SafeFish

Research to Support Food Safety, Trade and Market Access

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In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

Foreword

Seafood is the most globally traded human food protein. In Australia in 2015/16 $1.4b AUD worth of fisheries and aquaculture products were exported, and $1.8b AUD of product was imported into our market. Seafood safety has become, and continues to be essential to Australia's access to both global and domestic markets and particularly into the growing Asian economies.

The SafeFish program provides technical advice to industry and government to enhance the safety of seafood produced and consumed in Australia, and to support access to international markets. The program leverages the expertise and resources available in government, research and industry networks to provide expert technical support in response to food safety incidents. To achieve these outcomes, the program brings together experts in food safety to assemble all relevant, available data and by conducting research where necessary. In undertaking these roles, SafeFish helps the seafood industry to stay ahead of the ever-changing food safety requirements internationally and in Australia and helps to mitigate food safety risks.

As Independent Chair of SafeFish since 2014, I have been involved with the program for this three-year funding cycle, and have worked with our partners, industry sectors and the Secretariat to streamline SafeFish's governance and operating arrangements to ensure that the program is performing to the highest standard possible. I am very pleased to report, that the SafeFish program has effectively met its specified objectives over the past three years, and in most cases exceeded them. We have also managed to provide additional research and services by leveraging our investments through targeted strategic alliances.

Examples of this include:

- Providing an extension workshop to communicate packaging options and processing techniques to increase awareness and provide information on suitable hurdle technologies to control the prevalence of *Clostridium botulinum*.
- Leveraging funding from external sources to progress the validation and implementation of marine biotoxin test kits.
- Re-designing the reports section of the SafeFish website to enhance the searchability and improving the user-friendliness experience of finding technical reports, and
- Exceeding the required input into Codex discussions by reviewing over 300 Codex related documents and submitting 40 technical briefs around issues affecting seafood (well over the required projection of 5 technical briefs) relating to histamines, food additives, seafood allergens, code of practice for scallops, and methods of analysis for marine biotoxins.

In 2017, SafeFish canvased industry to gauge support for continuation of the program following the cessation of the current FRDC funding cycle in July 2018. I am pleased that industry saw value in the work conducted, and through its support, the SafeFish program has been successful in acquiring funds for another three years from July 2018 to June 2021.

In the next three years, SafeFish will develop increased engagement with our stakeholders. We are also looking forward to working closely with the recently established peak industry organisation, Seafood Industry Australia (SIA). We will collaborate as appropriate to address issues of concern for all sectors of the industry.

Managing seafood safety is a challenge – across multiple aquatic environments, species, sectors, harvest procedures, jurisdictions, supply chains, product formats and markets. The need to protect the public, including the safety of recreational and customary fishers, and ensure governments are fully informed, adds further complexity. SafeFish plays the role of the trusted independent resource that is able to assist as issues arise. I am excited to continue to be involved in this initiative to ensure Australia maintains its outstanding reputation as a producer and supplier of high quality, safe and tasty seafood.

Dr. Anne M Astin PSM

Independent SafeFish Chair

Bio of Author

Dr. Anne Astin is an Australian biochemist and forensic expert. She was added to the Victorian Honour Roll of Women in 2010, received a Public Service Medal in the 2011 Queen's Birthday Honours (Australia) and is notable for her role in dairy development/regulation and maintaining food safety standards.

She began her career teaching biochemistry at Monash University, then became a forensic expert and later joined Australia's dairy industry as the CEO of Dairy Food Safety Victoria, the state's leading dairy regulatory authority. Dr. Astin has been the Chair of the bi-national Implementation Sub-Committee for Food Regulation, the Chair of the Australian Institute of Food Science and Technology, (AIFST) and in 2014 was appointed as the Independent Chair of SafeFish, a position she currently holds. She is also currently Chair of Dairy Food Safety Victoria and the William Angliss Institute of TAFE and a Director of the Australian Packaging Covenant Organisation (APCO) and Sheep Producers Australia.

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Acknowledgments

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- Food & Animal Bi-products Section, Export Standards Branch of the, Commonwealth Department of Agriculture, and Water Resources (DAWR)
- Dairy, Eggs and Fish Program, Export Division, DAWR
- Fisheries Research and Development Corporation (FRDC)
- Food Standards, Australia and New Zealand (FSANZ)
- Food Safety & Innovation Division, The South Australian Research and Development Institute (SARDI)
- Australian Shellfish Quality Assurance Advisory Committee (ASQAAC)
- A representative of the Seafood Trade Advisory Group (STAG) from Dover EX 27
- Sydney Fish Market
- Seafood Importers Association (SIA)
- A representative of the seafood processing industry from Simplot Australia

SafeFish would also like to acknowledge the support provided by its stakeholders to review and input into Codex and other internationally standards setting processes that SafeFish facilitates.

A full list of stakeholders who have contributed to the program is available in Appendix 1. Without their input, the risk commensurate and practically appropriate advice provided by SafeFish would not be able to be generated.

Abbreviations

AAA - Abalone Association of Australasia

ACA - Abalone Council Australia

ACACA - Australia-China Agricultural Cooperation Agreement

ACPF - Australian Council of Prawn Fisheries

AAGA – Australian Abalone Growers Association

AMIA - Australian Mussel Industry Association

ASCRC - Australian Seafood Cooperative Research Centre

ASEAN - Association of Southeast Asian Nations

ASQAAC - Australian Shellfish Quality Assurance Advisory Committee

ASQAP - Australian Shellfish Quality Assurance Program

CCFFP - Codex Committee for Fish and Fisheries Products

CCFH - Codex Committee on Food Hygiene

CCCF - Codex Committee on Contaminants in Foods

CCFA - Codex Committee on Food Additives

CCFH - Codex Committee on Food Hygiene

CCFO - Codex Committee on Fats and Oils

CCMAS - Codex Committee on Methods of Analysis and Sampling

CCRVDF - Codex Committee on Residues of Veterinary Drugs in Foods

CNHFPC - Chinese National Health and Family Planning Commission

CSIRO - Commonwealth Scientific and Industrial Research Organisation

DAWR - Department of Agriculture and Water Resources

DSP - Diarrhetic Shellfish poisoning

DST - Diarrhetic Shellfish toxins

FAO - Food and Agriculture Organisation of the United Nations

FIAL - Food Innovation Australia Limited

FRDC - Fisheries Research and Development Corporation

HAV - Hepatitis A Virus

MAP - Modified Atmosphere Packaging

MIFB - Malaysian International Food & Beverage Trade Fair

NHFPC - National Health and Family Planning Commission

NoV - Norovirus

NSSP - National Shellfish Sanitation Program, USA

OA - Oysters Australia

PASE - Package Assisting Small Exporters

PCBs - polychlorinated biphenyls

PFOS - Poly-Fluoroalkyl substances

PSP - Paralytic Shellfish Poisoning

PST - paralytic shellfish toxins

PwC - PricewaterhouseCoopers

RACs - Research Advisory Committees

SARDI - South Australian Research and Development Institute

SFP - Scombrotoxin fish poisoning

SIV - Seafood Industry Victoria

SRL - Southern Rocklobster Ltd.

STAG - Seafood Trade Advisory Group

TSGA - Tasmanian Salmonid Growers Association

WHO - World Health Organisation

WINSC - Woman’s Industry Network Seafood Community

Executive Summary

Background

SafeFish is an initiative that was developed by the South Australian Research and Development Institute (SARDI) with Australian Seafood Cooperative Research Centre (ASCRC) funding in 2010 (Project 2010-752-10: SafeFish – Seafood Trade Expert Panel). The project ran until the cessation of the ASCRC in 2015, at which point the Fisheries Research and Development Corporation (FRDC) and several industry bodies provided funding for an additional three years from 2015 to 2018 (Project 2015-212: SafeFish – Research to support Food Safety, Trade and Market Access). Since its inception, SafeFish has successfully enabled seafood industry sectors to respond in a coordinated and professional manner to technical trade and market access impediments that arise, especially in relation to food safety and hygiene. It provides industry and government departments with access to technical and scientific capability to manage known risks, and assists to identify and address new risks and market access barriers that emerge.

Aims and Objectives

The two objectives of SafeFish were:

1. To ensure continued delivery of robust food safety research and advice to industry and regulators that underpins Australia's reputation as a producer of safe seafood.
2. To maintain and enhance the capabilities of SafeFish to provide that research and advice in a cost effective, efficient and timely manner.

Methodology

SafeFish operates under four platforms: governance; input to international food standards under development at Codex; technical work; and extension/communication activities.

SafeFish is guided by an advisory committee (the SafeFish partners), following a defined Charter, and supported by a Secretariat with an Independent Chair. The partners come from industry, government (Food Standards Australia, New Zealand (FSANZ), Department of Agriculture and Water Resources (DAWR), Fisheries Research and Development Corporation (FRDC) and researchers, bringing a variety of expertise, resources and linkages to the program. They meet quarterly to guide the operation of SafeFish and assist in resolving issues that arise.

SafeFish follows a formalised process to provide technical briefs to support the Australian delegation attending relevant Codex meetings. SafeFish monitors all Codex Committee agendas through involvement with Codex Australia, and when relevant items arise SafeFish liaises with stakeholders to provide a technical response that reflects the Australian position. When necessary, SafeFish facilitates national working groups and attendance at Codex meetings.

The technical program is underpinned by a strategy to identify current and emerging food safety and market access issues, prioritise these issues, and undertake technical work to provide potential solutions to overcome those identified as the highest priority. In general, two technical projects are undertaken annually. Wherever possible SafeFish funds are leveraged to generate larger projects addressing the issue of concern. Technical reports are either conducted by SafeFish researchers, or outsourced to external experts in that field. International expertise is sourced when required. Major bodies of work are peer reviewed to ensure accuracy and scientific rigor.

SafeFish has developed a communication strategy to enable input from a variety of sources, wide distribution of outputs and targeted communication of SafeFish activities. We maintain a broad stakeholder network of government officials, researchers and industry contacts that are drawn upon for expertise and advice. Extension and adoption activities include seminars, workshops, training days,

technical reports, articles, fact sheets and communiques. These are a key facet of the program and are designed to educate, facilitate capability building, and rapid uptake of outputs.

Results/Key findings

During the three year project, SafeFish has built strong governance arrangements and has a clear model of operations that is detailed in the SafeFish Charter. SafeFish partners include representatives from DAWR, FRDC, FSANZ, SARDI, ASQAAC, STAG, SIA, Sydney Fish Market and an industry representative from the seafood processing company Simplot.

The partnership approach has been successful in leveraging the expertise and time provided by FSANZ, DAWR, FRDC, key industry members and researchers. It is an active, engaged group of representatives, investing time and resources in key issues that impact seafood safety and trade through a unified platform. This group responds collaboratively on a number of levels and through a variety of channels, and is a strong asset to the seafood industry going forward as a central point of contact for when issues arise, as well as a tool to assist in driving resolutions.

SafeFish monitored the activities of six Codex Committees during this project. As a result, over 300 documents were reviewed, resulting in actions on 40 items, including 17 submissions to support a response from Codex Australia. Topics included histamines, methyl-mercury, ciguatera, veterinary drugs, food additives, foodborne parasites, Aqui-S Isoeugenol (Korean SPS notification), and heavy metals (Hong Kong SPS notification). Technical representatives were funded to attend two Codex meetings to support Australian delegations. Input to Codex is essential to ensure the standards under development are not overly onerous and reflect the Australian situation. For example, SafeFish assisted in the changes to the histamine standard to provide simple risk commensurate standards with good practical advice on temperature control to achieve desired outcome, and changes to the methyl-mercury standard that will avoid rejection of significant volumes of high value Australian fish at export, but still support public health requirements.

SafeFish has produced technical reports on high priority issues identified by the SafeFish partnership through prioritisation exercises. These include reports on: validation of rapid test kits for use by bivalve shellfish sectors in detecting paralytic shellfish toxins; food safety risks associated with minimally processed, chilled and extended shelf-life seafood; the food regulatory systems covering bivalve shellfish in place in Australia (to assist with re-negotiating market access for bivalve shellfish to the United States); an application to allow Australian abalone containing sodium metabisulfite to be exported to China; a review of all available tools that can be used in determining the authenticity of Australian seafood products; and hazard identification sheets of current and emerging issues affecting seafood. This work has assisted the Australian seafood industry to meet their food safety obligations, provide novel risk-management options, assisted in maintaining or re-opening markets to Australian products, and provided technical support, training and capability to seafood businesses, the seafood industry, researchers and regulators.

Another important benefit from SafeFish has been the development of capability to address food safety and market access issues in Australia. SafeFish has invested in training regulators, researchers and industry personnel. We have provided opportunities for travel to technical conferences, organised expert working groups to address key issues and built laboratory expertise where required.

Implications for relevant stakeholders

SafeFish uses the Core funding received from FRDC and industry to carry out three types of projects:

1. Food safety incident responses
2. Technical input to inter-government consultations on food regulations and market access
3. Proactive research, risk analyses and training.

Through these combined activities, SafeFish helps to enable market access and to maintain an excellent food safety record for Australian seafood. If these two objectives are not met effectively, there are a number of negative consequences that may result:

- Health risks associated with consumption of unsafe seafood may increase
- Food safety compliance costs increase to the point where businesses cannot viably access certain markets
- Reputation and brand is damaged due to illness or non-compliance with food safety regulation systems. Experience shows that market access can be impacted significantly in this scenario.
- International and domestic trade of Australian seafood decreases
- Investors at all points of the supply chain suffer economic losses.

Whilst the SafeFish project cannot necessarily mitigate all of the items detailed above, the services it provides goes a long way to assisting the seafood industry respond to issues in a fast, effective and unified manner in order to decrease the ramifications that arise as a result. Industry and regulators have demonstrated that they value and rely on the work undertaken by SafeFish, and appreciate the role that it plays as a conjugate. The provision of future funding from industry and FRDC, with continued investment from FSANZ, and DAWR has demonstrated the desire of key stakeholders to continue these activities for another three years. The new funding provides opportunity for increased involvement from the various seafood sectors, and builds the collaborative model further. Recent active engagement with Seafood New Zealand and the New Zealand Seafood Food Safety Program will increase collaboration and access to expertise, as New Zealand and Australia are dealing with common food safety and market access issues.

Keywords

Seafood, Food Safety, Market Access, Partnership, Trade, Australia, Hygiene, Technical Advice, Trade Barriers, Oysters, Mussels, Rock lobster, Viruses, Marine Biotoxins, Prawns, Shellfish, Abalone, Scallops, Tuna, *Ostreidae* spp., *Pteriidae* spp., *Crassostrea gigas, Saccostrea glomerata, Jasus edwardsii, Penaeus indicus, Penaeus merguiensis, Penaeus monodon, Penaeus esculentus, Pectinidae, Haliotidae, Haliotis rubra rubra, Haliotis rubra conicopora, Haliotis laevigata, Haliotis roei, Haliotis iris, Thunnus maccoyii*

Introduction

SafeFish provides technical advice to support Australia's seafood trade and market access negotiations and helps to resolve barriers to trade. It does this by bringing together experts in food safety and hygiene to work with the industry and regulators to agree and prioritise technical issues impacting on free and fair market access for Australian seafood.

SafeFish has a record of success in reopening markets and in responding quickly when technical food safety issues arise. By involving all relevant parties in discussions and, where necessary, commissioning additional research to fill any knowledge gaps, an agreed Australian position is reached that is technically sound and defensible. This robust process builds knowledge and relationships, and results in better outcomes for industry in maintaining fair market access and ensuring that the seafood they sell is safe.

SafeFish provides technical advice to support the resolution of issues and challenges relating to the export, import and domestic trade of Australian seafood products. It undertakes the following activities to meet its core objectives:

- Managing and coordinating a panel of industry, government and scientific experts in seafood to consider technical issues and provide advice to key agencies involved in trade and market access negotiations
- Facilitating research to provide trade advantages and opportunities for industry whilst minimising regulatory costs
- Offering technical support to the seafood industry and government departments during major seafood safety incidents to assist in the risk management response provided
- Coordinating the production of technical advice in conjunction with and on behalf of industry to Codex Australia. This advice is then used by the Australian delegations to assist in representing Australia's position at Codex[1] meetings.

Need

Maintaining and enhancing market access for Australian seafood is critical for future industry growth. Seafood is one of the largest volume commodities traded internationally, and Australian seafood must comply with minimum food safety standards in order to participate in this trade. Our food safety systems and reputation for producing high quality, safe seafood enables market access and drives consumer demand for our product. However, in order to maintain this reputation, we must continue to address the pertinent food safety issues, both existent and emerging. We also need to ensure that food safety standards that control market access are scientifically valid, and relevant to the Australian situation. Many risks present in other countries are not a concern in Australia: we need to ensure that developing food standards reflect a risk based approach, and do not create unnecessary and expensive monitoring requirements for our seafood businesses.

SafeFish began working in this space in 2010 under the auspices of the ASCRC. The need to continue this work was acknowledged by the FRDC through funding of the current SafeFish program from 2015-2018.

Ensuring the safety of seafood and sustaining access to markets provides significant public benefit. SafeFish makes a significant contribution to this by:

[1] The Codex Alimentarius Commission (Codex), established by FAO and WHO in 1963 develops harmonised international food standards, guidelines and codes of practice to protect the health of the consumers and ensure fair practices in the food trade.

- Researching and providing technical input to international multilateral and bilateral trade negotiations through forums such as Codex Alimentarius
- Providing research and technical support to food safety incidents to minimise trade disruptions, including supporting appropriate risk communication
- Identifying emerging food safety issues and determining appropriate research and technical responses to protect Australia's continued access to markets
- Conducting research on seafood hazards to support risk management decisions
- Facilitating and coordinating national and international expert networks (including networks between researchers, industry and regulators)
- Developing and supporting food safety research and diagnostic capabilities
- Supporting productive partnerships between industry and regulators to enable utilisation of research findings and to facilitate considered responses to food safety issues.

Objectives

The agreed and contracted objectives for the project were as follows:

1. To ensure continued delivery of robust food safety research and advice to industry and regulators that underpins Australia's reputation as a producer of safe seafood.
2. To maintain and enhance the capabilities of SafeFish to provide that research and advice in a cost effective, efficient and timely manner.

Methods

In order to fulfil its objectives, SafeFish operated under four major platforms and completed the following processes under each:

Platform 1: Governance

- Coordinated an advisory committee (SafeFish partnership members' panel) that provided recommendations and steerage of the project and its relevant outcomes and outputs. Facilitated quarterly meetings of the advisory committee to drive the operation and work program for SafeFish.
- Provided Secretariat body to run the day-to-day operations of SafeFish, including appointing and supporting an Independent Chair.
- Developed a Charter detailing the governance arrangements for SafeFish, along with a business model, and work program processes.
- Facilitated a process to identify and quantify the value of the work that SafeFish provided as well as to gauge the support from Industry to continue the work post 2018.

Platform 2: Input into standard development

- Monitored issues affecting the seafood industry through six different Codex General Subject Committees, and one Codex Commodity Committee.
- Followed a formalised process to facilitate input to Codex standards and guidelines under development through emails, phone calls, national meetings and teleconferences with key experts and industry representatives to identify and collate a unified response on issues affecting Australian seafood.
- Liaised with industry, researchers and regulators to identify risk commensurate positions to proposed standards and to ensure that the position is appropriate and practical for industry to implement should it become formalised.
- Provided technical briefs to support the Australian delegation attending relevant Codex meetings to ensure that the Australian position on the Codex items addressed industry concerns and was factually based.
- Funded the attendance of technical experts at relevant Codex meetings and working groups. These experts were selected based on experience and knowledge of the issues under discussion. In addition to attending the meetings, the expert was heavily involved in the drafting process for the SafeFish technical briefs that were developed.
- Responded to the World Trade Organization (WTO) Sanitary and Phytosanitary (SPS) Notifications of new food safety regulations by trading countries by providing comment where appropriate, and notifying industry of impending changes.

Platform 3: Technical work program

- Coordinated the process of identifying and prioritising food safety and market access issues with the potential to impact individual Australian seafood sectors or the fisheries and aquaculture sectors as a whole. This process involved scoping issues and their potential risk in terms of trade and market access, public health, economic impact, media impact, political issues, environmental, sustainability and social issues and regulatory issues, and then prioritising issues via a risk-ranking framework. The prioritisation process is detailed in Appendix 4.
- Progressed technical work annually to address those issues identified as the highest priority.
- In general, two technical projects are undertaken annually. Wherever possible SafeFish funds were leveraged to generate larger projects addressing the issue of concern. Technical reports are either conducted by SafeFish researchers, or outsourced to external experts in that field. International expertise was sourced when required. Major bodies of work were peer-reviewed to ensure accuracy and scientific rigor.

Platform 4: Extension and communication activities

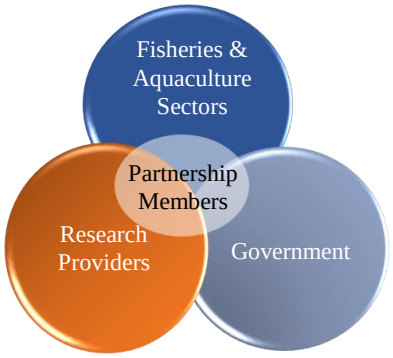
- Maintained a network of stakeholders from industry, researcher and government bodies. This network included both end-users of SafeFish outputs, and a list of experts comprising a wide range of skills and expertise, to be drawn-upon when required.
- Developed a communication strategy to ensure that all stakeholders were aware of the activities and outputs, including processes for raising food safety and technical market access issues, and past successes in resolving issues.
- Prepared and distributed technical information sheets on seafood food safety hazards for use in potential food safety incidents (for example Hepatitis A virus in food and scombroid fish poisoning).
- Conducted seminars and workshops to disseminate research and train stakeholders and end users.
- Designed, printed and distributed SafeFish technical reports to inform relevant stakeholders of research outputs.
- Facilitated external scientific/peer review of technical work undertaken to ensure the accuracy and robustness of the output.
- Prepared and distributed of communication outputs (such as the annual report, brochures, fact sheets, updates, magazine articles etc.) to disseminate information on SafeFish to stakeholders including the development and maintenance of the SafeFish website.

Results

Below is an overview of the SafeFish achievements within each platform throughout the life of the 2015-2018 SafeFish project.

Platform 1: Governance

SafeFish is the leading platform in the FRDC program for dealing with food safety and trade and market access issues for the Australian wild-fisheries and aquaculture sectors. SafeFish is a partnership of seafood experts (partnership panel) that assist the fisheries and aquaculture sectors to resolve technical trade impediments, especially in relation to food safety and hygiene. SafeFish is comprised of collaborative and strategic partnerships between fisheries and aquaculture sectors, research providers and Government stakeholders. The partners work together to deliver the outputs and objectives of the program.



SafeFish Partnership Panel

The SafeFish partnership members are an advisory committee that provided recommendations to the South Australian Research and Development Institute (SARDI) Executive for ratification. A formal agreement between FRDC and the South Australian Minister for Agriculture, Food and Fisheries governed the program.

The partnership members provided general oversight and strategic direction for the program. They also assisted in communicating the technical outputs of SafeFish through the appropriate channels in Australia and overseas to facilitate the resolution of issues. Depending on the issues being discussed, this group had the ability to invite observers or relevant stakeholders to be involved in meetings and/or processes and this ensured that appropriate and widespread representation was achieved at all times. The panel met three times annually to drive and set the work plan for the Secretariat to execute.

Partnership members over the 2015-2018 project are listed in Appendix 1.

SafeFish Secretariat

A Secretariat body operated by the SARDI Food Safety & Innovation group facilitated the SafeFish project. The Secretariat comprised of a program manager, executive officer, codex coordinator, administrative support officer (total 0.8 FTE) and an external Independent Chairperson. The Secretariat coordinated and facilitated the day-to-day operations of SafeFish.

Members of the SafeFish Secretariat over the 2015-2018 project are listed in Appendix 1.

Charter of Operations

In July 2016, the partnership members reviewed the SafeFish Governance document to bring it in line with the current operations of SafeFish. During this process, the content was amended and the document was rebranded as a Charter. The Charter includes an overview of how SafeFish operates (defining the terms of reference and processes required to be undertaken within the different bodies that make it up), details the reporting and chain of command arrangements, demonstrates how the program provides value to its stakeholders (including outlining its strategic plan), defines the stakeholder relationships that are developed and maintained, and outlines the communication strategy that SafeFish operates within.

The SafeFish Charter is attached for reference in Appendix 5.

Value Proposition

In October 2017, Dr. Len Stephens was contracted to undertake a review of the value SafeFish has provided to the seafood industry. The review identified the core services that SafeFish undertook and quantified the impact that these had. The aim was to provide a value proposition for industry, in order to broaden the funding base of SafeFish, allowing it continue for a further three years. The value proposition outlined the proposed costs and funding options to continue the project post June 2018. SafeFish received resounding support from industry and will continue its operations from 2018-2021 with financial support from the FRDC public good pool and contributions from the following industry stakeholders:

- Abalone Council Australia
- Australian Abalone Growers Association
- Australian Council of Prawn Fisheries
- Australian Mussel Industry Association
- Oysters Australia
- Southern Rocklobster Ltd.
- Sydney Fish Market
- Tasmanian Salmonid Growers Association
- FRDC Research Advisory Committees in each state and territory.

Platform 2: Input into Standard Development

Codex Technical Input

SafeFish monitors and has input into the review/development of a number of Codex Standards, Guidelines and Code of Practices of relevance to the Australian seafood industry. SafeFish aims to keep the relevant industry sectors informed of developments and helps to ensure that risk management approaches are commensurate to the level of risk within Australia. The adjournment of the Codex Committee on Fish and Fishery Products (CCFFP) in 2016 has resulted in all seafood related activities being now undertaken through the General Subject Committees that include:

- Codex Committee on Contaminants in Foods (CCCF)
- Codex Committee on Food Additives (CCFA)
- Codex Committee on Food Hygiene (CCFH)
- Codex Committee on Fats and Oils (CCFO)
- Codex Committee on Methods of Analysis and Sampling (CCMAS)
- Codex Committee on Residues of Veterinary Drugs in Foods (CCRVDF).

These Committees manage a wide variety of activities and whilst not all of these activities are relevant to the seafood sector, resources are required to identify the items that are. Since April 2016 over 300 Codex related documents have been reviewed (prior to 2016 statistics on Codex input were not being captured). A

full list of the Codex submissions that SafeFish has provided broken down by year can be found in Appendix 2.

Areas of potential impact to Australian seafood where input has been provided

To ensure that the Australian position on the Codex agenda addressed industry concerns, SafeFish followed a formalised process to provide technical briefs for issues that were of a potential concern to the Australian seafood industry. An overview of the technical input coordinated for specific issues is detailed below:

- **Methylmercury in FinFish**

  In 2013 CCCF agreed that consumer advice should not be developed at the international level and was more appropriate at the domestic level. SafeFish was active in comparing the proposed methylmercury levels to those documented in Australian fish, but noted that the global database on contaminants contained little information from Australian fish stocks. One option initially considered by CCCF was to establish a Maximum Level (ML) for methylmercury of 0.3mg/kg. This was based on risk only and SafeFish advised that such a level would be unpractical as it would result in high rejection rates and severe economic impact on the seafood industry. In 2017 CCCF agreed to establish MLs for methylmercury in a number of at-risk fish species based the ALARA principle (As Low As Reasonably Achievable). SafeFish continued to advocate and recommended to Codex Australia that if MLs were developed then they should be based on a risk-benefit approach, acknowledging the importance of fish consumption for positive health benefits as well as the risk associated with methylmercury. Input from SafeFish and other delegates were successful in having the approach changed to the ALARA principle, resulting in average rejection rates of less than 5% of fish internationally. After much debate, CCCF agreed in March 2018 to establish MLs for tuna (1.2 mg/kg), alfonsino (1.5mg/kg), marlin (1.7mg/kg) and shark (1.6 mg/kg). In addition, in March 2018 CCCF agreed to discontinue the work to set an ML for swordfish (as a consensus could not be reached) and for amberjack (as the average methylmercury levels were sufficiently low). The existing Guideline Levels for methylmercury in fish and predatory fish will also be revoked. Given the pending implementation of these limits and the discussions that have taken place around this compound, it should be noted that some export destinations may begin to/increase their testing for methyl-mercury in these products.

- **Histamine Guidance**

  Scombrotoxin fish poisoning (SFP) is a common cause of fish poisoning that occurs in humans, linked to histamine consumption. SafeFish has been contributing to the Codex guidance on preventing histamine formation that will be included as a new section in the Code of Practice for Fish and Fishery Products. Histamine formation can be effectively controlled by using good manufacturing practices to maintain hygienic quality of fish, particularly by controlling temperature exposure. The guidance will only apply to marine finfish species that present the greatest potential for developing hazardous levels of histamine; e.g. *Scombridae, Clupediae, Engraulidae, Coryphaenidae, Pomatomidae and Scomberesocidae* families. The Code of Practice will state that harvest vessels should implement a histamine control system including monitoring and record keeping that provides documented evidence of control. If histamine control records are not available to a receiving establishment, then histamine testing will become a critical control point for receivers. This guidance is expected to be adopted by the Codex Alimentarius Commission in July 2018.

  CCFH is now in the process of reviewing the histamine sections within the relevant Commodity Standards, including sampling plans. The current Codex health-based safety limits for histamine of 200mg/kg will remain.

- **Ciguatera**

FAO/WHO have identified that ciguatera fish poisoning is an issue that increasingly affects the tropical and subtropical regions of the Pacific and Indian Ocean, as well as the Caribbean Sea. Over the last 10 years ciguatera poisonings have accounted for the majority of food safety outbreaks related to seafood in Australia (OzFoodNet data). Ciguatera was ranked as a high priority issue in the 2016 SafeFish Prioritisation process. In 2017, CCCF made a request to FAO/WHO for scientific advice to support either the future establishment of MLs for ciguatatoxin analogues C-CTX-1 and P-CTX-1 and/or the development of risk management guidelines. FAO/WHO have subsequently released a joint call for data on ciguatera poisonings. In light of this, SafeFish initiated a working group with the objective of facilitating the collection and collation of available Australia data in response to the FAO/WHO call.

In March 2018, SafeFish facilitated a teleconference bringing together fourteen participants with expertise on ciguatoxins from industry, regulatory bodies and research facilities. The teleconference identified available Australian data that was suitable to collate (including ownership, method of collection and resources of collection). SafeFish then worked with data owners to compile a submission, ensuring the outputs of FAO/WHO risk assessment will be relevant to the Australian situation (see below Platform 4: Communication and Extension – Technical Research Extension Activities for more information). The FAO/WHO risk assessment may result in guidelines for risk reduction of ciguatera fish poisoning, however there are still many issues to resolve prior to implementation of a food standard (e.g. methods of analysis, and availability of toxin standards for analysis). An exciting outcome of this process was all participants have agreed to continue to be involved in the working group to facilitate future research and a nationally consistent outbreak response to ciguatera.

Technical Representatives at Codex

SafeFish technical delegates were sent to the following Codex meetings to build technical capability and understanding of the Codex processes, and to assist the Australian delegation through the provision of technical expertise on issues that had the potential to affect Australian seafood:

- Ms. Alison Turnbull attended the 34th Session of Codex Committee for Fish and Fisheries Products (CCFFP) meeting in Norway in October 2015. The meeting was productive, with extensive SafeFish input into the Proposed Draft Code of Practice on the Processing of Fresh and Quick Frozen Raw Scallop Products, and the Discussion Paper on Histamine.

- Dr. Stephen Pahl attended the Codex Committee on Food Hygiene (CCFH) meeting in Chicago, USA in November 2017. At this meeting the Australian delegation provided specific technical input into the Guidance for the Control of Histamine in Fish, Control of Shiga toxin-producing *Escherichia coli* (STEC), the Revision of the General Principles of Food Hygiene, the development of a Code of Practice on Food Allergen Management for Food Business Operators, and the Guidance for the Management of (Micro)biological Foodborne Crises/Outbreaks.

Technical Representatives at International Meetings

- In June 2015, Ms. Natalie Dowsett from SARDI Food Safety & Innovation was sponsored by SafeFish to attend the first International Seafood Safety & Trade Conference that was held in conjunction with the 16th Malaysian International Food & Beverage Trade Fair in Kuala Lumpur, Malaysia. The conference focused on seafood quality, safety, trade, health, environmental issues, innovation as well as product development.

- In January 2017, SARDI researcher Dr. Stephen Pahl was sponsored by SafeFish to travel to Brussels, Belgium to attend the EC Safe Seafood final conference. The purpose of the trip was to exchange knowledge on emerging seafood hazards and develop opportunities for collaboration

with European food safety experts. The conference assessed food safety issues related to non-regulated contaminates (such as flame retardants, Poly-Fluoroalkyl substances (PFAS), microplastics, heavy metals, and polychlorinated biphenyls (PCBs)) present in seafood as a result of environmental contamination and evaluated their impact on public health. Several of these issues have the potential to, or are currently of concern in Australia. For example, PFAS chemicals have been widely used in the community in cleaning products, fire fighting foams and as an impregnating agent in items such as carpets, furniture, paper, textiles and leather. Recently high levels in soil and water have been associated with air force bases: the commercial and recreational fisheries were closed in Port Stephens in 2016 because of contamination with PFOS from the Williamstown Air force Base.

- In November 2016, Alison Turnbull and Dr. Tom Madigan travelled to China for a technical exchange with funding from Australia-China Agricultural Cooperation Agreement (ACACA) and SafeFish. The aim of the travel was to establish networks with Chinese researchers and to potentially discuss and develop collaboration on a number of food safety and market access projects for seafood.

- In May 2017, Dr. Stephen Pahl participated in a trade mission to China with the Seafood Trade Advisory Group (STAG) and the Abalone Association of Australasia (AAA) with funding from ACACA. The mission met with key researchers and businesses who provided information that assisted in the drafting of a submission to the Chinese National Health and Family Planning Commission (CNHFPC) to change the Chinese food standards code to allow sulphites in canned abalone. This change to the Chinese food standards code would allow Australian canned abalone containing sulphites to be exported to China if adopted.

Platform 3: Technical Work Program

Prioritisation Process

The technical program is underpinned by a strategy to identify current and emerging food safety and market access issues, prioritise these issues, and undertake technical work to provide potential solutions to overcome those of highest priority.

A prioritisation round was held in June 2014 (prior to the current project) which set the work program for the 2015-2016 period. Following this, a further prioritisation process was facilitated by SafeFish in October 2016 to set the work program for the 2016-2018 period. In order to scope and prioritise the issues that were identified, SafeFish produced a report that provided information such as sectors affected, trade and market access information, public health impact, regulatory issues, economic impacts, reputational impacts – media and political, and environmental/sustainability issues that may be present. Using this information, the SafeFish partners then prioritised the issues through a risk assessment process. On the alternate years, a smaller in-house process of issue identification and prioritisation is run by the Secretariat and the partners to set the work plan for that interim period.

Technical Reports for 2015-2016

1. **Validation of the paralytic shellfish toxin rapid test kits for bivalve shellfish**

   Recurrent blooms of toxic algae in Tasmania resulted in an increased need for cost-effective, rapid biotoxin testing in bivalve shellfish (oysters, mussels, scallops and clams), abalone, and rock lobster, with many growing areas testing positive for paralytic shellfish toxins (PST) on a weekly basis. It was identified that testing methods were expensive (approximately $500 each), and laboratory turn-around times, combined with transport difficulties from regional areas meant

testing results were not available until 3-7 days after the samples were taken. This resulted in health risks for consumers, and a significant business risk for seafood industry members. Over the past 10 years, there have been over 22 domestic and 3 international recall events due to biotoxins in bivalve shellfish from Tasmanian product, resulting in significant direct costs to growers, and loss of market and brand value. In addition, there have been 5 illnesses of recreational harvesters.

The laboratory method used for analysing PST in shellfish is the Association of Official Agricultural Chemists Analytical Organisation (AOAC) Official Method 2005.06 (Lawrence et al., 2005 Method[2]) which is a chemical method requiring expensive equipment and expertise. A cost effective screening method was required that could be used locally to rapidly sort out harvests with no public health or business risk. Harvests producing positive screen results could then be held on-site whilst samples are sent for complete chemical analysis. There are several screening tests for PST on the market, however at the start of this project none were fully validated. FRDC funded research, conducted by the University of Tasmania, resulted in an appropriate screening test being identified, based on its performance characteristics for the toxin analogs commonly found in Tasmania. The cost of the screening test was less than $30 AUD, and each test could be done on site in less than 30 minutes. A full validation of the test kit was required to give businesses confidence to use the test, and provide evidence to regulators that it was appropriate for consideration in public health risk management.

Furthermore, changes to the ASQAP Operations Manual (2016), resulted in all growing areas in Australia being required to increase the frequency of testing for biotoxins. Currently Australian regulatory programs conduct over 3400 analyses per year for marine biotoxins, with approximately 88% of these are returning negative results. A cost effective system was required to enable compliant monitoring programs in low risk areas.

Through an application to the Department of Agriculture and Water Resources' grant scheme Package Assisting Small Exporters (PASE), SafeFish was able to leverage $15,000 of project funds to a total of $65,000 to validate the kit identified by IMAS as most appropriate. Combined with over $35,000 in-kind support from Neogen (the commercial kit provider) SafeFish led a single laboratory validation study and an inter-laboratory validation study, in line with internationally accepted procedures to validate the kit. Collaborators in the project were the South Australian Research and Development Institute, the University of Tasmania, Queens University Belfast, and Neogen Pty Ltd.

The validation study showed that the Neogen test kit used with the standard protocol was suitable for use in detecting PST in oysters, having appropriate selectivity and sensitivity. With respect to mussels, some variation was found amongst laboratories with the sensitivity, and individual businesses will need to show the test is appropriately sensitive in their hands. The standard protocol recommended by Neogen performed as well as the modified protocol designed by the University of Tasmania, and was found quicker to run and required less complex equipment. The validation is published in two peer reviewed scientific papers:

- Turnbull, A.R., Tan, J.Y.C., Ugalde, S.C., Hallegraeff, G.M., Campbell, K., Harwood, T. and Dorantes-Aranda (2018). Single-laboratory validation of the Neogen qualitative lateral flow immunoassay for the detection of paralytic shellfish toxins in mussels and oysters. JAOAC 101(2) DOI: https://doi.org/10.5740/jaoacint.17-0135
- Dorantes-Aranda, J.J., Tan, J.C., Hallegraeff, G.M., Campbell, K.C., Harwood, D.T., Bartlett, J.K., Campas, M., Crooks, S., Gerssen, A., Harrison, K., Huet, A., Jordan, T.B., Koeberl, M., Monaghan, T., Murray, S., Nimmagadda, R., Ooms, C., Quinlani, R., Shi, Q., Turner, A., Yakes, B.J., and Turnbull, A. (2018). Detection of Paralytic Shellfish Toxins

[2] Lawrence, J.F., Neidzwiadek, B., Menard, C., 2005. Quantitative determination of paralytic shellfish poisoning toxins in shellfish using prechromatographic oxidation and liquid chromatography with fluorescence detection: collaborative study. J. AOAC Int. 88 (6) 1714-1732.

in Mussels and Oysters using the Qualitative Neogen™Lateral Flow Immunoassay: Collaborative Study. JAOAC 101 (2) DOI: https://doi.org/10.5740/jaoacint.17-0221

The incorporation of rapid test kits into risk management programs has the potential to replace 90% of the analytical tests with screening tests. This would result in a minimum saving Australia wide of $765,000 per annum (note: approximately half of this cost is for paralytic shellfish toxins). The rapid test kits also have potential to be used with other seafood species, but will need to be optimised and validated for each species.

2. **Technical report addressing the food safety risks associated with minimally processed, chilled, and extended shelf-life seafood**

Recent developments in seafood packaging, and a change in the way seafood was distributed and retailed have resulted in a desire for extended shelf-life products as retailers try to maximise shelf-life and minimise food waste post receival. The distribution of seafood in Australia has seen a move away from traditional fishmongers, and a corresponding increase in the amount of Australian seafood sold through supermarkets. In addition, there is a growing export market for Australian seafood. These changes have resulted in a desire to produce seafood that remains minimally processed, but has extended shelf-life to meet the needs of these new markets.

Many seafood processors would like to produce longer shelf-life products to meet this growing demand. Relevant packaging and processing technologies exist, however the associated food safety risks differ from the risks associated with keeping unprocessed seafood fresh and needed to be carefully considered. This is an emerging area of risk for Australian seafood as a whole, with potential to impact on the excellent food safety record of our products if not properly addressed.

Seafood Industry Victoria (SIV) recognised this emerging issue, and partnered with SafeFish to apply for a grant through the joint Food Innovation Australia Limited (FIAL) and Department of Economic Development, Jobs, Transport and Energy's Food Safety granting scheme. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) was bought in as a collaborator to produce a technical report that reviewed the processing and packaging formats that were available (e.g. thermal and non-thermal processing, Modified Atmosphere Packaging (MAP), vacuum-packaging), in relation to food safety risks in seafood, and aimed to identify key hurdles and supply chain controls that could be used in hazard management. The report was produced for seafood processors, and specified the standards that processors had to meet (FSANZ, export standards, super market quality assurance programs etc.).

The report is available on the SafeFish website: http://safefish.com.au/Reports/Manuals-and-Technical-Guidelines/Packaging-and-Processing-Seafood-Safely

Technical Reports for 2016-2017

1. **United States market access for bivalve shellfish**

SafeFish and Oysters Tasmania assisted the Australian bivalve industry to begin the process of regaining market access to the United States of America by demonstrating that there was equivalence between the food safety programs run by each entity. A lack of trade with the USA resulted in cessation of costly annual audits in the 1990's, but industry has since shown a desire to resume bivalve shellfish trade. The project was funded by the DAWR PASE grant scheme. A detailed comparison was made of the ASQAP and the USA National Shellfish Sanitation Program (NSSP), and a case study demonstrating how the Australian shellfish quality assurance system works was produced. Whilst the NSSP is highly prescriptive in comparison to the outcome based Australian program, the report highlights similar deliverables for both regulatory schemes in the majority of areas. The report will enable inter-governmental negotiations, and assist the Australian industry to understand where changes were required to achieve export approval to the US.

2. **SafeFish technical work prioritisation process**

To set the technical work program for the 2016-2017 period, a review and workshop was undertaken to identify existing and emerging food safety, trade and market access issues of concern for the seafood industry, and rank them based against an agreed set of criteria. The review collated all of the issues identified and scoped information for each around trade and market access implications, public health, regulatory impacts, economic impacts, reputational impacts (media and political) and issues associated to environment and sustainability. Following this, a workshop was held that included the partners and an external consultant. The issues were scored and ranked using a risk matrix approach to identify those that were the highest priority and would form the SafeFish work plan going forward.

The report is available on the SafeFish website: http://safefish.com.au/Reports/Technical-Reports/Hazards-affecting-Australian-seafood---October-2016

3. **Consumption Data for Abalone and Lobster in China**

Chinese cooking sometimes includes the use of abalone and lobster viscera. In order to appropriately inform risk assessments for these high value Australian seafoods when consumed in China, it was necessary to determine the extent of viscera consumption. In October 2016, SafeFish coordinated a consumption survey with a number of Chinese and Hong Kong chefs to identify the types and frequency of meals produced in restaurants that use viscera. Following this mission, a report was prepared in July 2017 that detailed the results of that survey. The report has been used to refine risk assessment activities for Southern Rock Lobster. The data is an important reference point for the assessments as they show a similar proportion of consumption when compared to recreational lobster fishers in Australia. The data collected for abalone indicated that earlier risk assessments were likely to be conservative and this data could be used in updating these risk assessments. In addition to the outputs generated for risk analysis, information on the use and perception of these products was recorded and provided to industry.

Technical Reports for 2017-2018

1. **Sulphites in Canned Abalone**

Canned abalone can currently not be exported to China due to Chinese food standards not allowing the use a meta-bisulphite in seafood. Meta-bisulphite is a food additive added to canned abalone to control the blueing colour of abalone caused by reduction of abalone blood.

A submission to allow the use of sulphites in canned abalone was produced for the China National Health and Family Planning Commission (CNHFPC) following the required template: Application form of new variety of food additive. The submission included information on function, dosage, technical necessity, quality specifications and testing methods, along with a comparison of international standards for this additive in abalone. The submission now lies with the Abalone Association of Australasia (AAA) to complete information on industry methods and alternatives prior to lodging.

2. **Food Authenticity in Seafood**

Australian food is ranked the highest by Association of Southeast Asian (ASEAN) countries in terms of safety and quality (Economist Intelligence Unit 2012). This allows our export products to attract a premium price in the market, and creates consumer demand. To date Australia has escaped a major food safety scandal but we are not immune. Food fraud in general is increasing, costing the global food industry a reported $50 billion annually with an estimated 20% of in-store and 40% of on-line food products being adulterated or counterfeited (PwC 2016).

PricewaterhouseCoopers (PwC) reported in January 2016 that one in three companies were victims of fraud. Seafood is recognised as one of four major foods & ingredients for fraud (Moore et al. 2012). Whilst individual food safety incidents can cost up to hundreds of millions of dollars, it is recognised that many food and wine exporters are currently doing too little to protect their own or Brand Australia in foreign marketplaces.

Traceability is one method of combatting food fraud, but it is not sufficient on its own. Increasingly attention is turning to methods for determining authenticity in the market. Potential technologies to confirm authenticity and provenance include DNA metabarcoding, trace metal profiling, chemical fingerprinting, stable isotope technologies, and metabolomics.

SafeFish has written a comprehensive report to critically review available authenticity tools and provide information to the Seafood industry on the current state of play relating to food authenticity in Australia, and things that they need to consider in the future.

The report is available on the SafeFish website: http://safefish.com.au/Reports/Technical-Reports/Seafood-Authenticity

Platform 4: Communications and Extension

Technical Research Extension Activities

The following extension activities were completed in addition to the technical projects undertaken each year as part of the SafeFish work program. Funding was either provided directly through the SafeFish budget, or leveraged from outside sources.

Extension Activities 2015-2016

1. **Virus Management Workshop**

   In March 2016 in Hobart, SafeFish ran a workshop around strategies to improve risk management of enteric viruses associated with sewage in shellfish growing areas. The workshop was attended by 17 participants from industry, waste water authorities, Environmental Health Officers, regulators and researchers. The Australian Shellfish Quality Assurance Advisory Committee (ASQAAC) have acknowledged the benefit of the workshop in building expertise in regulators and an understanding in the waste water industry of the impacts of sewage outfall on shellfish production.

Extension Activities 2016-2017

1. **Update of the Australian Shellfish Quality Assurance Program (ASQAP) operations manual**

   ASQAAC is a government-industry technical working group for the Implementation Sub-Committee for Food Regulation. The ASQAP Operations Manual comprises the procedures and administrative practices that, if adhered to, enable food safety programs to comply with the Australia New Zealand Food Standards Code and Export Orders as they relate to bivalve molluscs. SafeFish facilitated a review and update of the manual in 2016.

   The ASQAAC Manual is available on the SafeFish website: http://safefish.com.au/Reports/Manuals-and-Technical-Guidelines/The-Australian-Shellfish-Quality-Assurance-Program-Manual

2. **Technical exchange visit to China**

   SafeFish accompanied the STAG on a visit to China to meet with regulators and Chinese scientists to promote technical exchange between the two countries in the area of food safety and market access for seafood. It also helped to build capability for the researchers, by raising their profiles

internationally, and by allowing them to establish networks with international experts in the field. A total of nine potential project proposals were put forward for collaboration and further development with the Yellow Seas Fisheries Institute. In addition to this, meetings took place with the Chinese Cuisine Association as well as the CNHFPC to discuss and finalise the survey to determine abalone/Rock lobster consumption pattern in restaurants (see below) and to discuss a proposal to the CNHFPC to allow Australian canned abalone containing sulphites to be exported to China.

3. Harmonisation of biotoxin regulatory limits for bivalves with international standards

SafeFish was requested by ASQAAC to prepare a submission to FSANZ to bring Australian marine biotoxin maximum permissible levels for bivalve molluscs listed in the Australia, New Zealand Food Standards Code (FSC) into alignment with Codex and other international regulations. Discrepancies occur in the limit for Diarrhetic Shellfish Toxins, absence of a limit for Azaspiracids in the FSC, lack of specification on analogues that should be analysed for each toxin group, and the units of reporting used for Paralytic Shellfish Toxins. As part of this process, SafeFish has also sourced and had translated, the Chinese paralytic shellfish toxin standards to allow comparison of these and other international limits. The submission was begun in November 2015 however due to competing priorities and lack of funding, the application was halted.

4. Assistance in managing food safety incidents

SafeFish provided technical assistance to industry and regulators to assist them to appropriately manage the following incidents that occurred in the 2016-17 periods:

- Significant toxic algal blooms on the east coast of Tasmania impacting on bivalve and Southern Rock Lobster fisheries (direct response to queries from industry and State/National regulators on incident response guidance, sampling protocols and analysis)
- Vibrio outbreak in bivalve shellfish (direct advice to regulators on methods of analysis, interpretation of results, international guidance documents)
- Review of the impact of a major sewage works on a bivalve fishery (risk assessment on the potential impact to scallop and mussel fisheries)

5. ASQAAC Science Day

SafeFish and the University of Technology in Sydney (UTS) coordinated a science day on behalf of the ASQAAC committee prior to their AGM that was held in November 2016 at the University of Technology in Sydney (UTS). This event acted as a forum to bring together those with an interest in seafood safety in Australia, to share knowledge and to build professional networks. The workshop was well attended by researchers, regulators and industry participants and included presentations on marine biotoxin uptake into seafood, and bacteria or viral contamination and emerging methods for rapid screening of harmful contaminants.

Extension Activities 2017-2018

1. Technical Exchange to China

SafeFish participated in a trade mission to China with the STAG and the AAA in May 2017. The mission met with key researchers and businesses who provided information that will assist in the submission of a request to the CNHFPC to change the Chinese food standards code to allow sulphites in canned abalone. A change to the Chinese food standards code would allow Australian canned abalone containing sulphites below permitted levels to be exported to China. The exchange also assisted in raising the profile of the researchers, enabled them to more clearly understand how

the Chinese regulatory system operates, and enabled them to build networks with researchers and businesses in China that could be called upon in the future for collaboration or assistance with projects.

2. Implementation of Biotoxin test kits in Industry

A grant of $199,800 was obtained from the PASE scheme to assist the bivalve industry adopt the Neogen rapid test kit for paralytic shellfish toxins, thus improving risk management of this issue (see Validation of the paralytic shellfish toxin rapid test kits for bivalve shellfish in Technical Reports above). International biotoxin experts, Drs. Cath McLeod and Pat Holland were contracted to assist in the development of an updated chapter on Laboratory analysis for the ASQAP Manual of Operations that included a section on the appropriate use of rapid screening analyses. They also provided appropriate QA/QC advice for industry users. The development of a national policy on screening techniques will allow regulators to add this new tool to their collection of methods to manage biotoxin risk. Current tools have proven to be too slow and costly to adequately manage the biotoxin risk in some areas.

In early 2018, Seafood Training Tasmania and the University of Tasmania provided training for 25 participants from the Tasmanian shellfish industry on how to use the kits and readers to detect biotoxins. Equipment (50 test kits and seven readers) was purchased and is now available in every growing area on the east coast of Tasmania. The provision of Neogen readers and kits and training of growers in their use, will enable businesses to take control of biotoxin risk management at the farm level, enabling them to make their own decisions on harvest sales. The cost (up to $30,000 per recall) and impact of biotoxin recalls can now be avoided through the actions of the growers themselves. The provision of testing equipment in every high risk growing area in Tasmania will allow a significantly greater rate of testing than would otherwise have occurred. The large number of growers trained means that they will now be able to help each other with both technique and equipment when required.

Proficiency testing of industry showed that many industry members were proficient in the use of the test kits, however, several industry members required additional practice and training before using the kits to make harvest decisions.

The combination of workshop and proficiency testing provided in this project has built confidence, capability of users, and capacity in the rapid testing procedure, for both industry in the short term and potentially for regulators in the longer term. It has also highlighted the need for experience in the kit use, and the dangers in using the kit without adequate training and practice.

The project will benefit the whole bivalve shellfish industry, including small exporters, producers, and retailers. Benefits to small exporters are through maintaining market access to key export destinations, particularly sensitive markets like Japan and Hong Kong, and reducing market access costs. The tests are cheap enough and fast enough that exporters could test every batch leaving their premises for less than $30 per test, and have a result within 30 minutes, significantly reducing business risk. The result should lead to a significant reduction in the number of biotoxin recalls experienced by Tasmanian growers, and subsequent protection of the reputation of the state Shellfish Quality Assurance Programs, and international market access.

Last financial year the shellfish industry conducted 3835 biotoxin tests, the majority of which were for paralytic shellfish toxins (ASQAAC minutes, October 2016) at an estimated cost of $1million dollars. Only 10% of these were positive. If 50 % (SafeFish estimate) of these tests are PST tests taken to confirm a low risk, then $500,000 per annum could be saved by incorporating screening tools into state regulatory programs.

3. Technical advice to the Seafood Industry, regulators and Laboratories relating to correct methods to calculate and report on paralytic shellfish toxins in seafood.

Paralytic shellfish toxins (PST) are a complex group of over 57 different analogues, all related to Saxitoxin, but with variable toxicity to humans. Domestic and International Standards require that PST are reported as one concentration, in milligrams (mg) Saxitoxin equivalents per Kilogram (Kg) seafood. The current method for analysing PST in Australia is the Lawrence method (AOAC 2005.6[2]). This method provides results as individual analogues in micrograms per litre (ug/L). SafeFish contracted Pth Consultancy to provide independent expert advice on the procedures to use to ensure that Australian laboratories were uniformly reporting PST in accordance with domestic and International standards, which are slightly different. This advice included the selection of appropriate toxic equivalency factors. The advice was provided to all shellfish quality assurance programs, laboratories and industries undertaking marine biotoxin testing (shellfish, rock lobster and abalone industries).

4. Continuation of the Harmonisation of biotoxin regulatory limits for bivalves with international standards:

At the November 2016 ASQAAC meeting, SafeFish was requested to resume progressing the FSANZ submission on harmonising biotoxin regulations in Australia if time permitted (an application had previously been started in 2015 but was never completed). SafeFish facilitated a number of meetings with FSANZ to progress the application, and at the 2017 ASQAAC meeting a workshop was held to answer questions that had been identified throughout the process that aimed to define the scope of the application going forward. ASQAAC could not agree on whether a submission for harmonisation should be proposed to FSANZ, so it was requested that SafeFish collate toxin data for all states to get a better understanding on the effect of changing the current biotoxin standards would have.

5. Workshop addressing the food safety risks associated with minimally processed, chilled, and extended shelf-life seafood - workshop, simplified guide and poster

In June 2017, a technical report addressing the food safety risks associated with minimally processed chilled, and extended shelf-life seafood was simplified and made into a user-friendly industry ready guide. This was then used as a training tool at a free SafeFish workshop (hosted and run by CSIRO) to build participants capability and understanding of the techniques and processes available to control key food safety hazards during the processing and packaging of seafood. The one-day workshop was attended by 25 participants from various seafood retailer/distributor bodies, regulatory bodies, and research facilities. The guide was provided to participants in addition to a poster detailing a number of important critical control points relating to specific processing techniques that are commonly used.

6. Microplastics in Seafood

Following a number of public enquires and ongoing media attention around this issue, SafeFish was requested to undertake a small literature review to determine how widespread the issue of microplastics in Australian seafood was, the risks and impacts it may have for the industry, and to document current international activities in this area. This document was presented to the SafeFish partners at their July 2017 meeting where it was discussed and deemed as an emerging issue that would be kept as a watching brief. Following these discussions, it was also requested that the literature review be turned into a simplified fact sheet for industry and put on the website for information.

In early 2018, SafeFish were approached by the University of Adelaide to collaborate on an FRDC proposal for funding for a project around marine plastic pollution in seafood. The proposal aims to determine how widespread the presence of plastics in Australian seafood sold for human consumption is, how this varies across the country (including from metropolitan and non-metropolitan markets), as well as placing the presence/absence of plastics in seafood into the international context to determine how bad the situation is in Australia. SafeFish was involved in

drafting the proposal and would assist in the dissemination of information through the correct channels, and have a role on the steering committee should the project be approved.

A fact sheet on Microplastics in Seafood is available on the SafeFish website: http://safefish.com.au/Reports/Food-Safety-Fact-Sheets/Microplastics-in-Seafood

7. **Assistance in managing food safety incidents**

SafeFish has continued to provide technical assistance in the form of incident response advice & management, to industry and regulators to enable them to appropriately manage food safety incidents when they arise. In 2017-18 SafeFish continued to provide assistance with managing the toxic paralytic shellfish poison bloom that occurred on the East Coast of Tasmania, impacting on bivalve, abalone and Rock Lobster fisheries.

SafeFish Annual Reports

An annual report for SafeFish has been produced for the periods of July 2015 to June 2016 and July 2016 to June 2017. These reports were published on the SafeFish website and were disseminated via electronic and hardcopy distribution to all SafeFish stakeholders.

Relevant information in this final report will be compiled into an annual report for the period of July 2017 to June 2018.

Copies of all years annual reports can be found on the SafeFish website: http://safefish.com.au/Reports/Annual-Reports

Technical Networks

SafeFish maintains an extensive network of contacts from production to consumption comprising a wide range of skills and expertise that can be drawn-upon when required. This network is used to provide fisheries and aquaculture sectors expertise, perspective and practical implementation advice on technical barriers to trade, scientific advice to resolve technical barriers to trade, and assist in providing input into the development of Codex standards. This group has knowledge in a wide range of fisheries and food safety disciplines including residues, microbiology, viruses, natural toxins, risk assessment, epidemiology, economics, consumer science, trade, public health, nutrition and Codex.

Communication Strategy and Plan

A stand-alone communication strategy was developed to formalise SafeFish communication efforts. A survey was undertaken to identify how stakeholders wanted to receive communications, and what they wanted to hear. This was then used as the basis to develop the following:

- A media communication pathway (including processes to follow during incident response)
- Groups of stakeholders SafeFish communicates with
- A risk overlay of how information was communicated
- The specific outputs that SafeFish communicated annually
- A communication plan specifying for each group of stakeholders the frequency, types of material and best methods of contact.

Website

The SafeFish website was updated and migrated to a new back-end operating system in 2017 to assist with design and functionality issues that the Secretariat was encountering. It was also re-designed to follow a similar theme/layout to the FRDC and other partner websites to ensure consistency across the board and brand recognition. In early 2018 a redesign of the reports page was commissioned to improve the search-

ability function, by introducing filters by category and species. This will enable users to find and link to reports more easily.

An update on the most commonly visited/downloaded content accessed via the website and the demographic of users was presented at each partners meeting to demonstrate the value of the website as a communication tool to SafeFish stakeholders. In the 2017-2018 period, there 1,600 hits to the SafeFish website (with approximately 300 monthly, 80 weekly and 20 daily users). The most popular pages visited were the homepage and the technical program section and the main demographic of users were from Australia, the USA and China.

SafeFish Updates

The following quarterly updates on activities and technical work was provided to industry stakeholder associations meetings and can be accessed from the SafeFish website: http://safefish.com.au/Media-Centre

- An overview of SafeFish activities was provided for publication in the Seafood Trade Matters newsletters (July and October 2016; January, March, June and September 2017; January, April and July 2018).
- An update of SafeFish projects was also provided multiple times per year on request to SRL, ACA, MIA, Oysters Australia and the Sydney Fish markets board meetings to inform them of the work that was being undertaken
- From July 2017, a communique was produced following each partners meeting, detailing the main discussion points. This was distributed to relevant stakeholders (via direct dissemination and through the website).

SafeFish Enquiries

SafeFish provided responses to technical enquiries around food safety and market access to industry, regulators and consumers on demand throughout the life of the project. Throughout this period, SafeFish received 67 separate enquiries, most of which were issue based and involved the Secretariat providing advice on appropriate contacts in the field or where to get further information around the topic. Other enquiries received were notifications of potential emerging issues.

Scientific Peer Review

In order to ensure that research undertaken was of a high standard and robust in nature, SafeFish contracted relevant experts in the following fields to undertake scientific peer reviews of the following technical reports:

- Industry guide to addressing the food safety risks associated with minimally processed, chilled, and extended shelf-life seafood – peer review undertaken in March 2016 by Dr. Graham Fletcher (Plant and Food, New Zealand)
- Food Authenticity in Seafood – peer review undertaken in May 2018 by Dr. Garry Lee (Food Science Solutions)

Meetings, Presentations and Workshops

From 2015 to 2018 the SafeFish Secretariat has:

- attended and presented at fourteen different national and international conferences relevant to seafood

- facilitated nineteen stakeholder meetings to develop projects or provide updates on SafeFish activities
- attended and presented at eighteen industry meetings/research and development days/workshops,
- hosted four international delegations and provided them with an overview of the activities that SafeFish undertakes
- coordinated and participated in two technical exchange visits to China
- established and facilitated two working groups of experts to address food safety issues around Diarrhetic Shellfish toxins (DST) (assisting in facilitating the process of harmonising biotoxin standards in Australia with other international jurisdictions) and Ciguatera (which has the potential to lead the implementation of guidelines for risk reduction of ciguatera fish poisoning and increased expertise in the area in Australia), and
- organised four workshops to communicate research outputs.

A detailed list of meetings, presentations and workshops that SafeFish have facilitated, attended and presented at are included in Appendix 3.

Magazine Articles and Publications

To enable the dissemination and communication of the research that SafeFish has undertaken, the following articles were produced and published in seafood related subscriptions:

- SafeFish assisted to compose the following articles for the FRDC Fish magazine:
  - Volume 26, Number 1 – March 2018 'Proactive testing tackles algal culture'. This article provided an overview of the research on PST validation kits that was undertaken, how it all came about and what it would mean for the industry in the future.
  - Volume 24, Number 2 – June 2016 'Balancing the benefits of Seafood'. This article relates to the review that SafeFish commissioned that detailed that the benefits of eating seafood containing omega-3's versus the risks from potential mercury ingestion.
  - Volume 22, Number 2 – June 2015 'Seafood and the food-safety golden rules'. This article details the risk of scombroid fish poisoning following the food safety incidents that occurred in Sydney and Bali.
  - Volume 23, Number 1 – March 2015 'Algal toxins have little impact on Abalone' and 'Expertise underpins safe fish trade'.
- Two articles were published on the Woman's Industry Network Seafood Community (WINSC) website in March 2018 celebrating the roles and achievements of the SafeFish Program Manager Alison Turnbull and SafeFish Chair Dr. Anne Astin.

Technical and Communication Outputs

A list of all of the technical and communication outputs that SafeFish have completed throughout the life of the project can be found below in the 'Project Materials Developed' section.

Discussion and Conclusion

SafeFish has successfully completed another three years of operation, building on work conducted under the original ASCRC project. The volume of work conducted over the three years is significant and varied. The drivers for this work have been both proactive and reactive.

On the proactive front, over forty submissions were made to six different Codex Committees, with over 300 documents being reviewed for potential requirements/standards that may have affected the Australian seafood industry. This has contributed to the development of international standards and guidelines that are risk commensurate to the Australian situation, avoiding unwarranted food safety requirements. SafeFish has also proactively worked to assist industry and regulators to assess emerging risks such as microplastics and per- and poly-fluoroalkyl substances (PFAS). Such assessments increase our knowledge of the issues, and determine whether there is a need for further investment in terms of additional research or management. SafeFish has also produced technical documents to assist industry to argue for increased market access. Examples include the industry submission to China to allow sulphites in canned abalone and the assessment of the Australian Shellfish Quality Assurance Program against the United States requirements. We have also produced technical information on managing food safety hazards when producing novel products with extended shelf-life, assisting industry to meet an increasing consumer demand, without damaging the current excellent food safety record of Australian seafood. Finally, we provided information packages to inform and arm the seafood industry during media attention relating to illness that may occur from seafood consumption.

On the reactive front, SafeFish has assisted industry to improve risk management of known hazards. An example of this was the work conducted on marine biotoxins in Tasmania. The extreme toxicity of the alga blooming in Tasmania presents a risk that the current management tools are too unwieldy to adequately manage – toxicities rise so quickly that the expensive and time consuming analytical techniques currently used cannot effectively provide enough information to manage the risk. As a result there has been many food safety failures with contaminated stock reaching market, resulting in high public health risk and shellfish recalls. High value species such as rock lobster and abalone have also been impacted, and new tools are required to adequately manage these fisheries as well. SafeFish leveraged funding from the DAWR for two projects in this field, one to validate a commercially available rapid PST test kit, and another to assist industry and regulators in the uptake of this screening tool. For a cash investment of $15,000, SafeFish leveraged a total of $299,800 to address the issue. As a result, every growing area on the east coast of Tasmania now has the equipment, consumables, and the required training to conduct PST screening on every harvest during the high risk biotoxin season. In addition, the national shellfish quality program will debate the potential for using these kits in low risk situations to screen for toxins, potentially saving the national industry over $500,000 in analytical testing costs per annum.

During this three year term, SafeFish has built strong governance and a model of operations that the partners agree should continue into the future. The future funding of SafeFish by industry stakeholders has provided the means to continue the work, following the same governance procedures.

Perhaps the greatest value from the partnership approach has been the successful leveraging of expertise and time provided by FSANZ, DAWR, FRDC, key industry members and researchers. We now have an active, engaged group of representatives, investing time and resources in key issues that impact seafood safety and trade. This group responds collaboratively on a number of levels and through a variety of routes, and is a strong asset to the seafood industry going forward.

Another important benefit from SafeFish has been the development of capability to address food safety and market access issues in Australia. SafeFish has invested in training regulators, researchers and industry personnel. We have provided opportunities for travel to technical conferences, organised expert working groups to address key issues and built laboratory expertise where required.

The robust prioritisation process enables all stakeholders to submit issues for consideration and assessment. The results allow resources (both industry and government) to be directed at the current and emerging issues of greatest importance to the Australian seafood industry. This allows the best use of limited resources.

Overall, SafeFish has met the objectives of the project by delivering robust food safety research and advice to industry and regulators to underpin Australia's reputation as a producer of safe seafood, and by maintaining and enhancing the capabilities of SafeFish to provide that research and advice in a cost effective, efficient and timely manner. The increased support from the seafood industry to continue to fund SafeFish for a further three years is testament to the success of this project, and the need for such work in Australia.

Implications

SafeFish uses the Core funding received from FRDC and industry to carry out three types of projects:

1. Food safety incident responses.
2. Technical input to inter-government consultations on food regulations and market access.
3. Proactive research, risk analyses and training.

Through these combined activities, SafeFish helps to enable market access and to maintain an excellent food safety record for Australian seafood. If these two objectives are not met effectively, there are a number of potential negative consequences:

- Risks associated with consumption of unsafe seafood increase, illnesses occur
- Food safety compliance costs increase to the point where businesses cannot viably access certain markets
- Reputation and brand is damaged due to illness or non-compliance with food safety regulation occurs. Experience shows that market access can be impacted significantly
- International and domestic trade of Australian seafood decreases
- Investors at all points of the supply chain suffer economic loss.

The current SafeFish project has demonstrated the need for such services, and the provision of future funding from industry and FRDC, with continued investment from FSANZ, and DAWR has demonstrated the desire of key stakeholders to continue these activities. The new funding provides opportunity for increased involvement from the various seafood sectors, and builds the collaborative model further. Recent active engagement with Seafood New Zealand and the New Zealand Seafood Food Safety Program will increase collaboration and access to expertise, as New Zealand and Australia are dealing with common food safety and market access issues.

Recommendations

The FRDC and industry bodies (ACA, AAGA, ACPF, AMIA, OA, SRL, Sydney Fish Markets, TSGA and FRDC RACs) have agreed to fund SafeFish for a further three years to enable a continuity in the services and protection to the Australian seafood brand that the provision of SafeFish services offer. At the April 2018 SafeFish partners meeting, the participants reviewed the current SafeFish model of operation to assess if this was still appropriate given the change in funding arrangements going forward. The SafeFish partners recommend:

- the mode of operation should not change
- SafeFish should work to broaden the stakeholder base and increase avenues for input
- financially contributing industries as well as all other SafeFish stakeholders should be invited to be involved in the generation of the SafeFish work program through the formal prioritisation process. This is scheduled to occur in July 2018 and will set the technical work programme for SafeFish for the 2018-19 period.
- The format for prioritisation should enable more industry involvement and transparency within this process.

A significant difference in the operation of SafeFish post June 2018 is that there will be increased funds to cover salaries and technical work. It was identified in the business model review in 2015 and the value proposition in 2017 that the work provided by the Secretariat far outweighed the funding that was being provided. By increasing the salary component, the Secretariat will now be able to fund a codex coordinator and project support officer to assist the program manager and executive officer on a part-time basis, a total of 1.1 FTE compared to 0.8 FTE previously (it should be noted that there have been significant in-kind contributions provided by SARDI for the running of the Secretariat, and this will continue). The technical work funds have also been increased to $55,000 per annum, and it is up to the discretion of the partnership members on how this is allocated to be spent (depending on what issues of priority are identified each year).

SafeFish is also currently monitoring changes in Codex policies for histamines, ciguatoxins, methylmercury and lead in fish. These changes are ongoing and dependent on the progression of the relevant committees in which they sit. Given this, technical input will continue to be provided in consultation with the Australian seafood industry to Codex Australia around this issues if and when they progress further.

Underpinning the actions of SafeFish is the reliance on scientific fact and process to drive response to incidents and standard development. This has been key to the successes at Codex, and to provision of information to industry and regulators. Whilst increasing it’s stakeholder base, SafeFish needs to be mindful to continue to rely on science to remain a trusted independent voice.

Extension and Adoption

Extension and adoption has been a major component of the SafeFish program and has been covered in detail in the results section of this report. The significant number of presentations and meetings attended by SafeFish staff, and the wide distribution of SafeFish outputs has ensured that the seafood industry and regulators are well aware of SafeFish and the activities it undertakes. Close engagement with stakeholders and active investment in adoption has helped to facilitate uptake of research into policy and improved risk management practices.

As discussed above in further development, the SafeFish project has been funded to continue providing the same services from July 2018 to June 2020. The communication and extension plan will therefore continue to be followed and updated as necessary to ensure that all stakeholders are aware of the outputs that are being produced.

To update stakeholders on what SafeFish has achieved from 2015-2018, the FRDC final report will be distributed electronically to all interested parties. An annual report detailing the activities from the July 2017 to June 2018 period will also be completed, distributed and included on the SafeFish website.

All historic materials will be retained on the SafeFish website to ensure free access to any interested party, and new communications will be added as they are developed.

Project coverage

In the life of the project, seven news articles based on research outputs or processes that SafeFish runs have been produced in seafood related publications.

In addition to the news articles produced, during the histamine in tinned tuna, and Hepatitis A Virus detected in berries public health incidents, SafeFish assisted the FRDC by producing informative fact sheets (and question and answer packages) to assist the seafood industry. Alison Turnbull was also interviewed by the ABC radio in October 2016 on the research that SafeFish undertook on the biotoxin rapid test kits, their benefit to the industry, and how the work came about.

Project materials developed

The following is a list of all of the technical and communication outputs that SafeFish have completed throughout the life of the project:

- Brochure on the successes and outcomes of SafeFish achieved for the Australian Seafood Industry 2010-2015
- Technical review on Arsenic in Australian seafood: A review and analysis of monitoring data 2000 – 2013: http://safefish.com.au/Reports/Technical-Reports/Arsenic-in-Australian-Seafood
- Technical report on Seafood consumption in Australia: risks and benefits: http://safefish.com.au/Reports/Technical-Reports/Seafood-Consumption-in-Australia-Risk-and-Benefits
- Fact sheet and Q&A package on Hepatitis A Virus: http://safefish.com.au/Reports/Food-Safety-Fact-Sheets/Hepatitis-A-Virus-FAQ-and-Fact-Sheet
- Fact sheet and Q&A package on Scombroid fish poisoning: http://safefish.com.au/Reports/Food-Safety-Fact-Sheets/Scombroid-Fish-Poisoning-FAQ-and-Fact-Sheet
- Review on mercury and Omega-3 oils in Australian seafood: risks and benefits of seafood consumption: http://safefish.com.au/Reports/Technical-Reports/Mercury-and-Omega-3-Oils-in-Australian-Seafood
- Brochure on seafood safety including individual fact sheets on: http://safefish.com.au/Reports/Food-Safety-Fact-Sheets/Seafood-Safety-Brochure
    - Amnesic Shellfish Poisons
    - Ciguatera Fish Poisoning
    - *Clostridium botulinum*
    - *Listeria monocytogenes*
    - *Escherichia coli*
    - Hepatitis A Virus (HAV)
    - Histamine Poisoning
    - Toxic Metals
    - Norovirus (NoV)
    - Okadaic acids/Diarrhetic Shellfish poisons
    - Paralytic Shellfish Poisons (Saxitoxins)
    - Salmonella
    - *Staphylococcus aureus*
    - Vibrio
    - Wax Esters
- SafeFish operational strategies: business model review
- SafeFish value proposition review
- SafeFish Prioritisation Process:

  - 2016 Hazard Identification Report (for industry): http://safefish.com.au/Reports/Technical-Reports/Hazards-affecting-Australian-seafood---October-2016
  - 2016 Workshop Report
  - 2016 Prioritisation Scoping Document

- Fact sheet on microplastics in seafood: http://safefish.com.au/Reports/Food-Safety-Fact-Sheets/Microplastics-in-Seafood
- Application to Ministry of Health of the Peoples Republic of China on sodium metabisulfite use in Abalone. Application prepared by SafeFish and currently residing with the AAA for finalisation and submission.
- SafeFish co-ordinated response from the ASQAAC to the DAWR Proposals for changes to the inspection and analysis of imported foods
- Report for US Federal Drug Bureau on Australia's shellfish quality assurance systems. To assist in negotiations for opening the market to Australian bivalve shellfish.
- Technical report addressing the food safety risks associated with minimally processed, chilled, and extended shelf-life seafood: http://safefish.com.au/Reports/Technical-Reports/Identification-of-Food-Safety-Hazards-and-Determination-of-Shelf-life-of-Packaged-Seafood
- Final report for Department of Agriculture and Water Resources: Implementation of a rapid screening tool for biotoxins (Project number 4-58Z6WSX)
- Industry guide on Packaging seafood safely: http://safefish.com.au/Reports/Manuals-and-Technical-Guidelines/Packaging-and-Processing-Seafood-Safely
- Poster on principle process techniques for packaging seafood safety
- Interim report from SafeFish working group on Ciguatera fish poisoning
- Authenticity for the Australian seafood sector: A review of available tools to identify substitution and mislabelling: http://safefish.com.au/Reports/Technical-Reports/Seafood-Authenticity
- SafeFish Communications Survey
- SafeFish Extension and Adoption Plan
- SafeFish Communication Strategy
- SafeFish Charter: http://safefish.com.au/About
- SafeFish Discussion Document: The future of SafeFish 2018-2021
- SafeFish annual report 2015-2016: http://safefish.com.au/Reports/Annual-Reports/2015-2016-SafeFish-Annual-Report
- SafeFish annual report 2016-2017: http://safefish.com.au/Reports/Annual-Reports/2016-2017-SafeFish-Annual-Report

Appendix 1:
Project Staff and Researchers

SafeFish Secretariat Staff

- Independent Chair – Dr. Anne Astin (contracted annually and retained on a stipend)
- Program Manager – Ms. Alison Turnbull
- Executive Officer – Ms. Natalie Dowsett
- Codex Coordinator – Mr. Stephen Pahl
- Administrative Support Officer – Ms. Navreet Mahli

SafeFish Partnership Members July 2015 – June 2016

- Dr. Anne Astin (Independent Chairperson)
- Ms. Alison Turnbull (ASQAAC Chair)
- Dr. Marion Healey (FSANZ)
- Mr. Mark Boulter (Sydney Fish Markets)
- Ms Alexandra McMannus (DAWR), Export Standards Branch)
- Ms. Lynda Hayden (DAWR, Export Standards Branch)
- Mr. Norman Grant (SIA)
- Ms. Shelley Alderman (DAWR, Dairy, Eggs and Fish Program)
- Mr. Alistair MacFarlane (Seafood New Zealand – Observer)
- Dr. Glenn Stanley (FSANZ)
- Mr. Spiro Markantonakis (Dover EX27 - STAG representative)
- Dr. Patrick Hone (FRDC)

SafeFish Partnership Members July 2016 – June 2017

- Dr. Anne Astin (Independent Chairperson)
- Ms. Alison Turnbull (ASQAAC Chair)
- Mr. Mark Boulter (Industry Representative for Sydney Fish Markets and SIA)
- Ms. Cristina Lesseur (Simplot Australia – Retailers Association Representative)
- Ms. Slava Zeman (DAWR, Food and Animal Bi products)
- Ms. Shelley Alderman (DAWR, Dairy, Eggs and Fish Program)
- Mr. Alistair MacFarlane (Seafood New Zealand – Observer)
- Dr. Glenn Stanley (FSANZ)
- Mr. Spiro Markantonakis (Dover EX27 - STAG representative)
- Dr. Patrick Hone (FRDC)
- Ms. Nicole Stubing (FRDC)

SafeFish Partnership Members July 2017 – June 2018

- Dr. Anne Astin (Independent Chairperson)
- Mr. Phil Baker (ASQAAC Chair)
- Mr. Mark Boulter (SIA)
- Mr. Erik Poole (Industry Representative for Sydney Fish Markets)
- Ms. Cristina Lesseur (Simplot Australia – Retailers Association Representative)
- Ms. Slava Zeman (DAWR, Food and Animal Bi products)
- Dr. Rochelle Prattley (DAWR, Food and Animal Bi products)
- Ms. Shelley Alderman (DAWR, Dairy, Eggs and Fish Program)

- Ms. Cathy Webb (Seafood New Zealand – Observer)
- Dr. Glenn Stanley (FSANZ)
- Dr. Ramez Alhazzaa (FSANZ)
- Mr. Spiro Markantonakis (Dover EX27 - STAG representative)
- Dr. Patrick Hone (FRDC)
- Ms. Nicole Stubing (FRDC)
- Ms. Jane Lovell (SIA)

SafeFish Contractors 2015-2018

The following contractors were engaged to assist with preparing technical research, to facilitate technical workshops, to undertake scientific peer reviews and/or to provide translation/interpreter services.

- Dr. Len Stephens (contracted to compile a value proposition of SafeFish)
- Mr. Simon Liu Song (contracted to undertake translation and interpreter services)
- Dr. Anne Astin (contracted as Independent SafeFish Chair 2015-2018)
- Dr. Garry Lee (contracted to undertake a peer review of the SafeFish Seafood Authenticity Report)
- Dr. Cathy Moir (contracted to develop the packaging and processing guide for seafood)
- Dr. Graham Fletcher (contracted to undertake a peer review of the packaging and processing guide for Seafood)
- Dr. Brenda Hay (contracted to run the virus management workshop)
- Drs. Cath McLeod and Pat Holland (contracted to draft a policy on laboratory methods for the ASQAP Operations Manual, and to provide advice on the correct methods for calculating and expressing saxitoxin equivalences for PSTs)
- Dr. Sarah Ugalde, IMAS and Seafood Training Tasmania (contracted to provide training and assistance in the proficiency trial during the PASE project to implement rapid biotoxin screening tests in Tasmania)

SafeFish Working Groups, Teleconferences and Workshops
Technical experts were convened to discuss and progress technical issues at working groups and in teleconferences. Workshops to extend research outputs were also facilitated and are show below:

Ciguatera Teleconference – Responding to call for data from FAO/WHO

- Ms. Alison Turnbull (Chair) – SARDI Food Safety & Innovation/SafeFish
- Mr. Steve Carter – Queensland Forensic and Scientific Services
- Dr. Ramez Alhazzaa - FSANZ
- Ms. Sue Poole – Queensland Department of Agriculture and Fisheries
- Dr. Glenn Stanley - FSANZ
- Mr. Stewart Carswell – Queensland Forensic and Scientific Services
- Dr. Shauna Murray – University of Technology, Sydney
- Dr. Ian Stewart – Queensland Department of Health/Griffith University
- Dr. Richard Lewis – University of Queensland
- Mr. Anthony Zammit – NSW Food Authority
- Ms. Natalie Dowsett - SARDI Food Safety & Innovation/SafeFish
- Dr. Andreas Seger - SARDI Food Safety & Innovation

Biotoxin Harmonisation Teleconference – FSANZ Application for Harmonisation

- Dr. Ramez Alhazzaa - FSANZ
- Dr. Glenn Stanley - FSANZ

- Dr. Shauna Murray – University of Technology, Sydney
- Ms. Alison Turnbull – SARDI Food Safety & Innovation
- Ms. Natalie Dowsett – SARDI Food Safety & Innovation

Biotoxin Harmonisation Working Group

- Ms. Alison Turnbull – SARDI Food Safety & Innovation
- Ms. Natalie Dowsett – SARDI Food Safety & Innovation
- Mr. Mark Boulter – Safe Sustainable Seafood
- Ms. Katrina Wilson – TSQAP, DPIPWE
- Mr. Hayden Dyke – Tasmanian Oyster Industry
- Mr. Andrew Clarke – Victorian Fisheries Authority
- Ms. Tracey Stamp – WA Department of Health
- Mr. Stuart Helleren – Dalcon Environmental
- Mr. Murray Barton – NT Fisheries
- Ms. Shelly Alderman – DAWR Export Division
- Ms. Navreet Malhi – SARDI Food Safety & Innovation
- Ms. Pat Spire – DAWR
- Mr. Andrew Bradbury – Symbio
- Mr. Brian Roughan - New Zealand MPI
- Mr. Phil Baker - NSW Food Authority
- Mr. Paul Dowsett – Biosecurity SA
- Mr. Anthony Zammit – NSW Food Authority
- Mr. Clinton Wilkinson – SARDI
- Mr. Mike Pengelly – WA DPIRD
- Mr. Steve Brett – Microalgal services
- Ms. Sue Grau – Oysters Tasmania
- Ms. Amita Bernadi – Primesafe Victoria
- Ms. Trudy McGowan – SA Oyster Growers Association

Virus Management Workshop

- Mr. Anthony Zammit – NSW Food Authority
- Mr. Phil Baker - NSW Food Authority
- Ms. Hazel Farrell – NSW Food Authority
- Ms. Yvette Dethridge – DAWR Imported Foods Section
- Ms. Jane Clout – Oyster Farmer
- Mr. Andrew Clarke – Victorian Fisheries Authority
- Ms. Patricia Spire – DAWR
- Ms. Amita Bernadi – Primesafe
- Ms. Judi Marshall – Taswater
- Mr. Owen Hunt – DPIPWE
- Ms. Megan Burgoyne – DPIPWE
- Ms. Alison Turnbull – SARDI Food Safety & Innovation
- Dr. Brenda Hay – Aquabio consultants
- Mr. Neil Stump – Oysters Tasmania
- Mr. Grant Webster – NSW Food Authority

Processing and Packaging Guide Workshop

- Ms. Jessica Mignano - Mainstream Aquaculture
- Mr Craig McCathie – Port Lincoln Fresh Fish Co
- Ms. Sandy Harder – Port Lincoln Fresh Fish Co
- Mr Will Schwarz – Simplot
- Ms. Shreya Chokasi-Iyer – Simplot
- Ms. Liz Matthews – Simplot
- Mr Boris Musa – Main Aquaculture
- Dr. Rochelle Prattley – DAWR
- Mr Spiro Argyros – SJS Seafoods
- Ms. Nicole Stubing – FRDC
- Mr Peter Lamb - Tassal
- Mr Charles Nelson – AFCOL
- Ms. Parvin Walia – University unknown
- Mr James Calvert – Tas Prime Oysters
- Mr Peter Mellios – Steve and Cons Seafoods Pty Ltd
- Ms. Alice Cheung – DAWR
- Mr George Hatzipanagiotis – Oyster Growers Seafood
- Ms. Shelly Alderman – DAWR
- Mr Maomao Chen – Kansome Unmatched Fine Foods
- Ms. Doris Wong – Kansome Unmatched Fine Foods
- Mr Wayne Kelly – Feed of Fish
- Mr Matt Dutura – Feed of Fish
- Mr Phil Golledge – DAWR

Input into Codex and /or other International Standard Setting Processes

The following stakeholders were consulted with and provided input into Codex and other international standard setting processes through SafeFish:

- *CCCF - 14 CX/CF 15/9/13 –Maximum levels for methylmercury in fish*

  Mark Boulter (Sydney Fish Markets)

- *CCFFP – 2nd Draft Discussion Paper on Histamine*

  Alison Turnbull, Natalie Dowsett and Stephen Pahl (SARDI Food Safety & Innovation)

- *CCFFP - 3rd Round of Electronic working group (eWG) report relating to the proposed draft Code of Practice (CoP) on the processing of fresh and quick frozen raw scallop products*

  Bob Lister (Tasmanian Scallop Fishermans Association, Hamish Ch'ng (Far West Scallops) and Paul Hodson (Urangan Fisheries)

- *CCFFP - 4th Round of Electronic working group (eWG) report relating to the proposed draft Code of Practice (CoP) on the processing of fresh and quick frozen raw scallop products*
  Stuart Richie (Tasmanian Scallop Fishermans Association), Bob Lister (Tasmanian Scallop Fishermans Association, Hamish Ch'ng (Far West Scallops) and Paul Hodson (Urangan Fisheries)

- *CCFFP - Final Electronic working group (eWG) report relating to the proposed draft Code of Practice (CoP) on the processing of fresh and quick frozen raw scallop products*

  Stuart Richie (Tasmanian Scallop Fishermans Association), Bob Lister (Tasmanian Scallop Fishermans Association, Hamish Ch'ng (Far West Scallops) and Paul Hodson (Urangan Fisheries)

- *CCFH - General Principles for Food Hygiene and its HACCP Annex*

Mark Boulter (Sydney Fish Markets), Tamira Thompson (SARDI Food Safety & Innovation)

- *CCFA - Alignment of the Food Provisions of Commodity Standards and Relevant Provisions of the GSFA*

  Stephen Pahl (SARDI Food Safety & Innovation), Alison Turnbull (SARDI Food Safety & Innovation)

- *CCFH - 'Histamine Work Plan' prepared by the Electronic Working Group on the Guidance for Histamine Control in the Code of Practice for Fish and Fishery Products (CAC/RCP 52-2003) and Sampling Plans for Histamine in Standards for Fish and Fishery Products*

  Stephen Pahl (SARDI Food Safety & Innovation), Alison Turnbull (SARDI Food Safety & Innovation)

- *CCFH - Application of General Principles of Food Hygiene to the Control of Foodborne Parasites.*

  Mark Boulter (Sydney Fish Markets), Jim Raptis (Raptis Seafoods), Peter Sperou (Angelakis Bros), Franca Romeo (Wildcatch Fisheries SA), Abalone Council Australia

- *CCFH - General Principles of Food Hygiene (CX/FH 16/48/5)*

  Tamira Thompson (SARDI Food Safety & Innovation)

- *CCCF - Response to the invitation to comment on the circular letter on the relevant work to be considered for ciguatoxins.*

  Mark Boulter (Sydney Fish Markets), Shuana Murray (University of Technology, Sydney), Andrew Bradbury (Advanced Analytical), Richard Lewis (University of Queensland), Ian Stewart (University of Queensland), Sue Poole (Queensland Department of Agriculture and Fisheries), Lyndon Llewellyn (AIMS), Tim Harwood (Cawthron)

- *CCCF - Draft MLs for lead as part of Circular Letter CL 2017/23-CF*

  Stephen Pahl (SARDI Food Safety & Innovation)

- *CCCF - Discussion Paper on Maximum Levels for Methylmercury in Fish*

  Claire Webber (Australian Southern Bluefin Tuna Industry Association) Mark Boulter (Safe Sustainable Seafood), Trent D'Antingnan (Cleanseas Tuna)

- *CCFH - Code of Practice for Fish and Fishery Products*

  Stephen Pahl (SARDI Food Safety & Innovation)

- *Circular Letter (CL 2017/70-FH) regarding the proposed draft guidance for histamine control in the Code of Practice for Fish and Fishery Products (CAC/RCP 52-2033)*

  Tuna Australia, Australian Southern Bluefin Tuna Industry Association, Cleanseas, South Australian Sardine Industry Association, Tasmanian Salmon Growers Association, Great Australian Bight Fishing Industry Association, South East Trawl Fishing Industry Association, Lakes Entrance Fishermen's Co-operative Ltd, Major fish markets (Sydney, Darwin, Melbourne), State and national industry councils (National Aquaculture Council, Commonwealth Fisheries Association, Northern Territory Seafood Council, Western Australian Fishing Industry Council, Aquaculture Council of Western Australia, Tasmanian Seafood Industry Council, Seafood Industry Victoria, Wildcatch Fisheries SA, Queensland Seafood Industry Association, South Australian Aquaculture Council), and several individual companies known to export seafood.

- *Draft revision of the Code of Practice for Fish and Fishery Products as part of the CCFH Histamine eWG (new section for fish at risk for scombrotoxin formation)*

  David Ellis (Tuna Australia, Ltd), Cristina Lesseur (Simplot)

- *Draft Maximum Levels for Methylmercury in fish Including Associated Sampling Plans*

  Kirsten Rough (Australian Southern Bluefin Tuna Industry Association), Mark Boulter (Safe Sustainable Seafood), Trent D'Antignana (Clean Seas Seafood), David Ellis (Tuna Australia), Trent Timmiss (AFMA) Dylan Skinns and Rhys Arangio (Austral Fisheries), Renee Vajtauer (Commonwealth Fisheries Association)

Appendix 2:
Codex Input Provided by SafeFish

In 2015-16, SafeFish has developed positions and/or notified key stakeholders for the following topics

- July 2015 – Comments provided on the discussion paper on histamine.
- November 2015 – Comments provided on the Code of Practice for processing of Fresh and Quick Frozen Raw Scallop Products, processing of Fish Sauce.
- March 2016 – Notified key industry representatives on discussions surrounding the unintended presence of veterinary drugs residues in foods from feed.
- April 2016 – Reviewed report from 48th Session of CCFA and maintain watching brief on the use of food additives associated to non-standardised smoked fish products and the alignment of 10 frozen fish commodity standards.
- May 2016 – Reviewed report from the 10th Session of CCCF and maintain watching brief on the discussion paper for the development of maximum levels (MLs) for methylmercury in fish.
- May 2016 – Comments provided on the discussion paper to develop guidance and sampling plans for histamine.
- May 2016 – Notified representatives of key industry sectors on a CCFA request for information on use levels for adipic acid.
- June 2016 – Comments provided on the General Principles of Food Hygiene to the control of foodborne parasites.
- June 2016 – Notified key industry representatives of new MRLs and Risk Management Recommendations for the following veterinary drugs; oxytetracycline, emamectin benzoate and flumequine.

In 2016-17, SafeFish has developed positions and/or notified key stakeholders for the following topics

- July 2016 – Reviewed document on the revision of the General Principles of Food Hygiene and maintain watching brief.
- August 2016 – Comments provided on the histamine work plan.
- August 2016 – Reviewed draft revision of the General Principles of Food Hygiene and maintain watching brief.
- September 2016 – Comments provided on the alignment of food additive provisions in 10 commodity standards for frozen fish products.
- September 2016 – Reviewed discussion paper on the unintended presence of residues of veterinary drugs in food commodities resulting from the carry –over of drug residues into feed and maintain watching brief.
- October 2016 – Comments provided on the draft guidance on histamine control and sampling plans for histamine.
- October 2016 – Reviewed report from the 23rd Session of CCRVDF and maintain watching brief on the feasibility of establishing maximum residue limits (MRLs) for groups of fish species and unavoidable and unintentional residues in foods from carryover in feed.
- December 2016 – Reviewed report from 48th Session of CCFH and maintain watching brief on development of histamine control guidance and revision of General Principles of Food Hygiene and its Hazard Analysis and Critical Control Point (HACCP) annex.
- February 2017 – Comments provided on a discussion paper on methylmercury in fish.

- March 2017 – Comments provided on review of maximum levels of lead in fish.
- March 2017 – Notified key industry representatives on developments on the Standard for Fish Oils.
- March 2017 – Comments provided on discussion paper on ciguatera and future risk management guidance.
- March 2017 – Comments provided on the draft guidance on histamine control in at-risk fish species.
- March 2017 – Notified key stakeholders on the discussion paper on non-dioxin like PCBs in the Code of Practice for the Prevention and Reduction of Dioxin and Dioxin-like PCBs.
- April 2017 – Comments provided on the Biological Method Performance Criteria.
- June 2017 – Comments provided on the development of guidance information to prevent histamine formation in susceptible species.

In 2017-18, SafeFish has developed positions and/or notified key stakeholders for the following topics

- August 2017 – notified key stakeholders on discussions on the revision of the General Principles of Food Hygiene.
- August 2017 – Notified key stakeholders on implementation on the Standard for Fish Oils.
- August 2017 – Notified key stakeholders on a call for data on total and methylmercury levels in a number of predatory fish species.
- September 2017 – Comments provided on the draft guidance on histamine control in at-risk fish groups.
- September 2017 – Notified key stakeholders on the risk management recommendations for gentian violet.
- October 2017 – Notified key stakeholders on the alignment of food additive provisions on remaining seafood commodity standards.
- October 2017 – Notified key stakeholders on FAO/WHO expert advice regarding histamine formation in salmon.
- November and December 2017 – Comments provided on the discussion to review maximum levels (MLs) of lead in Codex Standards
- November and December 2017 – Notified key stakeholders on proposal to establish maximum residue limits (MRLs) for amoxicillin, ampicillin and lufenuron and the extrapolation of MRLs on groups fish species.
- January and March 2018 – Comments provided on the proposed methylmercury maximum levels and sampling plans in fish.
- February 2018 – Established Australian eWG for input onto the FAO/WHO call for data on cigutoxins.
- March 2018 – Notified key stakeholders on call to prioritise development of maximum residue levels (MRLs) of veterinary drugs and extrapolation of MRLs on groups of fish species
- May 2018 – Comments provided on the review and harmonisation of 11 seafood commodity standards that have histamine provisions and associated sampling plans (as part of CCFH eWG).

Relevant issues that SafeFish has actioned and/or maintains a watching brief

- **Aqui-S (Isoeugenol) – Korea SPS Notification**

In February 2017 Korea issued a SPS notification that a new Korean MRL for isoeugenol (active component within Aqui-S or clove oil) is being established at 0.01 mg/kg. The current MRL in Australia for isoeugenol is 100 mg/kg for fish and there is no MRL for molluscs or crustaceans.

The lack of national monitoring data or isoeugenol depletion rates post-treatment is made if difficult for the DAWR NRS to formulate a response.

- **MLs of Metals – Hong Kong SPS Notification**

  In June 2017 Hong Kong issued a SPS notification that is proposing to establish MLs for metallic contamination in different food/food groups. The proposed amendments plan to adopt Codex MLs unless otherwise justified. Some of the proposed amendments will be stricter than domestic (FSANZ) and Codex MLs.

Appendix 3:
Meetings, Workshops and Presentations

Below is a list of meetings, workshops and presentations that SafeFish have facilitated and/or attended.

Date	Purpose	Type	Details
26 to 27/10/2015	Seafood Directions	Presentation and Trade Show	Australian National Seafood Industry Conference and trade show: Seafood Directions 2015in Perth
10 to 14/06/2015	MIFB	Conference and Trade Show	Malaysian International Food & Beverage Seafood Safety & Trade Conference in Malaysia
12/08/2015	AIFST	Conference and Presentation	Australian Institute of Food Science and Technology conference in Sydney. A Turnbull presentation
03/08/2015	Visiting Delegation	Presentation and Tour	Description of SafeFish to delegations visiting SARDI from Shandong A Turnbull
28/08/2015	Visiting Delegation	Presentation and Tour	Description of SafeFish to delegations visiting SARDI from Saudi Food and Drug Administration, A Turnbull and N Dowsett
23/11/2015	Visiting Delegation	Presentation and Tour	Description of SafeFish to delegations visiting SARDI from Guangdong Academy of Sciences, A Turnbull
24/11/2015	Visiting Delegation	Presentation and Tour	Description of SafeFish to delegations visiting SARDI from West Java, A Turnbull
12/08/2015	AIFST	Conference and Presentation	Invited speaker on seafood safety in Australia and SafeFish at the annual Australian Institute of Food Science and Technology conference in Sydney
14/08/2015	AGA Industry Meeting	Update and Presentation	Presentation on SafeFish to the Abalone Growers Association annual meeting
18/09/2015	ASQAAC	Update and Presentation	Presentation at the ASQAAC Committee annual meeting on SafeFish activities
12/11/2015	AAA	Update and Presentation	Presentation on SafeFish to the Abalone Association of Australasia meeting

Date	Purpose	Type	Details
5/02/16	Anne Astin Visit & Presentation	Presentation	Dr. Anne Astin provided a presentation to SARDI staff, PIRSA Agriculture Food & Wine representatives and invited industry guests from seafood processors and TAFE SA on what happens when things go wrong in a food safety event. The presentation focused on a case study detailing the New Zealand Fonterra Incident. The incident closed a significant portion of the NZ dairy industry, and had significant ramification in Australia. In the presentation, Dr. Astin covered the details of the incident, contributing factors, lessons learnt, the role of laboratory analysis, and how the interpretation of the data occurred.
16/02/16	FRDC Stakeholder Event	Stakeholder Event	FRDC industry stakeholder event that was held in Port Lincoln. This event allowed the staff to meet the newly appointed FRDC board members and liaise with a number of seafood industry representative sectors.
16-17/02/16	Industry Visits Port Lincoln	Industry Visits	Port Lincoln visit to meet with the Southern Rocklobster Association, Mori Seafoods, Spencer Gulf Prawn Association, Wildcatch SA, the Australian Tuna Boat Owners Association, the South Australian Shellfish Quality Assurance Program SASQAP, and Cleanseas to discuss SafeFish and current and future research opportunities that SARDI Food Safety & Innovation can provide for the seafood industry.
24/02/16	GFresh Meeting & Presentation	Presentation	A Turnbull gave a presentation on food safety hazards in seafood and the SARDI run project SafeFish to seafood exporters at a meeting organized by GFresh in Sydney. GFresh is an e-commerce organization specializing in the sale of live and fresh product into China. During the meeting GFresh signed an agreement with the China Certification and Inspection Corporation to allow preclearance of Australian product destined for China that goes through GFresh.
3/02/16	SafeFish Partners Meeting	Meeting	A SafeFish partners meeting was held in Melbourne at the Holiday Inn on March 3rd 2016. Discussions were had around the Charter, governance document, communications, and other SafeFish activities
9-10/03/16	Virus Management Workshop	Workshop	From the 9-10th March 2016, SafeFish via Natalie Dowsett, Senior Research Officer and Alison Turnbull, Program Leader (SARDI Food Safety & Innovation) facilitated a workshop on virus management to demonstrate risk management options for oyster growing areas. Expert Brenda Hay from Aquabio Consultants Pty Ltd was contracted to provide the workshop which gave an overview of the background biology to virus contamination issues, the role of bacterial standards in virus management, the relationship between bacterial indicators and the risk of virus contamination, sanitary surveys, viral sources, and the identification of key control points for managing virus contamination of growing areas. The

Date	Purpose	Type	Details
			workshop was attended by 20 industry representatives, regulators and risk managers.
9 to 15/04/15	China Trip	Technological Visit	Alison Turnbull and Dr Tom Madigan (Food Safety & Innovation) presented several seminars to the Yellow Seas Fisheries Institute in Qingdao, China. Ms Turnbull presented on SARDI and Food Safety and Innovation capability, SafeFish – a trade and market access program for Australian seafood and Risk assessments for marine biotoxins in Australian wild caught abalone.
9/06/16	AGA board meeting	Meeting & SafeFish Update	Alison Turnbull attended the Abalone Growers Association board meeting in Glenelg, SA. She discussed the new Charter, technical program for the year and the upcoming prioritisation process. Discussions were held over obtaining permission to use anaesthetics from the APVMA.
9/07/15	ACA Board Meeting	Meeting	On 9 June 2016, Alison Turnbull (Program Leader, SARDI Food Safety & Innovation), attended the Abalone Council Australia's board meeting at Glenelg. Alison gave the board an update on the SafeFish FRDC project, and discussed a project proposal to quantify the impact of processing on levels of marine biotoxins in abalone.
12/07/16	Partnership meeting	Meeting	SafeFish partners meeting was held in Brisbane at the Mantra Hotel. Extensive discussions were held around annual prioritisation process for SafeFish. Other business included SafeFish media policy, communication strategy, website improvements, Codex input and technical work update on activities undertaken since the last meeting that was held in March 2016. This was followed by an industry engagement event at the same hotel.
1/08/2016	China Visit	Meeting	Alison Turnbull met with the Shandong Food and Drug Administration and the Department of Agriculture Water and Environment in Canberra as part of a technical exchange between Australia and China on seafood food safety and regulation. Ms Turnbull gave a presentation on SafeFish and food safety/trade and market access issues for Australian Seafood.

Date	Purpose	Type	Details
17-18/08/16	FSANZ's 25th Anniversary	Conference	From 17-18 August 2016, Alison Turnbull and Ms Anne Astin attended the FSANZ conference celebrating 25 years of food standards setting. The conference discussed innovation in food safety and emerging technologies of interest as well as issues around food safety culture in Australia. They also visited the Fisheries Research and Development Corporation to discuss SafeFish.
25/10/2016	Prioritisation of SafeFish work	Workshop	SafeFish Prioritisation Workshop was held with SafeFish partners at SARDI Waite Campus. The workshop was led by Alison Turnbull (Program Leader, Food Safety and Innovation) with technical assistance from Stephen Pahl (Research Scientist, Food Safety and Innovation) and Navreet Malhi (Research Officer, Food Safety and Innovation). The workshop was independently facilitated by Dr Len Stephens, Australian Seafood CRC. The workshop was well attended with representation from SafeFish, FRDC, DAWR Export Branch, FSANZ, STAG, industry partners and New Zealand Seafood. The aim of the workshop was to rank the issues/hazards raised by SafeFish stakeholders, identify two issues to address as technical work for the financial year and seek collaborations for the other highly ranked issues/ hazards.
26/10/2016	National RAC Meeting	Meeting	Patrick Hone from FRDC represented on behalf of SafeFish and presented the results of the prioritisation workshop.
28/10/2016	Shellfish Futures	Conference	Alison Turnbull gave three presentations at Shellfish Futures, the Tasmania Shellfish Industry conference, in Sorell, Tasmania. The talks were: “SafeFish update and validation project for paralytic shellfish toxins rapid test kits”, “*Vibrio* outbreak associated with Tasmania oysters and monitoring results” and “Recent changes in the ASQAP manual and update on the bacteriophage project for sewage risk management”.
22 to 23/05/2017	Meeting with Australian Abalone Association	Meeting	Discussions on two projects: the application to implement an innovative retort process for canned abalone and a submission to the CNHFPC Food Safety Branch to allow sulphites in canned abalone
07/03/2017	SafeFish Partners Meeting	Meeting	Quarterly meeting to discuss SafeFish activities and outcomes for the period of Aug 2016 to Mar 2017.
15 to 17/03/2017	Meeting and Review of Seafood NZ Food Safety Program	Meeting and Technical Exchange	Review of the Food Safety Program to meet the research needs of the New Zealand horticulture and seafood industries, particularly in reference to domestic food safety and market access.

Date	Purpose	Type	Details
05/05/2017	Meeting	Meeting	Discussion of developing value proposition with consultant Dr. Len Stephens.
May 2017	Oysters Australia R&D Meeting	Presentation	Overview of SafeFish and update of activities
14 to 8/05/2017	International Conference on Molluscan Shellfish Safety in Galway, Ireland	Conference	The conference is a biannual event that brings shellfish researchers, industry and regulators together from all over the world to discuss research and management of food safety risks for bivalve shellfish.
May 2017	ICMSS Galway, Ireland	Presentation	Detection of PSTs using Neogen Kits Laboratory Study
May 2017	ICMSS Galway, Ireland	Presentation	Improving risk management of enteric viruses
23/06/2017	Southern Rocklobster RDE Committee Meeting	Presentation	SafeFish Update and Overview of PSTs in Southern Rocklobster
13/06/2017	ACA Research Advisory Group Meeting	Presentation	Overview of SafeFish and the Fighting Food Waste and Fraud CRC bid, the successful biotoxin contamination project to start at Roseworthy, and opportunities for ACA to build a project within the contamination facility.
14/06/2017	Food Standards Australia, New Zealand forum on Incident Management	Meeting	Incident response plans were discussed and opportunities for improvement in the government/industry response framework workshopped
19/06/2017	SafeFish workshop	Workshop	National workshop for the seafood industry based on the SafeFish guide to safely extend shelf-life of minimally processed seafood.
24/07/2017	Meeting with University of Tasmania	Meeting	Discussions for a research project to further the understanding of marine biotoxins in Southern Rocklobster.
24/07/2017	Meeting with ACA and the Tasmanian Abalone Council	Meeting	SafeFish update, and discussion on a proposal for a research project examining the risk a biotoxin accumulation in black-lip abalone during blooms of *Alexandrium tamarense*

Date	Purpose	Type	Details
25/07/2017	Meeting with Tas Oyster Industry, Oysters Tasmania and Regulators	Meeting	To discuss a research proposal related to depuration of biotoxins from oysters
25/07/2017	Meeting with IMAS, Oysters Tasmania and Oyster Industry representatives	Meeting	To discuss the PASE project funded by DAWR to develop a national policy on the use of analytical methods for the bivalve shellfish industry in Australia.
26/07/2017	Meeting with FRDC	Meeting	To discuss the SafeFish project and plan the next project submission to extend SafeFish
27/07/2017	SafeFish Partners Meeting	Meeting	Quarterly meeting to discuss SafeFish activities and outcomes for the period of Feb to July.
30/08/2017	FRDC Annual Planning Stakeholder Workshop	Presentation	Overview of SafeFish and update of activities including overview of value proposition
23 to 25/09/2017	Southern Rocklobster Conference	Conference	Annual congress meeting held by the Southern Rocklobster industry to discuss research and development opportunities
September 2017	Rock lobster Congress Meeting	Presentation	Biotoxin management strategies for SRL
27 to 30/10/2017	Seafood Directions Conference	Conference	“Sea the Future”. A two-day conference that showcases the best of the Australian seafood industry and opens the door to discussions, concepts and solutions for all levels of the supply chain
October 2017	Oysters Australia R&D Meeting	Presentation	SafeFish update and progress report on Improving harvest management during PST blooms and implementing PST rapid test kits
19 to 20/10/2017	Shellfish Futures Conference	Conference	The conference provides an opportunity for growers, regulators and researchers to meet and discuss a range of issues of particular importance to the industry.
October 2017	Shellfish Futures Conference	Presentation/Workshop	SafeFish update, facilitated session on how growers can improve their own harvest risk decisions.
24/10/2017	SafeFish Partners Meeting	Meeting	Quarterly meeting to discuss SafeFish activities and outcomes for the period of July to Oct.

Date	Purpose	Type	Details
1 to 2/11/2017	ASQAAC AGM and Workshop	Workshop and AGM	The workshop addressed the sections of the manual on laboratory methods (including the use of screening tests), a FSANZ submission to harmonise Australian and Codex Maximum levels for biotoxins, and biotoxin monitoring.
5/12/2017	Seafood Export Consultative Committee Meeting	Presentation	Implementing PST test kits in Tasmania
8 to 12/01/2018	IMAS Meeting	Meeting	PST Test Kit project. Method development and experimental design
01/02/2018	DST Teleconference	Teleconference	Shuana Murray - Discussion around DSTs
01/03/2018	Ciguatera Teleconference	Teleconference	A Turnbull and N Dowsett facilitated a teleconference on Ciguatera and called together experts in the field to discuss the WHO/FAO call for data.
02/02/2018	Microplastics in Seafood	Meeting	Meeting with Bronwyn Gillanders University of Adelaide
23/03/2018	Biotoxin Facility Meeting	Meeting	Meeting with Quinn Fitzgibbons UTAS regarding biotoxin facility setup
09/04/2018	Oysters Australia R&D meeting	Meeting and Presentation	Presentation to Oysters Australia on SafeFish and PASE Projects N Dowsett
13/04/2018	SafeFish Partners Meeting	Meeting	Quarterly meeting with SafeFish Partners in Melbourne
02/05/2018	FSANZ Joint Industry-Government Incident Exercise	Meeting/Exercise	Incident response exercise attended on behalf of the Seafood Industry by N Dowsett
24/05/2018	Meeting with National Residue Survey	Meeting	Meeting with David Padula from NRS to discuss potential issues relating to Seafood

Appendix 4:
Generation of SafeFish Work Program

The generation of the SafeFish work program includes a systematic approach to capturing and identifying issues (existing and emerging), prioritising the issues, and undertaking technical work to provide potential solutions to overcome technical barriers. The SafeFish Secretariat facilitates the following process annually to generate the program for the next year:

Identification of Emerging Issues

The following sources of information and data are scrutinised by the Secretariat to identify emerging issues and gather background information on these potential problems:

- Recently published scientific and regulatory literature;
- Trade databases containing statistics on rejections/detentions of seafood from key trading partners;
- International human illness outbreaks related to seafood consumption;
- Advice from industry trade groups (e.g. STAG, Seafood Importers Association etc.)
- Advice from industry and regulatory stakeholders;
- Advice through Codex forum and new international seafood risk management policies.

Using this information as a knowledge base, the following is then undertaken:

- A brief description on each emerging issue is generated.
- A running list of emerging issues is collated. This is sent to the SafeFish partnership members every 12 months for their feedback and advice as to whether these issues pose a significant threat to trade.
- Based on advice from the partnership members, high priority emerging issues will be included in the prioritisation process for future work (as detailed below).

Prioritisation Process for Emerging Issues (occurs bi-annually)

A prioritisation process is coordinated by the Secretariat to rank the issues, this entails the following:

- An independent consultant undertakes a risk ranking process on the issues identified which considers the likelihood of the issues to impinge on trade and the consequences (severity) if the issues occur.
- The Secretariat liaise with the broad stakeholder network to scope the issue and establish whether it is feasible that technical input could assist in resolution of the problem.
- Based on feedback from the consultant and the stakeholder network the Secretariat will form a short list of issues that could be addressed by technical work.
- A prioritisation workshop involving key stakeholders (partnership members, technical & industry expert/(s), panel members and other relevant parties) is then held to discuss the potential progression of the short listed issues. This workshop also allows stakeholders to provide input to the shortlist of issues and suggest further alterations.
- Following the prioritisation workshop, a technical work program is generated containing the issues that SafeFish will develop technical advice for to assist in their resolution.

Progression of Technical Work Programme

Resourcing

The SafeFish Secretariat works collaboratively with industry, government and science providers to secure resources to support the progression of short listed high priority issues through the technical work programme.

Generation of Technical Advice

The Secretariat engages technical and/or industry expert/(s) to provide advice or input into issues as required. The advice received is then collated into a formalised brief or response from SafeFish to the appropriate government and/or industry organisation that then progresses the issue resolution process further.

Peer Review Process

Key research outputs facilitated by SafeFish will follow a process of Peer Review to provide assurance on the robustness of the information generated. Internal and external peer review will be sought by the Secretariat through the following process:

- A database of scientific and industry experts relevant to the technical work programme will be maintained.
- Liaison with experts to undertake the peer review process. Depending on the extent and scope of the report, a paid peer review could be commissioned by an external consultant.
- Peer review comments will be sent to authors for consideration and a response to the comments requested.

The peer review process will be an open and transparent process, with reviewer comments and details being available to primary authors.

Appendix 5:

SafeFish Charter

Please see below appended Charter for SafeFish.

SafeFish

Charter

2018 Version 3.2

Contents Page

Section 1: Context

Fishery and Aquaculture sectors

International and domestic trade and market access are essential to ensuring the continued growth and development of the Australian Fisheries and Aquaculture sectors. The 2012 Fisheries and Agriculture Organization (FAO) yearbook of Fisheries statistics shows that seafood is an increasingly important source of protein worldwide (Figure 1). Not only is the world's population steadily increasing, but the fish supply per capita is also rising resulting in a rapid increase in the volume of fish supplied for food. Wild fisheries production is increasing slowly, but aquaculture production is increasing rapidly and is predicted to rise at a faster rate in the future in order to keep up with this increasing demand. The FAO statistics also detailed that seafood has become the most traded food commodity globally: estimated to be worth over US $129 billion dollars per annum.

From an Australian perspective, the Fisheries and Aquaculture sectors is currently producing around AUD $3 billion dollars of seafood each year, with wild-caught accounting for AUD 1.74 billion dollars (Figure 2) and aquaculture products accounting for AUD 1.3 billion dollars (Figure 3). Just under half of all seafood produced in Australia is exported, with the highest value exports being rock lobster, abalone and tuna (Figure 4).

Figure 1: *FAO Yearbook Fisheries and Aquaculture Statistics 2012*

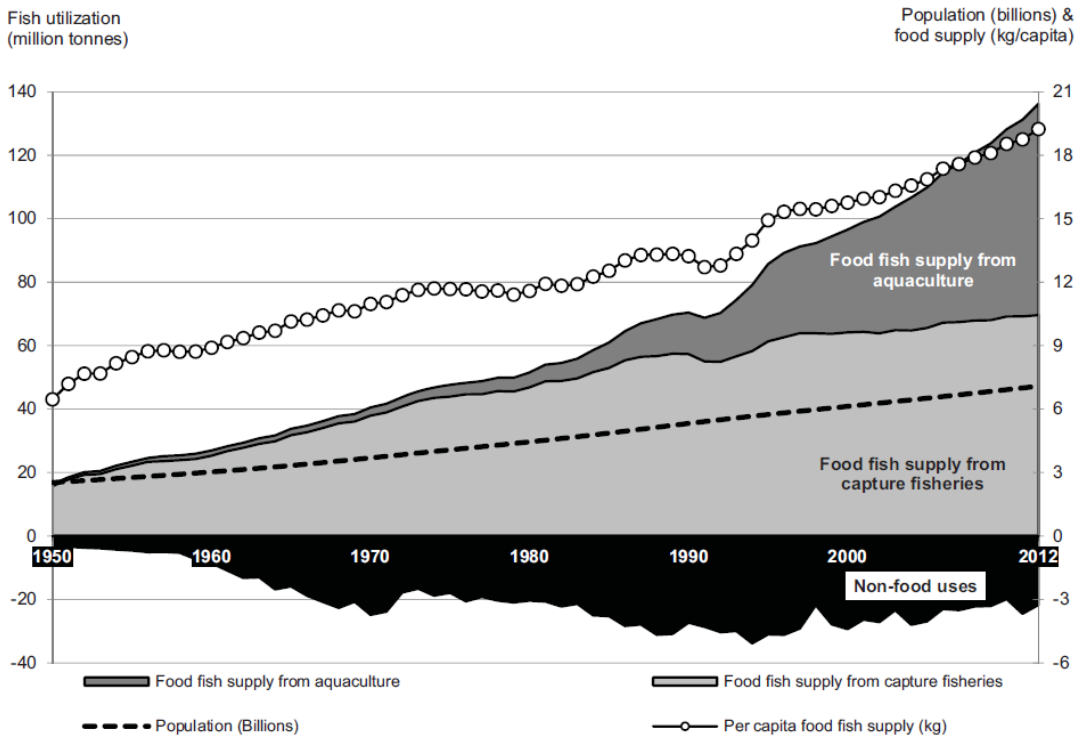


Figure 2: *Australian Wild-caught Production Figures for Seafood in 2015/2016. Collated from ABARES Australian fisheries and aquaculture statistics 2016.*

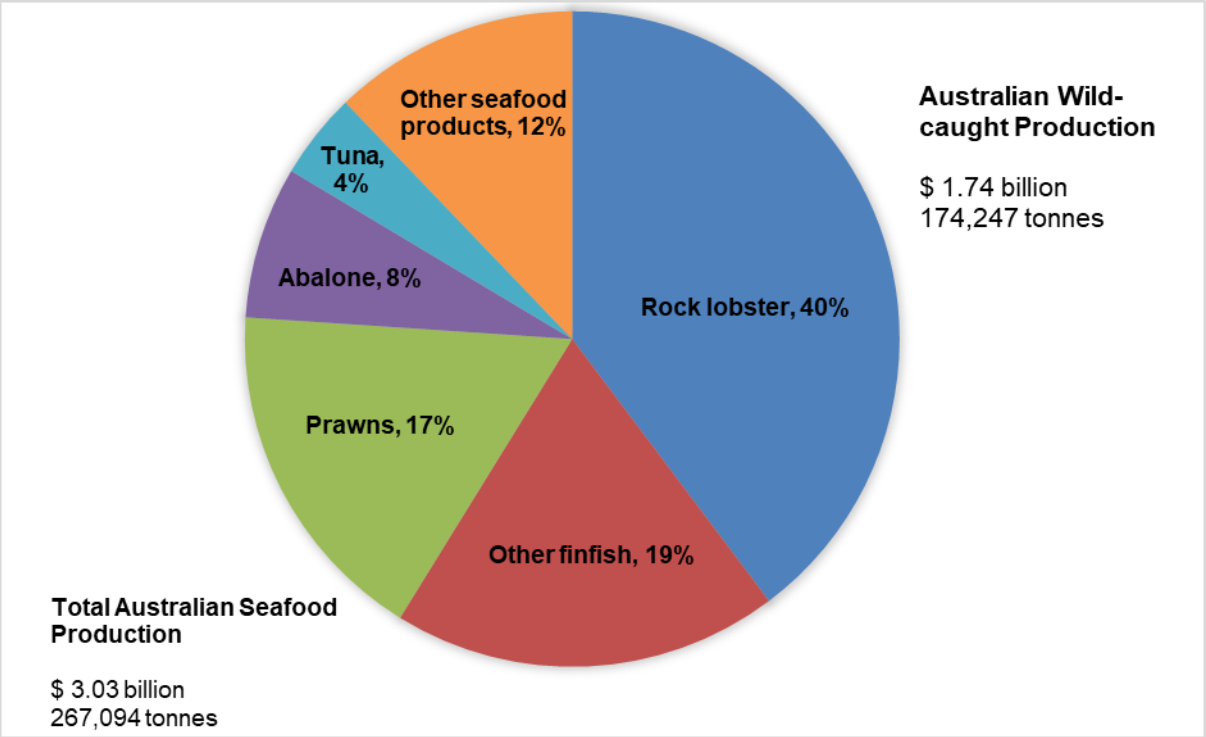


Figure 3: *Australian Aquaculture Production Figures for Seafood in 2015/2016. Collated from ABARES Australian fisheries and aquaculture statistics 2016.*

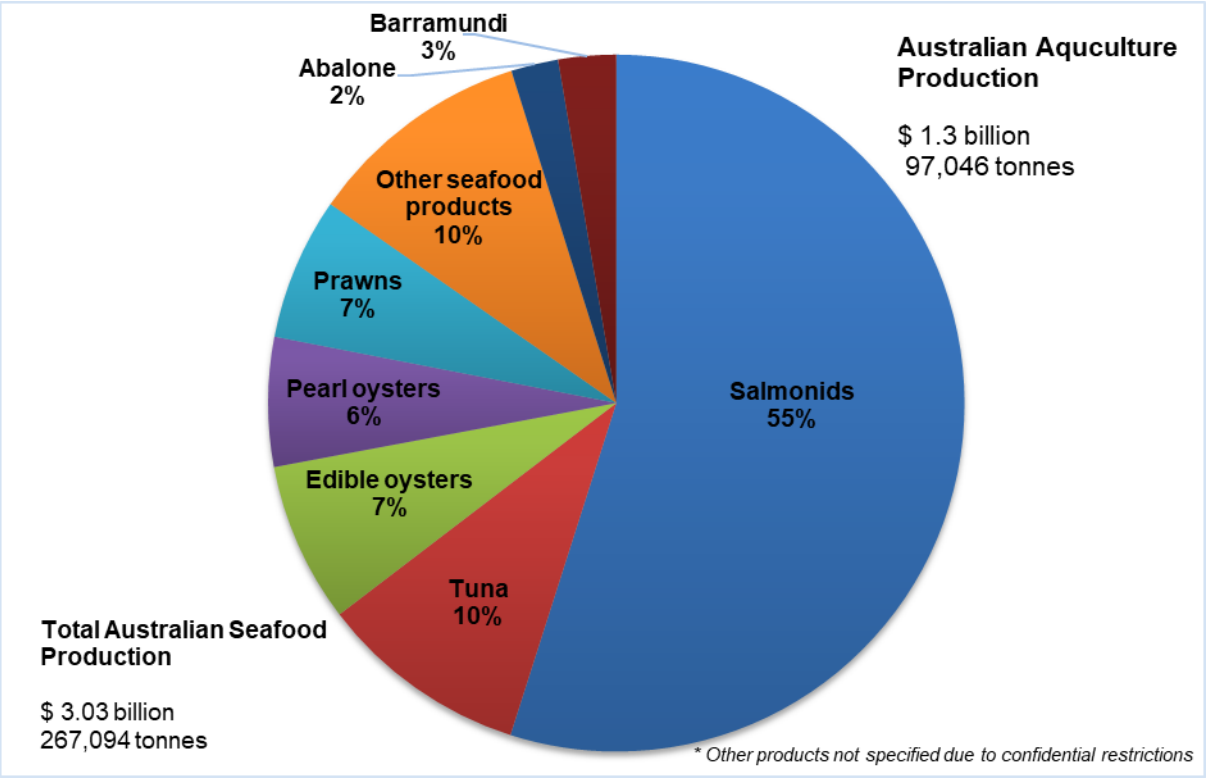
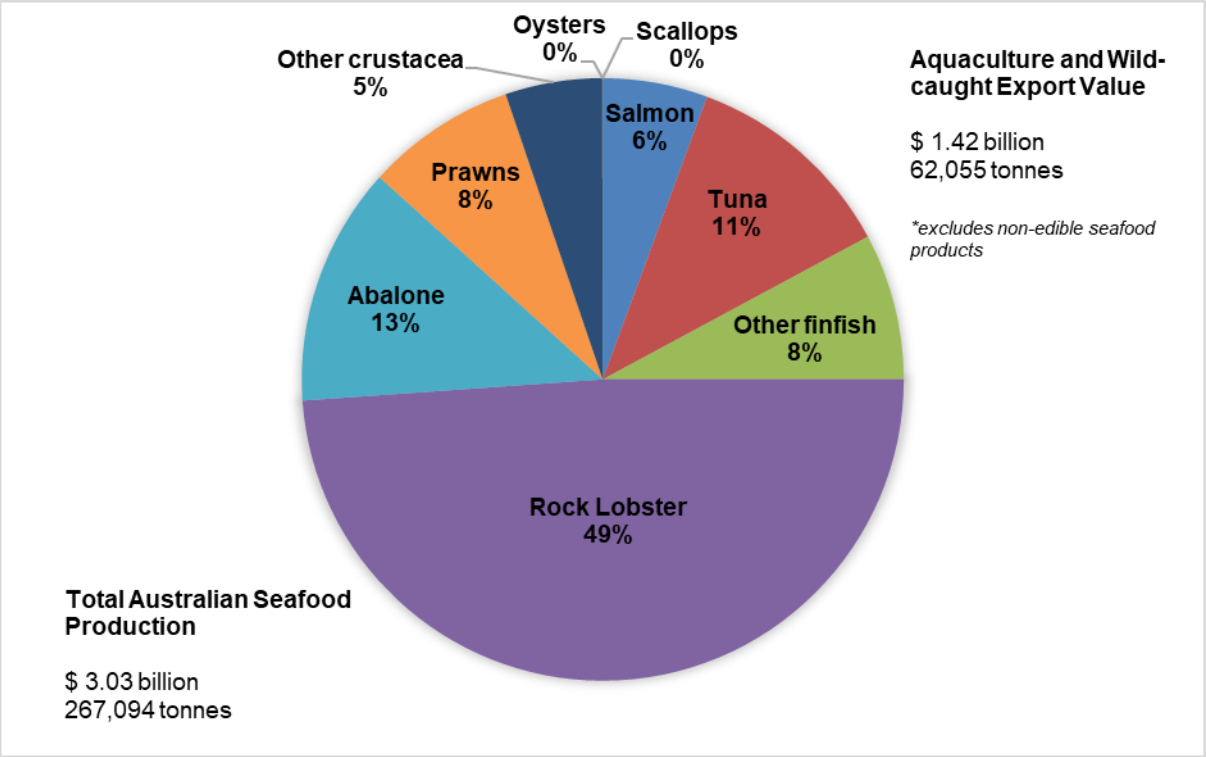


Figure 4: *Australian Aquaculture and Wild-caught Export Figures for Seafood in 2015/2016. Collated from [ABARES Australian fisheries and aquaculture statistics 2016](#).*



1.2 What is SafeFish?

SafeFish was initiated to allow the seafood industry to respond in a strategic manner to trade and market access issues relating to food safety. Key to this is Australian involvement in *Codex Alimentarius* – the forum for developing internationally agreed standards to prevent 'technical barriers to trade'. Food safety standards developed at Codex form the basis for international trade, and provide an agreed reference point for settling international disputes. By providing evidence based technical reports to Australian delegations to Codex, SafeFish enables Australia to argue for the development of standards that are commensurate with risk in the Australian context, preventing technical barriers from arising.

SafeFish has also become a trusted, independent source of food safety information to both industry and regulators. As a provider of technical advice, SafeFish does not participate in the monitoring or management of risk, or in analytical testing of product. SafeFish is focused on issues that impact on food safety only, and thus does not include aspects such as biosecurity, country of origin or provenance.

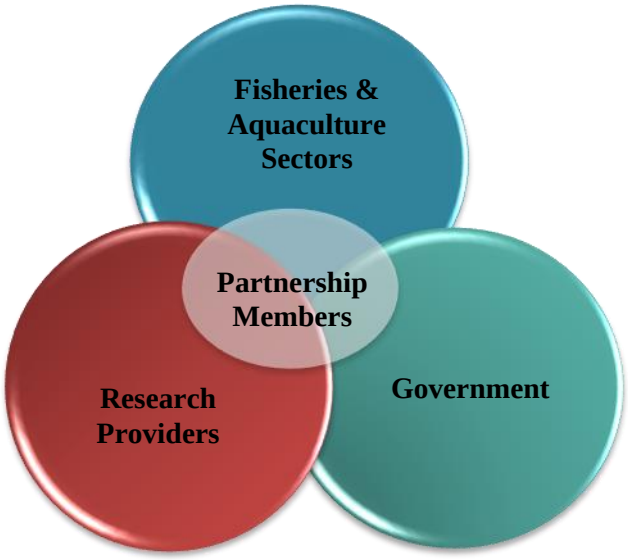
SafeFish acts in a collaborative manner, drawing expertise from a variety of Australian and international researchers and industry members. The SafeFish process builds a seafood sector that proactively addresses food safety issues in an innovative and collaborative manner.

SafeFish is primarily funded by the Fisheries Research and Development Corporation (FRDC) public good pool which represents all seafood commodities, however it also receives direct contributions from the Abalone Council Australia Ltd., Australian Abalone Growers Association, Australian Council of Prawn Fishers, Southern RockLobster Ltd, Oysters Australia, the Tasmanian Salmonid Growers Association, Mussel Industry Australia, the Sydney Fish Market, and the National and Commonwealth FRDC Research Advisory Committees.

FRDC recognizes SafeFish as the leading platform in their program for dealing with food safety and trade and market access issues for the Australian Fisheries and Aquaculture sectors.

1.3 Who We Are

SafeFish is a partnership of seafood experts that assist the Fisheries and Aquaculture sectors to resolve technical trade impediments, especially in relation to food safety and hygiene. SafeFish is comprised of collaborative and strategic partnerships between Fisheries and Aquaculture sectors, research providers and Government stakeholders. The partners work together to deliver the outputs and objectives of the program.



1.4 What We Do

SafeFish operates on behalf of the Fisheries Research and Development Institute (FRDC) to actively manage a range of food safety projects related to the Australian Fisheries and Aquaculture sectors. The purpose of SafeFish is to:

- Provide technical expertise to enable rapid response to sustain free and fair access to key markets, and
- Underpin the safety and integrity of seafood sold commercially in Australia.

In order to achieve these outcomes, SafeFish undertakes the following key functions:

- Researching and providing technical input to international multilateral and bilateral trade negotiations
- Researching and providing technical input into regulatory development (for example, input into Codex processes, technical advice to regulators such as Department of Agriculture and Water Resources and Food Standards, Australia New Zealand etc.)
- Providing research and technical support to food safety incidents to minimize trade disruptions, including supporting appropriate risk communication
- Identifying emerging food safety issues and determining appropriate research and technical responses that will protect Australia's continued access to markets
- Conducting research on seafood hazards to underpin appropriate risk management
- Developing and supporting food safety research and diagnostic capabilities

- Supporting productive partnerships and networks between Fisheries and Aquaculture sectors, researchers and regulators to enable utilization of research findings and to facilitate considered responses to food safety issues.

Section 2: Governance

2.1 Collaborative and Strategic Partnerships

SafeFish provides an overarching service for food safety research on behalf of the FRDC by acting as a 'virtual centre for excellence' in this area. The program draws on resources from its key networks of stakeholders and extensive collaborative and strategic partnerships to undertake the aims and deliver outcomes of its research. These collaborative and strategic partnerships are as follows:

2.1.1 Partnership Members

The partnership members provide general oversight and strategic direction for the program. They also assist in communicating the technical outputs of SafeFish through the appropriate channels in Australia and overseas to facilitate the resolution of issues. Partnership members include senior representatives from Government organisations that provide services for seafood, key seafood Fisheries and Aquaculture sectors organisation/affiliation delegates, and senior technical representatives from research institutes. Depending on the issues being discussed, this group has the ability to invite observers or relevant stakeholders to be involved in discussions to ensure that appropriate and widespread representation is achieved at all times. The current core partnership members include:

- Independent Chair, SafeFish
- A senior representative of the Fisheries Research and Development Corporation (FRDC)
- A senior representative of the Dairy, Eggs and Fish Program; Export Standards Branch, Department of Agriculture and Water Resources
- A senior representative of the Food and Animal By-products; Export Standards Branch, Department of Agriculture and Water Resources
- A senior representative of Food Standards, Australia and New Zealand (FSANZ)
- The Chair of the Australian Shellfish Quality Assurance Advisory Committee (ASQAAC)
- A senior representative of the New Zealand Seafood Industry Council (independent observer)
- A representative of the South Australian Research & Development Institute (SARDI)
- A representative from the Seafood Trade and Advisory Group (STAG)
- A representative from the Seafood Importers Association (SIA)
- A representative from the Seafood wholesalers/processors sector
- A representative from the Seafood domestic retailers sector

2.1.2 Secretariat

A Secretariat operated by the SARDI Food Safety & Innovation group facilitates SafeFish. As detailed above funding for SafeFish is provided by direct Fisheries and Aquaculture sectors support (through Industry Partnership Agreements (IPA's)), and public good funds facilitated through FRDC, as well as

voluntary direct industry contributions (see list in Section 1.2 above). In-kind support from SARDI Food Safety & Innovation is also provided. The secretariat comprises of the Executive Officer, Program Manager, Codex coordinator, SafeFish support officers and an external Independent Chairperson.

The Secretariat coordinates and facilitates the day to day operations of SafeFish by undertaking the following:

- Liaising with the seafood sector stakeholders that comprise SafeFish.
- Coordinating the process of identifying and prioritising food safety and trade issues that may threaten individual Australian seafood sectors or the Fisheries and Aquaculture sectors as a whole.
- Engaging stakeholders in the prioritisation process.
- Delivering the annual technical/research and capability development program
- Facilitating peer review of technical/research reports followed by the dissemination of the advice generated to appropriate parties and stakeholders for further action.
- Communicating outputs and outcomes produced by SafeFish to stakeholders and other relevant parties.
- Facilitating technical input into high priority Codex policies, and coordinating the attendance of SafeFish technical experts at relevant Codex meetings to assist the Australian delegation.
- Assist Fisheries and Aquaculture sectors in an advisory function.

2.1.3 Appointment of the Independent Chair

A partnership meeting or out of session process prior to the cessation of the current Independent Chair position will be held to call for suitable candidates to be nominated. Following this, a vote will be cast by the partners to elect the new chair from the nominated pool of candidates, with the appointment being formalised by SARDI for a minimum of 12-months (the term length will be discussed and set by the partners prior to the execution of each contract).

The following criteria will be considered when nominations are provided by the partners:

- Position description
- Ability to chair and prior experience
- Broad industry perspective of food safety
- Knowledge of the seafood industry
- Any potential or current conflicts of interest that would affect the appointment of the nominee

The following terms of reference will be provided to the nominated Chair and will be included in the SARDI contract to formalise the position.

Terms of Reference for Independent Chair appointment:

The Chair of SafeFish works closely with the Executive Officer to coordinate the Secretariat body which governs and facilitates the day to day operations of SafeFish and conducts the following core functions:

- Liaising with and providing consultation between the seafood sector stakeholders that comprise SafeFish.
- Coordinating the process of identifying food safety and trade issues that may threaten individual Australian seafood sectors or the industry as a whole.

- Driving the process to prioritise food safety and technical market access issues according to scientific, political, social, environmental and economic factors.
- Engaging stakeholders to identify, prioritise and provide input and technical advice on issues that are identified.
- Facilitating the collation of technical information, peer reviewing of the information followed by the dissemination of the advice generated to appropriate parties and stakeholders for further action.
- Communicating outputs and outcomes produced by SafeFish to stakeholders and other relevant parties.
- Facilitating technical input into high priority Codex policies, and coordinating the attendance of SafeFish technical experts at relevant Codex meetings to assist the Australian delegation.

The main functions that the Chair of SafeFish will be required to directly undertake are as follow:

- Raise the profile of SafeFish nationally/internationally by highlighting the role of SafeFish and the support it can provide
- Ensure appropriate governance of the Secretariat
- Assist with determining future models of operation for SafeFish
- Oversight of the prioritization process to identify key work areas for work program
- Consult with industry, regulators and trade officials to be a conduit to the secretariat, bringing industry concerns to SafeFish and highlighting outputs back to appropriate stakeholders
- Chairing of SafeFish meetings (3 face to face meetings per year - partnership meetings, and national meetings with key experts)

It is expected that the position will require 8 working days per year to achieve the aforementioned tasks. The nominated candidate will receive a stipend payment as remuneration for undertaking the role and all accommodation, travel and incidentals will be covered separately by SafeFish.

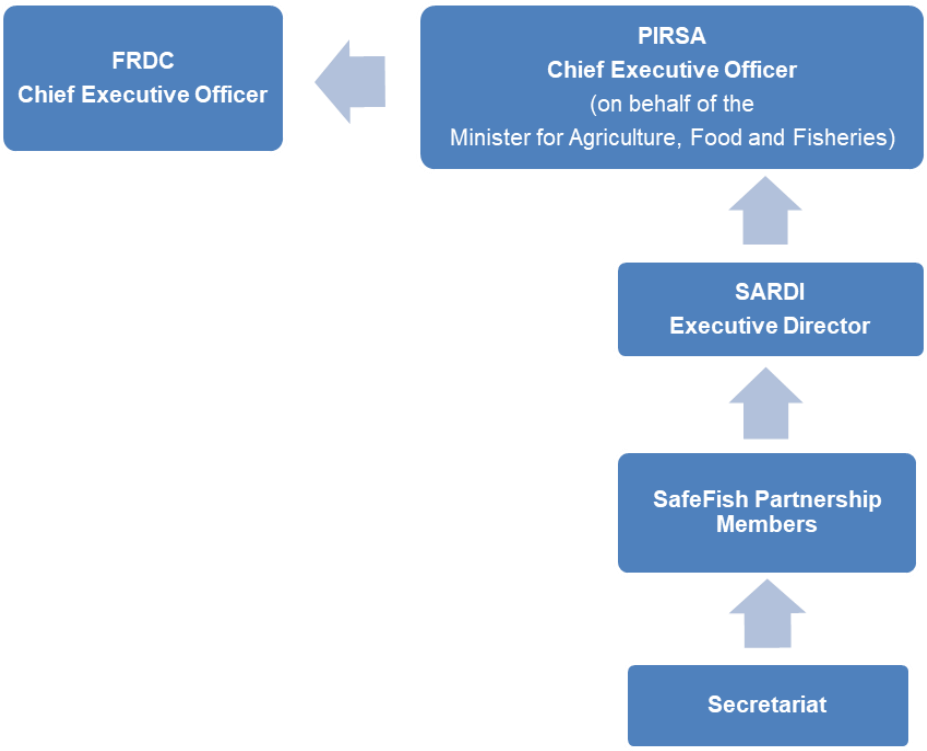
The chair will prepare a minute for the SafeFish partners at the end of his/her term on future recommendations for SafeFish.

2.2 Broad Stakeholder Network

SafeFish maintains an extensive network of contacts from production to consumption comprising a wide range of skills and expertise that can be drawn upon when required. This network is drawn on to provide Fisheries and Aquaculture sectors expertise, perspective and practical implementation advice on technical barriers to trade, scientific advice to resolve technical barriers to trade, regulatory expertise, and assist in providing input into the development of Codex standards. This group has knowledge in a wide range of fisheries and food safety disciplines including residues, microbiology, viruses, natural toxins, risk assessment, epidemiology, economics, consumer science, trade, public health, nutrition and Codex.

Accountability

The SafeFish partnership members are an advisory committee that provides recommendations to the SARDI Executive for ratification. A formal agreement between FRDC and the South Australian Minister for Agriculture, Food and Fisheries governs the program. The reporting structure is as follows:



Section 3: Business Model

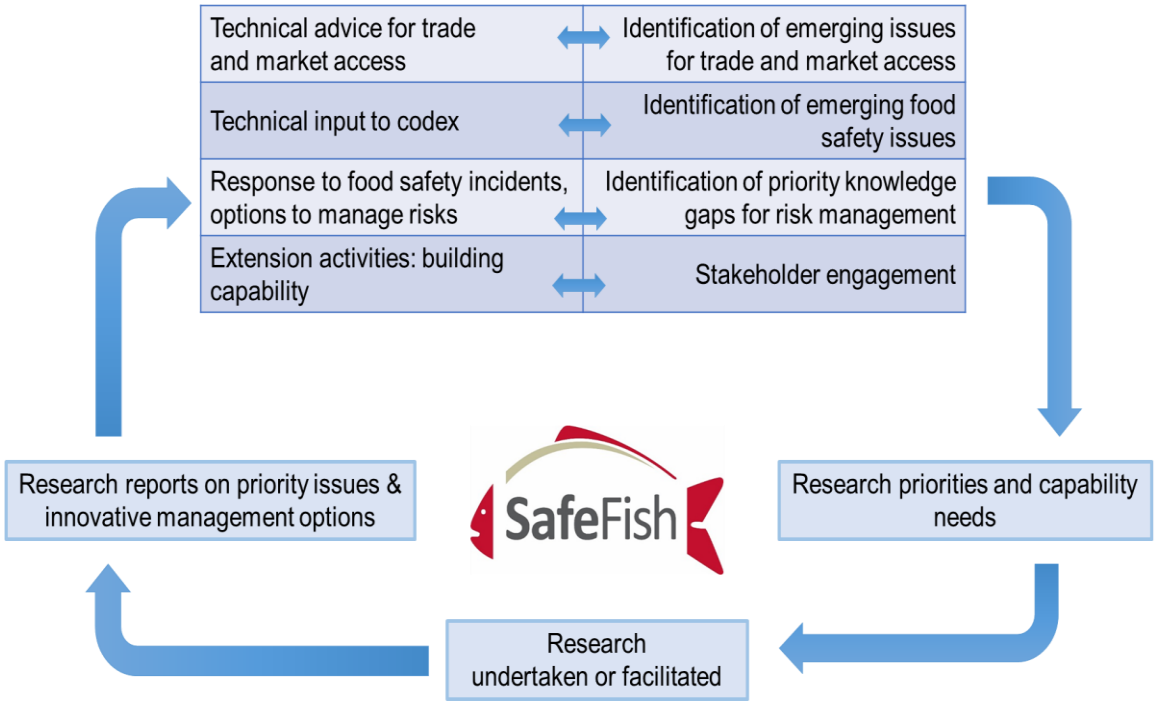
3.1 How SafeFish Creates Value

The Fisheries and Aquaculture sectors are highly varied. There are multiple aquatic environments, species, sectors, harvest procedures, jurisdictions, supply chains, product formats and markets which make managing seafood safety a challenge. The need to protect the public, including the safety of recreational and customary fishers, and ensure governments are fully informed, complicates this task even further.

In many cases, the basic knowledge of the current seafood food safety risks required to underpin appropriate risk management is lean. New risks are emerging as a result of climatic change, novel processing, longer supply chains and changes to agricultural practices. Furthermore, industries and risk managers have limited resources. By working collaboratively across sectors, and with regulators and researchers, SafeFish leverages this knowledge and the resources available to maximise the gains from doing so.

SafeFish creates value through engagement and collaboration, risk identification, technical input and advice, investment in research, and facilitation. In doing so, build research and human capacity and leveraging these into capabilities that create safer seafood.

Figure 5: Synergistic process demonstrating how SafeFish creates value



The collaborative approach used by SafeFish allows research to be conducted on high priority issues, which in turn informs SafeFish technical advice, allows input into the development of international standards, assists in the resolution of trade and market access issues, and assists with food safety incident management. The value of the SafeFish model is that the collaborative approach encourages the research outputs to be directly converted to outcomes with benefit for Fisheries and Aquaculture sectors and regulators alike. This then encourages more input into the collaborative process.

The success of SafeFish is (and will continue to) emerge via an iterative process that generates synergistic benefits from engagement, research and collaboration. Tomorrow's capability to create safe seafood depends heavily on collaboration today to prioritise and invest in research that targets current issues, and then goes beyond these R&D outputs to facilitate uptake and reveal new innovative ideas. The SafeFish mission is grounded in attracting resources that will build shared capacity and capability over time. Figure 5 illustrates the elements and synergist process that SafeFish creates to build value for its stakeholders.

3.2 Strategic Plan

SafeFish follows a three-year strategic plan aligned to the current funding cycle, wherein an annual work program is developed. The SafeFish annual work program addresses priority food safety issues identified through a process coordinated by the Secretariat that entails the following:

- Identification of issues through multiple pathways (e.g. trade detentions, Fisheries and Aquaculture sectors/regulator feedback, Codex etc.)
- Liaison with the broad stakeholder network to scope the issue and establish whether it is feasible that technical input could assist in resolution of the problem,
- Shortlisting of issues that could be addressed by technical work by partnership members,

- An independent risk ranking of issues identified and their impact (nature and quantum) on trade,
- A prioritisation workshop of key stakeholders to discuss short listed issues and work program priorities.

Following the prioritisation workshop, SafeFish will generate a technical research program containing the food safety issues to be resolved and the technical advice required for input into Codex (for more detailed information on these processes, see Schedules 1 and 2).

Section 4: Communications

4.1 Stakeholder Communications

As detailed in Section 2.2 above, SafeFish collaborates and communicates with a wide range of stakeholders. The secretariat maintains registers for all key stakeholder groups that it engages with. These contacts include researchers and/or service providers, Government employees, state/national regulators, representatives from the Fisheries and Aquaculture sectors, funders and other parties with an interest in seafood.

4.2 Communication Strategy

The communication strategy is a separate SafeFish policy that aims to ensure that all SafeFish stakeholders are aware of the activities and outputs that are undertaken. It also updates them on the processes that are run to assist in the resolution of food safety and technical market access issues.

The SafeFish communication strategy includes a communication plan (which is derived through stakeholder analysis), a description of the protocols that SafeFish follows, the predicted communication outputs, dissemination pathways and related risks that have been identified. This strategy is reviewed triennially is informed by a stakeholder assessment and communications survey.

4.3 Stakeholder Updates

Following the partner meetings, quarterly updates are provided on the activities and key outputs from the last period to all seafood stakeholder associations that request to be kept informed via this medium. A communique is also produced that details the main outcomes from the discussions at the meeting and this is made freely available on the SafeFish website.

Section 5: Enquiries and Further Information

For more information on SafeFish, please visit our website www.safefish.com.au or contact us on 08 8429 2286.

Schedule 1: Generation of SafeFish Work Program

The generation of the SafeFish work program includes a systematic approach to capturing and identifying issues (existing and emerging), prioritizing the issues, and undertaking technical work to provide potential solutions to overcome technical barriers.

Identification of Issues affecting Australian Seafood

The following sources of information and data are scrutinized by the Secretariat annually to identify emerging and existing issues that affect the Australian seafood industry:

- Recently published scientific and regulatory literature;
- Trade databases containing statistics on rejections/detentions of seafood from key trading partners;
- International human illness outbreaks related to seafood consumption;
- Advice from industry trade groups (e.g. Seafood Trade Advisory Group STAG, Seafood Importers Association etc.)
- Advice from industry and regulatory stakeholders;
- Advice from SafeFish partners;
- Advice through Codex forum and new international seafood risk management policies.

Following this process, a list of issues is generated which is then filtered by the Secretariat and SafeFIsh partners to only include those that fall within the scope of the program (parameters used to determine this include: food safety related; cost to facilitate work; threats to trade; and remit of the SafeFish platform). The resulting list of issues is then included in the prioritisation process specified below:

Prioritisation Process

A comprehensive prioritisation process to fully scope and rank the issues identified is coordinated by the Secretariat every three-years, this entails the following:

- The secretariat scopes each issue that has been identified. The scoping document includes a description of the issue, outlines who it affects, provides existing trade and market access data that is available, as well as specifies the public health, economic, environmental, reputational and regulatory implications).
- A prioritisation workshop (facilitated by the independent consultant) involving key stakeholders (partnership members, technical & industry expert/(s), panel members and other relevant parties) is then held to rank the issues based on pre-set criteria. This determines the issues with the highest priorities and these form the technical work program for the next period.
- On the interim years, a smaller in-house process is facilitated by the Secretariat and involves the following:
- The SafeFish partners are provided with a list of issues that were identified as high priority at the last comprehensive prioritisation process, but have not yet had technical research completed to resolve them.
- Emerging issues not already captured are identified using the process documented above.
- A scoping document (using the same parameters as above) is developed for any emerging issues that were identified

- A meeting is called with all partners and relevant stakeholders where a brief overview of each issue being prioritised is given. Following this, each participant is asked to determine a priority value the issues (and rank them from highest to lowest priority e.g. 1 to 5 etc.). The Secretariat will document each individual vote as a record of the process.
- Following this, the technical work program for the next period will be generated.

Progression of Technical Work Programme

Resourcing

SafeFish has $55,000 AUD annually to facilitate technical work to resolve trade and market access issues that are identified.

In some cases, the SafeFish Secretariat works collaboratively with industry, government and science providers to secure additional resources to support the progression of short listed high priority issues through the technical work programme (this may be through leveraging additional funds, or contracting external expertise and assistance to complete the work).

Generation of Technical Advice

Where formal technical advice is required, the Secretariat engages technical and/or industry expert/(s) to provide advice or input into issues as required. The advice received is then collated into a formalised brief or response from SafeFish to the appropriate government and/or industry organisation that then progresses the issue resolution process further.

Peer Review Process

Key research outputs facilitated by SafeFish will follow a process of Peer Review to provide assurance on the robustness of the information generated. Internal and external peer review will be sought by the Secretariat through the following process:

- A database of scientific and industry experts relevant to the technical work programme will be maintained.
- Liaison with experts to undertake the peer review process. Depending on the extent and scope of the report, a paid peer review could be commissioned by an external consultant.
- Peer review comments will be sent to authors for consideration and a response to the comments requested.

The peer review process will be an open and transparent process, with reviewer comments and details being available to primary authors.

Schedule 2. Input into Codex and other International Standard Setting Bodies

To ensure that the Australian position on the Codex and other International standard setting bodies agenda items address industry concerns, SafeFish follows a formalised process to provide technical briefs to support the Australian delegation. This process operates as follows:

- Issues are scoped according to relevance to the Australian seafood sector from the Codex agenda of upcoming meetings and/or by monitoring the World Trade Organisation (WTO) Sanitary and Phytosanitary (SPS) notification
- Feedback is elicited from industry and technical experts on high priority draft Codex papers associated with the Codex agenda and SPS notifications
- A draft technical brief is drafted by SafeFish
- Liaison with the appropriate body (i.e. Codex Australia and the Australian Codex delegation head, DAWR, National Residue Survey etc.) occurs on the draft brief
- The draft SafeFish brief is provided to industry and expert stakeholders for review and comment
- Comments are incorporated into the SafeFish briefs where possible/feasible
- The SafeFish briefs and any unresolved issues are discussed at the Australian Codex panel meetings
- Briefs are finalised and submitted to Codex Australia and/or relevant International authorities.

SafeFish has limited funding to support the attendance of technical experts at relevant Codex meetings and working groups that are held. Experts are selected by the SafeFish partnership members based on their experience and knowledge around the issues that are being discussed at the meetings. In addition to attending the meetings, the expert is heavily involved in the drafting process for the SafeFish technical briefs that are developed. Following the meeting, the SafeFish representative is required to submit a report to the partners detailing the outcomes of the meeting and any recommendations or further actions that are required.

FRDC FINAL REPORT CHECKLIST

Project Title:	SafeFish; Research to Support Food Safety, Trade and Market Access		
Principal Investigators:	Alison Turnbull and Natalie Dowsett		
Project Number:	2015-212		
Description:	SafeFish, provides technical advice to support Australia's seafood trade and market access negotiations and helps to resolve barriers to trade. It does this by bringing together experts in food safety and hygiene to work with the industry and regulators to agree and prioritise technical issues impacting on free and fair market access for Australian seafood. SafeFish has a record of success in reopening markets and in responding quickly when issues arise. By involving all relevant parties in discussions and, where necessary, commissioning additional research to fill any knowledge gaps, an agreed Australian position is reached that is technically sound and defensible. This robust process builds knowledge and relationships, and results in better outcomes for industry in maintaining fair market access and ensuring that the seafood they sell is safe.		
Published Date:	N/A	**Year:**	2018
ISBN:	N/A	**ISSN:**	N/A
Keywords:	Seafood, Food Safety, Market Access, Partnership, Trade, Australia, Hygiene, Technical Advice, Trade Barriers, Oysters, Mussels, Rock lobster, Viruses, Marine Biotoxins, Prawns, Shellfish, Abalone, Scallops, Tuna, *Ostreidae* spp., *Pteriidae* spp., *Crassostrea gigas, Saccostrea glomerata, Jasus edwardsii, Penaeus indicus, Penaeus merguiensis, Penaeus monodon, Penaeus esculentus, Pectinidae, Haliotidae, Haliotis rubra rubra, Haliotis rubra conicopora, Haliotis laevigata, Haliotis roei, Haliotis iris, Thunnus maccoyii*		

Please use this checklist to self-assess your report before submitting to FRDC. Checklist should accompany the report.

	Is it included (Y/N)	**Comments**
Foreword (optional)	Y	Provided by Independent SafeFish Chair
Acknowledgments	Y	
Abbreviations	Y	
Executive Summary	Y	
– **What the report is about**	Y	
– **Background – why project was undertaken**	Y	
– **Aims/objectives – what you wanted to achieve at the beginning**	Y	
– **Methodology – outline how you did the project**	Y	
– **Results/key findings – this should outline what you found or key results**	Y	
– **Implications for relevant stakeholders**	Y	
– **Recommendations**	Y	
Introduction	Y	Includes section on Need
Objectives	Y	
Methodology	Y	Broken down into platforms of deliverables
Results	Y	Reported against platform deliverables
Discussion	Y	Combined with Conclusion

Conclusion	Y	Combined with Discussion
Implications	Y	
Recommendations	Y	
Further development	Y	
Extension and Adoption	Y	
Project coverage	Y	
Glossary	N	
Project materials developed	Y	
Appendices	Y	Five Appendices included