APPRAISING THE DELIVERY OF COMMUNICATIONS ABOUT MARINE PESTS TO THE COMMERCIAL FISHING INDUSTRY

"Keeping marine pests out of my fishing grounds"

Evaluation report

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OceanWatch Australia
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The purpose of this report is to present an appraisal of the delivery of communications about marine pests to the commercial fishing industry by OceanWatch Australia through the SeaNet program between 2009 and 2011.

This report is part of the Consultancy Agreement between the Commonwealth of Australia, acting through the Department of Agriculture, Fisheries and Forestry, and OceanWatch Australia, for the delivery of the regional marine pest communication program for the commercial fishing industry.

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1. Summary

Introduced marine pests (IMPs) are a threat to marine ecosystems at the economic, environmental and human health levels. Vessels are one of the main vectors for the translocation of marine species between different regions around the world, including Australia. Marine species can be moved over long distances as a result of vessel contact and transportation.

Because the Australian fishing industry is vulnerable to IMPs and is partially responsible for their appropriate management, the National System for the Prevention and Management of Marine Pest Incursions commissioned OceanWatch Australia to design and roll out the *National biofouling management guidelines for commercial fishing vessels*. This process involved a dialogue with the fishing industry to design the guidelines and to roll out a communication strategy for their adoption.

In this framework, the implementation of extension activities to the fishing industry needs to be evaluated to ensure that they are effective. This is particularly important for managing IMPs. This document appraises the fishing industry's reaction to the guidelines, the effectiveness of the communication strategy delivered to the fishing industry, and the level of uptake of the guidelines by the industry.

SeaNet extension officers conducted 48 interviews across a range of fisheries, using a standard questionnaire. The responses obtained indicated that fishers in general have a positive attitude towards the introduction of the guidelines; most of them knew where to find a copy and the majority accepted the guidelines as part of their normal maintenance routine.

The communication strategy was very effective, as most fishers considered the materials delivered to be clear, relevant and appropriate. Levels of uptake of the guidelines were high, with most fishers implementing the guidelines, disposing of biofouling appropriately and following best practices on a regular basis, particularly regarding hull maintenance.

The SeaNet program was widely considered to be a main source of information about IMPs. This demonstrates the value to the fishing industry of this extension service, which bridges the gap between practitioners and policymakers.

An ongoing rollout of the guidelines is imperative, not just to keep high levels of industry awareness about IMPs, but also to ensure that the industry has updated and improved its understanding of IMPs.

2. Introduction

Introduced marine pests (IMPs) are a threat to marine ecosystems at the economic, environmental and human health levels. Because IMPS can have serious negative effects on fishing grounds and fishing ports, the Australian professional fishing industry has a role in reducing the risks associated with the introduction and spread of IMPs in our waters.

Professional fishing vessels have been recognised as a likely secondary translocation vector for IMPs that reach our waters. Of the 23 non-trading sectors of the Australian domestic marine domain, professional fishing was rated the highest risk group, as it had the potential to facilitate secondary invasions from the initial establishment sites of IMPs. This assessment was based on a high potential for entrainment, the number of vessels (estimated to be up to 12 000) and the high mobility rate of vessels within coastal fisheries (Summerson & Curran 2005).

Australia is responding to the threat posed by marine pests through the development and implementation of the National System for the Prevention and Management of Marine Pest Incursions (the National System). As a component of the National System, OceanWatch Australia and the fishing industry developed the *National biofouling management guidelines for commercial fishing vessels*. These guidelines set out a consensus view of effective biofouling management practices applicable to fishing vessels and gear.

As it is vital that the Australian commercial fishing industry is actively involved in reducing the risk of spreading marine pests, OceanWatch Australia developed a communications program to:

- ensure that members of the Australian commercial fishing industry understand the potential impact of marine pests on the viability of fishing grounds and on the broader marine environment
- guarantee that fishing industry participants are aware of, and understand, the practices that they can implement to reduce the risk of spreading marine pests
- encourage adoption of those practices as presented in the guidelines.

The program aimed to engage fishers through face-to-face interaction, raising awareness of the threats IMPs pose to the fishing industry, and explaining, and promoting the uptake of, the guidelines. The strategy was rolled out to the industry by OceanWatch Australia's extension arm, SeaNet, in 2009 (appendix A). Over the two-year life of the project, SeaNet actively engaged with 3377 fishers/marine farmers across 88 Commonwealth and state-licensed fisheries (appendix B). This engagement was achieved through conversations with fishers at wharfs and slipways and on their vessels, and aimed to ensure that those engaged were those most likely to implement the recommended practices. This strategy was reinforced by a range of communication tools and materials, including laminated versions of the guidelines, laminated identification cards, stickers, T-shirts, brochures and posters (appendix C).

SeaNet conducted a preliminary evaluation to gauge the effectiveness of the program, particularly the attitudes of fishers towards the guidelines, the effectiveness of the communication tools implemented and the degree of uptake of the guidelines. The aim of this document is to present the results of the preliminary evaluation. The outcomes will feed into the overarching evaluation and review program being developed for the National System.

3. Evaluation method

SeaNet used a questionnaire comprising 29 questions across three lines of investigation to appraise the rollout of the guidelines. This questionnaire was based on an initial survey carried out in 2005 to inform the development of the guidelines. In March and April 2011, SeaNet extension officers interviewed a total of 48 fishers from all states and the Northern Territory. Data were analysed quantitatively, tabulating answers by frequency according to identified broad categories. Results were transformed into percentages of the proportion of fishers providing a given answer. As some interviewees gave more than one answer, the total percentage for some questions is higher than 100 per cent (appendix D). Likewise, because some fishers did not answer certain questions, some answers present total frequency values lower than 100 per cent. Presenting results in this manner allowed opportunities for comparison. However, given that the sample size resulted in categories having low frequencies (f<5), no statistical analysis was implemented.

Fisher selection process

SeaNet extension officers selected fishers from high-priority (n=4), medium-priority (n=32), and low-priority (n=12) fisheries, trying to revisit as closely as possible those locations where the initial investigation to design the guidelines took place. The criteria for priority setting were:

- vessels that move between ports
- fishing gear that comes into contact with the sea floor at depths less than 200 metres.

High priority implies that both of these criteria are satisfied; medium priority implies that one or the other of the criteria is satisfied; and low priority implies that neither criterion is satisfied.

This prioritisation aimed to detect fisheries that could be targeted for further work. However, since the responses indicated no obvious differences between fisheries, these criteria are not discussed further in the results.

Interview process

To minimise biased answers, SeaNet extension officers assured fishers that the surveys would be anonymous.

Using the information kit, SeaNet extension officers briefed fishers on what marine pests are and why they are a threat, and outlined the National System. The officers introduced the fishers to, and familiarised them with, the *National biofouling management guidelines for commercial fishing vessels*. They explained the explained the objectives of the project and asked the questions set out in the questionnaire (see section 4), keeping a record of the comments and feedback.

For each fisher interviewed, the following additional information was collected (Appendix E):

- fishery
- location of fishing grounds
- main activities (method and gear)
- port/s of operation.

4. Survey results

Section A—Reaction of fishers to the introduction of the guidelines

Do you know where to find the guidelines (that is, either the full document or the summary version) and associated material to prevent the spread of marine pests?

Most fishers (96 per cent) knew where they could access the guidelines. However, only 40 per cent of interviewees said they actually have them readily available, with 33 per cent having them onboard, 4 per cent having them in the office and 2 per cent having them at home. The remaining 56 per cent of interviewees identified a potential source to obtain the guidelines; 40 per cent from the internet, 6 per cent from a government body, 6 per cent from a peak industry body and 16 per cent from a SeaNet extension officer.

Q1. What factors influence your hull maintenance routines (annual survey, weather, seasons, closures, other)?

Different factors were recognised as influencing the hull maintenance routine of vessels. Nearly half of the fishers interviewed (48 per cent) mentioned the annual boat safety assessment (annual survey), 40 per cent identified seasonal closures and 19 per cent indentified weather conditions.

"All vessels that I use are regularly maintained. My net boat (small aluminium vessel used to gillnet with), nets and trailer are cleaned down with a high pressure blaster after each use, the hulls are blasted with fresh water to keep clean. My net boat is trailered so it is out of the water most of the time and stored at home." Commercial fisher, New South Wales.

Q2. What circumstances might exclude your business from incorporating the guidelines into normal practice?

Most of the fishers interviewed (73 per cent) said that there were no issues preventing them from implementing the guidelines. However, 8 per cent mentioned difficulty due to fishing gear cleaning, 8 per cent mentioned time availability, 4 per cent mentioned weather conditions, 4 per cent mentioned costs, 2 per cent mentioned occupational health and safety (OHS) considerations and 2 per cent mentioned access to water.

"We don't anti foul our boats, but the best practice reflects our current operations. In the beach they are in and out, so don't stay in the water long enough. Constant drying fixes the problem." Commercial fisher, Queensland

Q3. How do marine pests affect you and your business? Is it an economic problem or an environmental problem?

Fishers' perceptions in this regard did not present a consistent pattern. Answers were broken down into four categories using a combination of two variables: acknowledgement of marine pests as a problem (that is, either economic or environmental); and the actual presence of marine pests in the area of operation. Interestingly, 55 per cent of interviewees identified marine pests as an issue even though there were no known marine pests in their fishing grounds. On the other hand, 36 per cent indicated an 'out of sight out of mind' attitude. These fishers did not consider marine pests as a

potential threat, as they were not present in their area. Not surprisingly, but crucially, all interviewees with known marine pests in their area of operation considered them a threat.

"*Well, we are in a situation where any threat needs to be taken seriously as trophic cascades can ultimately affect us. Therefore, for us IMPs can have both impacts, economic and environmental."* Commercial fisher, Victoria.

Q4. What sources of information have contributed to your understanding of marine pests?

Although responses included a broad range of sources, 81 per cent of fishers mentioned the SeaNet extension officers as their main source of marine pest information. The remaining sources were: previous outbreaks (25 per cent); magazines (14 per cent); government bodies (12 per cent); peak industry bodies (8 per cent); the internet (10 per cent); IMP guidelines (6 per cent); brochures (6 per cent); workshops (4 per cent); and scientists (6 per cent).

Q5. To what extent do actions in the guidelines reflect normal operating procedures?

All fishers interviewed stated that their normal maintenance routines included the biofouling management practices recommended in the guidelines.

"I always give my boat a clean down with freshwater after each use. Using a tinnie and visiting multiple areas daily, I'd be more worried about the spread of weeds, but I don't venture too far from home." Commercial fisher, Queensland.

Section B—Effectiveness of the communications tools developed

Q6. How do you prefer to get information about what is going on at the moment in industry and about issues? (that is, what do you read, see or go to, who do you talk to etc. to get this info, which magazine, newsletters, who tells you etc.?)

The fishers interviewed identified a broad range of information sources, with the SeaNet program being the most frequently mentioned (46 per cent). Additional sources acknowledged include: magazines (25 per cent); emails (19 per cent); newsletters (27 per cent); industry meetings (10 per cent); word of mouth (4 per cent); the internet (4 per cent); and gear shops (2 per cent).

"SeaNet is my preferred method. Having someone approach me at my vessel is great; I don't have to worry about meeting or anything like that." Commercial fisher, Queensland.

Q7. Have the right 'words' been used and have the best messages been given to you or other fishers in the industry?

All interviewed fishers considered that the messages used in rolling out the guidelines had been clear and adequate.

Q8. Do you think these guidelines are understandable to industry?

All fishers interviews considered that the communications tools used were understandable to their industry.

Q9. Are we giving the most helpful information with enough detail?

All interviewees found the information provided by the communication tools used to roll out the guidelines to be helpful. In addition to this general response, 4 per cent of fishers would like to receive more locally relevant information and 2 per cent would like to receive communications on past outbreaks.

Q10. Is the information provided specific enough or would you like to receive other information about IMPs?

Most interviewees (87 per cent) considered the information provided about IMPs to be adequate. Suggestions for additional information included: keeping fishers updated about IMPs (27 per cent); providing information about eradication (3 per cent); and raising awareness about potential pest outbreaks (4 per cent). Only 4 per cent of interviewed fishers found the information provided to be deficient, as they would like to receive more information about potential new outbreaks.

Q11. Any other suggestions?

Even though this question related to the communication tools developed for this project, some fishers answered more broadly, suggesting a need for improved decision-making processes between different stakeholders to manage IMPs (2 per cent), information about individual effects of IMPs on fisheries (2 per cent), and broader community involvement in the management of IMPs (8 per cent). The latter was particularly evident in Victoria, where tension between recreational fishers and commercial operators was identified.

Q12. Do the materials in the formats used work well for fishers in your position?

All fishers interviewed considered the formats used in the rollout process to be adequate.

Q13. Brochures, pamphlets and stickers.

All interviewees considered the materials used in the rollout process to be adequate.

Q14. Workshops and personalised contact (SeaNet direct contact).

Most interviewees (95 per cent) were satisfied with workshops and direct contact with SeaNet extension officers. However, 8 per cent mentioned that workshops were inadequate, as they do not fit within their schedules.

"SeaNet direct contact is convenient for us fishers, especially when we are busy and don't always have time to meet appointments." Commercial fisher, Queensland.

Q15. Marine pest identification resources such as ID cards.

While almost all interviewees were satisfied with the identification resources, 4 per cent said they would prefer to have additional ID cards with side-by-side comparisons of IMPs and similar native species.

Q16. Environmental Management System (EMS) actions

No fishers mentioned EMS actions being particularly relevant to the management of IMPs.

Q17. Any other suggested formats?

A small number of interviewees suggested additional formats, as follows: emails (2 per cent); media coverage (2 per cent); workshops (2 per cent); online interactive maps (2 per cent); DVDs (6 per cent); and calendars (4 per cent).

Section C—Degree of uptake of the guidelines

Q18. How do you clean the vessel during maintenance (fresh water blast, scraping, and chemicals)?

Fishers clean their vessels using the recommended methods but taking up the guidelines at different levels. While 100 per cent of fishers interviewed use water blast, 45 per cent use sand blast, and 23 per cent use scraping.

Q19. Do you ever remove biofouling at sites away from recognised slipways?

Nearly all interviewees (90 per cent) remove biofouling at designated sites, while 16 per cent do it elsewhere, such as in their backyards and at sea. The main reason given for this latter behaviour is the costs associated with slipway usage.

Q20. What other practices do you use to reduce biofouling on the hull and fittings? (please provide detailed explanation of methods and products)

Apart from implementing the guidelines, including application of antifouling on a regular basis, most fishers (96 per cent) do not implement any other practice. Only 4 per cent mentioned polishing the propeller, which improves fuel efficiency and reduces primary biofouling.

Q21 Are you aware of any safety and environmental considerations when applying or removing antifouling? If so, list.

The level of awareness of risks associated with antifouling handling was varied. Whereas some fishers use contractors (13 per cent), and as a result did not mention any issues, others identified antifouling with OHS implications (60 per cent), as well as environmental considerations (50 per cent). The former included inhaling fumes and the latter comprised water pollution.

"We do our best! Follow safety guidelines on the tin and observe the slipway procedures for applying and removing." Commercial fisher, Northern Territory.

Q 20. How often do you renew your antifouling?

Most interviewees renew their antifouling regularly, at least once every two years. Half of the interviewees (50 per cent) recoat their vessels with antifouling once a year; 22 per cent do it once every two years; and 4 per cent do it twice a year. Only 17 per cent replace their antifouling on an 'as required' basis.

Q21 What records do you keep about antifouling (for example, when applied, brand, effectiveness)?

Record keeping of antifouling did not present any consistent pattern. Fishers kept different records, with 25 per cent keeping records of the date, 28 per cent of the brand, and 16 per cent of the type of paint. Some fishers (33 per cent) did not keep any records at all, while others (17 per cent) said that their records were kept by a third party, mostly slipway operators.

Q22. Do you follow the National biofouling management guidelines for commercial fishing vessels to manage marine pests (explain)?

Almost all the fishers interviewed (96 per cent) follow the guidelines. Unfortunately, the small number of fishers (4 per cent) who do not follow them did not provide any information as to why.

"Yes, I believe so (... follow the best practice guidelines). We keep our vessel clean and tidy. Anything brought up with our longline goes back into the water." Commercial fisher, Tasmania.

Q23. On what occasions do you believe that you have encountered marine pests with your fishing gear?

Most of the interviewees (96 per cent) had not encountered any IMPs, but a few mentioned having had experience with IMP species such as black-striped mussel (2 per cent), starfish (4 per cent), weed (2 per cent), Asian mussel (2 per cent), Asian paddle crab (2 per cent), Undaria (4 per cent), Asian seastar (8 per cent) and screwshell (4 per cent).

Q24 What marine pest populations in your local area, including fishing grounds, are you aware of?

While half of the fishers interviewed (50 per cent) were not aware of any IMPs in their fishing grounds, the other half mentioned the following species: Undaria (10 per cent), seastar (6 per cent), mussel (8 per cent), Japanese kelp (8 per cent), Asian mussel (2 per cent), Asian paddle crab (2 per cent), screwshell (4 per cent), Asian seastar (12 per cent), crown of thorns (2 per cent) and Asian green mussel (8 per cent).

"Very aware of Cairns Harbour infestations, but as far as the trawl grounds go, nothing." Commercial fisher, Far North Queensland.

Q25. How would you identify an organism as a known or suspected marine pest?

All fishers interviewed demonstrated their willingness to use a variety of resources to try to identify potential IMPs during their operations. While most would rely on identification cards (81 per cent), others would look for assistance from a broader range of sources when trying to detect whether a species was new to their fishing grounds. These sources include government bodies (21 per cent), sample ID from research centres (10 per cent), SeaNet (3 per cent), the internet (6 per cent), other fishers (3 per cent) and local personal experience (10 per cent).

Q26. Who would you report a suspected marine pest outbreak to?

Most fishers interviewed (96 per cent) indicated that they would report a suspected marine pest outbreak to the government agency responsible for fisheries in their state. Other reporting options included SeaNet (40 per cent), peak industry body (21 per cent), CSIRO (4 per cent), and the IMP hotline (10 per cent).

"Depends on the pest and the nature of the pest (...who to report to), but probably via the Qld boating patrol or through QDPI Nth Fisheries Centre". Commercial fisher, Queensland.

Improvement in attitudes and practices

A comparison between the survey conducted in 2005 and the 2011 survey indicates some improvements in adoption of best practice. Although fishers' levels of awareness about IMPs were very similar between years (figure 1), their understanding of relevant fisheries management stakeholders (i. e., state/federal fisheries management agencies, research institutions, industry bodies) and antifouling management showed improvement. Not only did the number of recognised stakeholders increase, but also the number of fishers acknowledging them (figure 2). This pattern clearly demonstrates that the communication tools implemented in the rollout have played a key role in improving IMP management. Likewise, fishers had a better understanding of the OHS and environmental considerations of antifouling processes (figure 3).

Figure 1. Levels of awareness of IMPs among fishers, 2005 and 2011

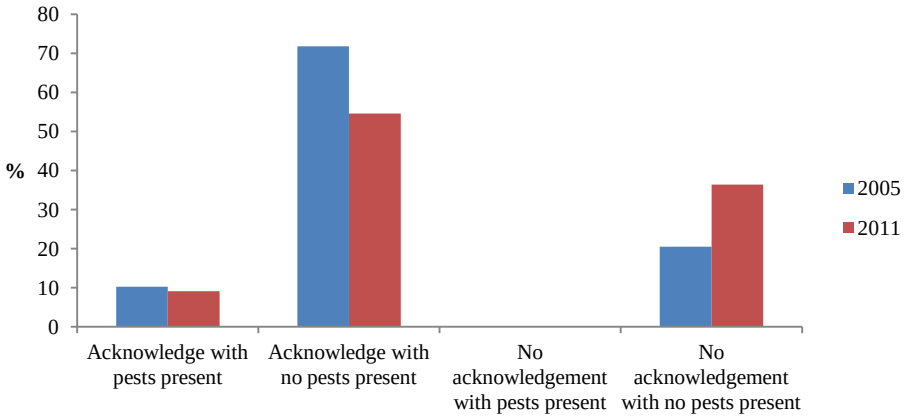


Figure 2. Stakeholders recognised, and proportion of acknowledgement, by fishers when reporting IMPs, 2005 and 2011

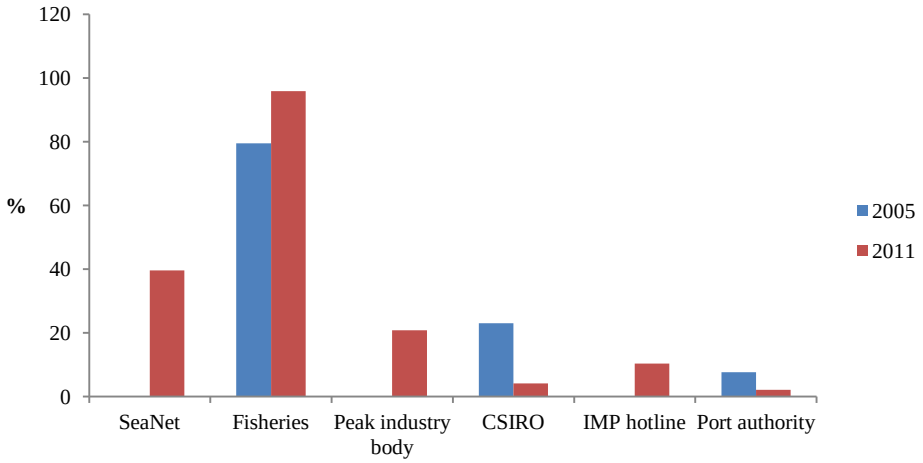
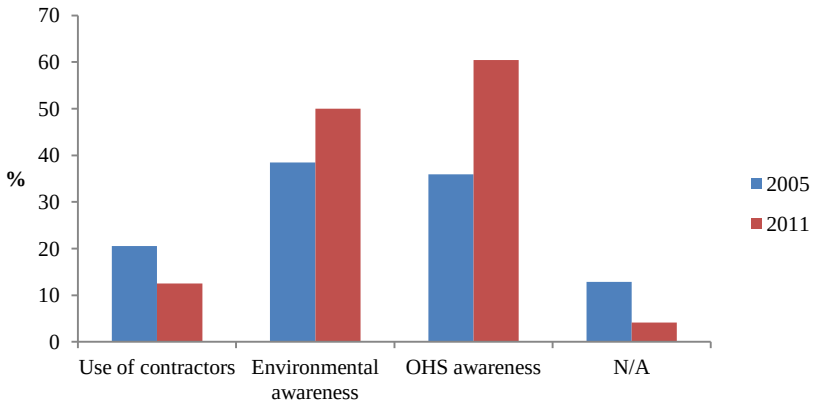


Figure 3. Environmental and OHS awareness of antifouling chemical management, 2005 and 2011



5. Conclusions

From the surveys it is possible to draw the following conclusions:

Fishers' reactions to the guidelines seem to be positive. Most have either incorporated adoption of the guidelines into their normal routines, or already undertake the recommended practices for other operational reasons.

Most fishers seem to have adopted the guidelines, particularly with regard to hull maintenance. However, little mention was made of appropriate management (such as cleaning) of fishing gear and 'in situ' disposal of bycatch, and the questionnaire did not draw out detailed information on these issues. Because inappropriate cleaning of fishing gear and disposal of bycatch are potential vectors for IMP spread, it is highly recommended to further investigate the level of understanding and uptake of this section of the guidelines by fishers.

Commercial fishing operators are potentially both vulnerable to and responsible for IMPs and, as such, have high levels of awareness. However, they feel they are not the only group accountable for the appropriate management of IMPs. This issue was particularly evident in Victoria, where interviewed fishers expressed their concern about the adequate adoption of similar guidelines developed for the recreational fishing sector.

In terms of prevention, the rollout was very effective at raising awareness about the effects of IMPs, how they become a problem and how to prevent them. Nevertheless, further work is required to improve detection. Most fishers presented very vague statements about the identification process of potential IMPs. Therefore, it is vital to maintain strong and effective communication with the industry to ensure that local fishers are kept up to date and that levels of awareness remain high.

SeaNet was recognised as a valuable and effective means to rollout IMP guidelines. As an extension service, SeaNet was viewed by industry as the distributor of information rather than a source of technical expertise on identifying IMPs, or as a program with any regulatory function. This recognition by industry demonstrates the effective and validity of the SeaNet program as a legitimate extension service that bridges the gap between the industry, scientific research and policy to improve the environmental performance of the Australian seafood industry.

The rollout of the *National biofouling management guidelines for commercial fishing vessels* has leveraged the influence of the fishing industry in supporting the management of IMPs. Prior to the

release of the guidelines, the information available to fishers was incomplete and insufficient. There was a clear need to improve the industry's understanding of IMPs, create common language and establish a stronger network of stakeholders to tackle the issue.

This study demonstrates that the guidelines, and the rollout, have substantially empowered the fishing industry to play an active role in preventing of spread of IMPs, as fishers have demonstrated high levels of awareness, commitment to following the guidelines and capacity to engage with relevant stakeholders.

References

Summerson, R & Curran, D 2005, The potential for the commercial fishing industry to spread introduced marine pests, final report, Bureau of Rural Sciences, Canberra.

National System for the Prevention and Management of Marine Pest Incursions 2009, *National biofouling management guidelines for commercial fishing vessels*, Department of Agriculture, Fisheries and Forestry, Canberra.

Appendix A: Overview of OceanWatch Australia.

OceanWatch Australia Ltd is a national not-for-profit environmental company that works to advance sustainability in the Australian seafood industry. OceanWatch Australia's key activities involve:

enhancing fish habitats and improving water quality in estuaries and coastal environments
working with industry and local communities to minimise negative environmental impacts
introducing industry and communities to sustainable technologies and behaviours.

To achieve these positive outcomes, OceanWatch Australia works in partnership with the Australian seafood industry, federal and state governments, natural resource managers, private enterprise and local communities.

SeaNet, established by OceanWatch Australia in 1999, is a unique Australian network of fisheries conservation experts that provides an environmental extension service to the Australian fishing and seafood industry. SeaNet extension officers work tirelessly to improve the industry's responsible fishing credentials and on-ground marine conservation biodiversity and best practice outcomes. Over the past 10 years, this national extension program has assisted the Australian Seafood industry to adopt environmentally sustainable practices while remaining competitive.

SeaNet's eight officers work all over Australia in most Australian fisheries. In the past 10 years they have worked face-to-face with about 7000 Australian wildcatch fishers and many others in the industry. This represents about 40 per cent of all commercial fishers, including 68 per cent who fish in Commonwealth fisheries.

SeaNet's successes include:

- major reductions in accidental capture and bycatch of marine turtles, seals and sea lions, sea snakes, seabirds, dugongs, whales, dolphins and sharks, while assisting industry to remain internationally competitive
- the development and adoption of fishery-specific environmental management systems, codes of practice and codes of conduct in many fisheries around Australia
- industry member participation in hands-on workshops and sea trials of new measures and gear, as well as cooperatively producing best practice technical guides and handbooks
- working in partnership with researchers, government agencies and industry associations to implement new policies, regulations, guidelines, improved practices and new technologies
- major beach and coastal clean-ups with the collaboration of industry members
- good working relationships with fishers, industry councils, associations and cooperatives, as well as environmental and community groups around Australia
- winning national and international awards for groundbreaking work.

Appendix B: Ports visited by SeaNet extension officers in 2009 to roll out communications about marine pests to the commercial fishing industry

State	Port/locality
New South Wales	Bermagui
	Eden
	Greenwell Point
	Kiama
	Pyrmont
	Ulladulla
	Wollongong
Northern Territory	Darwin
	Roper River
Queensland	Bowen
	Brisbane
	Bundaberg
	Cairns
	Karumba
	Mooloolaba
	Southport
	Townsville
South Australia	Port Adelaide
	Ceduna
	Thevenard
	Kangaroo Island
	West Beach
	Wallaroo
	Port Wakefield
Tasmania	Devonport
	Hobart
	Launceston
	Margate
	Ross
	Sandy Bay
	St Helens
	Stanley
Victoria	Geelong
	Lakes Entrance
	Portland
	Queenscliff
Western Australia	Broome
	Dampier
	Exmouth
	Karratha
	Onslow
	Port Hedland
	Port Samson

Appendix C: Samples of the communication strategy tools

Laminated guide

A concise two-page laminated version of the national biofouling management guidelines for commercial fishing vessels was distributed to fishers for use at sea.

Laminated guide - Page 1

Laminated guide – Page 2

Good vessel operation

Trailered Fishing Vessel (Coastal and Estuarine fishers and vessels including; estuaries, bays and inlets, beach based fishers and divers)	Non-Trailered Fishing Vessel (Off shore vessels that may travel between ports)
What to do before going fishing	
• use locally sourced bait wherever possible to prevent the introduction of pests and diseases	• clean hull and antifoul if vessel has been in port for a prolonged period
What to do whilst fishing	
• return bycatch to sea as near as possible to the point of capture (if it is legal to do so)	• return bycatch to sea as near as possible to the point of capture (if it is legal to do so)
What to do after fishing	
• never release a known marine pest back into the water • clear warps and anchors of biological matter and mud/sand as they are hauled	• retain bycatch on board if cleaning gear away from fishing grounds and dispose of in land based facilities (if it is legal to do so) • ballast water (including brine tanks) should be exchanged offshore • clear warps and anchors of biological matter and mud/sand as they are hauled
What to do back at port	
• rinse trailered vessels with freshwater if moving between locations within 48 hrs • clean and dry all niche areas that could carry pests (see diagram over) • check and clean live tanks and wells for marine life	• clean and dry all niche areas that could carry pests (see diagram over) • clear decks and other areas that may harbour pests (such as under winches and around deck fittings) • dispose of bycatch in land based facilities if cleaning gear in port • check and clean live tanks and wells for marine life
Good ongoing maintenance tips	
• rinse vessel with freshwater wherever possible • periodically clean anchor and chain wells and lockers • inspect, clean & dry gear and equipment (do a topside freshwater rinse if possible) • clean access points to internal water systems and flood systems with freshwater	• rinse vessel with freshwater wherever possible • periodically clean anchor and chain wells and lockers • inspect, clean & dry gear and equipment (do a topside freshwater rinse if possible) • clean access points to internal water systems and flood systems with freshwater

Emergency response

If you spot a marine pest, please call your state agency directly using the following contact details:

TAS	DPIW	0408 380377	SA	PIRSA	1800 065 522
NT	DPIFM	0413 381094	QLD	DPI&F	132 523
NSW	Fisheries	02 4982 1232 (business hrs) 02 4916 3877 (24hr message)	VIC	DPI	136 186
			WA	Fisheries	08 9482 7333

For further information about marine pests visit www.marinepest.gov.au

OCEANWATCH AUSTRALIA

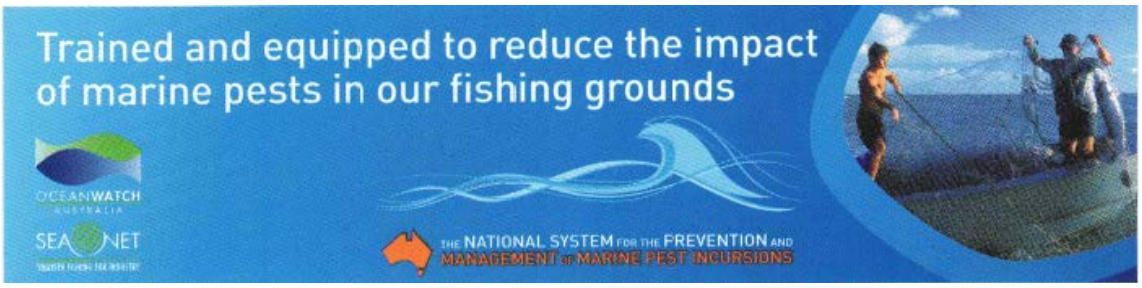
SEANET SMARTER FISHING FOR INDUSTRY

If you would like further help on how to keep marine pests out of our fishing grounds, please visit OceanWatch Australia at www.oceanwatch.org.au

This collaborative effort is supported by the Australian Government, state and Northern Territory governments, marine industries, researchers and conservation groups.

Accreditation sticker

Stickers were distributed to fishers that had attended information sessions provided by SeaNet officers to acknowledge the training received. The stickers also provided a visual reminder of the marine pest management message.



T-shirts with marine pest communication messages

These t-shirts were distributed once fishers had received marine pest information and training and were designed to stimulate conversations amongst fishers about marine pest and their implications.

Brochures

A double-sided **brochure** was distributed to businesses that support the fishing industry, such as slipways, fishers' cooperatives and industry peak bodies.

Brochure—side 1

Brochure—side 2

Other communications utilised

Media releases and additional communications about IMPs were produced to supplement the rollout process as below (documents are available from the URLs provided or upon request).

Fishing Today, Tasmanian Seafood Industry News February–March 2010 (page 29)

SeaNet Newsletter, February 2009 (page 1)

SeaNet Newsletter, June 2010 (pages 3, 5, 8, 10)

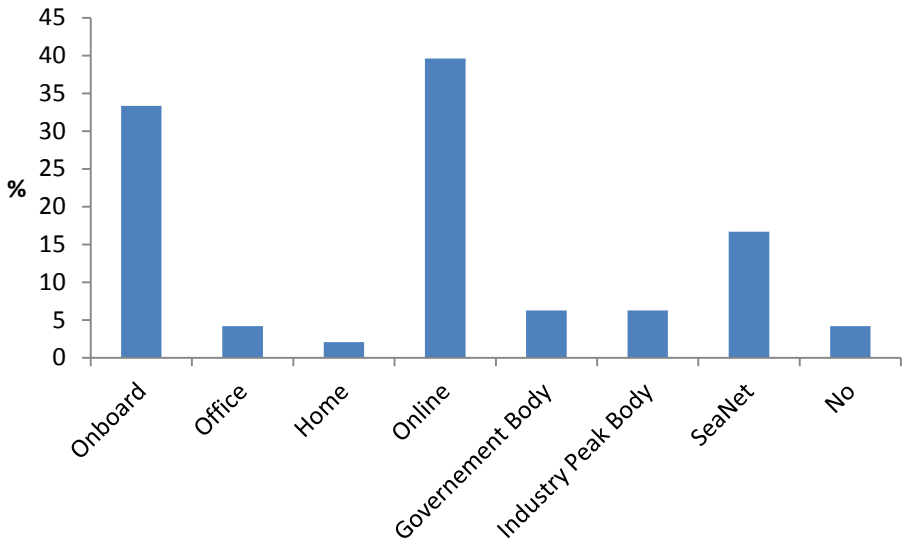
SeaNet Newsletter, June 2011 (pages 7, 10, 12)

SeaNet 10-year brochure

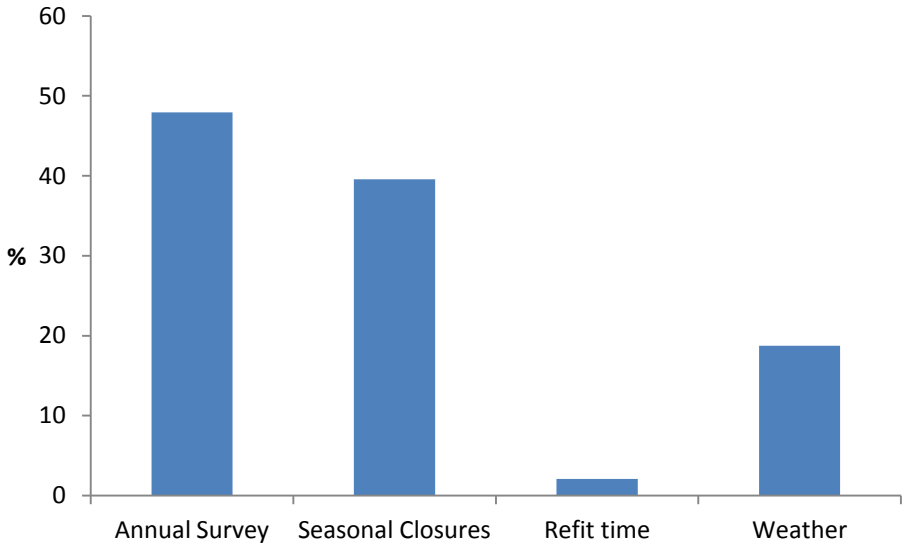
Appendix D: Questionnaire responses

Figures in this appendix are given in percentage and as overalls at national level (figures broken down at state level are available upon request).

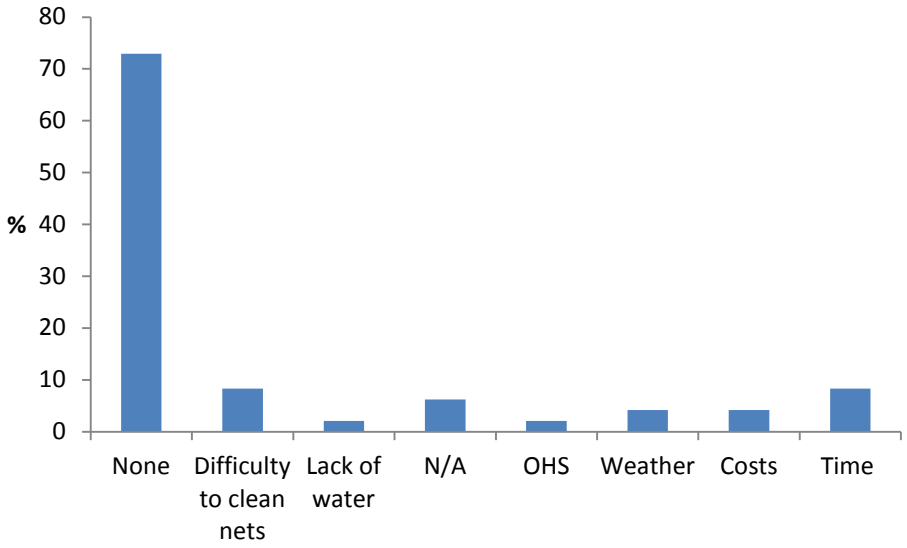
Do you know where to find the guidelines (that is, either the full document or the summary version) and associated material to prevent the spread of marine pests?



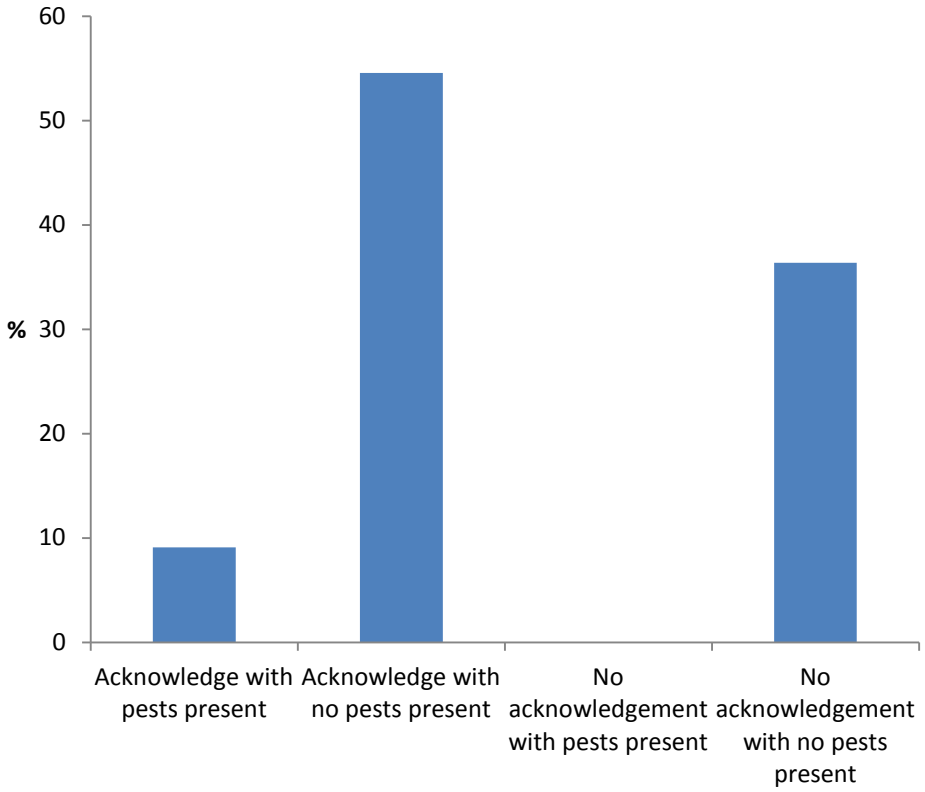
What factors influence your hull maintenance routines (annual survey, weather, seasons, closures, other)?



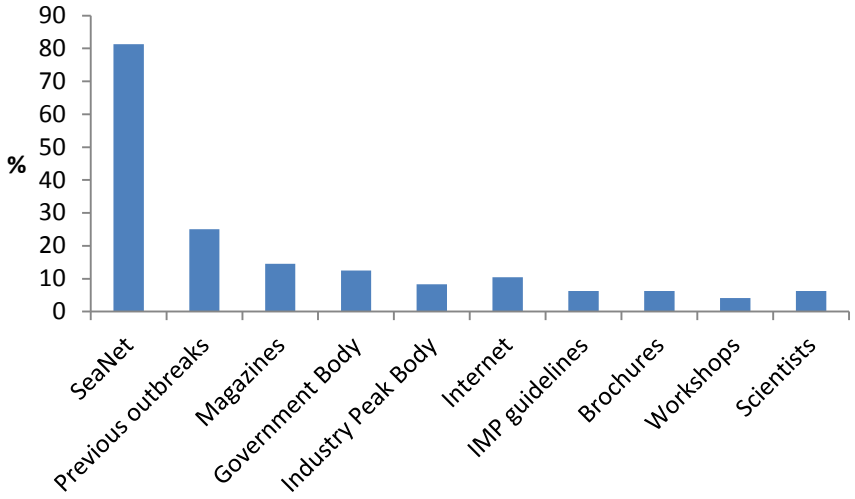
What circumstances might exclude your business from incorporating the guidelines into normal practice?



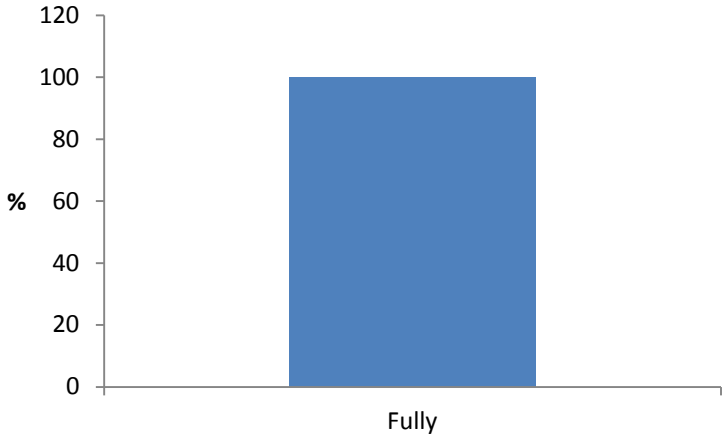
How do marine pests affect you and your business? Is it an economic problem or an environmental problem?



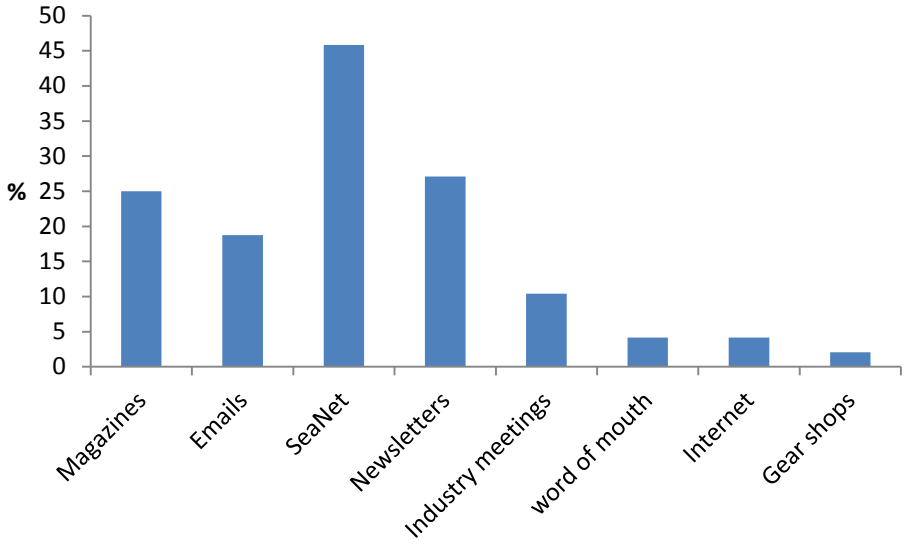
What sources of information have contributed to your understanding of marine pests?



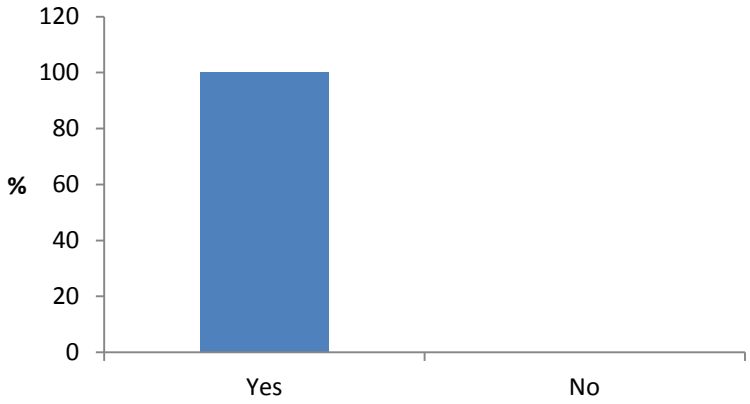
To what extent do actions in the guidelines reflect normal operating procedures?



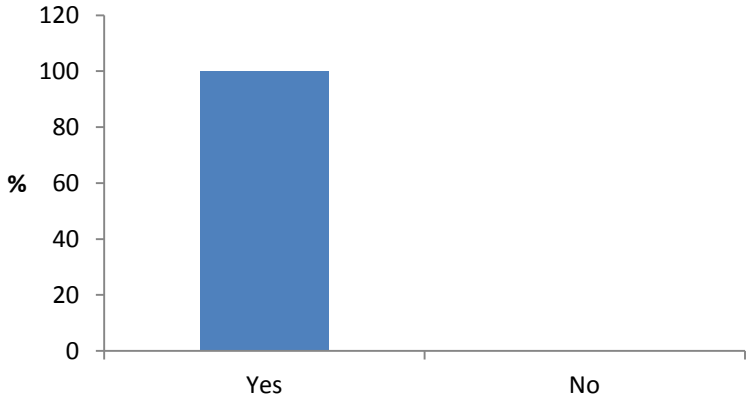
How do you prefer to get information about what is going on at the moment in industry and issues? (that is, what do you read, see or go to, who do you talk to etc. to get this info, which magazine, newsletters, who tells you etc.)



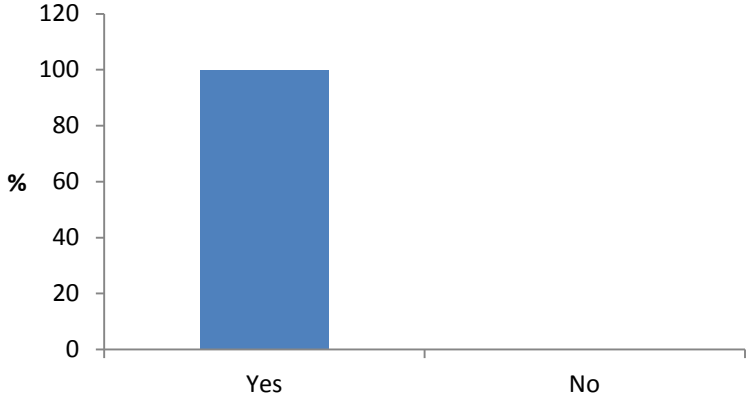
Have the right 'words' been used and have the best messages been given to you or other fishers in the industry?



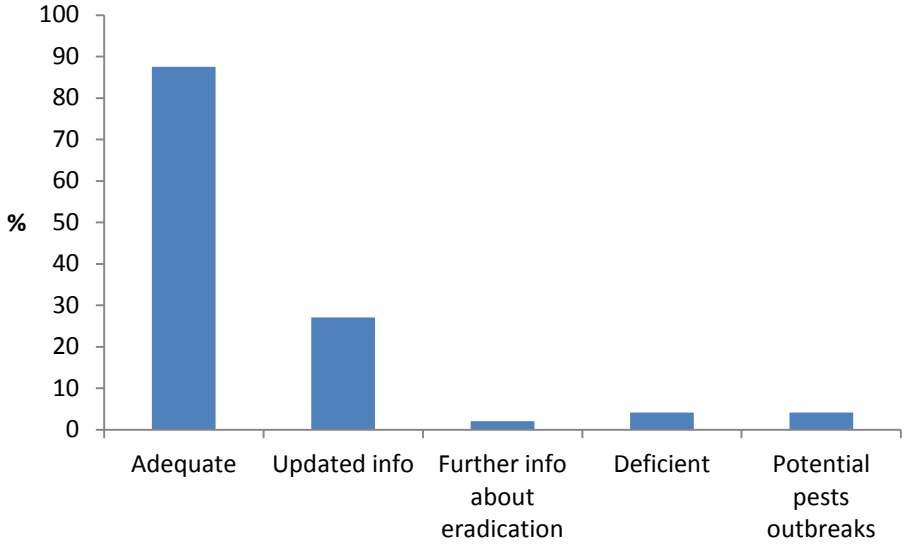
Do you think these guidelines are understandable to industry?



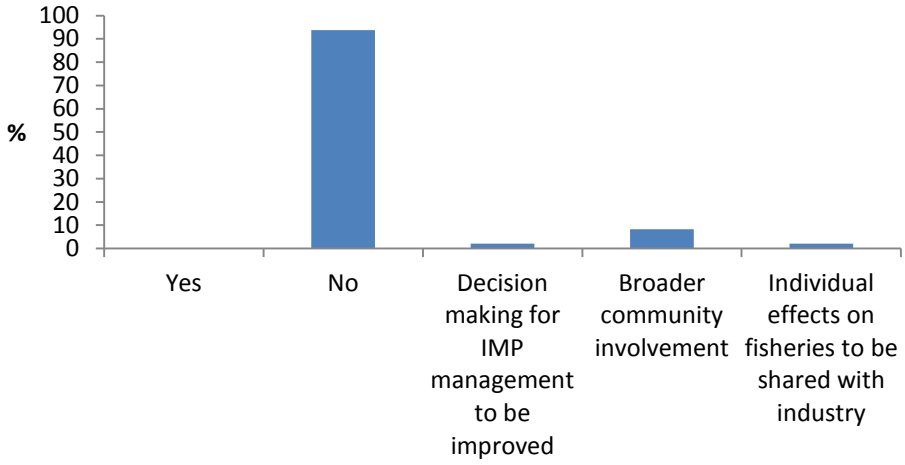
Are we giving the most helpful information with enough detail?



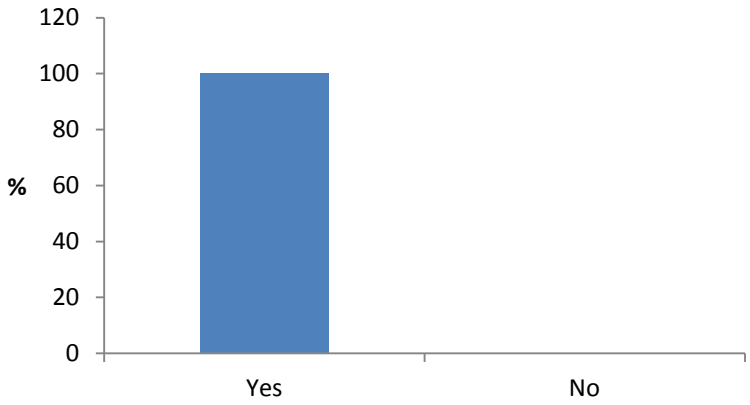
Is the information provided specific enough or would you like to receive other information about IMPs?



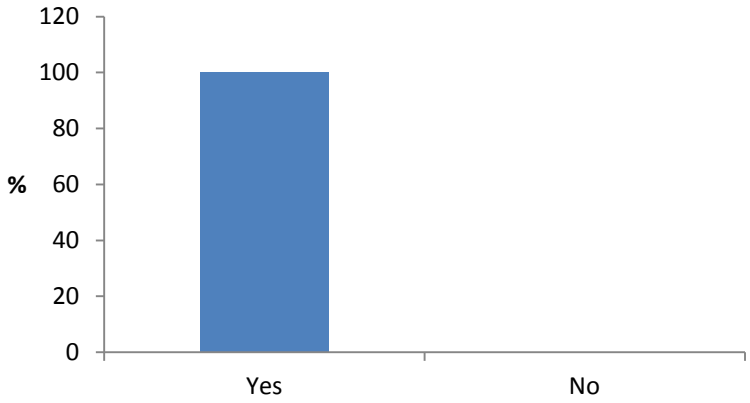
Any other suggestions?



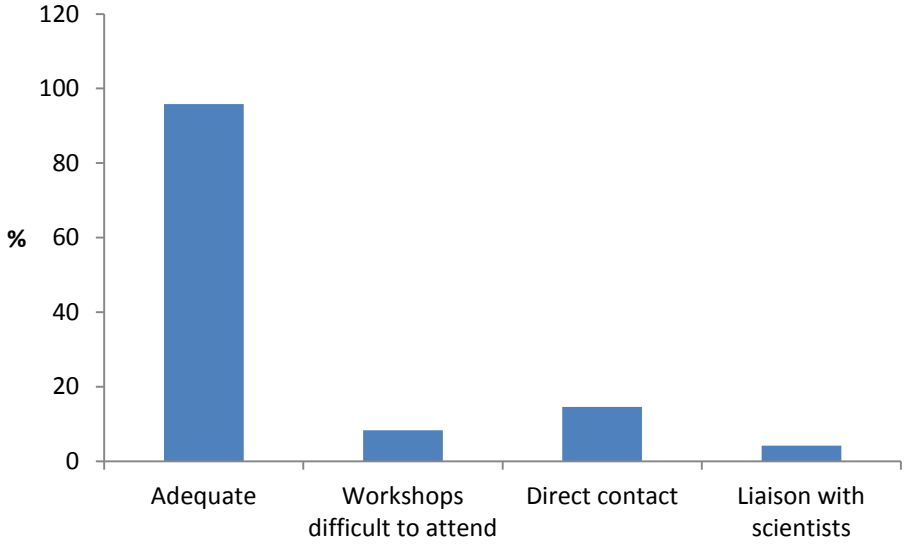
Do the materials in the formats used work well for fishers in your position?



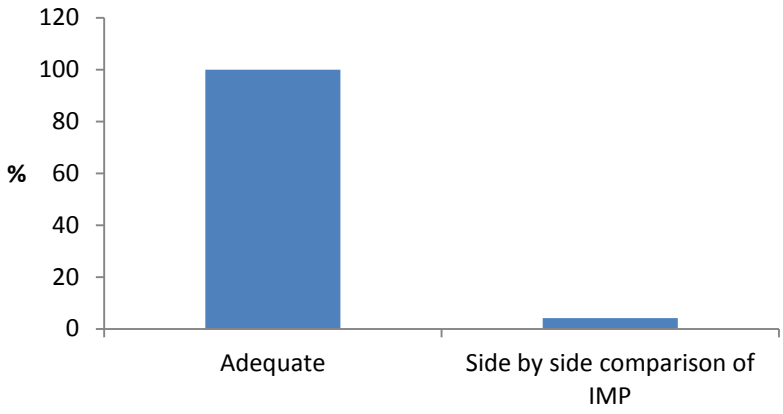
Brochures, pamphlets and stickers.



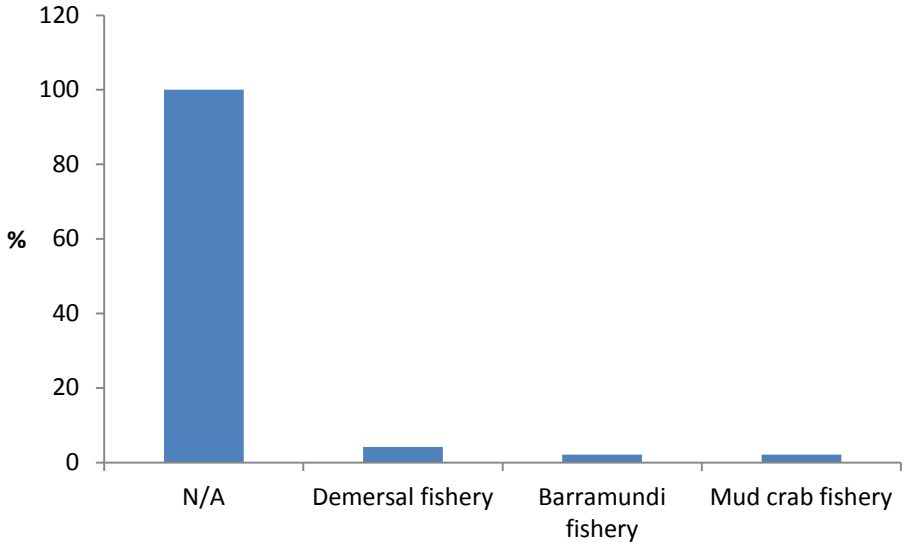
Workshops and personalised contact (SeaNet direct contact).



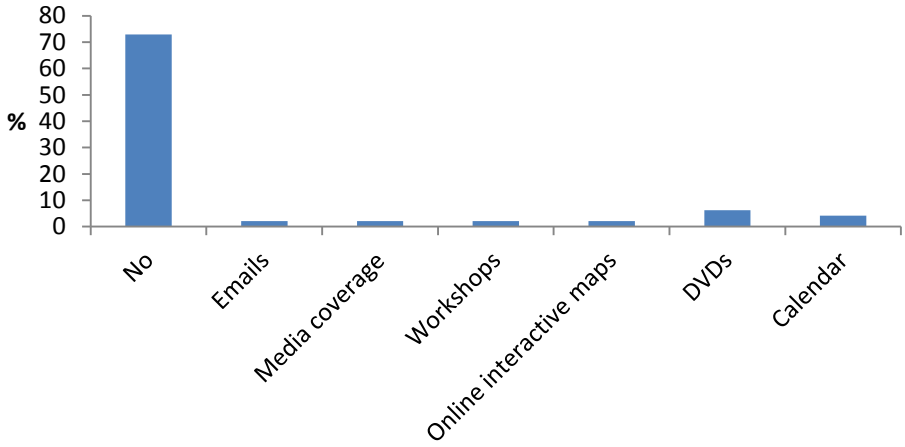
Marine pest identification resources such as ID cards.



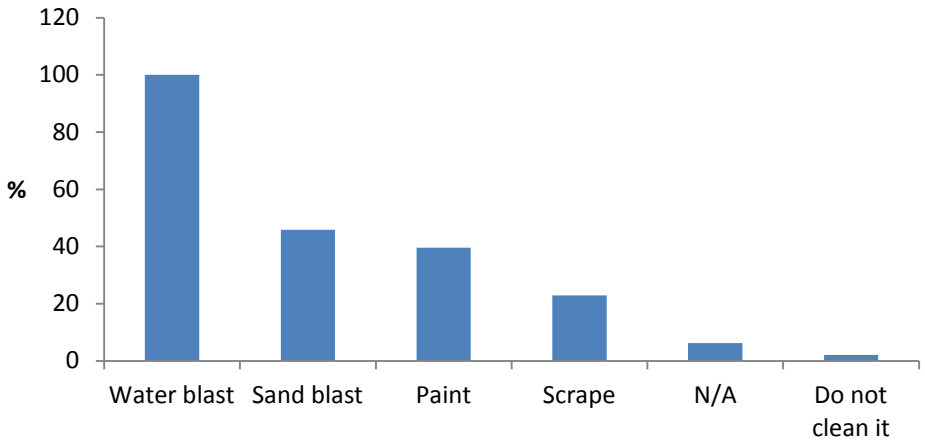
EMS actions.



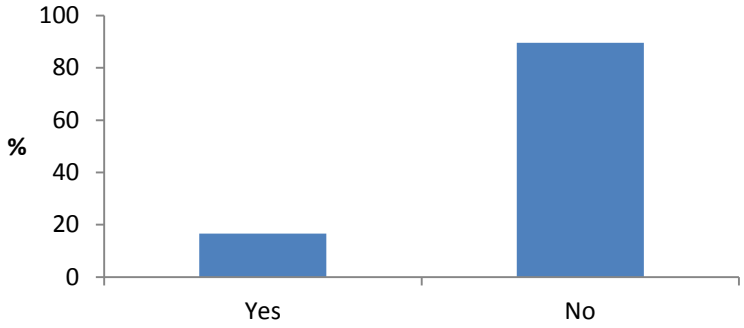
Any other suggested formats?



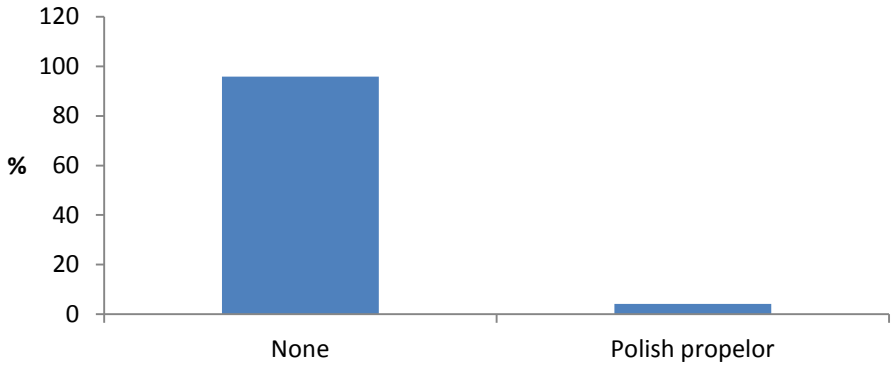
How do you clean the vessel during maintenance (fresh water blast, scraping, and chemicals)?



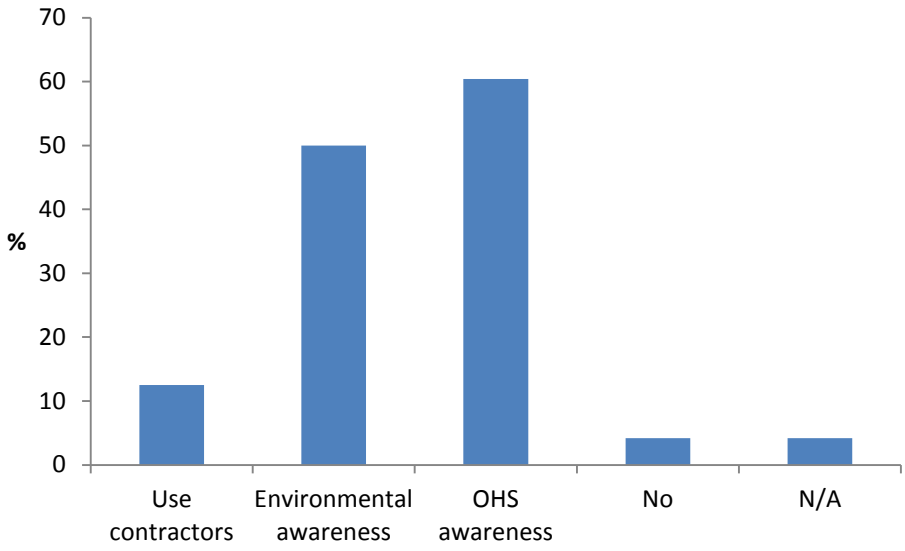
Do you ever remove biofouling at sites away from recognised slipways?



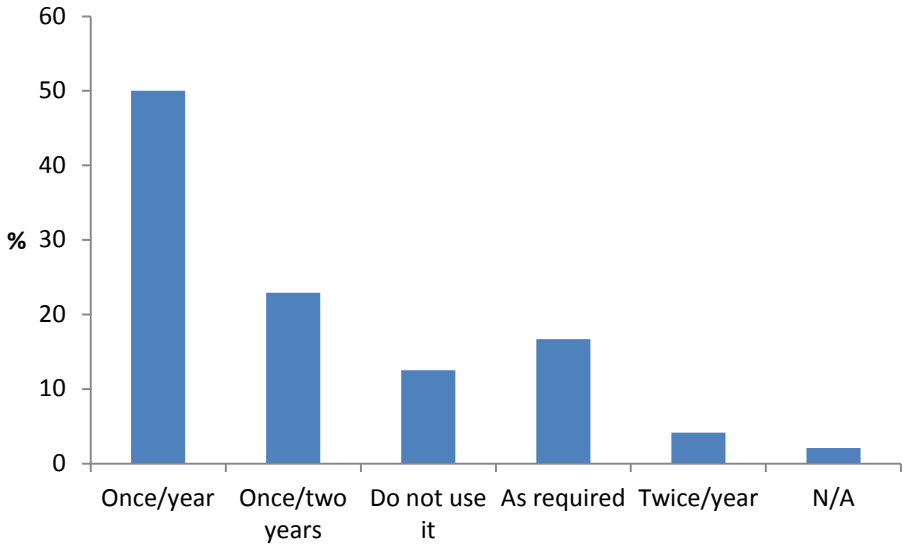
What other practices do you use to reduce biofouling on the hull and fittings? (please provide detailed explanation of methods and products)



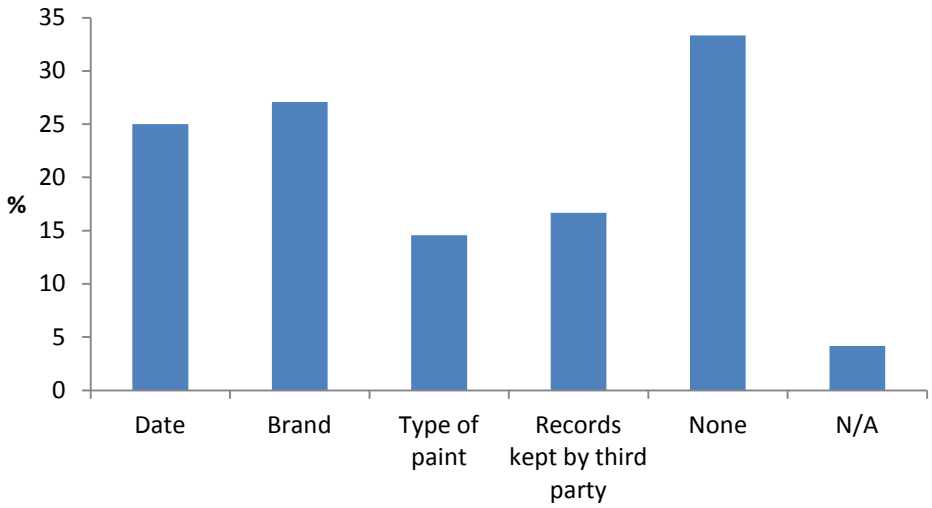
Are you aware of any safety and environmental considerations when applying or removing antifouling? If so, list.



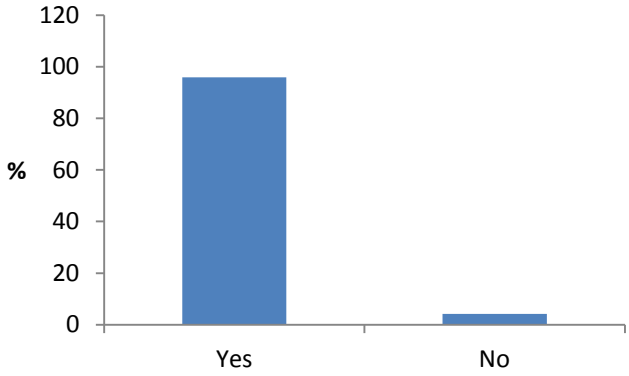
How often do you renew your antifouling?



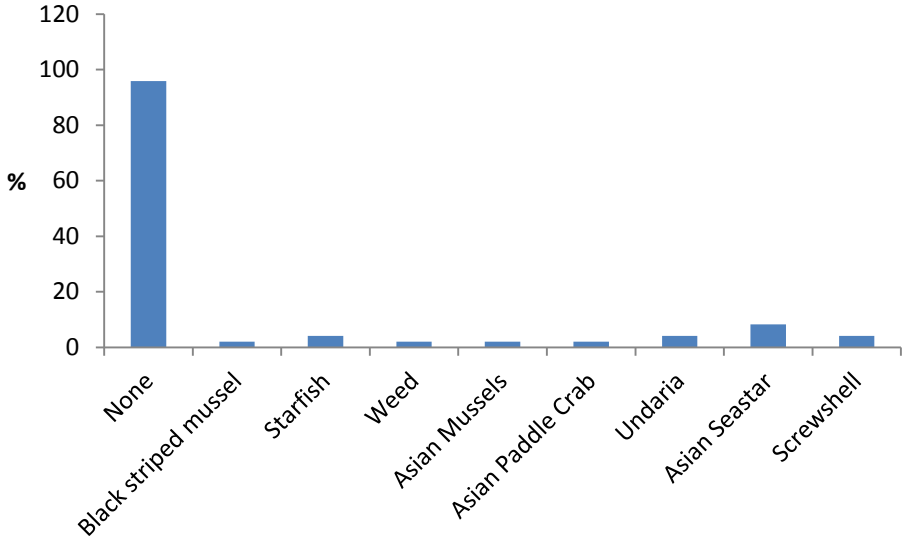
What records do you keep about antifouling (for example, when applied, brand, effectiveness)?



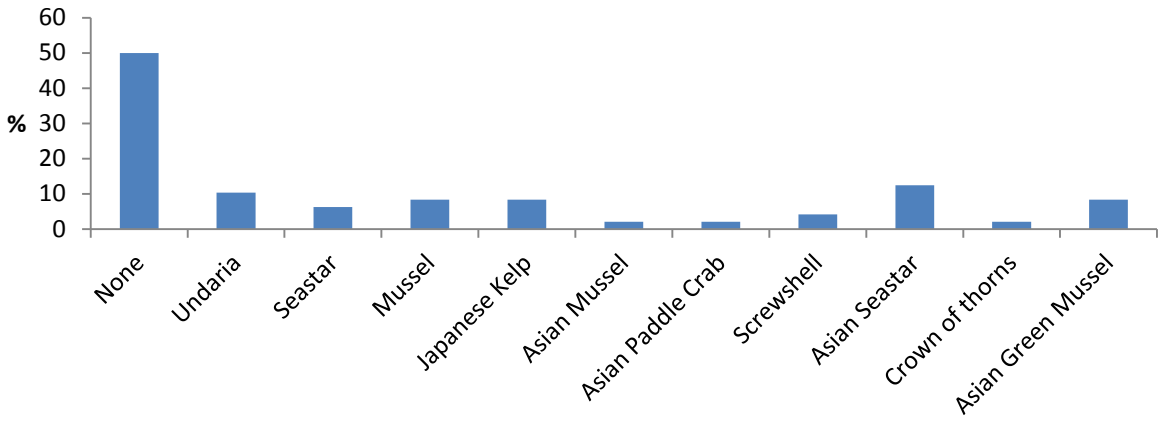
Do you follow the National biofouling management guidelines for commercial fishing vessels to manage marine pests (explain)?



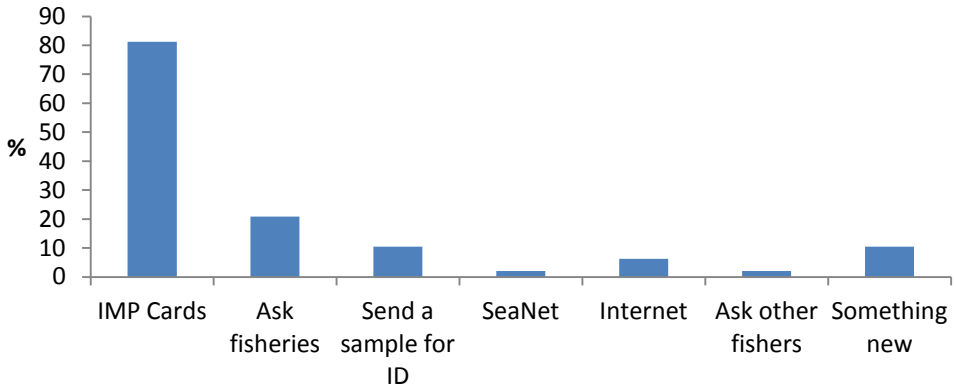
On what occasions do you believe that you have encountered marine pests with your fishing gear?



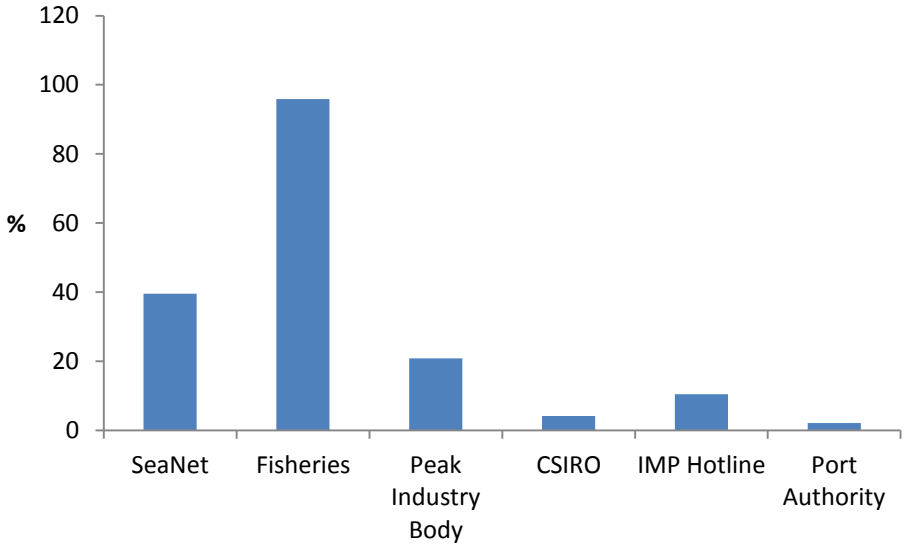
What marine pest populations in your local area, including fishing grounds, are you aware of?



How would you identify an organism as a known or suspected marine pest?



Who would you report a suspected marine pest outbreak to?



Appendix E: List of fisheries, ports, main activities and fishing depths of interviewed fishermen

State*	Fishery**	Port	Main activities	Fishing depth (m)
FNQ	NPF and East Coast Trawl	Karumba and Cairns	Prawn trawl	20–90
FNQ	Inshore Net and Qld Mud Crab Fishery	Local landings in the Burdekin region	Gillnet and pots	0–6
FNQ	Offshore Gillnet and Inshore Gillnet	Cairns, Port Douglas and Cooktown on occasion	Gillnet	<30
FNQ	Torres Strait Reef Line and Spanish Mackerel	Cairns and Thursday Island (only in breakdowns)	Line fishing	<40
FNQ	Qld East Coast Trawl	Cairns and Cooktown (sometimes)	Prawn trawling	<50
FNQ	Qld Reef Line, Inshore Net and Qld Mud Crab	Port Hinchinbrook	Handlines	0–20
FNQ	Net, Line and Crab	Townsville	Gillnet, line and pots	?
NSW	Estuary General and Ocean Haul	Coffs and Port Macquarie	Trap, haul and mesh net	<8
NSW	Ocean Trap and Line and Estuary General	Greenwell Point	Line and gillnet	?
NSW	South East Trawl	Greenwell Point and Bermagui for slipping purposes	Trawl	20–1000
NT	Spanish Mackerel	Darwin, Broome	Trolling-line	10–50
NT	Coastal line and Barramundi	Darwin	Gillnet and hand line	2–10
NT	Kimberley Mackerel	Darwin, Broome	Line fishing	20–30
NT	Demersal	Darwin, Broome	Traps	?
NT	Demersal	Darwin, Broome	Traps	?
NT	Prawn and NPF Kimberley	Darwin, Karumba	Trawl	?
NT	Prawn and NPF Kimberley	Darwin, Karumba	Trawl	20
NT	Prawn and NPF Kimberley	Darwin, Karumba	Trawl	20
NT	Finfish Trawl	Darwin, Karumba	Fish trawl	20–100
SEQ	Eastern Tuna and Billfish	Mooloolaba	Pelagic longline	?
SEQ	East Coast Trawl	Mooloolaba	Prawn trawl	0–200
SEQ	Eastern Tuna and Billfish	Mooloolaba	Longline	0–200
Tas	Commonwealth Scalefish Hook	Hobart, Strahan, Sydney and Melbourne	Longline	?

*State: FNQ (Far North Queensland); NSW (New South Wales); NT (Northern Territory); SEQ (South East Queensland); Tas (Tasmania); Vic (Victoria); WA (Western Australia).

**Fisheries are presented according to the state they operate from, not the level of government regulating them.