included forums, pop-up SharkSmart education at events, use of the SharkSmart App and digital communications. Six of the 25 Councils did not support 'Beach signage informing beachgoers about how to avoid the chance of a shark encounter'. Further research to understand attitudes to beach signage is warranted.

Most Councils gave high or strong preference scores to Personal responsibility. Councils support government and other public mitigation measures, in part for equity (for example the needs of tourists and the inexperienced should be considered), but they also want a better-informed Community making sound decisions about risks associated with sharks, especially when using the ocean outside patrolled times and places. Research to better understand, and Community education to disseminate information, are important to most Councils as vehicles for enabling people to take personal responsibility for their own safety.

Lower preference – invasiveness, effectiveness and cost

The lower average preference scores were for Shark mesh nets (1.8), Helicopters (6.0), Personal shark deterrents (6.3), and SMART drumlines (6.8).

Twenty-two Councils did not support use of Shark mesh nets. Kempsey, Nambucca and Randwick Councils gave moderate support, although Nambucca and Randwick both expressed concern at bycatch associated with use of Shark mesh nets and indicated that Shark mesh nets were the least preferred measure. Randwick said any changes to provision of Shark mesh nets should occur after significant consultation and engagement with the local Community.

The lethal impact of Shark mesh nets on target and non-target animals, including threatened species, was repeatedly expressed as reason for opposition to their use. But they are also criticised for being ineffective in protecting ocean users, because sharks can swim around them. Simultaneously, there is widespread belief that improved technologies have brought more effective alternatives for detecting (Drones) and deterring (SMART drumlines, Personal shark deterrents) sharks, without harming marine life.

Helicopters are widely associated with high costs and ‘snapshot’ coverage. However, they are also positively associated with shark alerts, and were seen to be able to cover large areas; and were consequently supported by 19 Councils. Cost is an important consideration, and for some the cost of Helicopters is too high, and coverage too infrequent, especially in relation to Drones.

Councils are divided on support and preference for Personal shark deterrents. Personal shark deterrents received high support from five Councils and strong support from 3. Eight gave moderate support, and six Councils either did not support or not prefer them. There is uncertainty about their effectiveness, but there is also optimism about the potential for technology to make Personal shark deterrents more useful and effective that is contributing to support for research.

Twenty-two Councils supported SMART drumlines and three did not. Eight gave high support and six gave strong support. SMART drumlines are often preferred to Shark mesh nets because they are perceived to do less harm to sharks, to minimise ‘bycatch’, and to contribute through tagging to improved understanding of sharks and their movements. However there is concern that SMART drumlines cause harm to sharks they catch, that retrieval times may be too long, and there is a desire for less impactful versions or solutions to be developed. Given that the effectiveness of Listening stations is heavily dependent on shark tagging performed using SMART drumlines, we might expect these two measures to achieve similar preference scores. However, Listening stations scored higher. While many are clear in understanding mitigation measures, this tendency to prefer Listening stations over SMART drumlines has been suggested as evidence of some misunderstanding of details of specific mitigation measures, or their interdependence. This suggests that while the alerts generated by listening stations are valued, perceptions of harm caused by SMART drumlines may detract from their appeal as a mitigation measures.

6.2 Individual responses

Table 37 shows the mean preference scores for all NSW individual responses. Drones and Personal responsibility were the most preferred measures, followed by Research and Community education. The least preferred measures were Shark mesh nets and SMART drumlines.

Table 37 NSW Individual and Council preference means

Preferences (n=4023)	Community mean	Council mean
Drones	8.4	8.4
Personal responsibility (self-education and risk analysis)	8.4	7.7
Research to learn more about sharks and mitigation technologies	8.3	8.4
Community Education (e.g. signs, mobile education and pop-ups)	7.8	8
Shark Listening stations linked to the SharkSmart app	7.5	8.5
Helicopters	6.7	6
Personal shark deterrent devices	6	6.3
SMART drumlines	4.6	6.8
Shark mesh nets	2.5	1.8

Community response means were overall similar to Council response means concerning Drones, Research, Community education, and Personal shark deterrents. There was substantial alignment between Council and Community on preference for Drone surveillance, and measures that help to improve Community decision-making or develop technologies that mitigate harmful human-shark interactions.

Community participants gave substantially higher preference scores to Personal responsibility, Helicopters and Shark mesh nets. Councils gave higher scores to Listening stations and SMART drumlines. This may be due to a deeper understanding of how SMART drumlines are used to support Listening station functionality.

6.3 Stakeholder organisations

Although diverse in interests and focus, other organisations preferred non-invasive approaches to shark mitigation over in-water and traditional surveillance approaches.

All organisations supported Community education, Drones, Research and Personal responsibility for self-education and risk analysis.

Only one organisation, the Hunters Hill Sailing Club supported Shark mesh nets. Just five of the 17 organisation survey submissions supported the use of SMART drumlines.

Fourteen organisations supported Listening stations.

Preference scores for Personal shark deterrents were polarised, 10 organisations giving high preference and seven organisations giving very low preference.

Environment and advocacy organisations were divided in support for Helicopters, as were other stakeholder organisations, some giving highest preference, others moderate preference.

6.4 Surf Life Saving NSW branch responses

The SLSCs all gave high or strong preference scores to Drones, and all indicated support and at least moderate preference for Listening stations.

All indicated support for Research and Community education, although neither was preferred by the Mid North Coast.

A firm majority of branches supported use of Helicopters, with most giving strong and high preference scores.

Half of the SLSCs supported use of Shark mesh nets and six of the eight SLSCs supported SMART drumlines.

There were a range of preferences reported for Personal responsibility. Personal shark deterrents were mostly supported, but preferences varied.

7

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8

APPENDICES

Local Government Authorities

8.1 Tweed Shire

8.1.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	

	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	1
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0

	Shark listening stations linked to the SharkSmart app	8
	Personal shark deterrent devices	6
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Drones are non invasive and relatively effective for warning beachgoers of the danger. Education can help limit the windows in which people are exposed to risk. The marine environment is to be respected and people need to know how they can co-exist with shark species.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

8.1.2 Other organisation responses Tweed Shire

Kingscliff Boardriders

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Patterns in human-shark interactions	Drone technology improvements
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	1
	Helicopters	9
	Drones	7
	SMART drumlines	10
	Shark mesh nets	4
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	5
	Personal responsibility (self-education & risk analysis)	1
	Research to learn more about sharks and mitigation technologies	5
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Most of our Boardriders Club members are aware of the risks when taking to the ocean to surf. They are educated on conditions to avoid and accept the risks. Drone surveillance does not at this stage cover most areas where surfers of the Tweed surf so although helpful, are a limited resource for surfers. Understanding where sharks are and deterring sharks from the area is a priority and Smart Drumlines / tag and release programs seem to offer the best option for this outcome. This is Kingscliff Boardriders Club members preferred mitigation for the option and it seems to have been very effective elsewhere.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	In late 2020 a Tweed Shark Mitigation Group was formed to discuss the way forward for our Community with respect to shark mitigation-Kingscliff Boardriders Club is part of this group as well as other boardriders, surf schools, and SLSC clubs - all key stakeholders and recreational ocean users who support smart drumlines. We were advised in December by the DPI that early 2021 Community consultation would be undertaken in our area. This has to date not been widely publicised and a more direct consultation approach with key stakeholders such as Community forums / meetings should be implemented.	

How satisfied with the information provided in this survey?	Moderately satisfied
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SALT SLSC

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

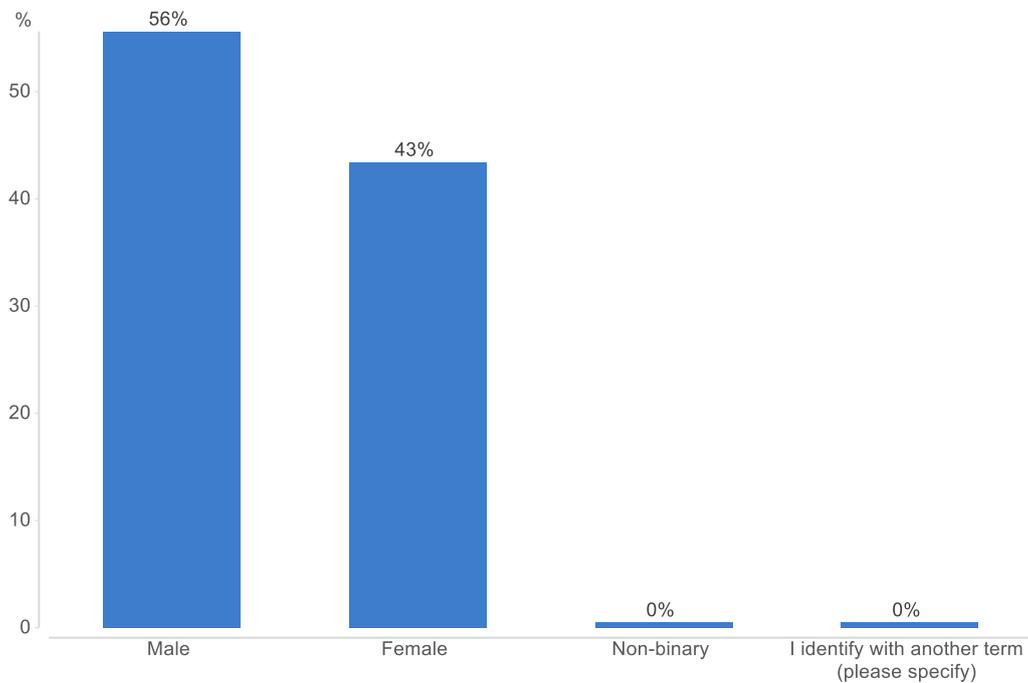
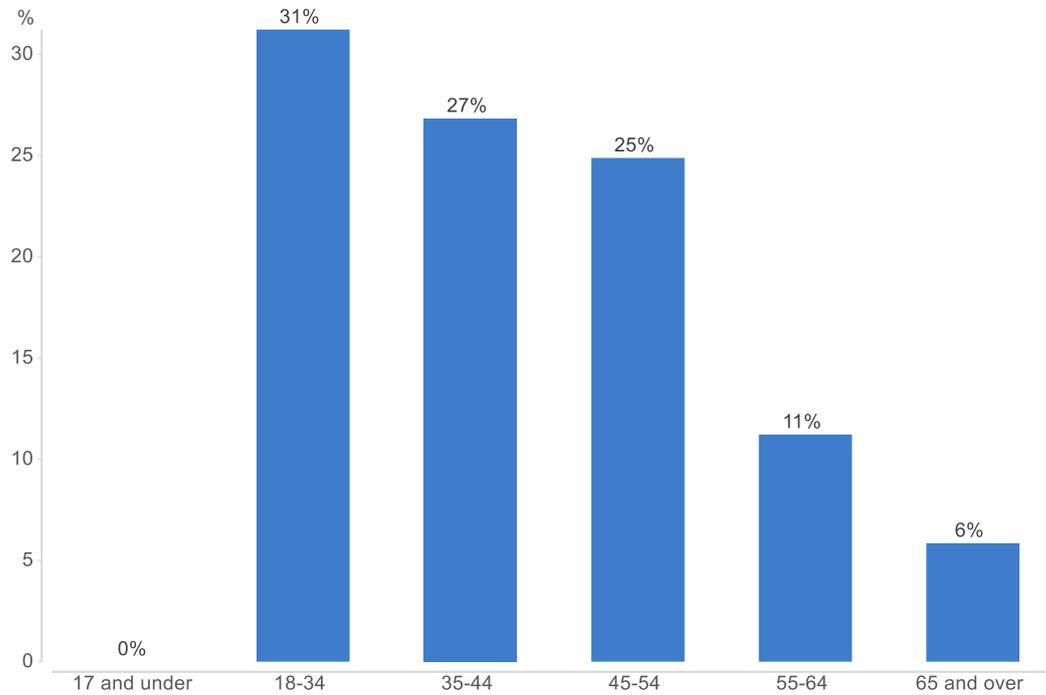
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	0
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	10
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	0
	Research to learn more about sharks and mitigation technologies	0
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Safety	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	Needs to be some culling or relocation of predatory sharks	

How satisfied with the information provided in this survey?	Moderately satisfied
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8.1.3 Survey responses from individuals

Sample

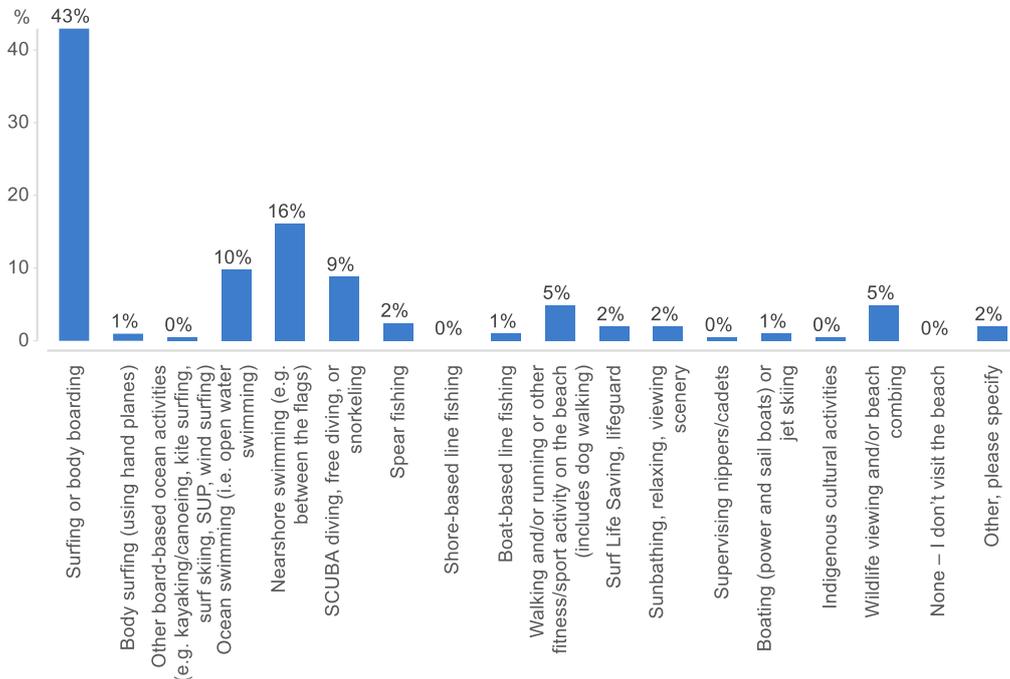
There were 205 individual responses, as follows.



There was a spread of people aged 18 to 64 with more males than females.

Main beach activity of respondents

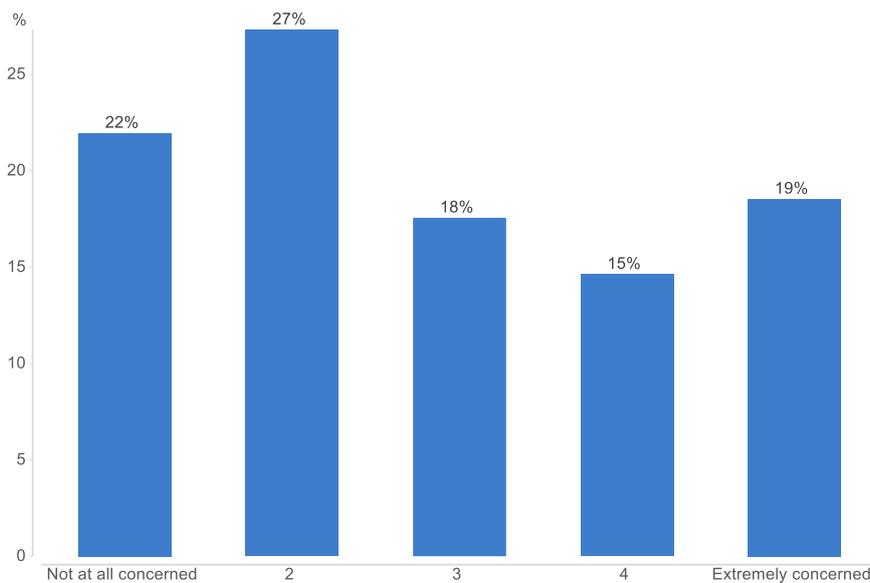
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



The main beach activities were: surfing or bodyboarding (43%) followed by nearshore swimming (16%) and ocean swimming (10%).

Concern about encountering sharks

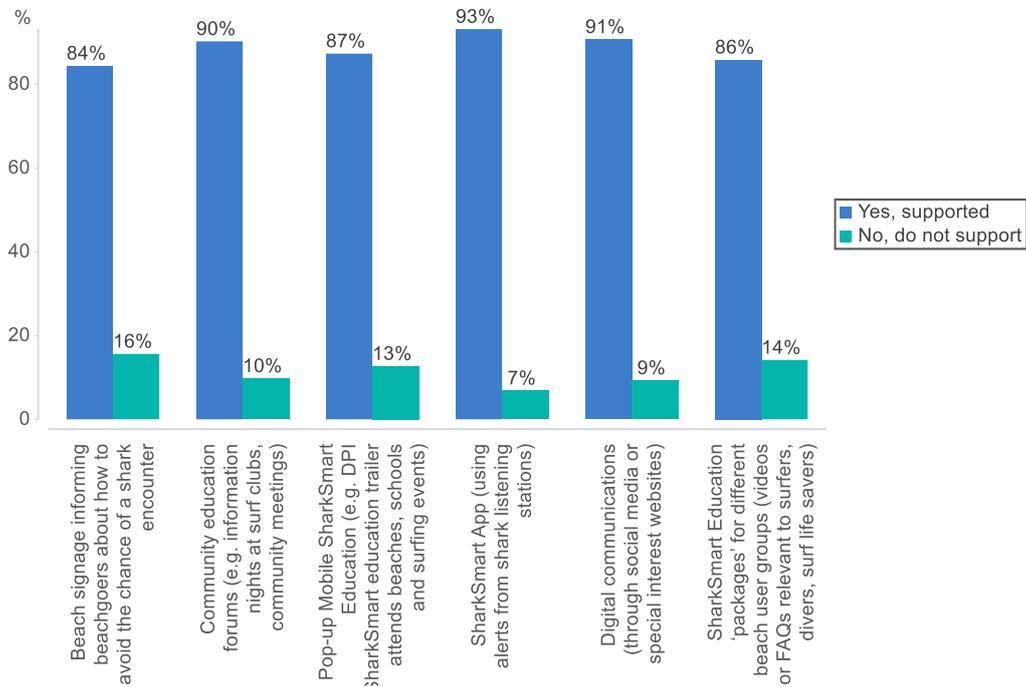
How personally concerned are you about encountering a shark while at a beach in NSW?



There were more people (49%) either not concerned at all or a little concerned, however 34% were either concerned or extremely concerned.

Support for Community education and shark-alert measures

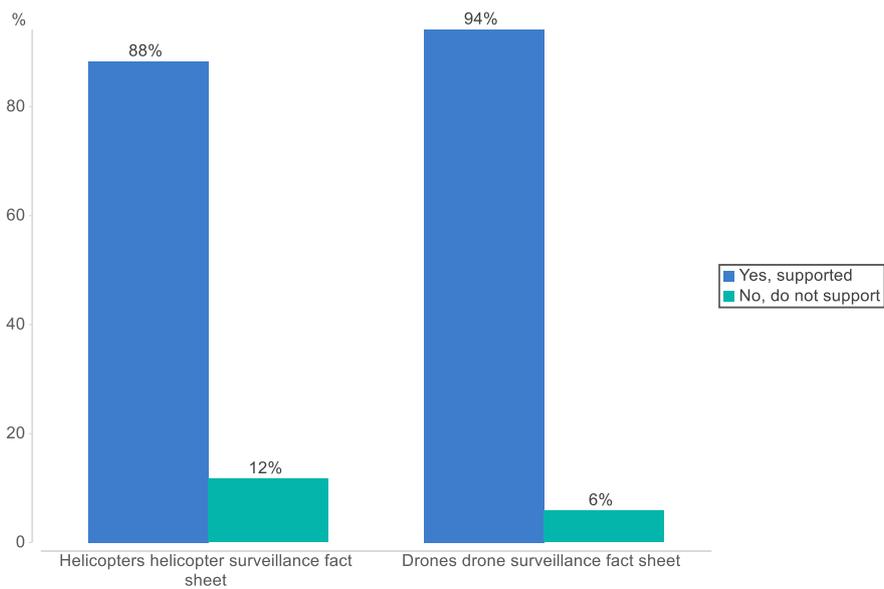
The list below includes different Community education and shark-alert measures. Which, if any, do you support in your local government area (or NSW in general)?



There was high or strong support for all of the education options.

Support for aerial surveillance

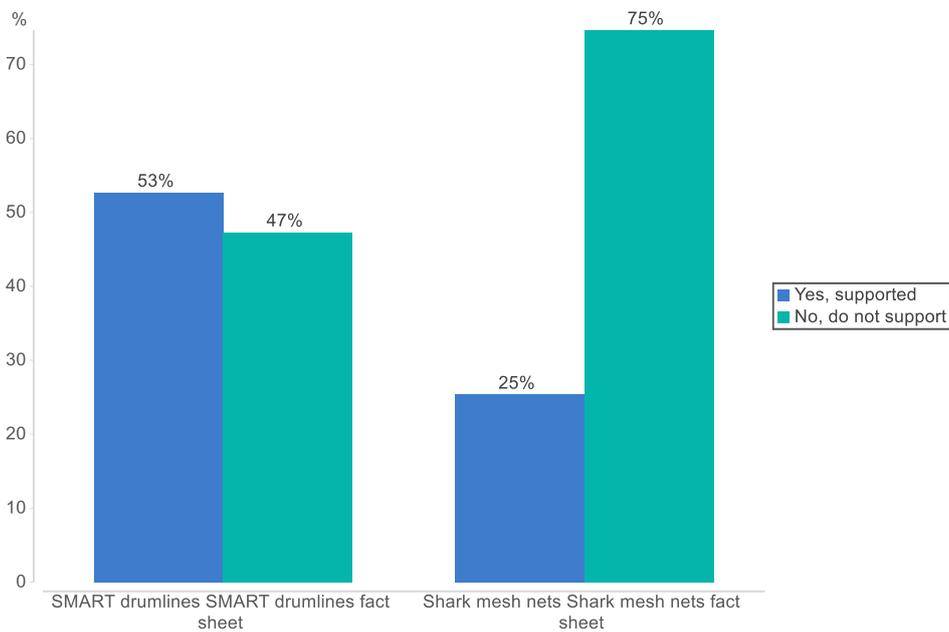
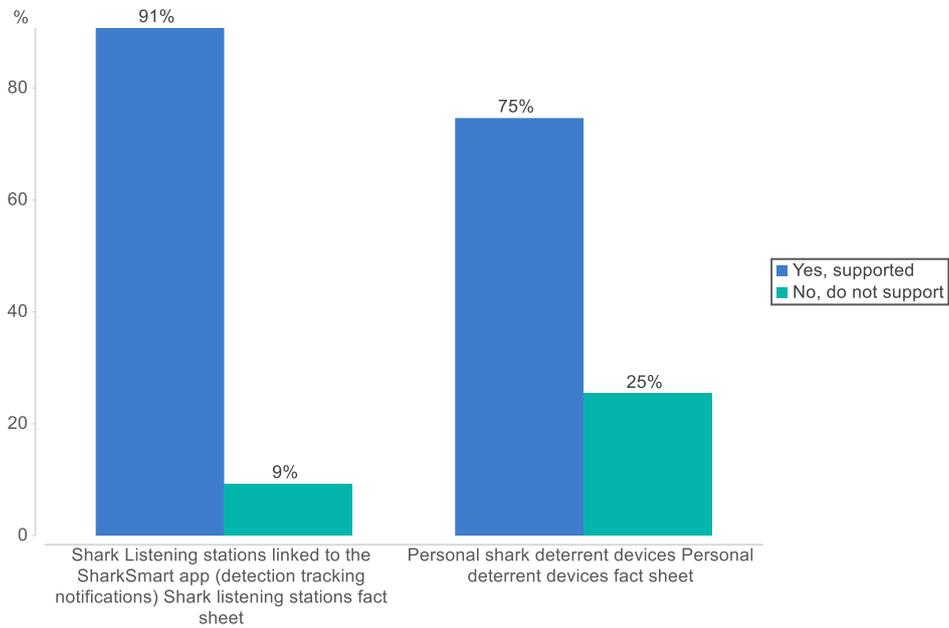
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for both helicopters and drones.

Support for in-water measures

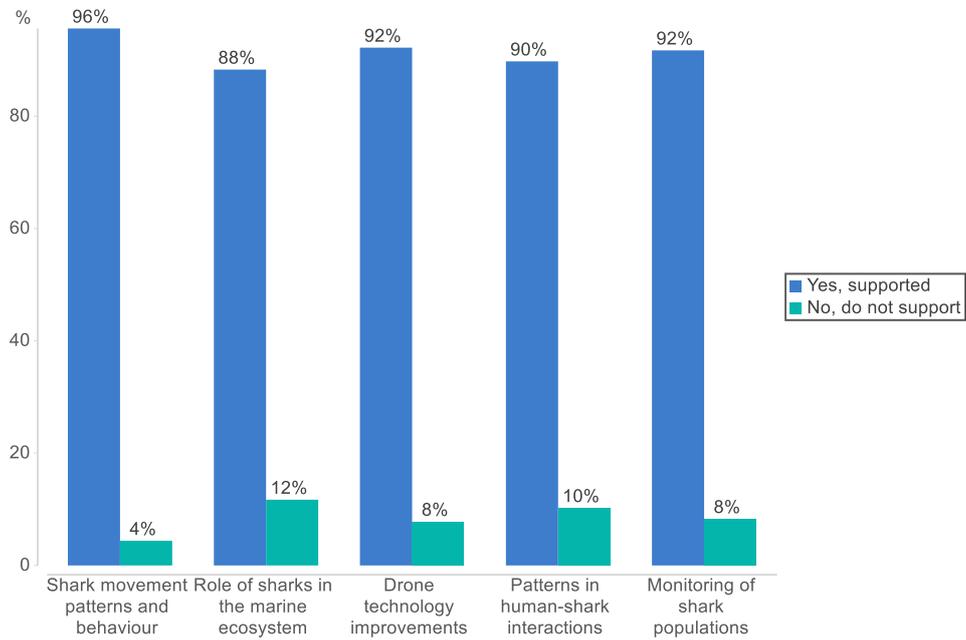
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Shark listening stations, and strong support for Personal shark deterrents. A narrow majority supported SMART drumlines and there was high opposition to Shark mesh nets.

Support for research

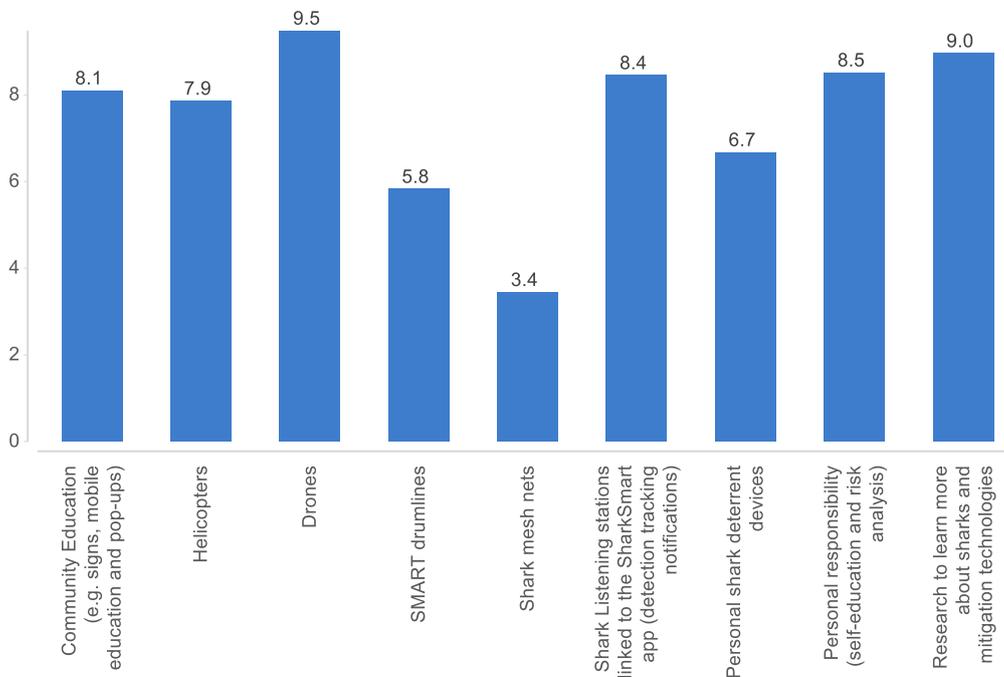
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics, especially shark movement patterns.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



Most mitigation measures were supported, Drones and Research were most preferred. Least preferred was Shark mesh nets.

8.2 Byron Shire

8.2.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app	Shark mesh nets
	Personal shark deterrents	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure Preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	4
	Helicopters	*
	Drones	10
	SMART drumlines	10
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	4
	Personal responsibility (self-education & risk analysis)	4
	Research to learn more about sharks and mitigation technologies	4
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	<p>Council preference is for the use on non-lethal and non-intrusive shark mitigation measures ONLY. This is based on the understanding of the broader Byron Shire Community.</p> <p>Council has consistently resolved over the preceding years for the following initiatives to be implemented to enhance water surveillance and beach safety:</p> <ol style="list-style-type: none"> 1. Shark Listening Devices (such as real time sonar detection buoys). 2. The implementation of an aerial surveillance program including the use of: 3. Gyrocopters, and 4. Drone surveillance 5. Land based, shark tower spotting program 	

	<p>Council has previously requested DPI for the trial of Smart Drumlins to be installed within the Marine Park (outside of Sanctuary Zone) and outside of the whale migration season.</p> <p>Other mitigation measures such as Community educational initiatives, research and technology improvement (i.e. personal shark deterrent devices) are also supported but to a lesser extent. ‘</p> <p>Council does not support the use of Shark Mesh Nets due to the impact on non-target animals. Shark nest are lethal and intrusive as shown by a 40% survival rate on non-target animals.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Our Community are highly engaged and educated with a great love of the coast, estuaries, waterways and marine life. Protecting and enhancing our natural environment and biodiversity is paramount to our business and ethos.</p> <p>Sharks are central to the marine ecosystem and shark management should not be detrimental to the survival of these species. We thank the State government for previous support and/or funding to trial initiatives and look forward to future opportunities to collaborate and resource appropriate shark mitigation measures in Byron Shire to ensure beaches are safe.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

8.2.2 Other organisation responses – Byron Shire

Byron Bay Dive Centre

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	6
	Drones	10
	SMART drumlines	1
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	5
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Shark education for the Community and monitoring strategies such as drones are more effective to the marine eco system than drum lines and nets which cause significant harm to marine species	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Soul Surf School

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

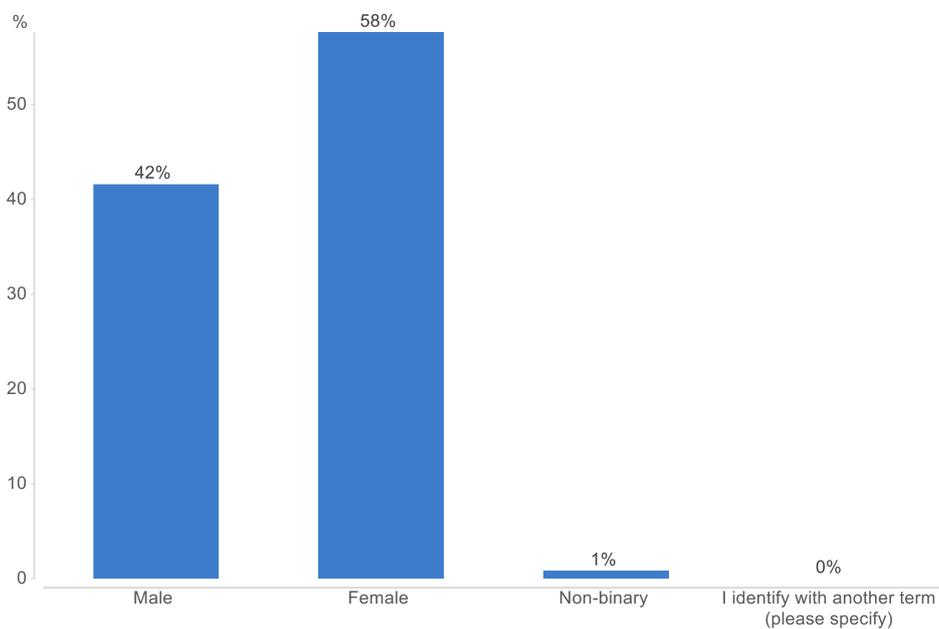
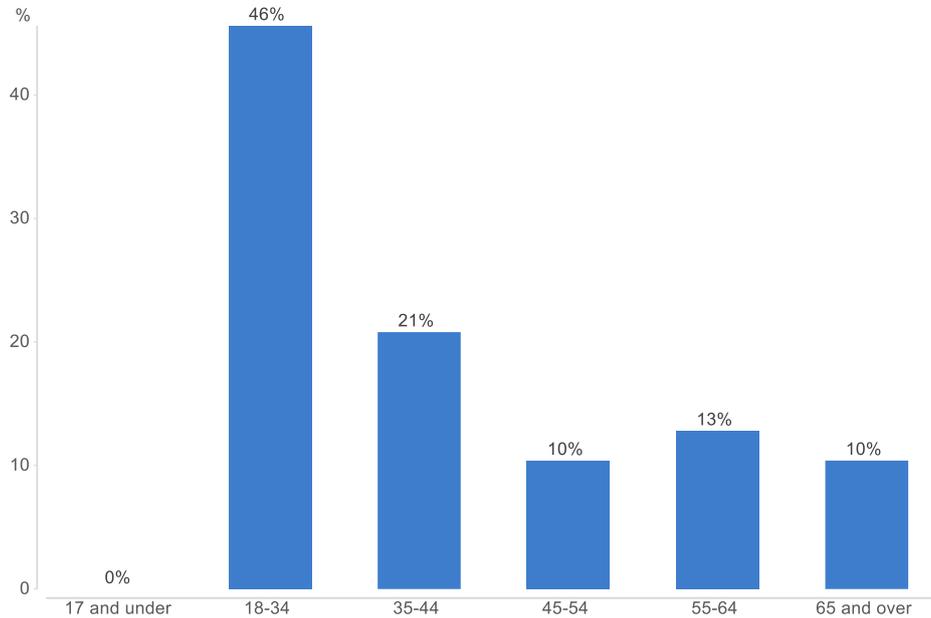
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	5
	Helicopters	5
	Drones	10
	SMART drumlines	10
	Shark mesh nets	3
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	<p>Our business (Soul Surf School) spends 363 days on the year on our local beaches in Ballina Shire.</p> <p>We have found over the past 5 years the drones and lifeguards patrolling the beach to be the most effective at keeping surfers and swimmers safe.</p> <p>All I would say is that there needs to be better signage to notify other surfers on non-patrolled beaches that are close proximity to a beach where a drone has spotted a shark with date and times etc</p> <p>Maybe a digital sign that is linked to the shark smart app information that shows up to date tagged sharks are in the area.</p> <p>Thanks</p>	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Extremely satisfied

8.2.3 Survey responses from individuals

Sample

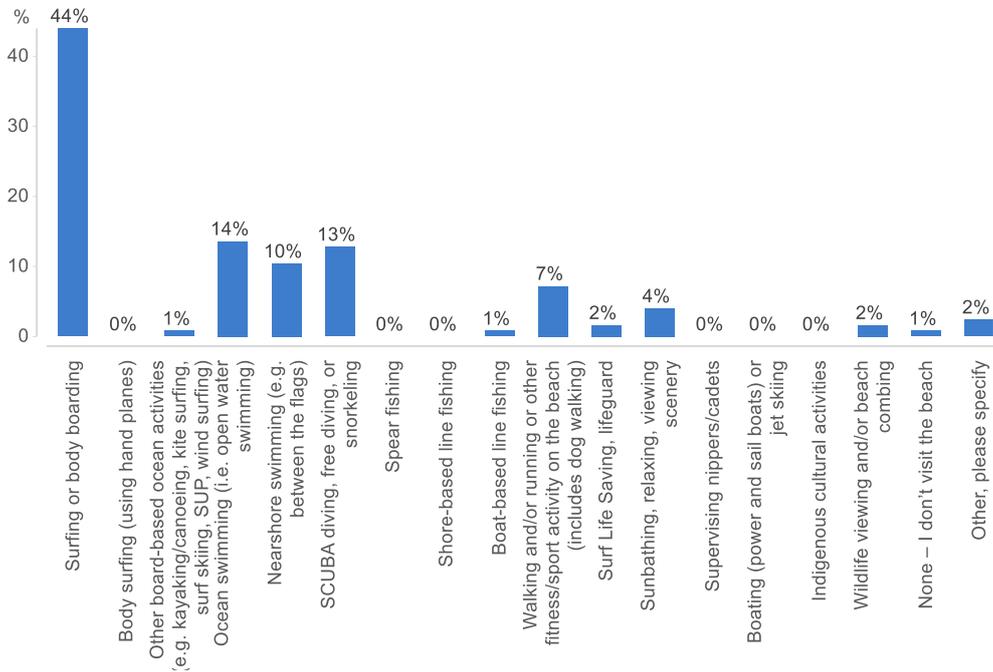
There were 125 individual responses, as follows.



The sample was mostly younger aged 18-44, with a spread of older age groups. There were more females than males.

Main beach activity of respondents

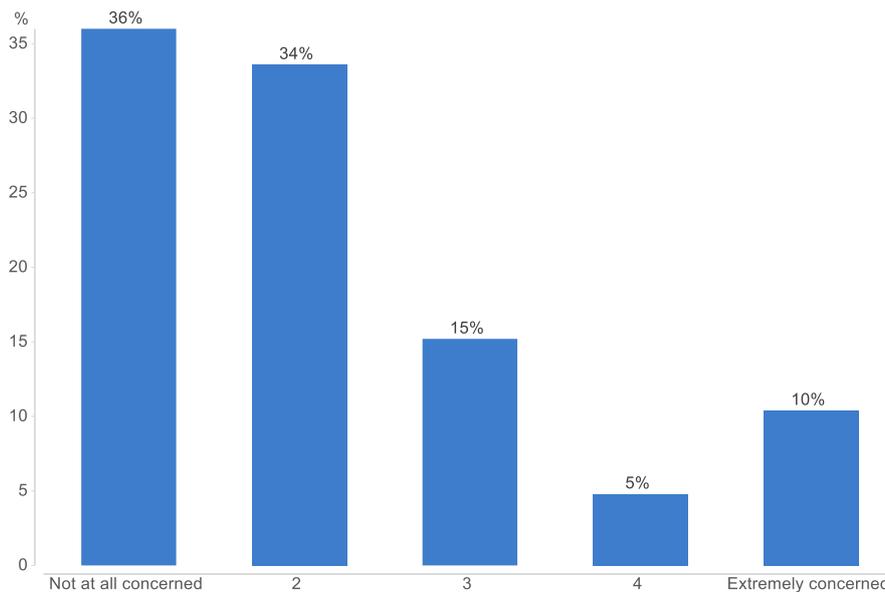
What is the main activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were: surfing or bodyboarding (44%), ocean swimming (14%) and diving/snorkelling (13%).

Concern about encountering sharks

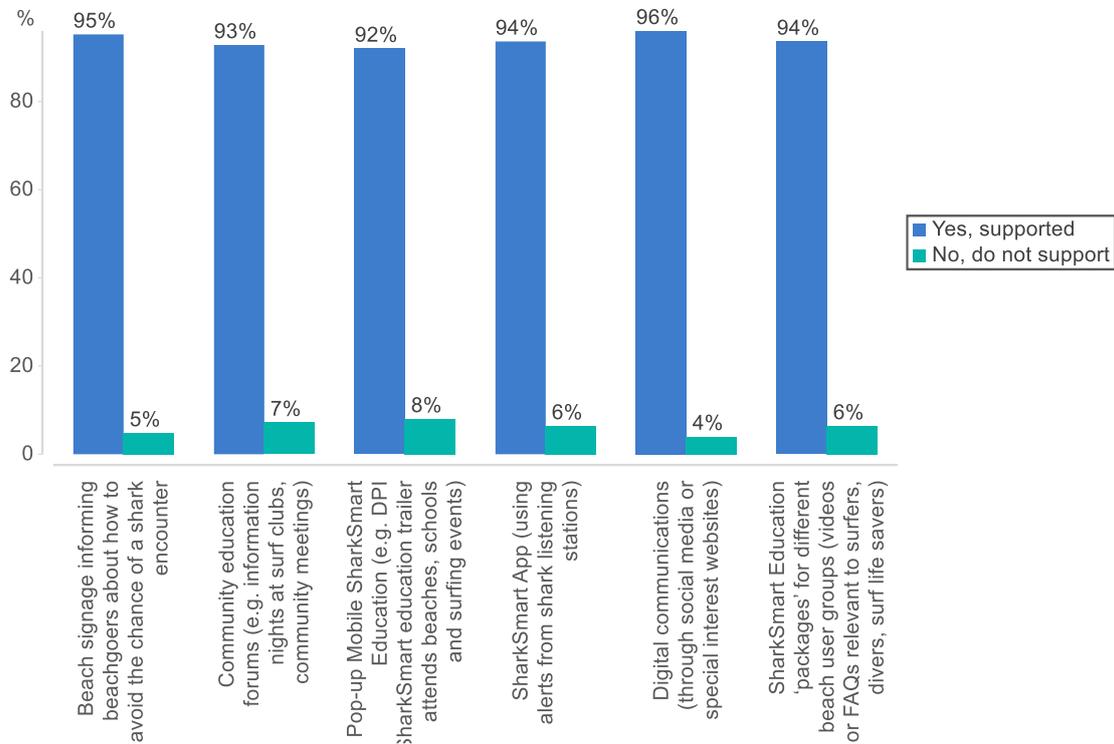
How personally concerned are you about encountering a shark while at a beach in NSW?



Most were less concerned or not concerned at all about encountering a shark at the beach, however 15% were concerned or extremely concerned.

Support for Community education and shark-alert measures

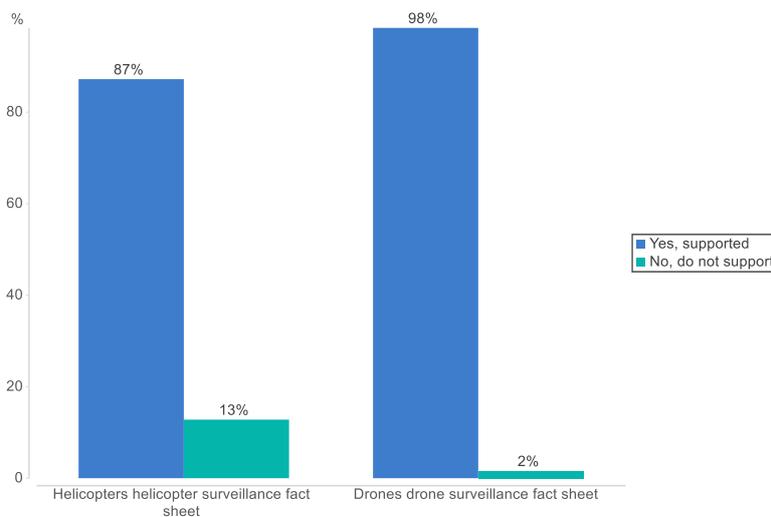
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Community education and shark-alert measures.

Support for aerial surveillance

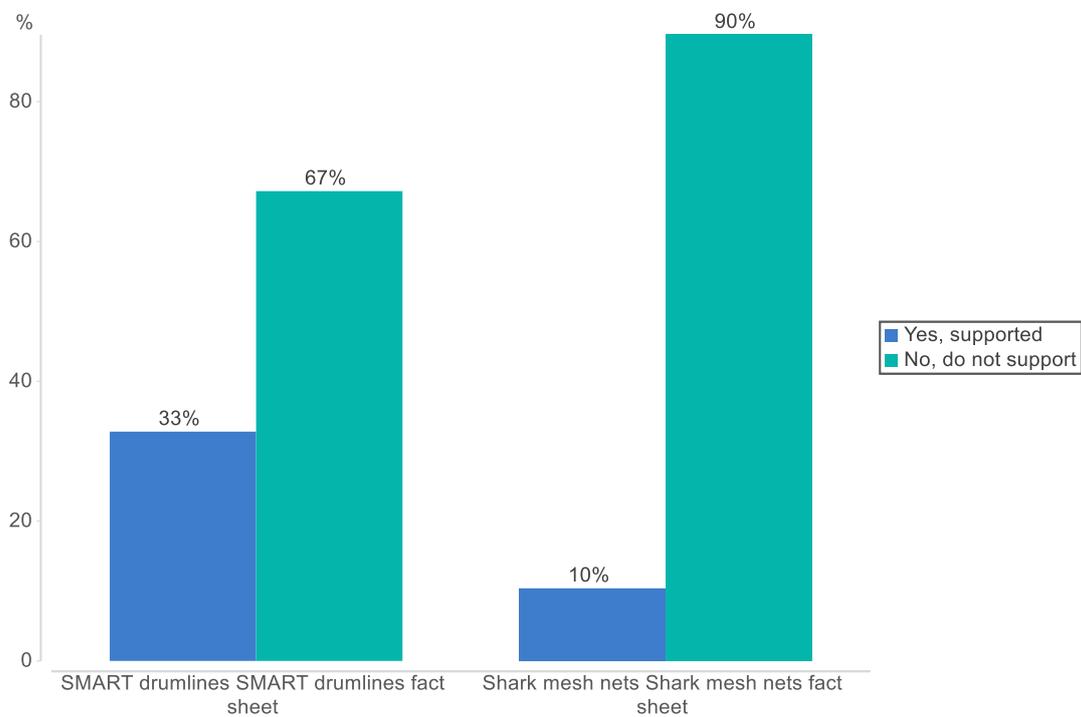
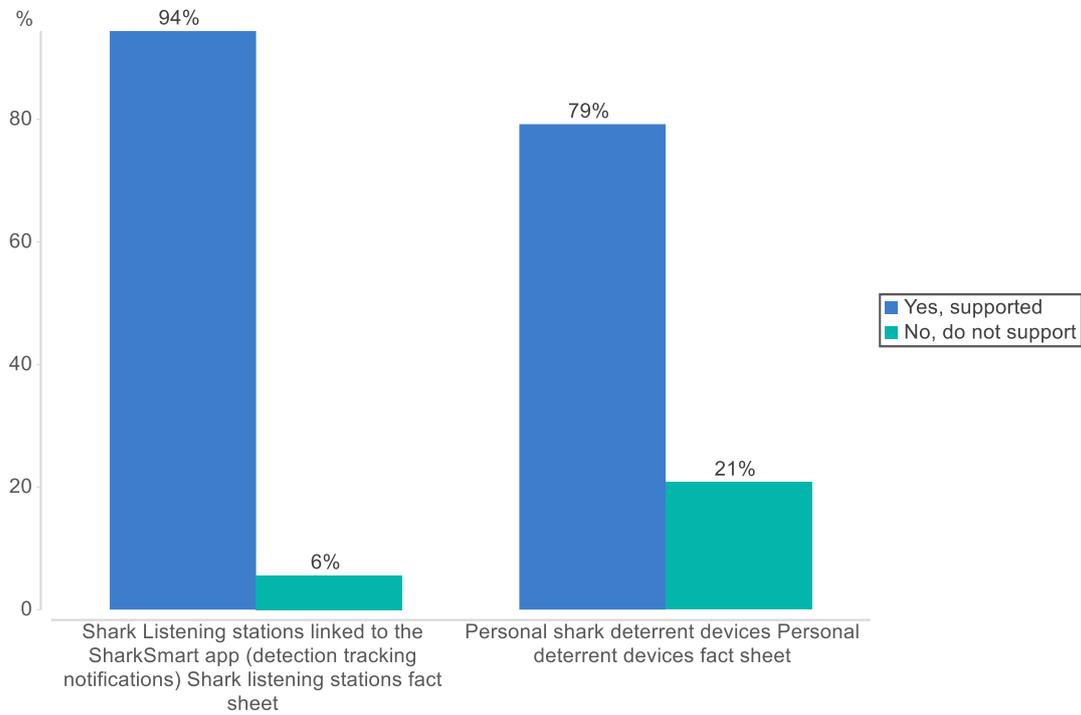
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for aerial surveillance, especially drones.

Support for in-water measures

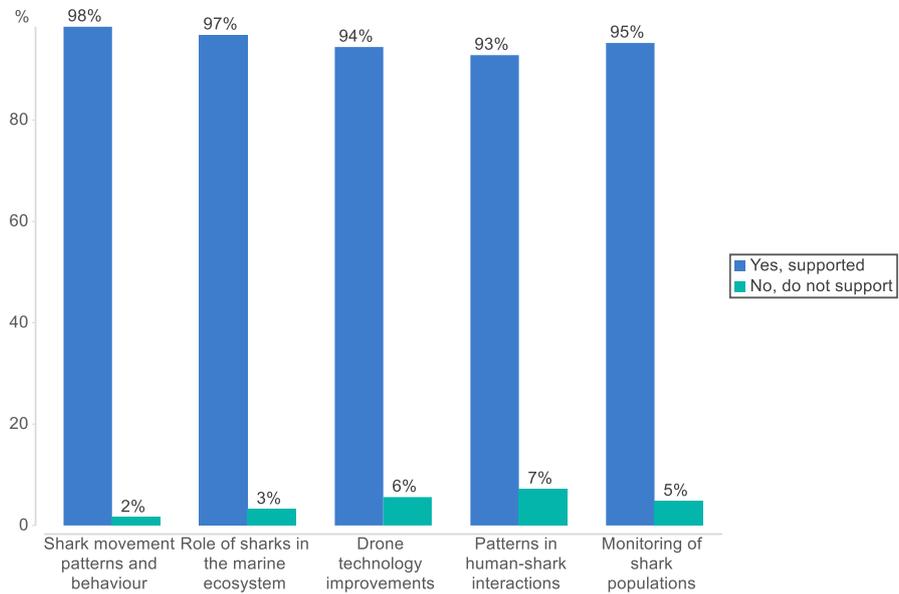
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Shark listening stations, and strong support for personal shark deterrents, but the majority did not support SMART drumlines, and 90% did not support Shark mesh nets.

Support for research

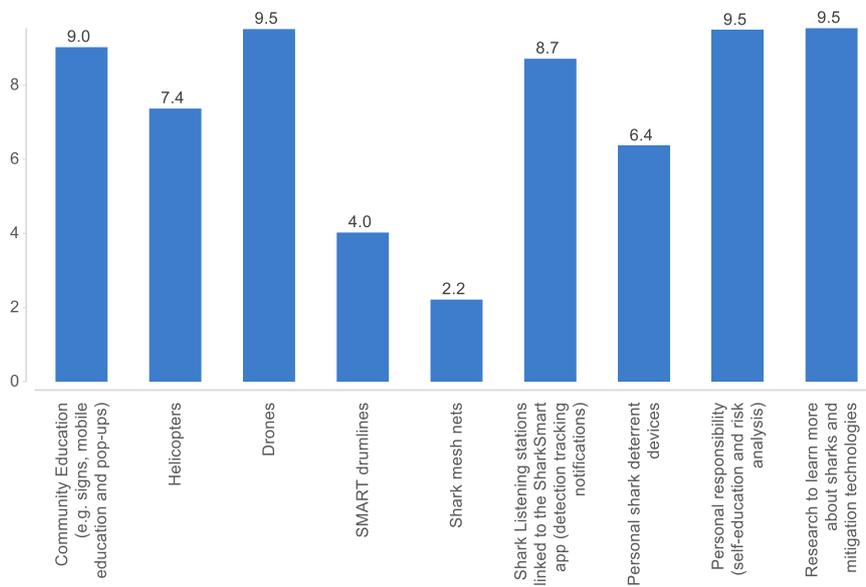
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all the Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The strongest relative preferences were for Research, Drones and Personal Responsibility, followed by Community education and Shark listening stations.

There was little preference for SMART drumlines and Shark mesh nets.

8.3 Ballina Shire

8.3.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	4
	Drones	10
	SMART drumlines	10
	Shark mesh nets	2
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	8
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	A high number of shark mitigation measures have been trialled within Ballina and the North Coast region. Information and updates on the performance of individual mitigation measures have been continually provided to the Shark Management Strategy Stakeholder Group, culminating in the recently presented forum to Council. Additionally, throughout the strategy the DPI have undertaken Community consultation to both gauge Community sentiment and educate the Community on these different mitigation measures. A combination of experience, Community survey results to date and acknowledgement of the presented results have informed the provide preferences.	

<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>BSC values the partnership with DPI having worked collaboratively since 2015 implementing and trialling measures as part of the SMS. Both Council, and the Community have experienced the success of measures to date, and value the retention and continuation of the service levels that are currently in place at a minimum. We would strongly encourage and welcome continued research and development on all best practice mitigation measures and shark science. We would also advocate strongly for a continued focus on further mitigation measures to increase the protection of our surfing Community.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

8.3.2 Other organisation responses - Ballina

Ballina Lighthouse & Lismore SLSC

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	9
	Drones	9
	SMART drumlines	9
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	2
	Personal responsibility (self-education & risk analysis)	9
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	I have been involved in the Shark Mitigation program with DPI for a number of years and they have been supportive of our Club. I have experienced first hand the results of the strategies they have put in place.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	The Club fully supports the continuation of all the measures used by the DPI to provide information about sharks.	
How satisfied with the information provided in this survey?	Extremely satisfied	

Ballina Surf School

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	5
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10

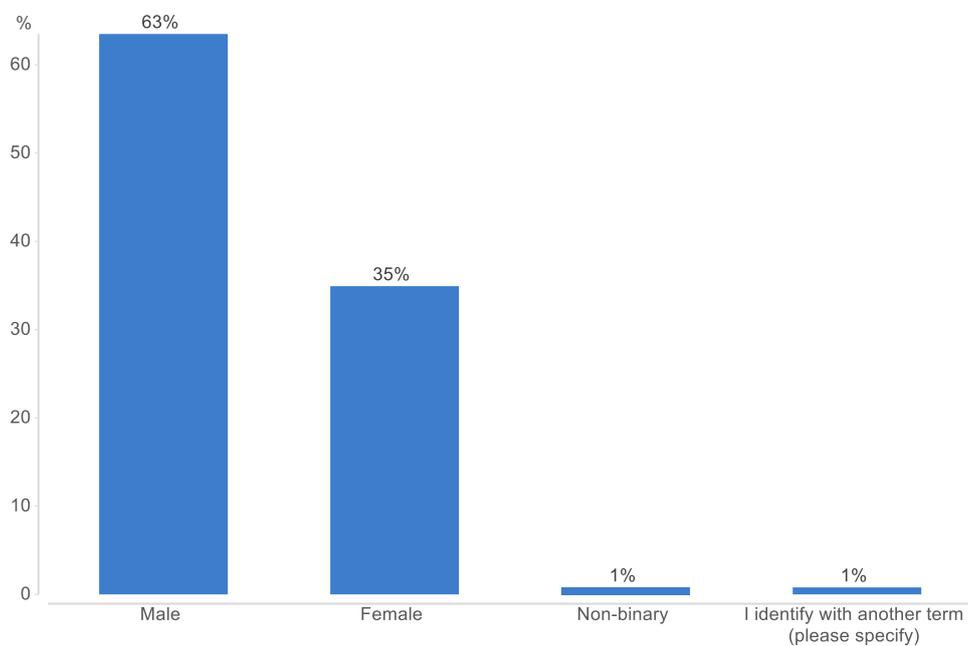
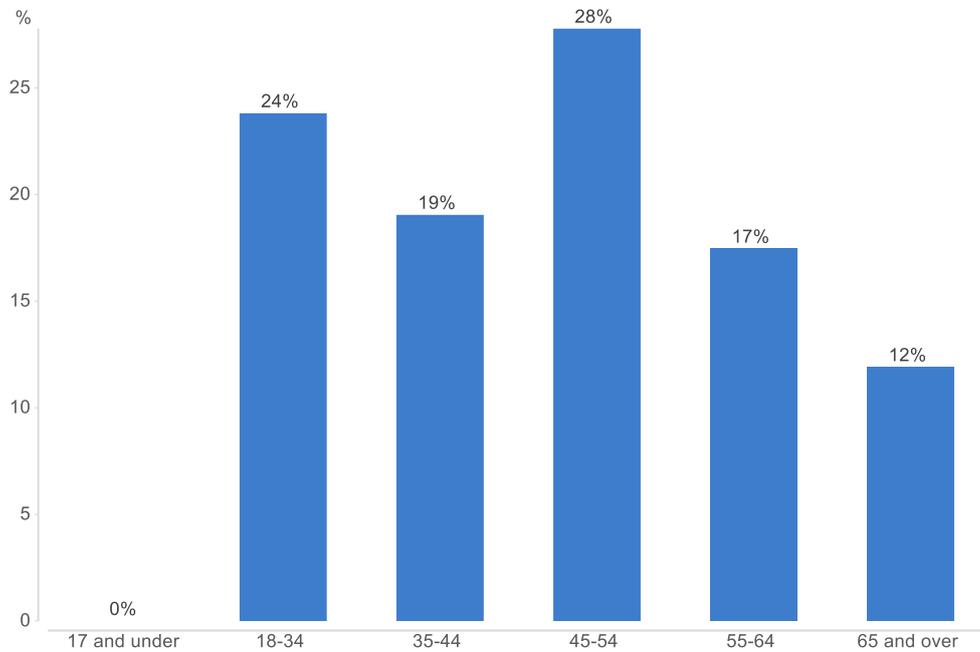
<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>As a surf school operator in Ballina I believe preserving human life is the most important factor in Shark mitigation practices and every means available should be used. 8 fatalities last year in Australia justifies research into patterns of behaviour taking into consideration all factors. Understanding sharks is the key to minimising human shark interactions. Nets have had problems here in Ballina as they have killed dolphins and turtles etc unnecessarily and missed a lot of sharks, not ruling them out but they are hard to maintain in heavy weather.</p> <p>All other measures are proactive and good but what is missing in local beaches is public access for first responders to first aid to stop bleeding if an interaction does occur. The reason for this is simple: time. Time is critical to stop a bleeding incident become a fatality. The best education the public can be given is how to use this equipment ie tourniquets etc. This is the best way to keep beaches safe, mitigation is good and preventative, however due to the unpredictable behaviour of sharks measures have to be put in place to provide first aid if there is an incident. It should be a combined effort of councils, DPI, SLSCs, surfers, beach goers, and the public in general to make this happen.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Rather than trying to not communicate statistics about sharks in the interests of protecting commercial interests, facts should be readily available to everyone so informed decisions can be made and human lives can be preserved.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Neither satisfied nor dissatisfied</p>

8.3.3 Survey responses from Individuals:

Ballina Shire (n=126)

Sample

There were 126 individual responses, as follows.

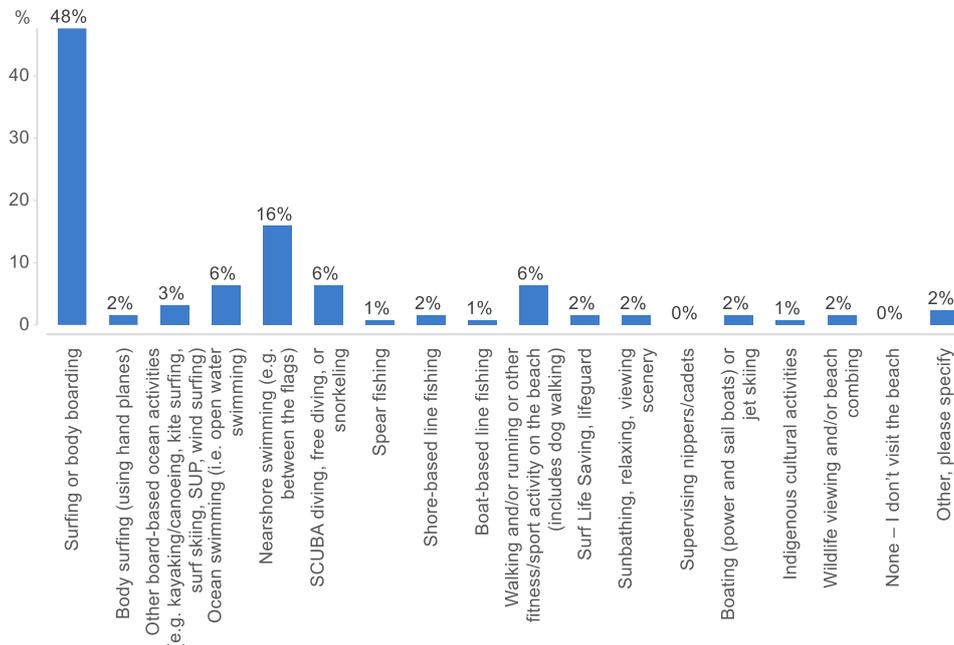


There was a spread of ages over 18, the sample were mostly male.

Main beach activity of respondents

What is the main activity you do at beaches in your local area?

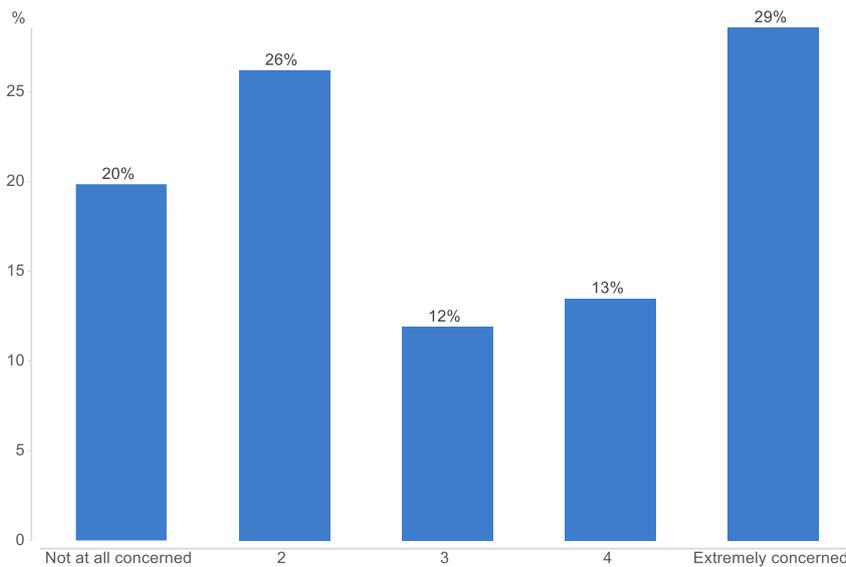
Please pick only one that you do most.



Respondents' main beach activities were in-water, surfing or bodyboarding (16%) and nearshore swimming (16%)

Concern about encountering sharks

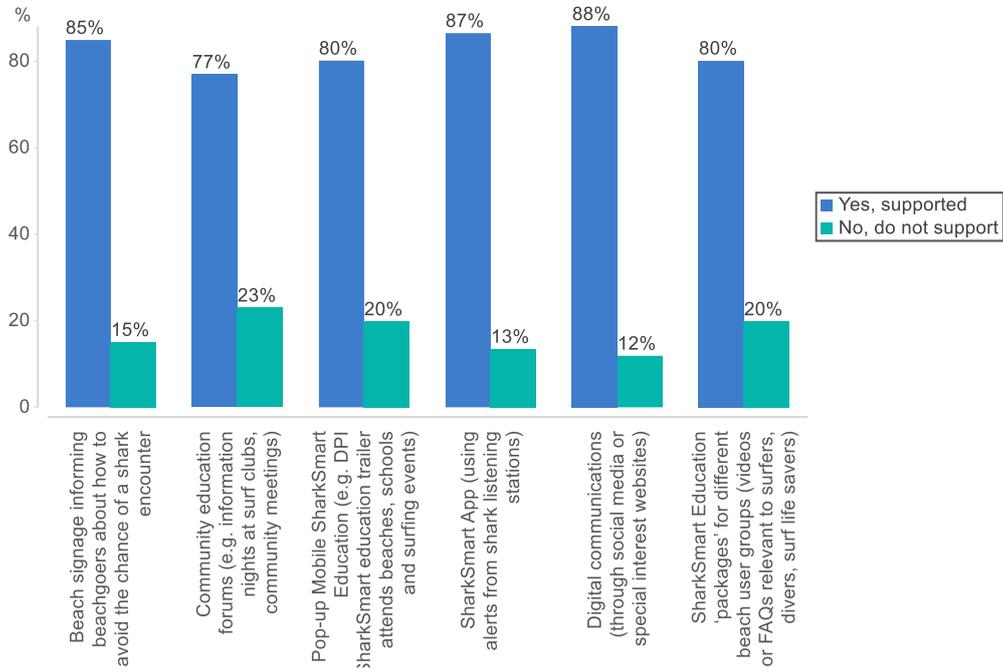
How personally concerned are you about encountering a shark while at a beach in NSW?



Forty-two percent were either concerned or extremely concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

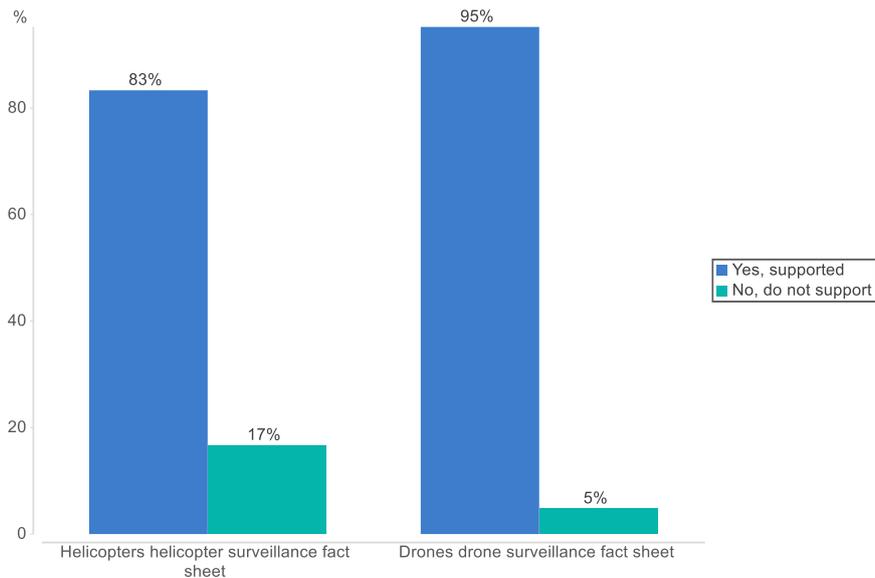
The list below includes different Community education and shark-alert measures. Which, if any, do you support in your local government area (or NSW in general)?



There was strong or high support for all Community education and shark-alert measures.

Support for aerial surveillance

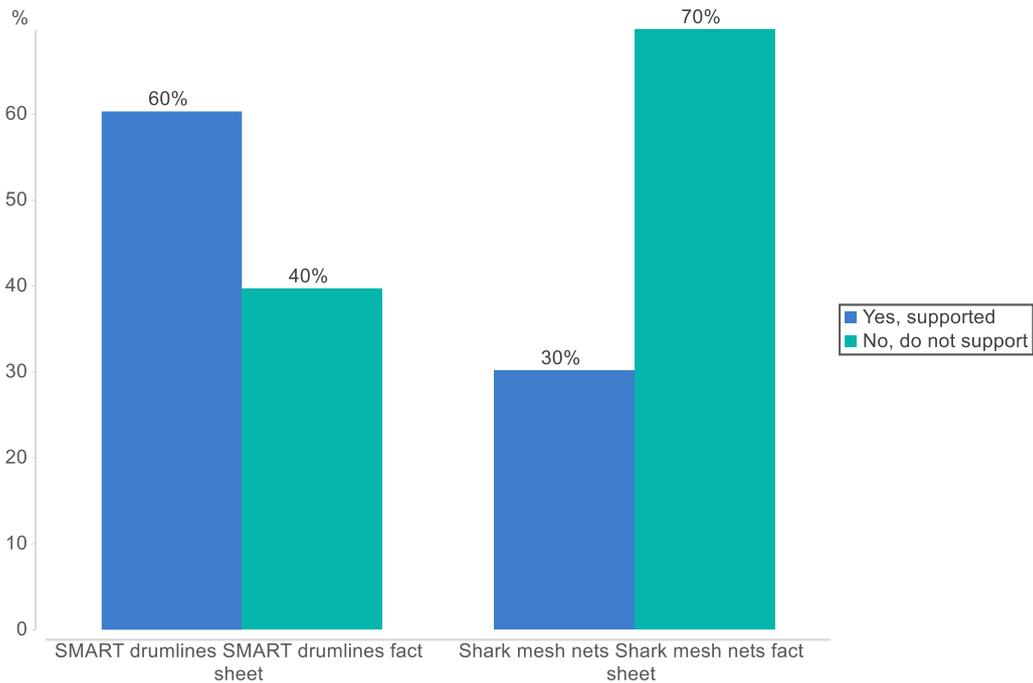
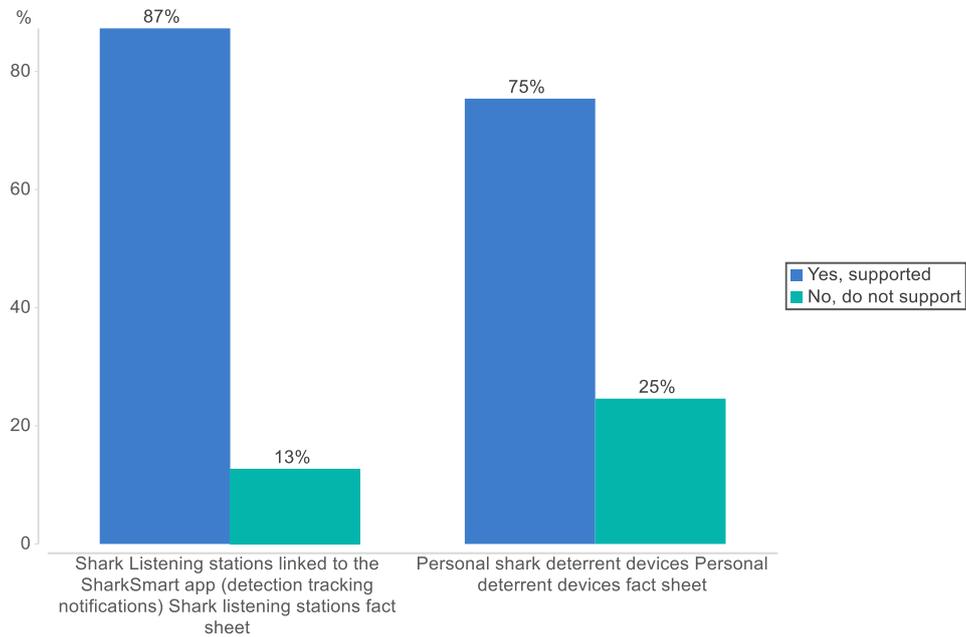
The list below includes different aerial surveillance measures like helicopters and drones. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters, and high support for Drones.

Support for in-water measures

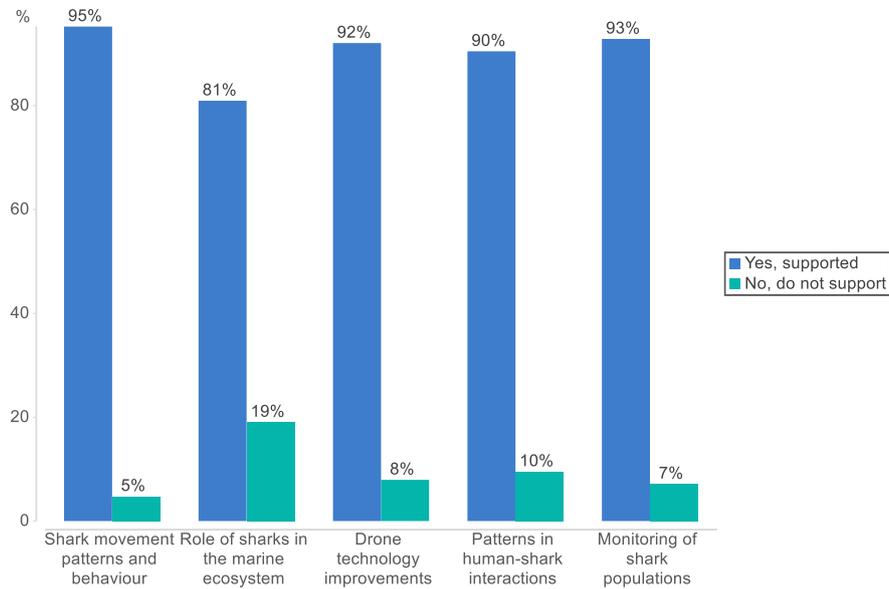
The list below includes different in-water measures. Which, if any, do you support in your local government area (or NSW in general)?



Respondents expressed high support for Shark listening stations and strong support for Personal shark deterrents. A majority supported SMART drumlines but just 30% supported Shark mesh nets.

Support for research

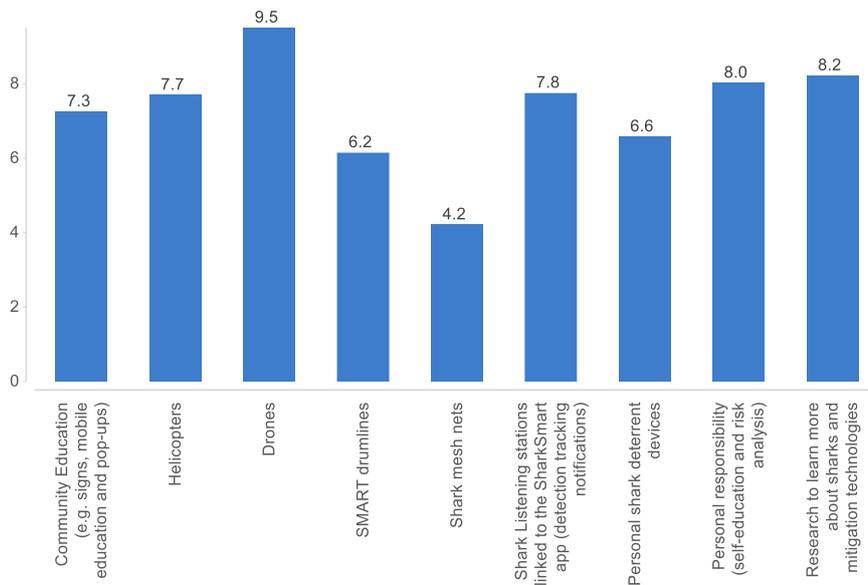
Which of the following research topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for most of the Research topics, and slightly less but still strong support for research into the Role of sharks in the marine ecosystem.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The most preferred measure was Drones, followed by Research to learn more about sharks and mitigation technologies and Personal responsibility. The least preferred options were SMART drumlines and Shark mesh nets.

8.4 Richmond Valley

8.4.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	0
	Drones	10
	SMART drumlines	10
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	6

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Each year Richmond Valley Councils coastal village of Evans Head has over 50,000 visitors, most whom come to enjoy our pristine beaches and well known surf spots. Council supports shark mitigation in Evans Head and will continue to fund the shark alarm at the Evans Head Surf Club in our yearly budget. This is in addition to the \$57,000 per year spent on lifeguard patrols for the extended summer months as well as the endless amounts of volunteer hours spent operating drones in order to keep our beach patrons safe.</p> <p>The results from the use of drumlines from December 2016 to June 2020 in this location shows 202 targeted sharks tagged and released and 61 non target in by-catch of which 59 were of shark species, with only one animal reported as deceased in 2017. Whilst more expensive and labour intensive, Council supports the continuation of the drum lines as they provide benefit for research purposes and are less harmful than other mitigating measures like shark nets.</p> <p>From the various investigations into shark movements recorded, there is still a large amount of uncertainty around water safety on beaches that do not have any shark mitigation measures. In the last 12 months, there were six fatal shark attacks in Australia, three of these fatalities were within 100km of Evans Head on beaches without drumlines and outside of this program.</p> <p>The NSW Shark Program provides a sense of safety in our community and for our visitors. Our tourism relies heavily on safe beaches which would be substantially impacted should the funding for the delivery of this program cease beyond June 2021.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>The shark mitigation measures currently used for Evans Head in Richmond Valley Council have been successful over the term of the program. In total, only 8.5 hours of beach closures occurred during period of December 2020 to February 2021 as a result of sharks within the main beach area and up until June 2020 a total of 202 targeted sharks were tagged and released. Council will always support an increase in the availability and delivery of these measures for the safety of our beachgoers and sees full benefit in any community education programs delivered by the DPI.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Neither satisfied nor dissatisfied</p>

8.4.2 Other organisation responses – Richmond Valley

Evans Head Spearfishers Club

Question	Response	
When should shark mitigation measures be deployed?	Winter, Spring	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Digital communications (through social media or special interest websites)	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	SharkSmart App (using alerts from shark listening stations)
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?		Helicopters
		Drones
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	SMART drumlines	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)
		Personal shark deterrent devices
		Shark mesh nets

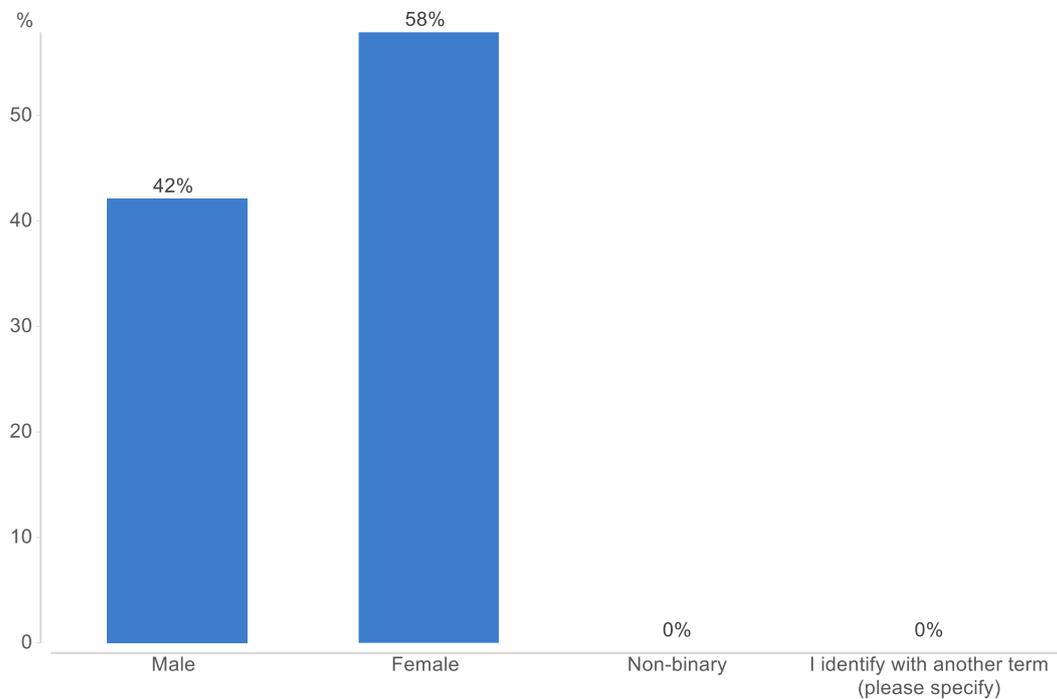
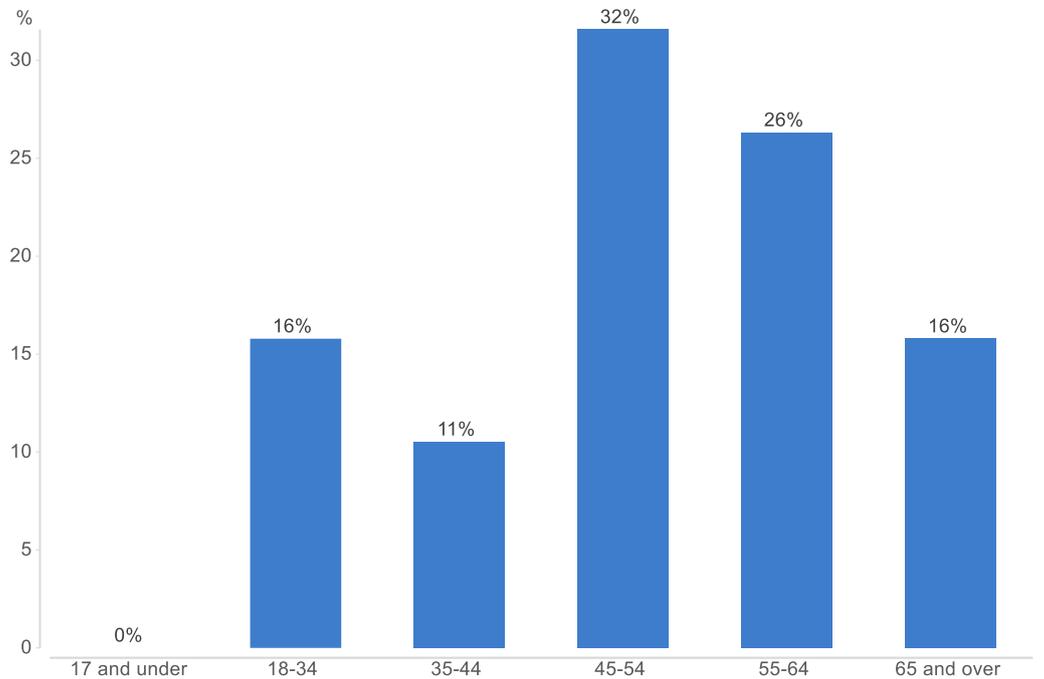
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Drone technology improvements
	Role of sharks in the marine ecosystem	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	1
	Helicopters	0
	Drones	0
	SMART drumlines	9
	Shark mesh nets	2
	Shark listening stations linked to the SharkSmart app	0
	Personal shark deterrent devices	1
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	1

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Personal Responsibility- Agree, situational awareness is critical in the Ocean at all times. Shark Listening buoys- Band-aid placebo mitigation tool. Drones- Useless in turbid waters of Northern Rivers NSW surf beaches. Old School Mesh Net in NNSW- does trip up White Sharks but by-catch unacceptable. Helicopters-More costly and useless than drones due to turbid waters and size of region to fly over. Shark Deterents- Snake Oil Salesman bullshit. Have trialled Shark Shield, device result was pathetic, and now device faulty/broken. Research- XXXXXXXX and XXXXXXXX first came to Ballina/Evans in winter 2015 with \$250 grand and with no knowledge and no idea, they need all the help they can get. Was disgusting/terrifying State Fisheries Scientist incompetence. Lennox Head DPI public forums in '15 and '16 was a smoke and mirrors campaign to protect their incompetence, and also avoid acknowledgement of the 20 plus year White Shark conservation effort. CSIRO was hilarious, meant to be at the '16 Lennox Forum, and pulled a sickie/no show. Pathetic Smart Drums- Certainly have prevented attack in Ballina/Evans by tripping up White Sharks before interaction with surfers, but not a long term solution to this conservation success story. Comm Education- good idea if the DPI Scientists actually explained the White Shark conservation effort and where this is going, the consequences to the ocean going public with success, White Shark seasonal aggregation regions, explained the changed risk exposure/level etc. \$24.250 million dollars to date for ongoing avoidance/denial of the White Shark conservation story and the consequences. A lot of blood on their (DPI Scientists) hands to date (Human and protected Marine fauna) since this debacle started regionally in Sept '14 Paul Wilcox attack at Byron Bay</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Does NSW DPI have a 'Duty of Care' to the Ocean Going Public with the unmanaged success of the '02 White Shark Recovery Plan? IMO DPI Scientists incompetence is at Criminal Negligence level with changed risk profile to the Ocean Going Public. 3 dead, 1 maimed, just last White season regionally. When is Lennox public forum # 3? XXXXXXXX has suggested changed EAC (current) as a reason Whites inshore, he should have stuck to Mudcrab science. How long can DPI get away with half truths and denial re White Shark recovery? 24.250 a lot of \$. XXXXXXXX slandered me in Evans Hd, still pissed off</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Neither satisfied nor dissatisfied</p>

8.4.3 Survey responses from individuals

Sample

There were 19 individual responses, as follows.

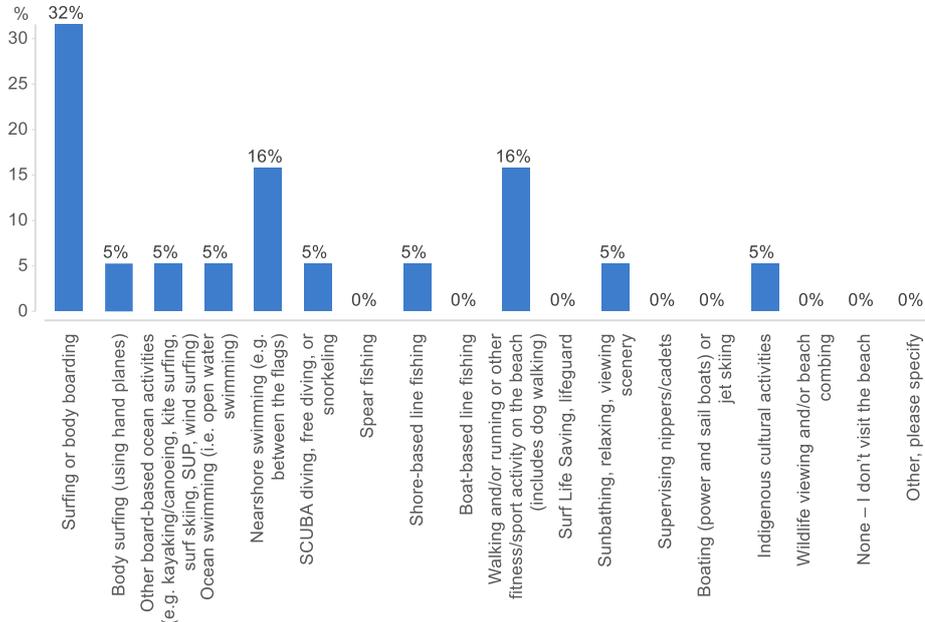


There were more females than males and the majority of the sample were aged 45 to 64.

Main beach activity of respondents

What is the **main** activity you do at beaches in your local area?

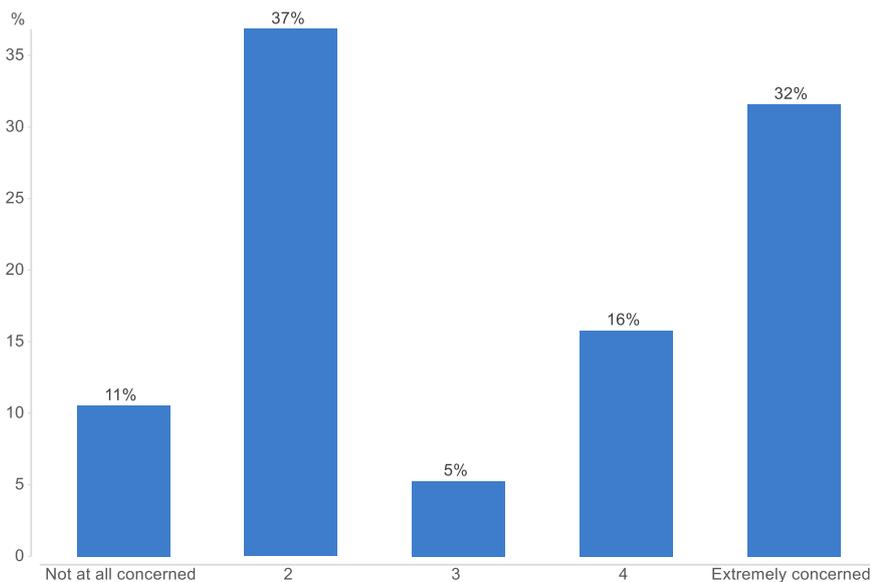
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (32%), nearshore swimming (16%) and walking or exercising on the beach (16%).

Concern about encountering sharks

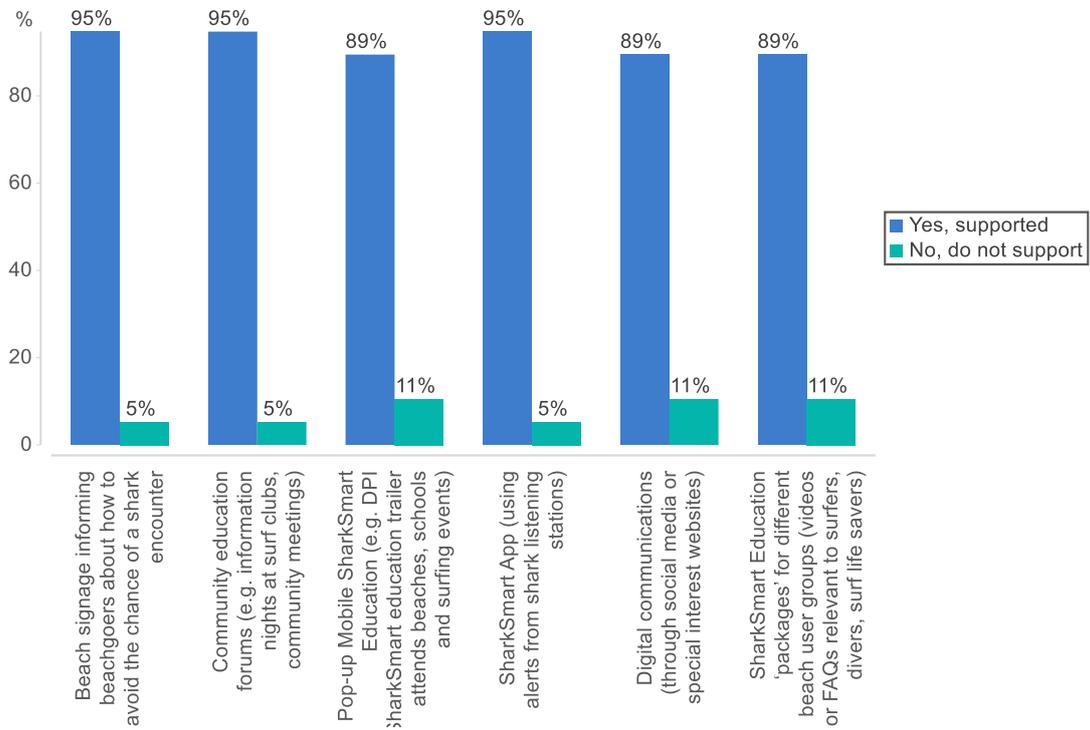
How personally concerned are you about encountering a shark while at a beach in NSW?



Almost half the sample were either concerned or extremely concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

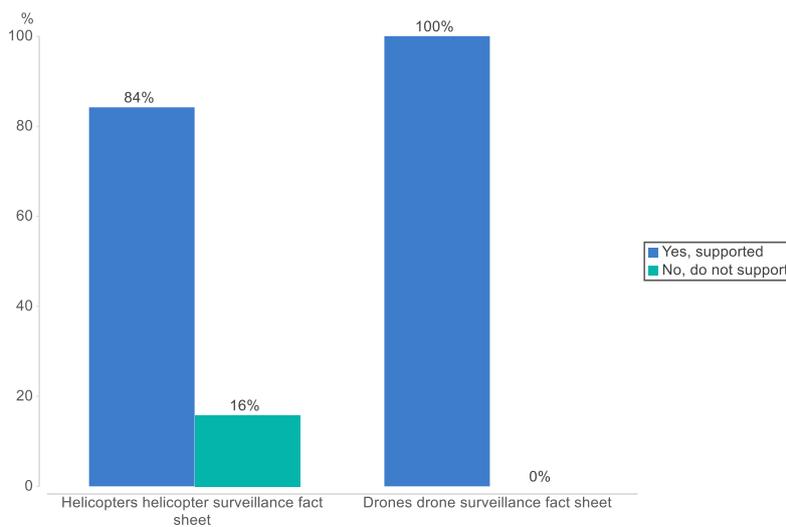
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all Community education and shark-alert measures.

Support for aerial surveillance

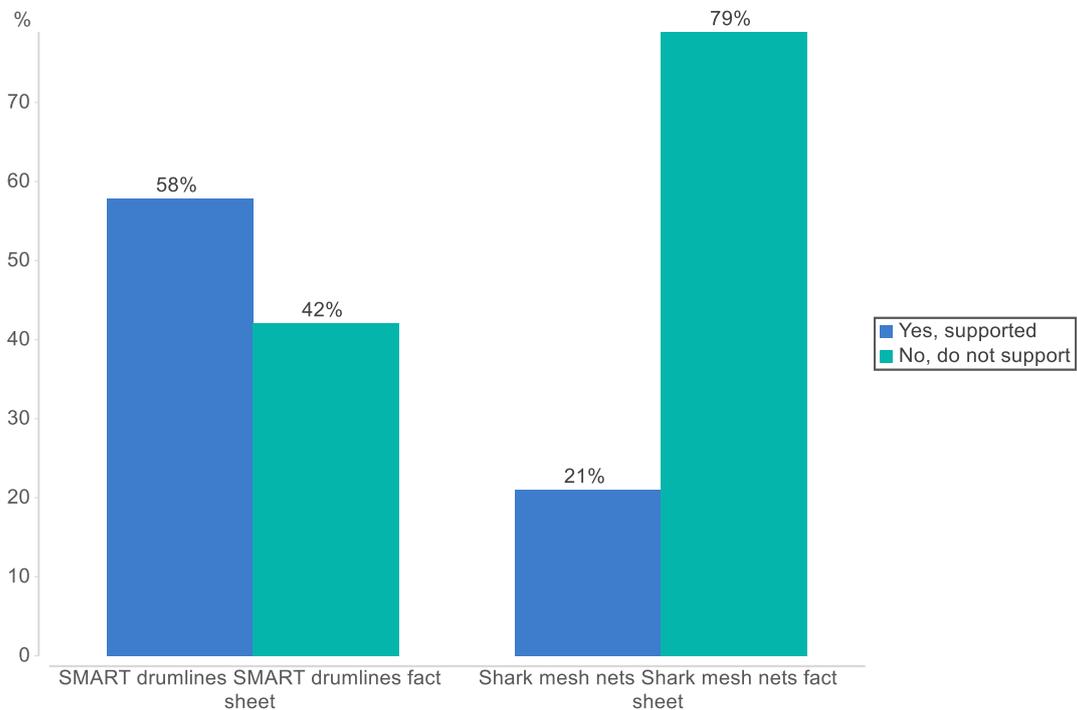
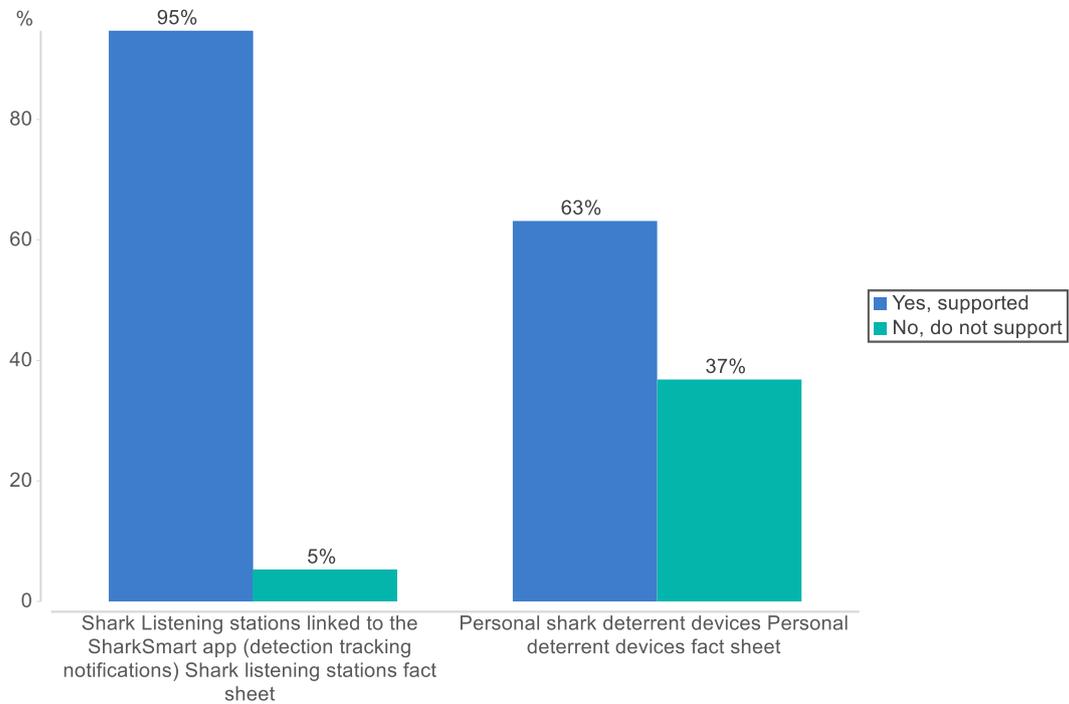
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and unanimous support for Drone surveillance.

Support for in-water measures

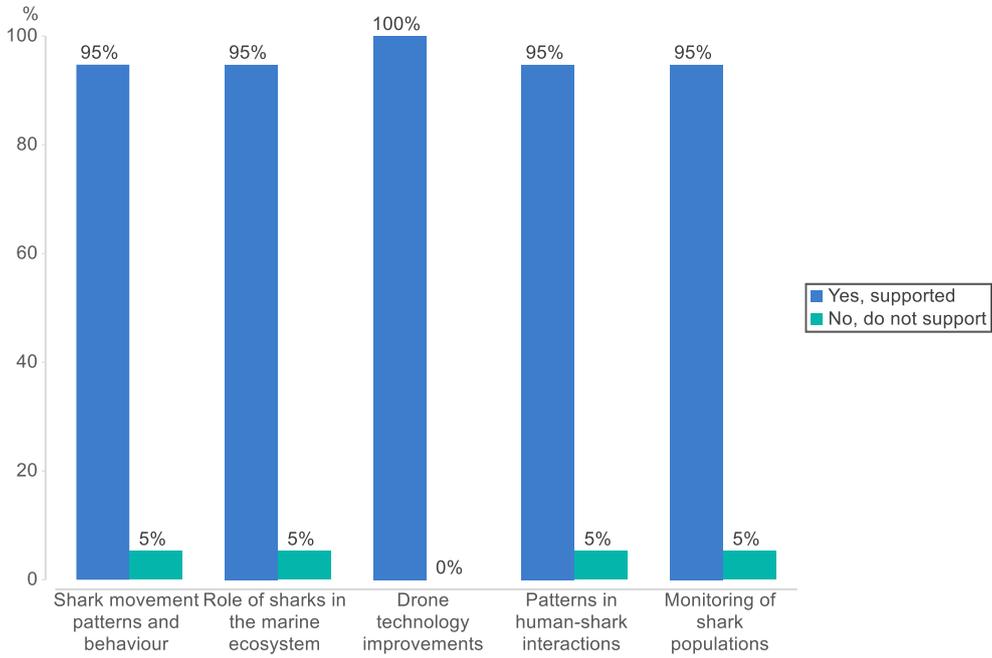
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and a majority supported Personal shark deterrents and SMART drumlines. A large majority did not support use of Shark mesh nets.

Support for research

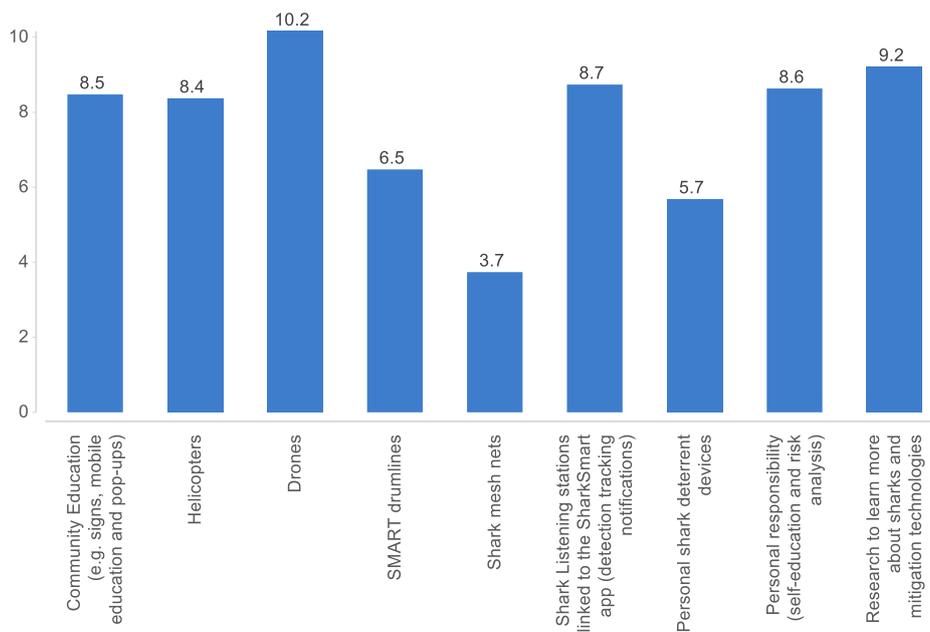
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



Drones were the most preferred measure, followed by Research and Listening stations. Shark mesh nets were the least preferred measure.

8.5 Clarence Valley

8.5.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	7
	Drones	9
	SMART drumlines	8
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Drones - effective at local patrolled and popular surf beaches as a technology that can assist with local and surf club SLS surveillance. We are aware that some boardrider clubs, and just groups of surfers, use drones as part of their event monitoring.</p> <p>SMART Drumlines - selected so long as sharks are released within 30minutes and they are tagged to enhance data collection. From the briefing appears that this is the primary way we collect data on shark movements and patterns with low level of fatality provided that this is done within a 30min response time.</p> <p>Improving data on shark numbers, patterns of movement and their feed species is what will help the community understand high risk times and areas.</p> <p>Community Education - awareness is a fundamental requirement and with digital technology can be done easily and cheaply.</p> <p>Shark Mesh Nets - we have a small shark net at luka Bay for a small swimming area. For off shore nets wouldn't support them as an effective tool due to off target species being affected and their efficiency for our LGA.</p> <p>Personal responsibility - we all need to be aware and do our assessment before entering the water.</p> <p>Helicopters - high costs but perhaps necessary tool for popular areas for swimmers and surfers that can cover a large area.</p> <p>Personal Devices - can we have more education about what works and what doesn't based on latest research</p> <p>Shark Listening stations - support more stations at popular surf beaches. Research - can not do enough and highly recommended.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Our Clarence Valley LGA has been tragically affected by shark attacks in recent times with the most devastating occurring at Wilsons Point near Diggers Camp that has had a devastating affect on the town of Minnie Water. Council strongly argues for the continuation of the governments initiatives and program to continue to track and monitor sharks and their behaviours using management tools as outlined in the workshop presentations and provided in this survey. The workshop was enlightening and that type of information needs to be conveyed widely through community education and awareness.</p>
<p>How satisfied with the information provided in this survey?</p>	

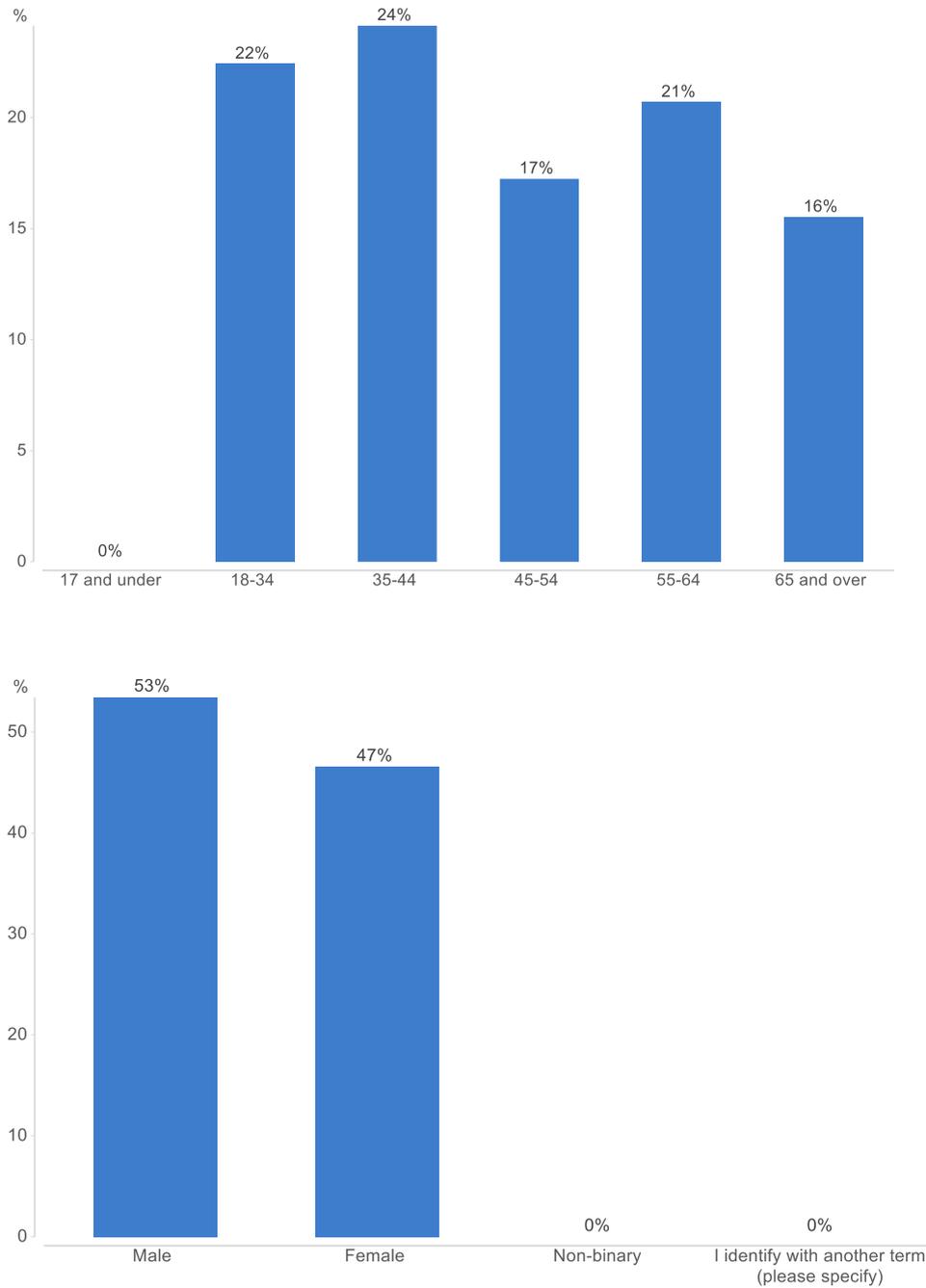
8.5.2 Other organisation responses Clarence Valley

No submissions received.

8.5.3 Survey responses from individuals

Sample

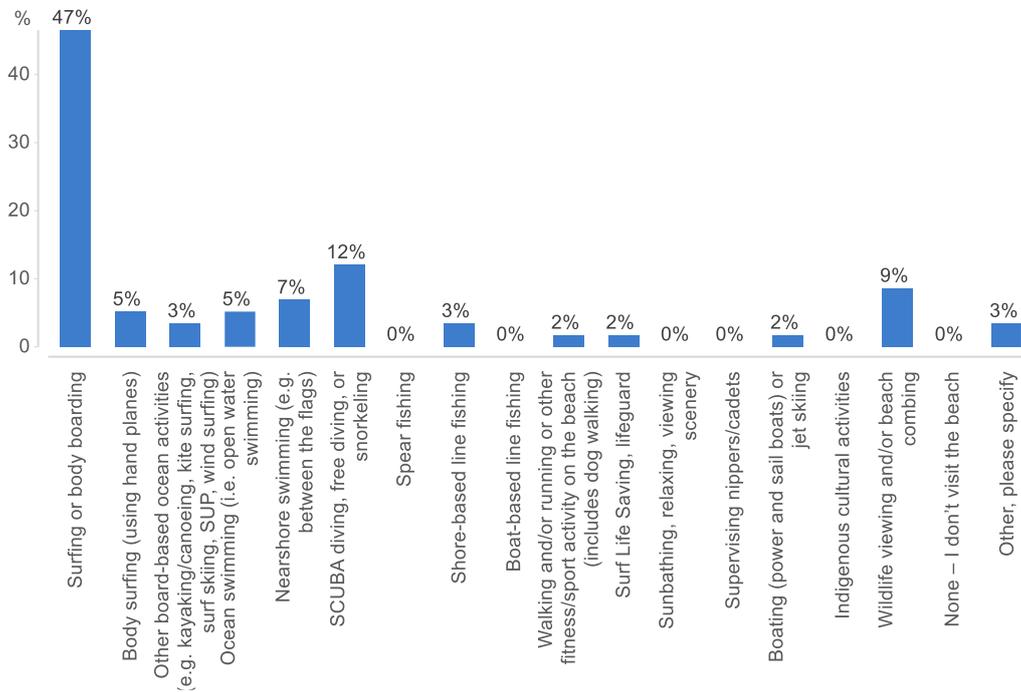
There were 58 individual responses, as follows.



There was a spread of people aged 18 and over, and a small majority of males.

Main beach activity of respondents

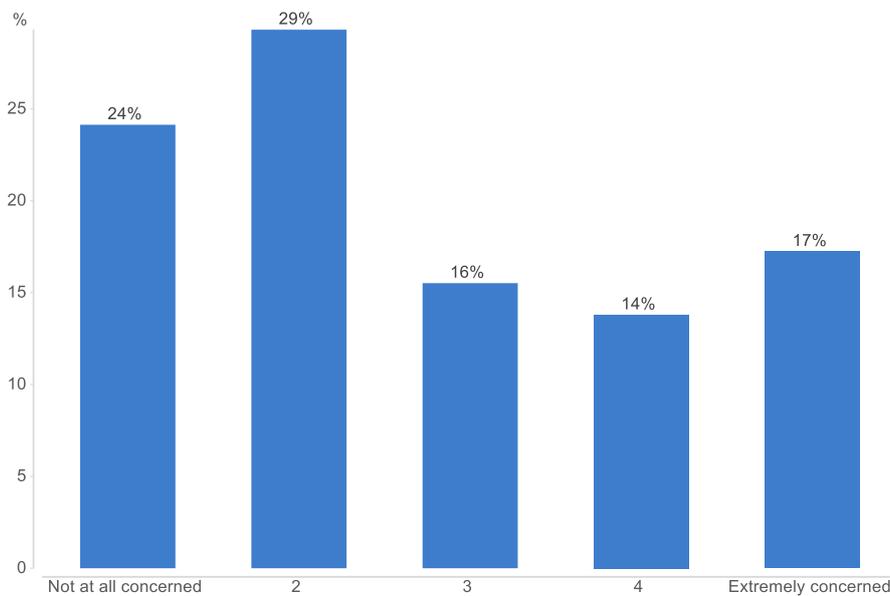
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (47%) and diving/snorkelling (12%).

Concern about encountering sharks

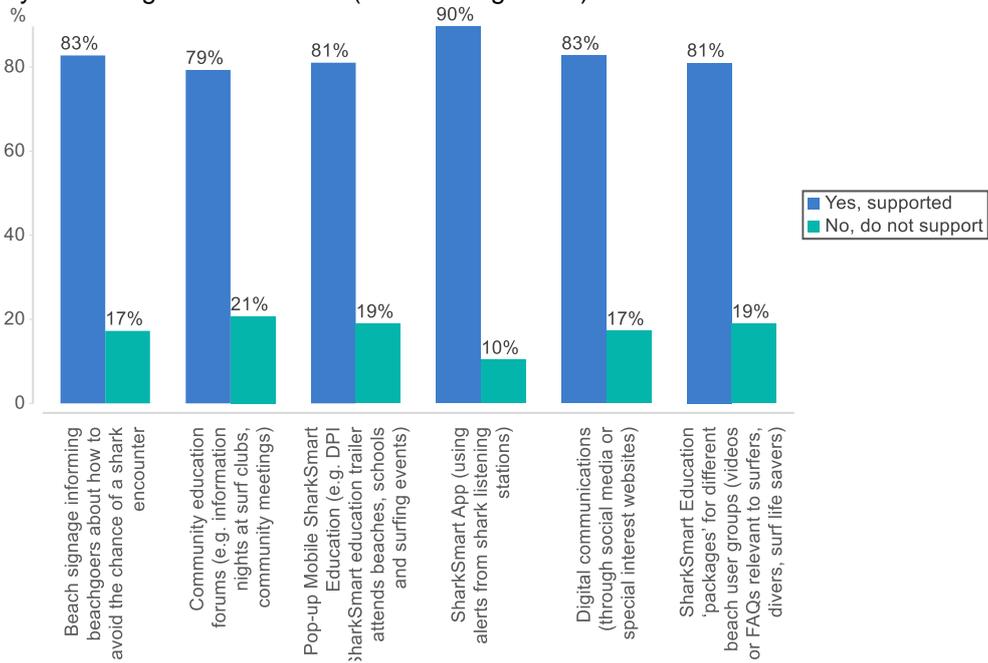
How personally concerned are you about encountering a shark while at a beach in NSW?



A majority expressed little or no concern at all, but almost one third expressed concern or extreme concern about encountering sharks at the beach.

Support for Community education and shark-alert measures

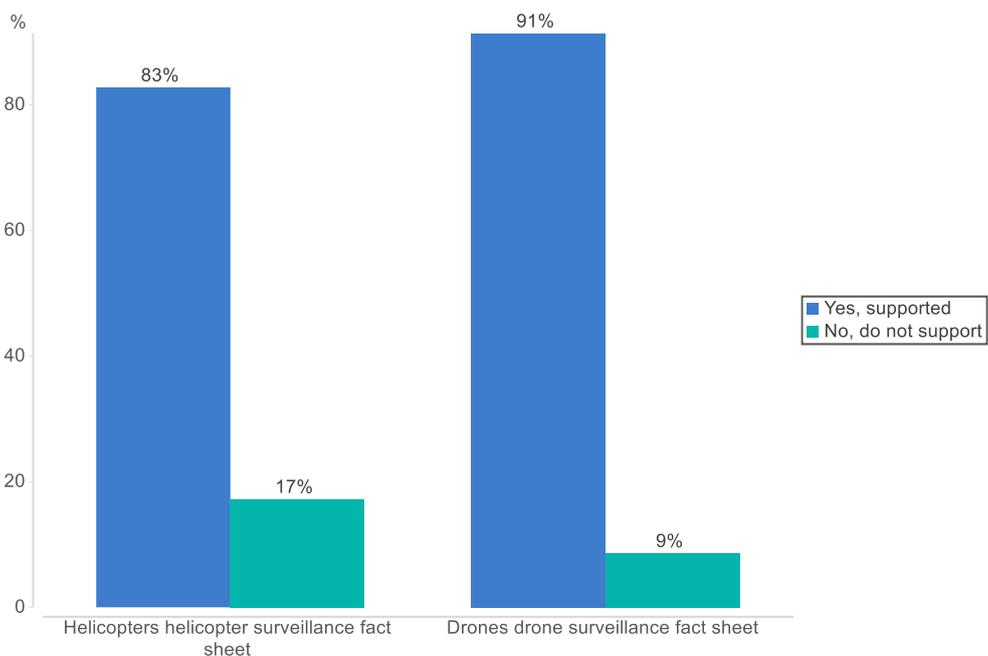
The list below includes different Community education and shark-alert measures. Which, if any, do you support in your local government area (or NSW in general)?



There was strong or high support expressed for all Community education and shark-alert measures.

Support for aerial surveillance

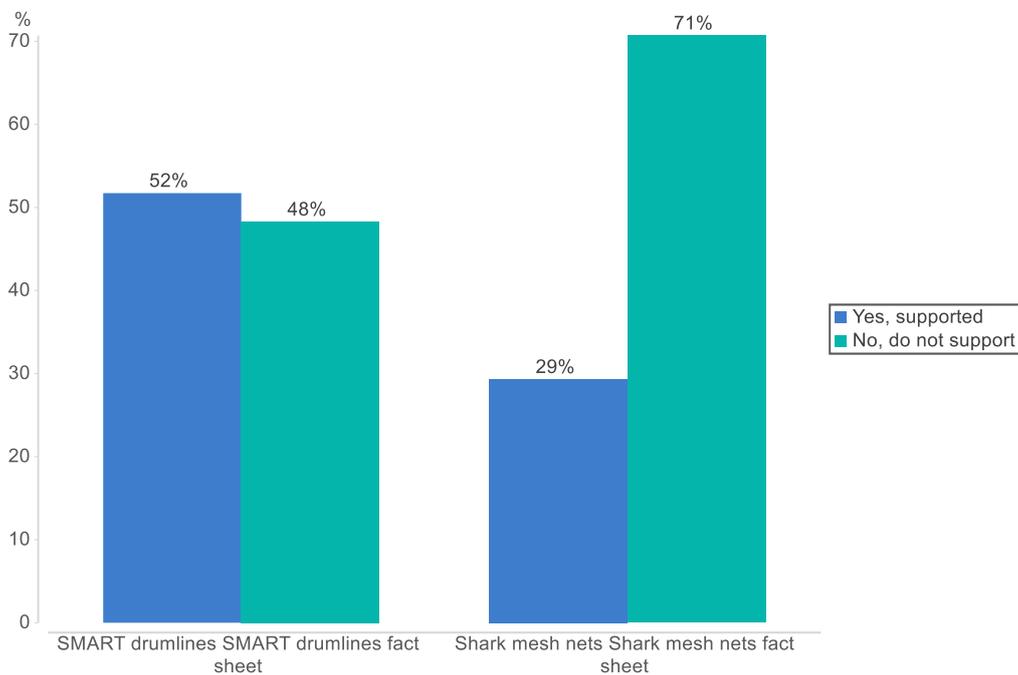
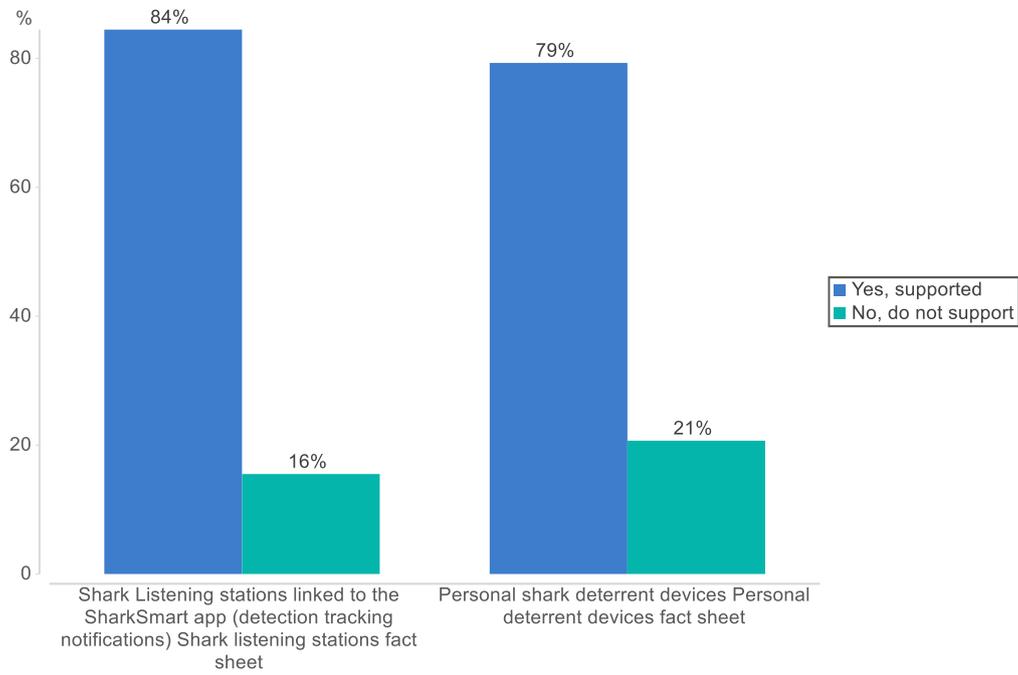
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and high support for Drone surveillance.

Support for in-water measures

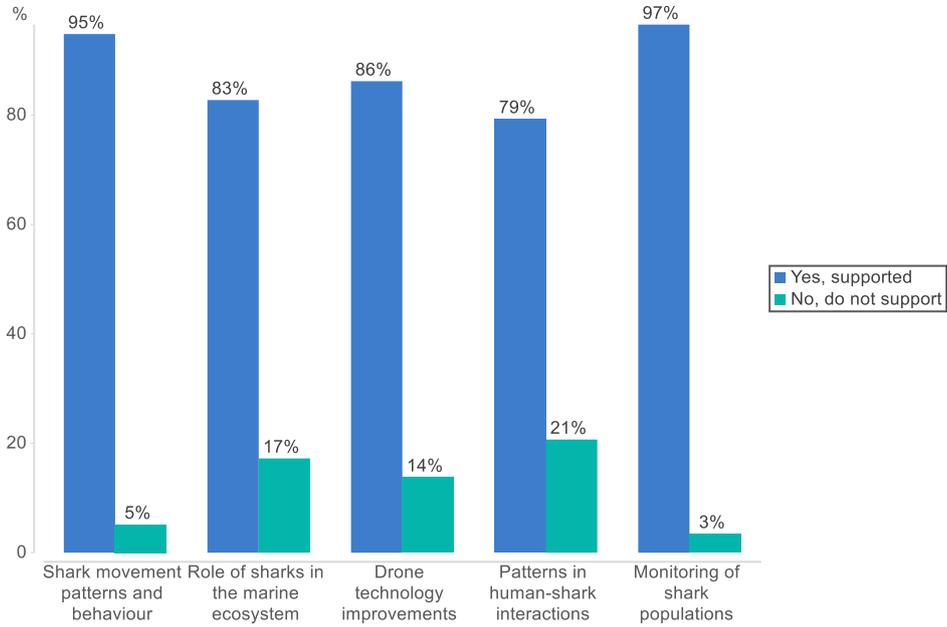
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Shark listening stations and Personal shark deterrents, and a small majority supported SMART drumlines. A majority did not support Shark mesh nets.

Support for research

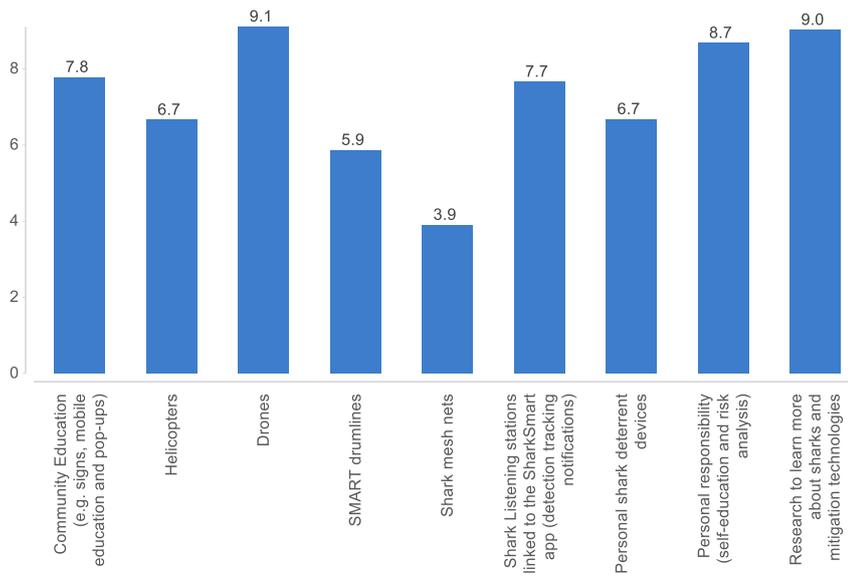
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high or strong support for all research topics aimed at increasing protection of beachgoers.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



The most preferred mitigation measures were Drones followed by Research into sharks and mitigation technologies. The least preferred were Shark mesh nets and SMART drumlines.

8.6 Coffs Harbour City

8.6.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	9
	Helicopters	1
	Drones	5
	SMART drumlines	7
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	9

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Community education is essential to further inform users of the real issues surrounding sharks and mitigation. With regards to helicopter use, very expensive and although they cover a wide area, they only get a snapshot. Drones are a good tool, however also limited. Weather, turbidity of water affect use, however for events, (surf carnivals, surfing events), use of drones could be very effective. Technologies and research into personal protective devices is the preferred method of mitigation, education into assisting people understand the importance of sharks within the environment is also essential. Educate the media as well.</p> <p>The use of nets is not supported due to the environmental damage they cause, by-catch is uncontrolled and most species caught appear to perish.</p> <p>Smart drumlines are somewhat supported, however members of the community are hesitant with regards to these as well as there is a perception that they attract sharks to the area.</p> <p>Tagging and monitoring with the use of listening stations is supported.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

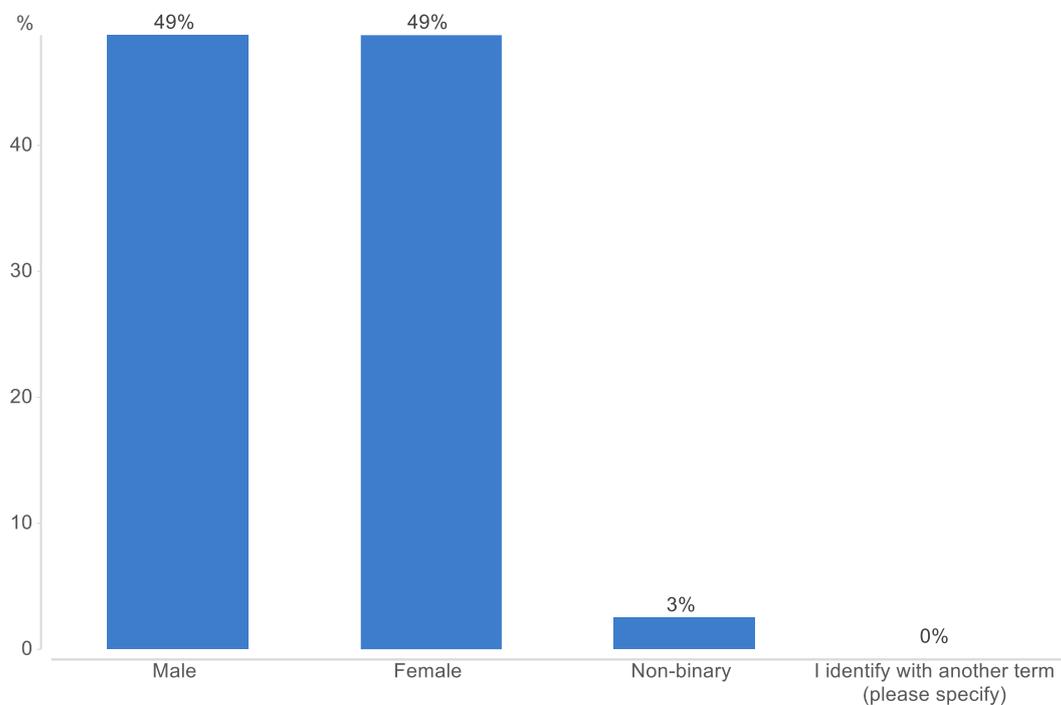
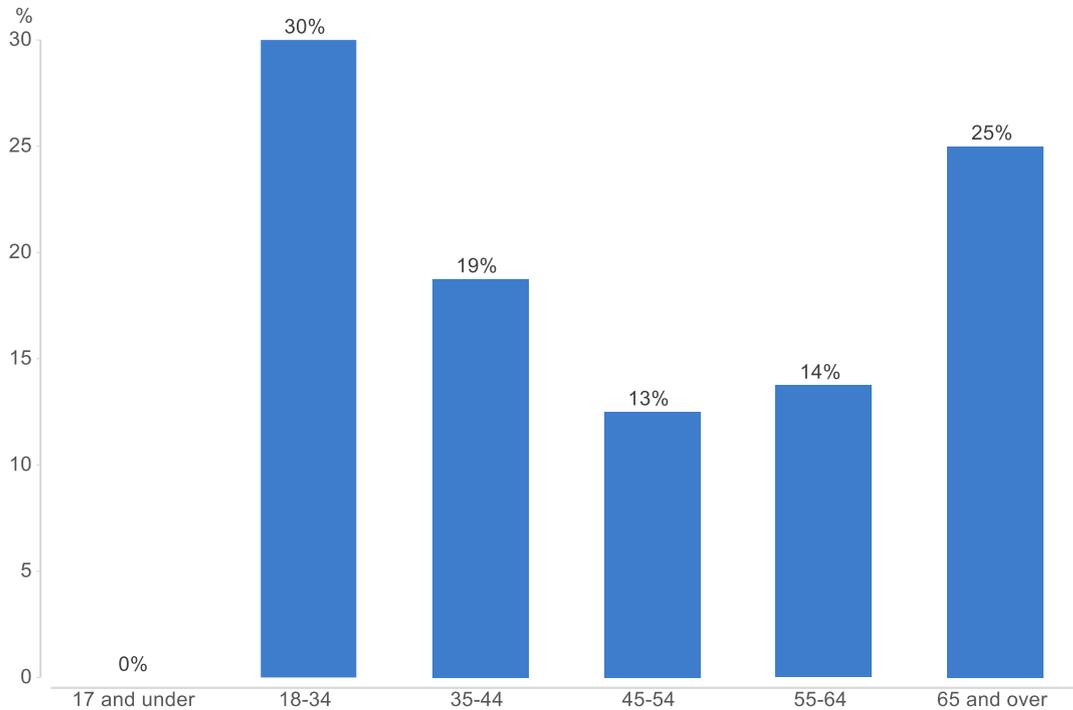
8.6.2 Other organisation responses Coffs Harbour ORGS

None received.

8.6.3 Survey responses from individuals

Sample

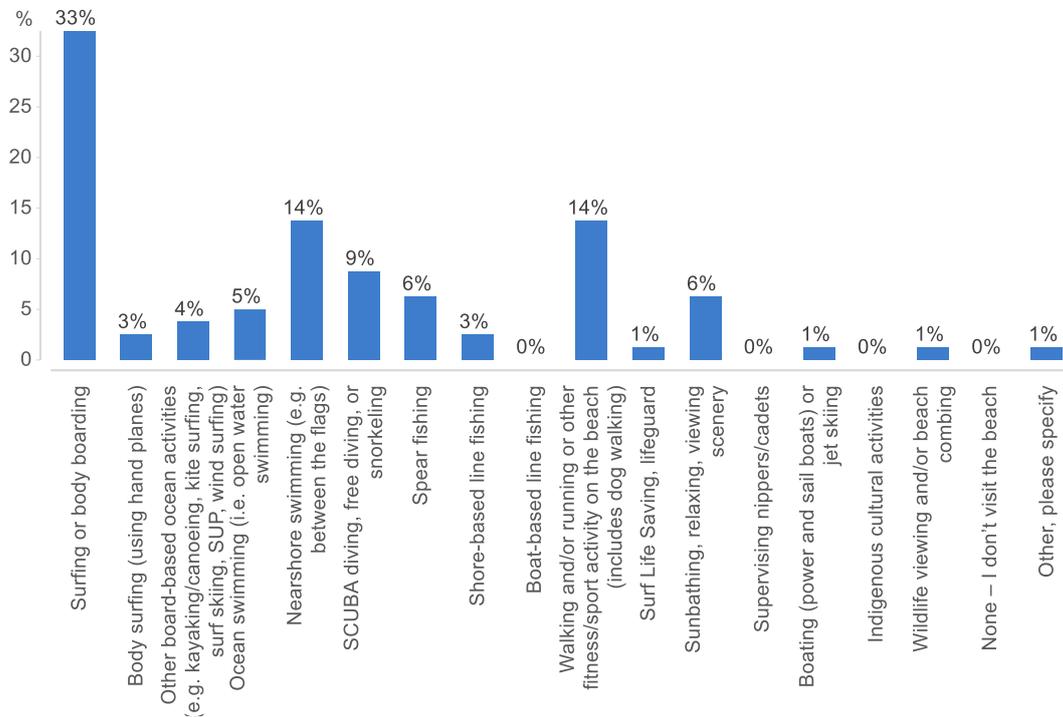
There were 80 individual responses, as follows.



There was a spread of people aged 18 and over, and an equal number of males and females.

Main beach activity of respondents

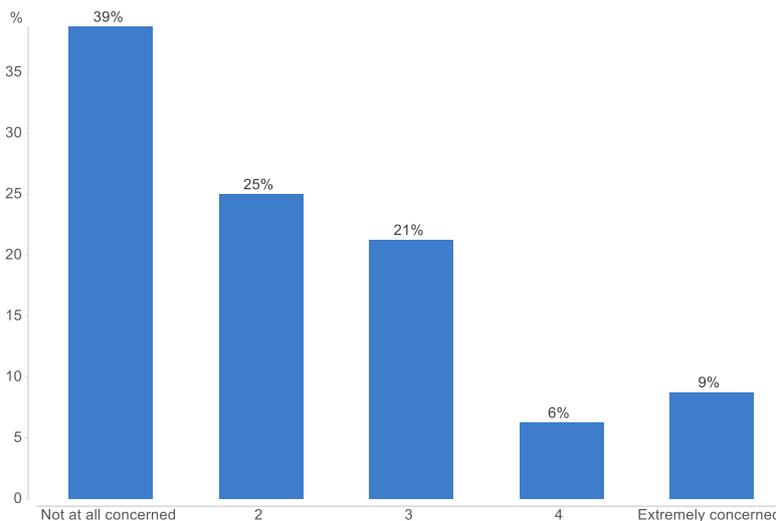
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (33%), nearshore swimming (14%) and walking/running on the beach (14%).

Concern about encountering sharks

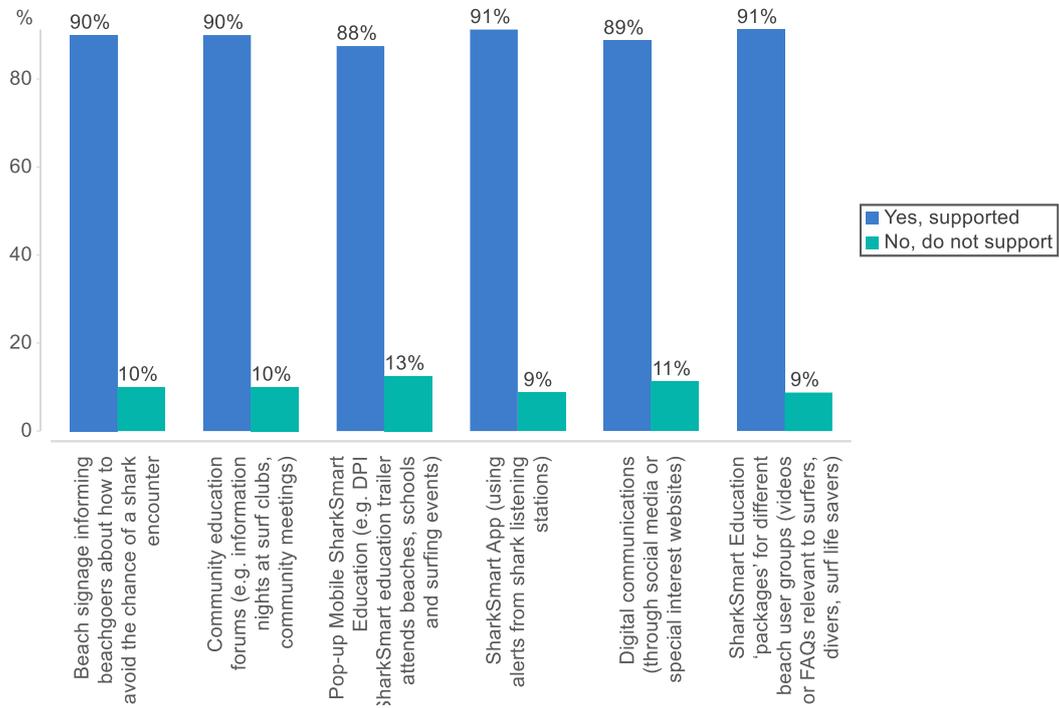
How personally concerned are you about encountering a shark while at a beach in NSW?



Most expressed little or no concern at all about encountering a shark at the beach. A small minority were concerned or extremely concerned.

Support for Community education and shark-alert measures

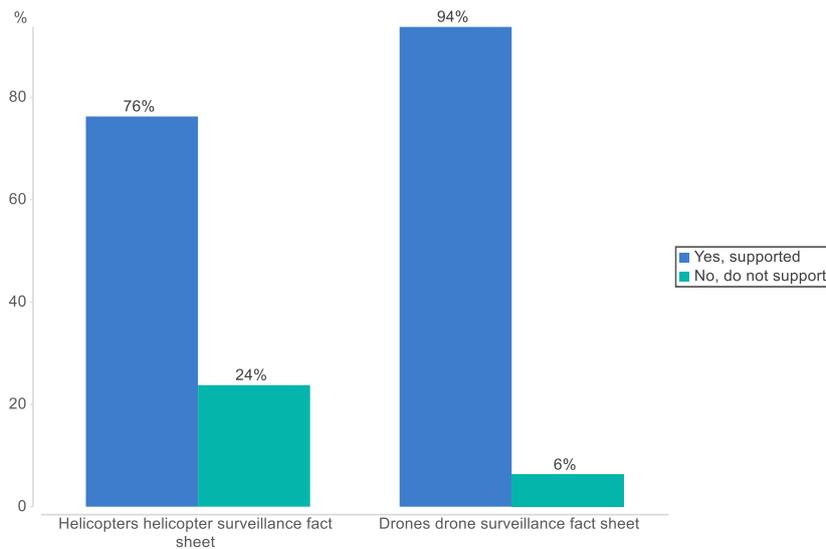
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all the Community education and shark-alert options.

Support for aerial surveillance

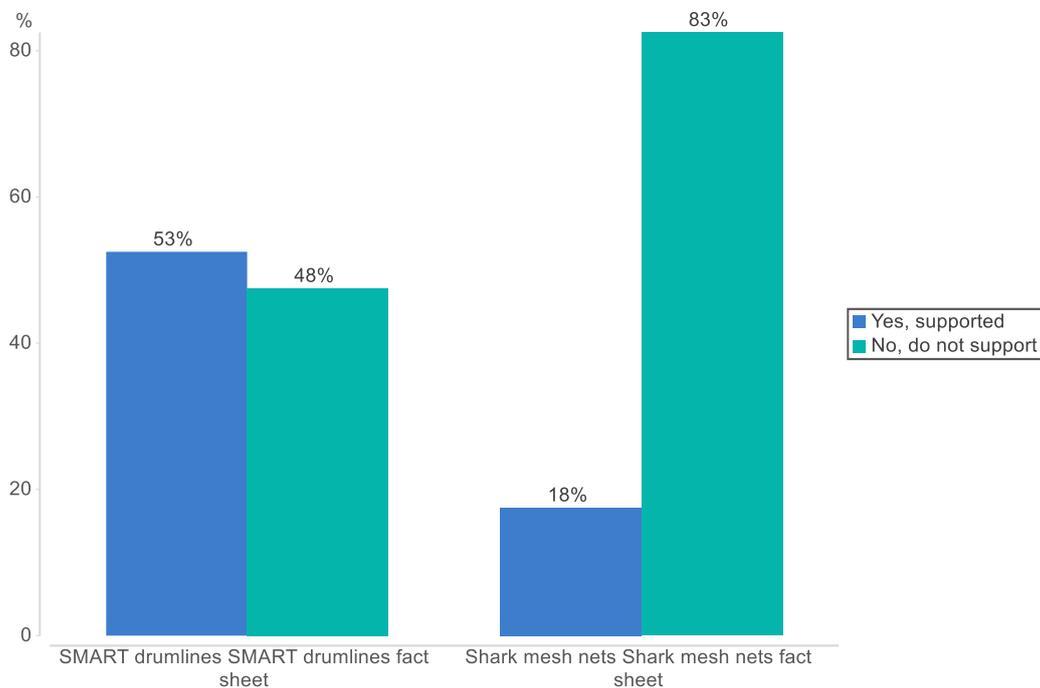
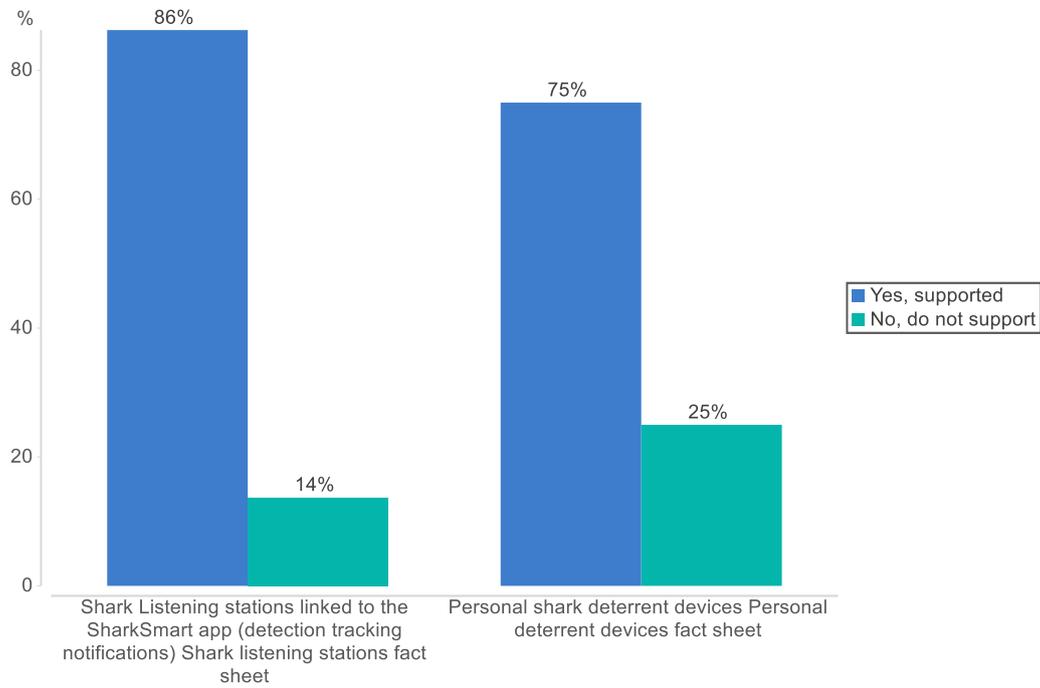
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and high support for Drone surveillance.

Support for in-water measures

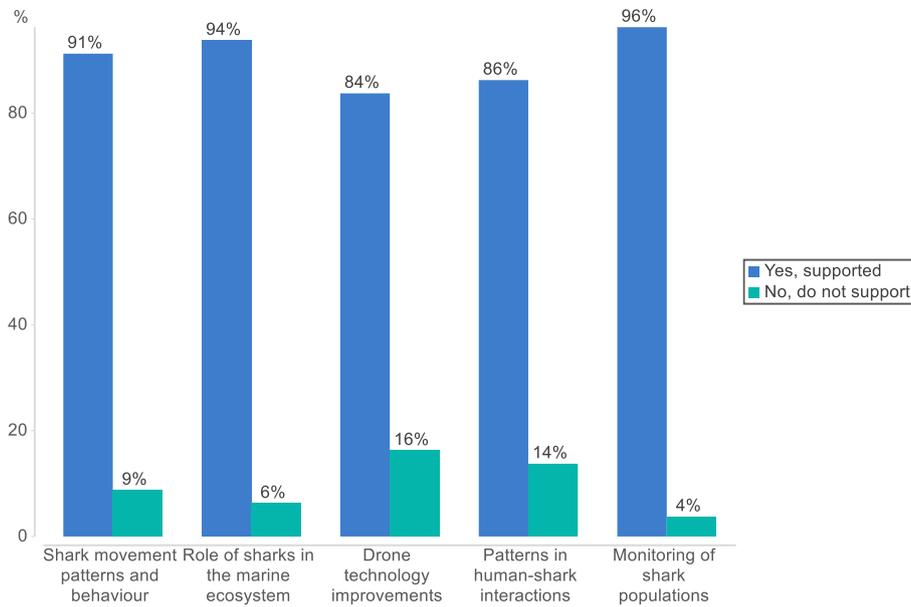
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Shark listening stations and Personal shark deterrents. A small majority supported use of SMART drumlines and a large majority did not support Shark mesh nets.

Support for research

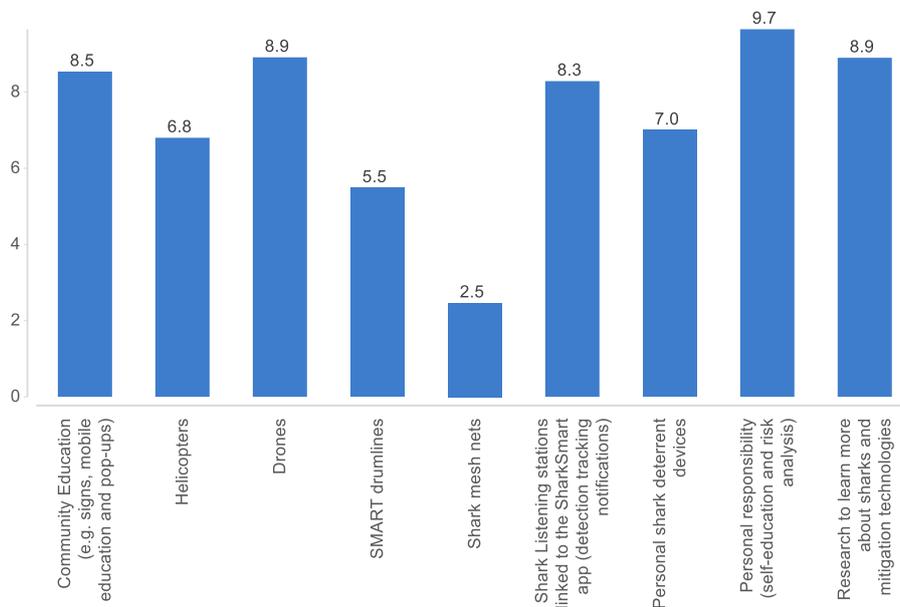
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was strong or high support for all Research topics to increase protection of beachgoers.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



Personal responsibility was the most preferred mitigation measure, followed by Drones and Research to learn more about sharks and mitigation technologies.

The least preferred measures were Shark mesh nets and SMART drumlines.

8.7 Bellingen Shire

8.7.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	7
	Helicopters	2
	Drones	10
	SMART drumlines	9
	Shark mesh nets	4
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	5
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>The drone trials undertaken from 2017 to 2020 demonstrated an effective observation strategy from safety, cost and environmental perspectives. With strong social support from the community, including Surf Life Saving NSW, the program allowed lifesavers to identify risks and immediately act to protect beachgoers. It was reassuring to hear that privacy concerns raised by the public were alleviated when drone operators were clearly identifiable, by uniform, as holding the trusted role of surf lifesavers.</p> <p>Smart drumlines and listening devices would provide additional reassurance in areas of particularly high target species activity and/or where coastal conditions do not provide a safe environment for drone operators. Whilst these treatments have the potential to have a negative effect on marine species, it is acknowledged that the tagging process provides important data regarding the movement patterns of white, bull and tiger shark species.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Bellingen Shire Council appreciates that our coastal environment is a wonderful asset and the opportunity for people to enjoy our beaches supports community wellbeing and the economy. The extensive research and development of resources by DPI to ensure the safety of beachgoers and natural ecosystems is greatly appreciated.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

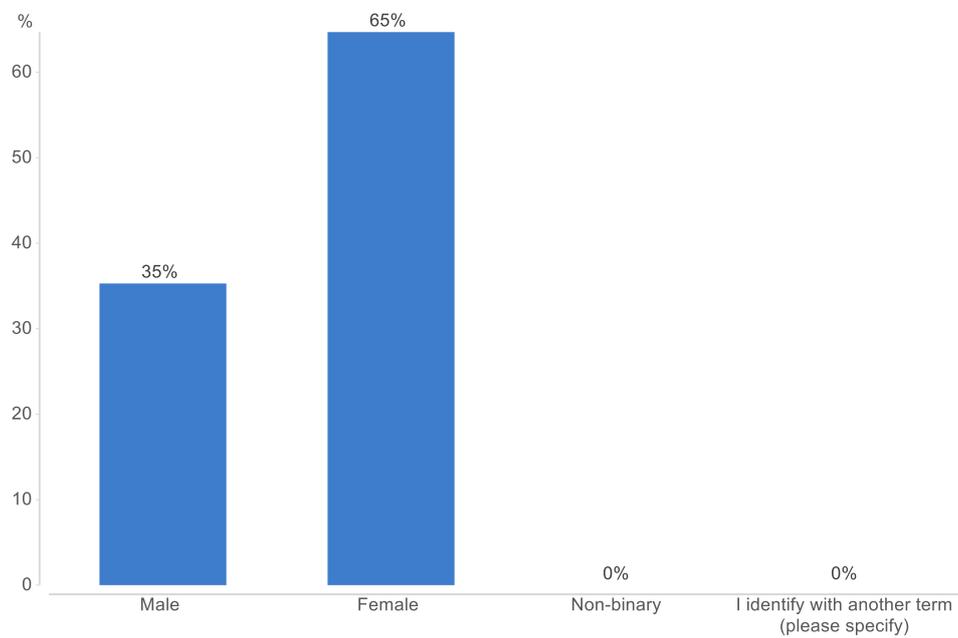
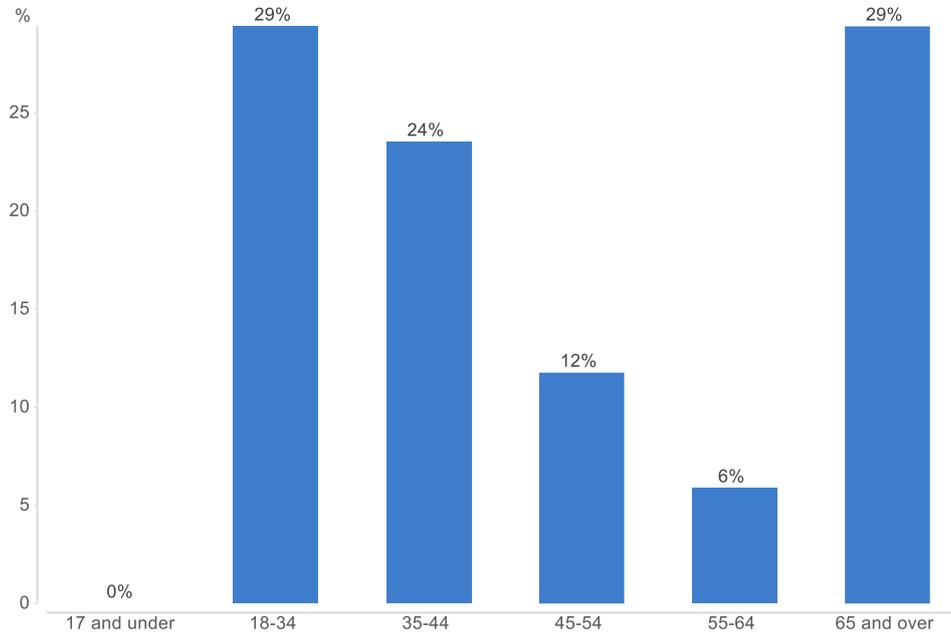
8.7.2 Other organisation responses - Bellingen

No submissions received.

8.7.3 Survey responses from individuals

Sample

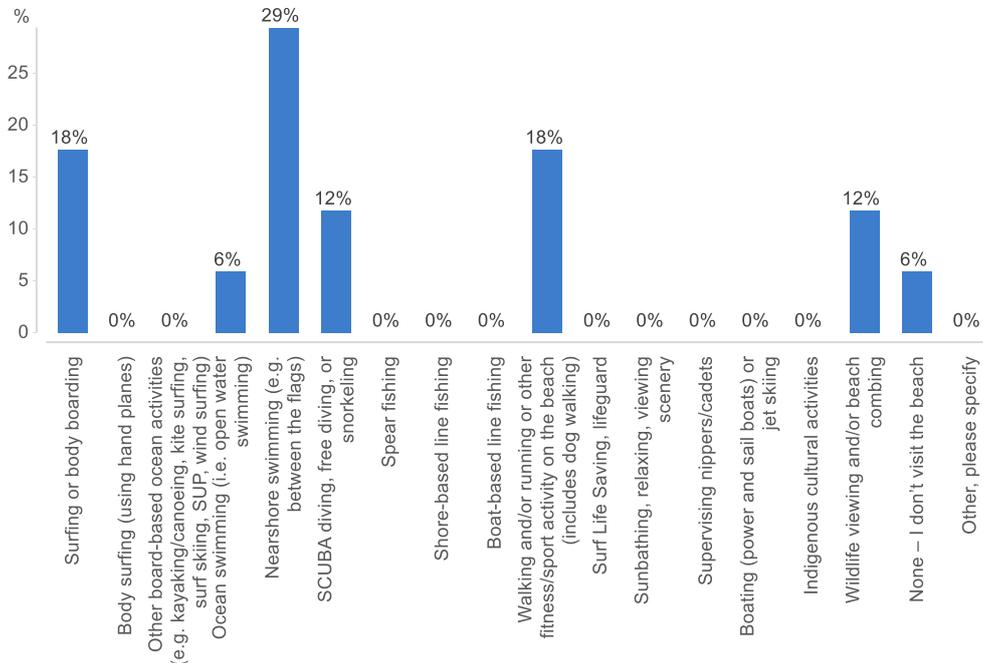
There were 17 individual responses, as follows.



There was a spread of people aged 18 and over], and more females than males.

Main beach activity of respondents

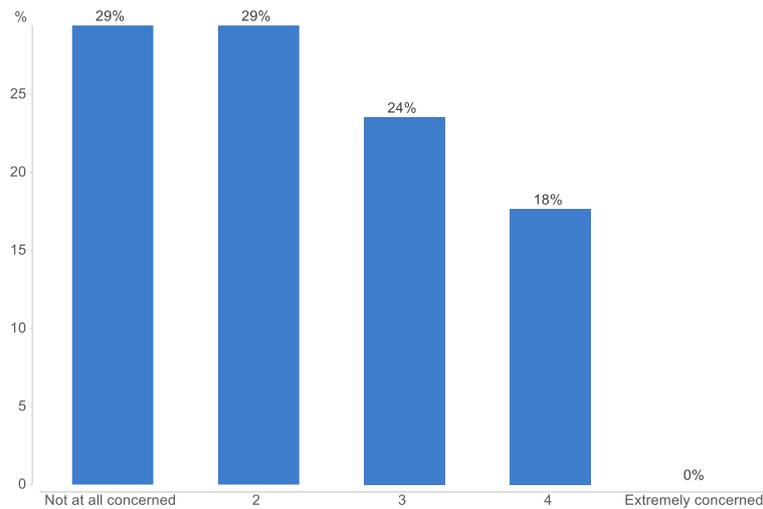
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were nearshore swimming (29%), surfing or bodyboarding (18%), and walking or running on the beach (18%).

Concern about encountering sharks

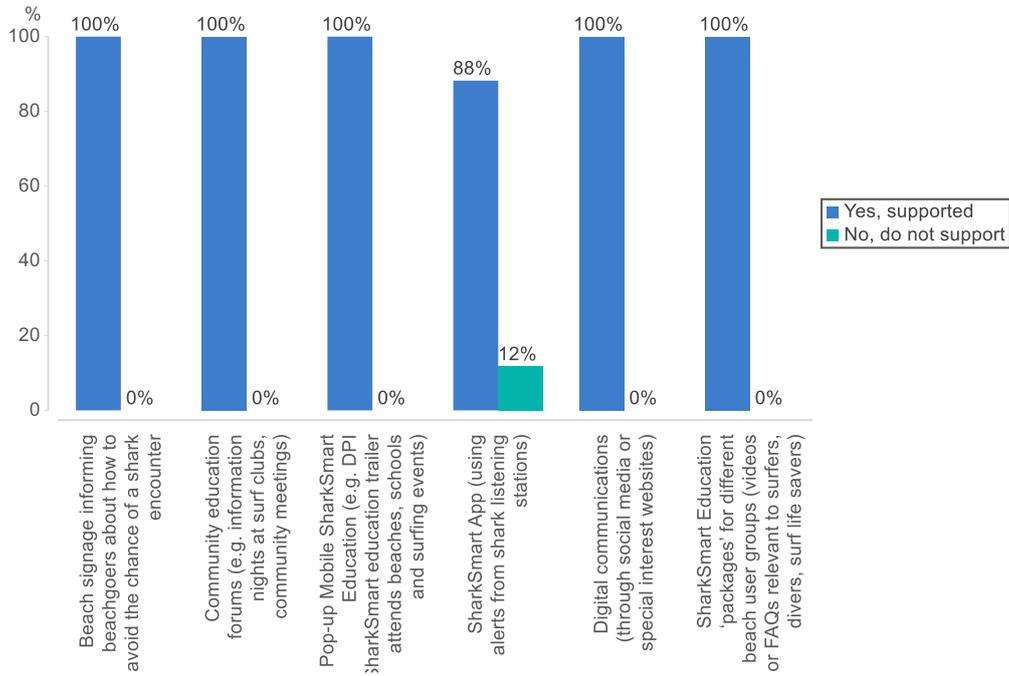
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were less concerned or not concerned at all but nearly one fifth were concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

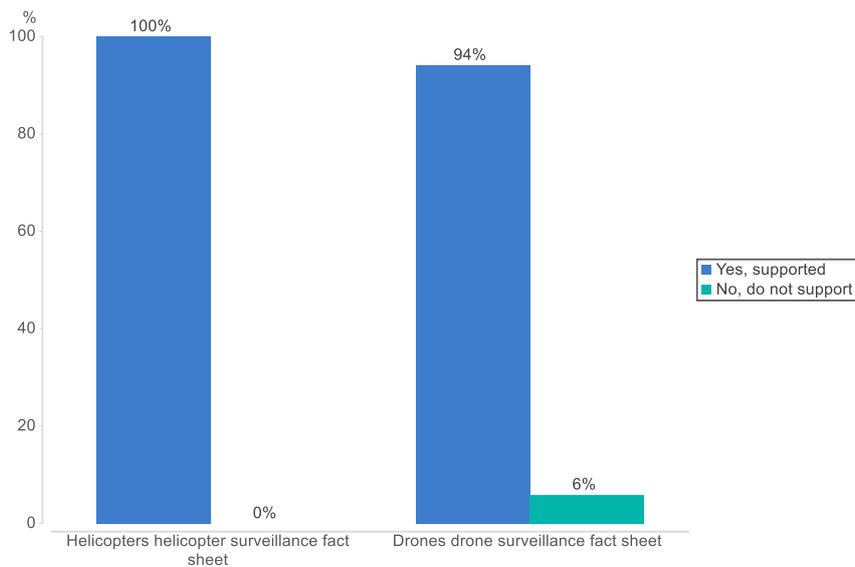
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



Almost all people supported all Community education and shark alert options.

Support for aerial surveillance

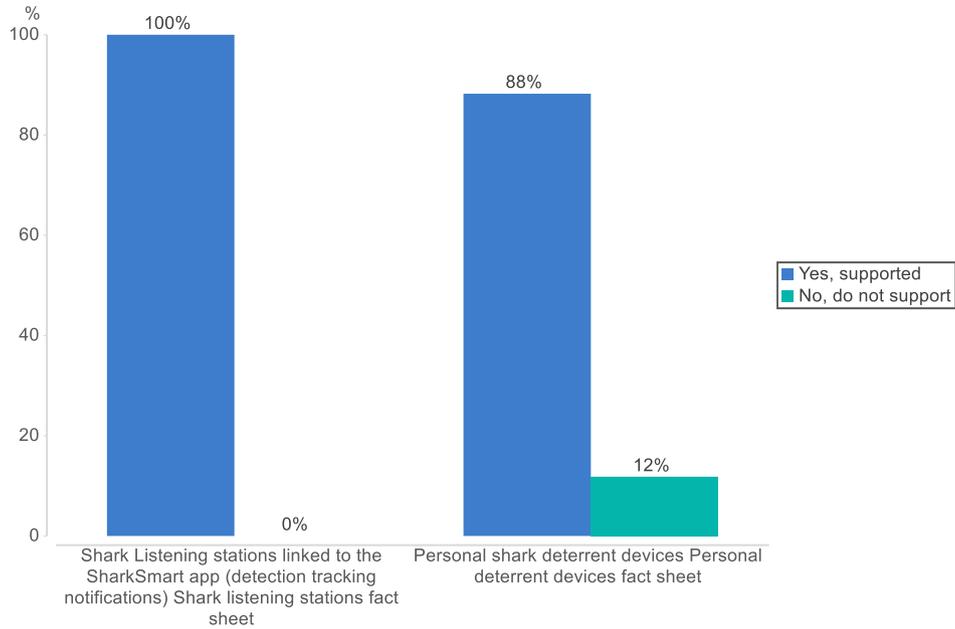
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



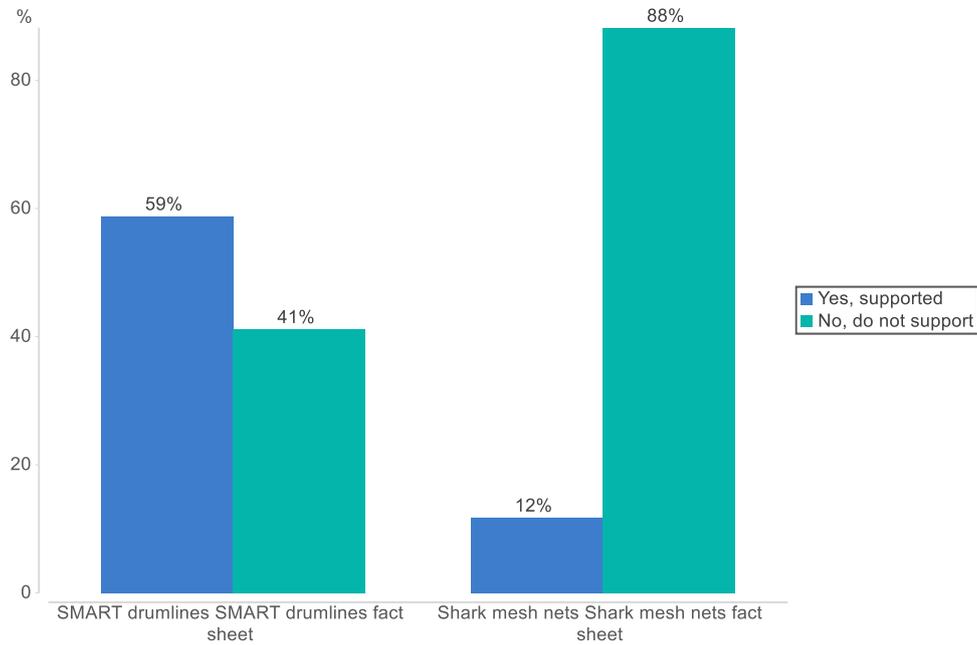
There was high support for aerial surveillance, especially helicopters.

Support for in-water measures

The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



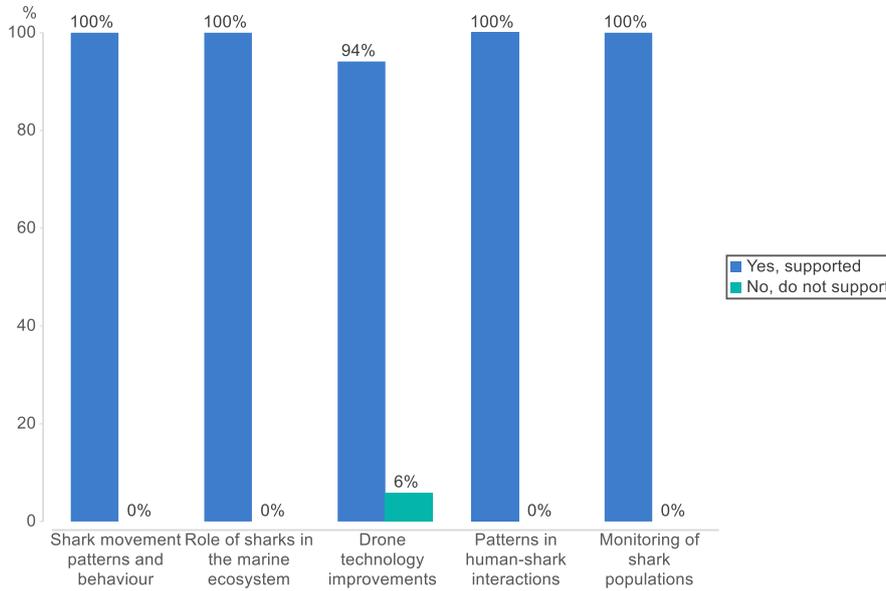
Almost every respondent supported shark listening stations and personal shark deterrent devices.



A majority supported SMART drumlines. There was little support for shark mesh nets.

Support for research

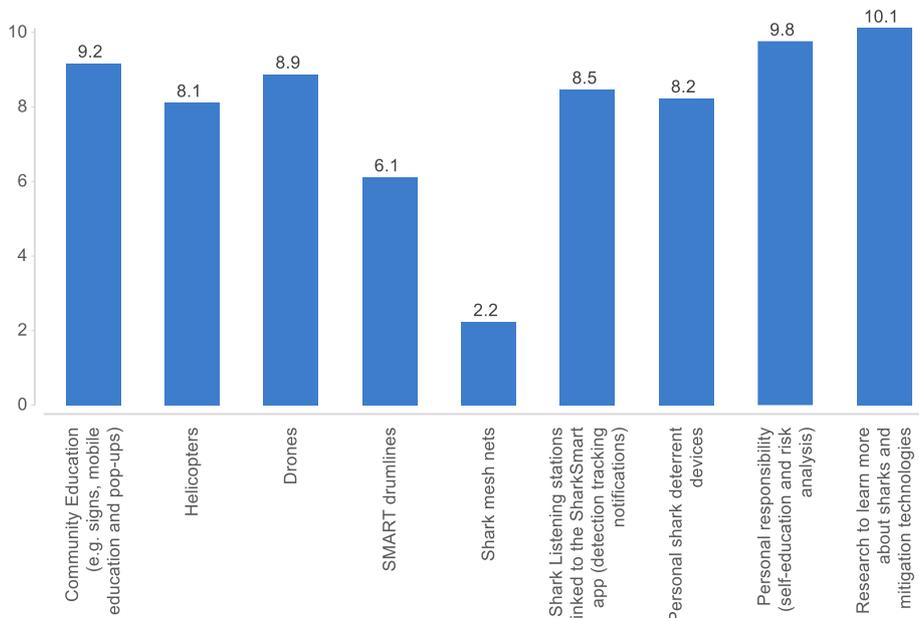
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



There was high relative support for Research to learn more about sharks and mitigation technologies and Personal responsibility, and for Community education and Drones. The least preferred measure was Shark mesh nets.

8.8 Nambucca Valley

8.8.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	5
	Helicopters	6
	Drones	8
	SMART drumlines	8
	Shark mesh nets	5
	Shark listening stations linked to the SharkSmart app	5
	Personal shark deterrent devices	8
	Personal responsibility (self-education & risk analysis)	8
	Research to learn more about sharks and mitigation technologies	5
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	The Nambucca Valley Council considered the questions at their meeting on 25 March 2021. The consensus was shark mesh nets are the least preferred strategy because of the by-catch, but it is understood that these have been in place in Newcastle, Sydney and Wollongong since the 1930's and their continuation or otherwise is not a matter for this Council. However the Council would not be keen on their introduction to beaches in our LGA. The consensus of the Council was that shark management strategies should be more targeted and have less impact on other marine life.	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Neither satisfied nor dissatisfied

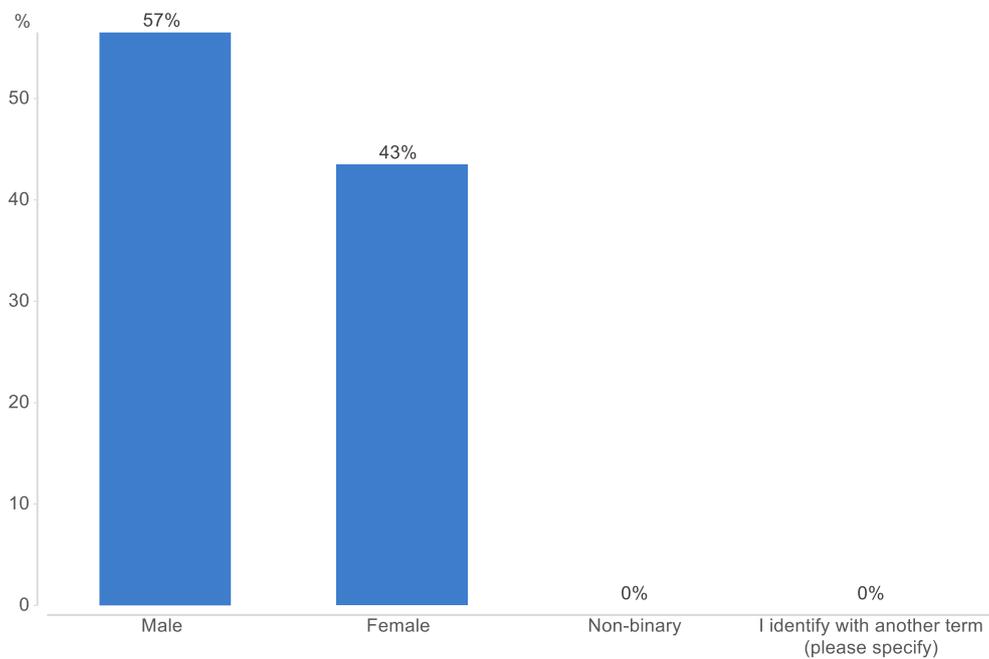
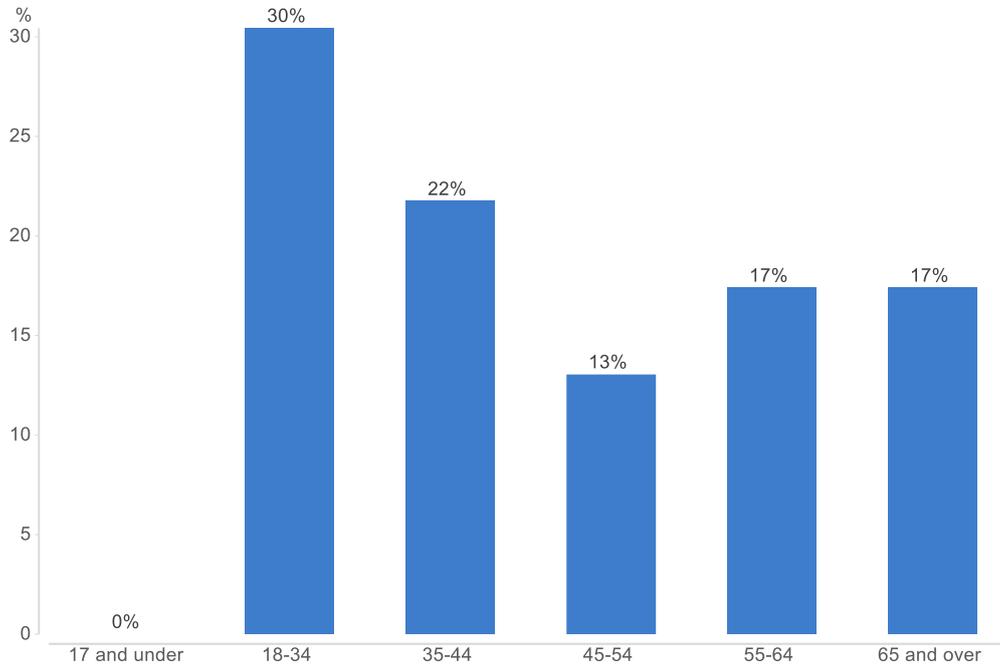
8.8.2 Other organisation responses Nambucca Valley

No submissions received.

8.8.3 Survey responses from individuals

Sample

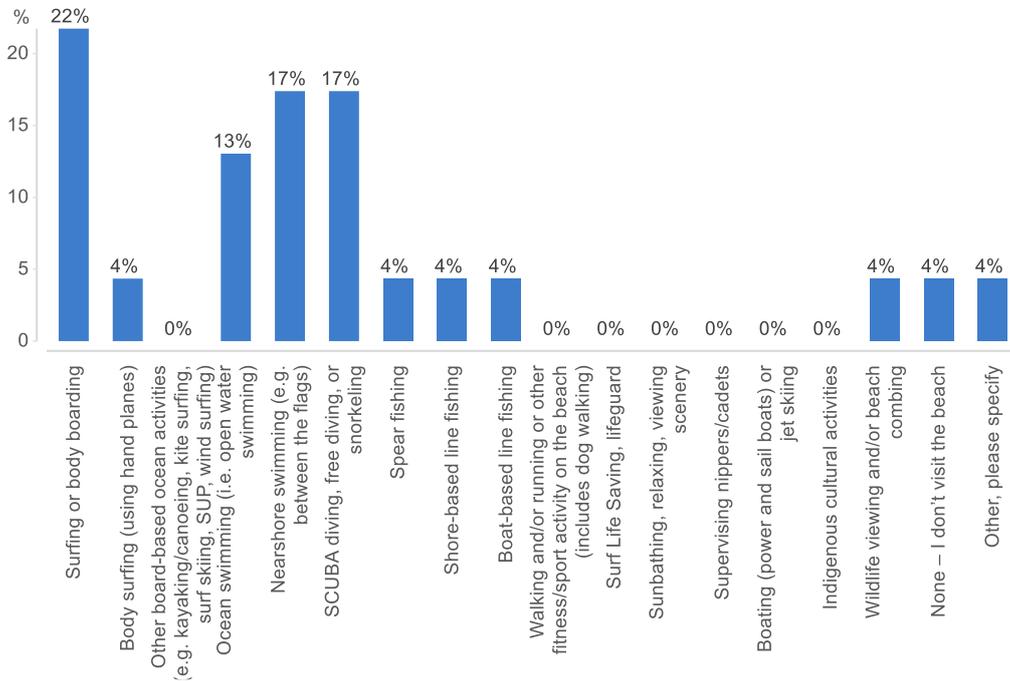
There were 23 individual responses, as follows.



There was a spread of people aged 18 and over, more aged 18-44, and there were more males than females.

Main beach activity of respondents

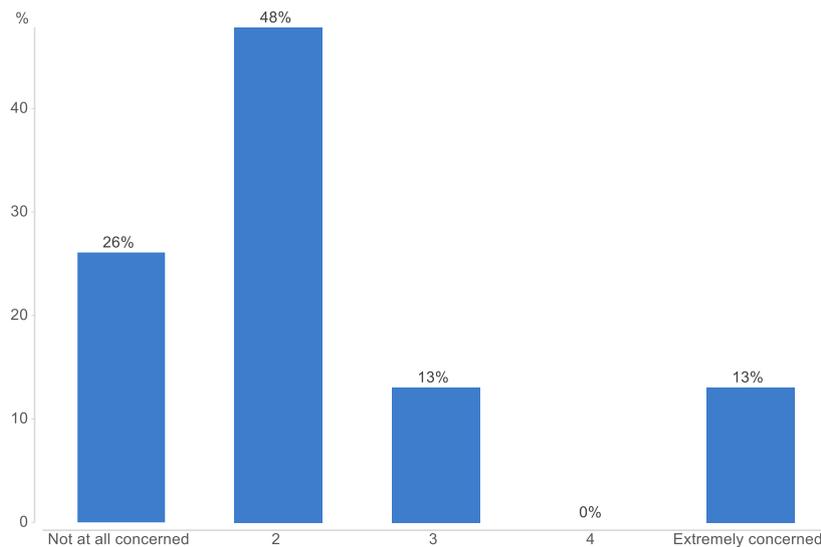
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (22%), nearshore swimming (17%) and diving/snorkelling (17%).

Concern about encountering sharks

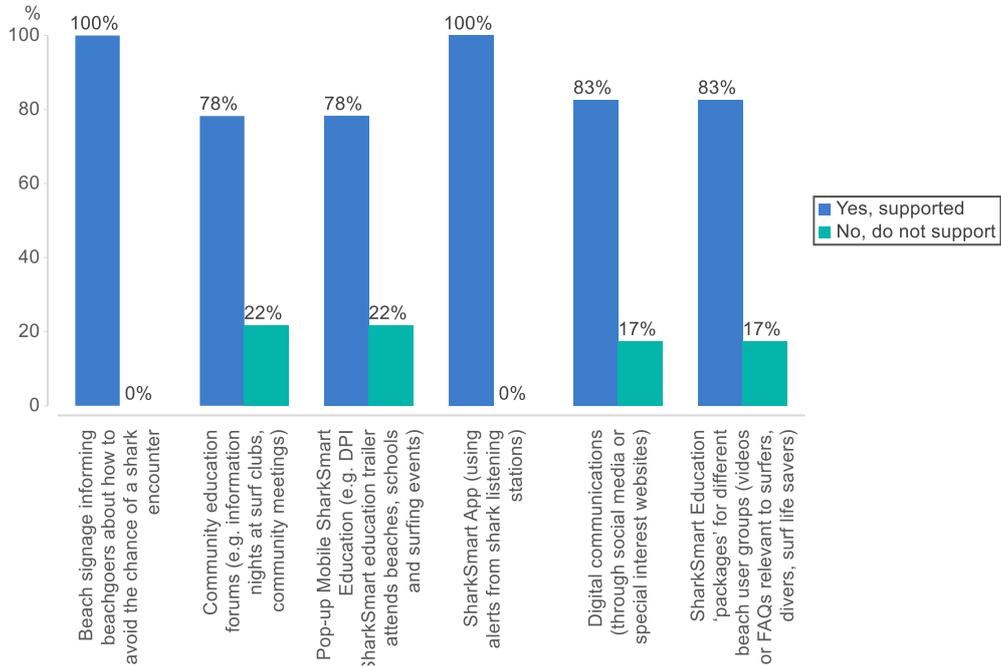
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were either less concerned or not concerned at all. Thirteen percent were extremely concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

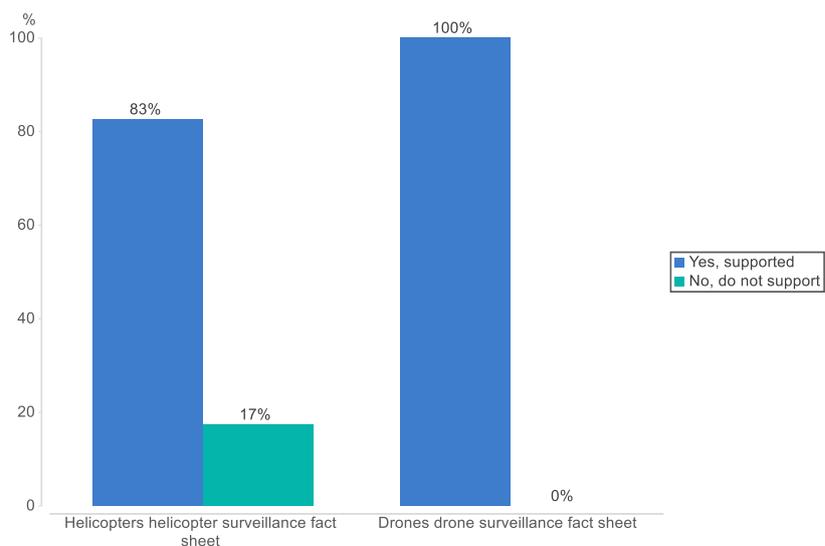
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was unanimous support for Beach signage and the SharkSmart App alerts, There was high support for the other education and alerts measures.

Support for aerial surveillance

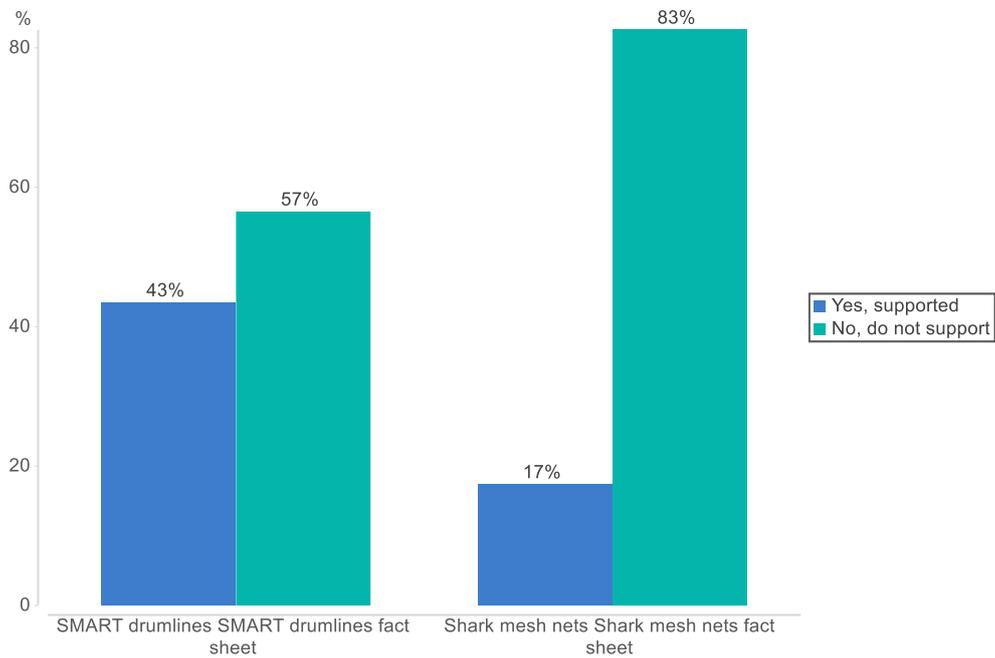
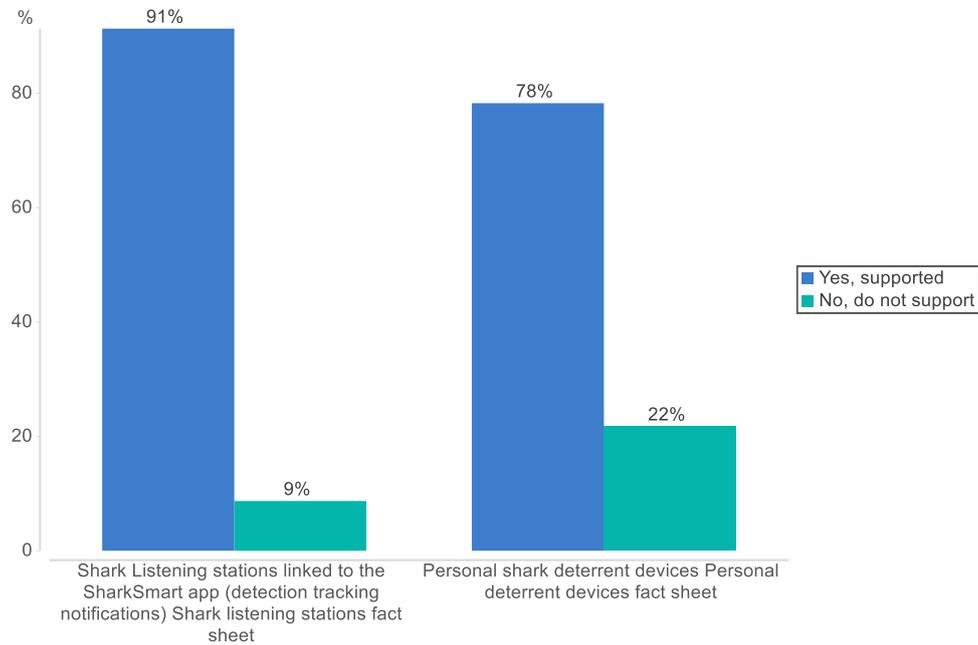
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and unanimous support for Drone surveillance.

Support for in-water measures

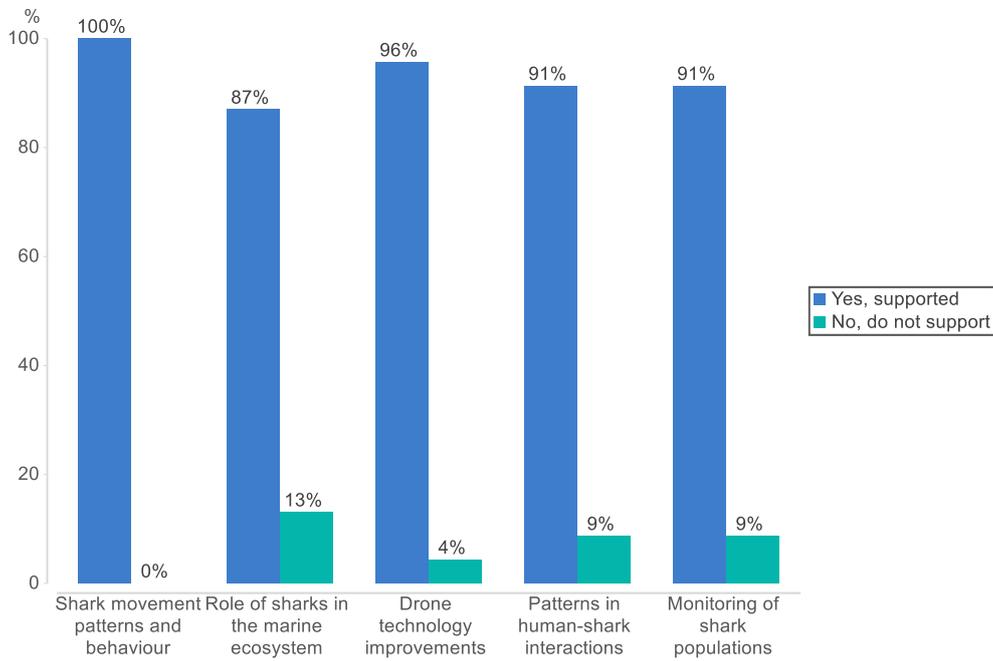
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and strong support for Personal shark deterrents. A majority did not support SMART drumlines and a very large majority did not support Shark mesh nets.

Support for research

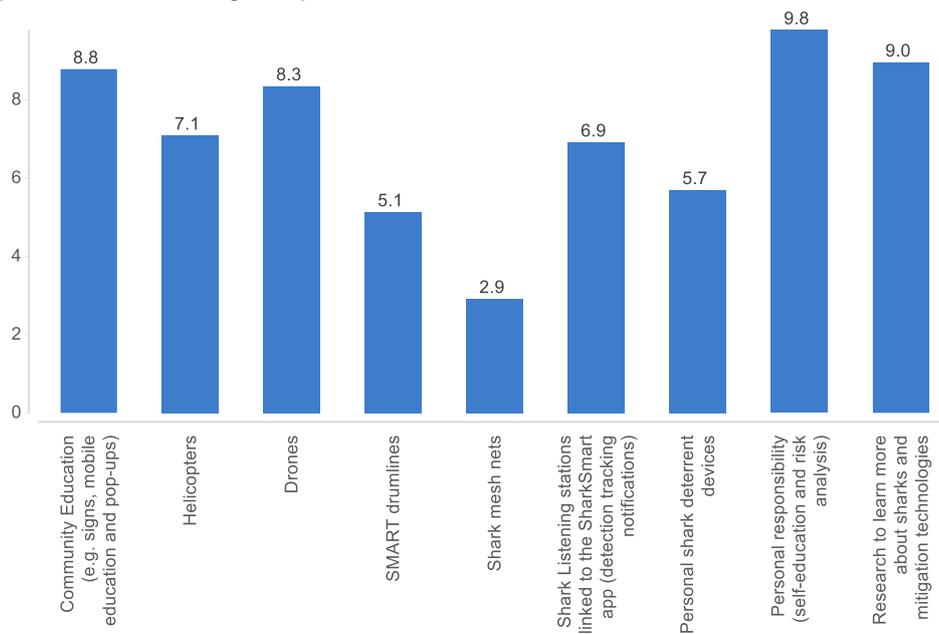
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was unanimous or high support for Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



There was extremely high support for Personal responsibility and high support for Research and Community Education. The least preferred measure was Shark mesh nets.

8.9 Kempsey Shire

8.9.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	SharkSmart App (using alerts from shark listening stations)	Community education forums (e.g. information nights at surf clubs, Community meetings)
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Monitoring of shark populations	Drone technology improvements
		Patterns in human-shark interactions
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	6
	Helicopters	7
	Drones	8
	SMART drumlines	4
	Shark mesh nets	5
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	4
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	6
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	N/A	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

8.9.2 Other organisation responses Kempsey

South West Rocks Figtree Descendants Aboriginal Corporation

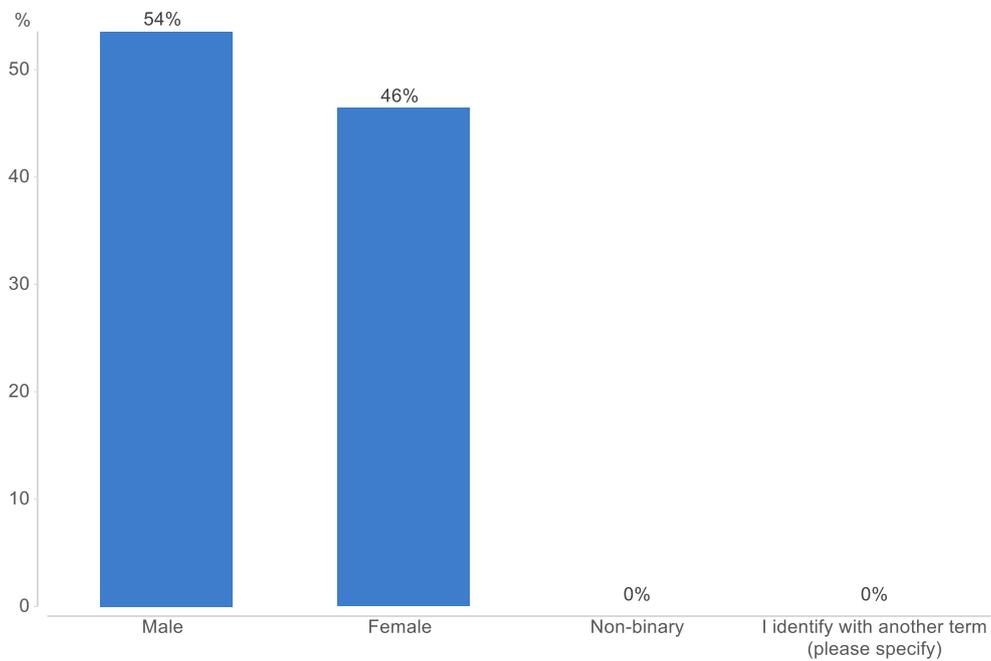
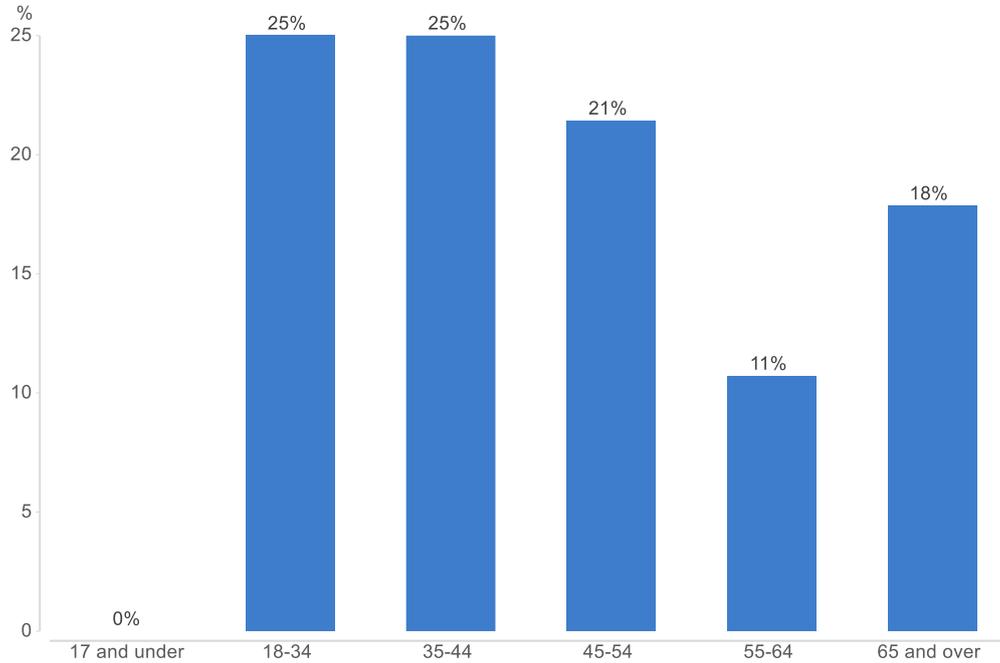
Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	5
	Drones	6
	SMART drumlines	7
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	4
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Education is important, but we don't see the need for nets unless they are monitored regularly	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	More discussions need to be had with Aboriginal communities living in coastal areas.	
How satisfied with the information provided in this survey?	Moderately satisfied	

8.9.3 Survey responses from individuals

Sample

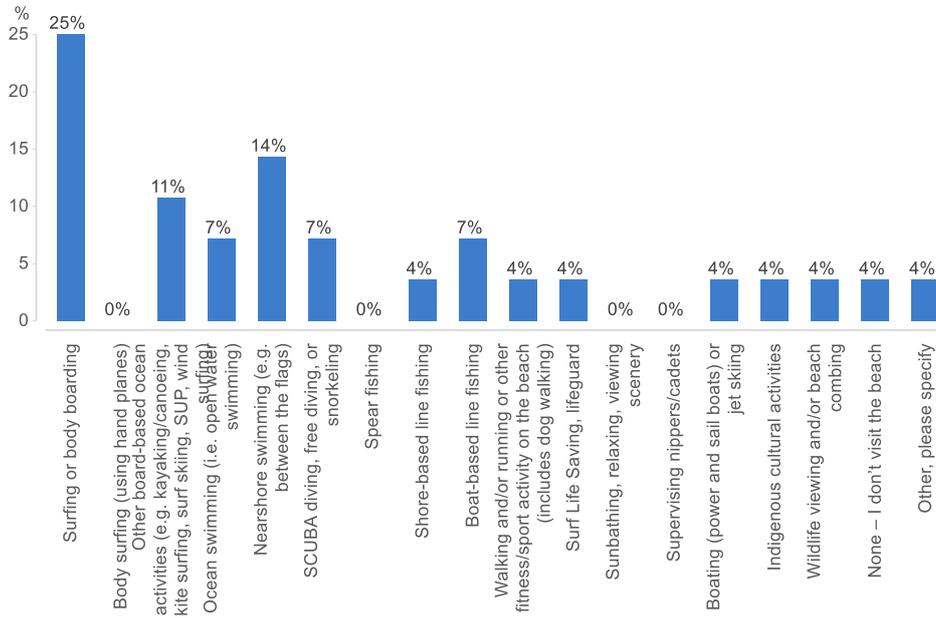
There were 28 individual responses, as follows.



There was a spread of people aged 18 and over, and more males than females.

Main beach activity of respondents

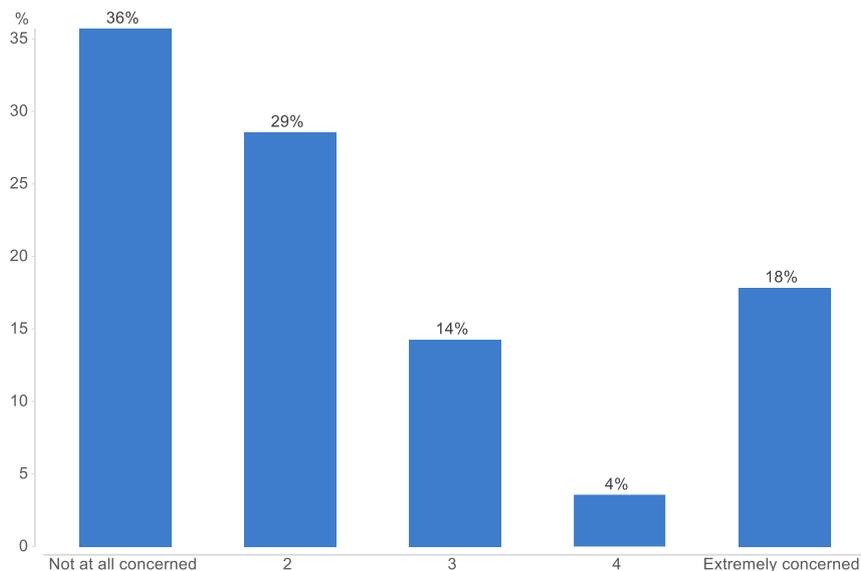
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (25%), nearshore swimming (14%) and other board-based activities (11%).

Concern about encountering sharks

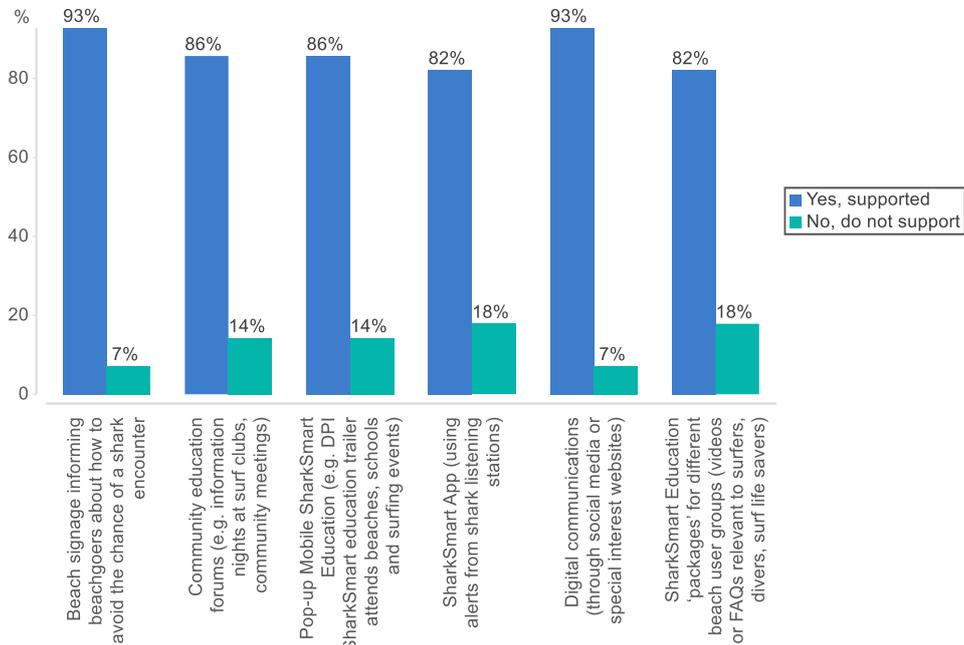
How personally concerned are you about encountering a shark while at a beach in NSW?



Most expressed little of no concern at all about encountering a shark at the beach. One fifth of the sample expressed extreme concern.

Support for Community education and shark-alert measures

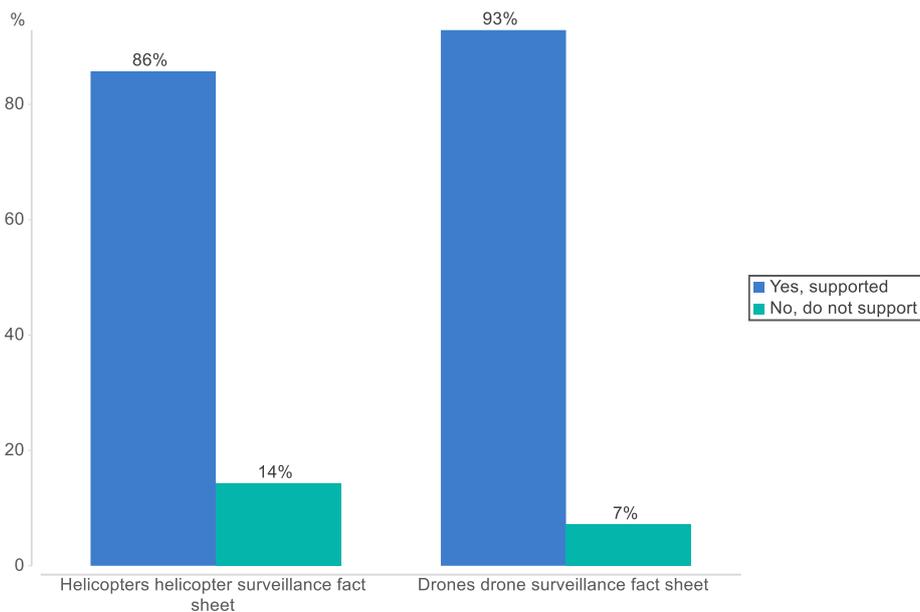
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong or high support for all Community education and Shark-alert measures.

Support for aerial surveillance

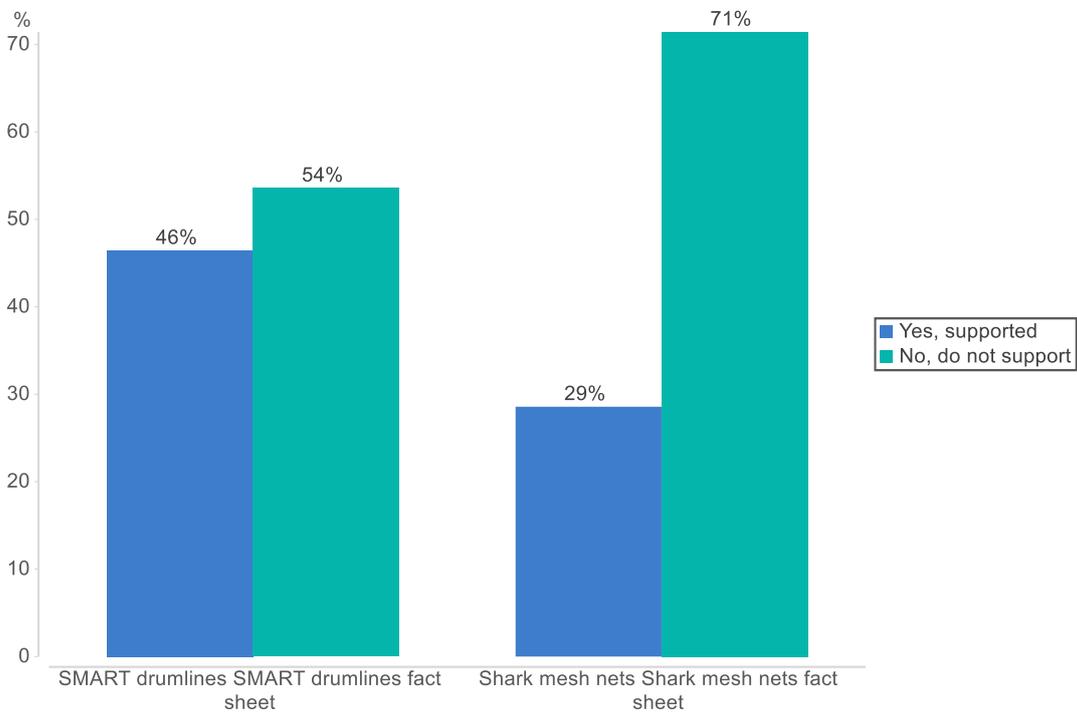
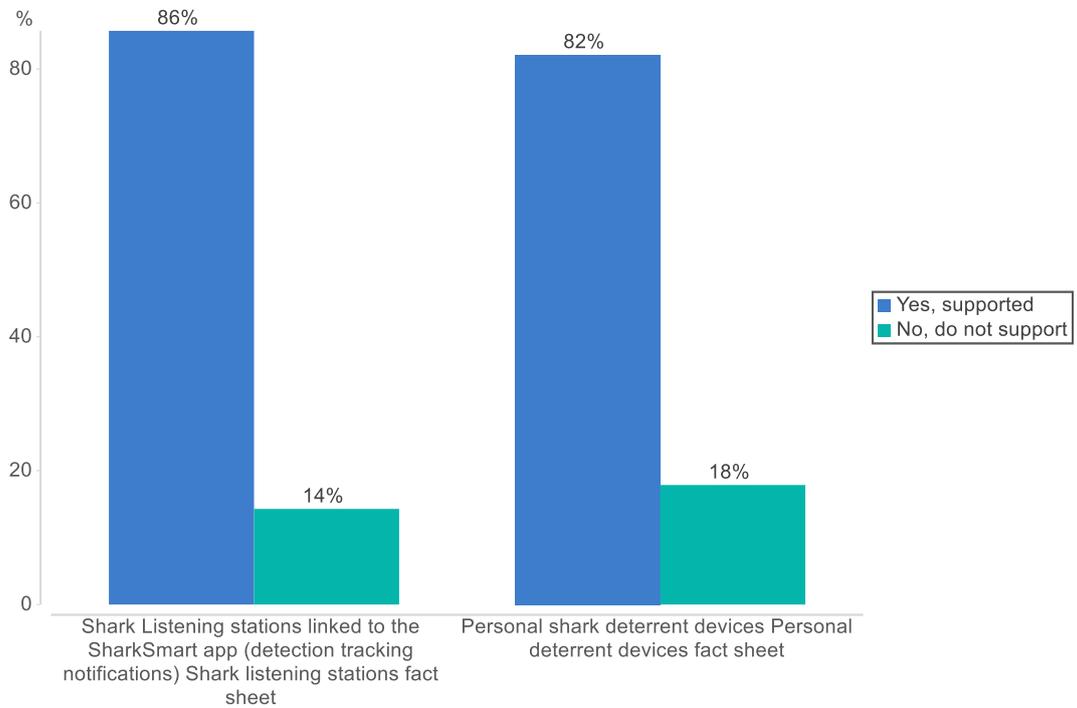
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and Drone surveillance.

Support for in-water measures

The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?

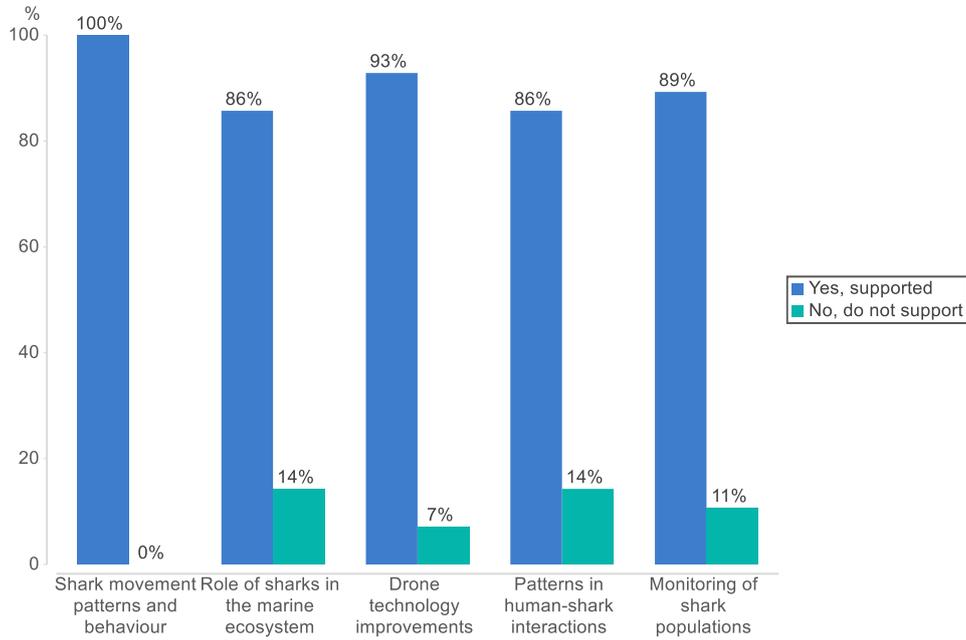


There was high support for Shark listening stations and strong support for Personal shark deterrents.

A majority were opposed to SMART drumlines and there was a large majority opposed to Shark mesh nets.

Support for research

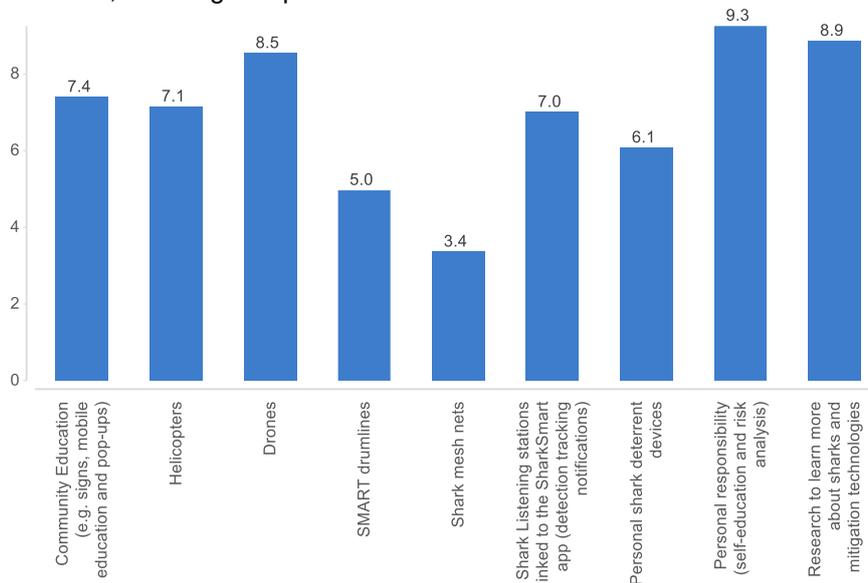
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all options to research into increasing protection of beachgoers.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



The most preferred mitigation measure was personal responsibility, followed by Research to learn more about sharks and mitigation technologies and Drones.

The least preferred measures were SMART drumlines and Shark mesh nets.

8.10 Port Macquarie-Hastings Shire

8.10.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	8
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>In general, we believe the shark nets are not appropriate for our area, nor do we believe the public would be supportive of any netting due to the harm to marine life.</p> <p>We are fully supportive on the use of drones as they are cost effective and feedback to lifeguards also shows the public feel safer in the water when a drone is undertaking regular flights.</p> <p>The helicopter has proved very valuable over the years, and although an expensive operation, the helicopter covers the whole coastline and surfers and swimmers seem to acknowledge and obey the evacuation sirens they sound when a shark is close by. The ability for swimmers and surfers to utilise the SharkSmart app is also great. Whether people choose to receive the alerts for sharks in the area or not, it is great that any person has the option to use the app to keep informed or not. The alerts also assist our lifeguards and lifesavers during patrols so they know when to increase or change their type of surveillance whilst there is shark activity.</p> <p>We would support a combination of all of the listed community education and shark alert measures that DPI deliver to communities to raise awareness with beachgoers.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>From this year, we will be providing a year-round lifeguard service at Town Beach, our most highly utilised beach in our region by both locals and tourists. With this in mind we believe that shark surveillance would be helpful all year round, especially as June through to November we seem to have a lot more shark reports, activity and bites in the area, and as such we would support year-round shark mitigation strategies being deployed by DPI.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

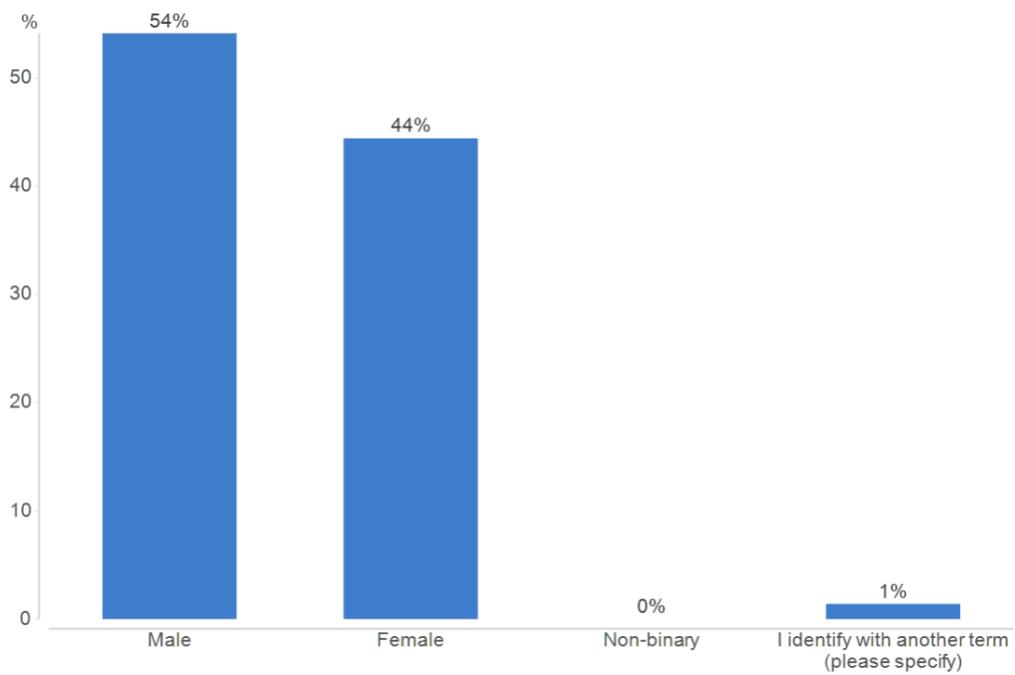
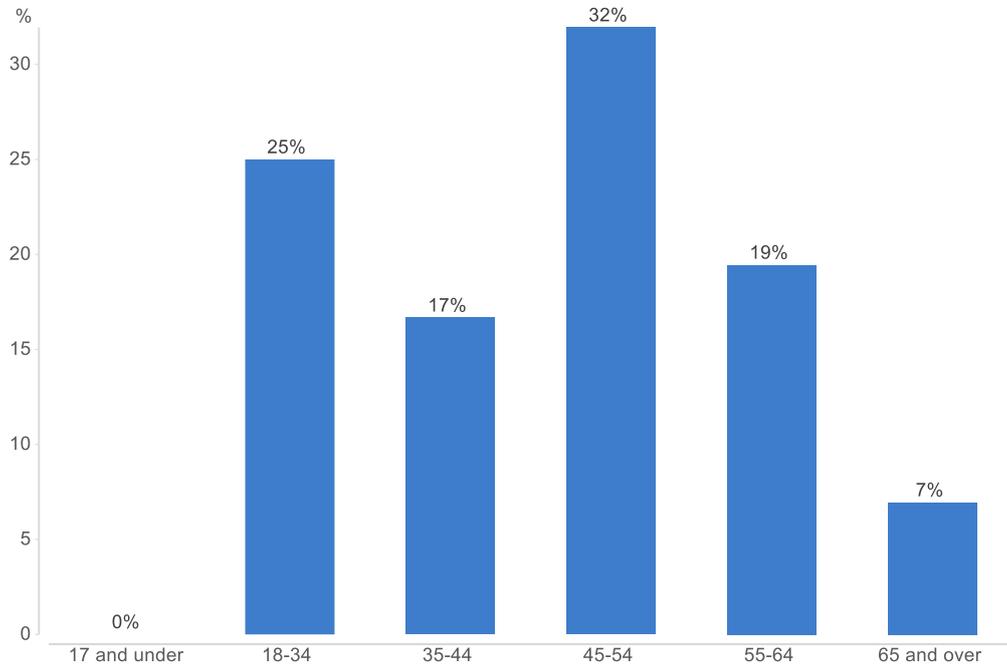
8.10.2 Other organisation responses Port Macquarie-Hastings

No submissions received.

8.10.3 Survey responses from individuals

Sample

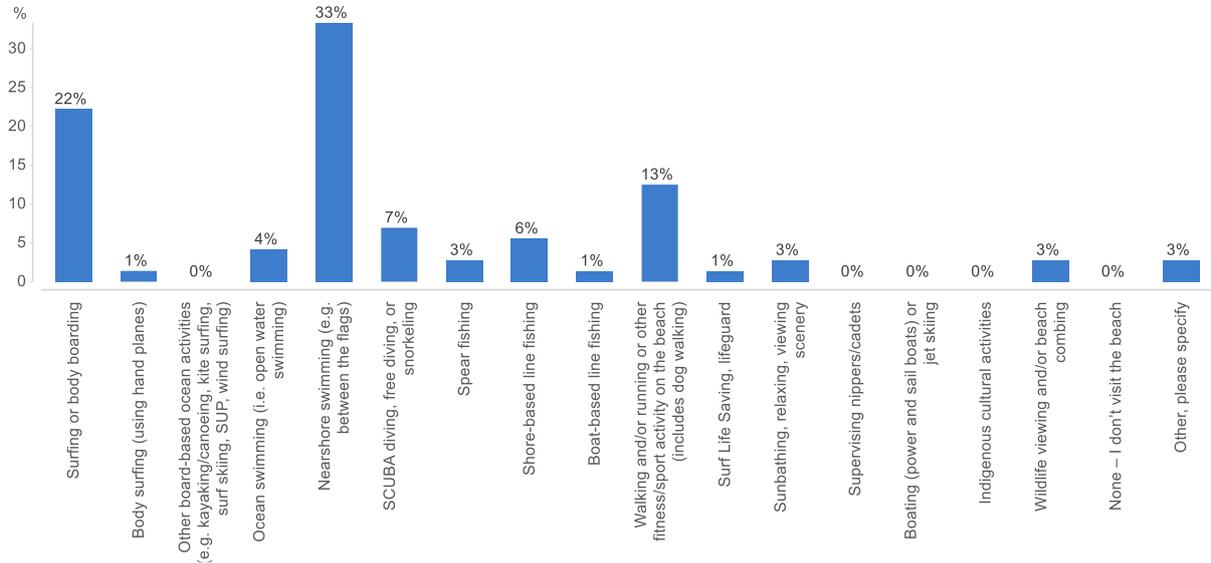
There were 72 individual responses, as follows.



There was a spread of people aged 18 and over, and more males than females.

Main beach activity of respondents

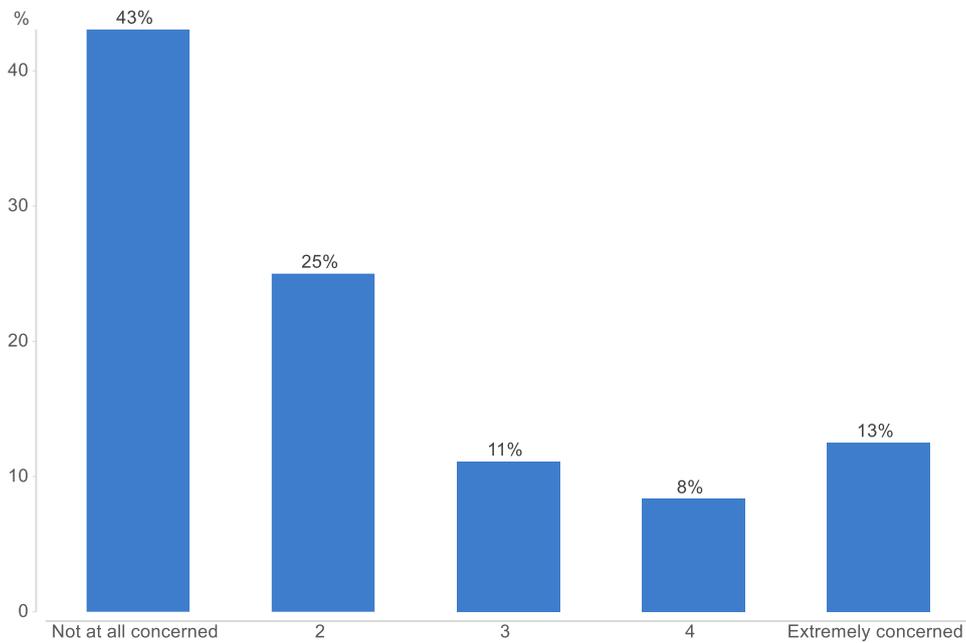
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were Nearshore swimming (33%), Surfing of bodyboarding (22%) and Walking/Running by the beach (13%).

Concern about encountering sharks

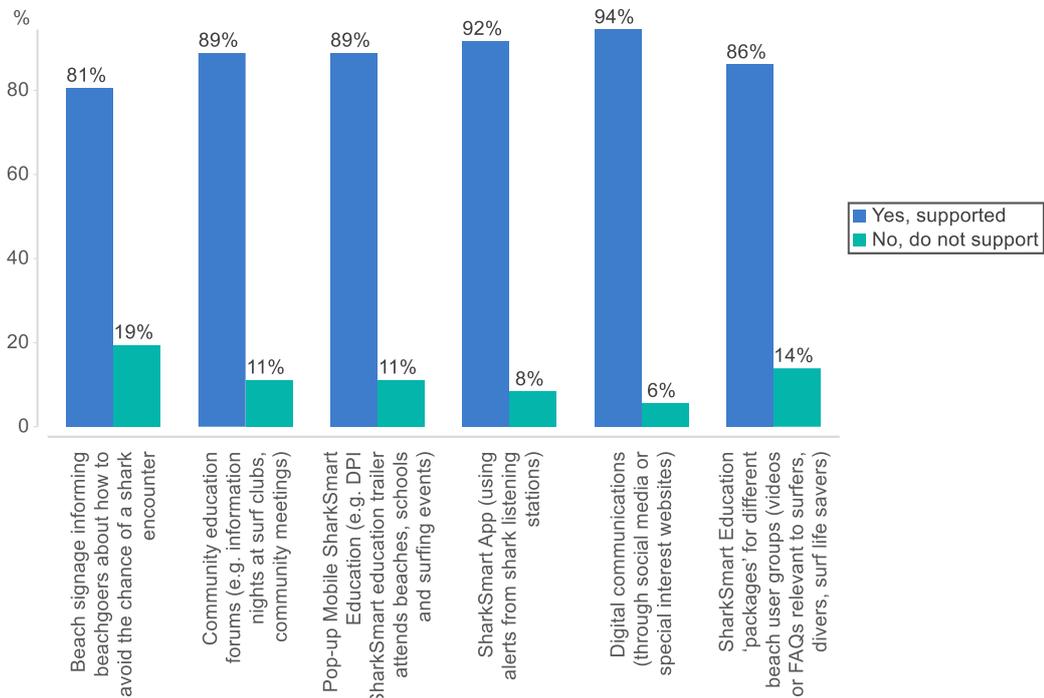
How personally concerned are you about encountering a shark while at a beach in NSW?



Most were either less concerned or not at all concerned, however 21% were either concerned or extremely concerned.

Support for Community education and shark-alert measures

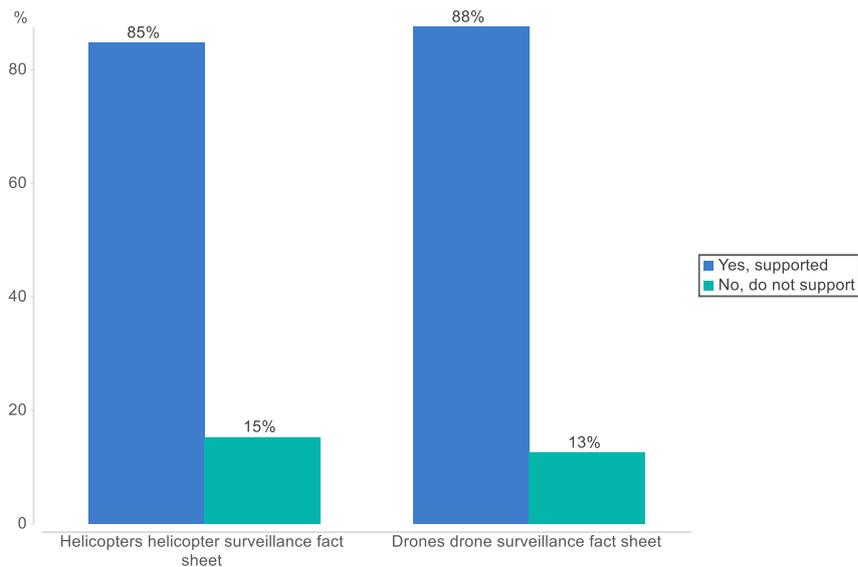
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high or strong support for all Community education and shark alert measures.

Support for aerial surveillance

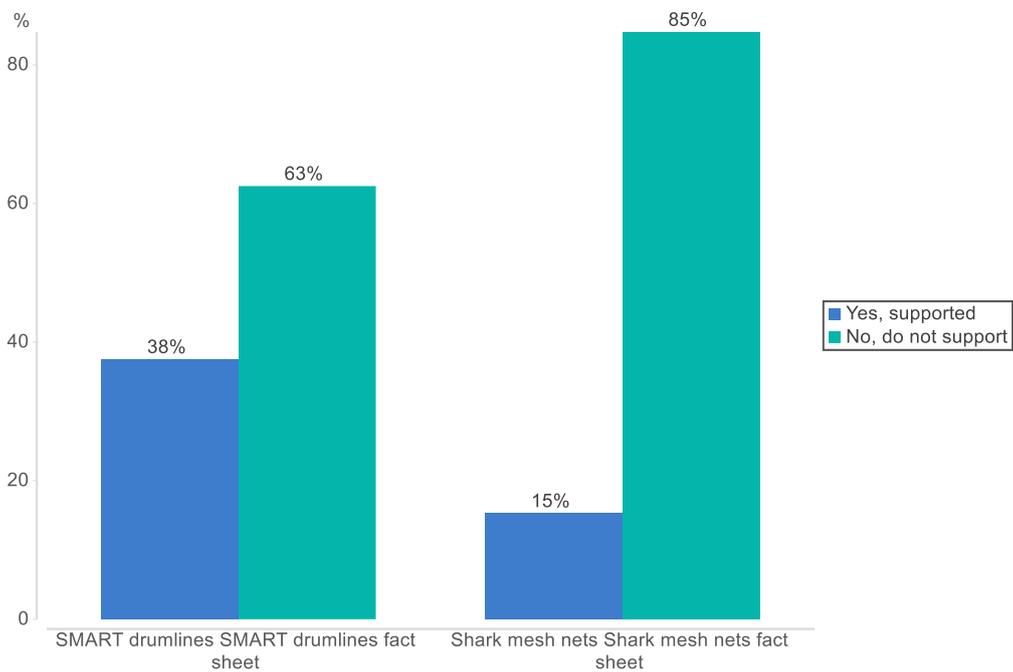
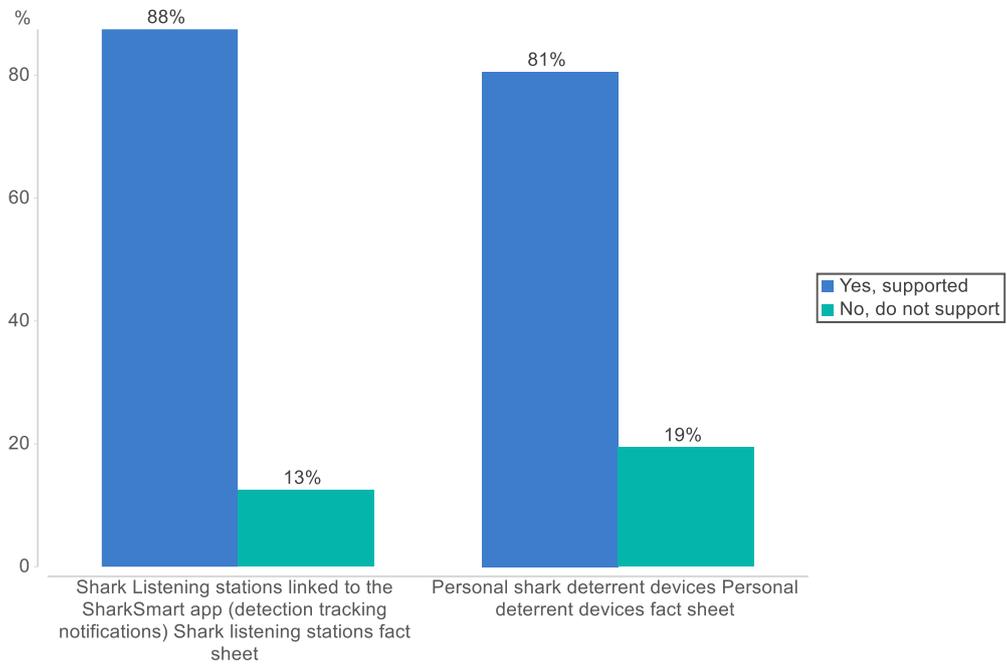
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopter and Drone surveillance.

Support for in-water measures

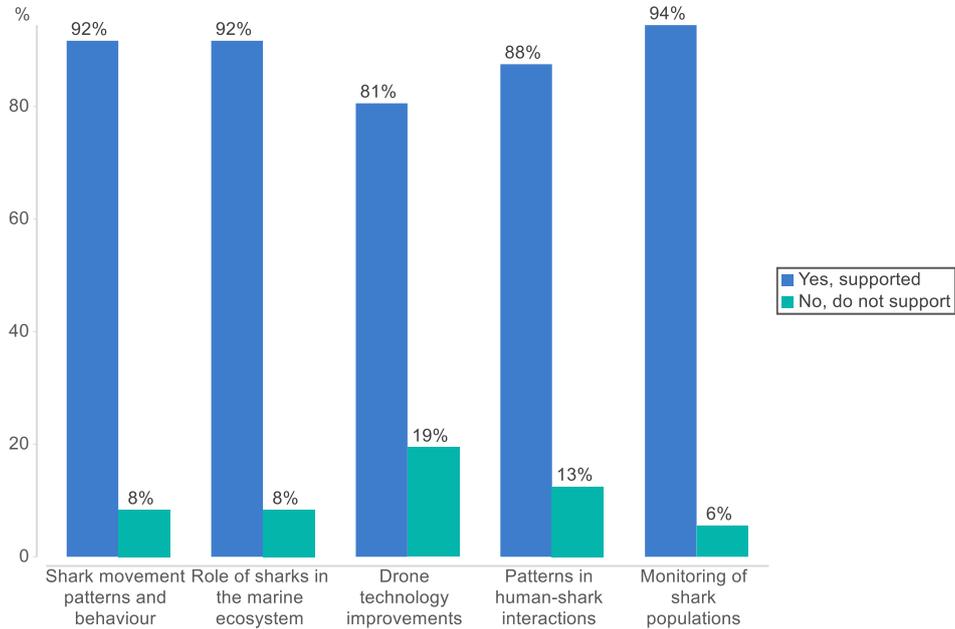
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for listening stations, and strong support for Personal shark deterrents. SMART drumlines were not supported by the majority Shark mesh nets were not supported by a very large majority (85%).

Support for research

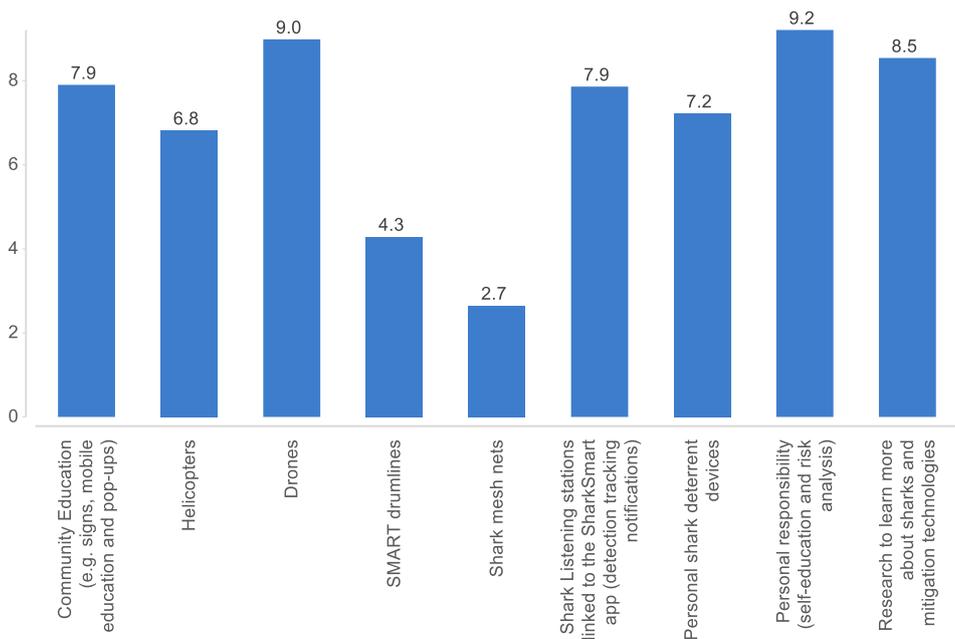
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high or strong support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



Personal responsibility was most preferred followed by Drones and Research. The least preferred measures were SMART drumlines and Shark mesh nets.

8.11 Mid Coast

8.11.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	6
	Drones	8
	SMART drumlines	6
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	6
	Personal shark deterrent devices	8
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Ultimately at the end of the day it is up to the individual to conduct a risk assessment and determine if they wish to swim in the ocean, river or estuary. All other measures are to be delivered within available resources at that time.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

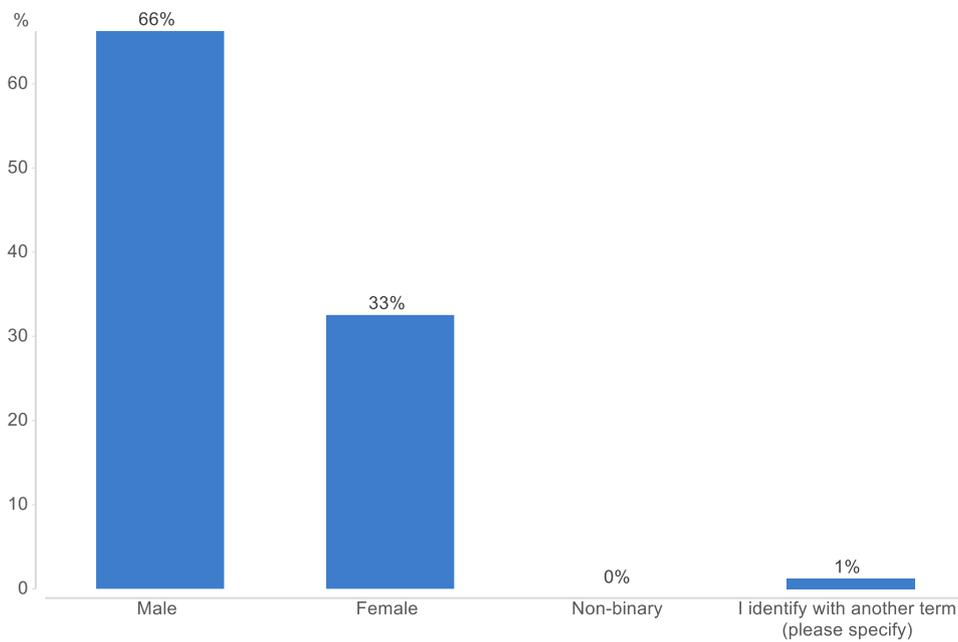
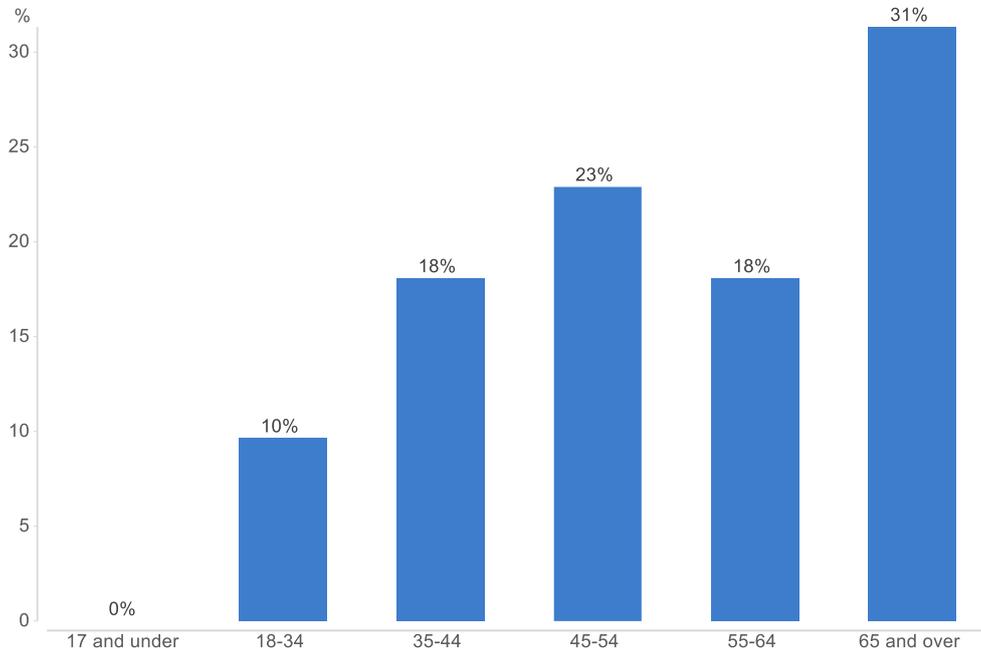
8.11.2 Other organisation responses Mid Coast

No submissions received.

8.11.3 Survey responses from individuals

Sample

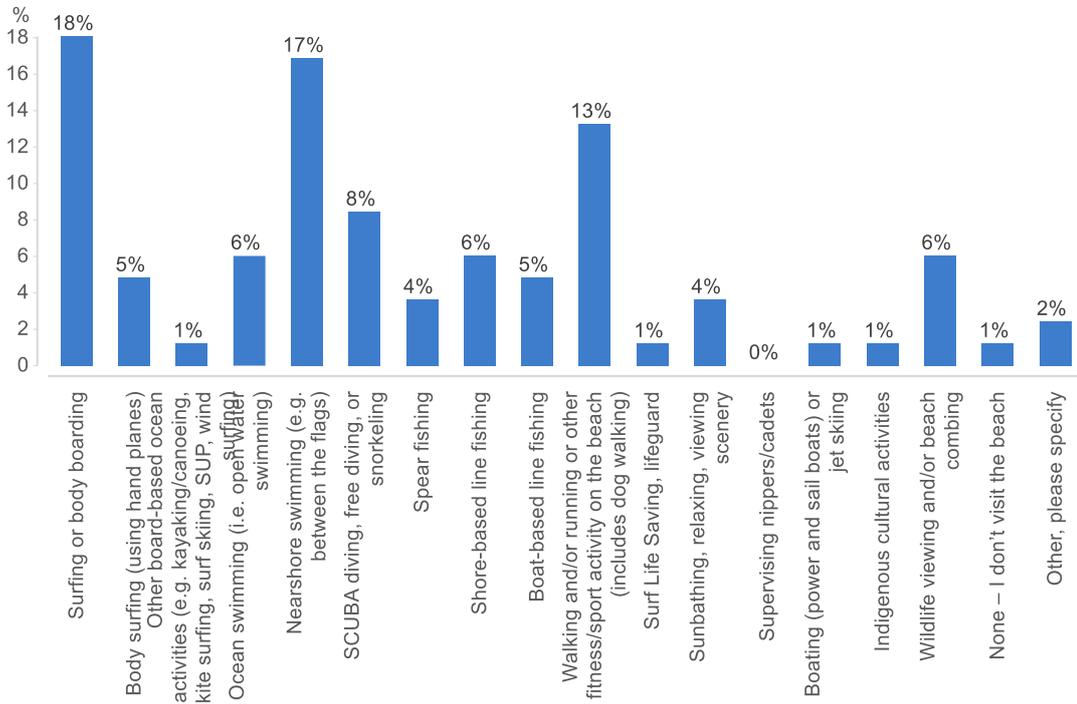
There were 83 individual responses, as follows.



There was a spread of age groups, a large majority were aged over 35. The majority (66%) were male.

Main beach activity of respondents

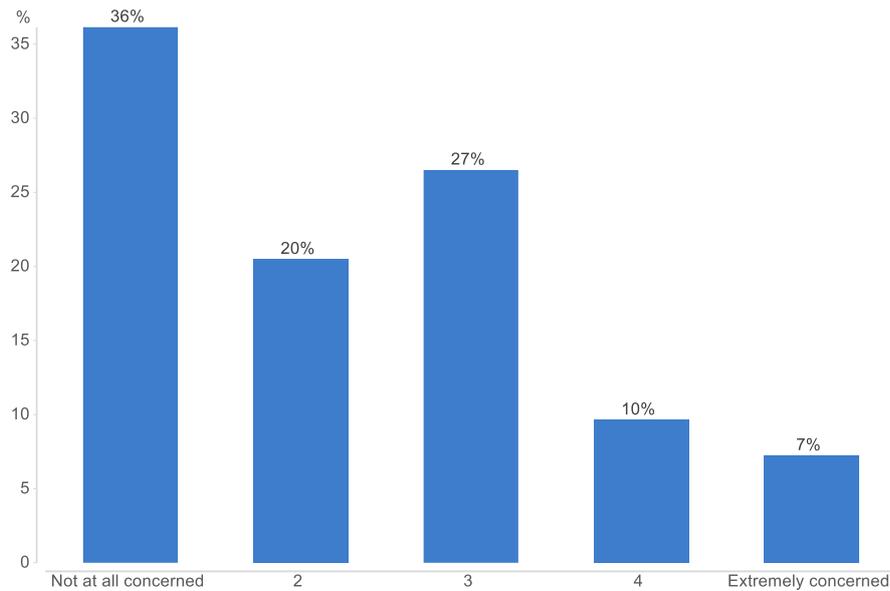
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (18%), nearshore swimming (17%) and walking/running by the beach (13%).

Concern about encountering sharks

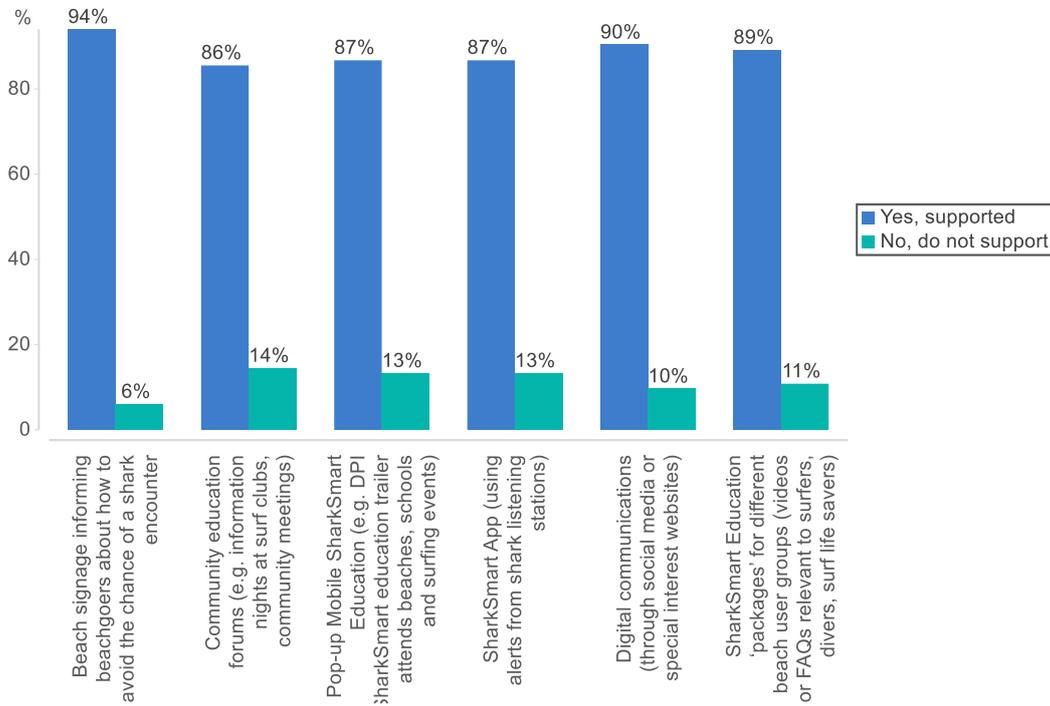
How personally concerned are you about encountering a shark while at a beach in NSW?



Most were either less concerned or not concerned at all. A small proportion were concerned or extremely concerned.

Support for Community education and shark-alert measures

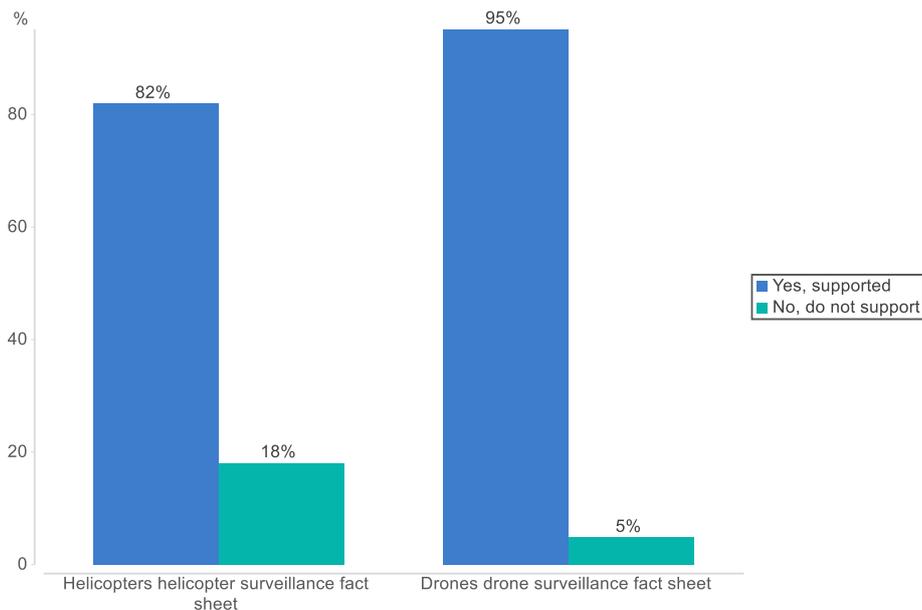
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all education and shark-alert measures.

Support for aerial surveillance

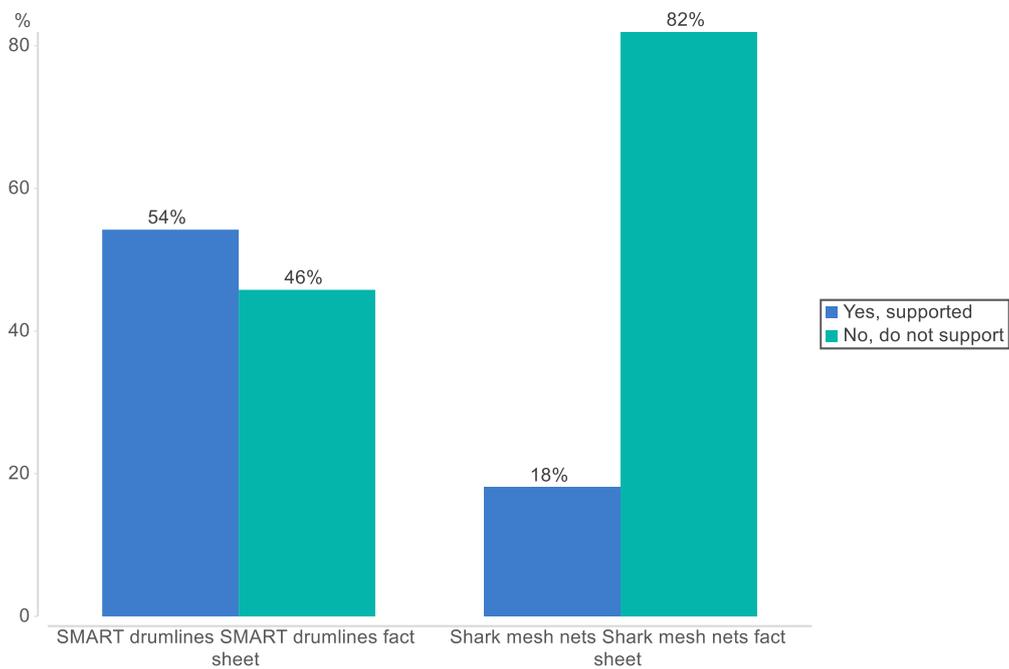
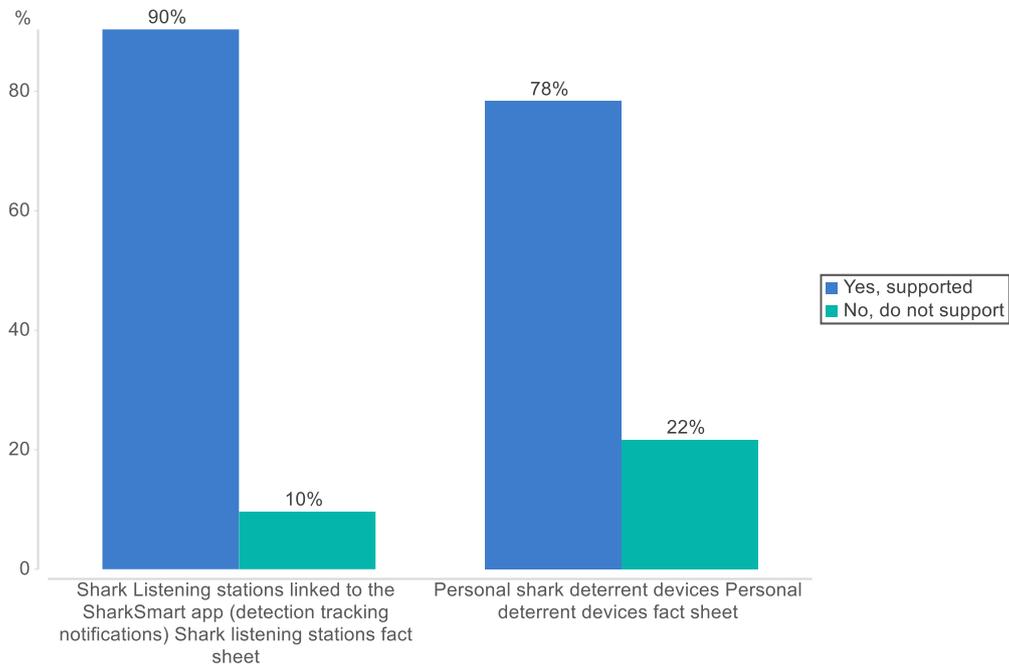
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and high support for Drones.

Support for in-water measures

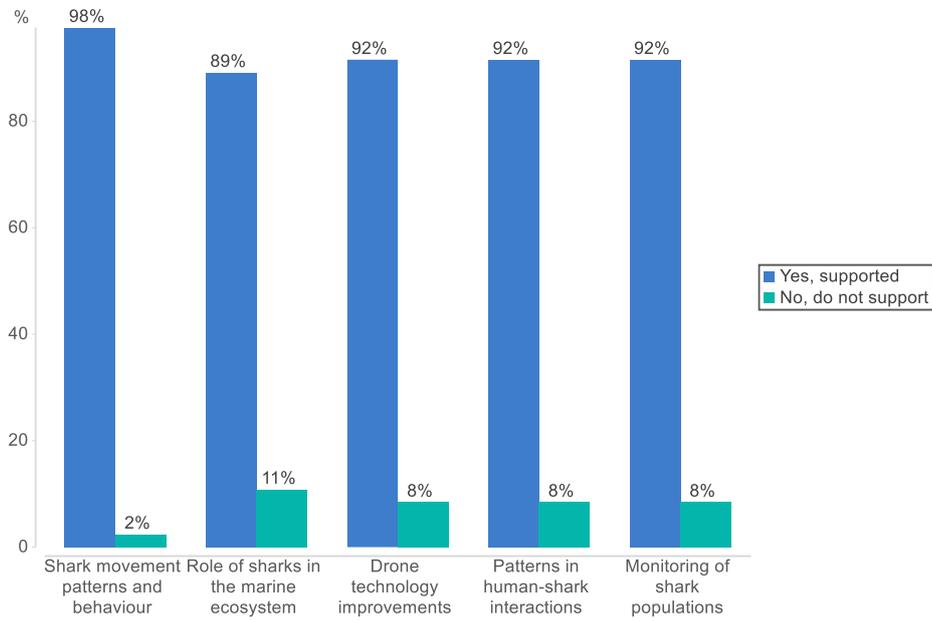
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and strong support for Personal shark deterrents. The Community were quite divided on support for SMART drumlines and a large majority were did not support Shark mesh nets.

Support for research

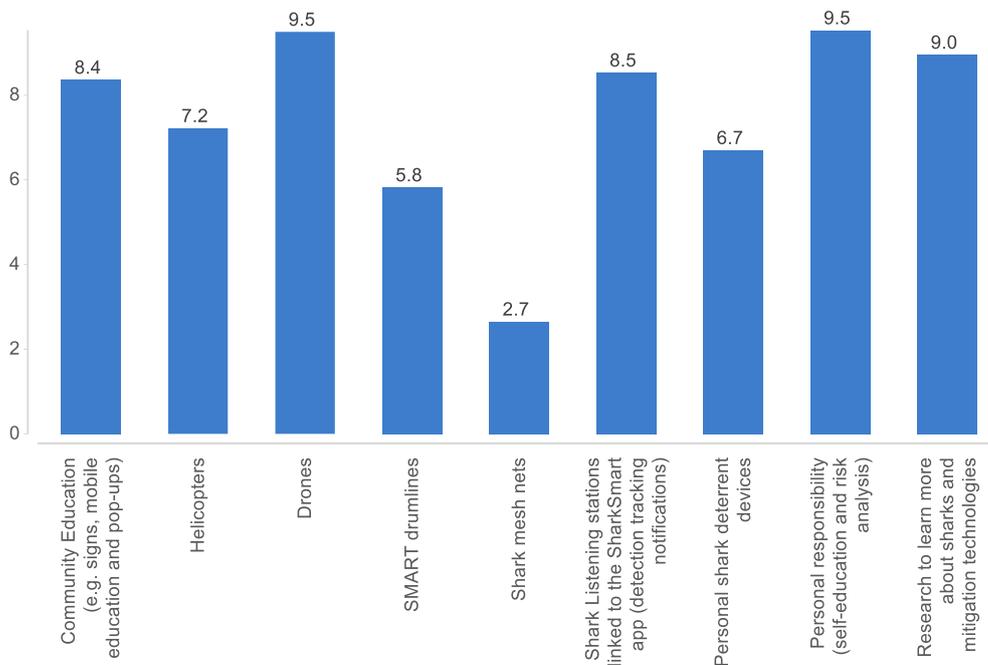
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all the Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The highest preferences were Drones and personal responsibility. The least preferred measure was Shark mesh nets.

8.12 Port Stephens

8.12.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	5
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	5
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	7
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Port Stephens Councils preference is to support non lethal shark management strategies and we currently don't have any of the lethal measures i.e. drumlines or shark nets located in Port Stephens. This view is supported by the Port Stephens Community. Council would prefer to promote tourist and community education around shark and swimmer safety.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		

How satisfied with the information provided in this survey?	Extremely satisfied
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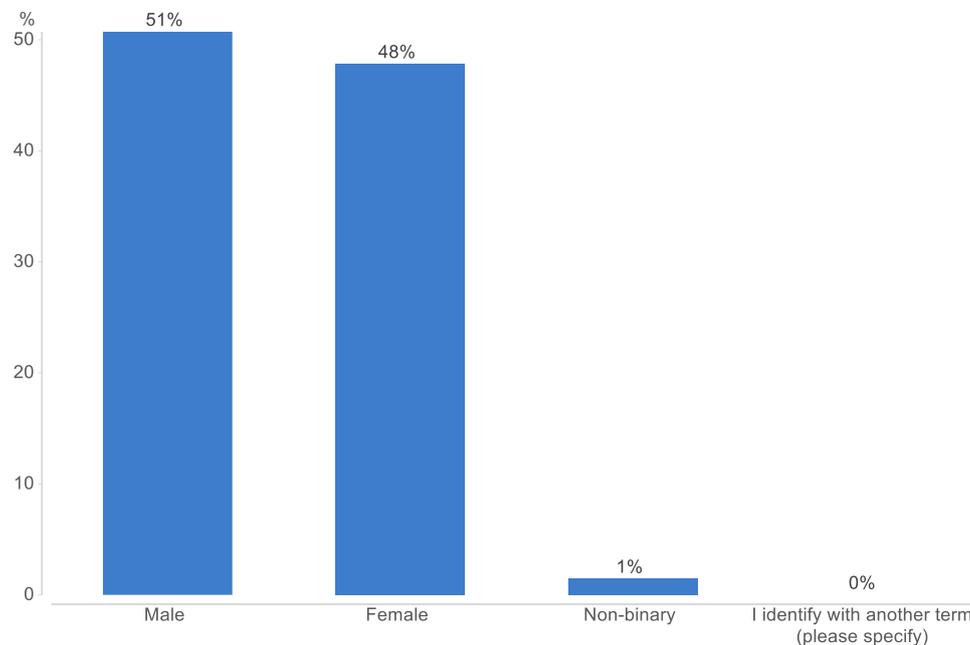
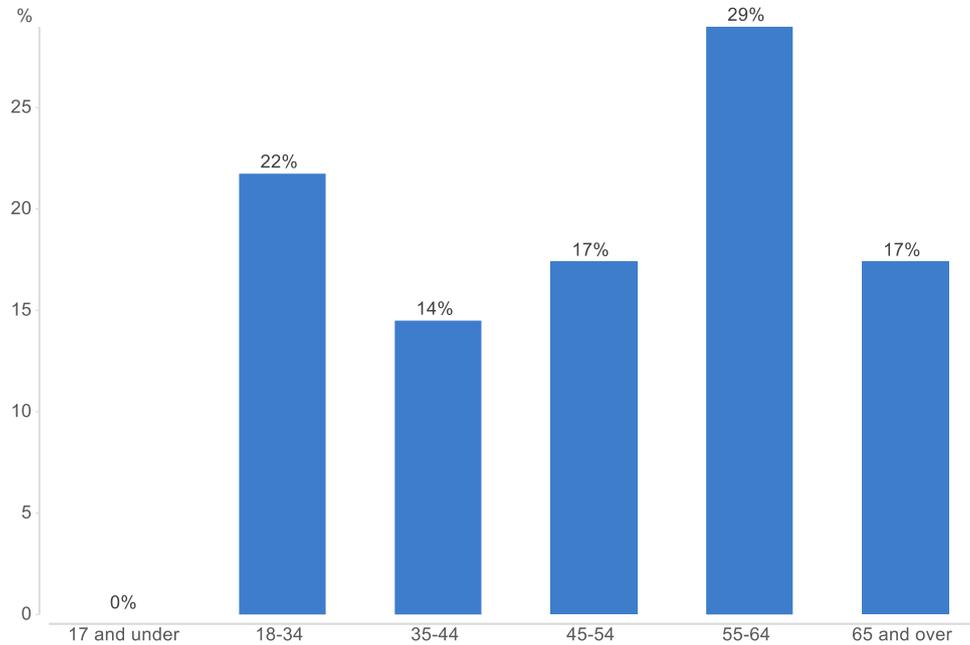
8.12.2 Other organisation responses Port Stephens

No submissions received.

8.12.3 Survey responses from individuals

Sample

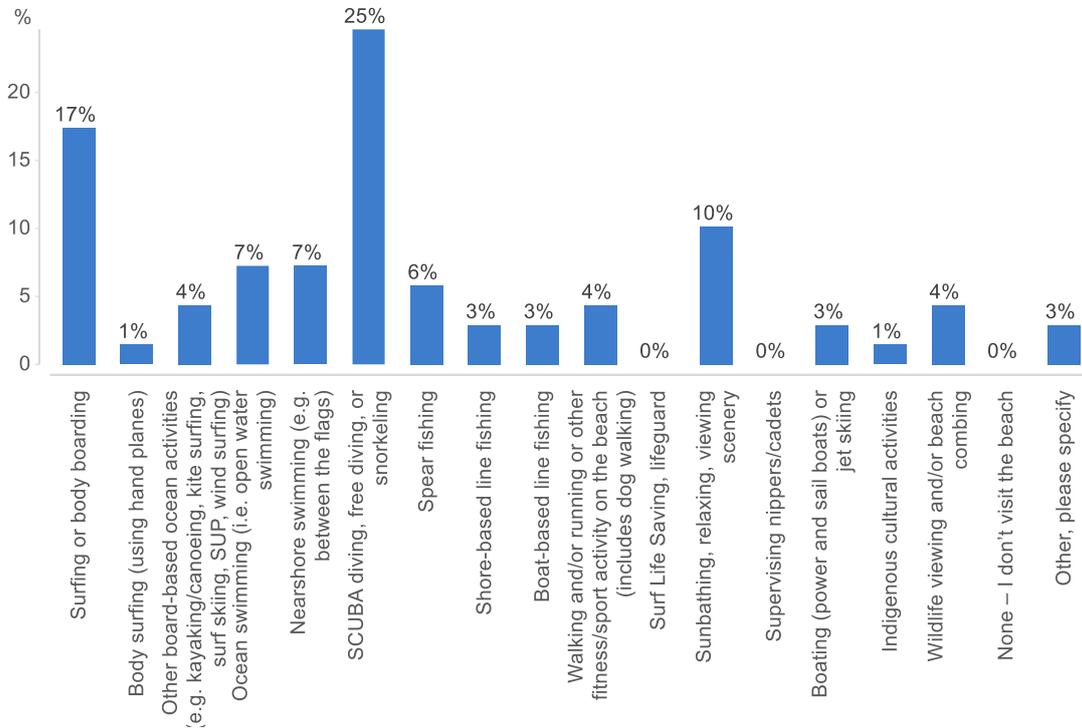
There were 69 individual responses, as follows.



There was an almost even spread of ages above 18 and males and females were almost evenly divided.

Main beach activity of respondents

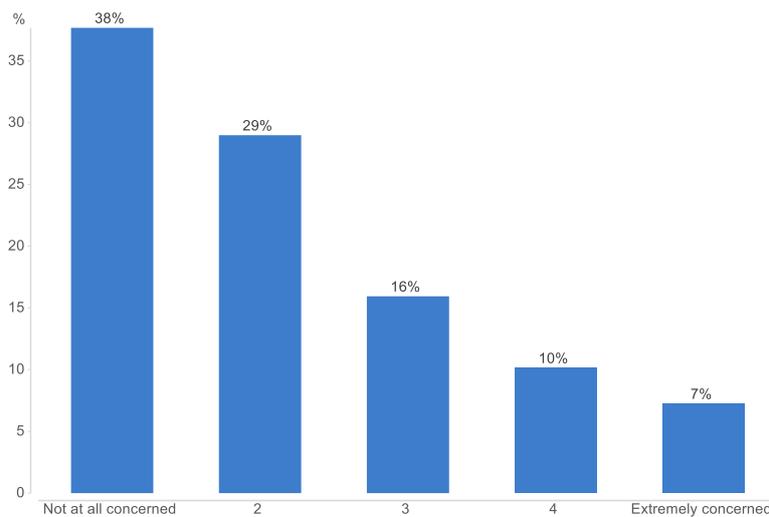
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were Diving/snorkelling (25%), Surfing and bodyboarding (17%) and Sunbathing/relaxing (10%).

Concern about encountering sharks

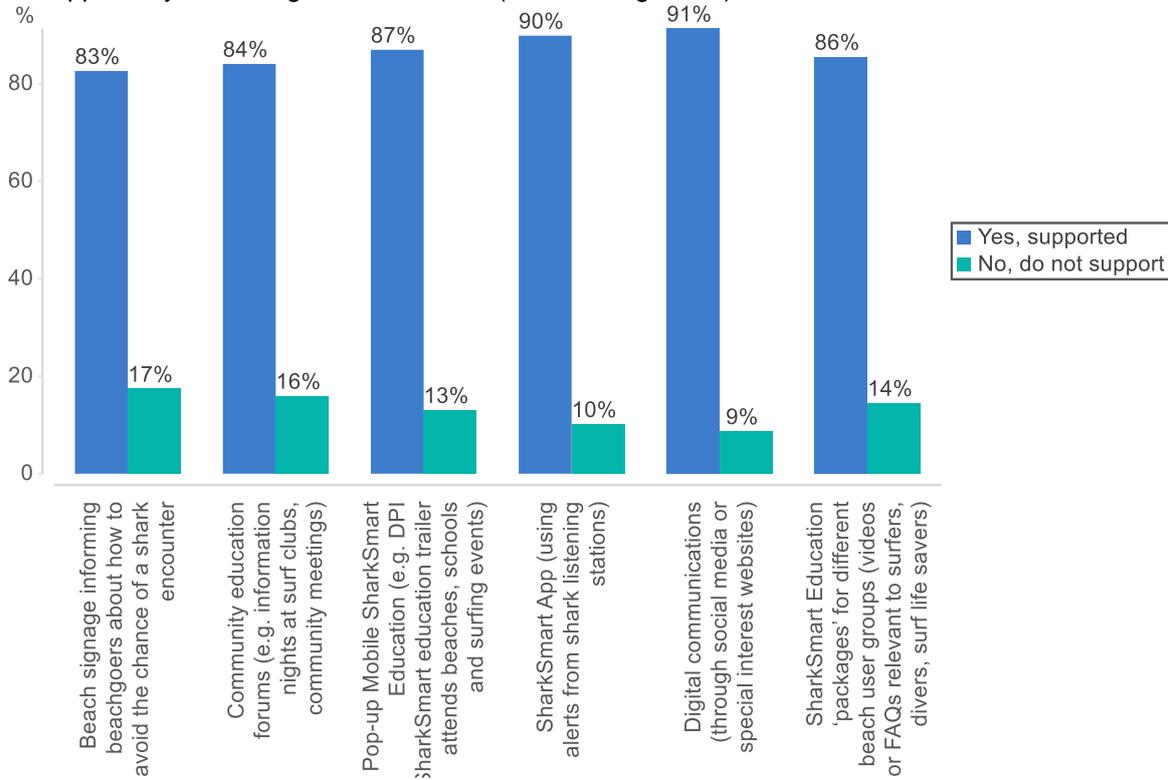
How personally concerned are you about encountering a shark while at a beach in NSW?



Most were either a little concerned or not concerned at all. A small proportion were concerned or extremely concerned.

Support for Community education and shark-alert measures

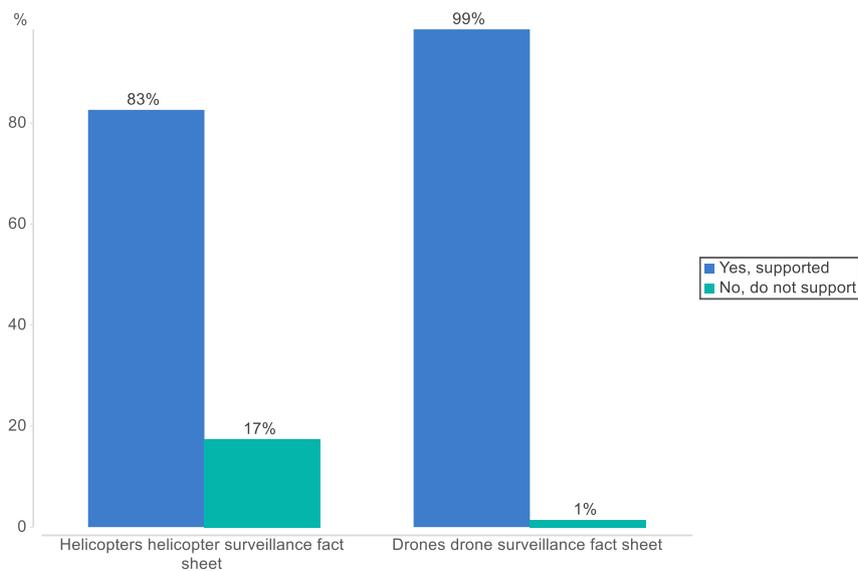
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high or strong support for all Community education and shark-alert measures.

Support for aerial surveillance

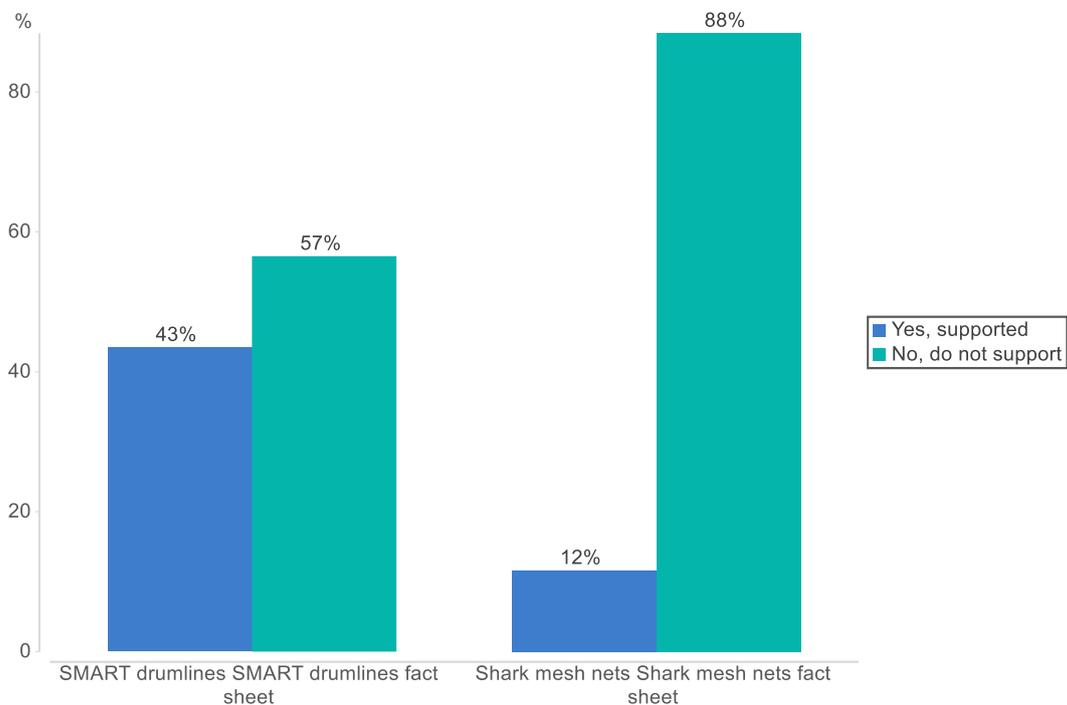
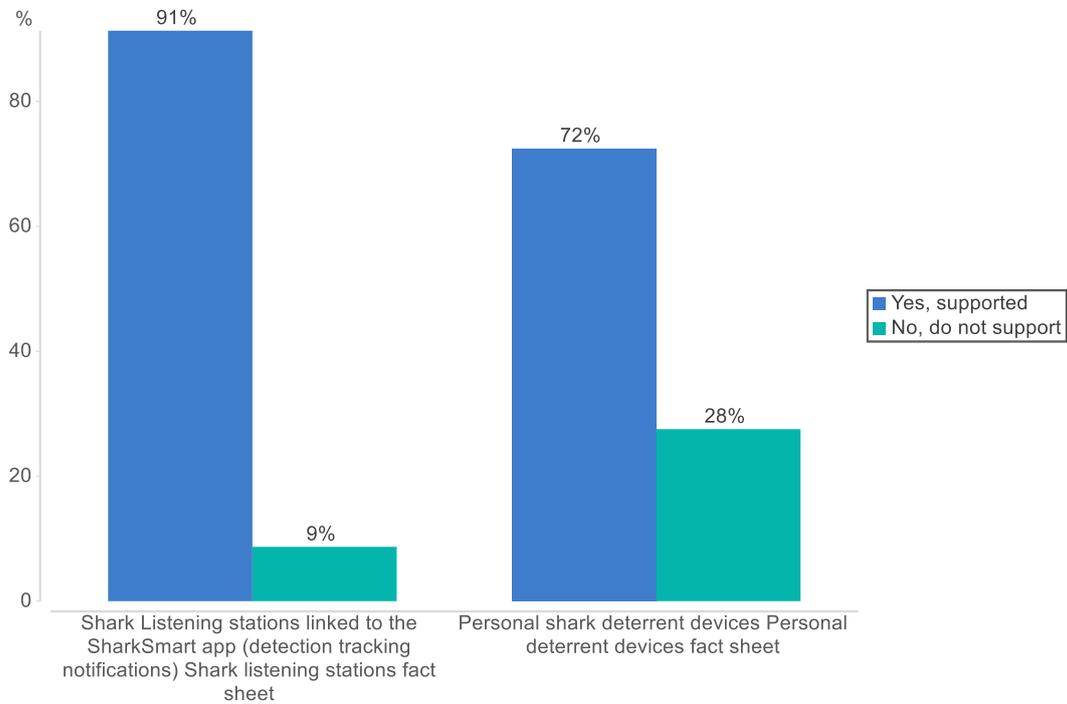
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and high support for Drone surveillance.

Support for in-water measures

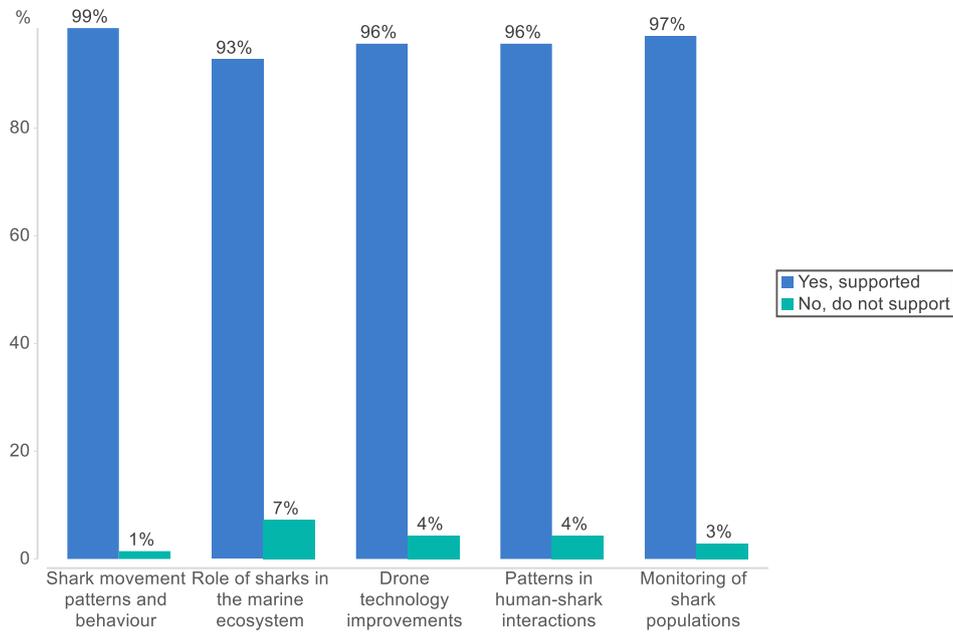
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and majority support for Personal shark deterrents. A small majority opposed SMART drumlines and a large majority did not support mesh nets.

Support for research

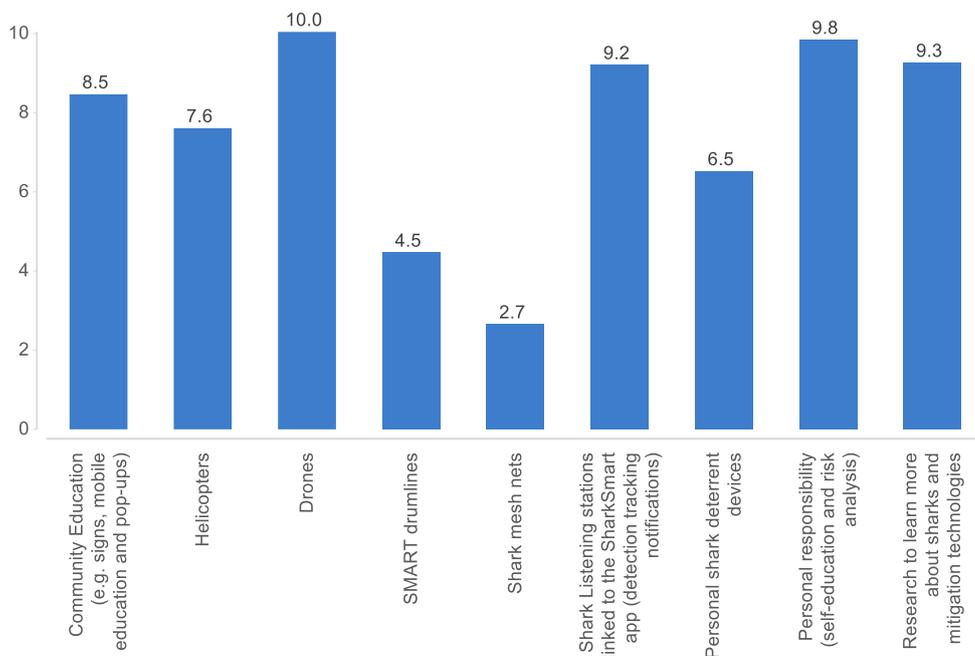
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The highest preference was for Drones, followed by Personal responsibility, Research and Listening stations. The least preferred measure was Shark mesh nets.

8.13 City of Newcastle

8.13.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	5
	Drones	10
	SMART drumlines	5
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	8
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Shark Nets are no longer suitable as a shark bite risk mitigation measure due to their inability to protect ocean-users, the impact on marine wildlife and their resultant unpopularity. Alternative measures can actually reduce the risk via detection (drone surveillance) and deterrence (personal shark deterrents, SMART drumlines, etc.) without the cost to marine wildlife.	

<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>City of Newcastle (CN) acknowledges the aim of the NSW State Government's Shark Management Strategy to increase protection for beachgoers from shark interactions while minimising harm to sharks and other marine animals and notes that shark mitigation is the responsibility of the NSW State Government. CN supports a modernisation of shark bite risk mitigation including the removal of shark nets in favour of increased drone surveillance, SMART drumlines, and trials of additional non-lethal measures.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

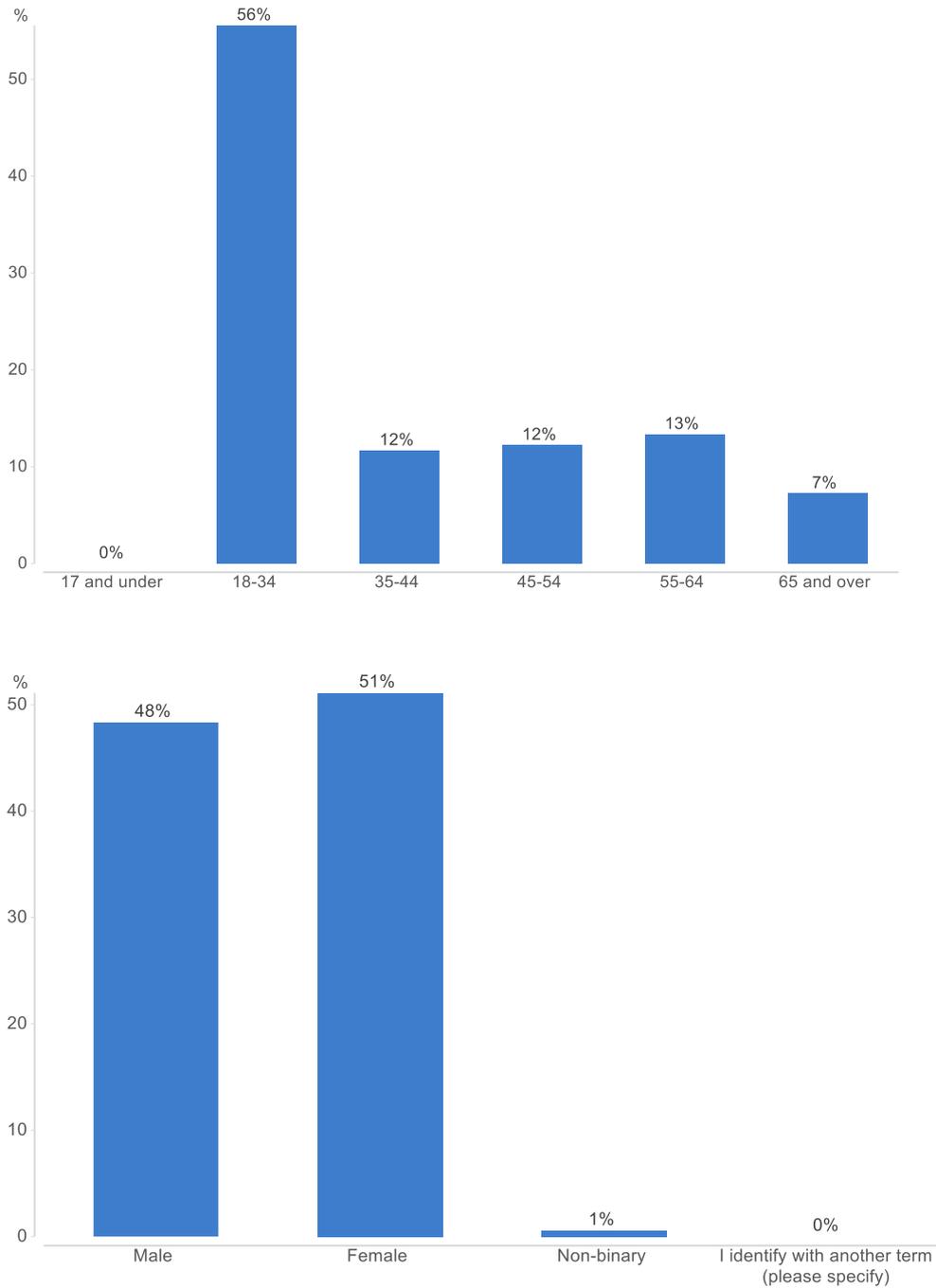
8.13.2 Other organisation responses Newcastle

No submissions received.

8.13.3 Survey responses from individuals

Sample

There were 180 individual responses, as follows.

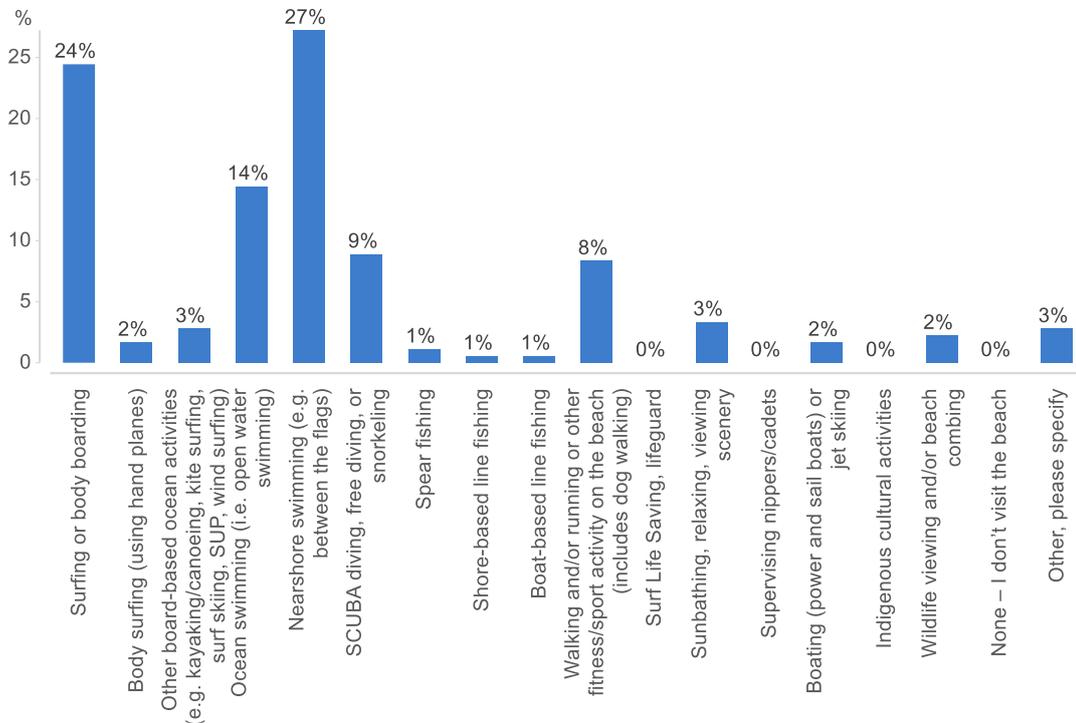


Half of the sample were aged 18-34. Otherwise there was a spread of ages 35 and over, and gender was almost equally split between males and females.

Main beach activity of respondents

What is the main activity you do at beaches in your local area?

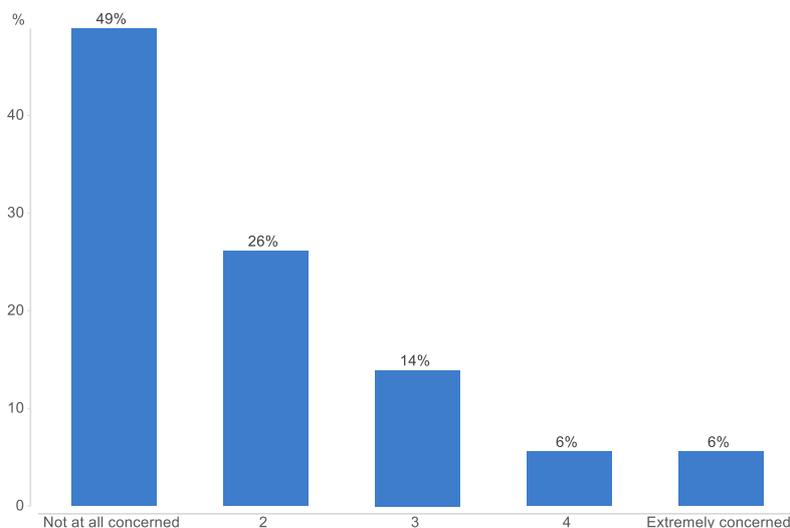
Please pick only one – that you do the most.



Respondents' main beach activities were nearshore swimming (27%), surfing or bodyboarding (24%) and ocean swimming (14%).

Concern about encountering sharks

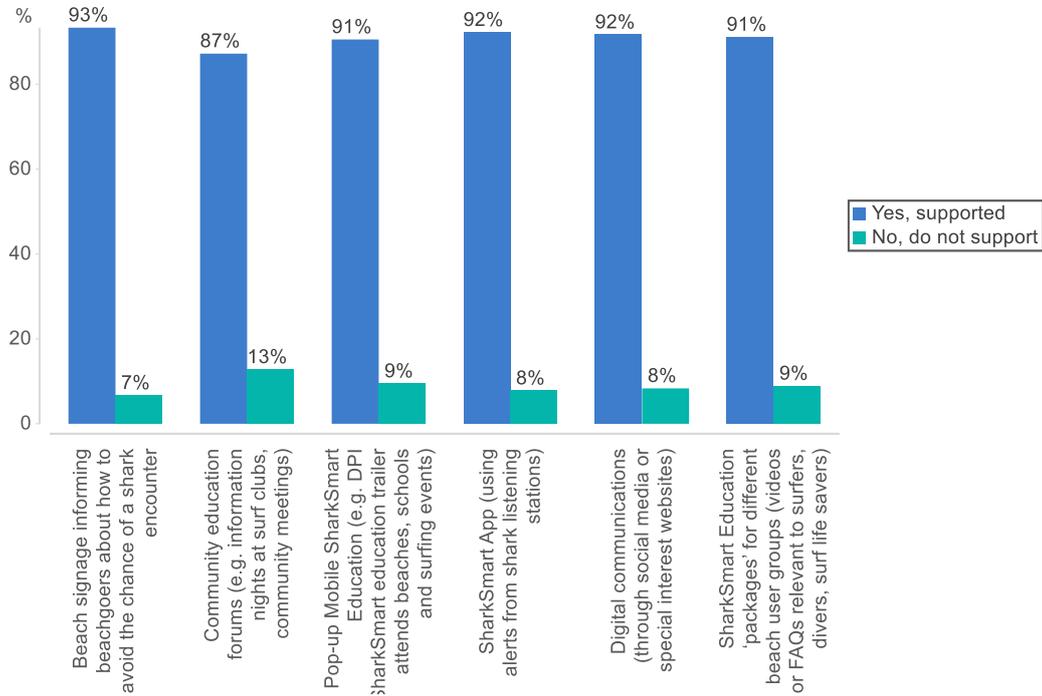
How personally concerned are you about encountering a shark while at a beach in NSW?



Most expressed little concern or were not concerned at all about encountering a shark at a beach.

Support for Community education and shark-alert measures

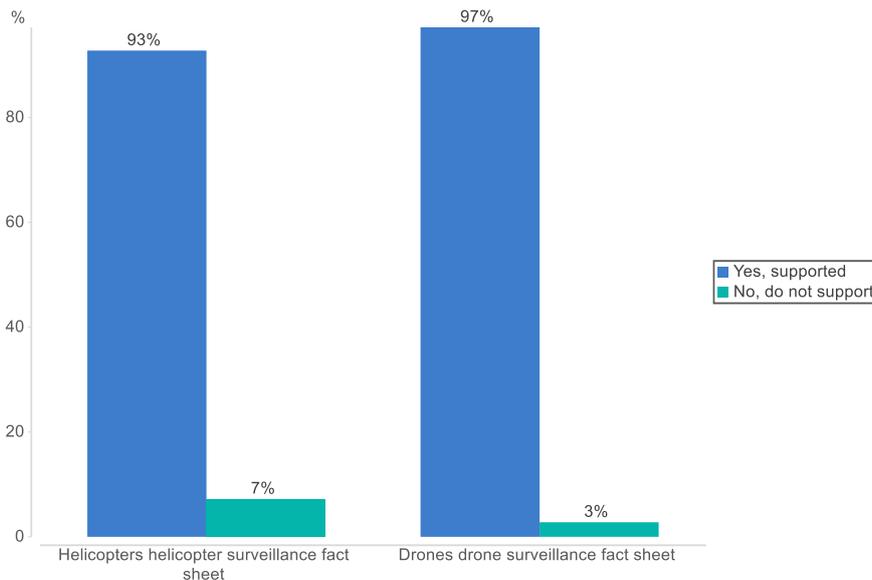
The list below includes different Community education and shark-alert measures. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all types of Community education and shark-alert measures.

Support for aerial surveillance

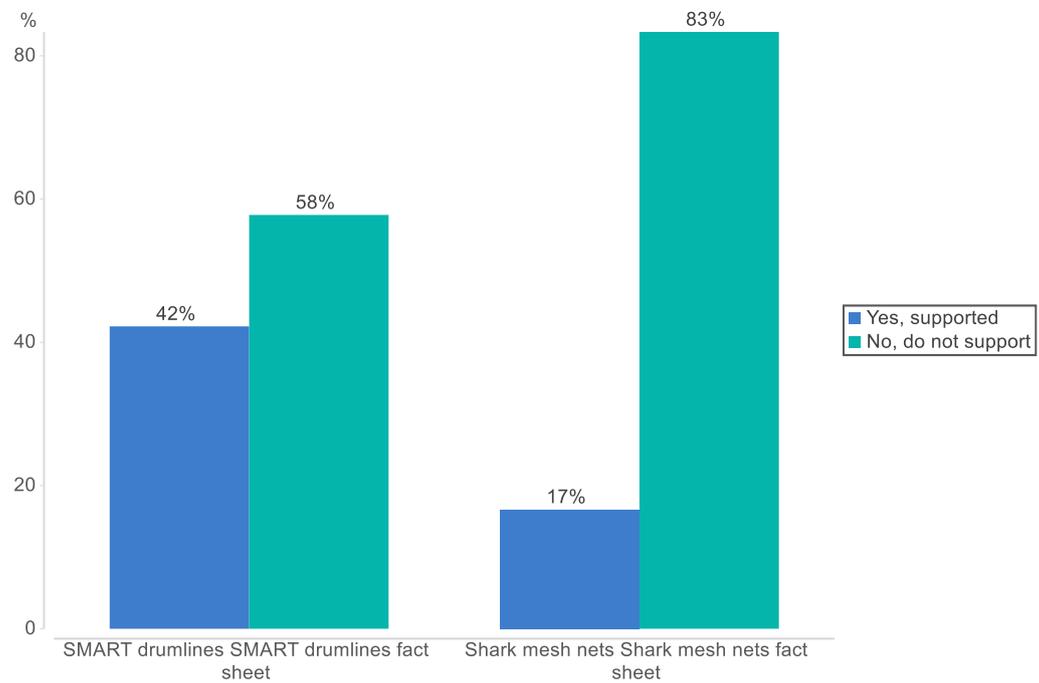
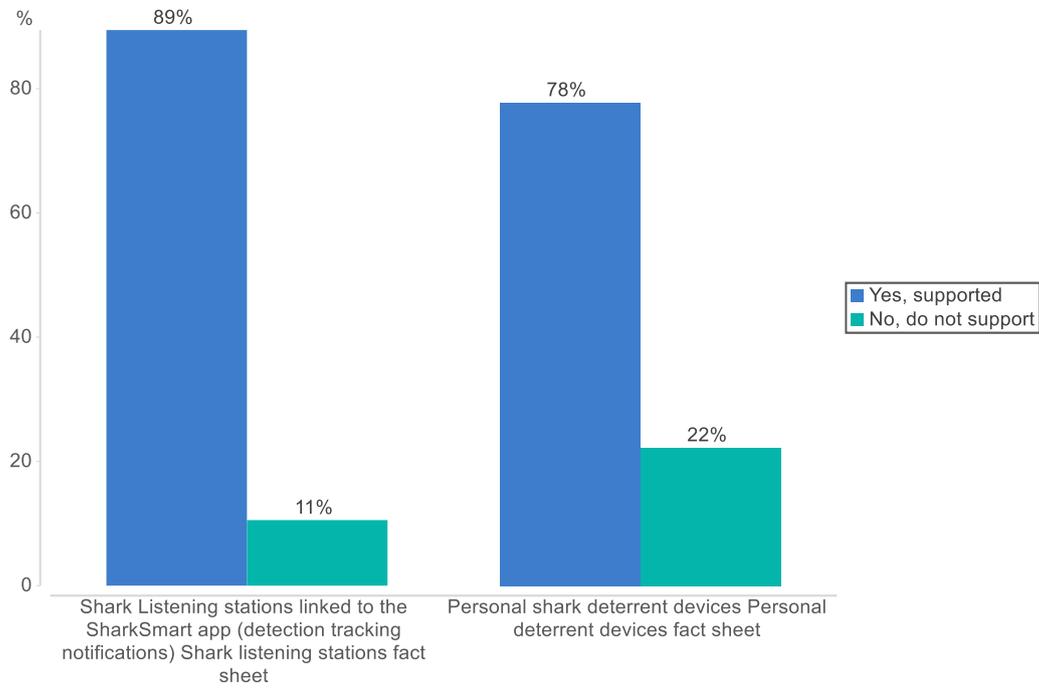
The list below includes different aerial surveillance measures like helicopters and drones. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for both Helicopter and Drone aerial surveillance.

Support for in-water measures

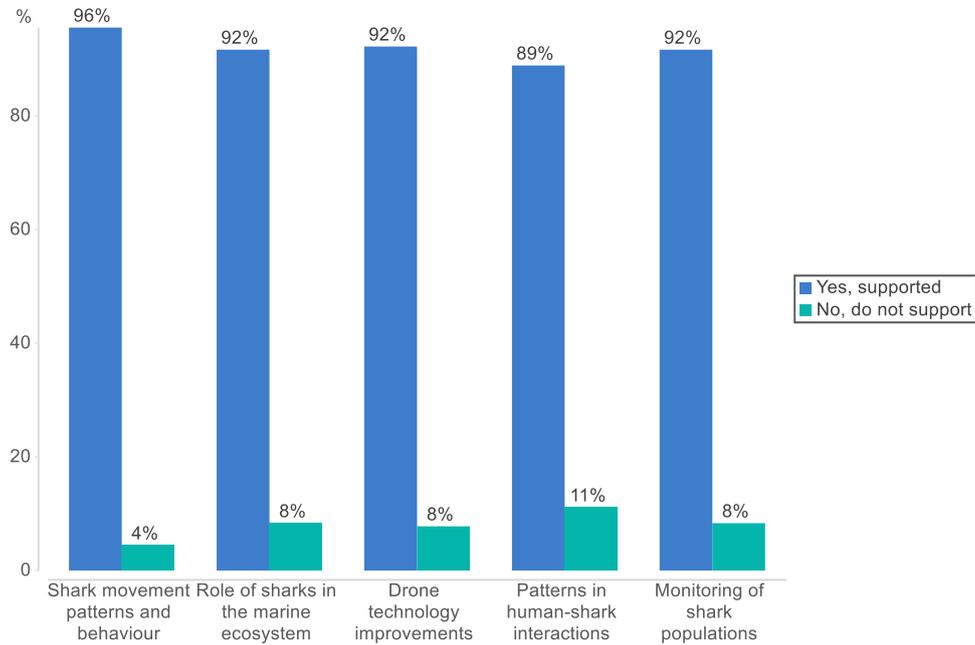
The list below includes different in-water measures. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Shark listening stations and strong support for Personal shark deterrents. A majority were opposed to SMART drumlines and a large majority were opposed to Shark mesh nets.

Support for research

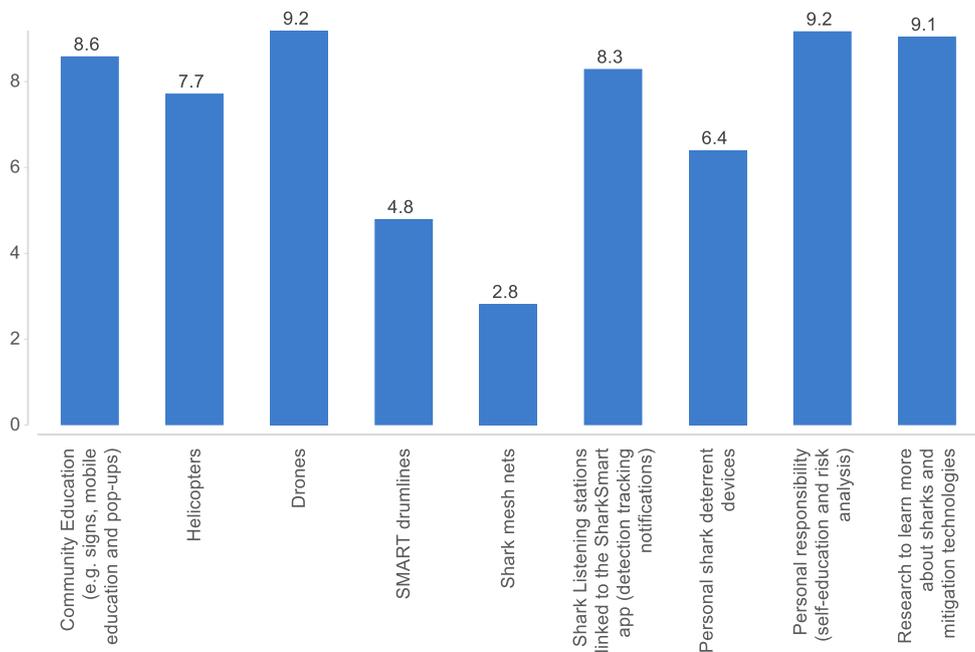
Which of the following research topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all research topics aimed at increasing protection of beachgoers.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



The highest support was expressed for Drones and Personal responsibility, followed by Research to learn about sharks and mitigation technologies.

8.14 Lake Macquarie

8.14.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
	SMART drumlines	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	10
	Drones	8
	SMART drumlines	8
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	2
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	8

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Community education, personal responsibility and research indicatives Council staff support all proposed approaches</p> <p>Surveillance Measures Council staff support helicopter surveillance and listening stations Council has undertaken trail programs with drone surveillance and found some limitations including short flight time, and potential safety impacts on beach users. We have also found it difficult to include drone operation as a part of Council Lifeguard duties due to the other roles Council Lifeguards are required to perform.</p> <p>Shark Interception Council staff support a change in shark interception measures from Mesh Nets to Smart Drumline. This is based on the evidence provided indicating the Smart Drumlines are more effective at intercepting target species, and have minimal ecological impact through reduced bycatch.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	
<p>How satisfied with the information provided in this survey?</p>	

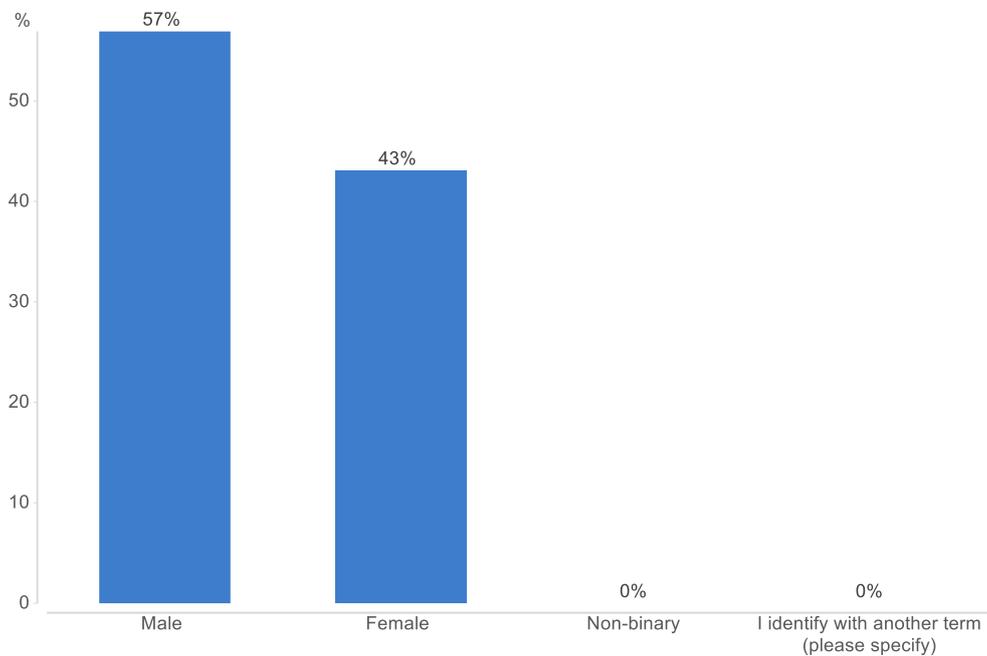
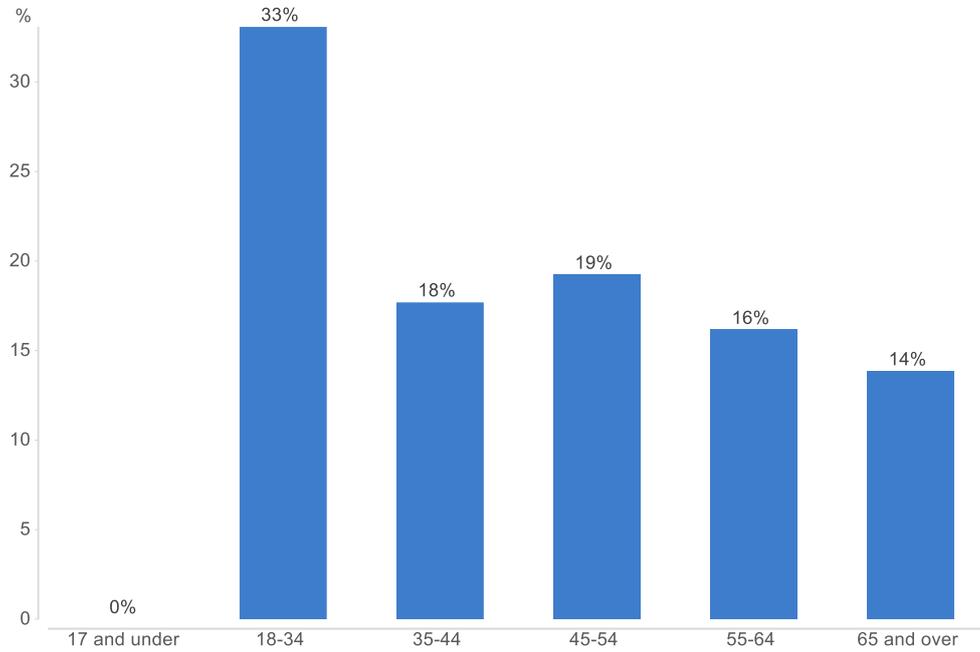
8.14.2 Other organisation responses Lake Macquarie

No submissions received.

8.14.3 Survey responses from individuals

Sample

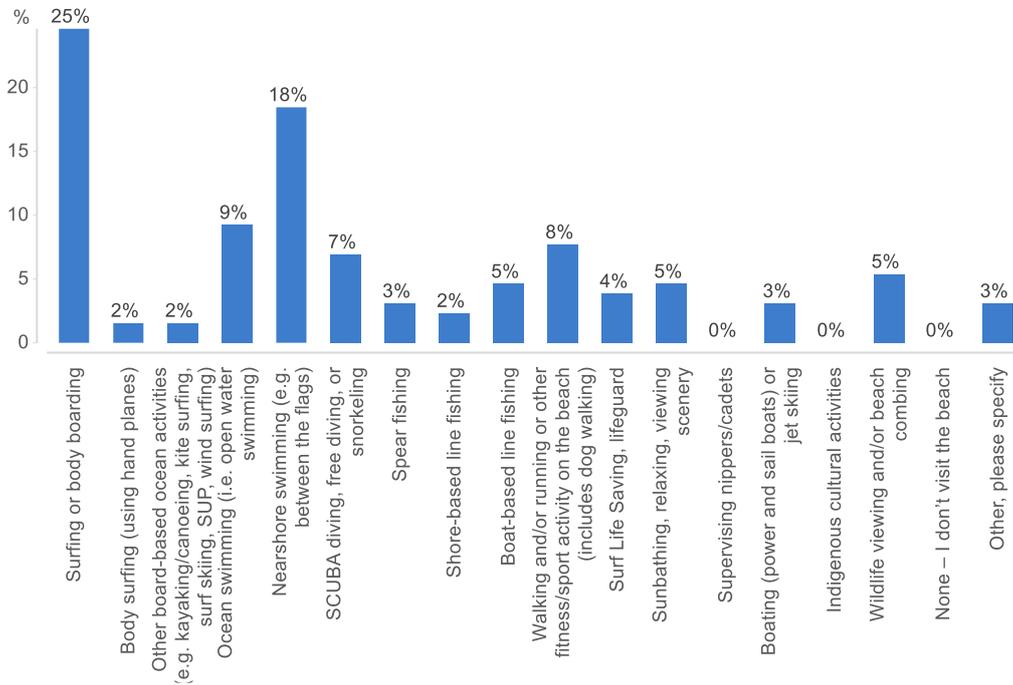
There were 130 individual responses, as follows.



There was a spread of ages over 18 and more males than females (43%)

Main beach activity of respondents

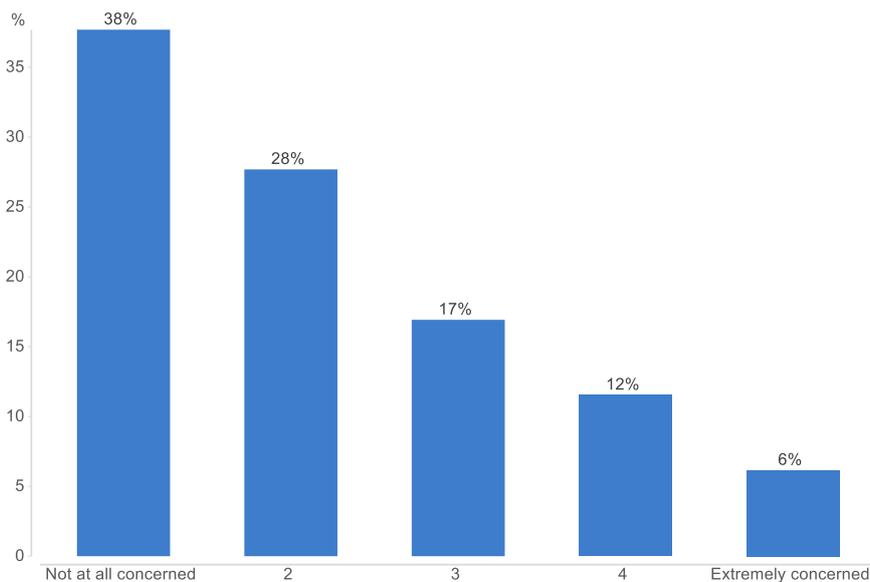
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (25%), nearshore swimming (18%) and ocean swimming (9%).

Concern about encountering sharks

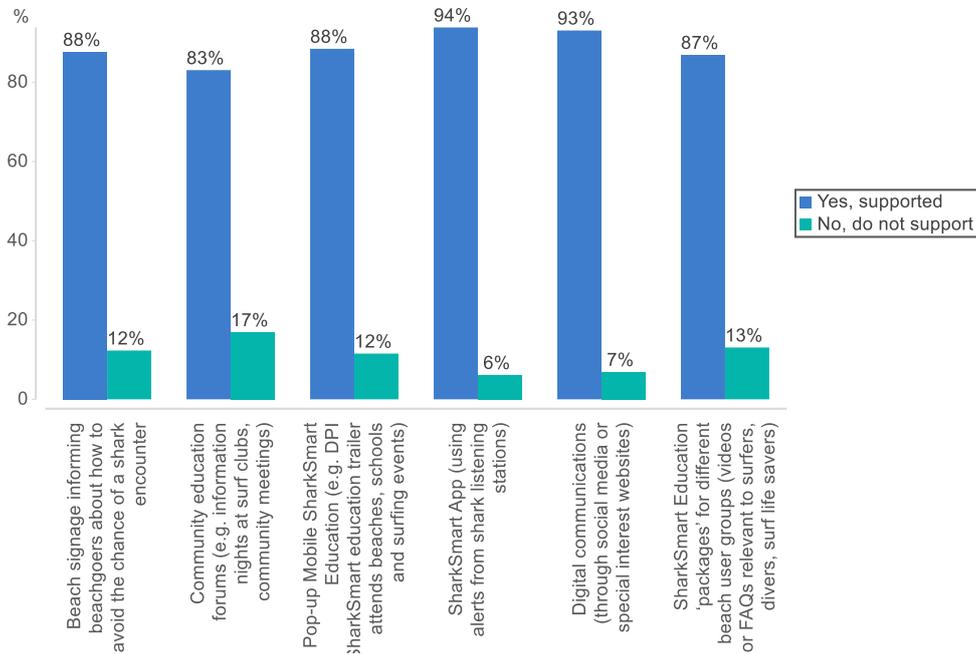
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were either a little concerned or not concerned at all. Some were concerned (12%) or extremely concerned (6%).

Support for Community education and shark-alert measures

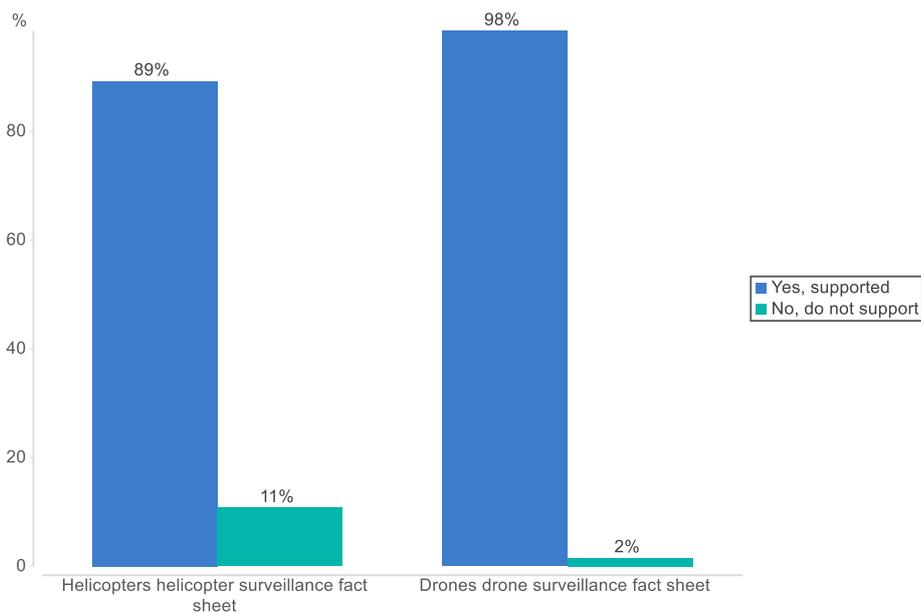
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high or strong support for all of the Community education and shark-alert measures.

Support for aerial surveillance

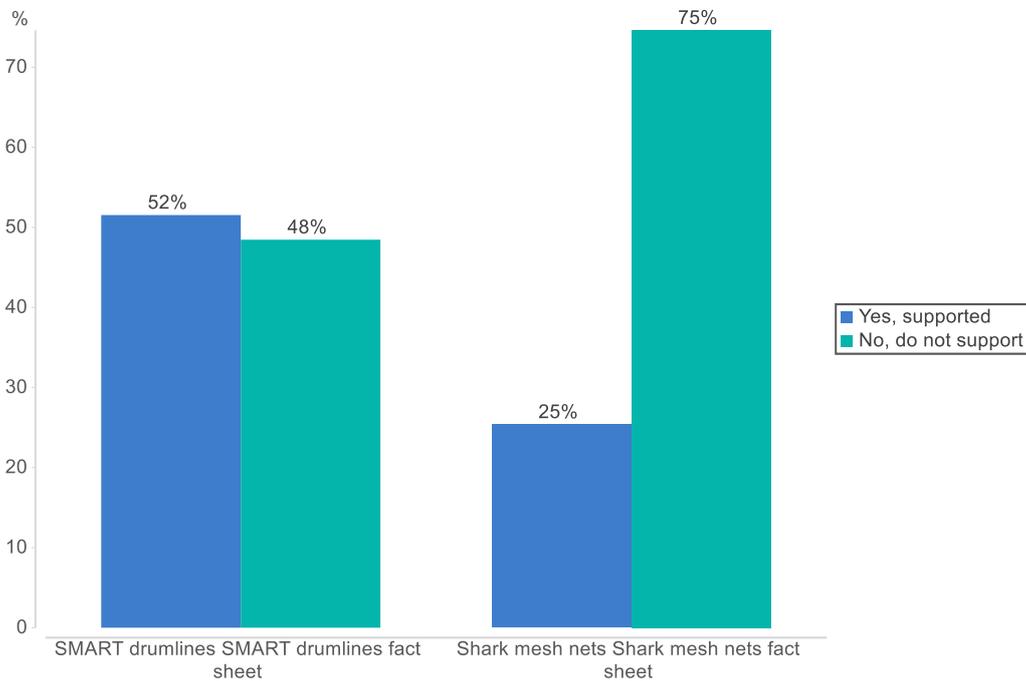
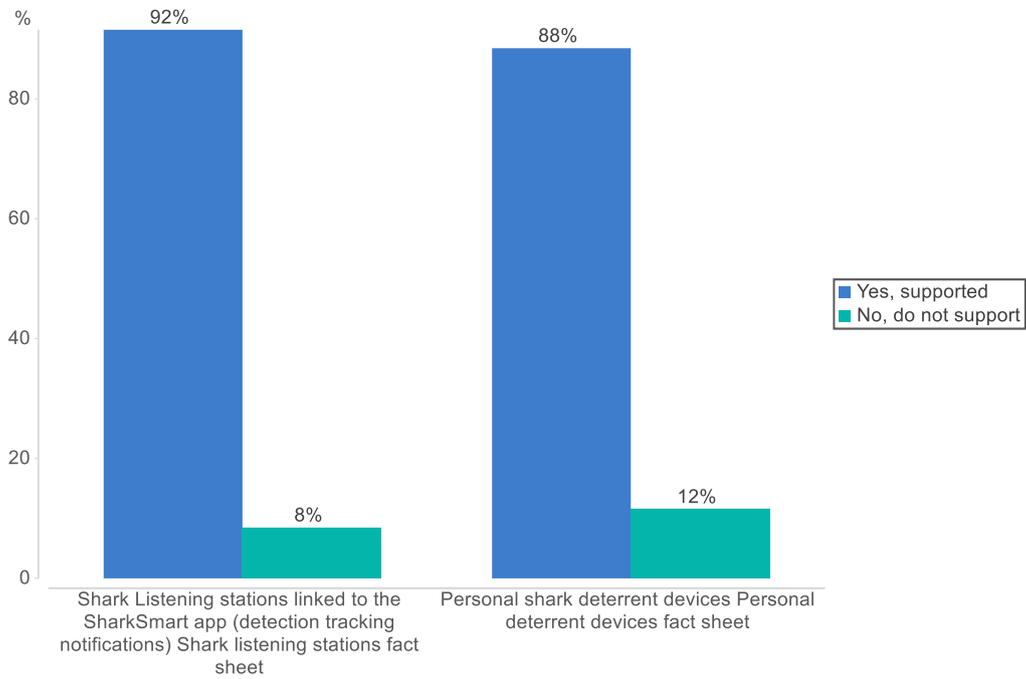
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and extremely high support for Drone surveillance.

Support for in-water measures

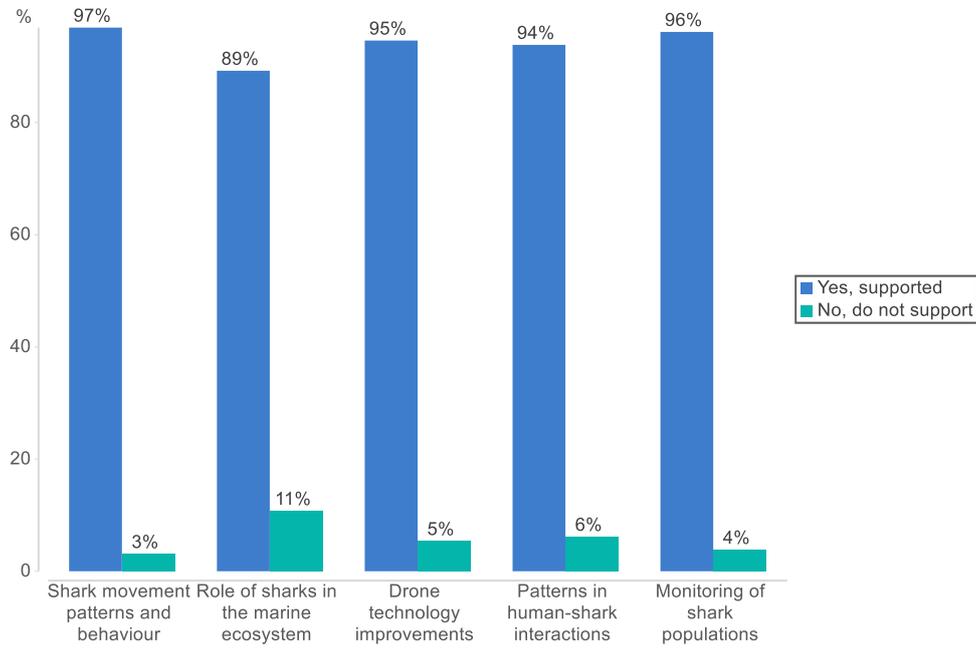
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There were high levels of support for Listening stations and Personal shark deterrents. The Community were closely divided over use of SMART drumlines and there was a large majority who did not support Shark mesh nets.

Support for research

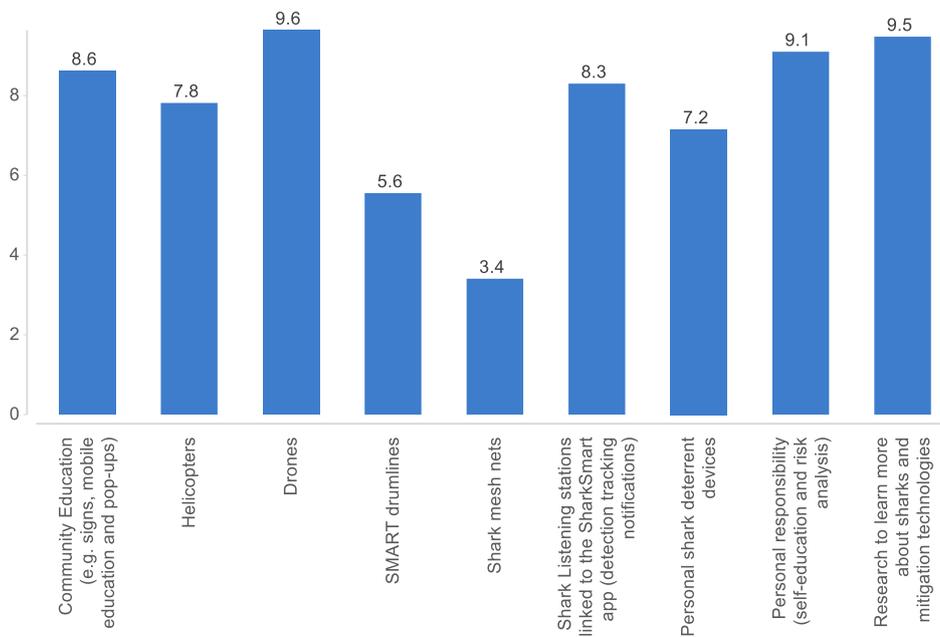
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The highest preference was Drones, followed by Research and Personal responsibility. The least supported mitigation measure was Shark mesh nets.

8.15 Central Coast

8.15.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year. September-April when people swim in the ocean.	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	*
	Drones	8
	SMART drumlines	8
	Shark mesh nets	
	Shark listening stations linked to the SharkSmart app	8
	Personal shark deterrent devices	7
	Personal responsibility (self-education & risk analysis)	8
	Research to learn more about sharks and mitigation technologies	8

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Central Coast Council supports the removal of shark nets and is in favour of more modern technology based alternatives and offer the following recommendations to the survey for your consideration.</p> <p>Community & Education Council supports the promotion of Shark Smart safety tips to the Central Coast community prior to and throughout the Beach Safety season each year.</p> <p>The education and outreach about shark behaviour are fundamental in helping protect swimmers when sharks are active in certain places and certain times throughout day.</p> <p>Council recommends that DPI provide Councils Communications team the relevant Shark Smart information package prior to summer season and that Council promote these Safety tips at start of and throughout the Summer season throughout our local community with its Beach Safety messaging tips.</p> <p>Council recommends that DPI provide Shark Smart education packages for different users groups to Council who can then distribute these at its Beach safety area throughout the summer period.</p> <p>Council believes that by introducing a broader Community & Education package to the beach users this will also assist in promoting personal responsibility and self-education with the associated risk of swimming at certain times throughout day and the dangers.</p> <p>Shark Listening Stations Linked to Shark Smart App The Central Coast region was not previously included in the trial for Shark listening devices and Council recommends that the Central Coast region be included in placing of selected shark listening devices at a number of beach locations within the Central Coast Council region.</p> <p>Consultation with Council Beach Safety team and SLSCC occur with location of these devices prior to rollout. DPI consider linking these shark listening devices to adjoining beach site location with an alarm through PA systems advising public within patrol hours at respective beach location.</p> <p>These Shark Smart listening stations should be linked to Shark Smart app Cons with CLS</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Aerial Surveillance Drones Central Coast region has been included in the trial and use of Drones at 2 of its 15 patrolled locations this past Summer season 2020 – 2021 @ Avoca beach & Nth Entrance beach.</p> <p>If Council was consulted prior to trial Councils Beach Safety team would have recommend an alternatives site of Soldiers beach instead of North Entrance beach as its second location for drone trial. The rational to support this is that Soldiers beach has a higher beach visitation and usage, it is also more protected from north east winds that restrict drone usage when winds are over 25</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Neither satisfied nor dissatisfied</p>

8.15.2 Other organisation responses Central Coast

Australian Seabird rescue Central Coast

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Shark nets kill indiscriminately which is impacting on already endangered species! All the other options focus on sharks which is what this is all about - can not be more simple than that!!!	

<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>I'm the Founder of Australian Seabird Rescue Central Coast and I please beg you to end the shark nets from 1937 that kill the endangered species of not only sharks but the marine turtles we fight so hard to protect! Its against the law (unless you are indigenous) to kill a protected species and yet these nets kill more endangered species and bycatch than anything else and our government support it for a popular vote because they have not been truthful to the public! These nets do not provide any safety against a shark incident! They are a placebo affect and sharks can swim totally around them!</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

Brisbane Water Aqualung Club

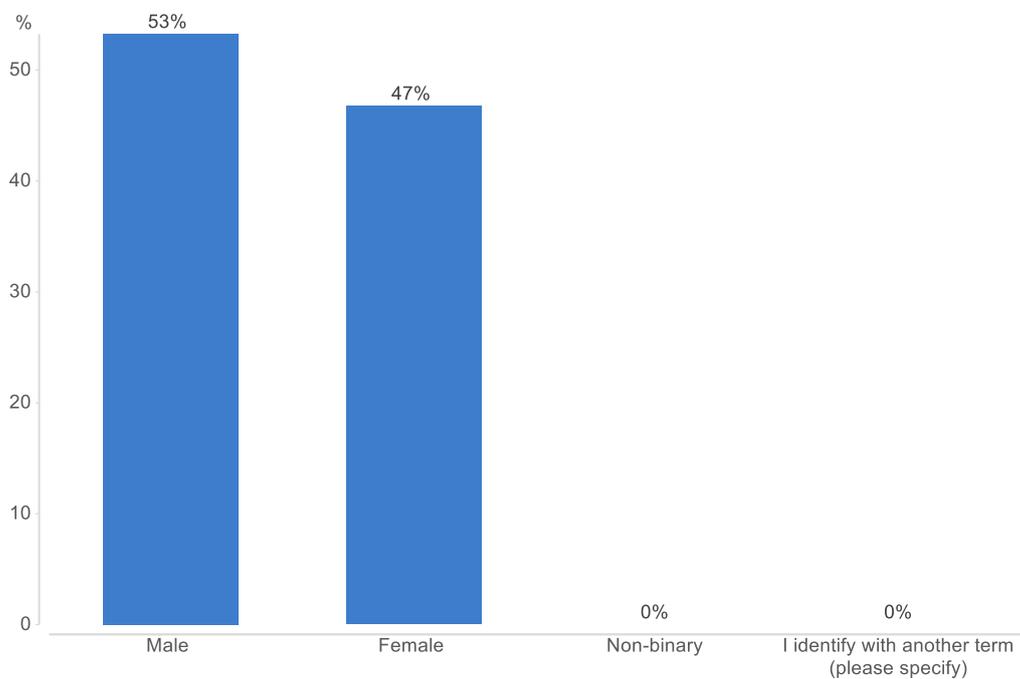
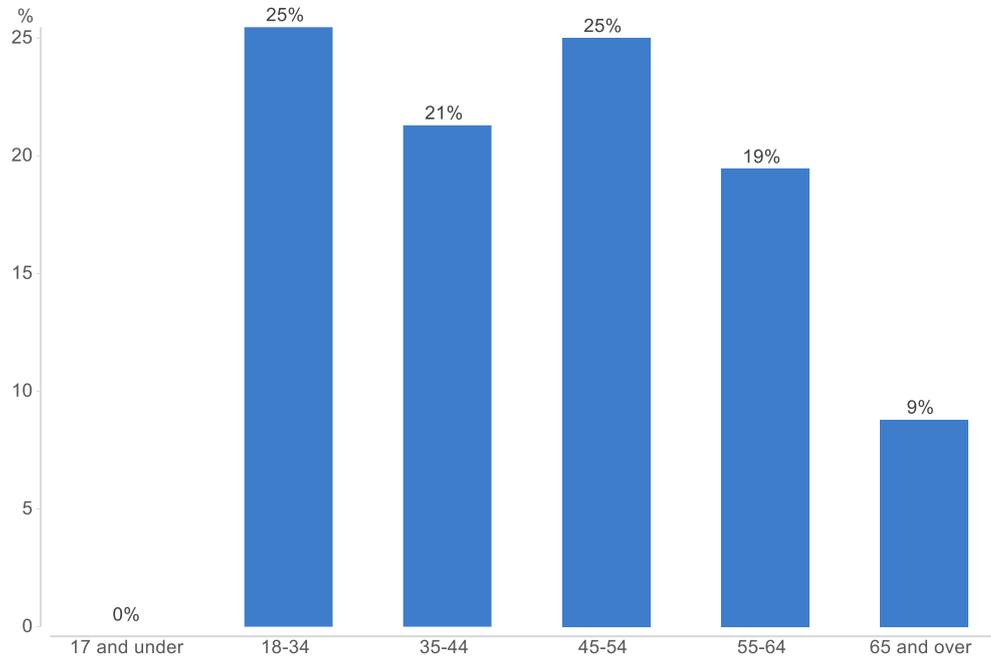
Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Drone technology improvements	Shark movement patterns and behaviour
	Patterns in human-shark interactions	Role of sharks in the marine ecosystem
		Monitoring of shark populations
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Physical barriers cannot distinguish between a. Man eating sharks or non man eaters ie Grey Nurse. Whales etc. Old fashion traditional nets etc. Kill the predator's . We are in their realm. Use our brains not our get even tradition. Stupid.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	You are talking Mitigation as if wild life is the problem .The problem are the humans and the pressure from businesses etc, We have encountered so called man eating sharks ,some of us had the Shark shields and the rest nothing. Be wary ,be a little careful , also talk to the users of the ocean ,we don't have a problem ,	
How satisfied with the information provided in this survey?	Extremely satisfied	

8.15.3 Survey responses from individuals

Sample

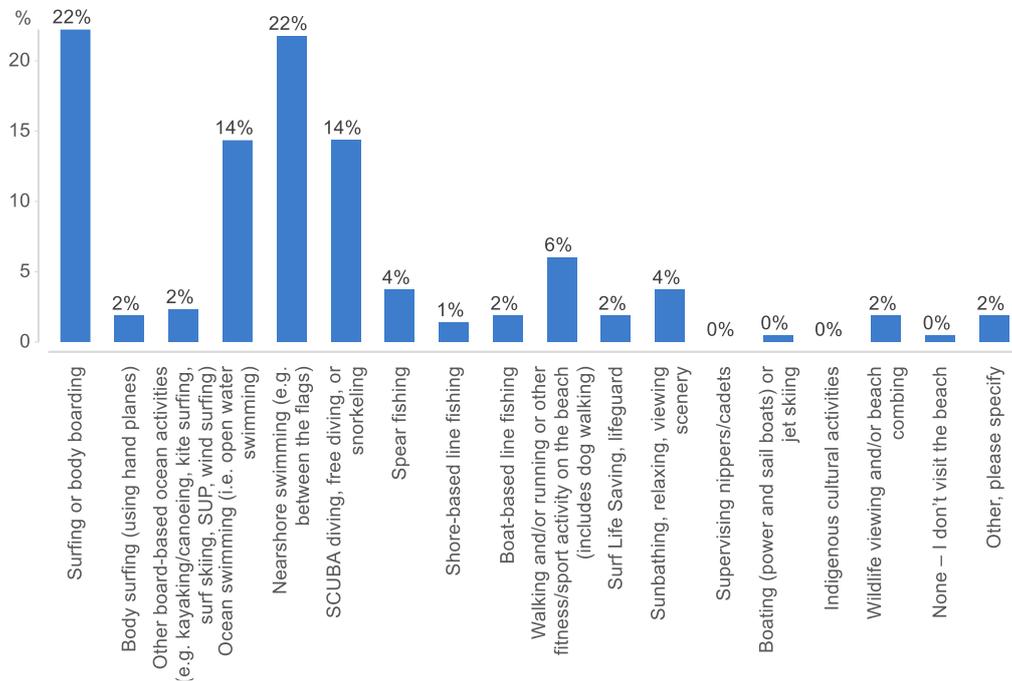
There were 216 individual responses, as follows.



There was a spread of people aged 18 and over, and a small majority of males.

Main beach activity of respondents

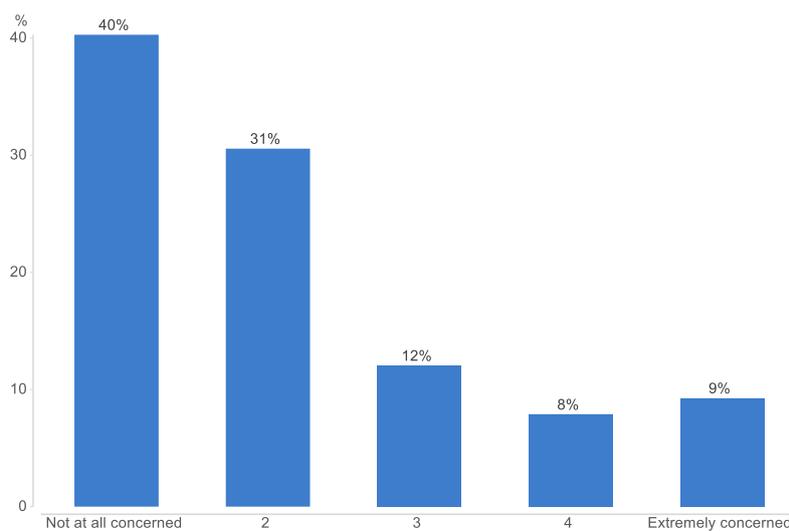
What is the main activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were Surfing of bodyboarding (22%), Nearshore swimming (22%), Ocean swimming (14%) and Diving/snorkelling (14%).

Concern about encountering sharks

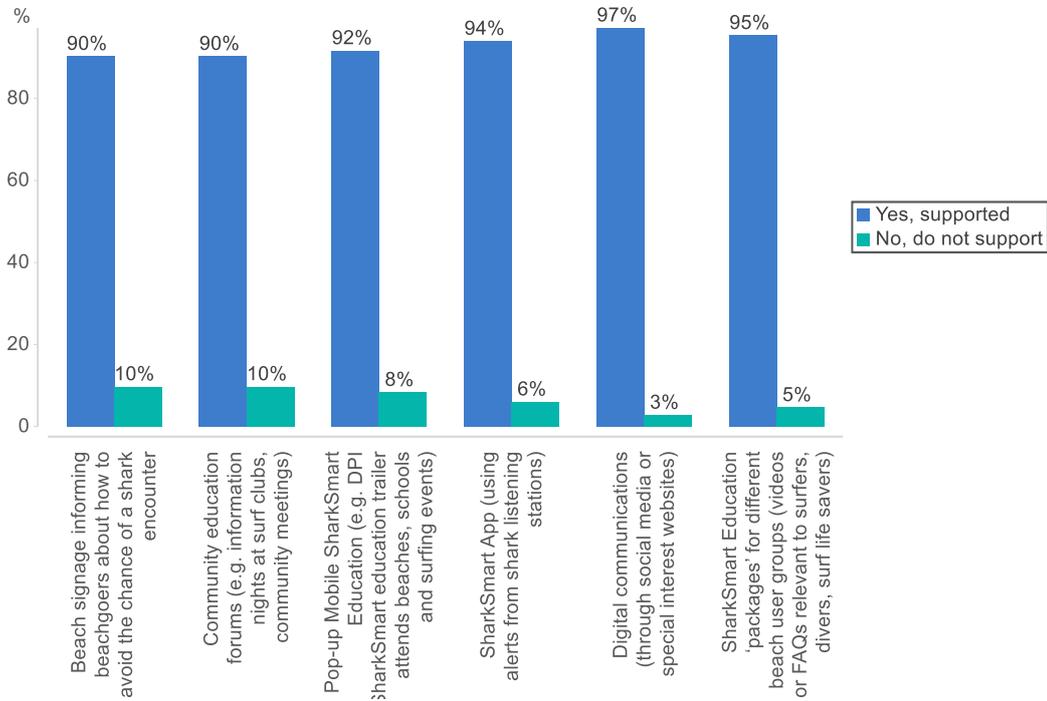
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were either not concerned at all or little concerned about encountering sharks. Some people were somewhat or extremely concerned.

Support for Community education and shark-alert measures

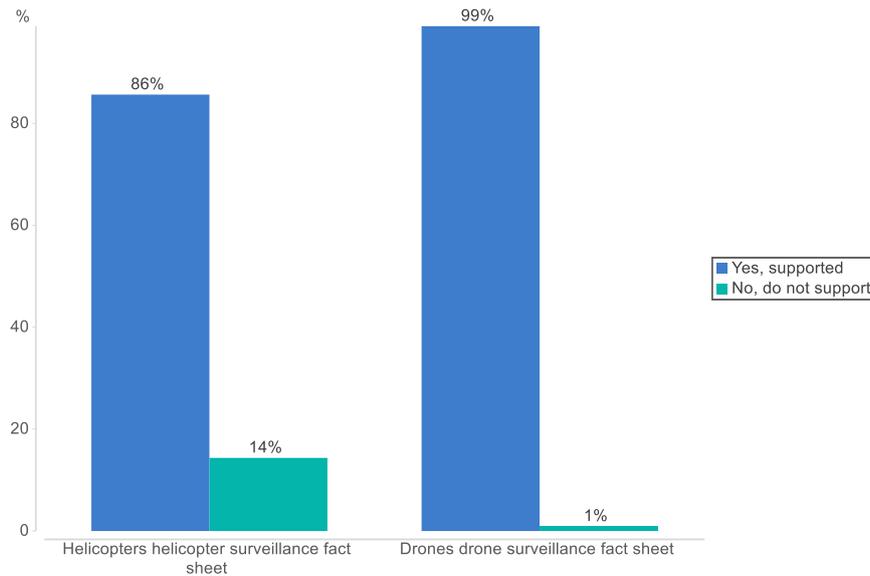
The list below includes different Community education and shark-alert measures. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all types of Community education and shark-alert measures.

Support for aerial surveillance

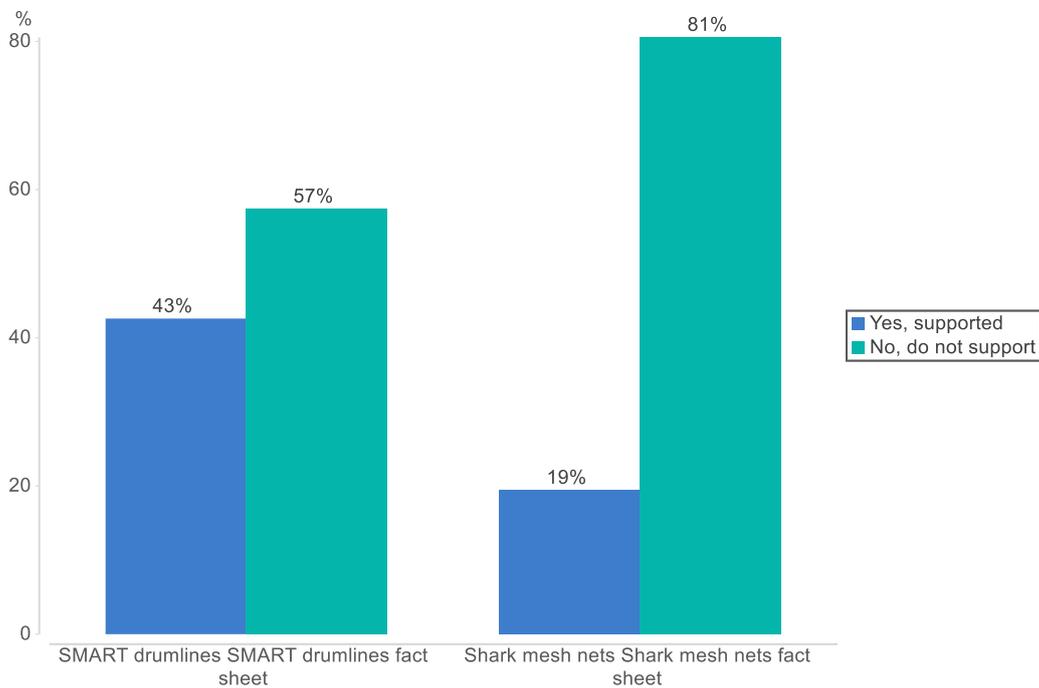
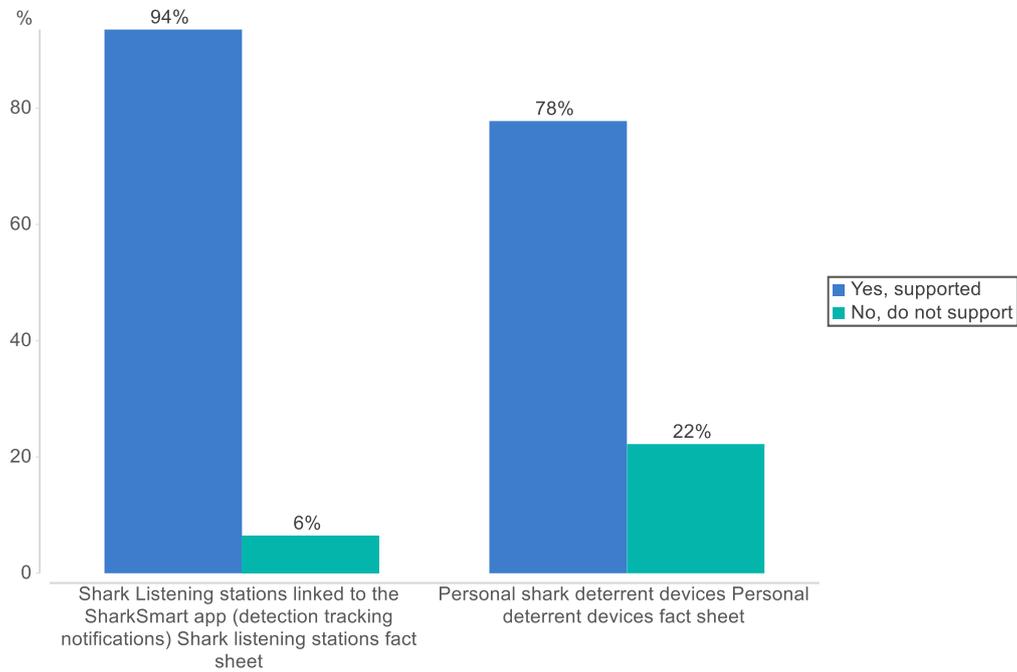
The list below includes different aerial surveillance measures like helicopters and drones. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for helicopters and extremely strong support for drones.

Support for in-water measures

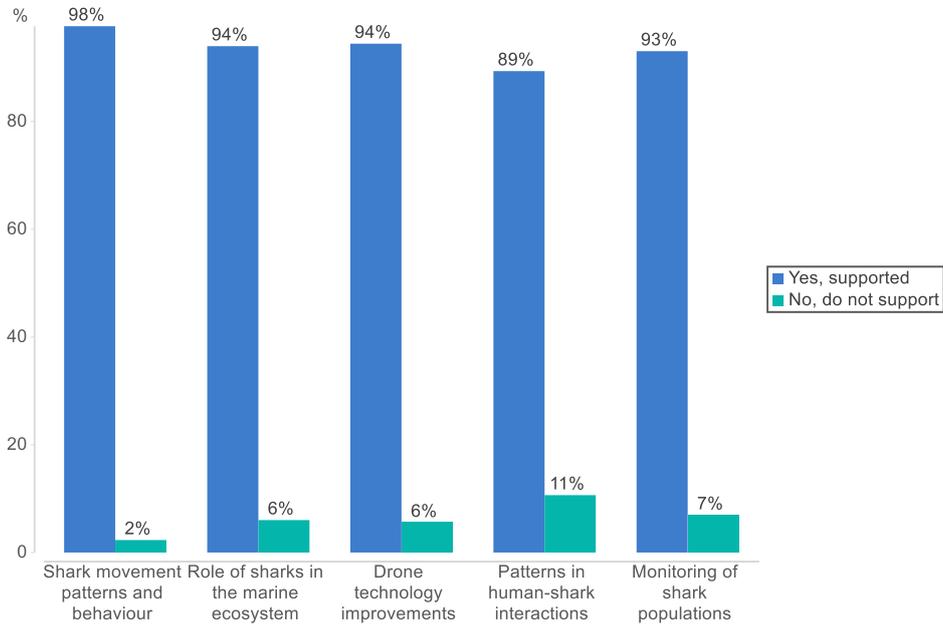
The list below includes different in-water measures. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Shark listening stations and strong support for Personal shark deterrents. A small majority were opposed to SMART drumlines and a large majority were opposed to Shark mesh nets.

Support for research

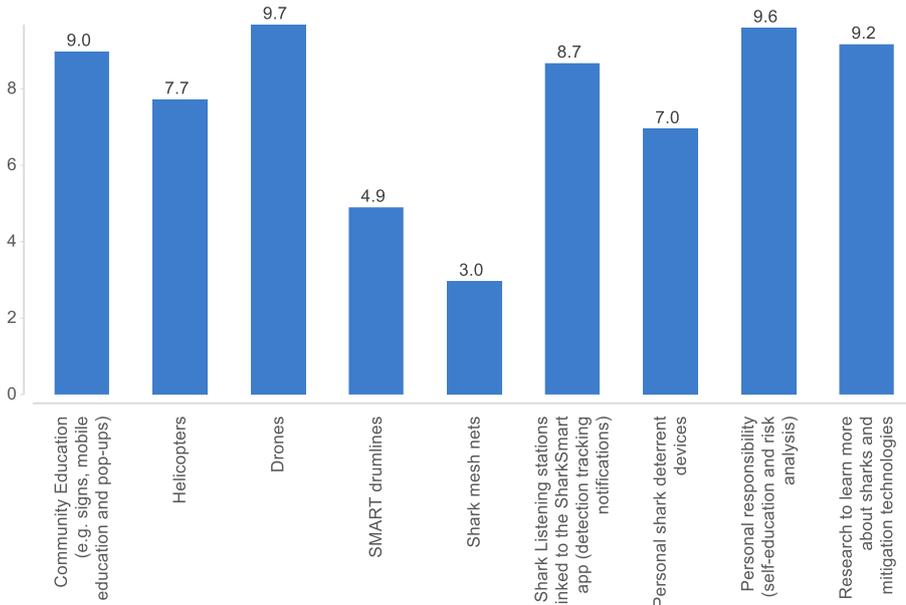
Which of the following research topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all types of research to increase protection of beachgoers.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



There was highest support for Drones followed by Personal responsibility and Research to learn more about sharks and mitigation technologies. There was low support for SMART drumlines and lowest support for Shark mesh nets.

8.16 Northern Beaches

8.16.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	8
	Shark mesh nets	2
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Northern Beaches Council is satisfied with the program as implemented by DPI Fisheries and currently participates in the implementation of this program by providing additional shark detection and closing beaches when necessary.</p> <p>DPI Fisheries funded programs or technology that result in lower shark &/or non-target bycatch mortality, whilst maintaining or improving the safety of recreational users of our waterways, are supported.</p> <p>DPI Fisheries is, and should continue to be, the agency with the expertise and responsibility for designing and implementing shark bite mitigation strategies in NSW. In practice a combination of the measures above will be applied at each location based on site specific factors. It is requested that:</p> <ul style="list-style-type: none"> • DPI Fisheries confirm the most efficient detection strategy or combination of strategies for the Northern Beaches • DPI Fisheries develop and provide additional information on the effectiveness and cost associated with alternative shark bite mitigation measures relative to shark nets.
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Council welcomes the opportunity to provide comment on initiatives that may inform DPI Fisheries ongoing NSW Shark Program. Council endorses the objectives of the current SMP Management Plan and believes any future shark strategy should also aim to reduce the risk of shark bite and minimise the impact of mitigation measures on target and non-target species.</p> <p>Additional, information on relative benefits to risk of various strategies and costings to better inform a decision to support additional measures to those funded by DPI Fisheries would be welcome.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

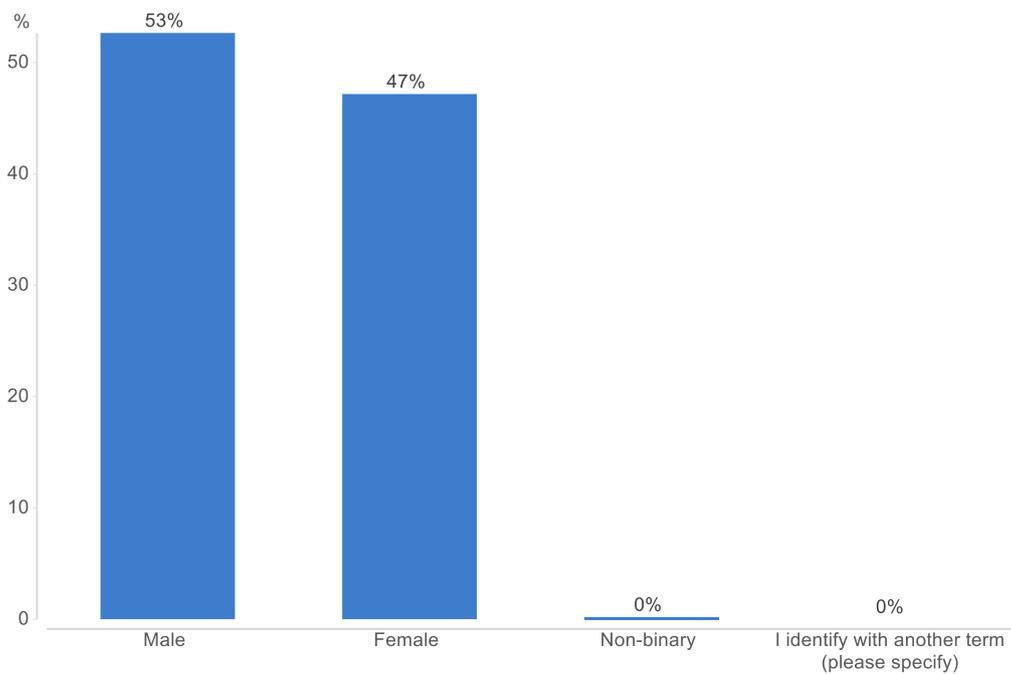
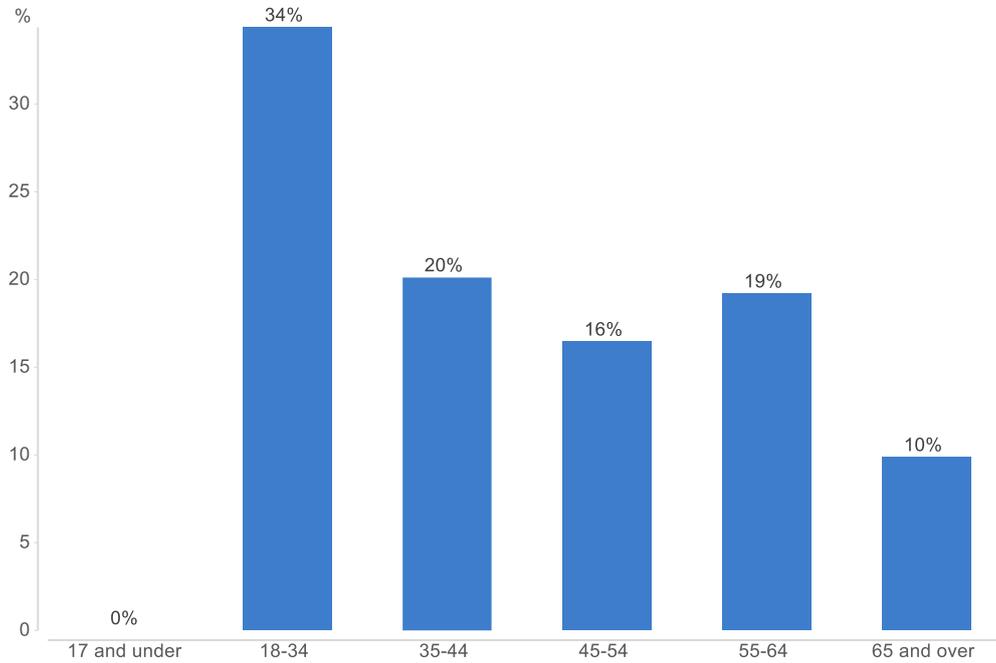
8.16.2 Other organisation responses Northern Beaches

No submissions received.

8.16.3 Survey responses from individuals

Sample

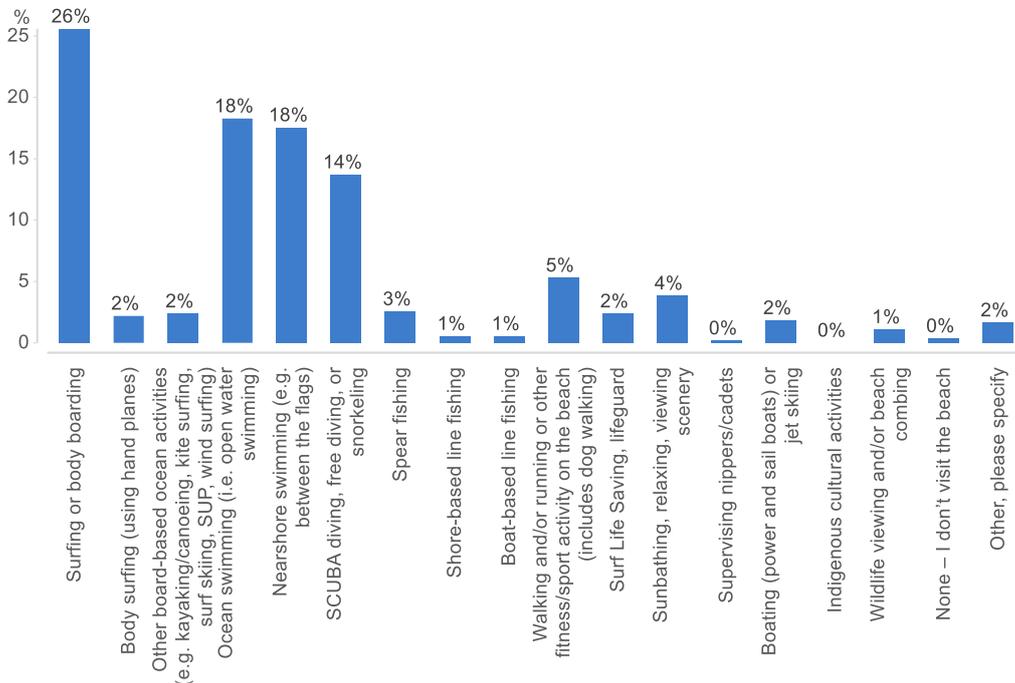
There were 547 individual responses, as follows.



There was a spread of ages over 18 and slightly more males than females (47%).

Main beach activity of respondents

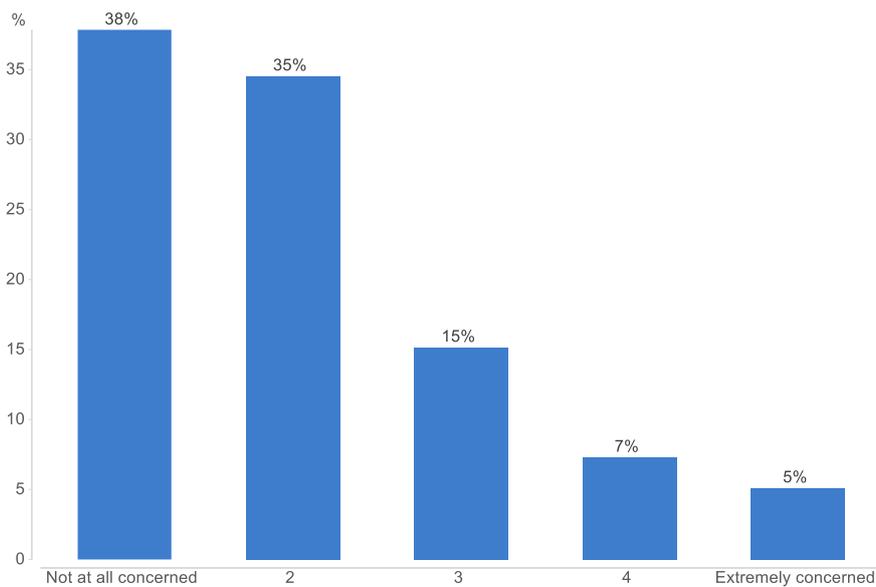
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing and bodyboarding (26%), Ocean swimming (18%), Nearshore swimming (18%) and Diving/snorkelling (14%).

Concern about encountering sharks

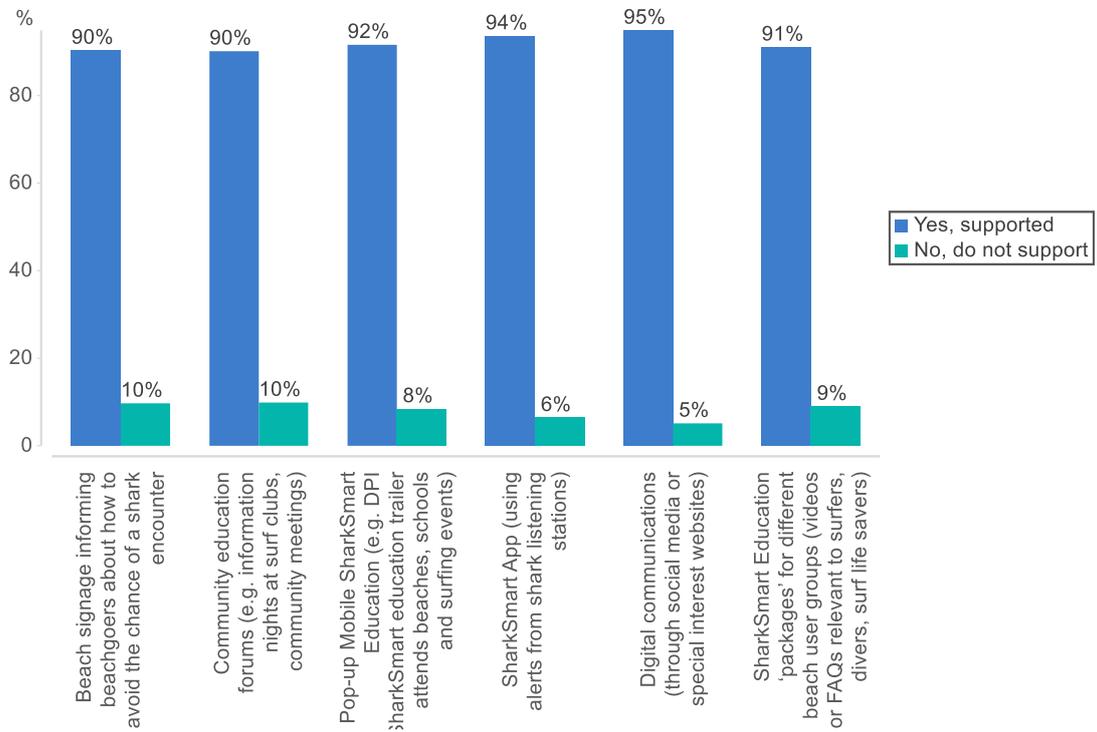
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were less concerned or not concerned at all about encountering sharks at the beach. A small proportion were concerned (7%) or extremely concerned (5%).

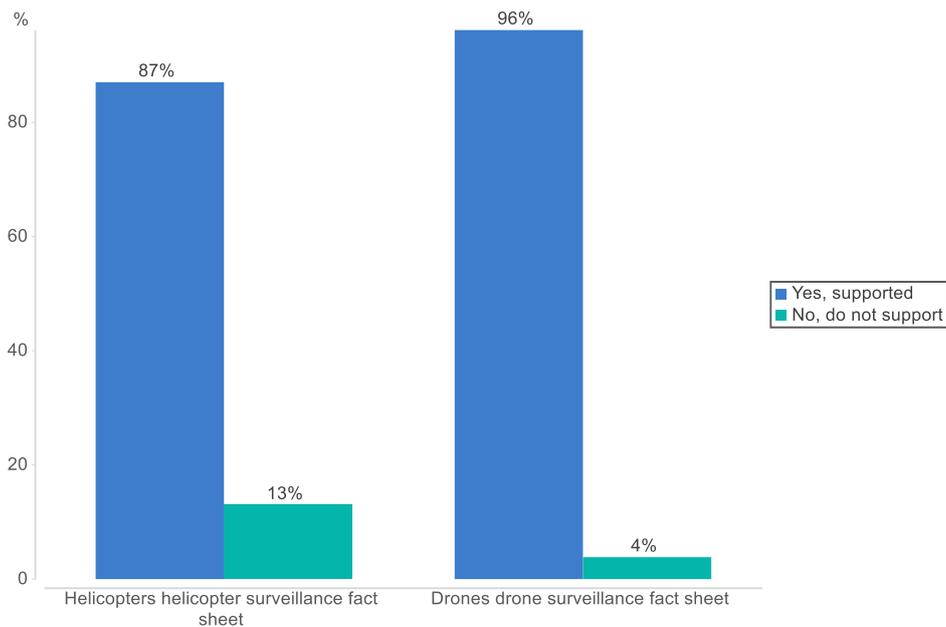
Support for Community education and shark-alert measures

The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



Support for aerial surveillance

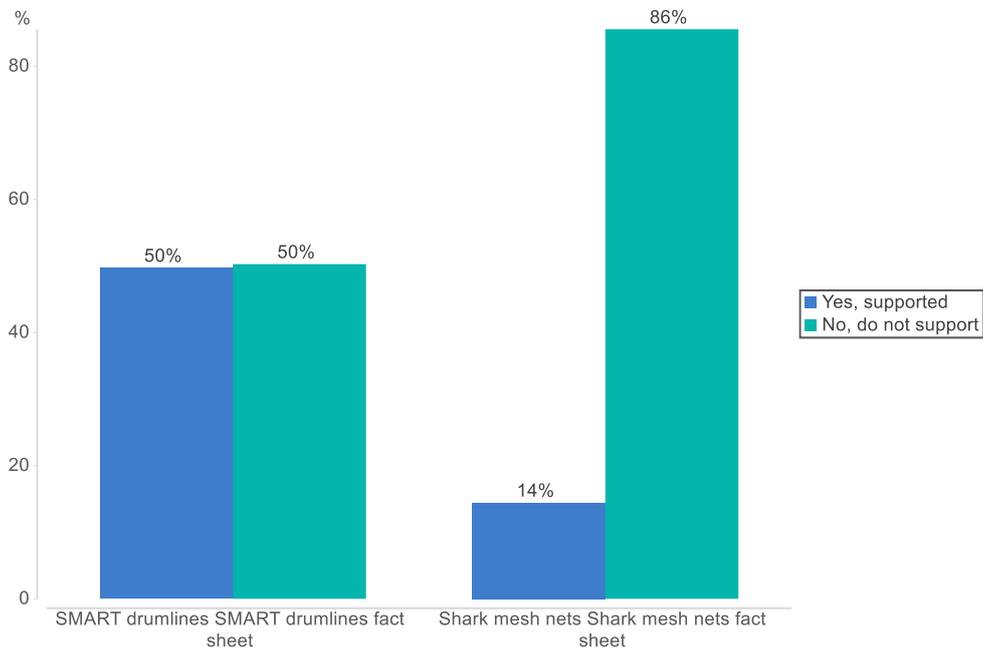
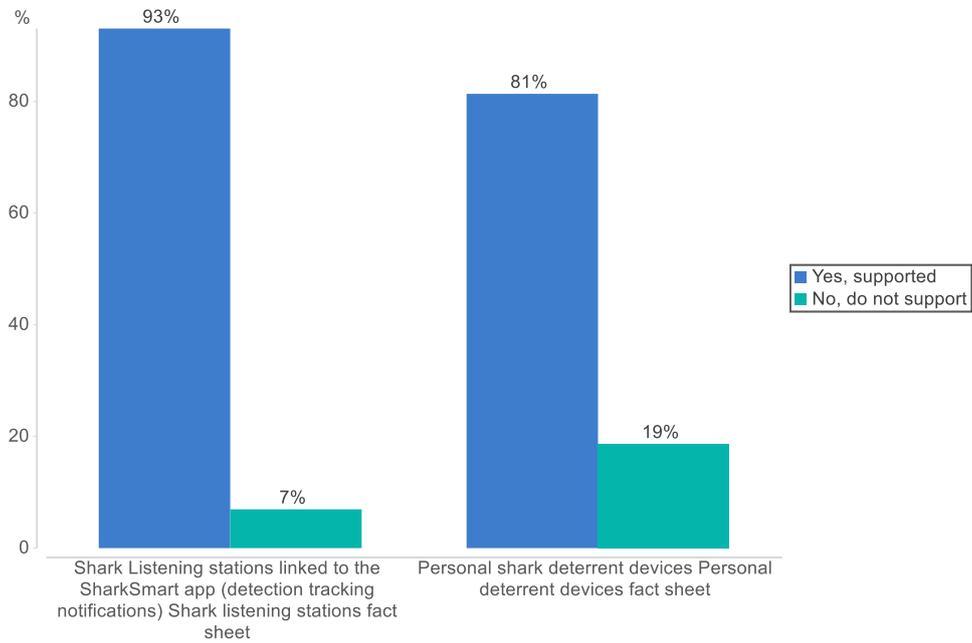
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and very high support for Drones.

Support for in-water measures

The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?

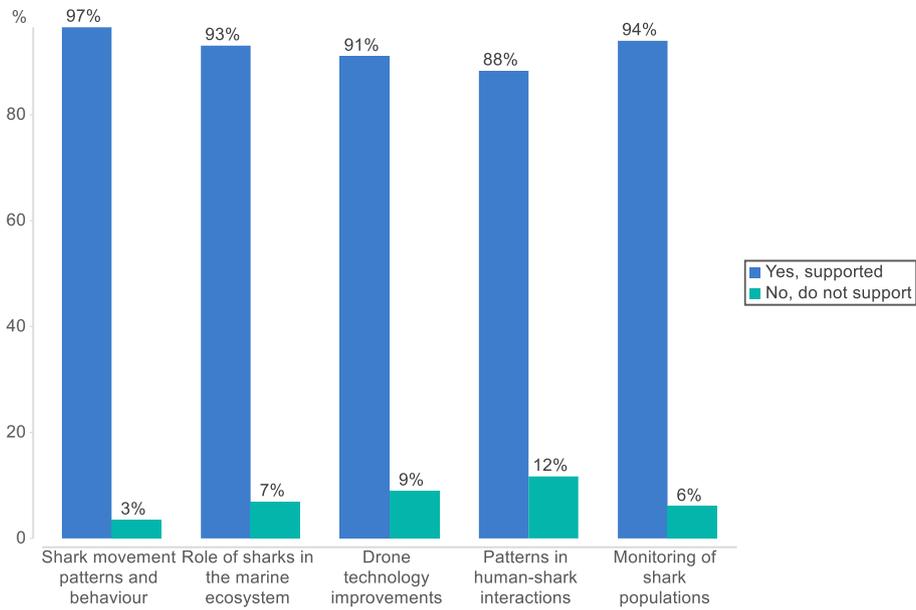


There was high support for Listening stations and strong support for Personal shark deterrents.

The Community was divided over support for SMART drumlines and a large majority did not support Shark mesh nets.

Support for research

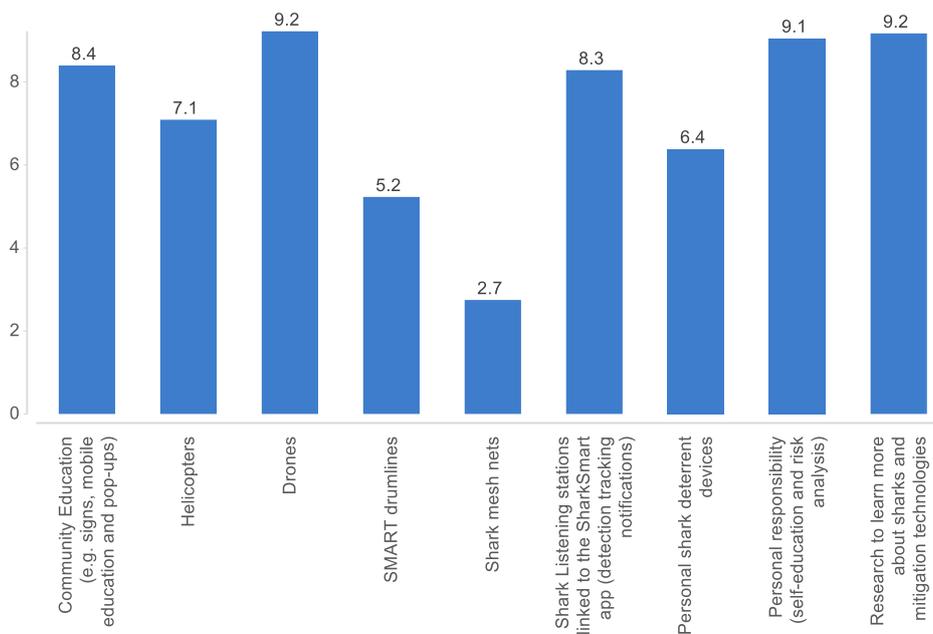
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The most preferred measures were Drones and Research, followed by Personal responsibility. The least preferred measure was Shark mesh nets.

8.17 Sutherland Shire

8.17.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
	SMART drumlines	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Patterns in human-shark interactions	
	Drone technology improvements	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	7
	Drones	10
	SMART drumlines	9
	Shark mesh nets	4
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	4
	Personal responsibility (self-education & risk analysis)	8
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Drum lines and increased numbers of listening stations will allow the NSW government to inform local beach goers of the presence of sharks via modern social media platforms. There use also provides an opportunity for greater insight into the movement and behaviours of sharks. This information is invaluable for future decisions regarding shark mitigation measures in NSW. Understanding movements and behaviours can result in more targeted funding for research or education programs. Monitoring the movement of sharks in conjunction with other ocean parameters including, but not limited to, oceans currents, weather systems (El Niño and La Nina) and fish movements can provide insights to the ecology of one of the oceans top predators and increase understanding of ocean food webs.</p> <p>Drum lines are preferred to mesh nets based on survival rates of both targeted and non-targeted species, plus the added ability to learn from tagged sharks.</p> <p>The use of drones provide local 'real time' search and surveillance capabilities, and when used in conjunction with local listening stations presents a more enhanced feeling of safety for life guards and beach goers</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>The beaches of the Sutherland Shire attract over 6 million visitors every summer. With this number in mind Sutherland Shire Council would like to request that a listening station be installed within the waters of Bate Bay.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied.</p>

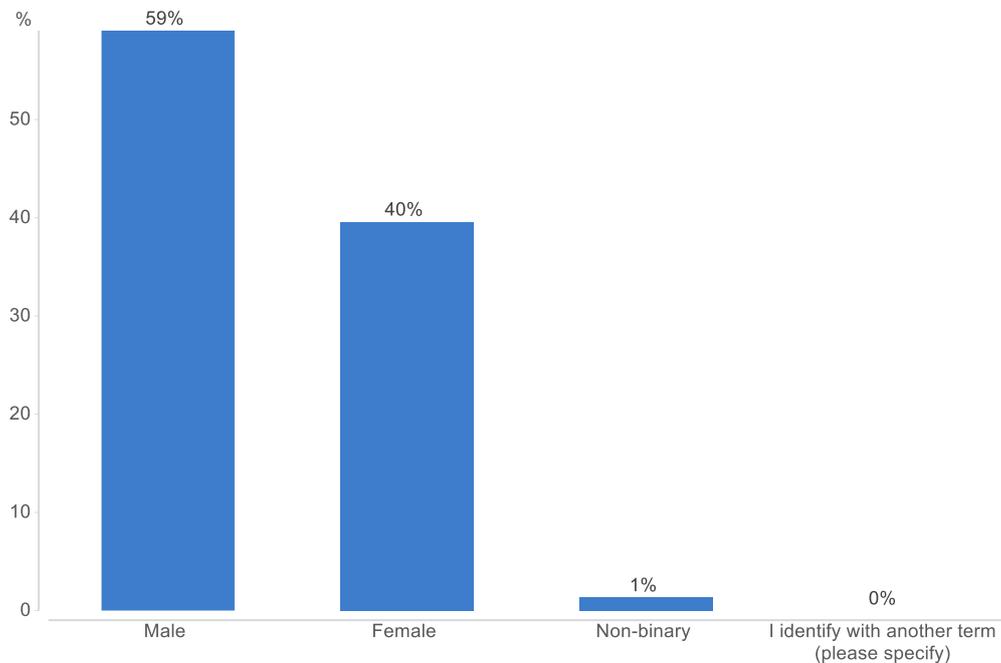
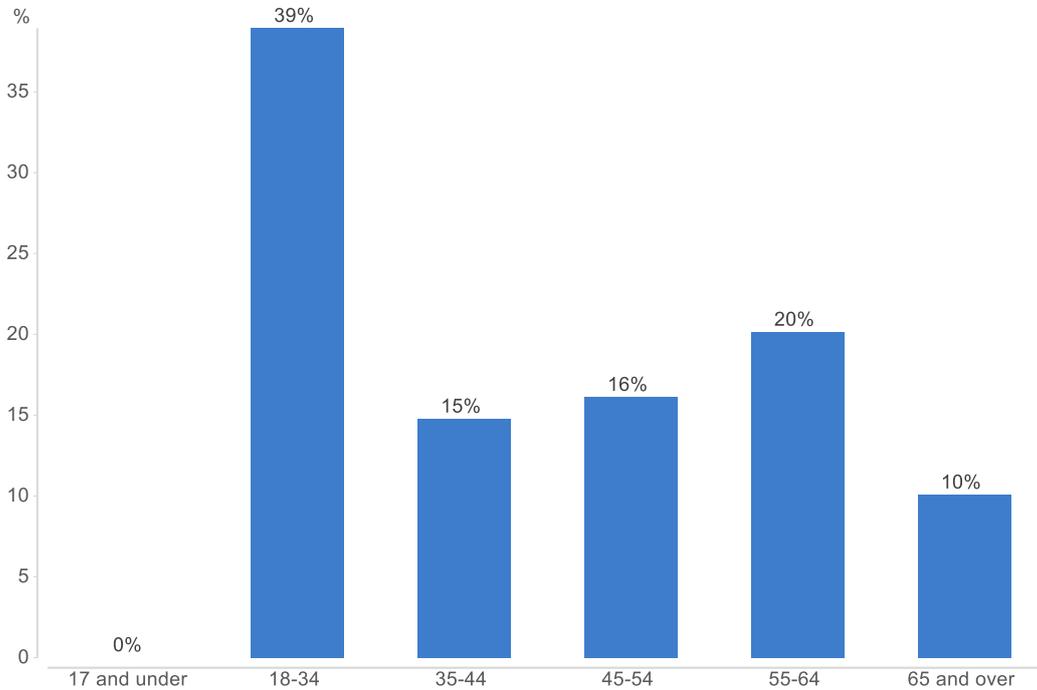
8.17.2 Other organisation responses Sutherland Shire

No submissions received.

8.17.3 Survey responses from individuals

Sample

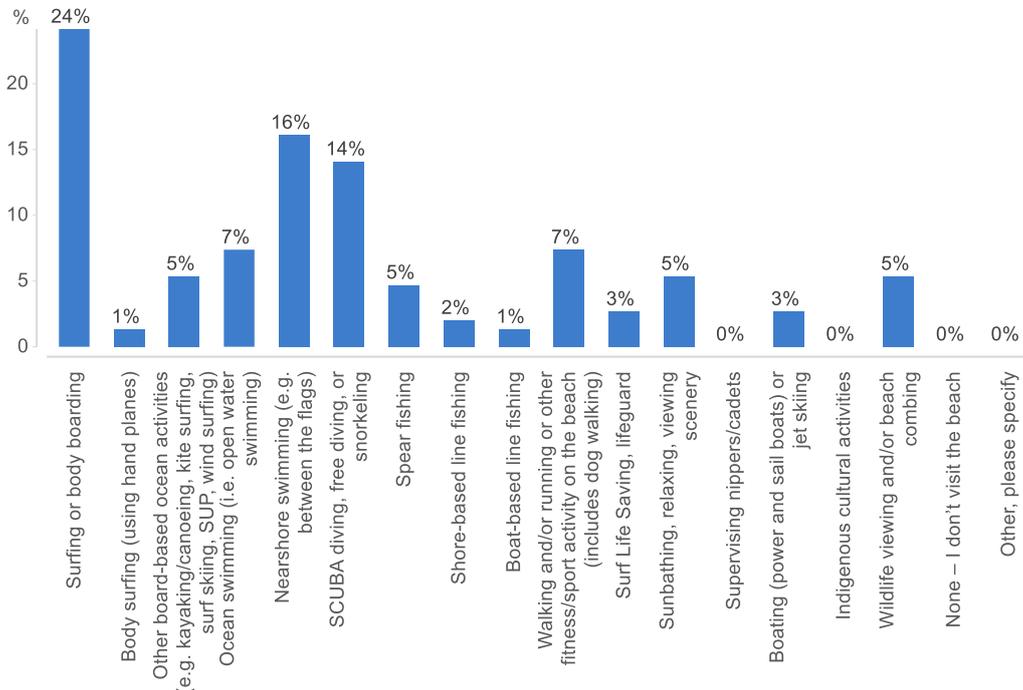
There were 149 individual responses, as follows.



There was a spread of ages over 18 and a majority of male respondents.

Main beach activity of respondents

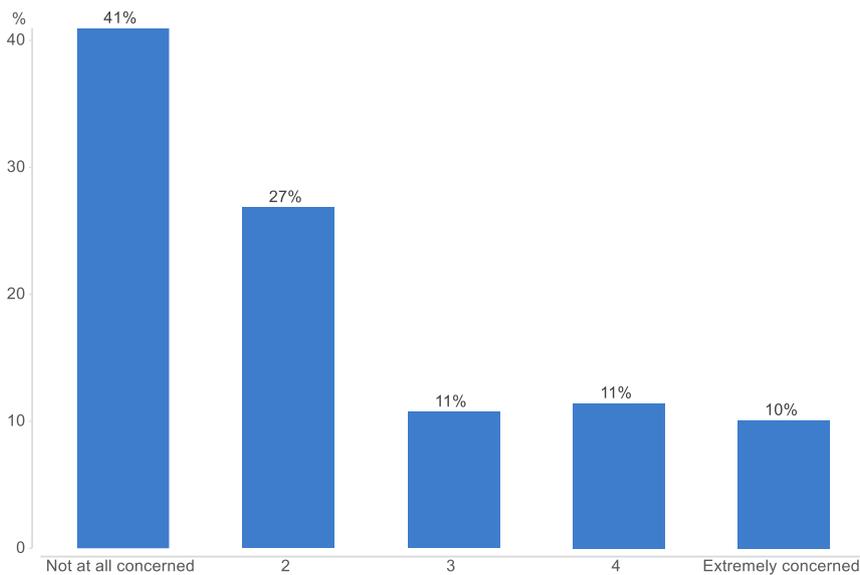
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were: Surfing and bodyboarding (24%), Nearshore swimming (16%) and Diving/snorkelling (14%).

Concern about encountering sharks

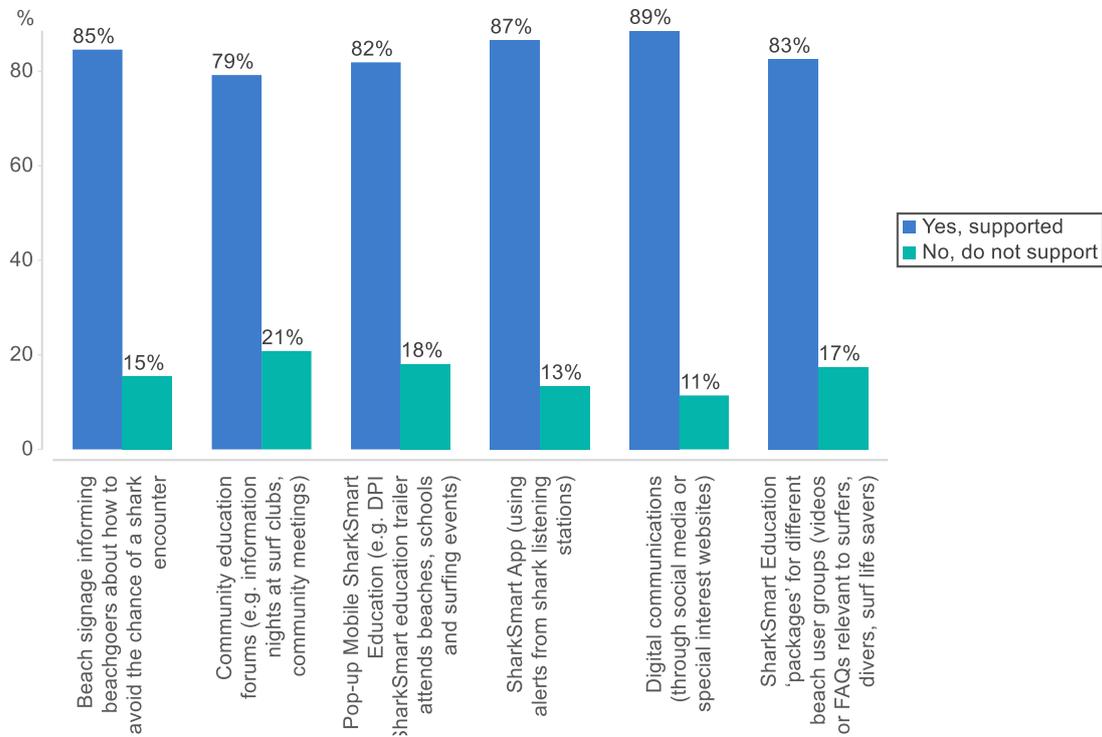
How personally concerned are you about encountering a shark while at a beach in NSW?



Most were either a little concerned or not concerned at all, 21% were either concerned or extremely concerned.

Support for Community education and shark-alert measures

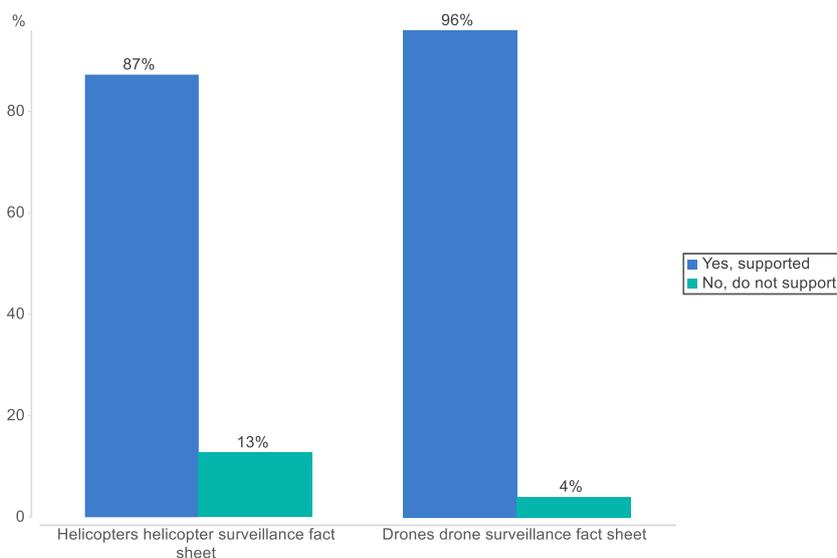
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high or strong support for all the Community education and shark-alert measures.

Support for aerial surveillance

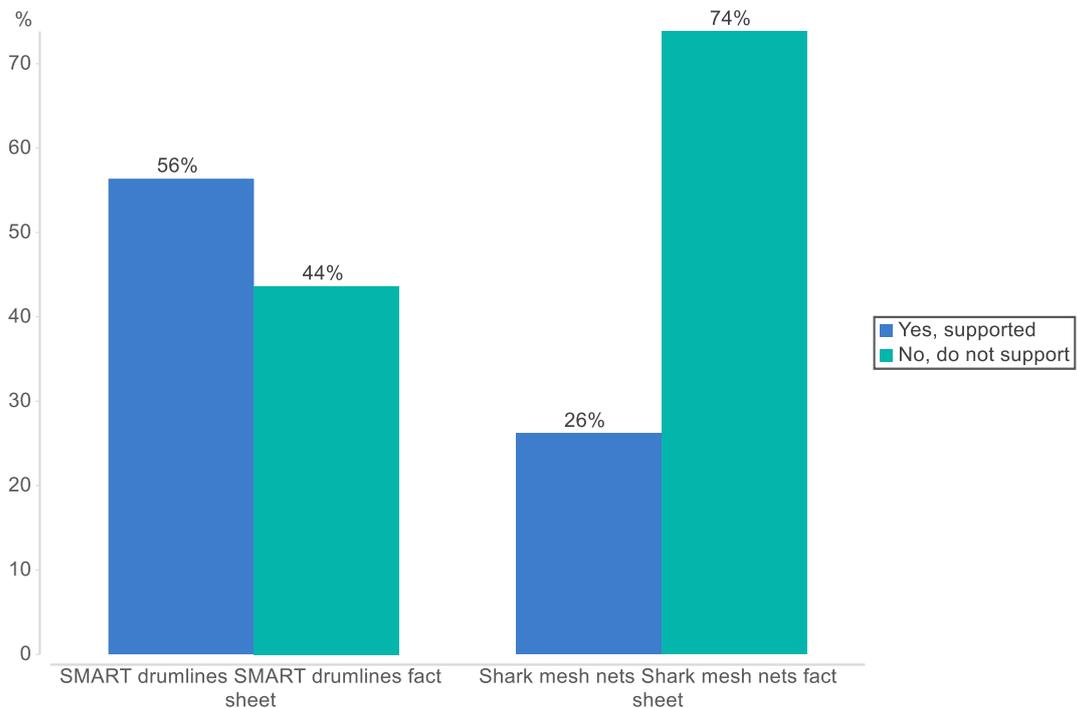
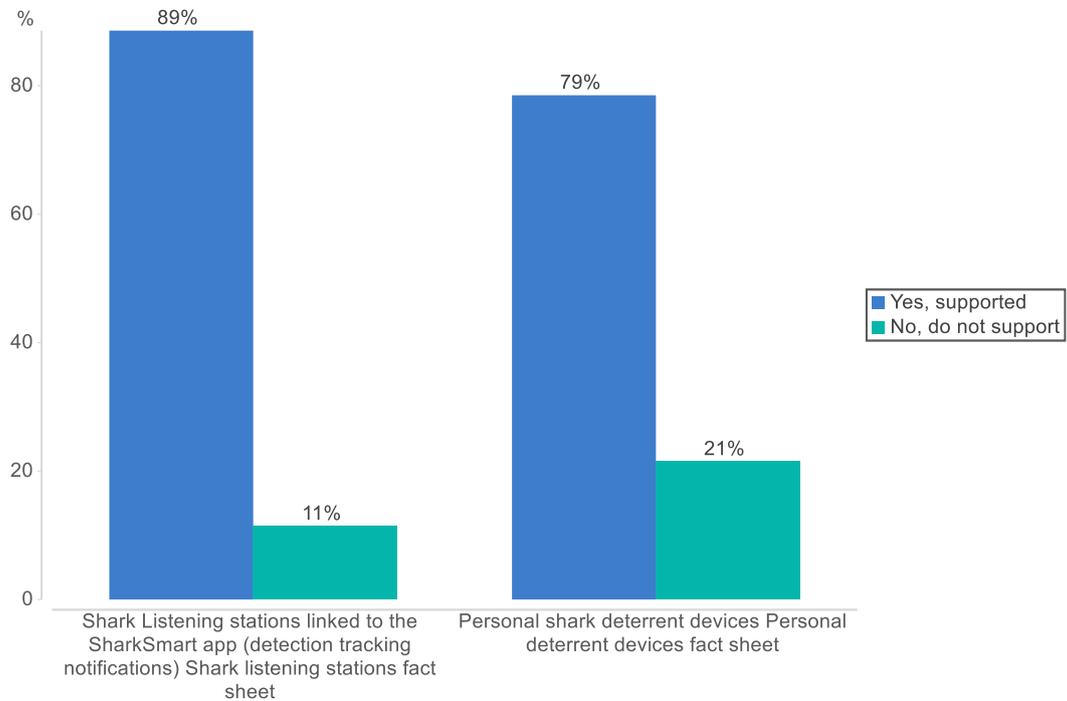
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and very high support for Drones.

Support for in-water measures

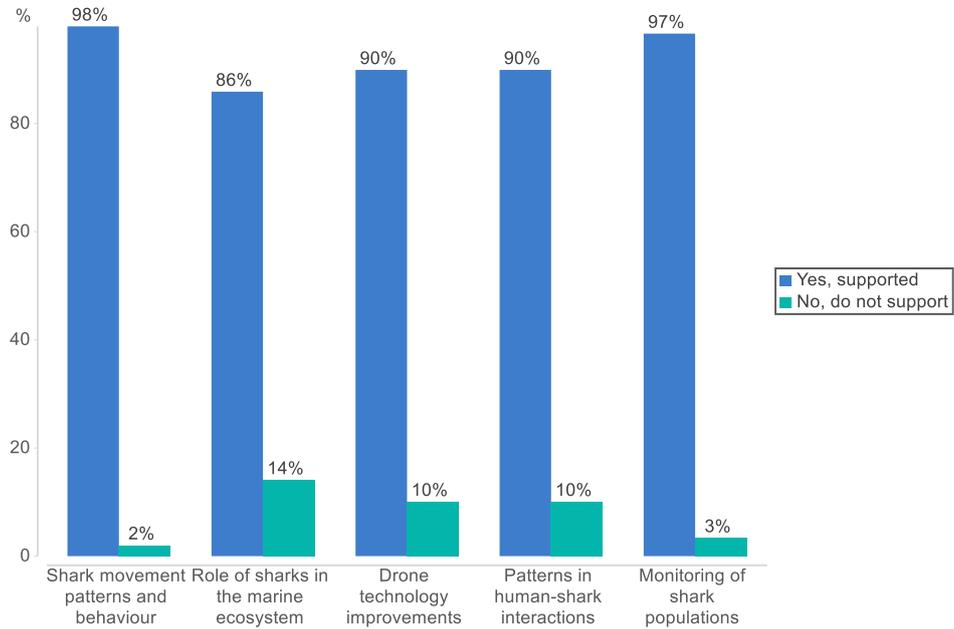
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and strong support for Personal shark deterrents. A small majority supported SMART drumlines and a larger majority did not support Shark mesh nets.

Support for research

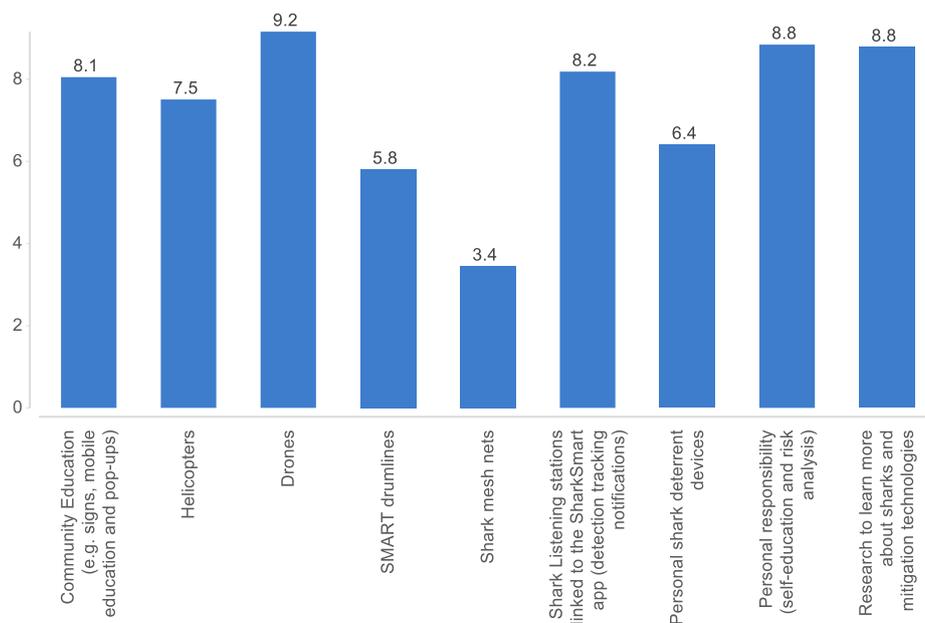
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all of the Research topics, highest for researching shark movements and behaviour, and monitoring populations.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



Most preferred measures were Drones followed by Personal responsibility and Research. The least preferred measure was Shark mesh nets.

8.18 Randwick City

8.18.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	7
	Drones	10
	SMART drumlines	8
	Shark mesh nets	5
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	6
	Personal responsibility (self-education & risk analysis)	6
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Randwick City Council's (RCC's) strongest preference in regard to shark mitigation technologies is in drones, SMART Drumlines and VR4G listening stations. RCC now has drones and can fly frequently, 365 days of the year to help quickly identify sharks in the water and clear the beaches if required. Drones are relatively low cost, can be rapidly deployed over the beaches, have no impact to sharks or other marine animals and provide an effective way to quickly observe/identify various marine life in the water. In regard to the SMART Drumlines, the data published by DPI from other NSW regions looks favourable in relation to the percentage of target species caught and also the relatively low impact across all marine species. With increased tagging of target sharks through the SMART Drumline program, this will then increase the effectiveness of the VR4G listening stations. Trialling these technologies along the RCC coastline will hopefully yield similar results to other NSW regions, justifying their long-term inclusion as part of the Shark Mitigation strategy across RCC beaches.</p> <p>While Shark Meshing statistics are not as favourable in regard to target species caught and the volume of marine life found dead, RCC recommends retaining this long-standing shark mitigation tool while a successful trial of the above technologies is conducted along the RCC coastline. Any proposed changes, however, should only be considered after significant community consultation and engagement with the local community. Equally important is continued research and education. While it is very important to gain a better understanding of sharks and their behaviours, extensive education will go a long way to ensuring the community have accurate and up-to-date information about the various marine life and shark mitigation tools.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

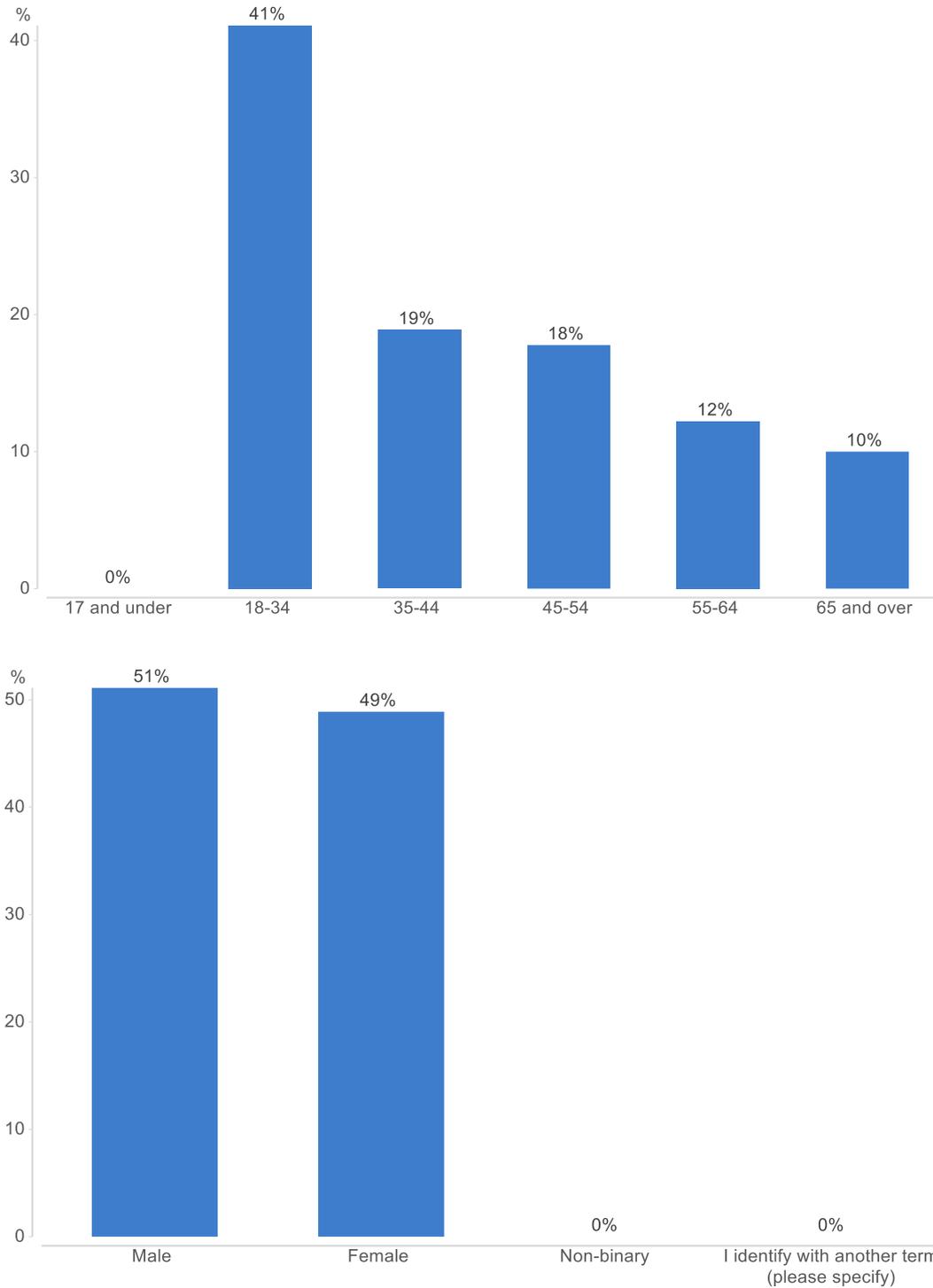
8.18.2 Other organisation responses Randwick City

No submissions received.

8.18.3 Survey responses from individuals

Sample

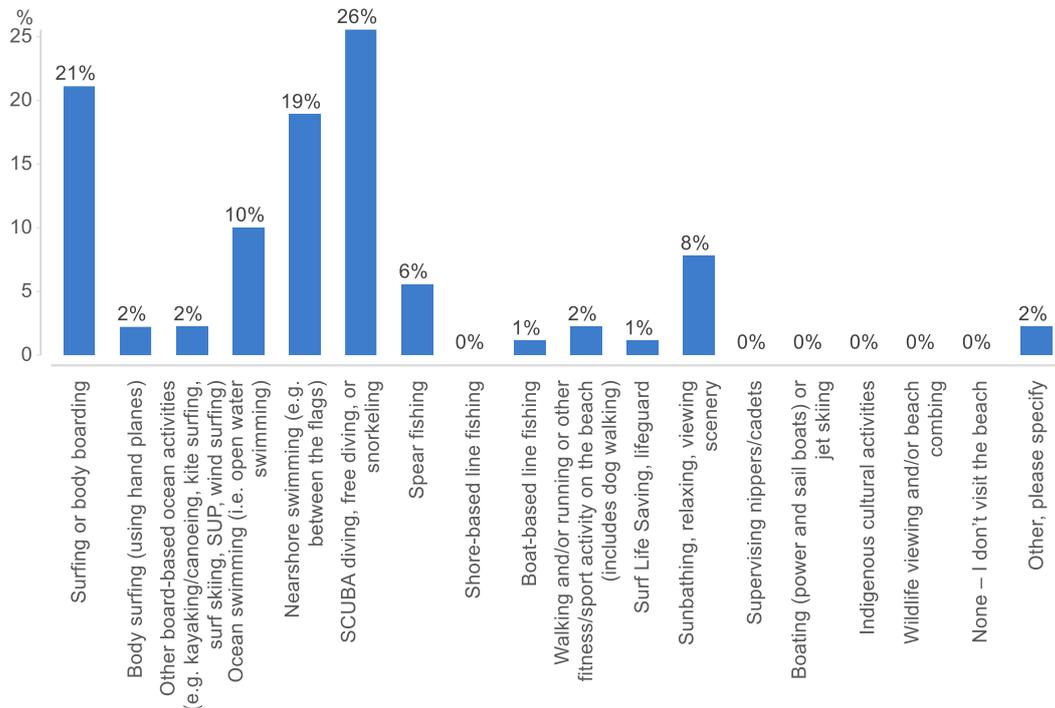
There were 90 individual responses, as follows.



There was a spread of ages over 18 and gender was closely divided.

Main beach activity of respondents

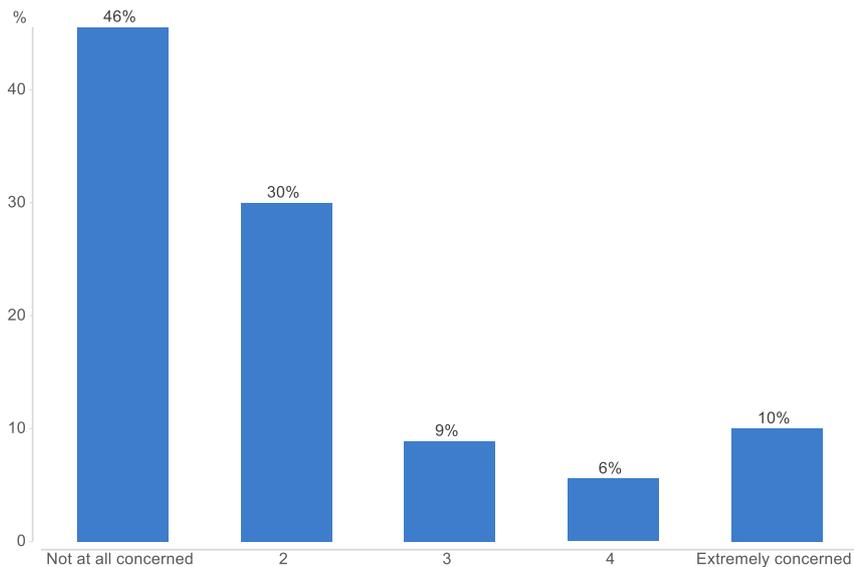
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were diving/snorkelling (26%), surfing or bodyboarding (21%) and nearshore swimming (19%).

Concern about encountering sharks

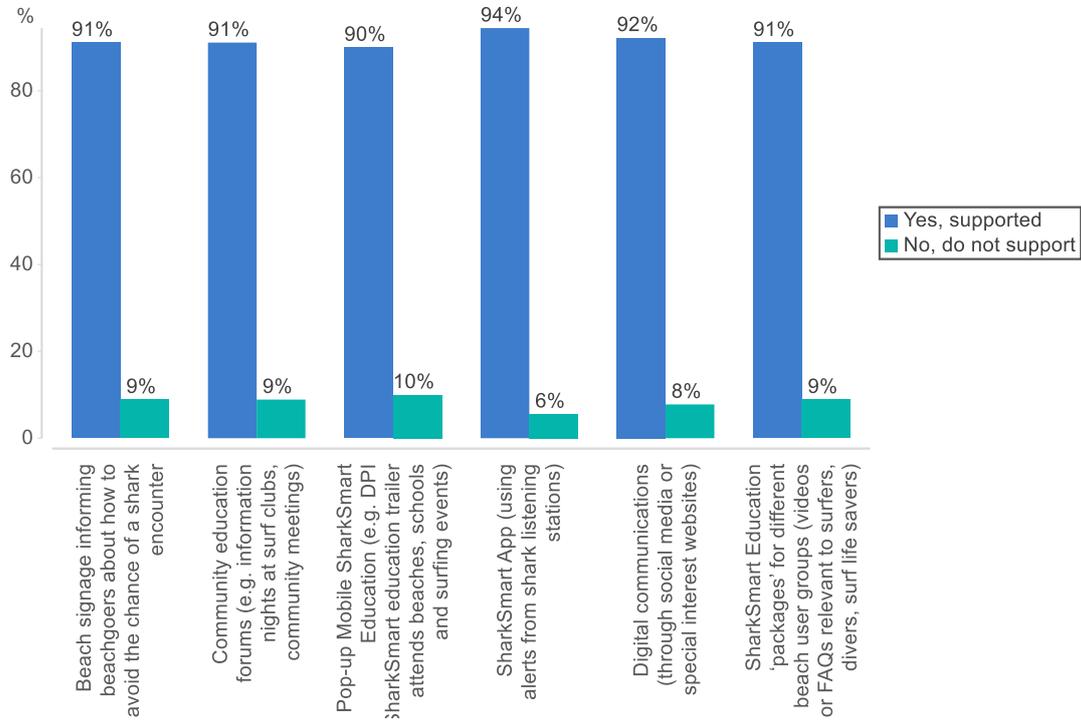
How personally concerned are you about encountering a shark while at a beach in NSW?



A large majority were either a little concerned or not concerned at all. 10% were extremely concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

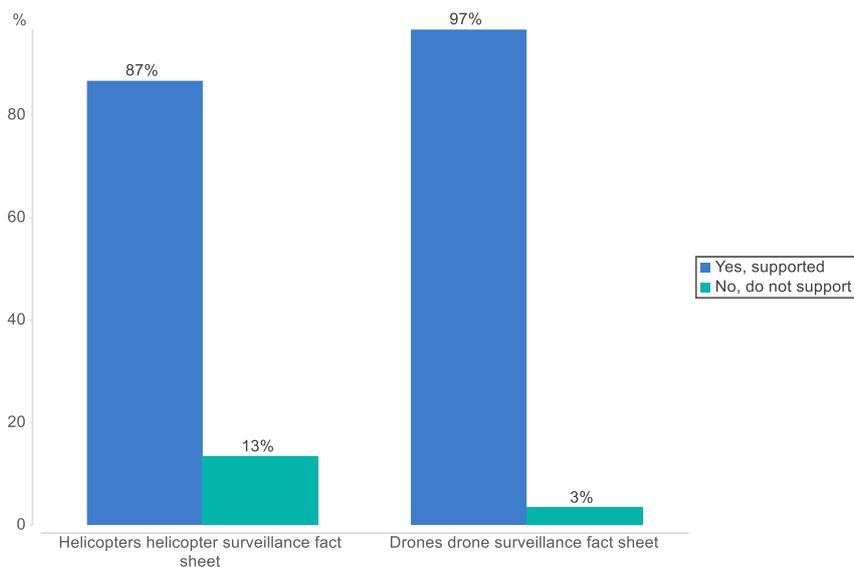
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Community education and Shark alert measures.

Support for aerial surveillance

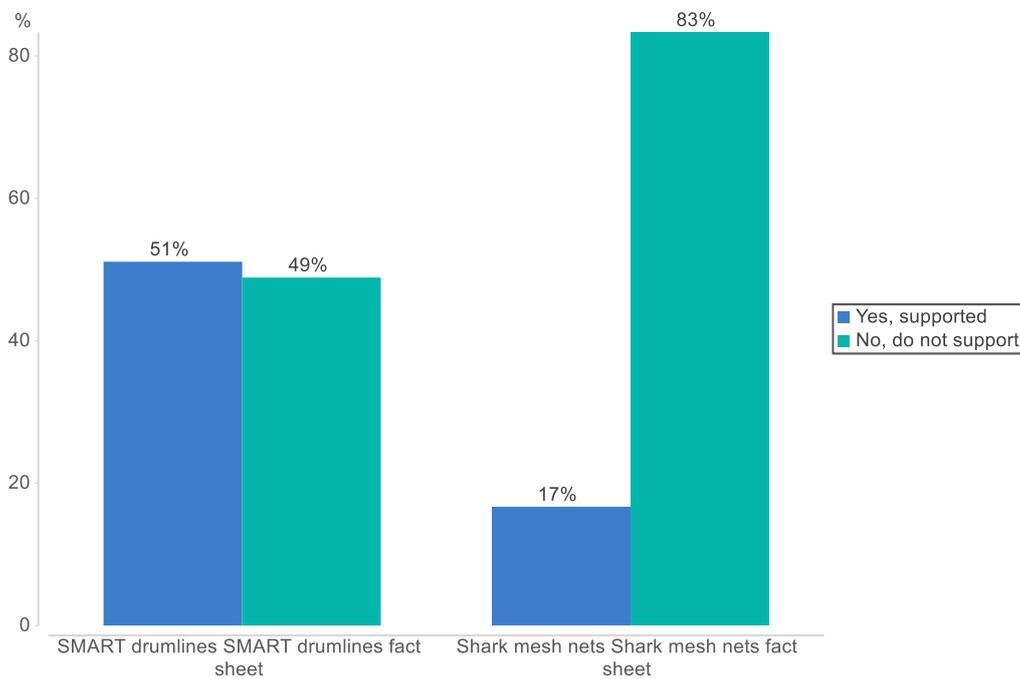
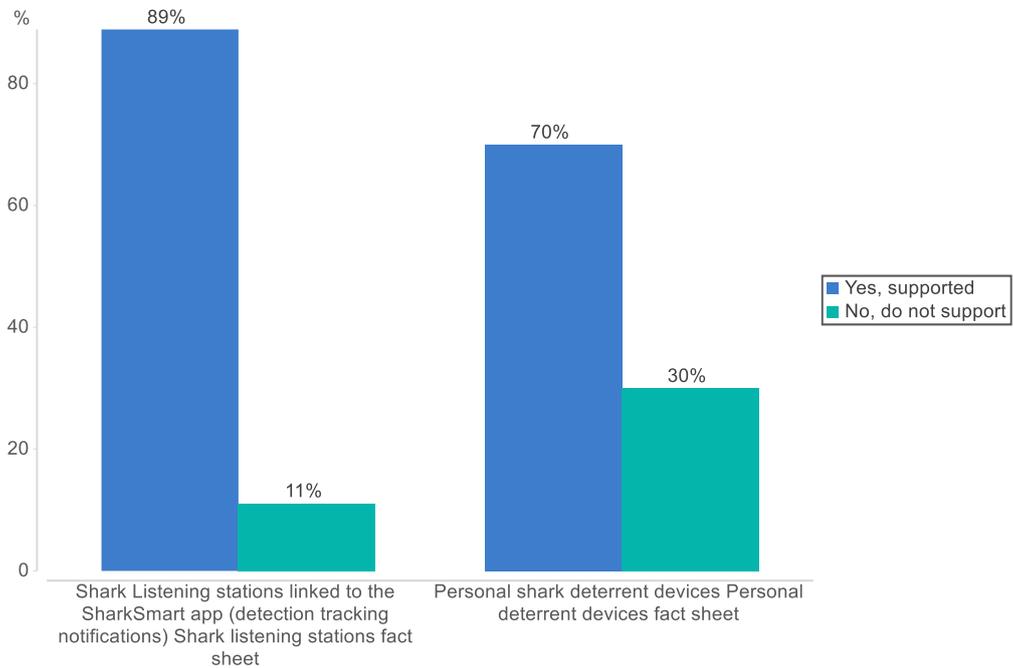
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and very high support for Drones.

Support for in-water measures

The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?

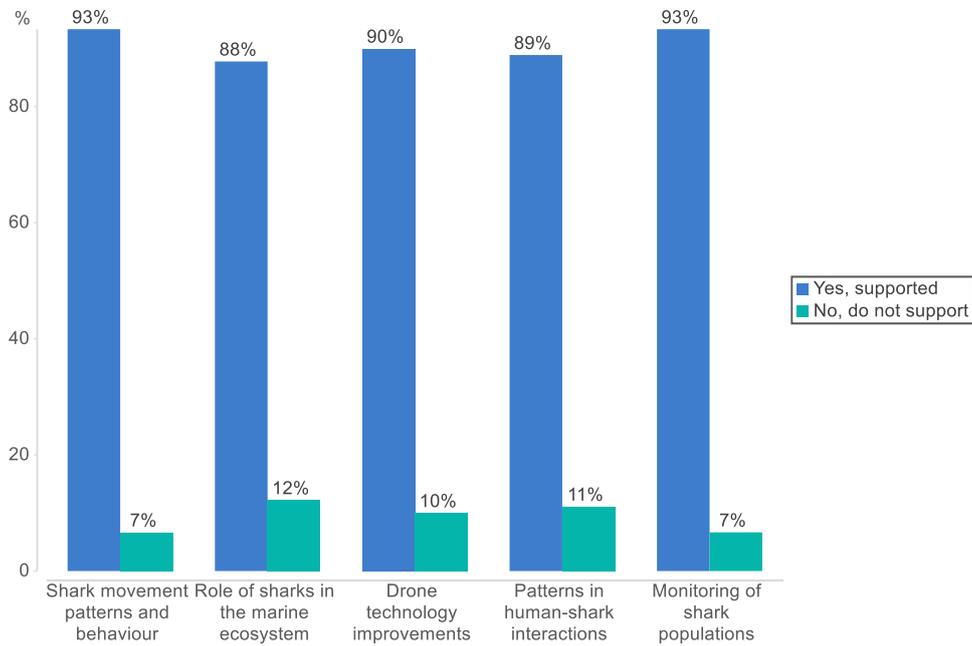


There was high support for Listening stations and majority (70%) support for Personal shark deterrents.

The Community were divided over support for SMART drumlines and a large majority did not support Shark mesh nets.

Support for research

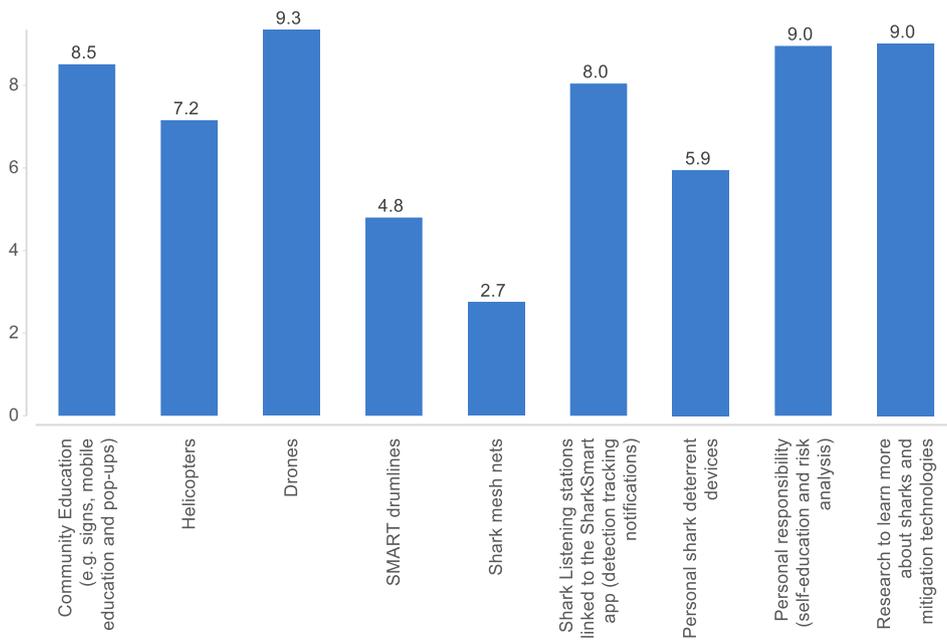
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all the Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



Drones were the most preferred measure, followed by Personal responsibility and Research. The least preferred measure was SMART drumlines.

8.19 Waverley

8.19.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
	SMART drumlines	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	5
	Helicopters	3
	Drones	2
	SMART drumlines	5
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	2
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation tech	7

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>Waverley Council understands that there is a very low swimmer safety risk to bather safety from sharks and that this risk is lower in Sydney than on the North Coast of NSW. This is reflected in the comparatively low number of sharks detected at Bondi by the listening station.</p> <p>From the research presented, the very significant impact of shark meshing on marine biodiversity, including dolphins, a dugong and a diverse number and quantity of rays and sharks is unacceptable. Shark meshing is identified as a key threatening process under the NSW Threatened Species Act, with impacts on threatened species such as Grey Nurse sharks and impacts on other species such as seals could be avoided by their removal. It also appears that the effectiveness of this management option is very limited in improving bather safety. The lack of actual beach protection provided by the meshing and the migratory nature of White, Tiger and Bull sharks and the significant impact on marine biodiversity mean that DPIE should strongly consider discontinuing shark meshing in future shark management options.</p> <p>Waverley Council considers SMART drumlines to be a moderate preference option, although they are not supported in the Waverley coast. Options to minimise impact on sharks caught on drumlines should be pursued. The listening station at Bondi is supported and relies on shark tagging from the SMART drumlines.</p> <p>The use of drones to detect the presence of sharks is noted. Council sees the use of drones as complementary to other management options. They could be a useful tool for Waverley lifeguards who would be able to utilise them year-round for a range of uses. They are limited in terms of weather conditions, aerospace, launching from crowds, and not as a permanent observation control but may be useful on as needs basis.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>The research provided by DPIE shows that there are fewer sharks tagged in the Sydney region than in other areas such as the NSW mid-North and North Coast. Council supports the use of permanent SMART drumlines in these areas but not in the Sydney region, except for research purposes.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

8.19.2 Other organisation responses Waverley

Dive Centre Bondi

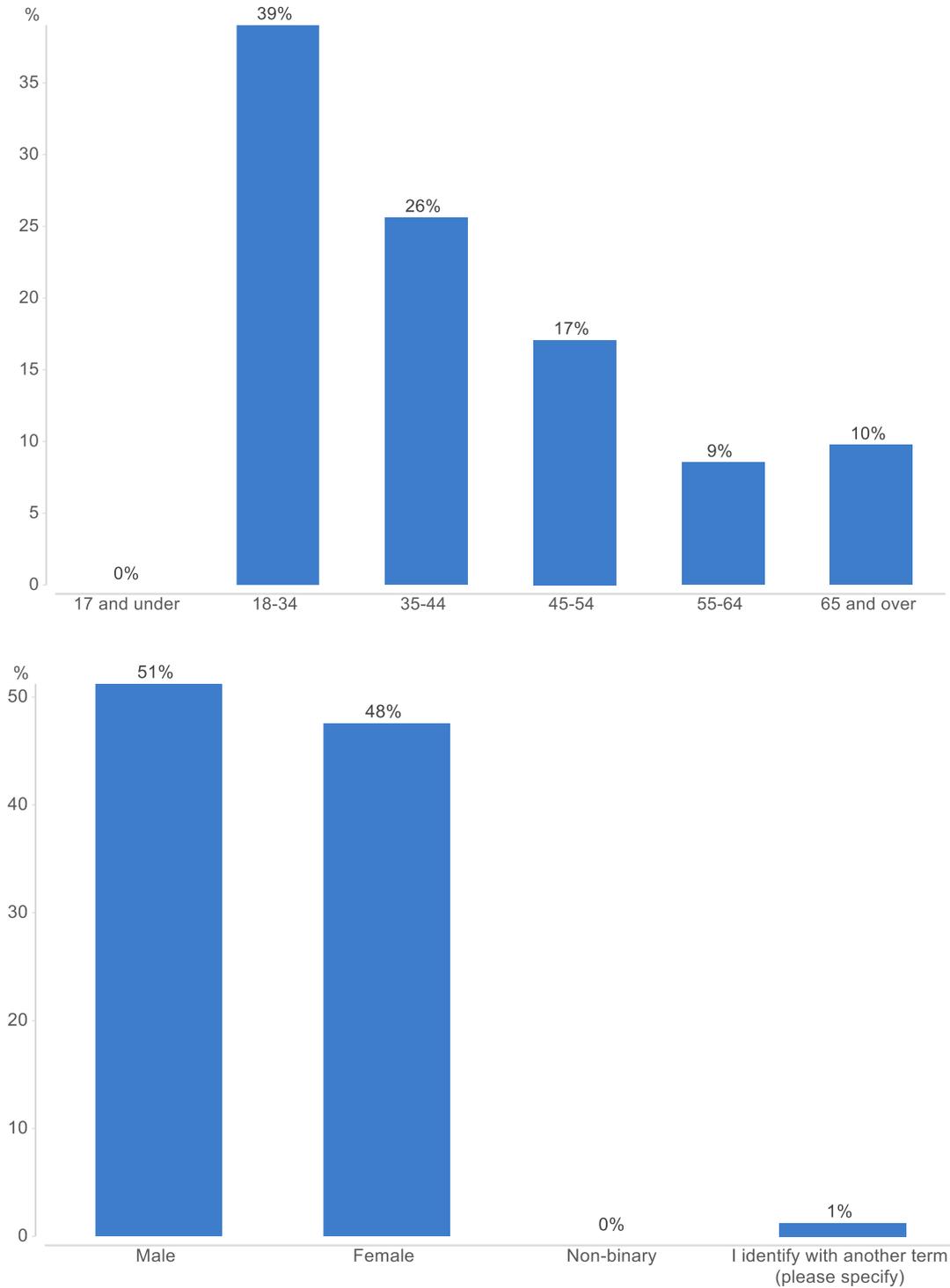
Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	9
	Helicopters	7
	Drones	9
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	0
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Sharks are an important part of our ecosystem. We need to learn to live alongside them as we cannot afford to live without them. Education is by far the best option. It is not up to us to control their behaviours, only our own.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

8.19.3 Survey responses from individuals

Sample

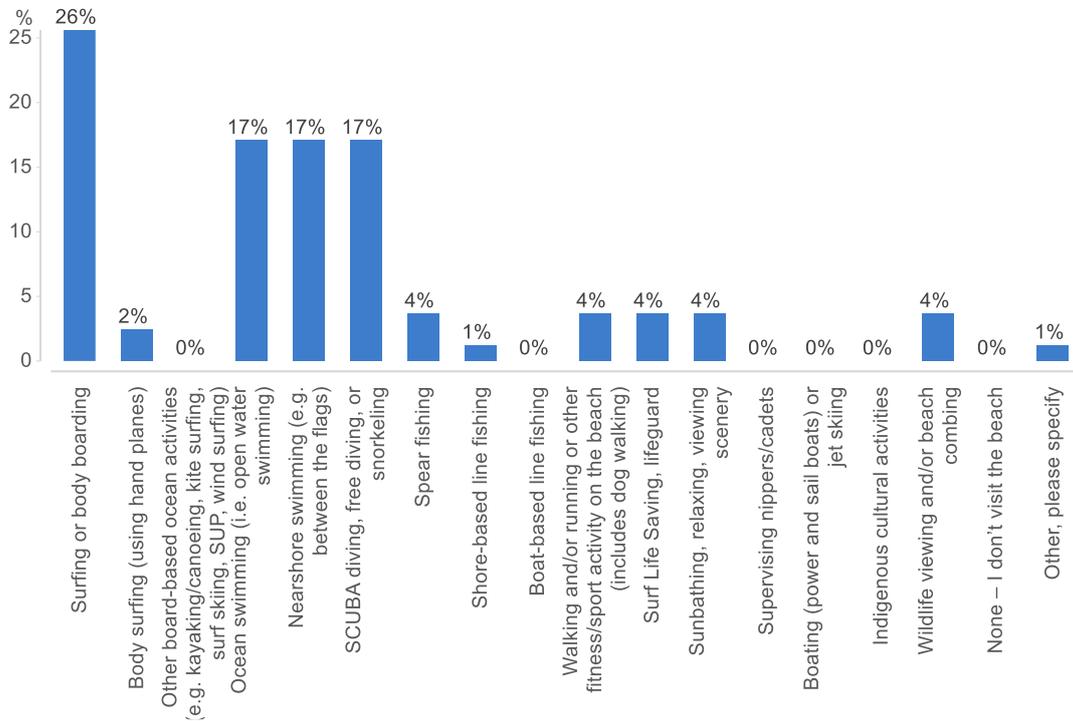
There were 82 individual responses, as follows.



There was a spread of ages over 18 and male and female numbers were almost even.

Main beach activity of respondents

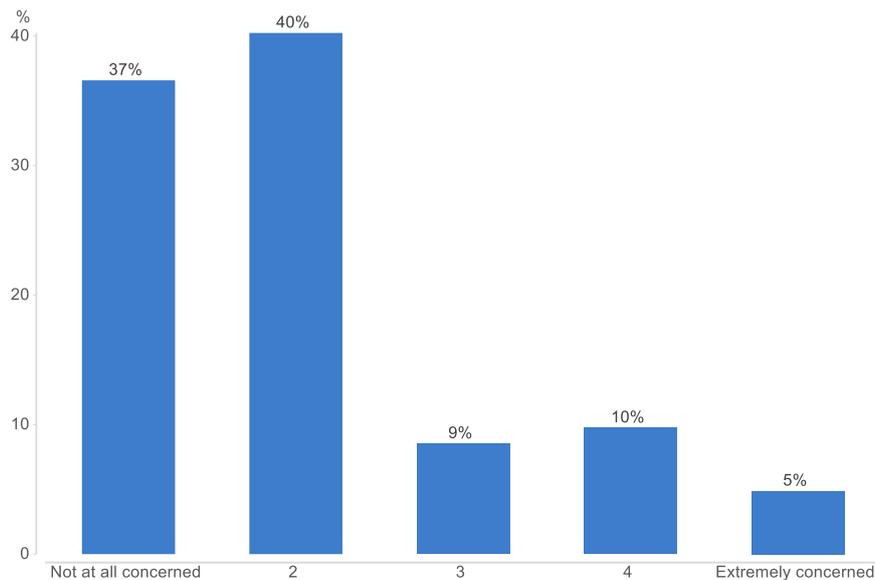
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (26%), ocean swimming (17%), nearshore swimming (17%), and diving/snorkelling (17%).

Concern about encountering sharks

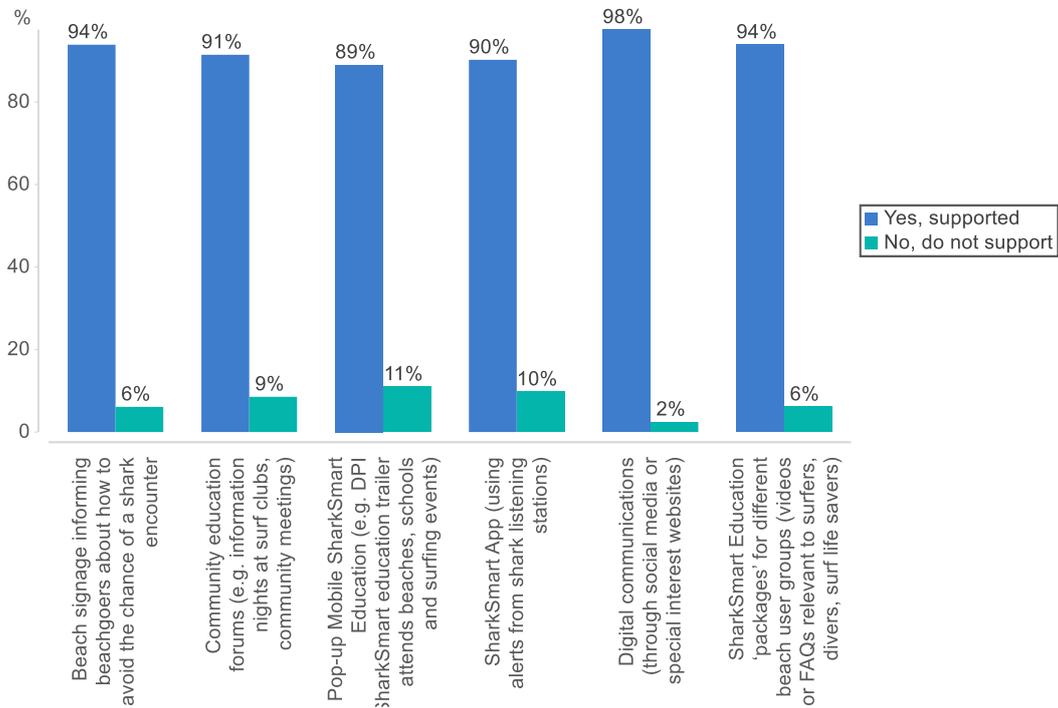
How personally concerned are you about encountering a shark while at a beach in NSW?



A large majority were little concerned or not concerned at all, 5% were extremely concerned.

Support for Community education and shark-alert measures

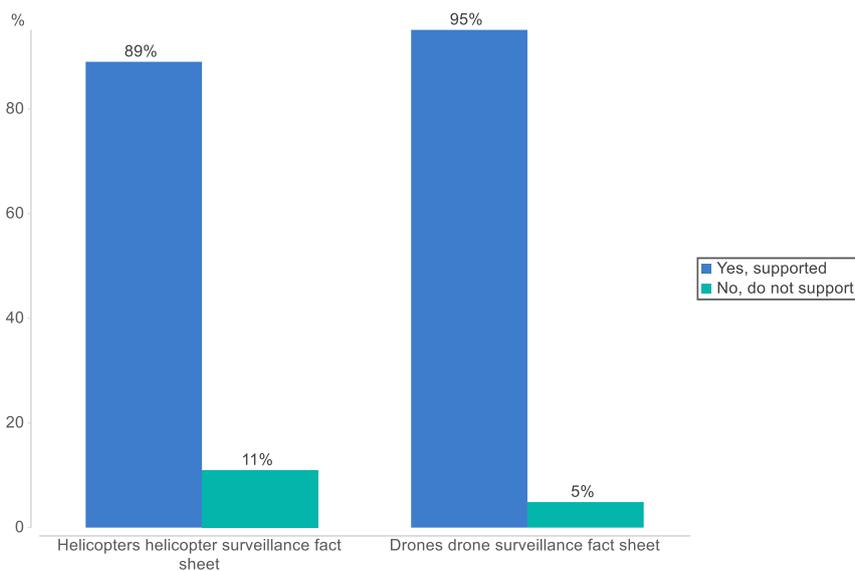
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



Support for all Community education and shark-alert measures was high.

Support for aerial surveillance

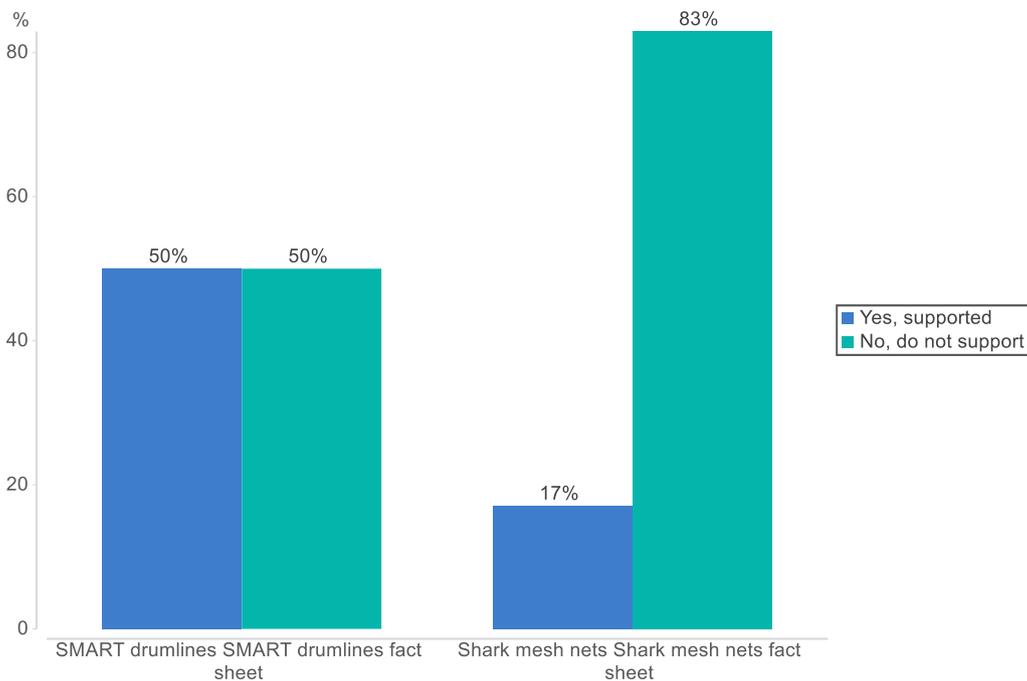
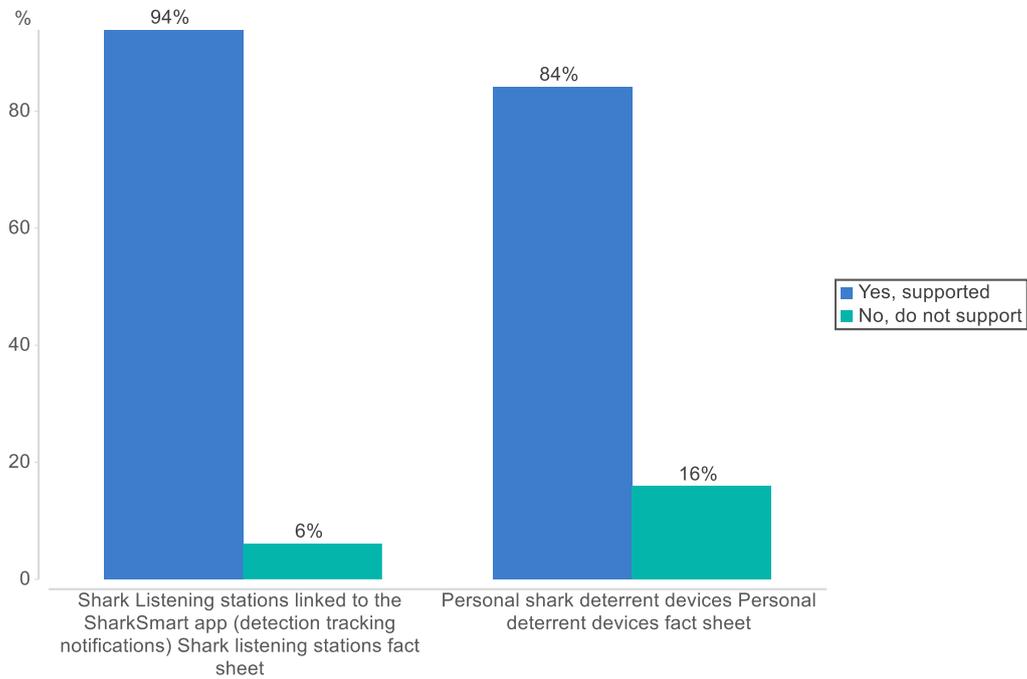
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and Drones.

Support for in-water measures

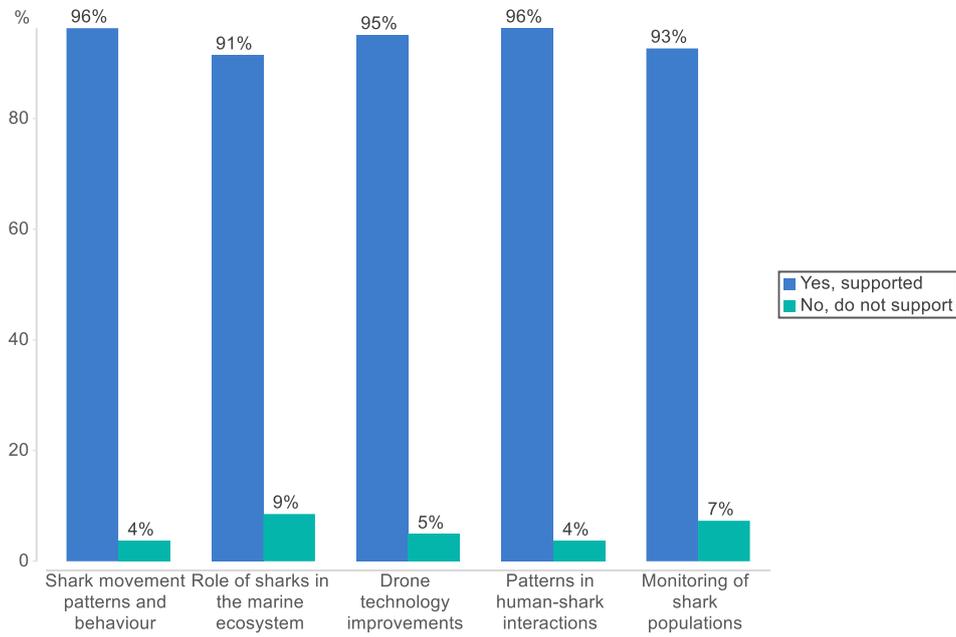
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listing stations and Strong support for Personal shark deterrents. The Community was divided over support for SMART drumlines and a large majority did not support Shark mesh nets.

Support for research

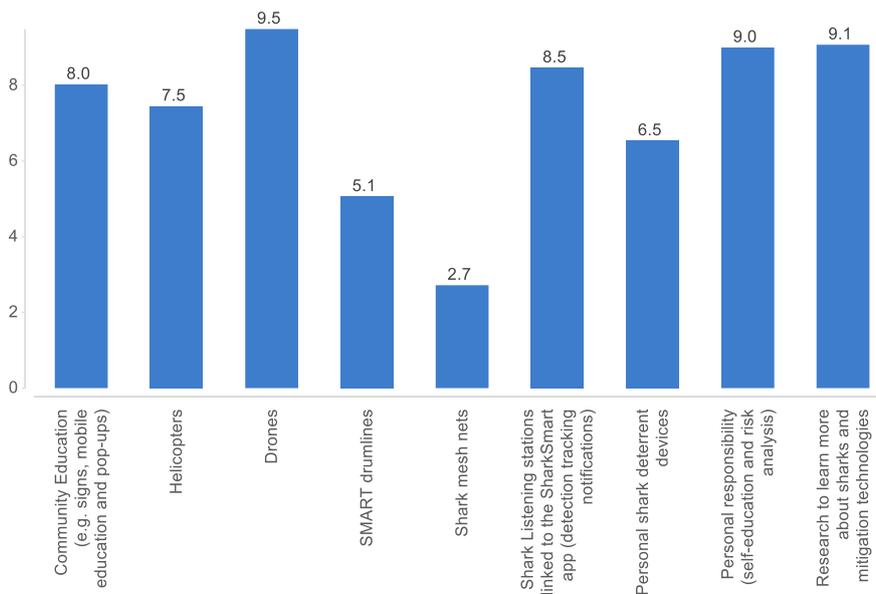
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The most preferred measure was Drones, followed by Research and Personal shark deterrents. The least preferred was Shark mesh nets.

8.20 Wollongong City

8.20.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	6
	Helicopters	10
	Drones	9
	SMART drumlines	10
	Shark mesh nets	2
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	7
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>SMART drum lines and aerial surveillance technology were rated the highest preference for mitigation measure being considered a more suitable and ecologically sound alternative in addressing the need to protect users of our beaches and surfing locations especially in the Wollongong LGA and the Illawarra. Helicopter surveillance was given a slightly higher preference above drones due to the specific need to monitor a high number of patrolled beaches in the Illawarra (including those not currently netted).</p> <p>Continuing research to learn more about shark patterns and behaviours and mitigation measures was also given the highest preference recognising the importance of the role of research in minimising environmental harm whilst maximising swimmer safety. Continuing investment in this research will also contribute to world leading shark research.</p> <p>Individual mitigation measures (personal responsibility and personal shark deterrent devices) were given a slightly lower preference (although still high at 7) due to the potential equity issues with lower income residents unable to afford such devices, and the diversity of beach goers who may not speak or read English or a good understanding of the beach. This is particularly pertinent for Wollongong being home to a large international student population and an area popular with persons visiting from Western Sydney, an area with high cultural and linguistic diversity.</p> <p>Community education (signs, mobile education, pop ups) was given a preference of 6 being important but playing a more supporting role in an integrated approach.</p> <p>Shark netting was given the lowest preference for all mitigation measures noted due to the association with harm to marine wildlife and ineffectiveness of technology targeting target shark species. However, there is likely continuing support from some community members and swimmers who believe that shark nets allow use of the ocean without the fear of risk of shark interactions.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Council currently patrols 17 beaches with shark netting protecting beach users installed at Coledale, Austinmer, Thirroul, North and City Beaches. Given the long association with netting at these beaches, Council supports a phasing out of the current shark meshing program and replacing it with a combination of alternative shark mitigation strategies (such as drone surveillance, personal shark deterrents, education and SMART drumlines) that more effectively protect beach users whilst minimising harm to marine wildlife.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

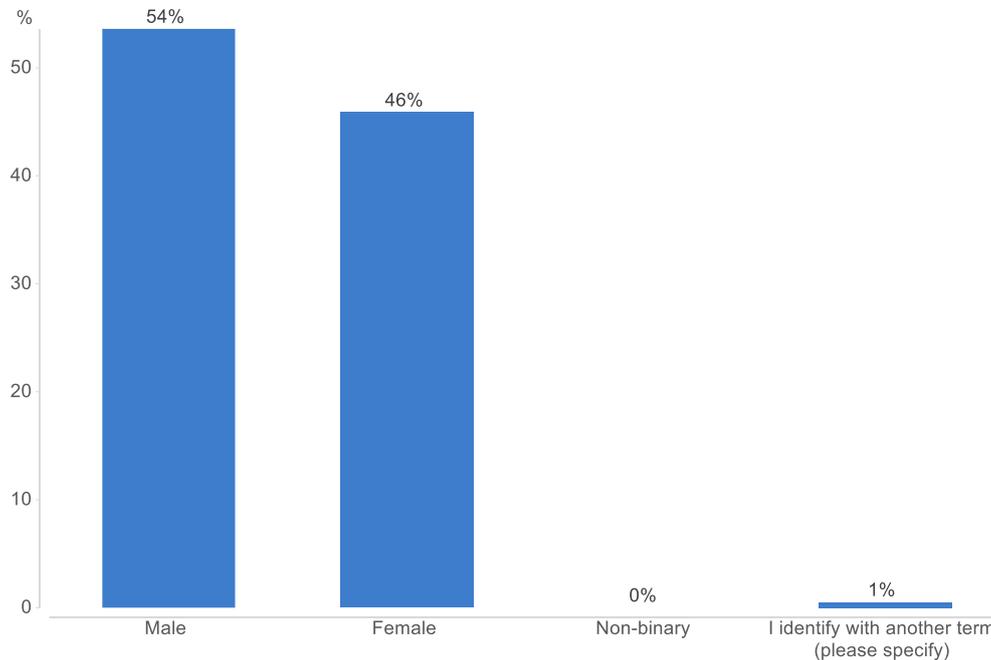
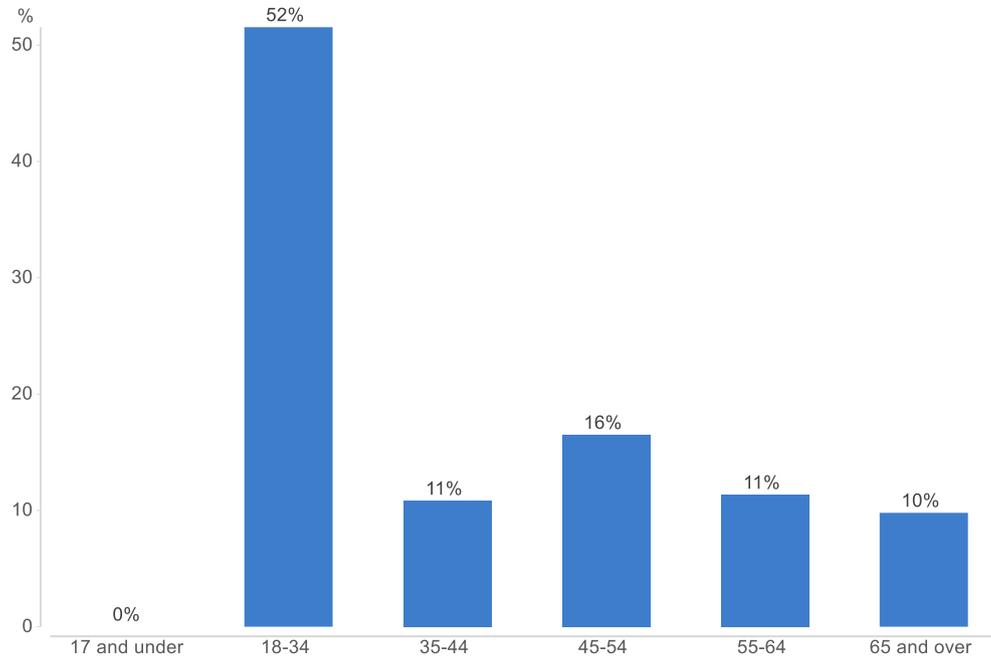
8.20.2 Other organisation responses Wollongong

No submissions received.

8.20.3 Survey responses from individuals

Sample

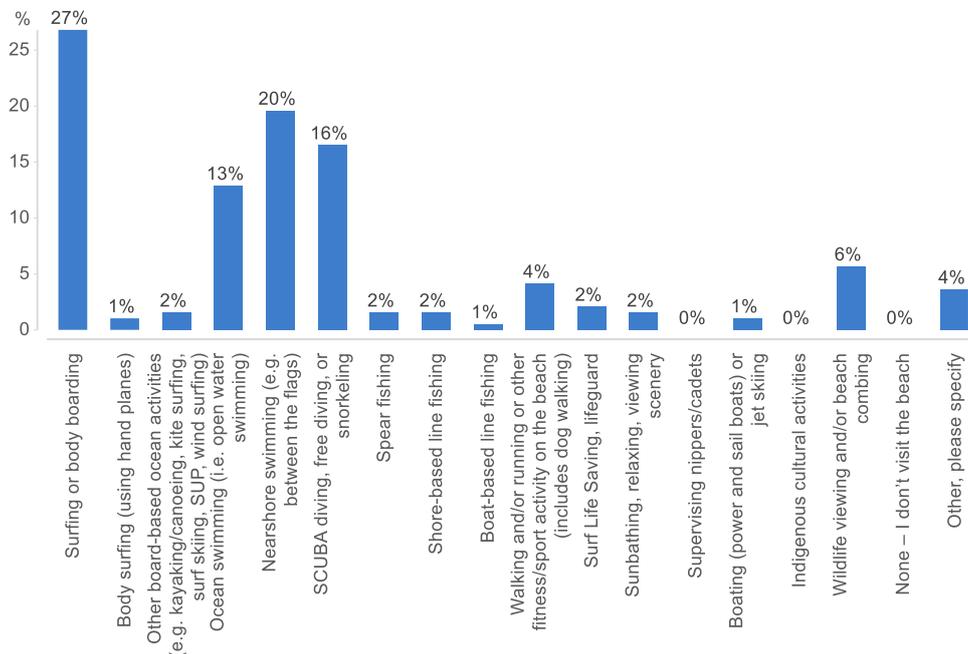
There were 194 individual responses, as follows.



The majority of respondents were aged 18-34 and there was spread of older respondents. There were more males (54%) than females (46%).

Main beach activity of respondents

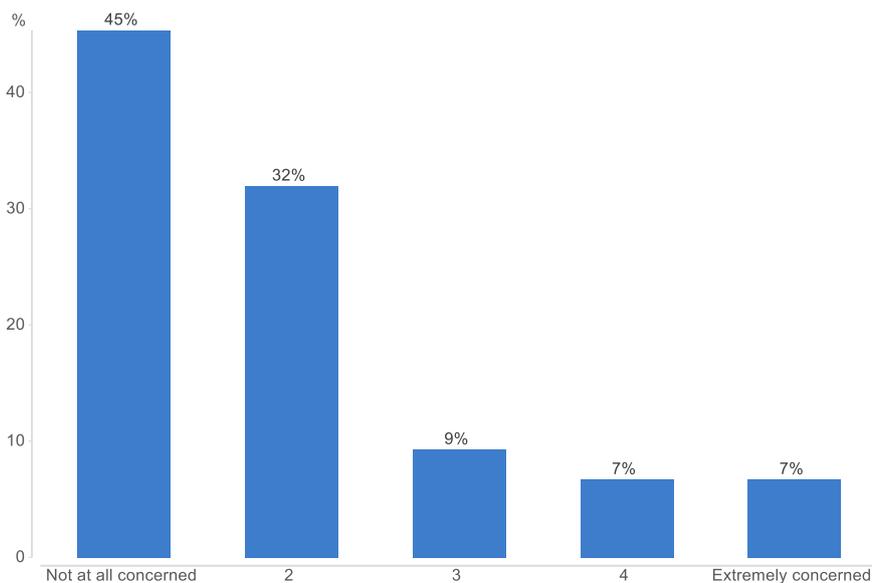
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (27%), nearshore swimming (20%), and diving/snorkelling (16%).

Concern about encountering sharks

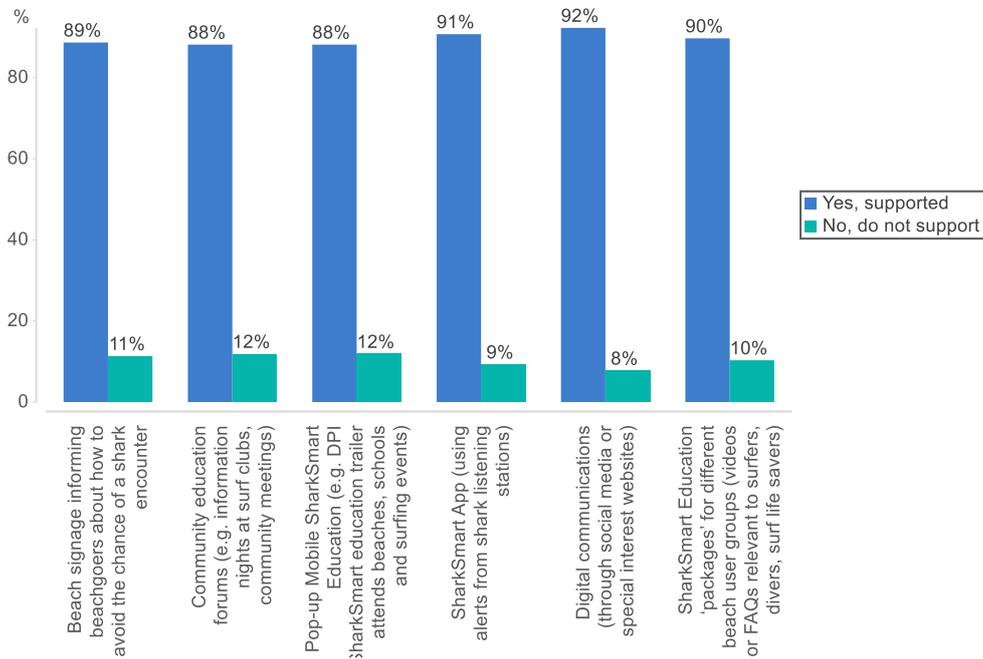
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were either little concerned or not concerned at all about encountering a shark at the beach. A small minority (7%) were extremely concerned.

Support for Community education and shark-alert measures

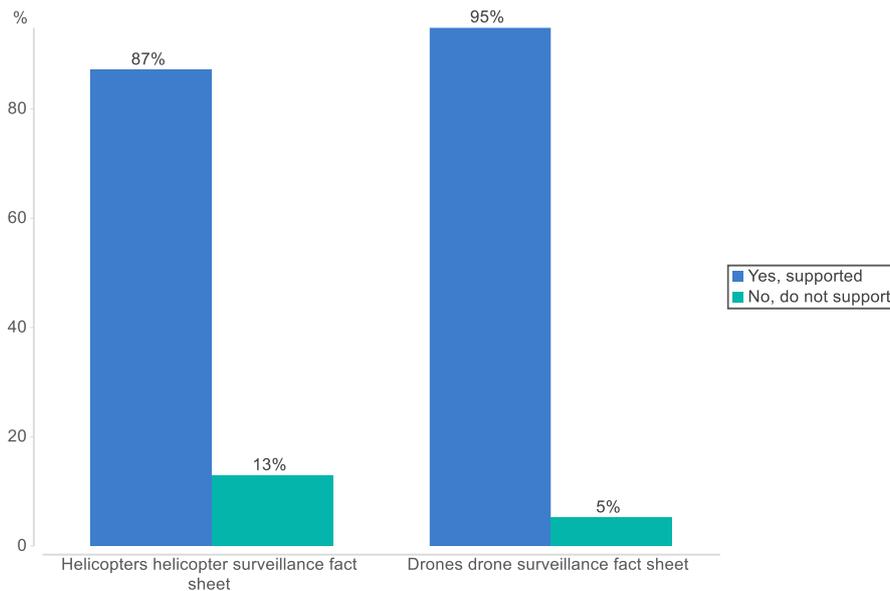
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all the Community education and shark-alert measures.

Support for aerial surveillance

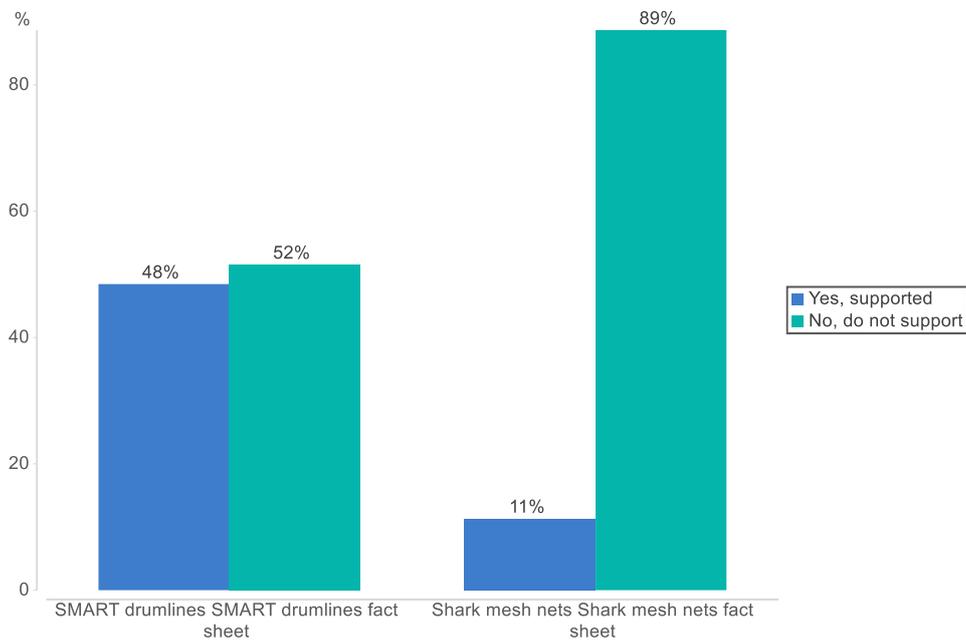
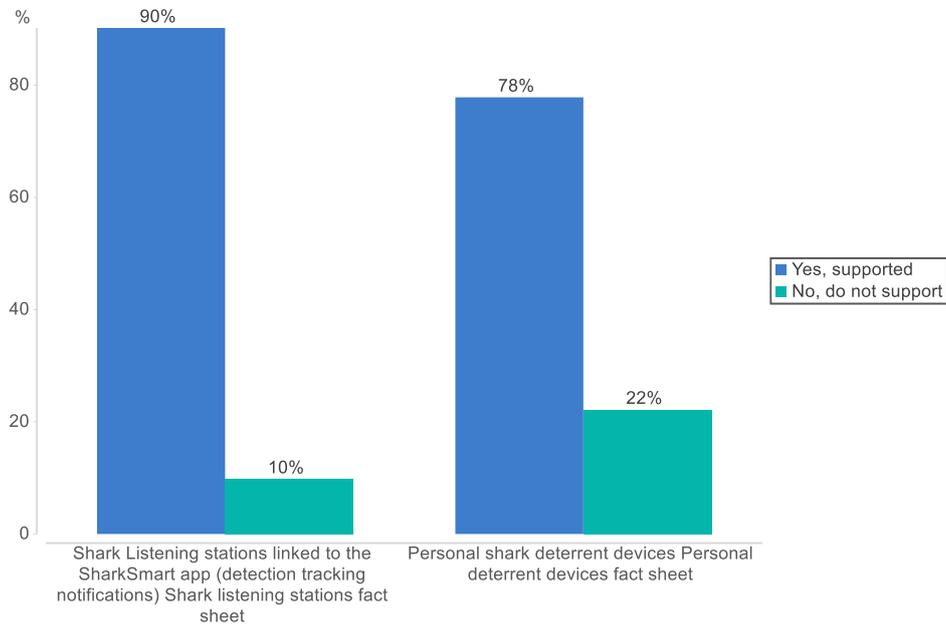
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and very high support for Drones.

Support for in-water measures

The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?

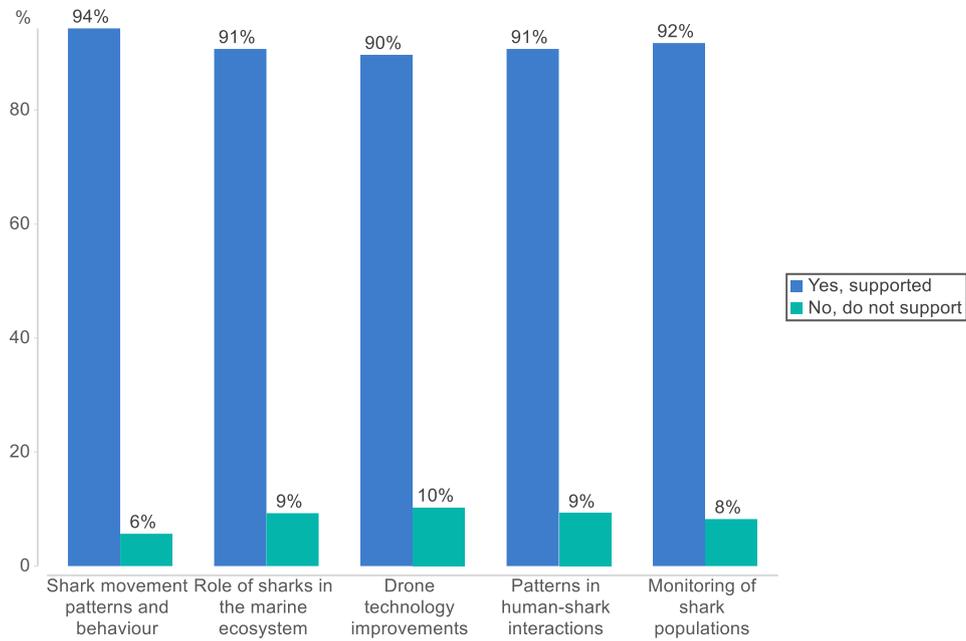


There was high support for Listening stations and strong support for Personal shark deterrents.

The Community was divided over support for SMART drumlines and a large majority did not support Shark mesh nets.

Support for research

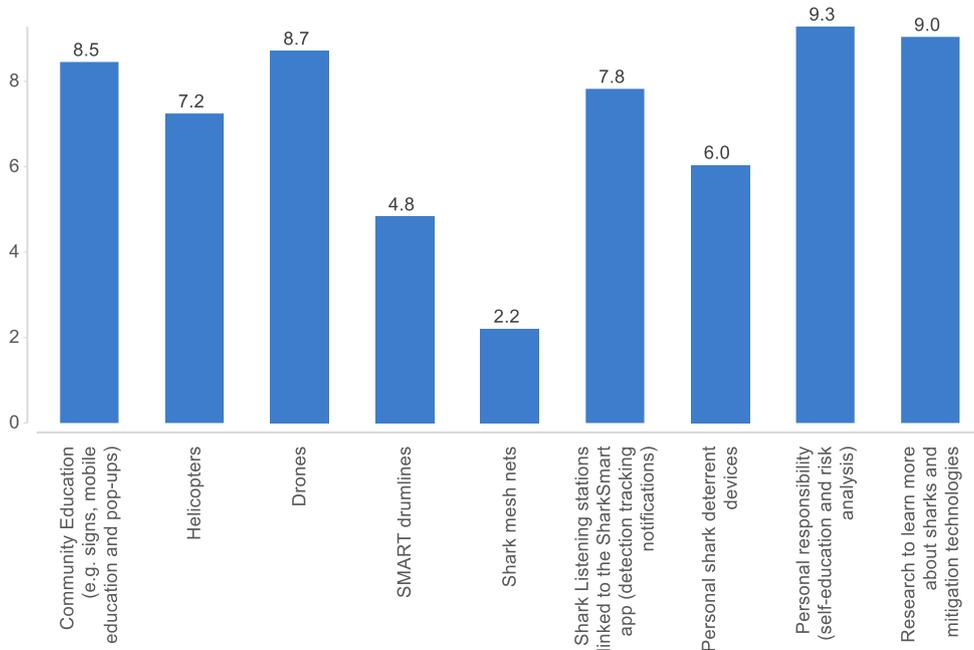
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



Personal responsibility was the most preferred measure, followed by Research and Drones. Shark mesh nets were the least preferred measure.

8.21 Shellharbour Council

8.21.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	9
	Helicopters	6
	Drones	7
	SMART drumlines	7
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	5
	Personal responsibility (self-education & risk analysis)	9
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	SCC has had no mitigations in place other than drone monitoring over 2020-2021 summer season. Preferred methods are those that reduce/minimise harm to sharks and other animals (e.g. education, monitoring, and research preferred over drumlines, and drumlines preferred over nets), increase knowledge and awareness (research & monitoring), and are most resource-efficient (e.g. drones preferred over helicopters). We also prioritise personal responsibility due to usage outside of patrolled times (off-season, pre & post patrol hours, etc.).	

<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Other than lifeguard services, no other trial mitigations have been in place other than limited drone surveillance. Regarding research, our preferred priority topics are patterns in human-shark interactions, shark movement patterns and behaviour, and monitoring of shark populations.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

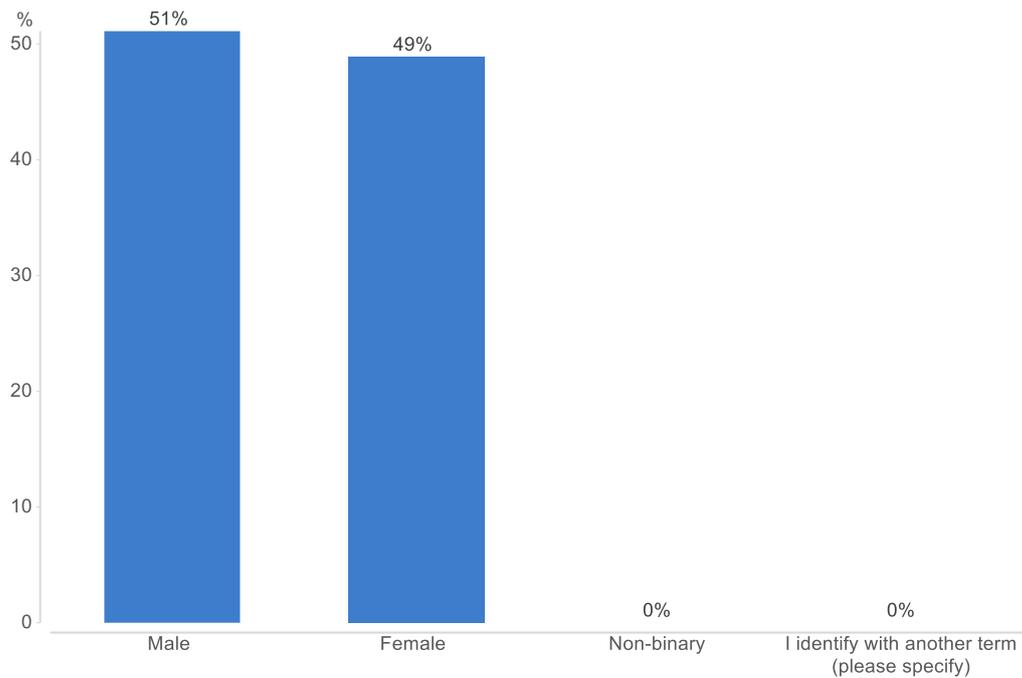
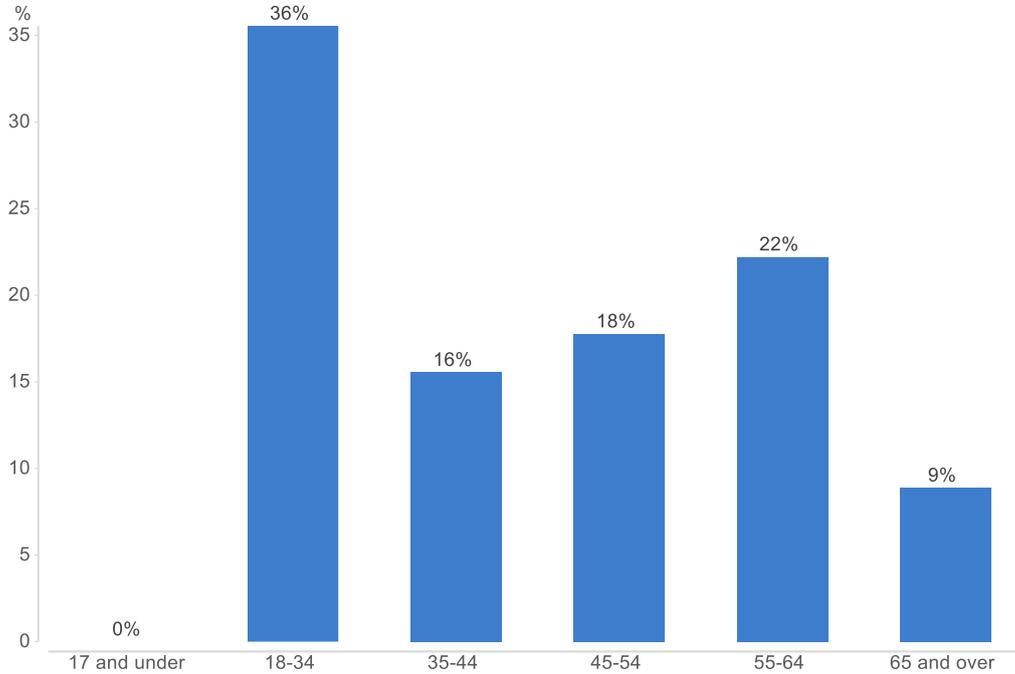
8.21.2 Other organisation responses Shellharbour

No submissions received.

8.21.3 Survey responses from individuals

Sample

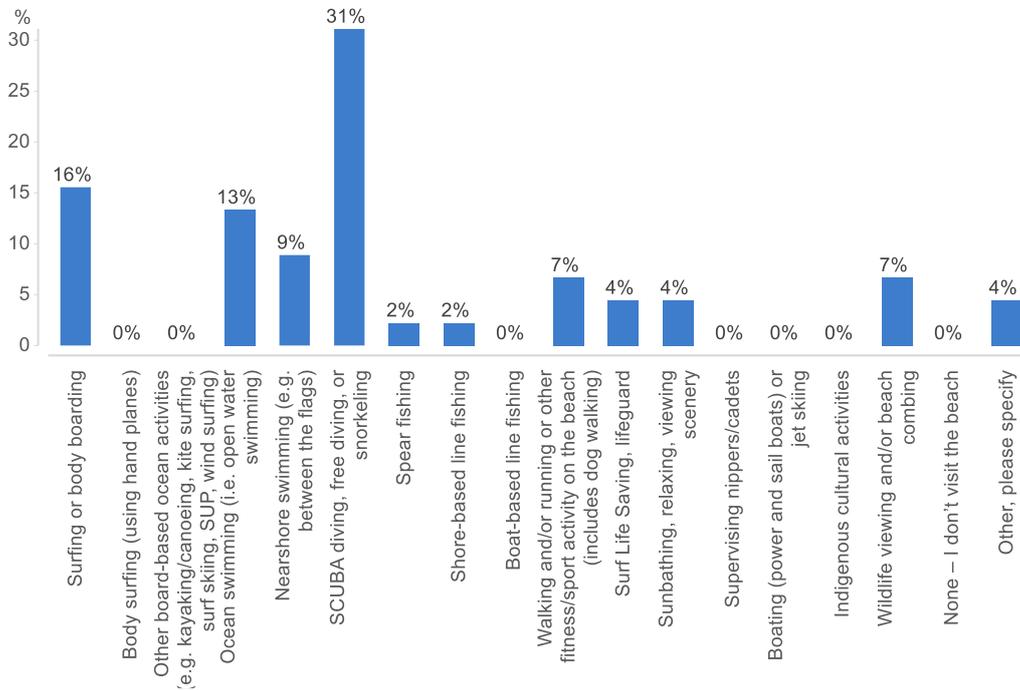
There were 45 individual responses, as follows.



There was a spread of ages over 18 and almost even number of males and females.

Main beach activity of respondents

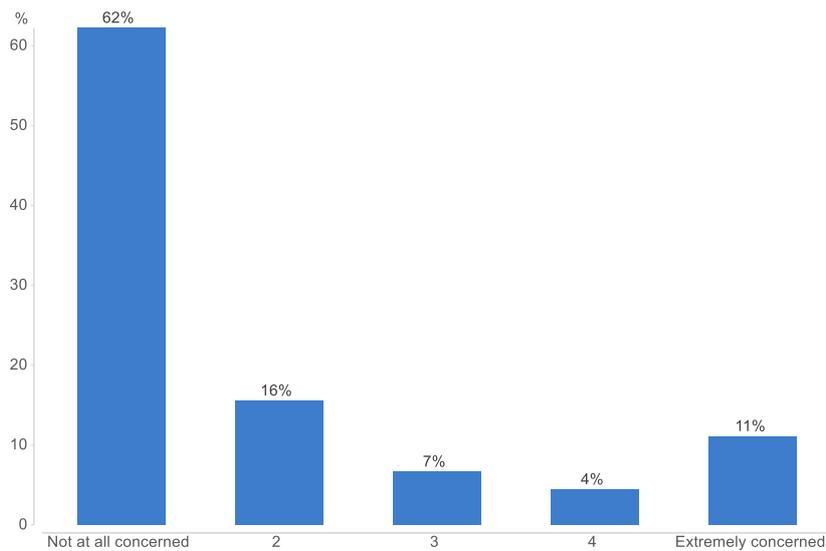
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were diving/snorkeling, surfing or bodyboarding and ocean swimming.

Concern about encountering sharks

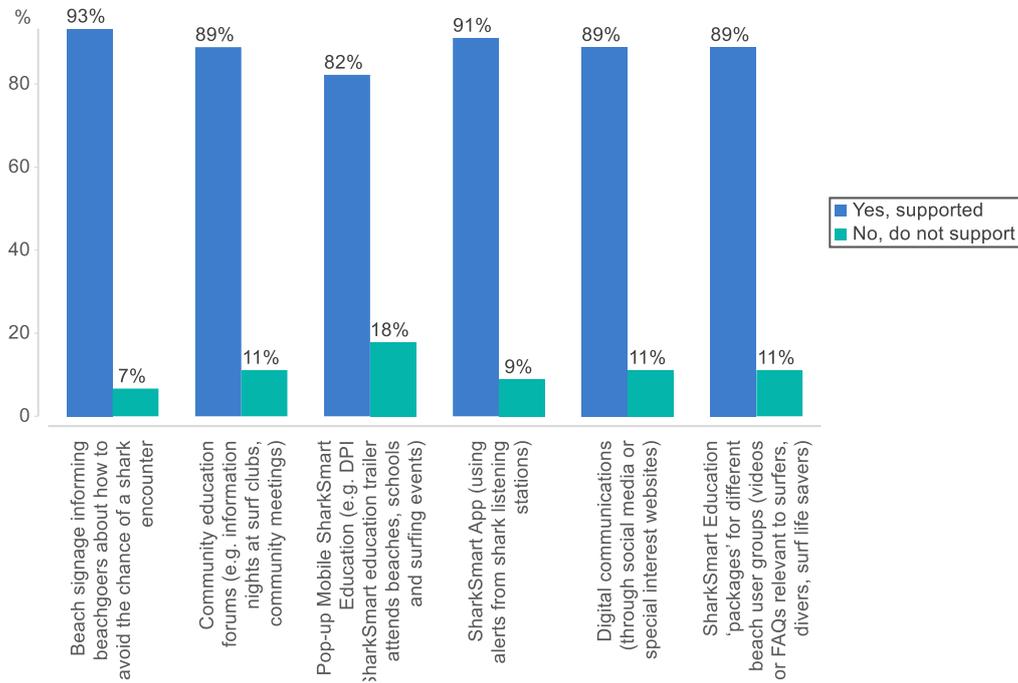
How personally concerned are you about encountering a shark while at a beach in NSW?



A majority were not concerned at all about encountering a shark at the beach while 11% were extremely concerned.

Support for Community education and shark-alert measures

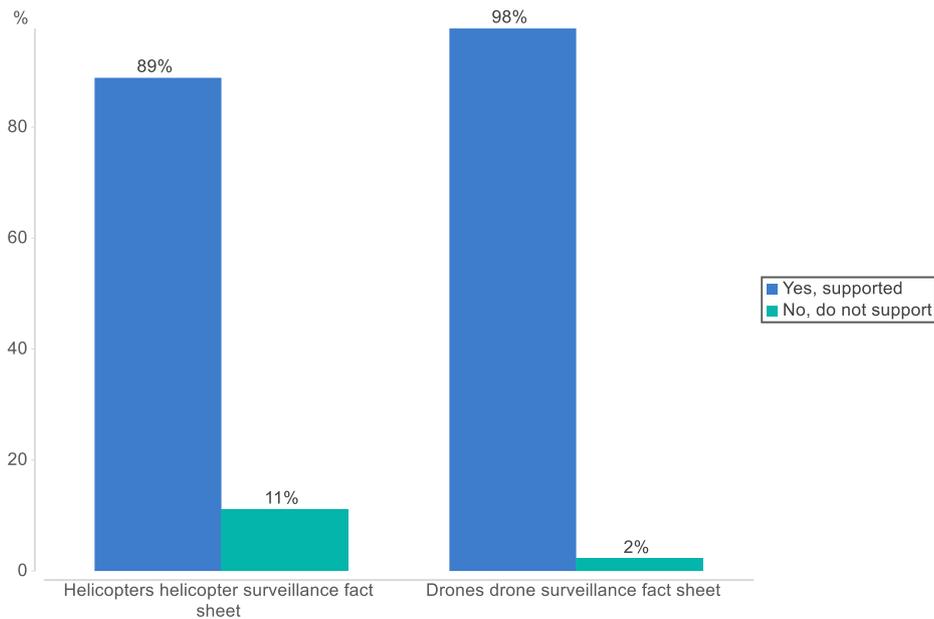
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There were high or strong levels of support for all Community education and shark-alert measures.

Support for aerial surveillance

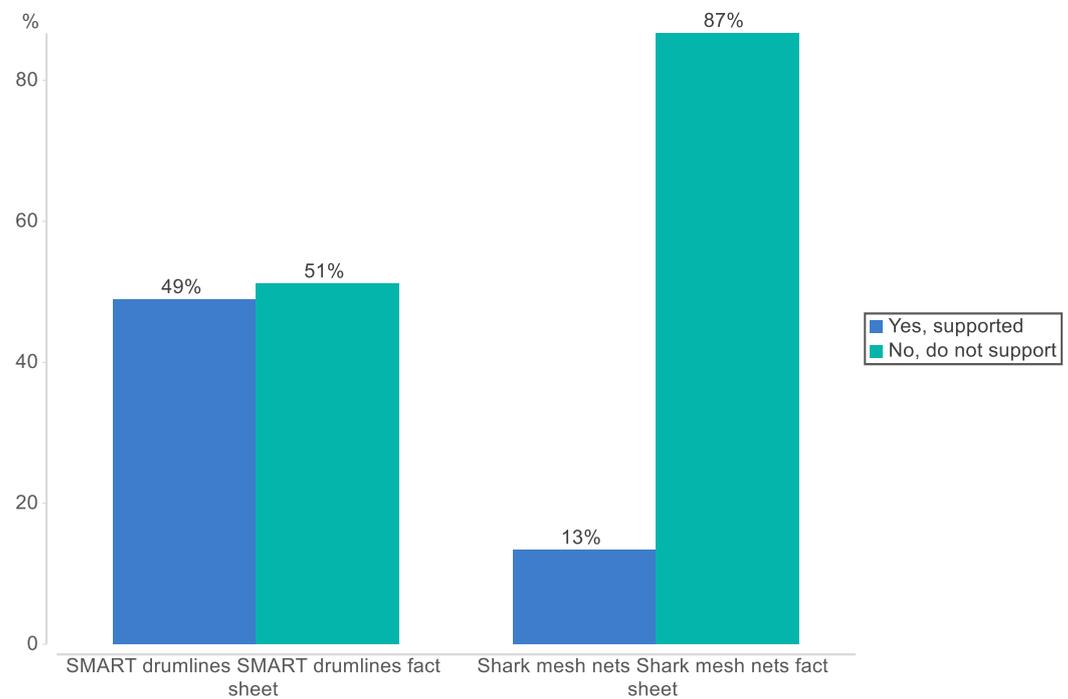
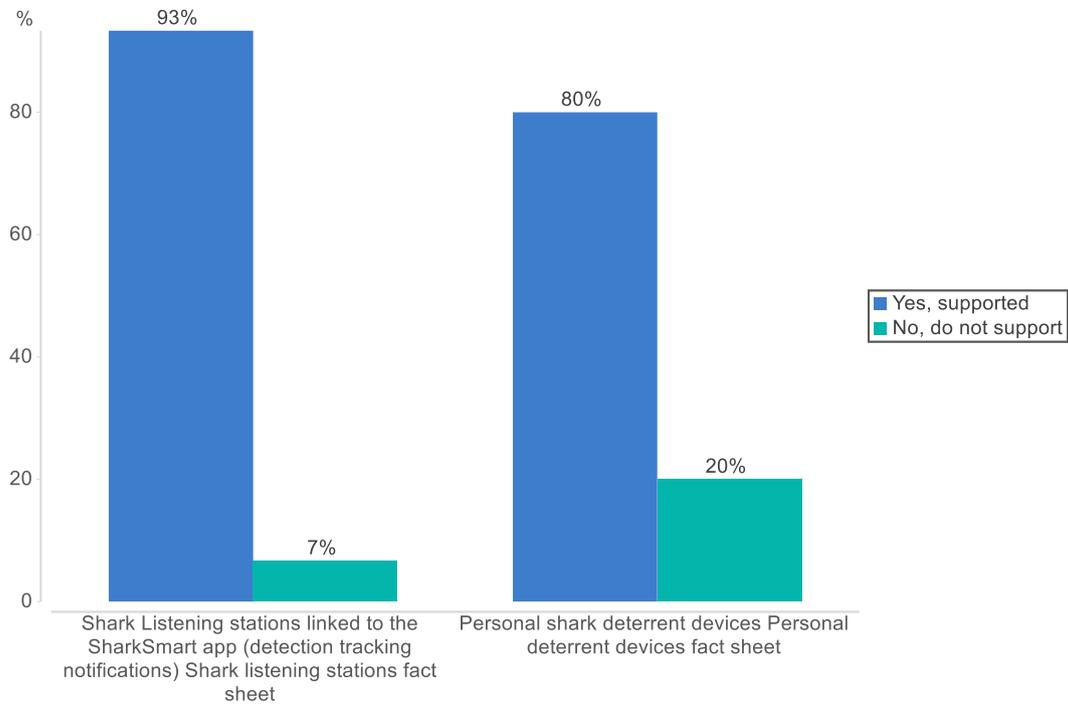
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and extremely high support for Drones.

Support for in-water measures

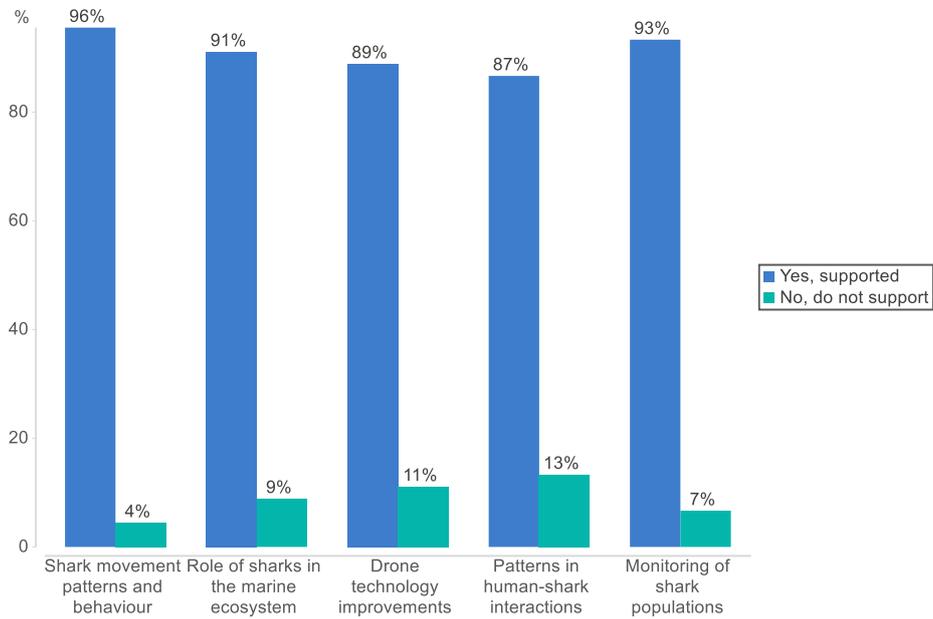
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and strong support for Personal shark deterrents. The Community was divided on support for SMART drumlines and a large majority did not support Shark mesh nets.

Support for research

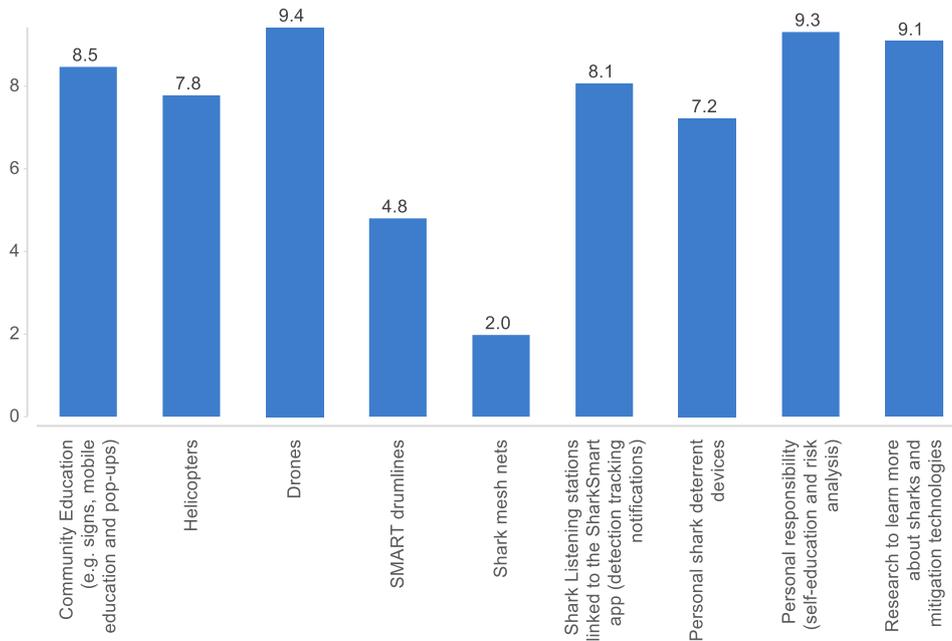
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all Research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The most preferred measure was Drones, followed by Personal responsibility and Research. The least preferred measure was Shark mesh nets.

8.22 Kiama Shire

8.22.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	Community education forums (e.g. information nights at surf clubs, Community meetings)
	SharkSmart App (using alerts from shark listening stations)	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)
	Digital communications (through social media or special interest websites)	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?		
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
	SMART drumlines	Shark mesh nets
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Patterns in human-shark interactions
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Monitoring of shark populations	

Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	7
	Helicopters	6
	Drones	8
	SMART drumlines	5
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrents	1
	Personal responsibility (self-education & risk analysis)	1
	Research to learn more about sharks and mitigation tech	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	The most important advancement in shark mitigation is technology and research. The need for review of traditional methods such as nets needs to be replaced by other "smart" approaches due to the collateral impact to other marine life. Drone technology as well as other water based detection systems, with appropriate and reliable message deployment capability to lifeguard teams and surf clubs will provide the necessary warnings to enable the removal of people from the water.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

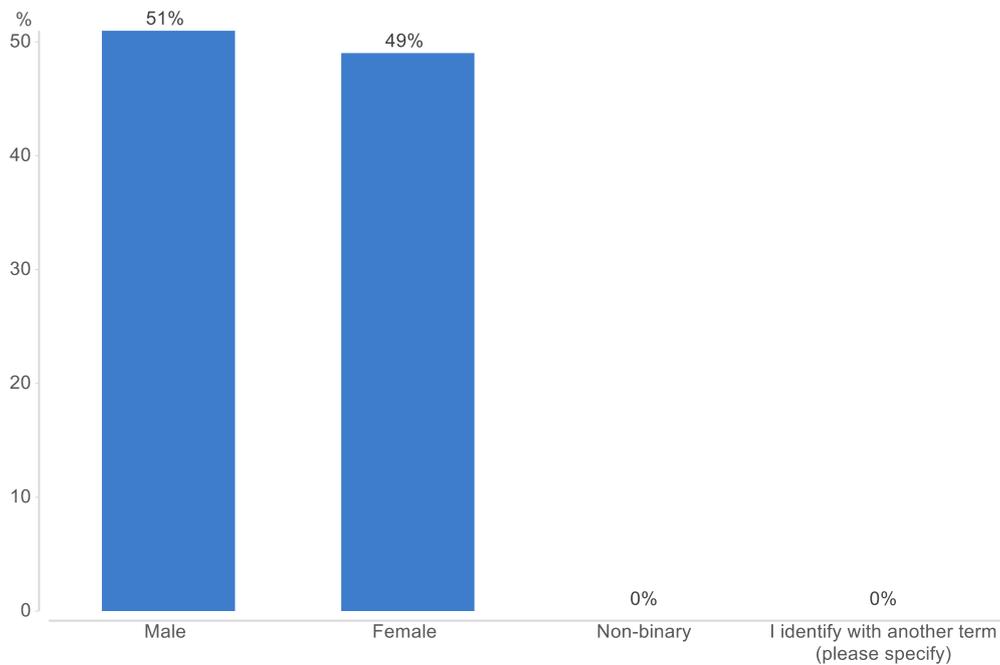
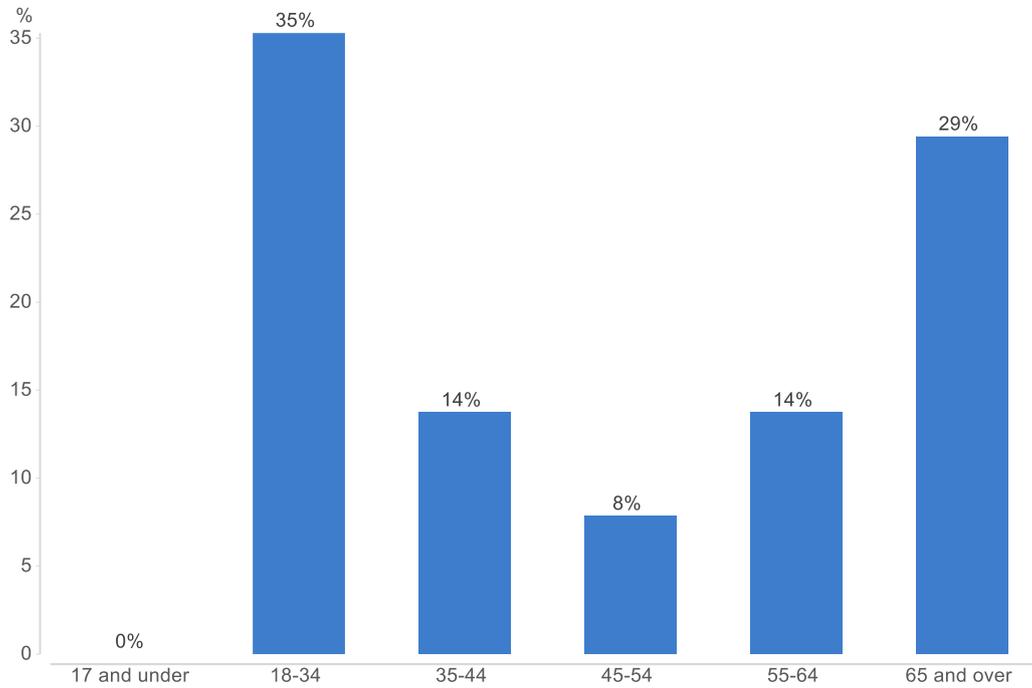
8.22.2 Other organisation responses Kiama

No submissions received.

8.22.3 Survey responses from individuals

Sample

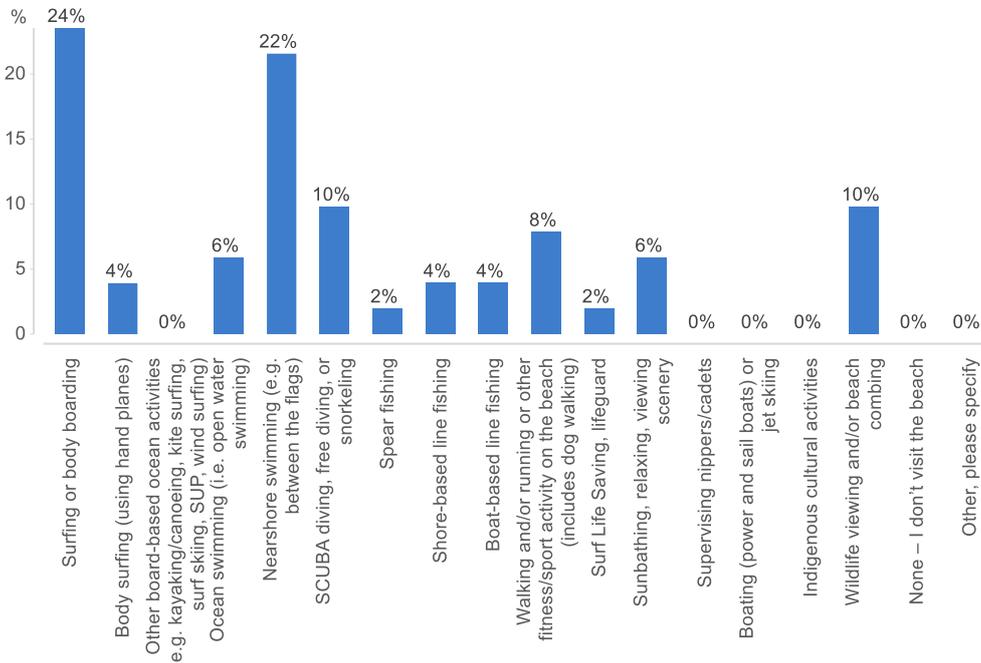
There were 51 individual responses, as follows.



The majority of the respondents were either younger than 34 or older than 65. There were smaller numbers of age groups in between. Males and female numbers were almost equal.

Main beach activity of respondents

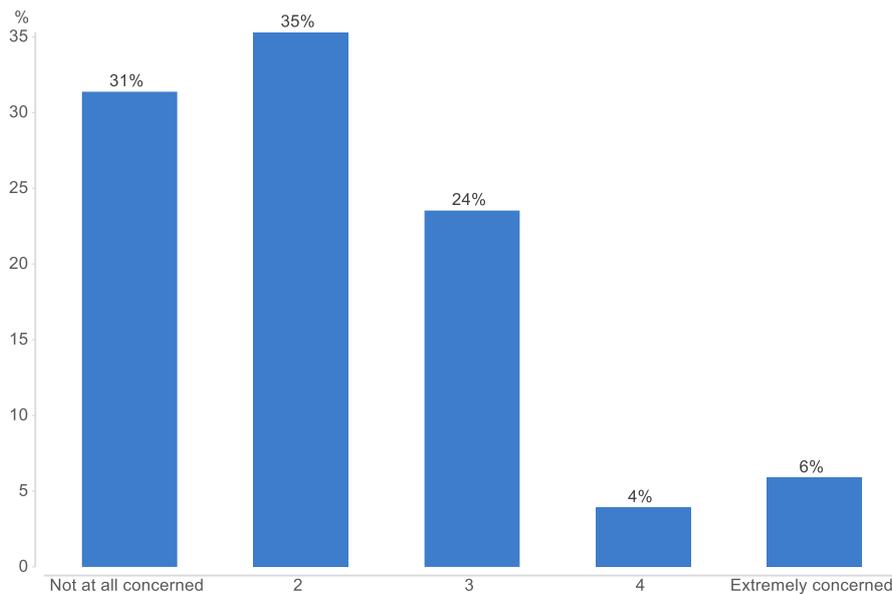
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (24%), nearshore swimming, diving/snorkelling (10%) and wildlife viewing (10%).

Concern about encountering sharks

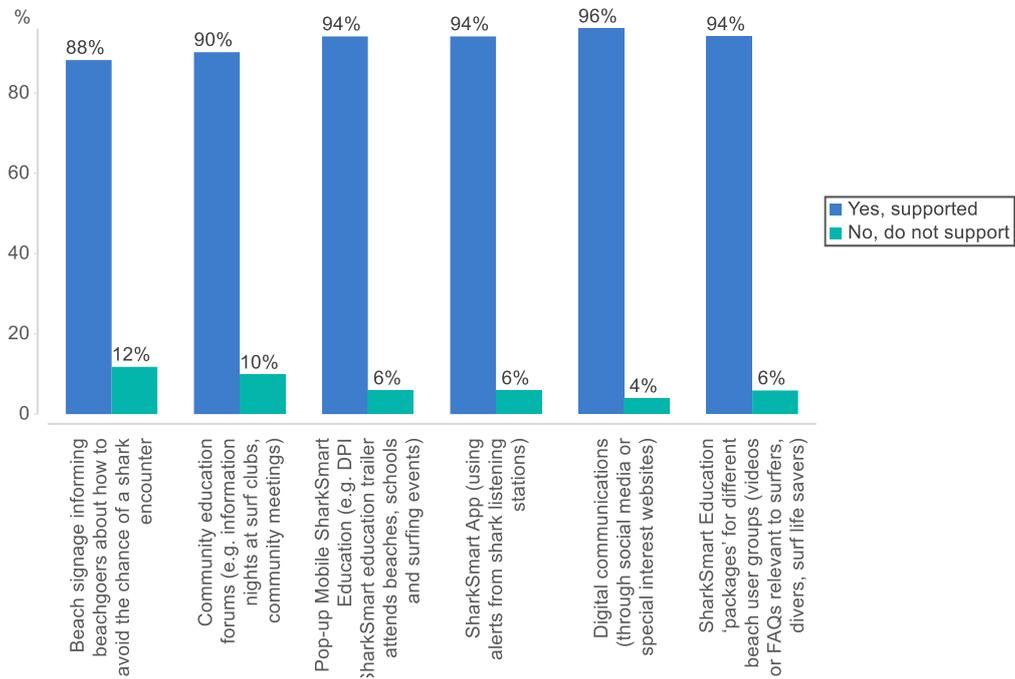
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were either a little concerned or not concerned at all about encountering a shark at the beach, while 6% were extremely concerned.

Support for Community education and shark-alert measures

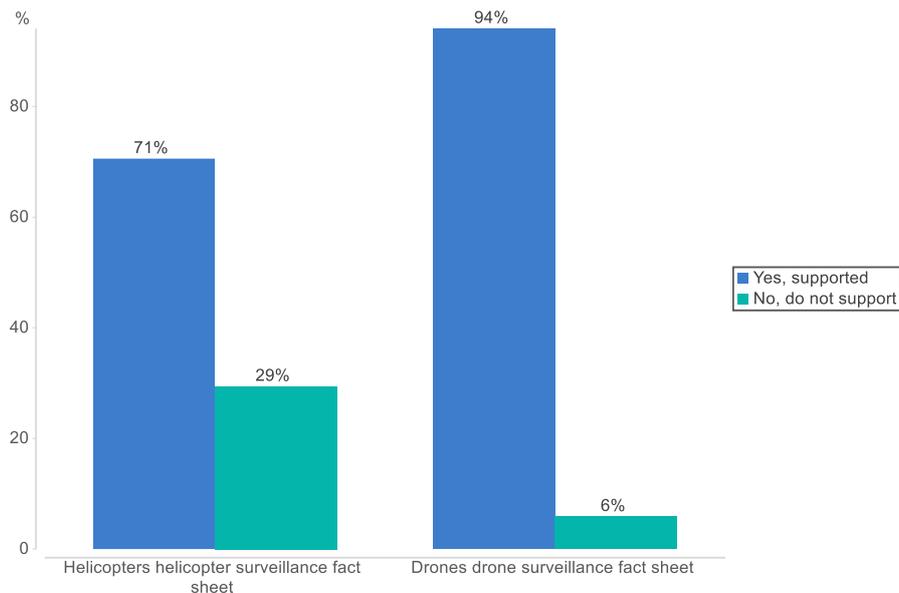
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all Community education and shark-alert measures.

Support for aerial surveillance

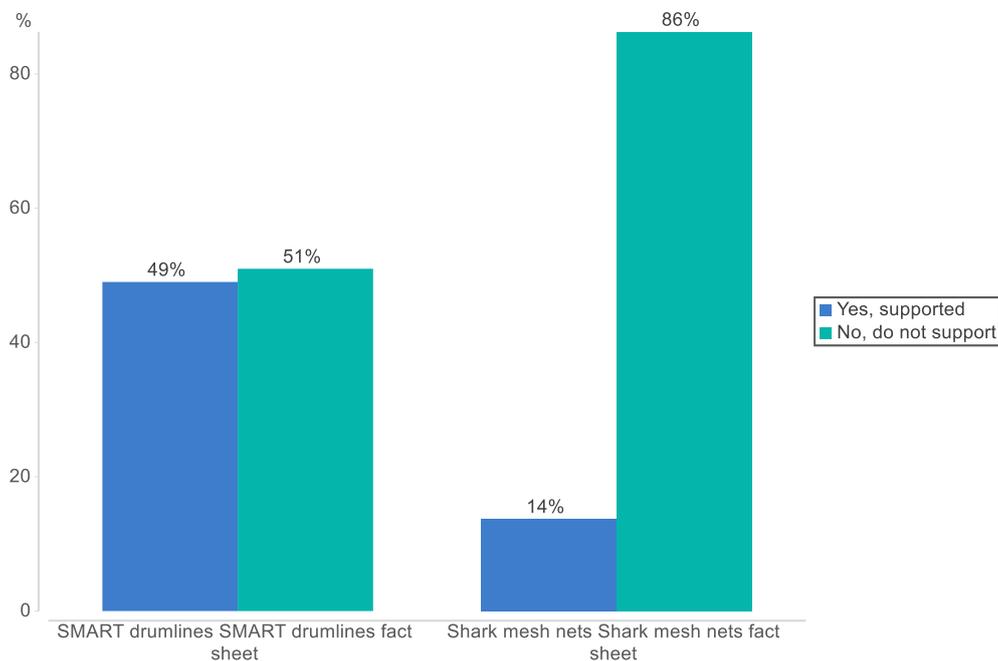
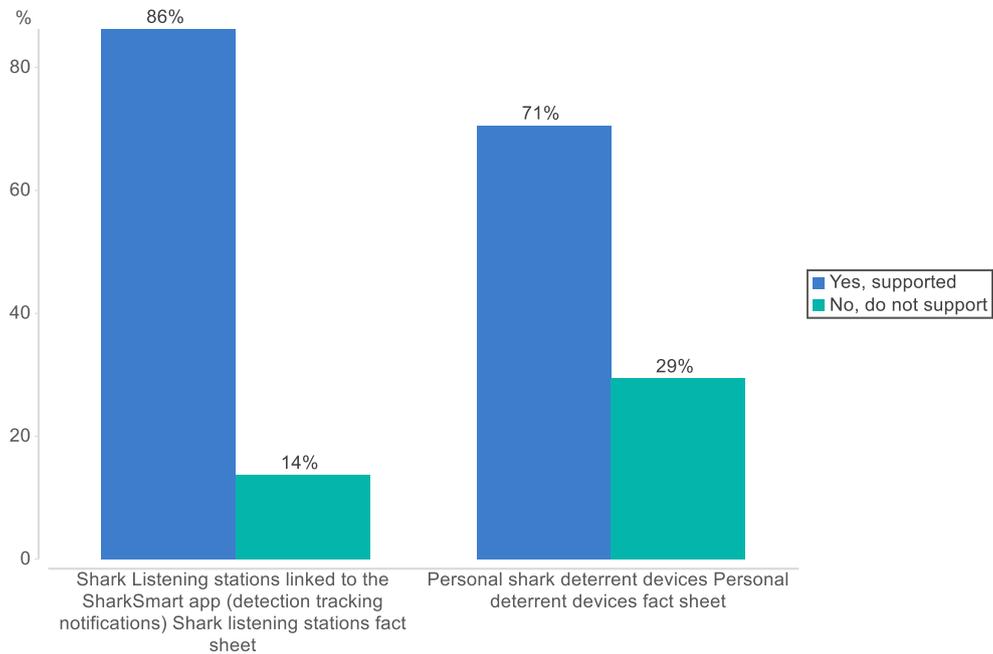
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



A majority supported Helicopters while there was high support for Drone surveillance.

Support for in-water measures

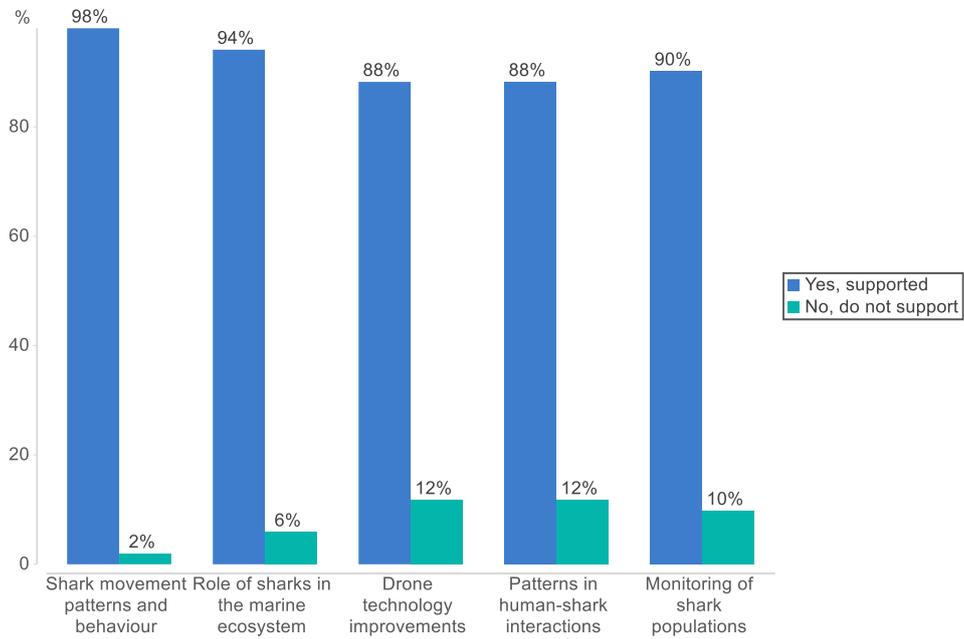
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and a majority supported Personal shark deterrents. The Community were divided over support for SMART drumlines and a large majority did not support use of Shark mesh nets.

Support for research

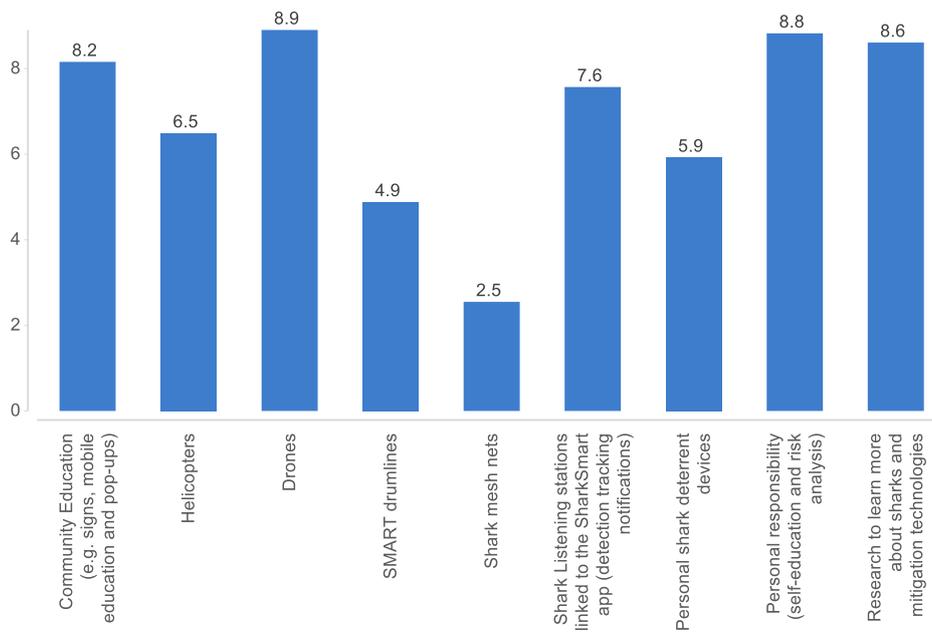
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



Drones were the most preferred measure followed by Personal responsibility and Research. Shark mesh nets were the least preferred.

8.23 Shoalhaven City

8.23.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh net

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	7
	Helicopters	4
	Drones	6
	SMART drumlines	1
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	6
	Personal shark deterrent devices	6
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	7
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Drumlines and Shark mesh nets are a political topic that would need more engagement before they could possibly be endorsed. Being a regional Council on the South Coast, Council would favour cost effective/efficient solutions as we would be historically be considered lower risk compared to Council's on the States North Coast.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	This survey has been responded to by Shoalhaven City Council at a staff level, not endorsed by the General Management or sitting Council. This needs to be reflected in the research paper in order for Council's response to be considered.	
How satisfied with the information provided in this survey?	Extremely satisfied	

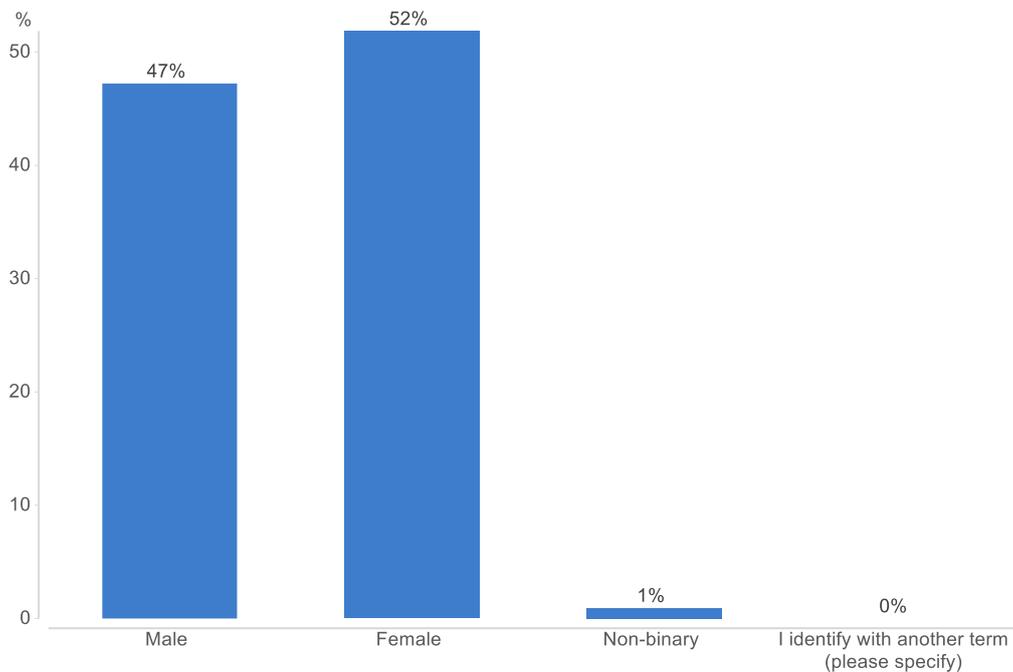
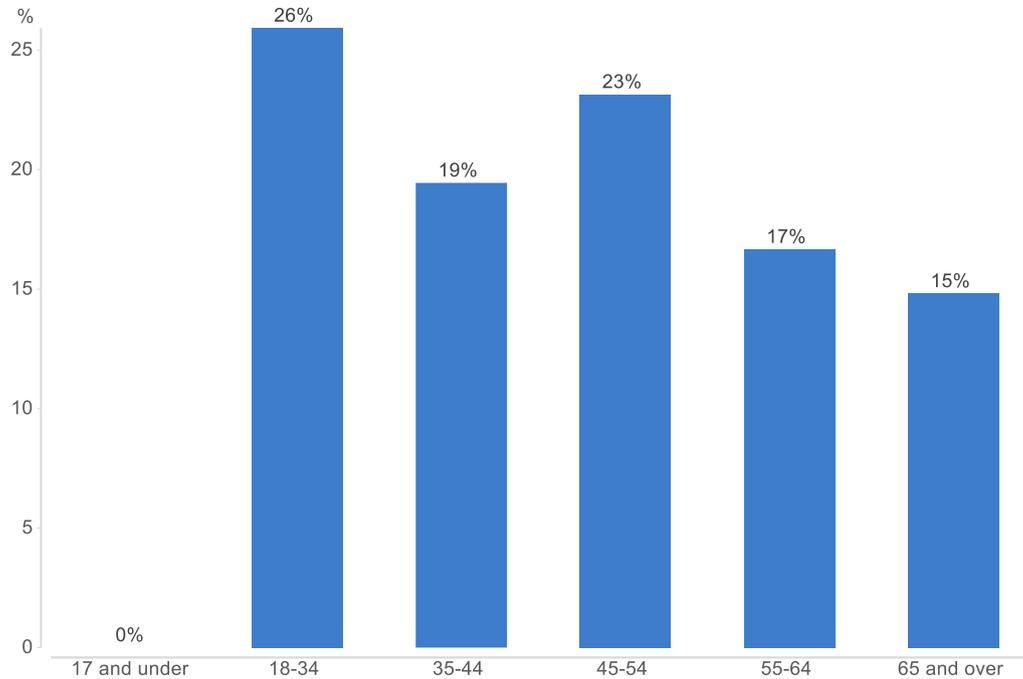
8.23.2 Other organisation responses Shoalhaven

No submissions received.

8.23.3 Survey responses from individuals

Sample

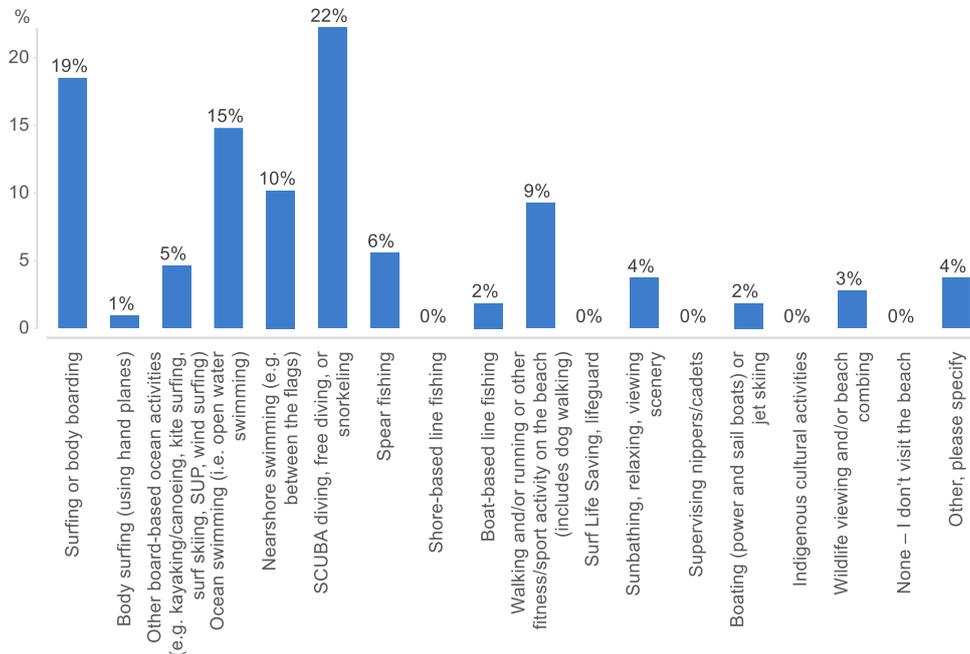
There were 108 individual responses, as follows.



There was a spread of people aged 18 and over, split almost evenly between genders.

Main beach activity of respondents

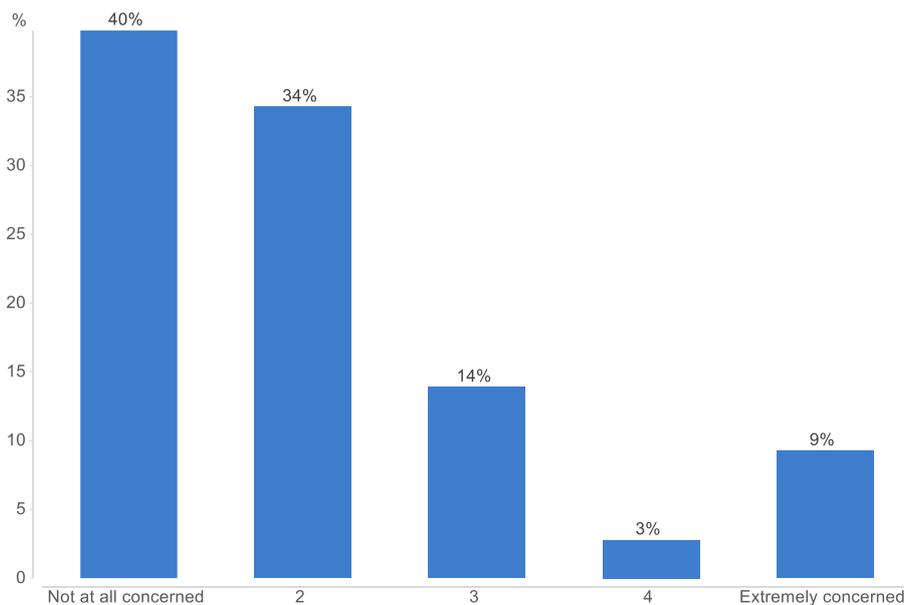
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were: diving/snorkelling (22%), surfing or bodyboarding (19%), and ocean swimming (15%).

Concern about encountering sharks

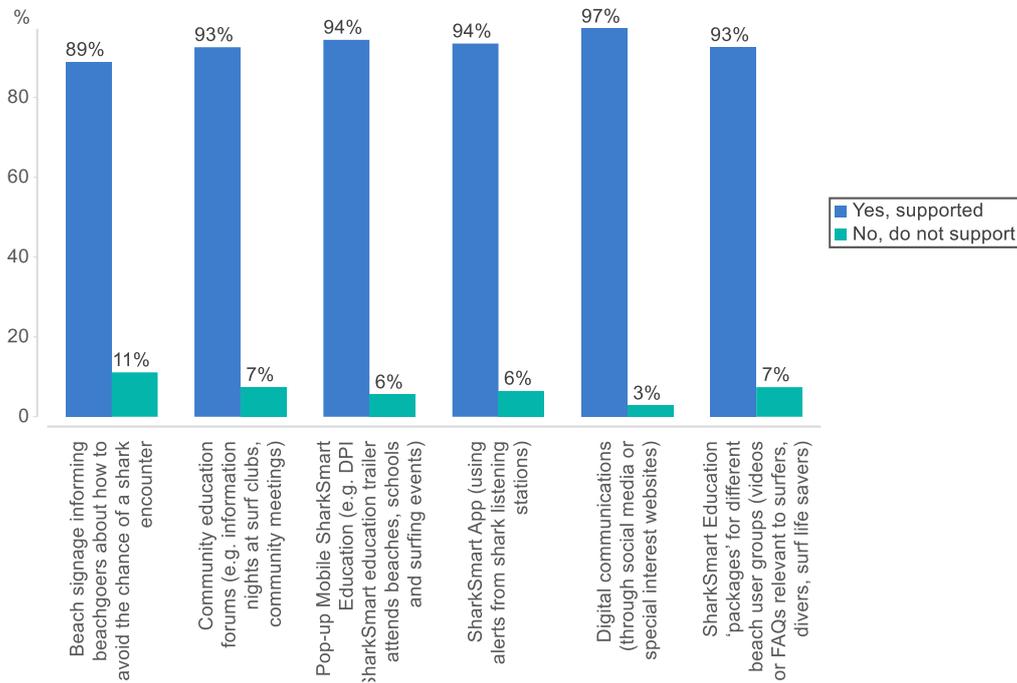
How personally concerned are you about encountering a shark while at a beach in NSW?



The majority were either little concerned or not concerned at all, while 9% were extremely concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

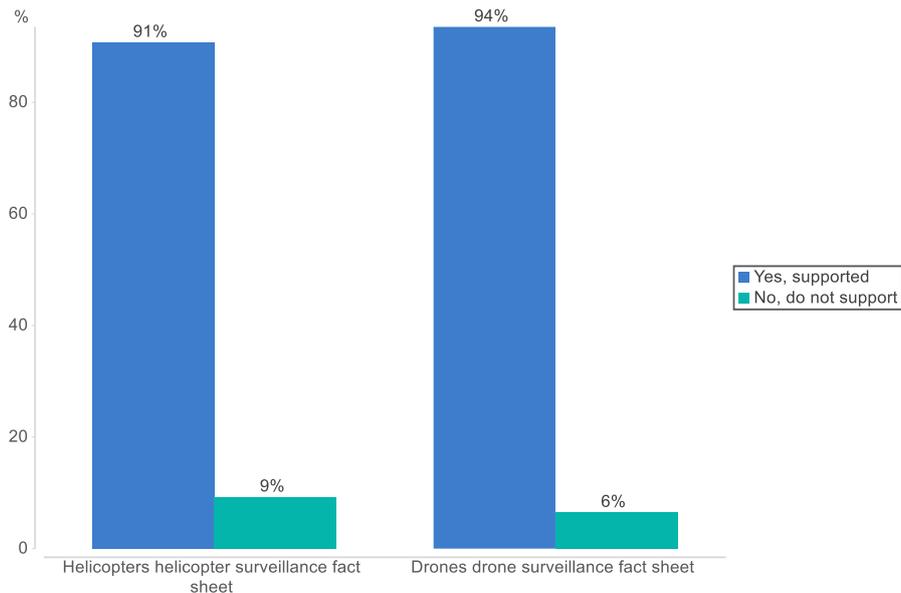
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for all Community education and shark-alert measures.

Support for aerial surveillance

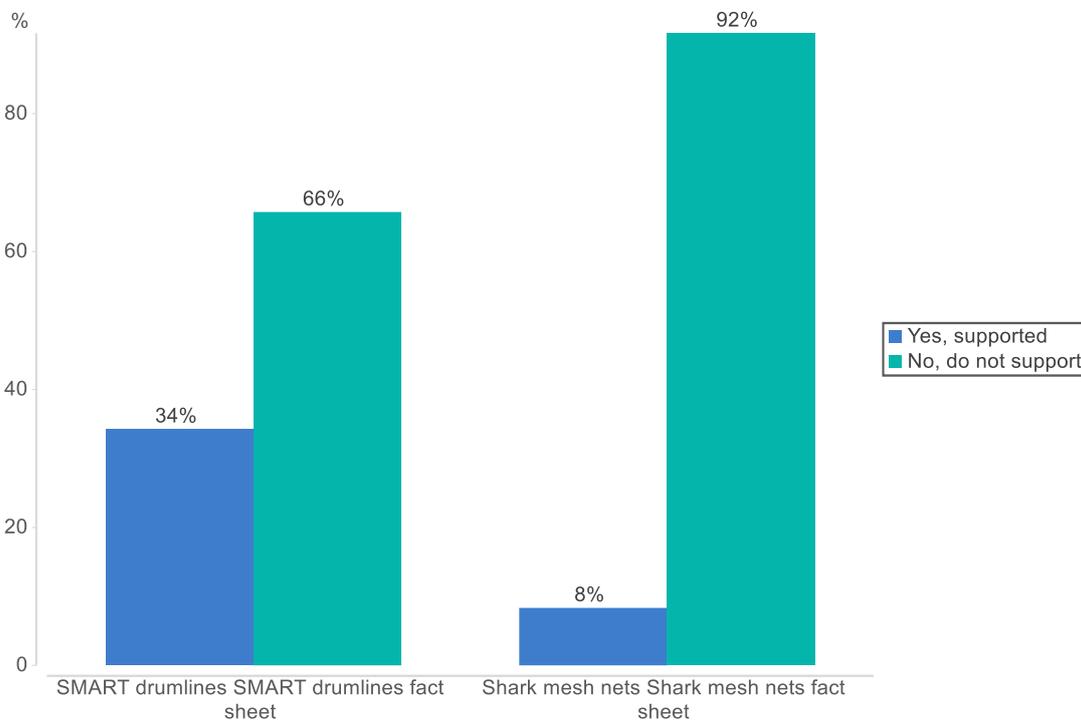
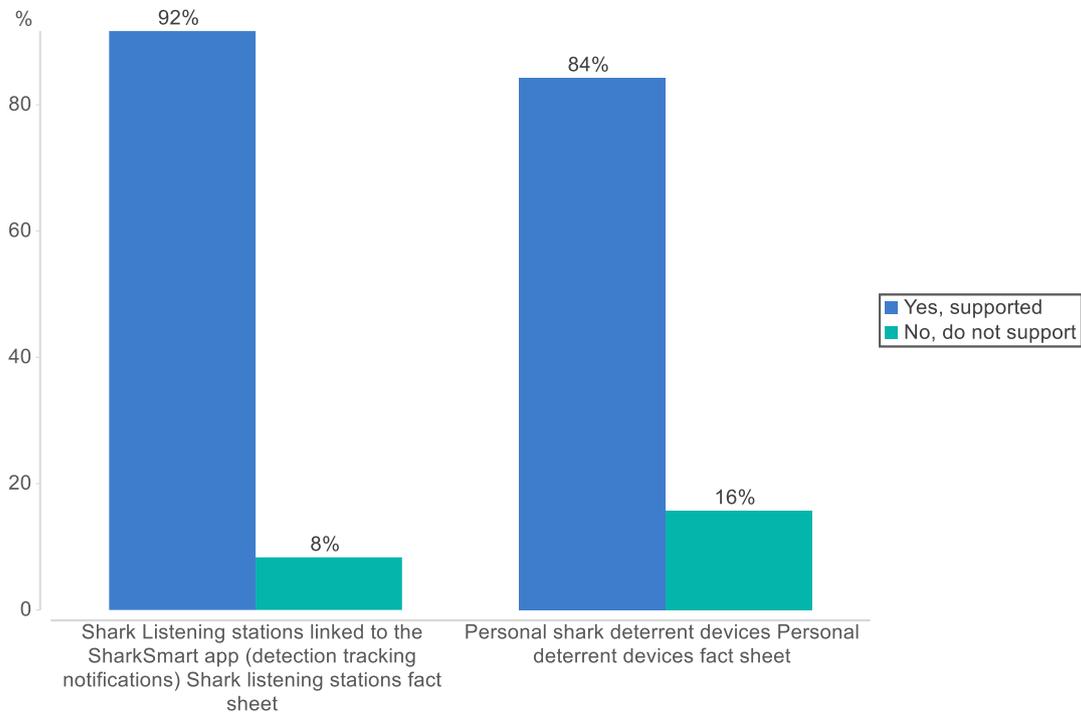
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Helicopters and Drone surveillance.

Support for in-water measures

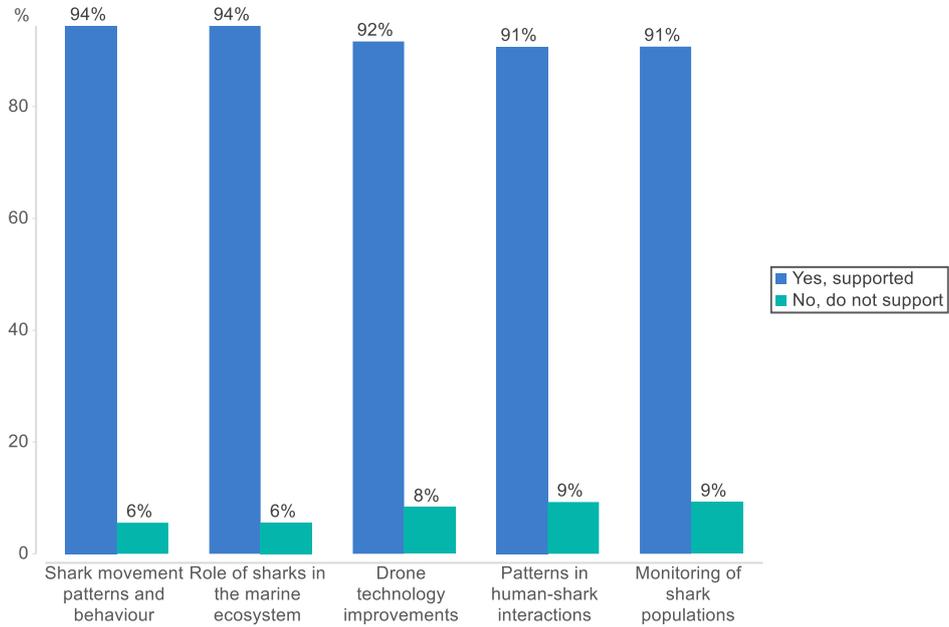
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for Listening stations and strong support for Personal shark deterrents. A majority did not support SMART drumlines and a very large majority did not support Shark mesh nets.

Support for research

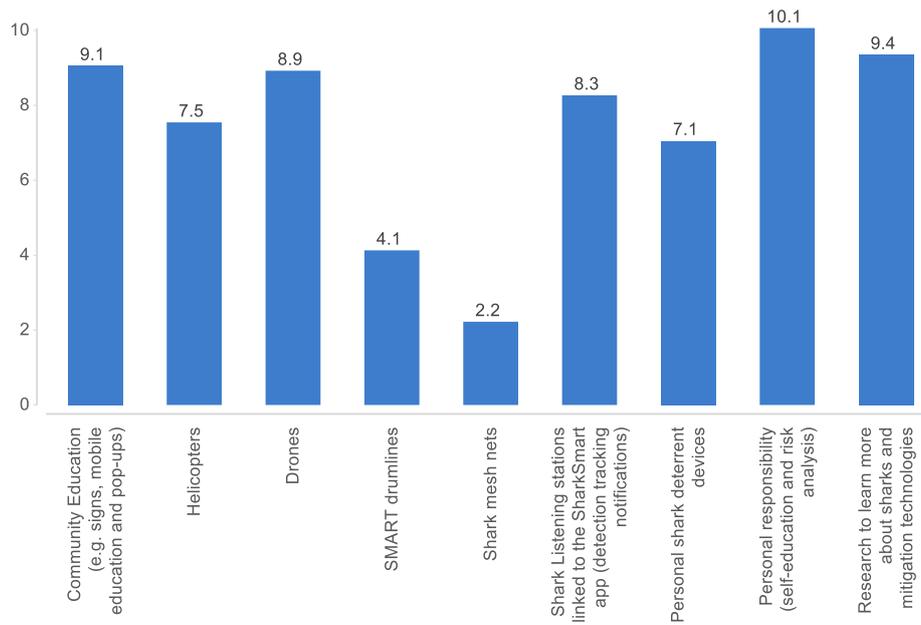
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high support for all research topics.

Relative preference for different mitigation measures

0 = lowest preference, 10 = Highest preference



The most preferred measure was Personal responsibility, followed by Research and Drones. Shark mesh nets were the least preferred option.

8.24 Eurobodalla Shire

8.24.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Monitoring of shark populations
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	5
	Helicopters	8
	Drones	5
	SMART drumlines	5
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	8
	Personal shark deterrent devices	5
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Sharks are a known risk when swimming and surfing therefore, the public needs to take responsibility such as not swimming early morning late afternoon etc.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

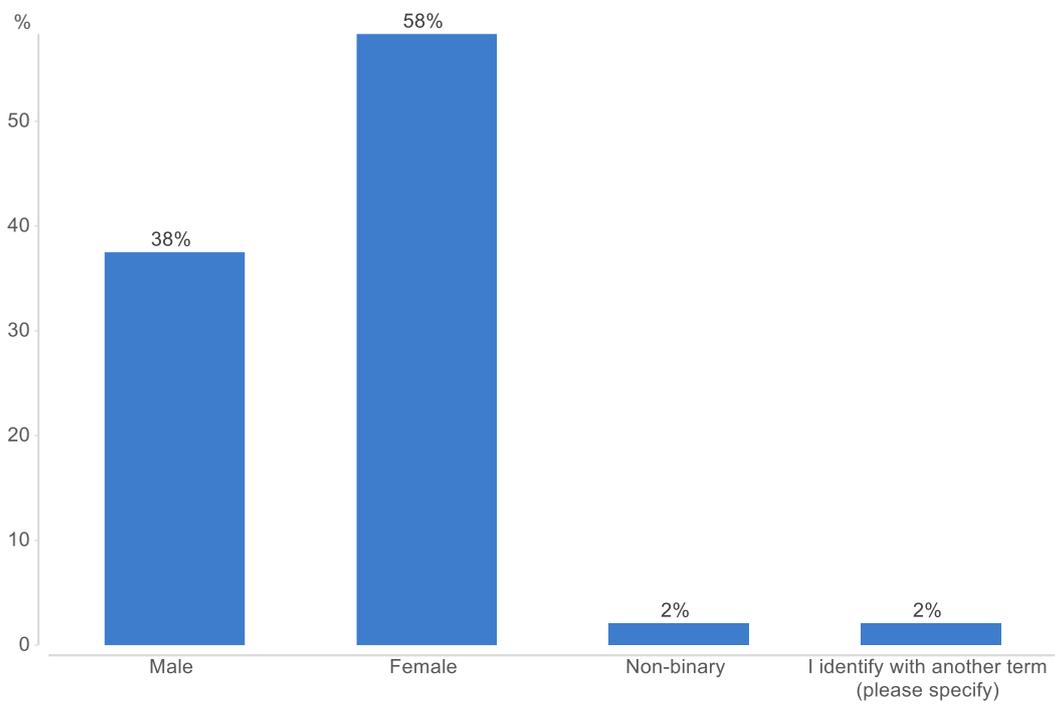
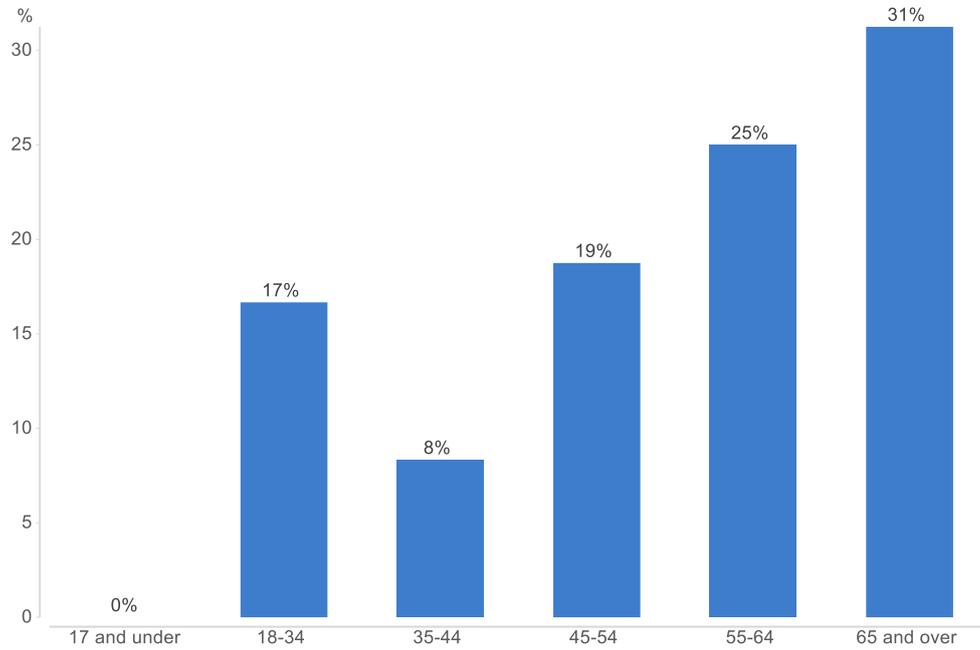
8.24.2 Other organisation responses Eurobodalla

No submissions received.

8.24.3 Survey responses from individuals

Sample

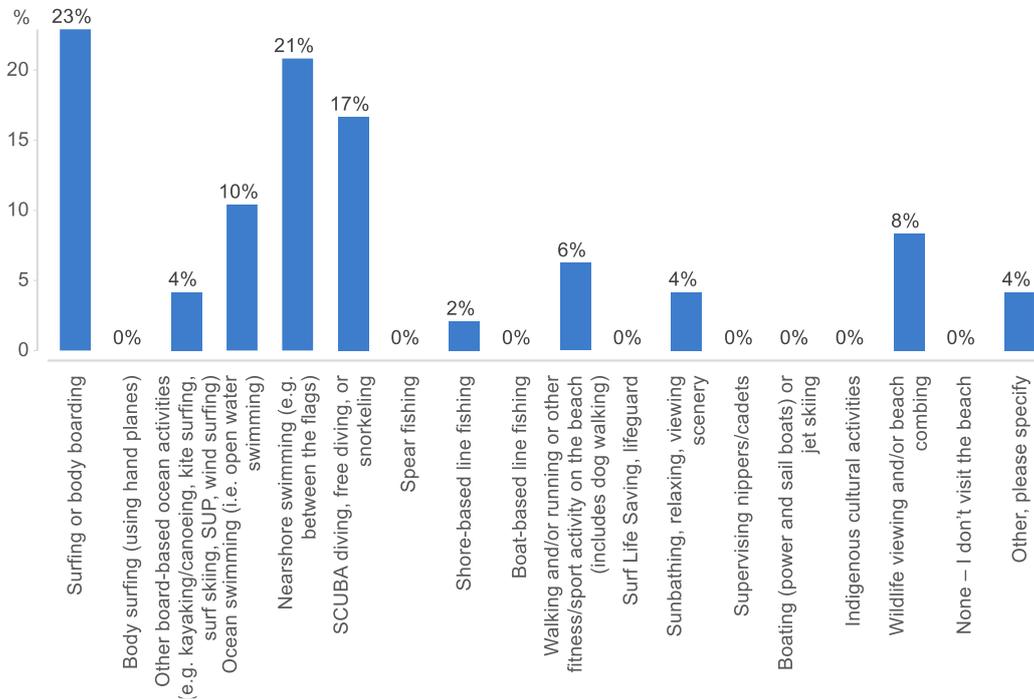
There were 48 individual responses, as follows.



There was a spread of people aged 18 and over, and a majority were female.

Main beach activity of respondents

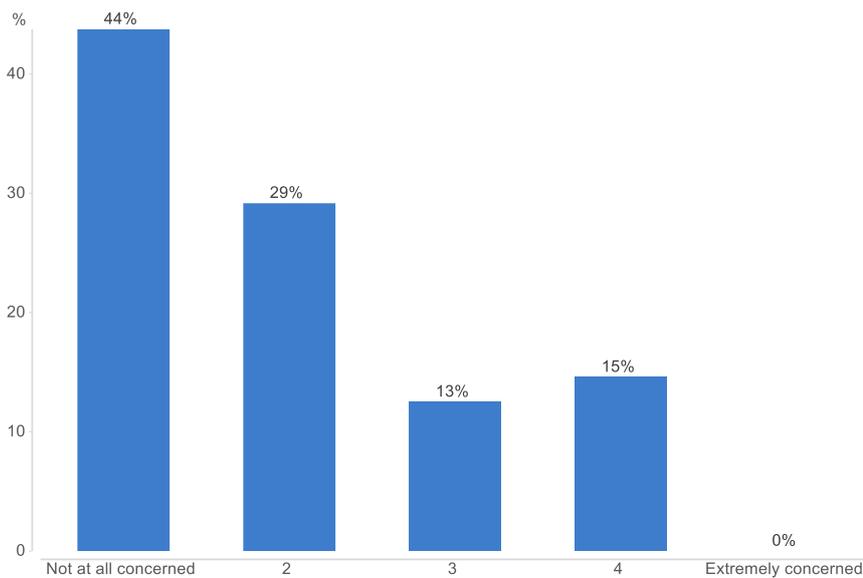
What is the **main** activity you do at beaches in your local area?
Please pick only one – that you do the most.



Respondents' main beach activities were surfing or bodyboarding (23%), nearshore swimming (21%) and diving/snorkelling (17%).

Concern about encountering sharks

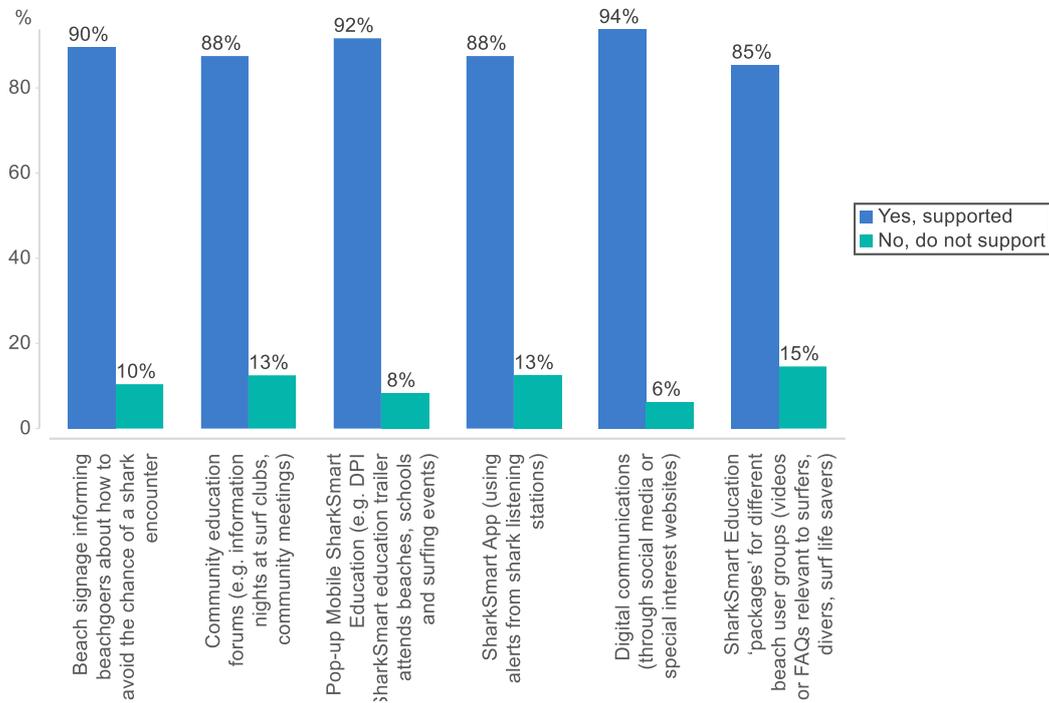
How personally concerned are you about encountering a shark while at a beach in NSW?



Most expressed either little or no concern at all about encountering sharks at the beach.

Support for Community education and shark-alert measures

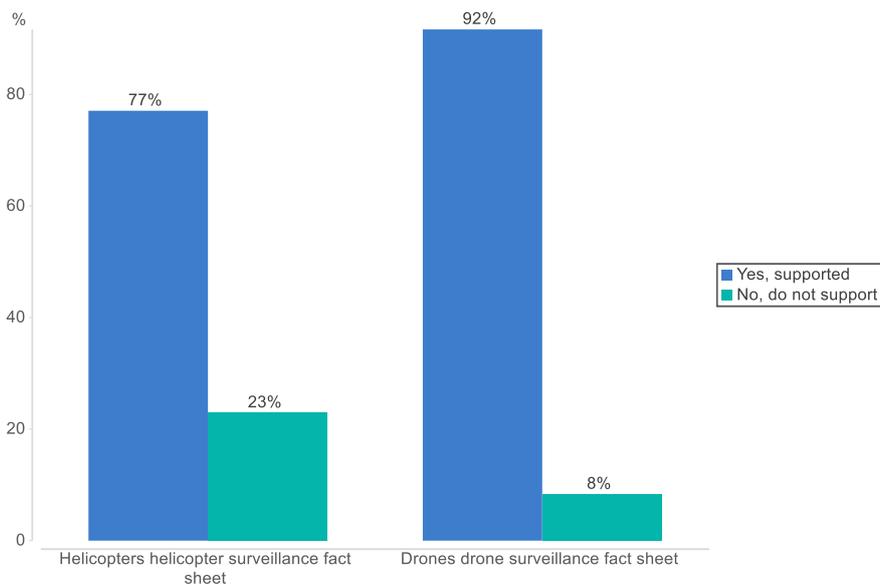
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for use of all Community education and shark-alert measures.

Support for aerial surveillance

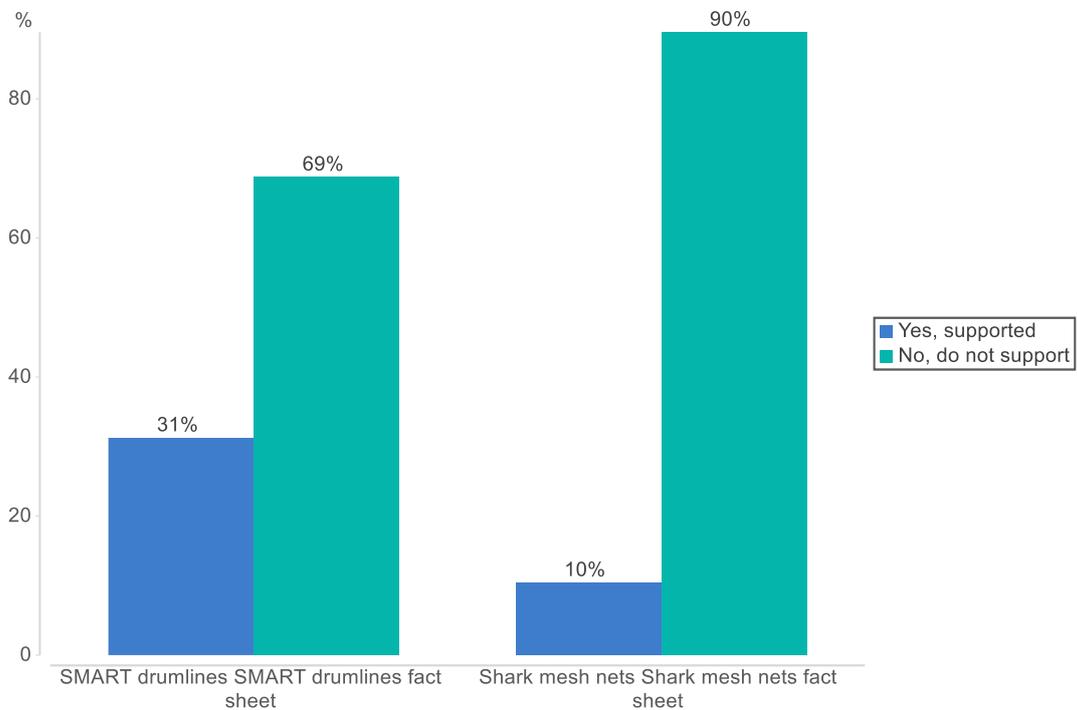
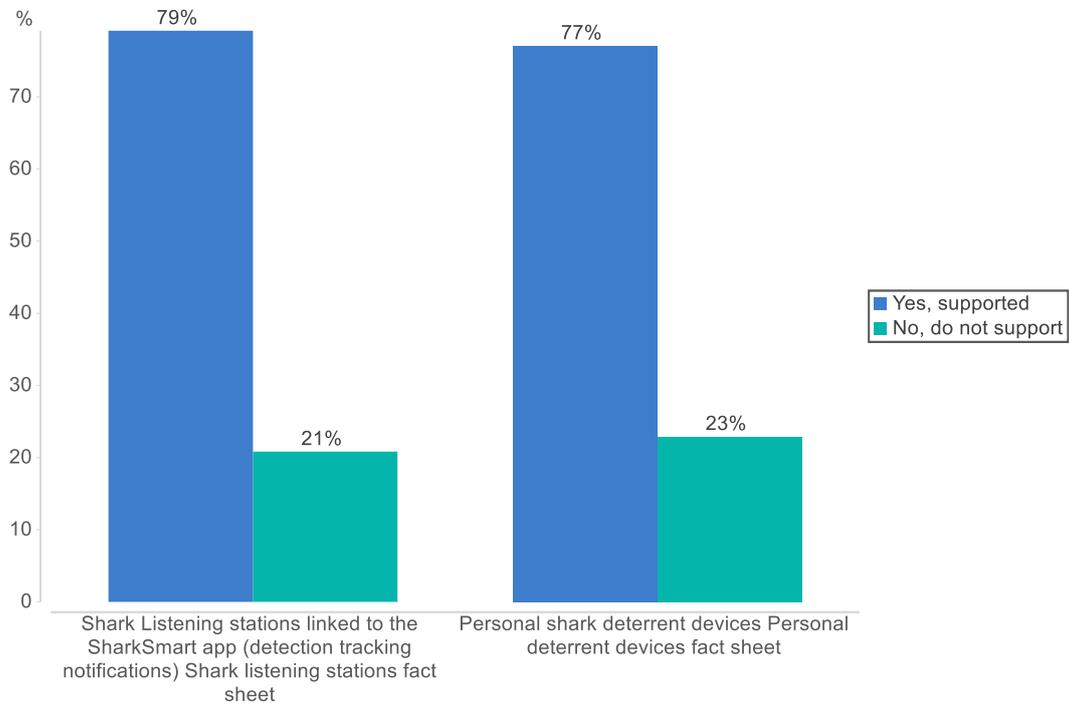
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Helicopters and high support for Drones.

Support for in-water measures

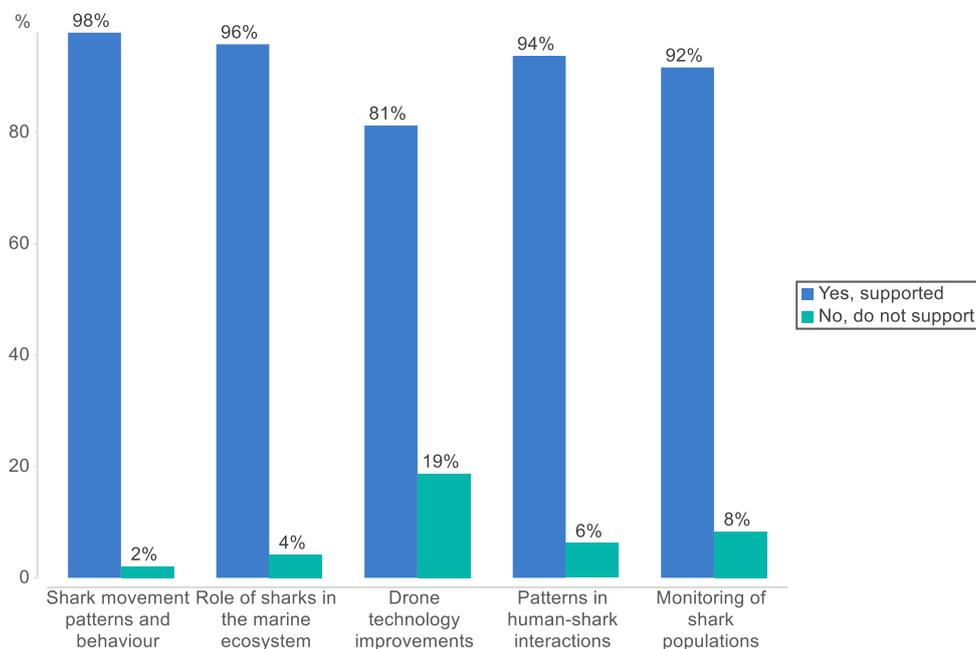
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Shark listening stations and Personal shark deterrents. There was little support for SMART drumlines and very little support for Sharm mesh nets.

Support for research

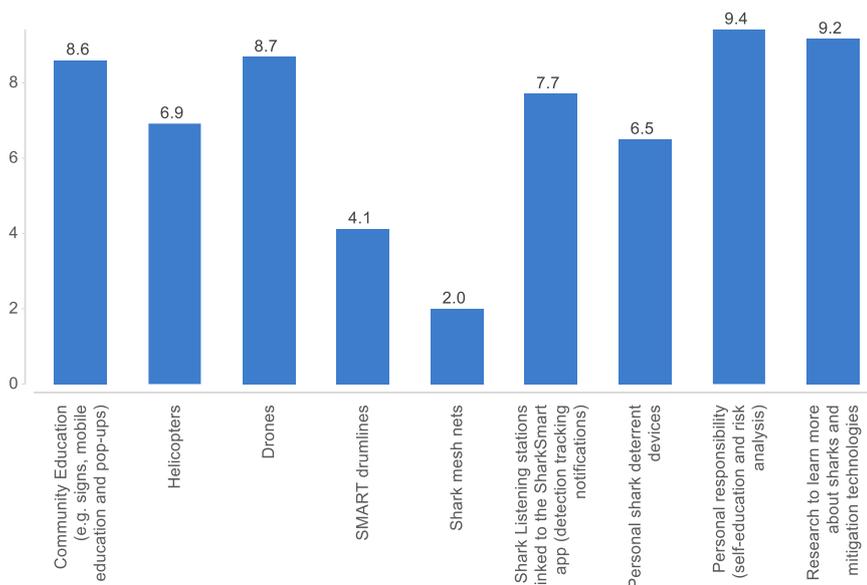
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was strong or high support for research to increase protection of beachgoers.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



The most preferred mitigation measure was Personal responsibility, followed by Research to learn more about sharks and mitigation technologies, and Drones. The least preferred measures were Shark mesh nets and SMART drumlines.

8.25 Bega Valley Shire

8.25.1 Council response to survey

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean, Summer	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	9
	Helicopters	5
	Drones	9
	SMART drumlines	9
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	6
	Personal responsibility (self-education & risk analysis)	9
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Hi priority items reflect research findings to date. Some merit in helicopter use however cost will be an issue and seems to be better cost benefits outcomes through other means. Ongoing research into personal deterrents worthwhile.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

8.25.2 Other organisation responses – Bega Valley

Merimbula Marina

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	SharkSmart App (using alerts from shark listening stations)
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?		Helicopters
		Drones
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?		Shark Listening stations linked to the SharkSmart app (detection tracking notifications)
		Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Drone technology improvements
	Role of sharks in the marine ecosystem	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	0
	Drones	0
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	0
	Personal shark deterrent devices	0
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>I firmly believe that each person is responsible for their own safety when choosing to enter the ocean. The government can provide information which should be based upon sound scientific evidence however I believe that there is always risk when entering the ocean. The more people that understand this the better. The ocean belongs to the creatures that live in it - eg: fish, sharks, whales, turtles and all the other incredible marine animals. I also believe that the ocean has the amazing ability to regulate itself and the primary importance of sharks in that ecosystem cannot be underestimated. I support the DPI conducting research that helps to inform us. However I am dubious that we are educated enough to be able to claim that we can manage the ocean. The ocean manages itself best when humans leave it alone. As a company that has conducted charter fishing activities for the past 18 years we have noticed the gradual decline in fish stocks. To the point now that we have decided to cease fishing charters. Rather now we will concentrate upon marine tourism and hope that by educating the public on the importance of protecting our ocean we may slowly start to see change. We are also firm supporters of marine parks and no take areas to allow species to recover from overfishing.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>I understand that the intention behind shark smart apps alerts may be to protect people. However I fear that they lull people into a false sense of security. We have often heard people comment that before they had the app they were scared to go into the ocean but now they feel safe. The sharks are always there and just because a drone or helicopters or sensor has not detected them does not mean they are not there. These measures may result in people taking less self responsibility for their own safety.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

Potoroo Palace Native Animal Education Sanctuary

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites) SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	5
	Helicopters	4
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	3
	Personal shark deterrent devices	1
	Personal responsibility (self-education & risk analysis)	4
	Research to learn more about sharks and mitigation technologies	0
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	The sea belongs to the sharks and other water dwelling creatures, not to humans.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	Sharks, including deep sea ones, are valuable as top predators. They already suffer terribly from hooks and other discarded fishing gear. They are sensitive and intelligent and love to be stroked.	
How satisfied with the information provided in this survey?	Extremely satisfied	

Sustainable Water Actions for Merimbula and Pambula (SWAMP) Inc.

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

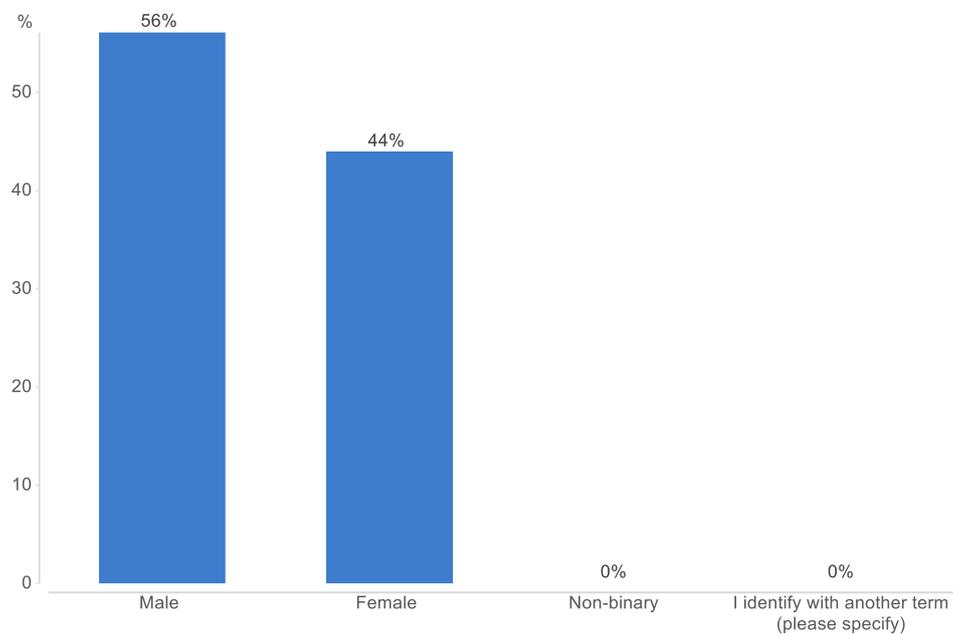
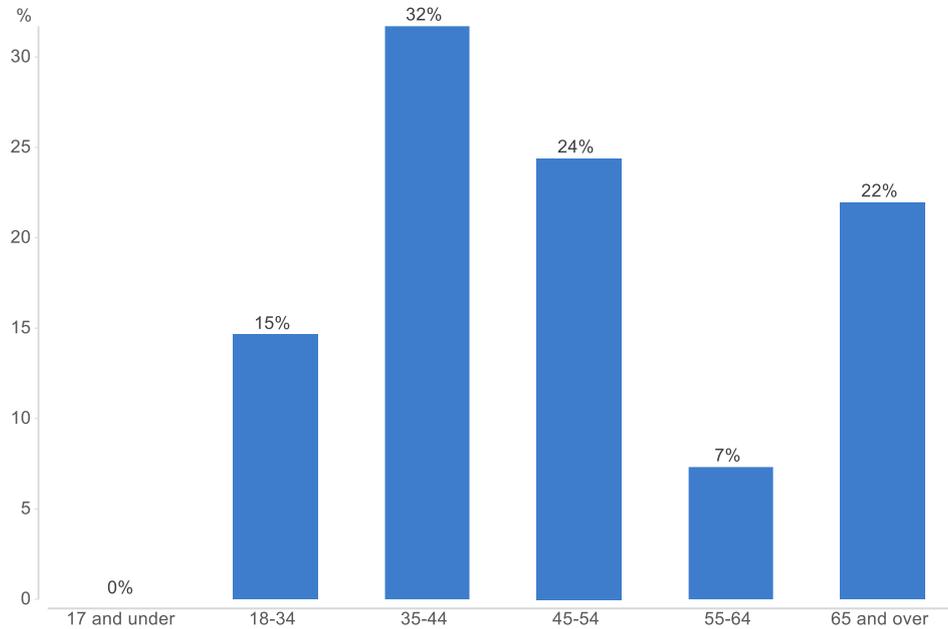
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Here in Merimbula, we appreciate our marine life. Sharks are amazing creatures and need to be treated with respect. We do NOT agree to nets of any type. This is 2021 and we need to work with nature not against it. Humans have created much damage in the natural environment. We simply cannot capture and kill everything we don't or won't understand.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		

How satisfied with the information provided in this survey?	Extremely satisfied
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8.25.3 Survey responses from individuals

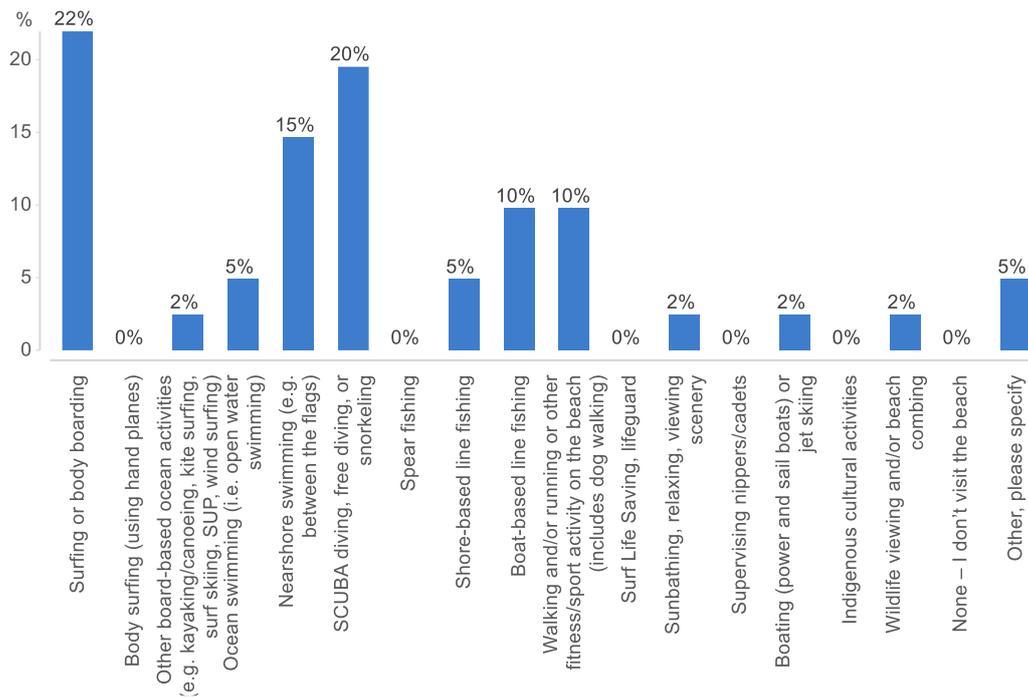
Sample

There were 41 individual responses, as follows.



There was a small majority of males in the sample. There was a spread of ages over 18.

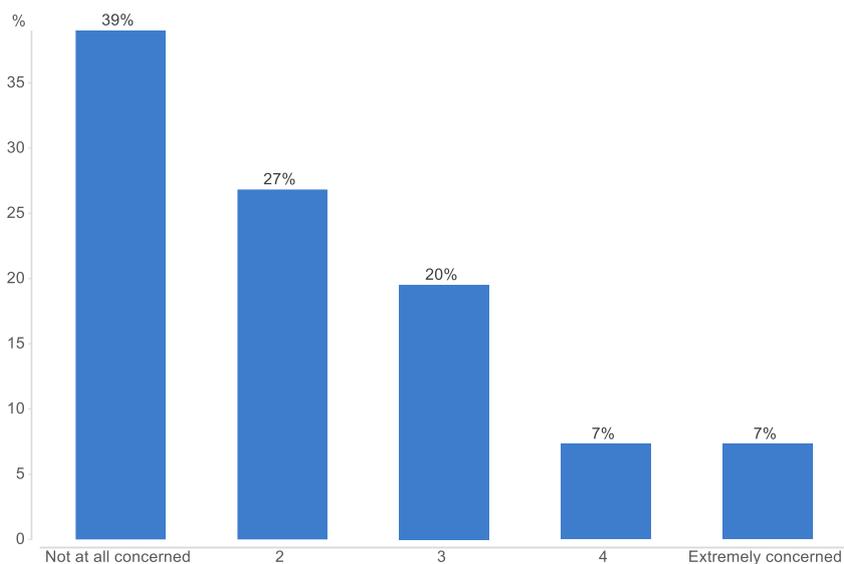
Main beach activity of respondents



Respondents' main beach activities were surfing or bodyboarding (22%), SCUBA diving and snorkelling (20%) and nearshore swimming (15%).

Concern about encountering sharks

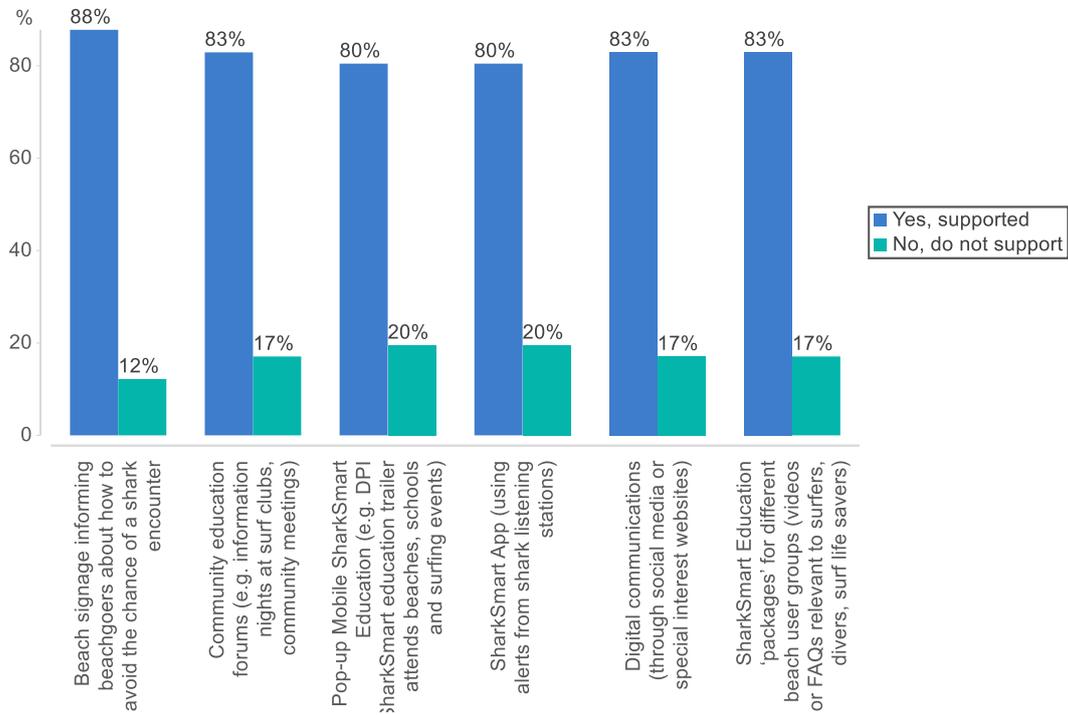
How personally concerned are you about encountering a shark while at a beach in NSW?



Most expressed little or no concern at all, but some were extremely concerned about encountering a shark at the beach.

Support for Community education and shark-alert measures

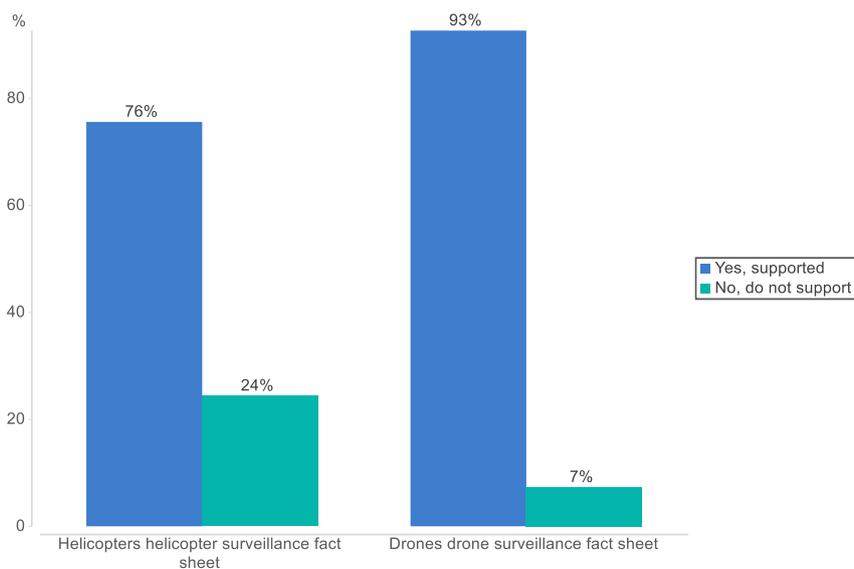
The list below includes different **Community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for all the Community education and shark-alert measures.

Support for aerial surveillance

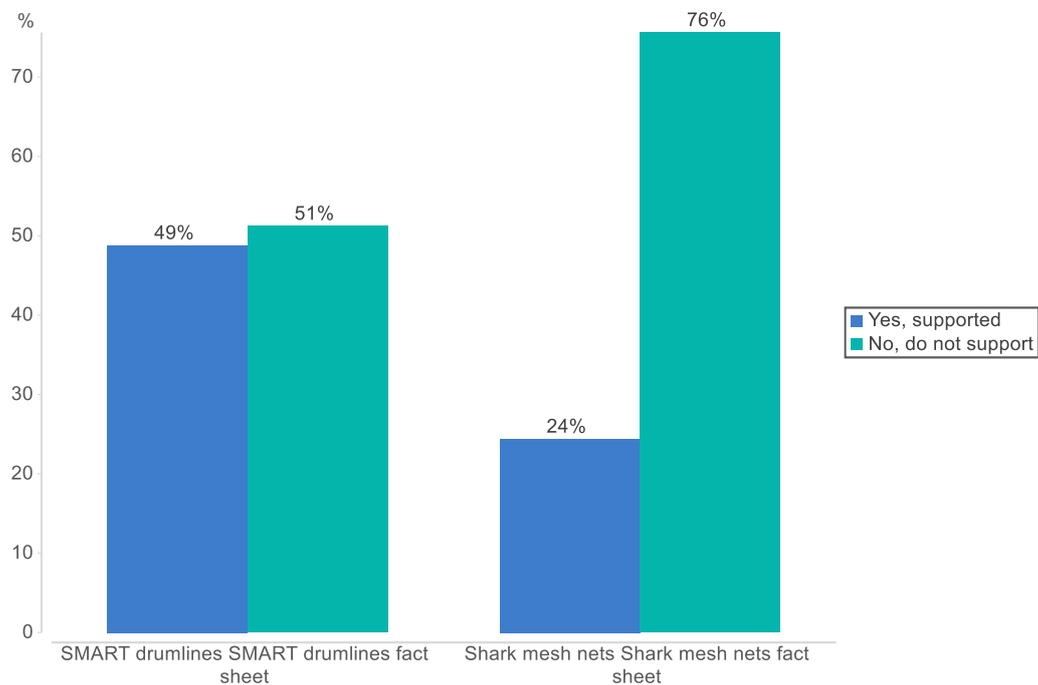
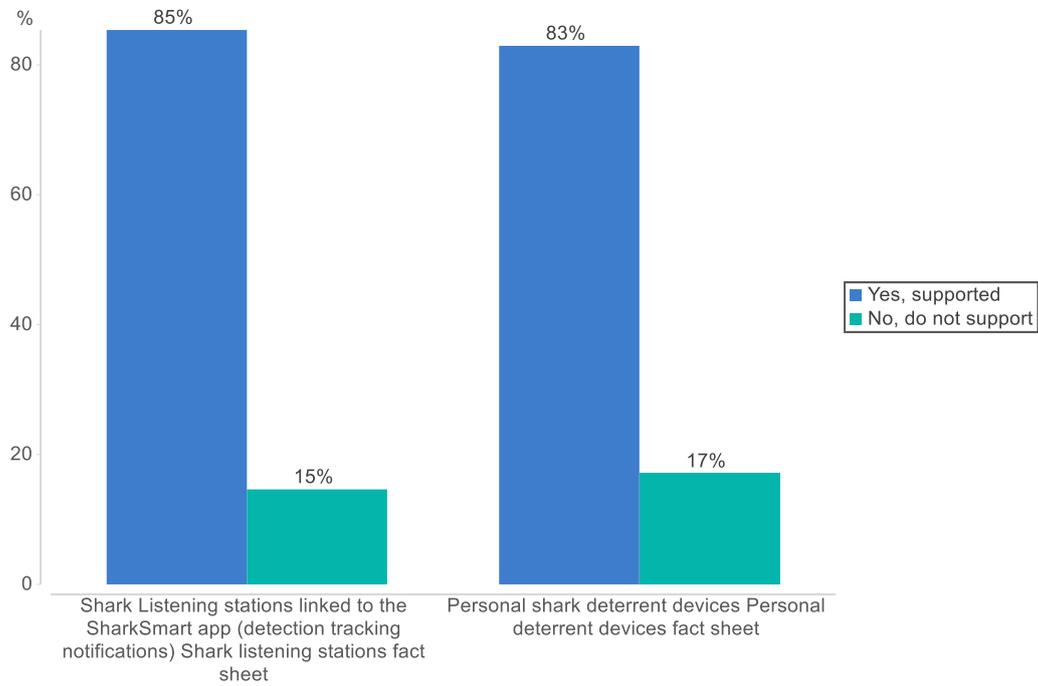
The list below includes different **aerial surveillance measures like helicopters and drones**. Which, if any, do you support in your local government area (or NSW in general)?



There was high support for drones and lower but still strong support for helicopter surveillance.

Support for in-water measures

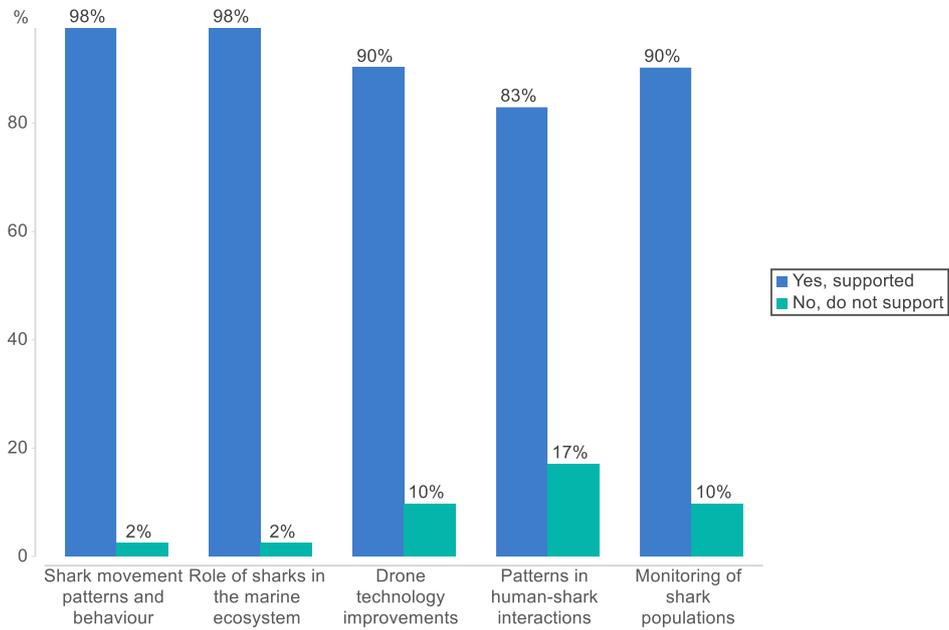
The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?



There was strong support for Shark listening stations and Personal shark deterrents. Opinions were closely divided about SMART drumlines and there was a strong proportion of respondents who did not support Shark mesh nets.

Support for research

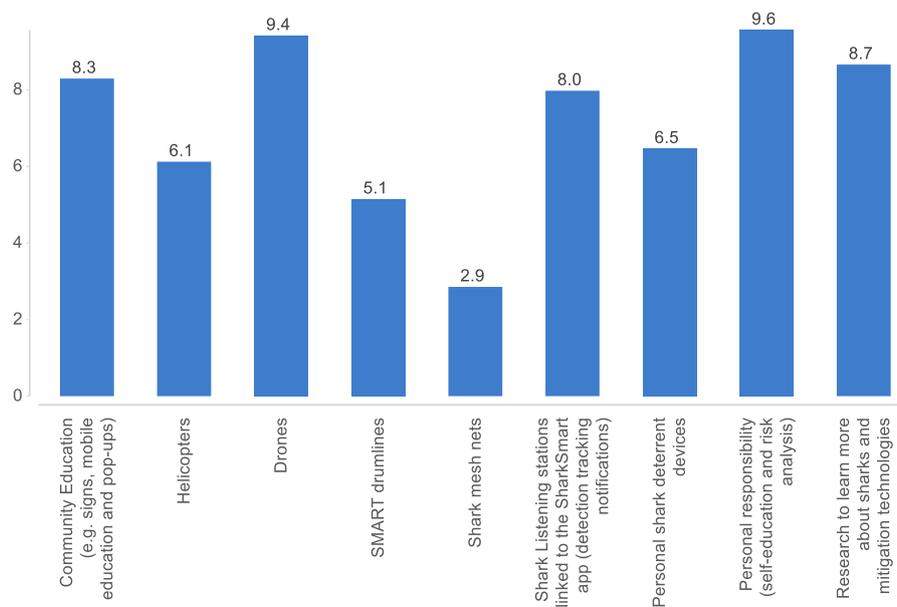
Which of the following **research** topics, should the government focus on in your local government area (or NSW in general) to increase protection of beachgoers?



There was high or strong support for all research topics.

Relative preference for different mitigation measures

0 = Lowest preference, 10 = Highest preference



The most preferred measures were Personal Responsibility, Drones, Research and Community education. Least preferred were Shark mesh nets and SMART drumlines.

8.26 Stakeholder Organisations

8.26.1 Other Council - Woollahra

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Monitoring of shark populations	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	4
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Woollahra doesn't have a great risk in terms of Sharks, we do have some netted swimming areas. The best method for use in Woollahra would be education and shark listening stations.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

8.26.2 Environment and advocacy

Australian Marine Conservation Society

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	
	Helicopters	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?		Shark Listening stations linked to the SharkSmart app (detection tracking notifications)
		Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	7
	Helicopters	3
	Drones	5
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	2
	Personal shark deterrent devices	0
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	0
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	I selected these options as I believe they would be the most efficient without any harm or effect on the animals and their habitat. We are entering their space, so we need to be aware of the risks but not cause any harm to them simply because we require the use of their environment. I do believe people need to be educated about the risks and be aware of their actions, however, I do not believe we have any right to put our wants as humans before other animals needs. Furthermore, we should not under any circumstance be harming the animals in any way whether physically or by using technology that can affect their environment.	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Moderately satisfied

Australian UAV Service

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	
	Helicopters	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	5
	Drones	10
	SMART drumlines	7
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	2
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	I believe that drones are the most practical and cost-effective way to minimise shark to human interactions. I may be biased because it's what I do, but it is also why I do it.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

Associacio LAMNA

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	4
	Drones	7
	SMART drumlines	1
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	6
	Personal shark deterrent devices	4
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Sharks are wild animals just living in their environment, any measure that kills them just to give beach goers a 'peace of mind' are just destroying the same ecosystem that beachgoers appreciate and thus the reason they go to the beach. Just as people need to learn to swim in order to enjoy the ocean, they need to learn to interact with sharks when "using" the same areas they use	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		

How satisfied with the information provided in this survey?	Moderately satisfied
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*** Organisation not based in NSW

Djuyalgu Wakulda

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	9
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	8
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	The shark is our nations totem of the Birrbay people. We do not support trapping or killing sharks.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	More discussions need to be had with Aboriginal communities living in coastal areas.	
How satisfied with the information provided in this survey?	Moderately satisfied	

Earth Garden Foundation

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	5
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Drum lines and nets are cruel, and wrong.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

Envoy

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Monitoring of shark populations
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	2
	Drones	10
	SMART drumlines	6
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Shark netting is proven not to be effective at keeping swimmers or surfers safe, causes extreme harm to the environment, and also the tourism reputation of the state. Any causation between installation in 1937 and any reduction in fatalities has well and truly been debunked by science. This is a correlation, not causation, and is far more likely linked to better first aid responses, and reduction in effluent and offal dumping. Just days before this submission, there was a shark interaction at Cronulla, a netted beach - proving this point yet again. The false sense of security created by these nets is going to get someone killed. Whilst the remainder of the program is progressive and encouraging, shark nets must go. It is time.	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Extremely satisfied

Humane Society International

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	SMART drumlines	Shark mesh nets
	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	5
	Drones	10
	SMART drumlines	7
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Shark Nets are no longer suitable as shark bite risk mitigation measure due to their inability to protect ocean-users, the terrible toll they take on marine wildlife and their resultant unpopularity. Alternative measures can actually reduce the risk via detection (drone surveillance) and deterrence (personal shark deterrents, SMART drumlines, etc.) without the cost to marine wildlife.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		

How satisfied with the information provided in this survey?	Extremely satisfied
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Migaloo 2 Foundation

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	1
	Drones	10
	SMART drumlines	1
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	9
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Drones provide real time spotting and identification possibilities that can interact with apps on peoples phones. Beach goers could potentially hook into the live feed from the drone to get a birds eye view of the ocean before entering. Drones are much cheaper than helicopters and use much less fossil fuels. Surf clubs already exist in most locations with keen pilots. Eduction to swim safe is also vitally important	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	All shark nets should be immediately removed during the humpback whale migration May to November with the plan to remove them completely. Shark Nets and drum lines should be removed from Great Barrier reef Marine park all year round. Shark Nets should all be removed North of Mackay over stinger season as no one swims in the water then anyway.	

How satisfied with the information provided in this survey?	Moderately satisfied
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Ocean Future Fund

Question	Response	
When should shark mitigation measures be deployed?	Summer, Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	0
	Drones	4
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	4
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	4
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	<p>There is enough compelling evidence now to provide DPI with the confidence to remove shark nets as part of the shark mitigation strategy. Coastal communities have come a long way with this work and have shown an appetite for non-lethal alternatives including Community engagement and education. DPI now must have the courage to remove the nets as part of moving forward to the next phase. If only this much research was carried out on the many impacts of fishing (both commercial and recreational) on our local environments and how to mitigate the significant impacts on our marine species from these sectors. Congratulations to the NSW DPI for this piece of work. It goes to show that when you bring the public along on the journey and don't shy away from looking at the hard questions, positive changes and impacts can be made.</p>	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Extremely satisfied

Our Blue Hands

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?		Shark Listening stations linked to the SharkSmart app (detection tracking notifications)
		Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	9
	Helicopters	8
	Drones	9
	SMART drumlines	1
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	1
	Personal shark deterrent devices	1
	Personal responsibility (self-education & risk analysis)	9
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	We are located in a bio diverse area. And all the people go to the water knowing about shark life overthere . If we know better about the habits and patterns we could avoid fatal attacks and also drones should work in most situation. The device service had been used to chase them (sharks) I don't agree.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Sentient

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	4
	Drones	10
	SMART drumlines	2
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	8
	Personal shark deterrent devices	4
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Education is key in any community but each person needs to take personal responsibility going into the ocean (like when you cross the road). Utilising technology in drones (& possibly helicopters although they are much more expensive) being the "eye in the sky" as well as possibly shark listening stations would be a great as extra "safety nets" especially during the summer months when there are lots of surfers & swimmers. Shark mesh nets are definately a no no as they don't work & kill too many non-target animals - every other option is worth investing in.	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Moderately satisfied

Shark Conservation Australia

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Because sharks are the doctors of the sea and we need to learn that sharks are in charge when we enter the ocean	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	We need signs that bait balls (fish sharks like) are in the area so no one goes swimming	
How satisfied with the information provided in this survey?	Extremely satisfied	

8.26.3 Sport, recreation and ocean experience

Salty Swims

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean, Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	9
	Drones	9
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	9
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Research and education "are" imperative. Helicopters and helicopters 2nd to the fact, they are down to human error and expensive. Mesh nets and drumlines do no work!	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Surfing Maps

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	1
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	The ocean will never be a risk free environment however risks can be reduced. The current control programs are outdated and ineffective and we need to support non lethal shark mitigation options if we want to move forward on this issue.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Balance Tri Club

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
		SMART drumlines
		Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile, and pop-ups)	10
	Helicopters	5
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrents	0
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation tech	10
Why those mitigation measures were selected, based on the needs of the local area	Contract for further info	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Hunters Hill Sailing Club

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	6
	Drones	10
	SMART drumlines	10
	Shark mesh nets	10
	Shark listening stations linked to the SharkSmart app	8
	Personal shark deterrent devices	1
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	As a bull shark potential hotspot we are keen for research and mitigation strategies year round.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Moderately satisfied	

Surfrider Foundation South Coast

Question	Response	
When should shark mitigation measures be deployed?	Never	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	0
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	10
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	10
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	<p>We need shark populations to ensure healthy and viable oceans. Overfishing is a cause of shark interactions with humans so more funding should be spent on ensuring marine parks and protected areas are introduced. Education regarding the importance of sharks should become the priority. These measures are great solutions however if we refuse to ignore the causes of shark/human interactions (overfishing) then all of these measures will be redundant. Educating the public about shark protection should become the priority.</p> <p>These measures are reactive and needed however if we don't address the underlying issues we are kidding ourselves.</p>	

<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>Overfishing education and awareness of ocean protection should become part of the mitigation strategy. It's great to teach about how we can protect beach goers but we must also educate the public about protect shark populations and be honest about why encounters are occurring. Overfishing must be stopped.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Moderately satisfied</p>

8.27 Surf Life Saving NSW Branches

Far North Coast Surf Life Saving

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Personal shark deterrent devices
	SMART drumlines	Shark mesh nets

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	7
	Helicopters	0
	Drones	10
	SMART drumlines	9
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	1
	Personal responsibility (self-education & risk analysis)	8
	Research to learn more about sharks and mitigation technologies	7

<p>Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).</p>	<p>I operate on the Far North Coast of NSW. I support all year round mitigation measures. I support drone surveillance as a cost effective way to mitigate shark proximity to swimmers and surfers. I believe drone technology is developing rapidly. I support SMART drumlines and shark tagging to give DPI clearer data on shark movements and migratory patterns. I have less faith in personal shark deterrents but am open minded about the improving technology in this area. I disagree with meshing or netting as shark mitigation for reasons of by catch. I no longer support helicopters as they are expensive and only in the air at most twice a day. I support shark buoys for the purpose of pinging a shark and plotting the behaviour of individual sharks to gain greater insight into species patterns. I do not really support the social media alerts as they are NOT accurate. They raise fear levels in local communities without any benefit. The buoys and subsequent social media alerts may be for a shark that is 500m seaward of the buoy and therefore posing no threat to beach users.</p>
<p>Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.</p>	<p>This is a good survey and I support the DPI shark mitigation project. Drones being used by surf life savers has led to greater awareness of marine life around our beaches. It has also raised the public's knowledge of shark behaviour and how to mitigate risk.</p>
<p>How satisfied with the information provided in this survey?</p>	<p>Extremely satisfied</p>

Far South Coast Surf Lifesaving (UAV coordinator)

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	5
	Helicopters	9
	Drones	9
	SMART drumlines	7
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	6
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	I've selected ones that could be beneficial to my branch (Far South Coast). The big ones for us are UAVs and helicopters, as well as drumlines and listening stations, to better understand where sharks are at any one time. Although we don't have as many shark interactions like the Far North Coast, they are becoming more frequent and we need to implement measures before an attack occurs. the Options I'd like implemented ultimately would ensure safety of both animals and humans, as after all we are in their backyard, therefor shark nets are a low priority. Community education is a big one, however it needs to be implemented without causing unnecessary fear. As the use of drones increase, we have grown to realise how helpful they are, but as they are only being flown and patrolled beaches and have a limited range, I still feel the need for helicopters to fill the gaps on where we cant and don't fly.	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Extremely satisfied

Hunter SLSC

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	8
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	10
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	8
	Personal responsibility (self-education & risk analysis)	8
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	We have a very healthy surf usage along our coast, the more aware we can make the bathing public the better our reaction will be to limit the interaction between ocean users and the big fish, the big fish live in the ocean we are the visitors we need to know when its safer and less safe to use the ocean, the work you have carried out so far is great and adds to our ability reduce the interactions.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Illawarra SLSC

Question	Response	
When should shark mitigation measures be deployed?	September-April when people swim in the ocean	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	Community education forums (e.g. information nights at surf clubs, Community meetings)
	Digital communications (through social media or special interest websites)	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)
		SharkSmart App (using alerts from shark listening stations)
		SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Personal shark deterrent devices	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)
	Shark mesh nets	SMART drumlines
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	

	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	7
	Drones	9
	SMART drumlines	5
	Shark mesh nets	5
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	2
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	5
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	There is very little community education surrounding sharks and hence has a higher priority, following is drones as they are very effective in shark detection (and a positive cost benefit to other options such as helicopters), helicopters are also effective but cost prohibitive. The shark listening devices linked to the shark smart app appear to be technologically superior but in its infancy in the region. Don't see the benefit in the personal shark deterrent devices as there is no effective solution available.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	The pop up videos in the survey were very beneficial for my understanding of the various mitigation strategies.	
How satisfied with the information provided in this survey?	Extremely satisfied	

Lower North Coast Surf Life Saving

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	
	Community education forums (e.g. information nights at surf clubs, Community meetings)	
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	Helicopters
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	SMART drumlines	
	Shark mesh nets	
	Personal shark deterrent devices	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Patterns in human-shark interactions
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	2
	Drones	8
	SMART drumlines	10
	Shark mesh nets	1
	Shark listening stations linked to the SharkSmart app	7
	Personal shark deterrent devices	1
	Personal responsibility (self-education & risk analysis)	5
	Research to learn more about sharks and mitigation technologies	8
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Education is key to everything. Drones are working at one of my beaches. Drum lines worked extremely well when used in the past.	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Neither satisfied nor dissatisfied	

Mid North Coast Surf Lifesaving

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Community education forums (e.g. information nights at surf clubs, Community meetings)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)	
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Drones	
	Helicopters	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	SMART drumlines
	Personal shark deterrent devices	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	
	Role of sharks in the marine ecosystem	
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	1
	Helicopters	8
	Drones	8
	SMART drumlines	1
	Shark mesh nets	8
	Shark listening stations linked to the SharkSmart app	5
	Personal shark deterrent devices	7
	Personal responsibility (self-education & risk analysis)	1
	Research to learn more about sharks and mitigation technologies	4
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	As the water is warmer in the region where I reside, I believe that there should be an annual surveillance of sharks in the area. There are a number of swimmers still in the ocean even during winter. I think that Shark Mesh is more kinder to the animals than drumlines. I believe that aerial surveillance is good on clear days. More community education about sharks and their habits could also be very beneficial in the long run to minimise the risk of shark attacks taking place.	

Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.	
How satisfied with the information provided in this survey?	Extremely satisfied

Sydney Surf Life Saving

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	Beach signage informing beachgoers about how to avoid the chance of a shark encounter	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)
	Community education forums (e.g. information nights at surf clubs, Community meetings)	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)
	SharkSmart App (using alerts from shark listening stations)	
	Digital communications (through social media or special interest websites)	
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	
	Personal shark deterrent devices	
	SMART drumlines	
	Shark mesh nets	

Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Role of sharks in the marine ecosystem
	Drone technology improvements	
	Patterns in human-shark interactions	
	Monitoring of shark populations	
Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	10
	Helicopters	10
	Drones	10
	SMART drumlines	10
	Shark mesh nets	7
	Shark listening stations linked to the SharkSmart app	10
	Personal shark deterrent devices	3
	Personal responsibility (self-education & risk analysis)	10
	Research to learn more about sharks and mitigation technologies	5
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).		
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Neither satisfied nor dissatisfied	

Sydney Northern Beaches Surf Life Saving

Question	Response	
When should shark mitigation measures be deployed?	All year	
Community education and shark-alert measures	Supported	Not supported
Which Community education and shark-alert measures supported in local government area?	SharkSmart App (using alerts from shark listening stations)	Beach signage informing beachgoers about how to avoid the chance of a shark encounter
	Digital communications (through social media or special interest websites)	Community education forums (e.g. information nights at surf clubs, Community meetings)
	SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)	Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)
Aerial surveillance	Supported	Not supported
Which aerial surveillance measures supported in local government area?	Helicopters	
	Drones	
In-water measures	Supported	Not supported
Which in-water measures supported in local government area?	Shark Listening stations linked to the SharkSmart app (detection tracking notifications)	Shark mesh nets
	Personal shark deterrent devices	
	SMART drumlines	
Research	Supported	Not supported
Which research topics should the government focus on in the local government area to increase protection of beachgoers?	Shark movement patterns and behaviour	Patterns in human-shark interactions
	Role of sharks in the marine ecosystem	Monitoring of shark populations
	Drone technology improvements	

Mitigation measure preferences		Preference level 10 = Highest 0 = Lowest
Which (if any) shark mitigation measures preferred for region?	Community Education (e.g. signs, mobile education and pop-ups)	9
	Helicopters	9
	Drones	9
	SMART drumlines	9
	Shark mesh nets	0
	Shark listening stations linked to the SharkSmart app	9
	Personal shark deterrent devices	5
	Personal responsibility (self-education & risk analysis)	7
	Research to learn more about sharks and mitigation technologies	9
Why those mitigation measures were selected, based on the needs of the local area (in 2000 characters or less).	Educating the public in relation to migration, safety, resources that we have available to us and drumlines over nets is very important to our ecology and beach going public and surf life savers	
Further comments or suggestions for the NSW Government regarding shark mitigation in the region, including any local factors that should be considered.		
How satisfied with the information provided in this survey?	Extremely satisfied	

Appendix A: Engagement program and information session schedule

Invitations to Online Information Sessions

Invitations sent	Week commencing 25 January
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Online Information Sessions

Attendees	Date	Time
Test Run Through	Tuesday 23 February 2021	1 – 3pm
Northern Rivers Councils	Tuesday 23 February 2021	5.30pm - 7.30pm
Sydney Coastal Councils	Wednesday 24 February 2021	5.30pm - 7.30pm
Mid-North Coast Councils	Monday 1 March 2021	Reset + 5.30pm - 7.30pm
Hunter Councils	Tuesday 2 March 2021	5.30pm - 7.30pm
South Coast Councils	Wednesday 3 March 2021	5.30pm - 7.30pm + pack up
Lifesavers and emergency services	Monday 8 March 2021	Reset + 5.30pm - 7.30pm
2015 Shark Summit attendees	Tuesday 9 March 2021	5.30pm - 7.30pm
Bite Club	Wednesday 10 March 2021	5.30pm - 7.30pm

Education Trailer

Location	Date	Time
Tweed & Kingscliff SLSC	13, 14 March (Sat, Sun)	8 - 2pm
Ballina & Woolli SLSC	27, 28 March (Sat, Sun)	8 - 2pm

Consultation Phase

Survey portal open for responses	22 February – 30 March 2021 (Extended by request to 30 April 2021)
Survey portal open for individual responses and stakeholder group responses	8 March – 28 March 2021

Appendix B: Information session program

Sample running sheet - Information sessions for Councils & Key Stakeholders

Session	Topic / Key Messages
INTRO Holding screen	NSW Shark Management Strategy Forum Forum begins at 5:30pm
INTRO Shark Management Strategy Video	VIDEO - Overview of five-year Shark Management Strategy (SMS)
INTRO Welcome	<p>Kim: Hello and Welcome to NSW DPI Shark Management Strategy Forum.</p> <p>We are coming to you live this evening from the Sydney Institute of Marine Science here in Mosman and it is our pleasure to be with this afternoon to share five years of world class shark science.</p> <p>Welcome to Country</p> <ul style="list-style-type: none"> We'd like to begin by acknowledging the traditional owners of the country we meet on today, and pay our respect to Elders, past present and emerging. We would also like to extend our respect to other Aboriginal people who are present today.
INTRO Introduction of Panel & Set Up	<p>Kim - Introduce tonight's panel</p> <p>For those of you who I haven't had the pleasure of personally meeting, my name is Kim Wolfenden, I lead the Community Engagement Program for the DPI shark strategy and I'll be your facilitator tonight.</p> <p>Joining me this evening are my colleagues from DPI:</p> <ul style="list-style-type: none"> Natalie Moltschaniwskyj – Director, Fisheries Research Marcel Green – Program Leader, Shark Programs And SLSNSW representative Brent Manieri on Zoom Katy Fardell & Emma Mudford – Stakeholder Engagement Officer moderating off camera Welcome to all our Sydney Councils tonight <hr/> <p>Kim - Set tone for evening and explain how evening will run</p> <ul style="list-style-type: none"> Tonight's Forum is broken up into four parts <ol style="list-style-type: none"> The results of testing and trialling a suite of shark mitigation measures

	<ol style="list-style-type: none"> 2. The science of sharks – what we have learned about White, Bull & Tiger shark movements and behaviour 3. The social research findings - What the NSW community thinks about sharks & mitigation 4. How organisations and beachgoers can share their views <p>Few Housekeeping:</p> <ul style="list-style-type: none"> • Please leave your camera's on and please make sure we can see your name and organisation' you can change this by clicking on the three dots in the corner of your screen • How to ask a questions – chat, at discussions times, or send a private message on Zoom if you'd rather not put your question on the public forum. We will be recording these sessions for internal purposes but will not make any of tonight's discussions publicly available. We will however, provide a copy of the presentation on the our website for members of the public to watch.
<p>Session 1. The results of testing and trialling a suite of shark mitigation measures</p>	<p>Introduce Session 1</p> <ul style="list-style-type: none"> • It gives me great pleasure to now hand over to Dr Natalie Moltschaniwskyj – NSW DPI's Director, Fisheries Research to step you through the results of the five-year shark mitigation trials. <hr/> <p>Nat - NSW SHARK MANAGEMENT STRATEGY AIM</p> <ul style="list-style-type: none"> • Aim of the five-year SMS was to increase protection for beachgoers from shark interactions, while minimising harm to sharks and other marine animals. • Three main programs that sat under this • Surveillance Detection and Deterrents – (e.g drones, SD's) • Science and Research – (e.g shark tagging and tracking) • 3. Education and Community Awareness (beach drop-in stands, website) <hr/> <p>Nat - Shark Meshing Program</p> <p>Where we started, in 2015 following shark interactions on the North Coast, shark nets were our only option. One of DPI's long-standing shark mitigation measures is the Shark Meshing Program, commonly known as 'the shark nets'. Shark nets are currently located at 51 beaches between Newcastle and Wollongong and set between April and September. Shark nets were not a part of the NSW SMS although DPI did undertake a trial to compare nets and SMART drumlines on the North Coast, which we will step you through in the SD's section. This was the existing technology since 1937, we knew there must be new technologies.</p> <hr/> <p>SMS TECHNOLOGIES GRAPHIC</p> <ul style="list-style-type: none"> • This graphic gives you a sense of the extensive suite of measures that were tested and trialled as a part of the SMS. I'll step you through them all quickly and then focus on the measures that were most successful and preferred by the community.



- Clever Buoy
 - Trialled off Hawks nest and results show further refinement and field testing is required to improve the range of Clever Buoy.



- Barriers
 - For the first time on Australia's East Coast, NSW DPI aimed to trial two shark barriers in 2016. The barriers could not be installed effectively and safely due to the dynamic ocean conditions on East Coast. Both trials were discontinued. Currently available shark barrier products are only suitable for NSW estuaries or highly sheltered coastlines.



- Personal Protection
 - Keeping a watching brief - Personal shark deterrents can be worn by an individual or attached to surfboards. We tested a suite of products with one coming out as more effective than others. As this technology continues to improve, we are keeping a watching brief.



- Helicopters
 - Watching brief - Helicopters are capable of surveying large areas of coast, however are expensive and less effective than drones. For this reason, it's an Amber tick.



- Drones
 - DPI's research showed drones are the most effective shark detection and surveillance tool for NSW ocean beaches. The NSW Government partnered with Surf Life Saving NSW (SLSNSW) to trial deploying drones at many beaches across the State. Highly effective.



- SMART Drumline

Session 2: The Science of Sharks



- VR4G listening stations
 - Shark listening stations have been deployed at 21 locations on the NSW Coast from Kingscliff to Merimbula, to provide real-time alerts of tagged sharks to beachgoers via the SharkSmart app. They are an effective tool to communicate movements of tagged sharks.



- Tagging and Tracking Sharks
 - DPI has tagged and monitored over 700 White, Bull and Tiger sharks to learn more about how these animals are using NSW coastal waters. This is one of the largest programs in the world. We have learned so much about where and why sharks move.



- Community Engagement and Social Research
 - DPI has shared the journey of the Strategy through strong community and stakeholder engagement and completed over xx social research studies to understand what people think about sharks in NSW.

Nat - SURVEILLANCE, DETECTION & DETERRENTS

- Of the array of technologies that were tested and trialled, there were three that stand out as being both scientifically viable and preferred by many in the community
- These measures are Drones, SMART drumlines & Listening Stations

Nat - DRONES

- To test drones, we first compared with helicopters & spotter
- Demonstrated drones have advantages over helicopters spotters not suitable in NSW
- Developed operating procedures and then integrated with beach safety

VIDEO: DRONE RESULTS

Nat - DRONE BENEFITS & CONSIDERATIONS

- Drones have been the most successful technology trialled on beaches. Our vision is to see drones at every surf club on the NSW coast.

Kim: For the last few years we have been partnering with Surf Lifesaving NSW to roll out drones on NSW beaches. This Summer, drones were live

on 34 beaches across the State – Brent, can you show us one of the SLS drones and talk us through some of the key findings in this Council area?

Brent to explain drones

Kim - PAUSE TO ANSWER 2 QUESTIONS FROM CHAT

Kim: We are going to talk you through our SMART drumline trials now. Let's start with a short clip of this technology and then Marcel will demonstrate how they work

VIDEO: SMART DRUMLINE RESULTS

Marcel: Demonstrates SMART drumlines

- SMART drumlines are set in the morning and retrieved in the afternoon. They are not left overnight.
- The unit is comprised of two buoys, a hook that is baited with one sea mullet and a GPS satellite unit
- When a shark takes the bait, we are instantly alerted to advise there is a shark on the line and a response happens within 30 minutes
- The shark is tagged, towed offshore 1km and released and results show sharks remain offshore for some time after this process before resuming their normal migration patterns.

Kim: Thanks Cel. Nat will now step through some of the results of SMART drumlines in trials conducted in this Council Region.

Nat - SMART DRUMLINE TARGET SPECIES

VIDEO: SHARK LISTENING STATIONS & TAGGED SHARKS

SHARK LISTENING STATIONS

- Benefits and Considerations

PAUSE FOR FEEDBACK

Kim: This is one of our latest videos that we haven't released to the wider public yet, we'd love to hear what you thought of these results. Thank you for your feedback, Nat will now step through helicopters

HELICOPTERS KEY RESULTS- Sydney region

Nat - HELICOPTERS BENEFITS & CONSIDERATIONS

Nat - PERSONAL DETERRENTS

Small grants program allowed an opportunity to trial ideas we were receiving about deterring sharks

VIDEO – PERSONAL DETERRENTS

TECHNOLOGIES TRIALLED & NOT SUITABLE FOR NSW

- Clever Buoy
 - Trialled off Hawks nest and results show further refinement and field testing is required to improve the range of Clever Buoy.



- Barriers
 - For the first time on Australia's East Coast, NSW DPI aimed to trial two shark barriers in 2016. The barriers could not be installed effectively and safely due to the dynamic ocean conditions on East Coast. Both trials were discontinued. Currently available shark barrier products are only suitable for NSW estuaries or highly sheltered coastlines.

PAUSE FOR FEEDBACK

Now that we have provided you with a lot of information, we'd love to hear from each of the Councils on your thoughts on hearing these findings. We are conscious of time, so we've got a couple of minutes to hear from each of you.

Kim

- That wraps up our first session showcasing the results of the trials, we are now going to share what we have learned about White, Bull & Tiger Sharks now that DPI scientists have tagged over xx of these sharks.
- Marcel, will now show us the shark tags we use and how they are fitted to the shark and then we'll watch a clip showing the results of the tagged sharks.

Cel - DEMO AREA : SHARK TAGS

- This is a satellite tag, it's mounted on the fin of White and Tiger Sharks. When the shark breaks the surface of the water, we get a ping. As you can see behind me, we are then able to track the sharks movements over time
- This is an internal acoustic tag
- This is an external acoustic tag
- Both of these tags are detected on the shark listening stations

PLAY SHARK TAGGING RESULTS VIDEO**Nat - WHITE SHARKS****Nat - BULL SHARKS****Nat - TIGER SHARKS**

	<p>Kim: Let's take a 5 minute break if you need a cuppa, break, stretch and then we'll come back to share what the NSW Community thinks of sharks and shark mitigation. In the meantime we will share some of our videos of tracked sharks that have been a hit on our Instagram channel.</p>
<p>Session 3: Social Research Findings</p>	<p>Nat - SOCIAL RESEARCH FINDINGS</p> <ul style="list-style-type: none"> • Last year, we undertook a statewide survey and there were two ways we did this. <ol style="list-style-type: none"> 1. Representative Survey, where we used consultants to undertake a representative sample across NSW from every Council region 2. Also ran this survey online as an opt-in for anyone to complete
	<p>Nat - SOCIAL RESEARCH RESULTS (STATEWIDE)</p> <ul style="list-style-type: none"> • These are the results from across the State • As you can see, xx came in at number 1, 2 & 3
	<p>Nat - SOCIAL RESEARCH RESULTS (THIS REGION)</p> <ul style="list-style-type: none"> • These are the results from this Council Region • As you can see xx came in at number 1, 2 & 3
	<p>Kim - EDUCATION & ENGAGEMENT</p>
	<p>Nat - SUMMARY OF MOST SUCCESSFUL MEASURES</p> <ul style="list-style-type: none"> • The technologies that are supported by science and community are: • Drones, listening stations, SMART drumlines and education
	<p>Kim - PAUSE TO ANSWER 2 QUESTIONS FROM CHAT</p>
<p>Session 4: How Councils Community can share their views</p>	<p>Kim - CONSULTATION PROJECT</p> <ul style="list-style-type: none"> • So now, after sharing the results of the five year trials, we are looking to capture all of the 26 Coastal Councils and Communities preferred shark mitigation measures. • To do this, the University of Wollongong and Charles Sturt University are hosting an independent survey for each Council to make a submission. They will then collate the results to provide an independent report from Government • We are looking to have one person nominated from each Council that we can organise for the University of Wollongong to send the survey through to. Could you please put your nominated email in the chat • Let me step you through the consultation program
	<p>Kim - CONSULTATION PROGRAM</p> <ul style="list-style-type: none"> • Purpose, approach and timings • Running a series of online forums this is the first of 8 over next couple of weeks • Submission survey open for Councils from 23 – 28 March. The survey is looking to capture your Councils preferred shark mitigation options. • Opens a little while later for the community on 8 March running through to 28 March • We will send you a resource pack in order to help us promote the survey to the community.

	<ul style="list-style-type: none"> University of Wollongong & CSU will collate results into a report for government <p>Kim - THE SUBMISSION SURVEY Submission survey was co-designed with UoW and CSU – will now step you through the key questions in the survey. Send pdf of survey to nominated person.</p> <p>Nat - WHERE WE STARTED Shark Mitigation has come a long way from where it first started with lifeguards on towers with shotguns</p> <p>Nat - WHERE WE ARE NOW To drones, real time listening stations and a much better understanding of shark movements and behaviour NSW is leading the world in terms of trialling and evidence on decision making</p> <p>Final Q & A Session Kim: We have time for any final Q & A session</p> <p>Kim - POLL: FEEDBACK ON THIS SESSION</p> <ul style="list-style-type: none"> Zoom poll – did we increase your awareness and confidence? Did you find the session engaging?
	<p>Kim - Wrap up Thank you for attending tonight's session.</p> <p>Any final words Nat/Cel? Nat – Thank the councils for your support of our scientists and beach authorities in running trials in your region. Marcel - What a journey we have been on last 5- 6 years. We are looking forward to receiving your submission survey to help guide the governments future decisions on shark mitigation. Kim: Thanks to our crew who are here tonight bringing this live to you. We look forward to receiving your submission that we help government make decisions for the future. Thanks for joining us.</p>

Appendix C: Online survey questionnaire

Stakeholder Consultation on Preferred Shark Mitigation Measures in NSW

Information statement:

This survey is being conducted by the University of Wollongong and Charles Sturt University on behalf of the NSW Department of Primary Industries (DPI). You are invited to complete a survey and share your views on shark mitigation measures in NSW. **Researchers: Dr Clifford Lewis, Charles Sturt University Associate Professor Peter Simmons, Charles Sturt University Dr Michael Mehmet, University of Wollongong Mr Kane Callaghan, Charles Sturt University**

It is important for you to understand the purpose of the survey and what it will involve, please take the time to read the following information carefully and discuss with others if you wish.

Participant Information

1. Why have I been invited to participate in this survey?

On 30 June 2020, DPI came to the end of a five-year program of trialling world-class technology and researching shark behaviour in NSW waters to increase protection of beachgoers from shark interactions. This program was called the 'NSW Shark Management Strategy' (visit www.sharksmart.nsw.gov.au). Following this work, the NSW Government is sharing the results with local councils and communities and using this survey to listen to what the preferred shark mitigation measures are. This will help guide future decisions on shark bite mitigation measures across NSW.

2. What is the purpose of this survey?

The purpose of the survey is to identify local government and community preferences for shark mitigation in NSW to help inform future decisions related to sharks and beach safety. We define shark

mitigation as the public and personal protection measures to increase the safety of beachgoers to reduce the chance of a shark-human interaction occurring.

2. What does this survey involve?

You will be asked to answer questions about shark mitigation measures. For some questions, you will be provided with videos and fact-sheets to review before you provide an answer. If you agree to participate by proceeding to the survey, this will be regarded as consent to participate in the research.

3. Are there risks and benefits to me in taking part in this study?

You may find the questions interesting but there will be no personal benefit to you in participating in this research. The benefit is for the NSW Government to understand local council and community preferences to shark mitigation measures to guide decision making.

4. How is this study being paid for?

The research is being funded by the **DPI**.

6. Will taking part in this study cost me anything, and will I be paid? There is no cost to you to participate, apart from your time in completing the survey. Participation is voluntary.

7. What if I participate and want to withdraw later? a) Organisations Those who are responding to this survey on behalf of an organisation will be able to withdraw from the survey at any time before the end of the survey, or within three weeks following the survey at which point the analysis process will commence. If you choose to withdraw, any information collected pertaining to the organisation you are affiliated with will be deleted and not included in the analysis.
b) Individuals Those responding to this survey in an individual capacity can decide to withdraw from the survey at any time before the end of the survey. Because all information is anonymous, we cannot remove your answers after you submit the completed survey.

8. How will confidentiality be addressed? You will be asked if you are responding as an organisation or as an individual. a) Organisations If you are responding on behalf of an organisation you will be asked to provide us with a contact name, the name of the organisation you are representing, and an email/postal address. Your responses will be published in the final report along with the name of your organisation, but not the contact name. b) Individuals If you reply as an individual any information collected by the **researchers** as part of the survey (gender, age, ocean interests and postcode) will not identify you. It will be stored securely and only accessed by the **researchers**, except as required by law. There are limits on assurances of confidentiality as law may

subpoena research data/records. Data will be retained for at least 5 years in a secure premise and on a password protected computer at Charles Sturt University.

9. What will happen to the information that I give you? The **researchers** will prepare a report for the **DPI**. The report and any papers will not be sold, and the research will not be used for commercial gain. Individual participants will not be identified in any reports arising from the project.

10. What should I do if I want to discuss this study further before I decide? If you would like further information please contact Dr Clifford Lewis on cllewis@csu.edu.au or 02 6338 6364.

11. Who should I contact if I have concerns about the conduct of this study? Charles Sturt University's Human Research Ethics Committee has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee on (02) 6933 4213 or ethics@csu.edu.au. Any issues you raise will be treated in confidence and investigated fully, and you will be informed of the outcome.

1. To start off with, please indicate if you are making this submission as:

1. An organisation (representing the view of a council, NGO, or other community group)
2. An individual (representing your personal opinion)

2.1 [For organisations only] In the space below, please provide us with the following details of the organisation you are representing:

1. Name of organisation: _____
2. Contact name: _____
3. Email/postal address: _____

2.2 Please select from the list below which local government area you live in:

▼ Ballina Shire Council (1) ... Other Council (27)

2.2.1 You selected 'Other Council' in the previous question, please type your local council into the space below:

2.3 [For individuals only] Which of the following age groups do you fall into?

1. 17 and under (1)
2. 18-34 (2)
3. 35-44 (3)
4. 45-54 (4)
5. 55-64 (5)
6. 65 and over (6)

2.4 [For individuals only] And, which of the following do you identify as?

1. Male (1)
2. Female (2)
3. Non-binary (3)

I identify with another term (please specify) (99)

2.5 [For individuals only] And, what is the **main** activity you do at beaches in your local area?

1. Surfing or body boarding (1)
2. Body surfing (using hand planes) (2)
3. Other board-based ocean activities (e.g. kayaking/canoeing, kite surfing, surf skiing, SUP, wind surfing) (3)
4. Ocean swimming (i.e. open water swimming) (4)
5. Nearshore swimming (e.g. between the flags) (5)
6. SCUBA diving, free diving, or snorkeling (6)
7. Spear fishing (7)
8. Shore-based line fishing (8)
9. Boat-based line fishing (9)
10. Walking and/or running or other fitness/sport activity on the beach (includes dog walking) (10)
11. Surf Life Saving, lifeguard (11)
12. Sunbathing, relaxing, viewing scenery (12)
13. Supervising nippers/cadets (13)
14. Boating (power and sail boats) or jet skiing (14)
15. Indigenous cultural activities (15)
16. Wildlife viewing and/or beach combing (16)
17. Other, please specify (99) _____
18. None – I don't visit the beach (17)

3.1 [For individuals only] How **personally concerned** are you about encountering a shark while at a beach in NSW?

1. **Not at all concerned** (1)
2. 2 (2)
3. 3 (3)
4. 4 (4)
5. **Extremely concerned** (5)

3. [For organisations only] When do you think shark mitigation measures should be deployed?

Please select all that are relevant

First. All year

Second. September-April when people swim in the ocean

Third. Winter

Fourth. Summer

Fifth. Spring

Sixth. Autumn

Seventh. Never

4. The list below includes different **community education and shark-alert measures**. Which, if any, do you support in your local government area (or NSW in general)?

You can watch the 1.09 min video below or view this [fact-sheet](#) on community education before you respond to this question.

	Yes, supported (1)	No, do not support (2)
Beach signage informing beachgoers about how to avoid the chance of a shark encounter		
Community education forums (e.g. information nights at surf clubs, community meetings)		
Pop-up Mobile SharkSmart Education (e.g. DPI SharkSmart education trailer attends beaches, schools and surfing events)		
SharkSmart App (using alerts from shark listening stations)		
Digital communications (through social media or special interest websites)		
SharkSmart Education 'packages' for different beach user groups (videos or FAQs relevant to surfers, divers, surf life savers)		

Descriptive text *We are now going to ask you about **shark mitigation measures**, many of which DPI has trialled over the last five years under the NSW Shark Management Strategy. This includes public and personal protection measures to increase the safety of beachgoers to reduce the chance of a shark-human interaction occurring.* Before you respond to the question, you are encouraged to click on the videos or read the fact sheets to find out more about these trials and the results.

You can watch the two 1.20 min videos below or view this fact-sheet before you respond to this question.

5. The list below includes different **aerial surveillance measures** like helicopters and drones. Which, if any, do you support in your local government area (or NSW in general)?

	Yes, supported (1)	No, do not support (2)
Helicopters helicopter surveillance fact sheet		
Drones drone surveillance fact sheet		

6.1 The list below includes different **in-water measures**. Which, if any, do you support in your local government area (or NSW in general)?

You can view the Shark Listening Station (1.07 min); and Personal Deterrent (1.20 min) video below or review the fact sheets.

	Yes, supported (1)	No, do not support (2)
Shark Listening stations linked to the SharkSmart app (detection tracking notifications) Shark listening stations fact sheet		
Personal shark deterrent devices Personal deterrent devices fact sheet		

6.2 You can view the SMART Drumline (1.40 min) and Traditional Shark Net (1.50 min) video below or review the fact sheets.

	Yes, supported (1)	No, do not support (2)
SMART drumlines SMART drumlines fact sheet		
Shark mesh nets Shark mesh nets fact sheet		

7. And, which of the following **research** topics, should the government focus on in your local government area (or in NSW in general) to increase protection of beachgoers?

	Yes, supported (1)	No, do not support (2)
Shark movement patterns and behaviour		
Role of sharks in the marine ecosystem		
Drone technology improvements		
Patterns in human-shark interactions		
Monitoring of shark populations		

8.1 Please indicate which (if any) of the shark mitigation measures listed below you would prefer for your region (or NSW in general).

For each option, please use the slider bar to indicate your preference on a scale of 0 to 10 where 0=No preference and 10=High preference. **If you have no preference for a measure, please click on the slider and ensure it is at 0.**

NOTE. We have also included personal responsibility as a mitigation option. This refers to the responsibility of individuals for their own safety when deciding to enter the ocean and includes self-education and assessing possible risk factors (e.g. bait fish, diving birds).

0- No preference 5-Moderate reference 10- High Preference

	0	1	2	3	4	5	6	7	8	9	10
Community Education (e.g. signs, mobile education and pop-ups)											
Helicopters											
Drones											
SMART drumlines											
Shark mesh nets											
Shark Listening stations linked to the SharkSmart app (detection tracking notifications)											
Personal shark deterrent devices											
Personal responsibility (self-education and risk analysis)											
Research to learn more about sharks and mitigation technologies											

8.2 In 2000 characters or less (approximately 300 words) [1200 characters for Individuals], can you tell us why you selected those options the way you did based on the needs in your local area (or NSW in general)?

9. [For organisations only] Do you have any further comments or suggestions for the NSW Government regarding shark mitigation in your region (or NSW in general), including any local factors that you feel should be considered?

1. Yes
2. No

10. [For organisations only] In 600 characters or less (approximately 100 words), please provide your additional comments/suggestions based on the needs in your local area (or NSW in general):

11. Thank you for participating in the survey.

Before you submit your responses, we would like to know how satisfied you were overall with the information provided to you in this survey.

1. Extremely satisfied
2. Moderately satisfied
3. Neither satisfied nor dissatisfied
4. Somewhat dissatisfied
5. Extremely dissatisfied

END

We thank you for your time spent taking this survey.

If you would like further information please contact - Dr Clifford Lewis on cllewis@csu.edu.au or 02 6338 6364. To contact NSW DPI please email nsw.sharkprogram@dpi.nsw.gov.au

Please click the finish button below to submit your answers

Appendix D: Sample invitation to information session

FORUM FOR ILLAWARRA SHOALHAVEN COUNCILS *Bega, Eurobodalla, Kiama, Shellharbour, Shoalhaven, Wollongong*

Dear Councils,

It's time to share the results of five years of shark science and hear your views.

Since 2015, NSW DPI has led the world in shark research and trialling new and emerging technologies for shark bite mitigation as part of the NSW Government's \$16 million Shark Management Strategy.

You're invited to attend an online forum where NSW DPI will share the findings of this Strategy with Councils from your region. This is Local Government's opportunity to hear the results first-hand and share your organisation's views.

Who should attend? We welcome attendance from key decision makers (Councillors, General Managers etc) and those involved with beach management. Please forward this invite to relevant staff and members of Council. All attendees must register for this closed forum using the link below.

The forum will cover;

- The results of testing and trialling a suite of shark mitigation measures
- The science of sharks – what we have learned about White, Bull & Tiger shark movements and behaviour
- The social research findings - What the NSW community thinks about sharks & mitigation
- How Councils, organisations and beachgoers can share their views

Details;

- Date – Wednesday 3 March 2021
- Time – 5:30pm – 7:30pm
- Upon registration, you will receive the Zoom meeting details - we recommend you save these in your calendar.
- RSVP by Wednesday 24 February 2021.
- All attendees **must register** for this closed forum

This is one of a series of forums to be held for key stakeholder groups in early 2021.

Following this forum, your Council will have the opportunity to let the NSW Government know the preferred shark mitigation measures for your region via an independent survey hosted by the University of Wollongong. Further details will be available at the forum.

As an introduction, here's a [sneak peek video](#) and [document](#) outlining the NSW Shark Management Strategy.

Marcel Green
Program Leader Shark Programs
NSW Department of Primary Industries | Fisheries

Appendix E: Responding Coastal Councils

North Coast

Tweed Shire

Byron Shire

Ballina Shire

Richmond Valley Shire

Clarence Valley Shire

Mid North Coast

Coffs Harbour City

Bellingen Shire

Nambucca Valley

Kempsey Shire

Port Macquarie- Hastings Shire

Hunter

Mid Coast

Port Stephens

Newcastle City

Lake Macquarie

Central Coast

Sydney

Northern Beaches

Sutherland Shire

Randwick City

Waverley

Wollongong City

South Coast

Shellharbour City

Kiama Municipal

Shoalhaven City

Eurobodalla Shire

Bega Valley Shire

<https://www.olg.nsw.gov.au/public/local-government-directory/>

Appendix F: Other responding organisations

Other Responding Organisations (n=32)	
1	Associacio LAMNA
2	Australia Marine Conservation Society
3	Australian Seabird Rescue Central Coast
4	Australian UAV Service
5	Balance Tri club
6	Ballina Lighthouse & Lismore SLSC
7	Ballina Surf School
8	Brisbane Water Aqualung Club
9	Byron Bay Dive Centre
10	Djuyalgu Wakulda
11	Dive Centre Bondi
12	Earth Garden Foundation Limited
13	Envoy
14	Evans Head Spearfishers Club
15	Humane Society International
16	Hunters Hill Sailing Club
17	Kingscliff Boardriders
18	Merimbula Marina
19	Migaloo 2 Foundation
20	Ocean Future Fund
21	Our Blue Hands
22	Potoroo Palace, Native Animal Education Sanctuary
23	SALT SLSC
24	Salty Swims
25	Sentient
26	Shark Conservation Australia

27	South-West Rocks (Figtree descendants Aboriginal Corporation)
28	Surfing Maps
29	Soul Surf School
30	Surfrider Foundation South Coast
31	SWAMP Inc
32	Woollahra Council
Surf Life Saving NSW Branches (n=8)	
33	Far North Coast
34	Far South Coast (UAV Coordinator)
35	Hunter
36	Illawarra
37	Mid North Coast
38	Lower North Coast
39	Sydney
40	Sydney Northern Beaches