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Health and Safety in the Australian Fishing Industry

RIRDC Publication No. 11/021

RIRDC Innovation for rural Australia

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Health and Safety in the Australian Fishing Industry

by Dr Kate Brooks

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Foreword

This project emanates from the identification of gaps in occupation health and safety (OHS) data for the fishing industry by the Collaborative Partnership for Farming and Fishing Health and Safety Program across all three of its objectives. The research is important as it provides a basis upon which to understand the OHS issues and challenges of the fishing industry and where further efforts and investment could most effectively be targeted.

The primary beneficiaries of this research are the commercial fishing industry, research and funding providers. The information contained in this report provides a clear guidance to the industry of its OHS circumstance relative to other primary industries (forestry and agriculture). It identifies the most 'at risk' groups in the industry, and the existing and emerging high risk elements of the industry. It also identifies those areas and issues that are in most need of further investment, and those which would produce the most effective outcomes in terms of reducing the incidences of OHS claims in commercial fishing.

The key finding is that a lack of awareness of occupational health and safety, and a culture of safety, still fails to be effectively dealt with across all States of Australia. The OHS data identifies that the commercial fishing industry has rates of claims that are average for the overall Agriculture, Fishing and Forestry sector, but that claims for fatal injuries in aquaculture and non fatal in marine (or wild capture) fisheries are both increasing relative to employment. The most 'at risk' group in the industry are those between the age of 20 to 24 years, with those aged 45 – 54 years being the next most at risk group, and will receive injuries from non powered hand tools, to their upper bodies.

The importance of this report is that on the basis of the best available statistical data (which represents in the vicinity of only 18% of the industry's participants), it provides some fifteen suggestions and recommendations for the industry and funding agencies to consider in regard to research, communication and training in the commercial fishing industry. It is the most useful basis that has been provided in recent years for framing a coherent approach to redressing the OHS issues in the commercial fishing industry and to arrest increasing rates of OHS claims.

This project was funded by the Collaborative Partnership for Farming and Fishing Health and Safety.

This report, an addition to RIRDC's diverse range of over 2000 research publications, forms part of our Collaborative Partnership for Farming and Fishing Health and Safety Research and Development Program, which aims to improve the physical and mental health of farming and fishing workers and their families, and the safety environment and work practices in farming and fishing industries.

Most of RIRDC's publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

Craig Burns
Managing Director
Rural Industries Research and Development Corporation

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The Author would like to acknowledge the funding provided by the Rural Industries Research and Development Corporation that enabled this project to be undertaken. The data analysis phase of the research would also not have been able to be undertaken without the NOSI database and the assistance provided by the staff (most particularly Jenny Job, Keith Mallett and Sue Barker) of Safe Work Australia. This assistance provided both in the preliminary scoping stages of the project and in the data collation and analysis, was invaluable. Sincere thanks go to them for their enthusiasm and support.

The project has also be strongly supported with guidance and industry feedback, by Jo-Anne Ruscoe from the Fisheries Research and Development Corporation, and Mr Brett McCallum, in his role as co-ordinator of the National Seafood Industry Alliance - Safety, Education and Training forum. Thanks also go to the tireless industry advocates and representatives who so often agree to assist in projects such as these, in ‘ground truthing’ the data, and providing guidance and feedback on industry supported ways to take research forward into positive outcomes for commercial fishing, Australian rural industries, and the Australian public.

Abbreviations

ABS - Australian Bureau of Statistics

ASCC - Australian Safety and Compensation Council

DAFF - Department of Agriculture, Fisheries and Forestry

EMS - Environmental Management System

FISAG - Fishing Industry Advisory Group

FRDC - Fisheries Research and Development Corporation

IFQ - Individual Fishing Quotas

ITQ - Individual Transferable Quotas

MSQ - Maritime Safety Queensland

MSV - Marine Safety Victoria

n.e.c. - Not Elsewhere Classified

NMSC - National Maritime Safety Committee

NOHSC- National Occupational Health and Safety Commission

n.p. - Data not available due to confidentiality restrictions

OH(&)S- Occupational Health and Safety

p - Preliminary data

PFD(s) - Personal Floatation Device(s)

QSIA - Queensland Seafood Industry Association

RIRDC - Rural Industries Research and Development Corporation

SIV - Seafood Industry Victoria

WAFIC - Western Australia Fishing Industry Council

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Executive Summary

What the report is about

This project emanates from the identification by the Collaborative Partnership for Farming and Fishing Health and Safety Program of gaps in occupation health and safety (OHS) data for the fishing industry across all three of its objectives. The research is important as it provides a basis to understand the OHS issues and challenges of the fishing industry and where further efforts and investment should be targeted.

The importance of this report in particular, is that on the basis of the best available statistical data, it provides some fifteen suggestions and recommendations for the industry and funding agencies to consider in regard to research, communication and training in the commercial fishing industry. It is the most useful research undertaken in recent years for framing a coherent and factually based approach to redress OHS issues in the commercial fishing industry and to arrest increasing rates of OHS claims.

Who is the report targeted at?

The primary beneficiaries of this research are the commercial fishing industry, research and funding providers. The information contained in this report provides clear guidance to the industry of its OHS circumstance relative to other primary industries (forestry and agriculture). It identifies the most 'at risk' groups in the industry, and the existing and emerging high risk elements of the industry. It also identifies those areas and issues that are in most need of further investment, and those which would produce the most effective outcomes in terms of reducing the incidences of OHS claims in commercial fishing, that have been explored with the industry itself for relevancy.

Where is the industry located in Australia?

The relevant industry groups (marine (or wild catch) aquaculture and post harvest commercial fishing) are located in every State and Territory of Australia, with the exception of the Australian Capital Territory. The States with the highest levels of employment in commercial fishing are indicated to be Western Australia, South Australia and Queensland. However it must be noted that Tasmania, New South Wales, Victoria, and the Northern Territory also have noteworthy levels of employment in the commercial fishing industry. Specific employment data for these States and Territory was not however, accessed for analysis in this project. The findings and recommendations from this report have relevance to all marine (wild catch) and aquaculture operations in Australia. The industry is difficult to quantify from employment statistics and the data examined here as many only participate part time in the industry and do not regard it necessarily as their primary source of income, or are not covered by standard workers compensation arrangements. The industry, in both wild capture (marine) and aquaculture is a mixture of sophisticated large business operators who supply both national and international markets, and other single person operators who supply limited product to local fishing co-operatives. There is no such thing as 'the' commercial fishermen. The style and nature of fishing activity and the risks involved also vary dramatically between wild catch inshore or offshore, ocean aquaculture and inland aquaculture activities.

The industry supplies both domestic and international markets. As reported in 'Australian Fisheries Statistics 2009', the 'total volume of Australian fisheries production fell by 2800 tonnes to 238 000 tonnes in 2008/09 and had a gross value of $2.2 billion. Tasmania accounted for the largest share of gross value of production (23 per cent), followed by South Australia (21 per cent) and then Western Australia (17 per cent). Commonwealth fisheries accounted for 14 per cent of gross value of production, and the gross value of aquaculture production (including southern bluefin tuna wild catch input to the South Australian tuna farming sector) decreased by 1 per cent ($9.1 million) to $861 million, and accounted for 39 per cent of the gross value of Australian fisheries production. The volume of aquaculture production was 69 600 tonnes, accounting for 29 per cent of total Australian

fisheries production. The value of farmed salmonids runs contrary to all other fisheries activities, exhibiting a rise by 7 per cent in production to $323 million in 2008–09. Farmed salmonids continues to be the largest aquaculture species produced in Australia, accounting for 37 per cent of the total value of Australian aquaculture production and 15 per cent of the total value of fisheries production. While the gross value of production for the wild catch sector increased by 1 per cent, to $1.4 billion, the volume of production decreased by 5 per cent (8500 tonnes) to 173 100 tonnes'[1].

Australian fisheries production peaked in 2000–01 at $582 million, but since that time the real value of fisheries production has declined (as identified from the figures cited above). The trend of decreasing financial returns for operators in the industry has resulted from rises in fuel costs, and the increasing value of the Australian dollar. Consequently it is important to ensure all possible opportunities are captured to enhance the economic efficiencies of the industry – and decreasing time and expertise lost through OHS claims is an obvious avenue.

Not only will the industry benefit from the work undertaken in this research, if the recommendations are acted upon, but also the Australian public. This is through the increased efficiency, and therefore profitability and sustainability, of a valuable food production and export earning industry.

Background

Aims/objectives

This project was initiated as a result of previous research funded by RIRDC which identified significant knowledge deficiencies in the area of commercial fishing occupational health and safety data and of the existing circumstances of the industry. The gaps in knowledge have arisen due to previous difficulties in collating and interpreting data, which have resulted from disaggregation of State data, creating difficulties in data analysis at the national level; availability of state data; and the nature of the fishing industry which results in many participants not being included in official statistics or records.

As a result, this project aimed to establish a current baseline as of 2010 of data knowledge by utilising recently available nationally aggregated data to provide an overview of the status of Occupational, Health and Safety in the commercial fishing industry for the period of data availability (1988 - 2008)(since aggregation and access to State data sets has been facilitated). It also sought to identify the OHS interventions that have occurred in the period of data availability along with the effectiveness of them. Subsequent to this, it also undertook to analyse available data to identify any particular 'at risk groups' or identifiable hazards that the industry may be able to address. It also identifies those areas and issues that are in most need of further investment, and which would produce the most effective outcomes in terms of reducing the incidences of OHS claims in commercial fishing.

Methods used

The research was undertaken as a desktop analysis utilising secondary research, in the form of reports, publications and collated data provided by Safe Work Australia.

The first section of the research (Chapters 1 and 2) involved a literature review of all publically available State and Federal government reports into Occupational Health and Safety issues and interventions, along with Industry reports and academic papers dealing with the issue at any time leading up to the period under review as well as during the years of 1988 to 2008.

The second section of the research (chapters 2 and 3) analysed the national data collated by Safe Work Australia in the sectors of Agriculture, Fishing and Forestry, which was also further broken down into

[1] ABARE–BRS 2010, *Australian fisheries statistics 2009*, Canberra, August

the sectors of 'marine' (otherwise known in the industry as wild catch or ocean) and aquaculture (ocean or inland farming) fishing. Specific unrounded State data was then analysed, (for four States, the maximum that can be accessed for any data set at one time) for the same factors examined at the national level, to identify if any further explanatory factors or trends could be identified to elucidate the circumstances around the rates of claims in the industry.

It is extremely important to note that all data analysed though out this report is *under* representative of the commercial fishing industry. This is explained in full under the discussion of data limitations in this report, along with the reasons for it. Fundamentally, it is because in the wild catch (or marine) sector of the industry many workers are self employed share fishers and therefore do not come under any workers compensation agreements or cover. They are therefore NOT represented in these statistics. This is a major deficiency of the data; however this is the best available occupational health and safety data in Australia for the commercial fishing industry. In summary, and as identified in the literature review (refer Academic Reports), it is estimated that only eighteen per cent of those employed in the commercial fishing industry are captured in any official occupational health and safety statistics.

Lastly, in light of the deficiencies in data coverage the project utilised an industry workshop to obtain industry feedback on the veracity of the results. This involved fifteen industry representatives who attended the workshop and a further eight who reviewed the draft reports and provided comment independently of the workshop.

Results/key findings

In relation to the objective, the report in the first instance provides an accessible summary of;

1. All publically available and accessible research and reports on OHS in the commercial fishing industry in Australia since 1983;

2. Identification of all OHS interventions since 1988 in the commercial fishing industry and a broad assessment of their apparent effectiveness;

3. Summary of the national circumstance of commercial fishing both in the context of the broader Agriculture, Fishing and Forestry sector; of itself; and a comparison of the sectors within commercial fishing (marine and aquaculture), for the period 1988 to 2008

4. Analysis of detailed data for four States in Australia for the period from 2000/01 to 2008/09, of commercial fishing by both sectors (marine and aquaculture) and, where appropriate, a comparison of sectors within the industry.

5. Industry comment and verification of the data trends and findings, and recommendations as of 2010 as to the most appropriate means to positively progress the circumstances of commercial fishing OHS for the benefit of the industry and the Australian public.

Overall, the resounding finding is that a lack of awareness of occupational health and safety, or safety culture, still fails to be effectively dealt with across all States of Australia. The OHS data identifies that the commercial fishing industry has rates of claims that are average for the overall Agriculture, Fishing and Forestry sector, but that claims for fatal injuries in aquaculture and non fatal in marine (or wild capture) fisheries are both increasing. The most 'at risk' group in the industry are those between the ages of 20 to 24 years, with those aged 45 – 54 years being the next most at risk group, who will receive injuries from non powered hand tools to their upper bodies.

If the recommendations of this report are adopted, this research will have benefited the industry by proactively engaging with the need and opportunity change and improve the safety culture of the industry, leading to reduced injuries to those in the industry and claims and lost economic opportunities. Therefore it will contribute to increased fishing time and food production for the

Australian public. This research also provides the industry and funding providers with an opportunity to have assessed the national and State status of the industry both before and after an intervention enabling, for the first time, assessment of intervention effectiveness.

Implications for relevant stakeholders:

The importance of this report is that, on the basis of sound statistical data, it provides some fifteen suggestions and recommendations for the industry and funding agencies to consider in regard to improving OHS in the commercial fishing industry through research, communication and training. It is the most directed research that has been provided in recent years for framing a coherent and factually based approach to redressing OHS issues in the commercial fishing industry and to arrest increasing rates of OHS claims.

For communities who both support the industry and the greater Australian public, research such as this, which if appropriately acted upon, will increase the safety of one of Australia's key food producing industries, and therefore its sustainability.

The implications for Policy makers of such research, is in the ability to be able to comprehensively understand the background and status of an industry and where certain interventions or policies have, and have not, had the desired effect.

Recommendations

A number of recommendations and suggestions were raised in the workshop and recorded in that section of this report (Chapter 5) regarding training and communication that would assist in the reduction of OHS claims in the industry. These recommendations are targeted at both industry and government policy makers. Both these parties must work together in their respective areas if the recommendations from this research are going to generate the positive outcomes that are envisaged possible by the industry. Industry action also needs endorsement and support, where appropriate, at the legislative level.

Introduction

This project was initiated in the context of research undertaken by Lyn Fragar[2], and the resultant suggested options to RIRDC for research investment. Gaps were identified in our knowledge and understanding of occupational health and safety data for the fishing industry across all three objectives of the Collaborative Partnership for Farming and Fishing Health and Safety Program. This has arisen due to difficulties in collating and interpreting commercial fishing data from the States at the national level. This circumstance emanates from a number of issues, including:

- a past lack of disaggregation of national data below the Agriculture, Fisheries and Forestry level of collection and reporting;
- the charter of State Fisheries agencies not covering the collection of Occupational Health and Safety (OH&S) data, so they have none; and
- The collection of OHS data by State Safe Work (or Work Safe) agencies is independent of the National body (Safe Work Australia) and release of that data is dependent on individual State confidentiality agreements.

Consequently, this project was designed to address these difficulties by providing an overview of existing data on the status of Occupational, Health and Safety in the commercial fishing industry for the period of nationally aggregated data availability (1988 - 2008); the interventions; the effectiveness of them and any particular 'at risk groups' or identifiable hazards that the industry may be able to address.

This work was undertaken in five parts. The first four parts consist of secondary data analysis and the last is an industry workshop to provide the opportunity for industry feedback on the results of the research and to discuss further actions and work that is or may be required to address OHS trends identified in commercial fishing. This report includes a review and synthesis of the literature; identification of interventions in fisheries management or OHS activities that may shed light on OHS data trends; an analysis of the national data for the commercial fishing industry and in the context of the broader Agriculture, Fishing and Forestry industry sector; and an analysis of the State data for four States (the maximum number of States that can be analysed in detail for any given period due to confidentiality agreements). Lastly, a summary of the industry workshop report is included.

The report then concludes with a summary of the results, implications and finally, recommendations for further consideration.

[2] Fragar, L. (2009). Collaborative Partnerships for Primary Industries Health and Safety. Research Investment Options 2008-2012. Canberra, Rural Industries Research and Development Corporation**:** 21.

Objectives

The objective of this research was to address the previously identified gaps in knowledge of commercial fishing OHS. These were, what research and interventions had previously been undertaken in relation to commercial fishing in Australia, and of these which, if any, had had any impact; where the industry was positioned relative to the other primary industries of Agriculture and Forestry; what the trends in OHS claims were for commercial fishing; and who were the most 'at risk' groups in the industry. It was also to identify, given the overall findings, what the most appropriate actions and means might be to address apparent trends moving forward.

Methodology

The methodologies employed for this project were a literature review, secondary data analysis and 'ground truthing' the data through an industry workshop. The literature review work covers chapters one and two, while the data analysis is discussed in chapters three and four. The workshop approach, feedback and recommendations are discussed in chapter five. Where appropriate more specific details on the methodology for each chapter is included in that chapter.

Literature Review and Intervention Identification

This part of the project (Chapters 1 and 2) is aimed at identifying all the literature that exists nationally, and interventions that occurred, relating to OHS in commercial fisheries in Australia between 1988 and 2008. The year 1988 was identified due to the introduction of the Victorian Marine Act, which specifically enforced the provision of "efficient and safe operation of vessels on State waters"[3] at that time. This review did not explore international fisheries OHS literature, and it did not identify or list all the Acts or legislation relating to OHS in fisheries, only those relating specifically to commercial fishing or where it may have reasonably been expected to have an impact on the industry. It also did not include the number of reports generically discussing industry fatalities of aggregated agriculture, fishing and forestry data, due to the skewed perspective this may provide given the higher rates of OHS incidents in Forestry and lower rates in Agriculture. This was due to the parameters of this study which is to identify the past issues in the Australian commercial fishing industry and any interventions that occurred in the period under review that may cast light upon the interpretation of the statistical data which follows.

Aside from regular OHS incident data, this project originally aimed to discover information regarding mental health issues in the fishing industry as well. Unfortunately Safe Work Australia – the national body which draws together all OHS data in Australia – has difficulty in accessing research records and archived literature that it may have collected in this area. This is due to a number of both bureaucratic re organisations and office relocations, which now sees its offices located separately from its resource library. However, discussions with the Director of Research at Safework Australia[4] identified that while there are a number of research articles and reports on areas around Psychosocial[5] and fatigue issues that affect OHS in the workplace, none of these related specifically to fishing or commercial fishing activities. The National Hazard Exposure Worker Surveillance Survey[6], which was undertaken in 2008, did provide some data on mental health issues in the workplace, however the sample relating to fishers was extremely small (0.3%). The data will still be included in this review for any 'clues' or context that it might provide in relation to the literature and, later, the larger standard OHS data sets.

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[3] Parliament of Victoria (1988). *Marine Act 1988*. Melbourne, The Parliament of Victoria. **No. 52 of 1988**.

[4] Dr Jenny Job, Director of Research & Evaluation, in the Research, Evaluation & Data Branch, SafeWork Australia, Canberra. Pers Com. 06/05/10

[5] Psychosocial is used in this domain to refer to the mental health aspects of OHS in the workplace. Is has several dimensions, being 'job control' - which covers issues such as, pressure to work long hours; deadlines; excessive workloads etc; and 'job support' – which includes events or actions such as, bullying; violence; and harassment.

[6] Australian Government Australia Safety and Compensation Council, 2008, "National Hazard Exposure Worker Surveillance (NHEWS) Survey: 2008 Results", Canberra, (Updated March 2009.)

Generally, there is remarkably little literature in the specific area of commercial fisheries and OHS, and consequently the scope was increased to include any academic journal articles that would shed light on the events, occurrences and circumstances of occupational Health and Safety in the Australian Commercial Fishing Industry.

The databases of the following sources were mined for literature:

- Safe Work Australia
- Seacare – Seafarers Safety, Rehabilitation and Compensation Authority
- Trove – The National Library of Australia
- The Australian National University
- Australian Maritime Safety Authority & National Marine Safety Committee
- Australian Fisheries Management Authority
- NSW Maritime
- South Australia's Department for Transport, Energy and Infrastructure
- Workplace Health and Safety Queensland Department of Justice and Attorney-General
- Northern Territory Transport Group
- Maritime Safety Queensland
- Marine and Safety Tasmania
- Marine Safety Victoria
- Government of Western Australia Department of Transport – Marine Information
- NT Worksafe
- Worksafe NSW
- Safework QLD
- Worksafe Victoria
- Safework SA
- Workcover Tasmania
- Worksafe Western Australia
- Seafood Services Australia

Data Analysis

The data for Chapters 3 and 4 was accessed through the NOSI (or National Online Statistics Interactive) system. At a national level, this data provides information at the level of commercial fishing, and then the sub categories of marine (or wild catch) and aquaculture. It does not separate post harvest activities from those of marine or aquaculture and hence the information from this sector is subsumed into the other two. Except in the instances of fatal claims where actual figures are provided, the data is rounded to the nearest five claims and in some cases data is subject to relative standard errors of 25% or greater – and is noted in these cases. In regard to the State data analysis, subsequent to agreements made with the States and Territories in or about the year 2000, this database now holds and can make available some State's data sets on OHS in commercial fishing from 2000/01 to 2008/09, which covers the essential years of interventions undertaken in the commercial fishing industry.

Confidence intervals have generally been getting narrower since 2001 therefore increasing the reliability of the data provided since that time. It must be noted that since all data is from the July to June year (e.g. 1998/99 is the 1999 year; 2000/2001 is the 2001 year and so on), data presented here for the 2009 year is preliminary (denoted with a 'p') as Safe Work Australia was awaiting the finalisation of the data at the time these data were provided. Consequently, it is subject to the provision of final statistics from all jurisdictions, at which time figures generally undergo an increase of approximately three percent[7] (3%).

Additionally, explicit graphs for the State data have not been provided where the numbers would become identifiable, to ensure adherence to Safe Work Australia's confidentiality practices which endeavour to protect the confidentiality of State information regarding industry OHS. In most cases this has been addressed by presenting graphs of the data represented as a percentage of industry employment (adjusted for the under representation of workers compensation coverage). Where this alternative has not been used, it is due to the percentages being too small to generate information of any value in a graphical form.

Data Limitations

It is noteworthy that many who earn a living in marine fishing, are not classified as employees due to being share fishermen (that is; they work for a share of the catch) and additionally, as individual operators are not required to carry workers compensation. The effect of these two circumstances is that such workers in the industry are unlikely to be represented by the NOSI or ABS Labour force statistics. However, this under representation applies to both the numbers working in the industry and of OHS claims for the industry. Therefore it is reasonable to see the results identified here as, if anything other than what is presented, to be an *under* representation of the reality of both employment and claim rates. In addition, it is the trends of the data that provides the perspective of the movement of the overall industry in regard to evaluating OHS events and outcomes.

The numbers of claims should be considered in light of the number of employees recorded nationally in the commercial fishing industry. Employees in the industry are regarded as those workers employed under labour hire arrangements and are classified under the industry of the employer regardless of the industry where the injury actually occurred. In addition, due to the limitations of the ABS in collecting detailed information on employment, in some cases only employee estimates can be supplied[8].

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[7] 21st Sept 2010, Pers com [email]; Keith Mallett, Safe Work Australia, Canberra Australia.

[8] Safe Work Australia, 2010 "COMPENDIUM OF WORKERS' COMPENSATION STATISTICS AUSTRALIA 2007–08", Commonwealth of Australia, Canberra; ISBN 978-0-642-32931-8 (Online PDF) p. 91

For confidentiality reasons all numbers are rounded to the nearest five claims and where these fall below three claims are represented as 'np' (or 'not for publication') in the dataset: or for the purposes of graphing, these instances have been recorded as zero, being the closest estimable figure. In some cases the relative standard of error was greater than 25%, where this occurred in greater than35% of the years in the period, the data was regarded as being too unreliable to make comment about, or draw conclusions from.

The data was initially analysed by the sector of commercial fishing, and was then examined as both 'marine' and 'aquaculture' fishing to explore any substantial trends that aligned with interventions in a particular area. Originally it was posed that the marine sector of commercial fishing would be further broken down into the groups of Line Fishing; Squid Jigging; Finfish Trawling; Prawn Fishing, and Rock Lobster Fishing. However when brought down to these levels, high levels of non publishable data made analysis unreliable. Further, the inordinate numbers of claims classified as 'Marine Fishing n.e.c.' (not elsewhere classified) also made analysis beyond the level of 'marine fishing' of no added value, as n.e.c classifications would contain claims occurring in the other sub sectors (Line Fishing, Squid Jigging, Finfish Trawling, Prawn Fishing and Rock Lobster Fishing). Consequently, a breakdown of data by marine fishing sub-sector was abandoned.

Definitions

For the purposes of this review, the following definitions and interpretations, as employed by the National Marine Safety Committee, are used as a guideline to the generic terms referred to throughout this document. In many of the reports, no details were provided as to the definitions or interpretations used for these terms, however it is reasonable to believe that the various interpretations of these terms generally reflect the intent of those contained below[9].

MARINE INCIDENTS

A Marine Incident is deemed to be an event causing or involving any of the following in the operation of a vessel.

- The death of any person on board a vessel, or caused by a vessel.
- The injury to any person on board a vessel, or caused by a vessel.
- The loss of a person from a vessel.
- The abandonment, loss or presumed loss of a vessel.
- The collision of a vessel with another vessel or with an object.
- The grounding, sinking, flooding or capsizing of a vessel.
- A fire or explosion aboard a vessel.
- Loss of stability affecting the safety of a vessel.
- Structural failure of a vessel.

[9] Taken from; National Marine Safety Committee Inc., (2009) "Commercial Vessel Incidents in Australia 2005-2008", Sydney, November, p. 18

FATAL MARINE INCIDENTS AND FATALITIES

A fatal marine incident is that which results in a death of a person(s); or a person or people are considered missing at sea. A fatality occurs when a person involved in a marine incident was killed during the incident or died within 30 days of the incident, where the death is attributable to injuries sustained during the marine incident or a person is considered missing at sea.

SERIOUS INJURY MARINE INCIDENTS AND SERIOUS INJURIES

A serious injury marine incident is an incident resulting in any injury to a person who requires admission to a hospital. A serious injury occurs when a person involved in a marine incident suffers any injury requiring admission to hospital. The number of serious injury marine incidents that occurred in a particular year is always less than, or equal to, the number of serious injuries that occurred.

INJURY MARINE INCIDENTS AND INJURIES

An injury marine incident is an incident resulting in any injury to a person but not a fatality. An injury occurs when a person involved in a marine incident suffers any type of injury (serious, minor and unclassified injuries) but does not involve a fatality. A minor injury occurs when a person involved in a marine incident suffers any injury which does not require a hospital admission. The injured person could be treated at the hospital and allowed to go home or not attend hospital. The number of injuries that occurred in a particular year is always greater than, or equal to, the number of injury marine incidents that occurred.

Chapter 1 – Literature Review

Introduction

The literature review is broken down into several parts according to the source, and then focuses on incidents and accidents that resulted in injury or disease to persons in the commercial fishing industry or were associated with the industry by the nature of the accident. The sources were comprised of reports by, the States; Federal government reports; industry generated and/or funded reports; and academic papers. All are summarised in the context of;

- the objective of the reports;
- the types of accidents or incidents identified or reviewed;
- the types of recommendations made; and
- any commonalities in terms of the 'at risk' groups identified.

The overall objective was to clarify any previously identified common high risk groups and activities (including mental health) of the commercial fishing industry, and to inform the focus and definitions that are employed in the quantitative data review (Chapters 3 and 4). The objective of this component of the research was to provide a frame of reference for the data analysis to follow.

Methodology

Further to the methodology details outlined in the Introduction, the following provides details around why specific reports were chosen to be included in or omitted from the review.

Two reports on accidents from NSW were not included in this review as while they were both related to commercial vessels, neither involved commercial *fishing* activities, but rather transport and shipping. These were the NSW Maritime's response to the Office of Transport Safety Inspection (OTSI) recommendations on the 'Dawn Fraser' and 'Pam Burridge' incidents.

A report from Maritime Safety Queensland (MSQ) similarly has not been included in this review (that of the 'Wunma' in the waters of the Gulf of Carpentaria on 6 and 7 February 2007) as although it was a commercial vessel, again it was one carrying zinc ore, rather than conducting fishing operations. Additionally MSQ also lists an incident report into the collision between 'Sun Paradise' and 'Pride of Airlie' at Whitsunday Passage on 18 November 2001, which was not considered as it involved two charter recreational craft, and did not involve any commercial fishing vessels.

While Maritime Safety Tasmania was one of the few agencies that had a large number (40) of incident reports listed, the majority of these related to commercial transport or passenger vessels, and a further number entailed no injury to persons on board (cases of groundings and collusions where no injuries were sustained) and consequently these reports were not included in the following discussion. A total of seven reports were identified from Tasmania that involved crew occupational health and safety (OH&S) issues.

Where reports could not be accessed directly from online data bases of the agencies listed previously, contact was made directly with the relevant person to ascertain the existence or otherwise of any reports or literature relating to commercial fishing OHS incidents and accidents that had occurred since 1988 and may or may not have resulted in recommended changes to operating procedures or legislation.

All reports acquired were analysed to establish both; a timeline of events and interventions in commercial fishing OH&S operations; and thematically for common issues or injuries occurring. The second part of this report - intervention identification – draws together the information on

interventions collected in the literature review to identify, where possible, the: events giving rise to the interventions; parameters and aims of the intervention; implementation methods; any identified altered outcomes in OH&S circumstances; and, where appropriate, a synthesis of factors leading to successful and unsuccessful interventions.

State (Incident) Reports

Reports from the States on commercial fishing marine incidents and accident reports vary greatly from State to State, in the existence of them; the years covered; and detail explored. Despite extensive investigations with the relevant agencies only Western Australia, South Australia, Victoria and Tasmania had any reports that could be uncovered from both on line database searches and personal contact with the various appropriate agencies' representatives. There were no reports of any kind that could be identified from New South Wales, Queensland or the Northern Territory.

In Tasmania, there were five incidents or accidents that resulted, or had the potential to result, in injury in the period up from 1988 to 2008. None were reported that resulted in any disease. It appears that these reports were often as a result of investigations undertaken some time after the accident when it was necessary to 'reconstruct' the circumstances of the incident. In one case the incident, which occurred in 1999, was not reported for some eight days after its occurrence, despite it resulting in a crew member sustaining 'vertebrae damage and would be away from work for approximately two months.'[10] No deaths were reported in those events listed, and three of the five resulted in injuries requiring hospital attendance. Only two of the reports related the cause of the incidents or accidents to equipment failure; the other three related to lapses in planning, training, or attention to prevailing conditions. These involved the failure to adopt appropriate; 'abandon ship' procedures (both training and timely implementation); trip planning; lookout and watches for objects or land/rocks; and attention to housekeeping of boat and equipment.[11] In these reports, while they varied in format, they generally covered a summary, narrative of the events, comments and analysis and conclusions. Only two of the reports included a recommendation, which in one case was 'no further [action] required'[12], and the other, that of a 'Davit[13] Failure', resulting in vertebrae injury to a crewman, made seven recommendations. Five of these related to repair and safe use of the davit in question; the sixth to consideration of a 'reprimand of the owner for being in breach of the Marin and Safety (...) Bylaws'[14], while the seventh recommended a 'provision to revise Master Survey registers for vessels at 5 year intervals.'[15] The remainder of the reports included 'conclusions' which pointed to a series of

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[10] Marine and Safety Tasmania, 1999, "Davit Failure on Vessel "Edulis" – December 1999", URL: http://www.mast.tas.gov.au/domino/mast/mastweb.nsf/v-lu-all/Publications~Incident+Investigations, Accessed 3/5/10

[11] Marine and Safety Tasmania, 2007, "Investigation into the grounding of MORTICIA South of Surveyors Point Huon River – 14th May 2007", URL: http://www.mast.tas.gov.au/domino/mast/mastweb.nsf/v-lu-all/Publications~Incident+Investigations Accessed 3/5/10

[12] Marine and Safety Tasmania, 2006, "Investigation into the Grounding of "UNA" Low Rocky Gulch" URL : http://www.mast.tas.gov.au/domino/mast/mastweb.nsf/v-lu-all/Publications~Incident+Investigations, Accessed 3/5/10

[13] A **davit**, is a structure, usually made of steel, which is used to lower things over an edge of a long drop off such as launching a lifeboat over the side of a ship. (http://en.wikipedia.org/wiki/Davit , Accessed 06/08/10)

[14] Marine and Safety Tasmania, 1999, "Davit Failure on Vessel "Edulis" – December 1999", URL: http://www.mast.tas.gov.au/domino/mast/mastweb.nsf/v-lu-all/Publications~Incident+Investigations, Accessed 3/5/10

[15] Ibid.

'common sense' issues that had been overlooked or a lack of maintenance of equipment (e.g. bilge pumps[16]). There were also cultural issues highlighted in the majority of reports, which related to a lack of attention to paperwork (log books), updating first aid training and safety drills. This is likely to relate to the culture of the fishing industry as discussed in academic papers reviewed later in this chapter. No follow up for the recommendations or conclusions was identifiable from the data accessed. The majority of events were identified to have resulted from 'human factors' in regard to a lack of planning, training or attention to prevailing conditions – attitudinally derived circumstance. The davit failure could reasonably also be attributed to attitudinal failures, given the lack of awareness or concern for review and inspection of equipment to ensure good working order.

There were six reports from South Australia that related to injury, disease or fatality occurring in the commercial fishing industry, in the years 1988 to 2008 inclusive. Four were in relation to deaths (1993 – 1998), one incident of a worker being struck by the propeller of an outboard motor (2006), and two incidents where injuries and lacerations to hands were experienced (2008). There were no incidents or accidents reported in the years between 1998 and 2006, that could be located. The decrease in the severity of the injuries sustained is noteworthy. The deaths were all attributed to either a direct failure to provide a safe working environment (1993, 1996 and both in 1998) either through training (e.g. diving without formal qualifications or training), induction, or adequate securing of equipment; and/or a failure to enforce use of safety equipment, (e.g. in the form of floatation devices (1996)).

In Western Australia there were two 'Safety and Health Alerts' in relation to commercial fishing for the period. The first was issued in July of 2000, and related to the death of a deckhand due to an electric shock, caused by inattention to the exposure of electrical connections to water, and use of electrical equipment on the deck of a vessel. The second Alert, related to two deaths in July and August of 2006, resulting from fishers going overboard during and after fishing operations. The recommendations that arose from that incident related, in the main, to the necessity for operators to conduct a risk assessment of persons going overboard; the need to implement or improve safety systems and procedures, induction and training; and the requirement for operators to enforce safety practices in day to day operations. Notably it also recommended the provision of 'auto inflating or rip cord inflation personal flotation devices for all crew while on deck...'[17] It was also noted that fatigue was a potential factor in these incidents. Overall, the incidents, as with South Australia and Tasmania, again appear to relate to the culture of the industry.

In 1992 and 1995 in Western Australia there were also incidents – the capsizing of the 'Saint Maddalena' in 1992, and sinking of the 'Harmony' and 'Lady Pamela' as a result of Cyclone Bobby in 1995 – which resulted in the deaths of five and seven crew members respectively. The reports on these incidents caused the practices of Fisheries Western Australia to be called into question regarding how they regulated the industry and how these may have contributed to the tragedies through limitations placed upon the operations of the vessels[18].

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[16] Marine and Safety Tasmania, 2006, "Investigation into the Sinking of the Resolution of Macquarie Harbour", URL: http://www.mast.tas.gov.au/domino/mast/mastweb.nsf/v-lu-all/Publications~Incident+Investigations, Accessed 3/5/10

[17] Department of Consumer and Employment Protection, Government of Western Australia, 2006 "10/06 Persons going overboard on a commercial fishing vessels", http://www.docep.wa.gov.au/WorkSafe/PDF/Safety_alerts/2006/10-06_Persons_going_overboard_on_a_commercial_fishing_vessel.pdf Accessed 06/05/10

[18] Department of Fisheries, Western Australia, 1997, "The impact of Occupational Safety and Health on the Management of Western Australian Fisheries", Fisheries Management Report No. 1, November, ISSN 1329-7902

> "Worksafe's concern in such a situation is that the Fisheries Department, through the imposition of specific rules regulating the manner in which fishing can be conducted, is potentially helping to create a work environment that is not as safe as it could be." [19]

The concern was that Fisheries Western Australia would, due to this, assume the duty of care normally assumed by the operator. There were five recommendations made as a result of this review, the key one of which was that the Fisheries Department should reconsider any constraints placed upon the industry and remove them if possible; specifically that:

> "When reviewing management plans where any form of legislative constraint is imposed that has a potential impact on safety, both the Fisheries Department and the authorised fishers should review the legislative constraint as it relates to safety with the aim of removing that constraint in the long term." [20]

This highlights the difficulties encountered when the legislative requirements of managing a common resource cross over with the operations of an independent business operation. This report may well be noteworthy, however, for its likely effect in focusing the industry on safety issues and practices, and consequently any OH&S data analysis must bear this event in mind.

In August 2008, the Western Australian Government published a 'State of the Work Environment' Report, which examined work related fatalities in WA from 1988-89 to 2007-08[21]. The report dealt with all fatalities in WA across all industries for the period however, it did not split fishing out as a separate category from Agriculture, Fishing and Forestry, which was the category with the highest number of fatalities for the period in the State. It did identify that some spikes in fatalities in the Agriculture Fishing and Forestry (in 1994-5 for example) could be attributed to marine fatalities that had been documented such as cyclone Bobby in 1995, and that 'many of these fatalities involved employees and self employed people working in the fishing industry in a range of occupations, including deckhands, and seamen, fishermen, tradespersons, pilots and pearling industry workers.'[22] The report also noted that generally in Western Australia, workplace fatalities most often occurred to employees (71.6%); were in the age group of 25 to 34 years (30.5%); were caused by falling objects (26%); and were as a result of multiple injuries or the principle injury could not be identified (44%). The finding that for the commercial fishing industry which is noteworthy is that; new employees/share fishers/contractors (usually young) who have limited training are the most likely victims of workplace OH&S incidents and accidents.

In August 2010, the West Australian Department of Commerce in conjunction with the Commission for Occupational Safety and Health published a report which established a Code of Practice for 'Man overboard' prevention and procedures[23]. This is a significant step forward in the production of clear guidelines aimed at improving the awareness and culture of safety through building awareness of risk assessment and abatement. As this report had only just been released its effectiveness or take up could not as yet be assessed.

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[19] Ibid, p. 6

[20] Ibid, p.59

[21] Worksafe (2008). State of the Work Environment. Work-related fatalities Western Australia 1988-89 to 2007-08. Worksafe. Perth, Government of Western Australia Department of Consumer and Employment Protection**:** 21.

[22] Ibid. p.11

[23] Commission for Occupational Safety and Health (2010). Code of Practice. Man overboard: prevention and response 2010. Department of Commerce. Perth, Government of Western Australia,**:** 36.

Overall, Western Australia appears to have been more alert to the implications of the culture (or lack thereof) of OH&S in commercial fishing earlier than other States, potentially because of the identified potential for litigation. However, it is only in 2010 that the Government itself appears, according to State reports, to have taken any specific action or intervention to address the apparent need to modify the culture in relation to OH&S attention in the fisheries sector. Despite this, as will be discussed later, the industry itself, through the Western Australia Fishing Industry Council (WAFIC), did take steps to improve awareness and responsiveness to OH&S in the industry in the late 1990s.

Victoria did not have any incident reports that could be located either remotely through the WorkSafe website (in fact fishing did not even appear as an industry of interest[24)], nor could anything be identified from discussions with officers at WorkSafe Victoria. However, Marine Safety Victoria (MSV) has published two reports with reference to Commercial fishing and marine Occupational Health, and Safety[25]. The first of these reports, 'Marine Safety in Victoria' provided an overview of all marine incidents that had been reported in Victoria from July 1999 to June 2001, which were defined as an event causing or involving death or loss of a person; loss or abandonment of a vessel; collision of a vessel with another vessel or object; and the grounding, sinking, flooding, capsizing, explosion or structural failure of a vessel. It did note that as incidents were only recorded with Marine Safety Victoria where the Water Police were notified, many incidents do go unreported. The report notes that of commercial incidents, there were six fatalities in the three year period covered by the report, of which half were persons overboard. These events occurred in a range of weather circumstances, but the specifics of each incident were not recorded, preventing the identification of contributing factors. There were also six commercial fishing non fatal injury incidents in the same period (or 40% of the total recorded). Unfortunately the report does not provide any analysis of the causes of the incidents, or any interventions that may have resulted from the reports. It does identify, from hospital admissions records, a declining trend in the risk of being seriously injured in a marine incident, over the 14 year period (1987 – 2001) that records had been kept at the time.

The second Victorian report identified was compiled by the Coroner's Office and examined 'Commercial Vessel Fatalities in Victoria 1991- 2001'. Significantly, this report notes that the introduction of 13 national Marine Parks in 2002, with fishing being prohibited in eight of these, would have reduced commercial fishing effort. The report went on to discuss previous research into commercial fishermen and the wearing of Personal Flotation Devices (PFDs), identifying that between 1989 and 1992 there were 55 deaths in the industry, of which 13 could be attributed to downing most commonly due to the lack of wearing a PFD, despite in some cases them being available on board. However, it also noted that 89 deaths per 100,000 workers in the 1989 -1992 period (16 times higher than the 'all industry' rate of 5.5 deaths per 100,000 workers per year) was actually a reduction from 143 per 100,000 in the previous period of 1982 to 1984. In addition to this it also cited that there were, on average, 28.33 injury claims per year in the commercial fishing sector[26]. Overall the report examined 16 incidents, and focused on the relative use of PFDs as a key factor in

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[24] See http://www.worksafe.vic.gov.au/wps/wcm/connect/wsinternet/WorkSafe/Home/Safety+and+Prevention/Your+Industry Accessed 08/05/10

[25] Monash University Accident Research Centre, 2002, "Marine Safety in Victoria" Prepared for Marine Safety Victoria, October.

And

Batchelor, M & L Bugeja, 2003, "Commercial Vessel Fatalities in Victoria 1991 – 2001", State Coroner's Office Victoria, February.

[26] Monash University Accident Research Centre, 2002, "Marine Safety in Victoria" Prepared for Marine Safety Victoria, October. p.27

the rate of fatalities. It identified that that 'safety equipment or procedures were present on the vessels, but were most often not utilised, in particular the wearing of personal flotation devices (PFDs). (...) Fishermen consider them uncomfortable to wear, dangerous in the working environment and in the surf and most importantly make it impossible to complete their duties'[27]. The implications of this was a recommendation (much the same as that made as a result of the WA incidents) that safety regulators or organisations should investigate and trial PFDs that can be comfortably and realistically worn by fishermen while working. A number of other recommendations were made by the report which covered weather conditions, training, use of on board equipment, capsizing of Cray-fishing boats; training in rescue and resuscitation, and working alone. Overall the key issue was awareness raising, training and enforcement of procedures.

The Coronial report also reviewed the work undertaken in 2003 around strengthening the OHS culture of commercial fishing in Victoria, which referred to the 'Fishing Industry Safety Advisory Group' (FISAG) set up in 2001. At the time of the group's initiation the key focus had been the 'introduction of a joint WorkSafe/MSV pre-sea mandatory deck hand training course.'[28] By 2003, the course had been drafted with a mandatory OHS component, and at that time it was still being considered by the FISAG. Some of the lag in action appears to have related to the identified need of a Memorandum of Understanding to be developed between WorkSafe Victoria and Marine Safety Victoria to 'facilitate appropriate intervention activity in circumstances such as those that arose in this instance[29]'.[30] Overall, the issues raised by this report, identified the following issues as shipboard dangers:

- Lack of staff training and supervision, including first aid training;
- The need for personal protective equipment (PPE) in relation to noise created by machinery;
- Lack of risk assessments; in relation to both onboard and shore based fishing industry activities (e.g. slips trips falls, spray painting, shore asbestos, working in confined spaces etc);
- Alcohol use on board; and
- The potential for hair entanglement on board.

Further, the report concluded that there was not only a strong need for a campaign to increase industry awareness of OH&S issues, but that there was noteworthy apprehension in the industry in regard to the increased costs that may be necessarily incurred due to the focus on OH&S. At the time of the publication of this 2003 report, WorkSafe Victoria was looking into developing some form of guidance material for the commercial fishing industry. In 2010, no further action on this had occurred.

In summary, it appears that, for Victoria, as with the other States, there was not a culture of concern in relation to OHS issues prior to the early 2000s: WorkSafe Victoria had made moves from 2001to actively work with Marine Safety Victoria to decrease the rate of fatalities and injuries in the commercial fishing industry, however progress on this has not been made since.

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[27] Batchelor M & L Bugeja, 2003, "Commercial Vessel Fatalities in Victoria 1991 – 2001", State Coroner's Office Victoria, February. p.28

[28] Ibid, p.29

[29] The "instance" referred to, was the death of a nine year old boy on a working commercial fishing vessel on April 7th, 2000.

[30] Batchelor, M. & Budgeja, L, (2003) "Commercial Vessel Fatalities in Victoria 1991 – 2001", State Coroner's Office Victoria, February p. 29

Summary

Across all the States that have produced reports on fishing occupational health and safety in the last 20 years, the common theme is that the majority of events were as a result of 'human factors' in regard to planning, training or attention to risk factors of either equipment or conditions. While human factors are invariably the ultimate culprit in OHS incidents regardless of industry, the members of the commercial fishing industry across all the States providing reports, appear to share a common lack of awareness or concern about OH&S issues or personal safety, and accept such factors as necessary elements of their working environment. The literature does, however, indicate that State agencies are demonstrating an increasing concern and awareness of the lack of attention being paid to commercial fishing occupational health and safety. Despite this, only Victoria and WA are able to point to any specific action, with the implementation of the FISAG, which has been undertaken to attempt to address OHS issues in the industry and the production of a Code of Practice. The status of the FISAG, as of mid 2010, is however in abeyance, with no particular actions being on the organisation's agenda[31], and at this time it is too early to assess the effectiveness of WA's Code of Practice.

Federal Government Reports

Aside from legislation and associated documents, there were eight reports generated by Federal government departments in relation to commercial fishing occupational health and safety. One was published by the SeaCare Authority[32]; a further two were generated by the National Occupational Health and Safety Commission (NOHSC)[33&34], the precursor to SafeWork Australia, and one produced by the current SafeWork Australia, spanning the years 1989 to 2009[35]. A further three reports were generated by the National Marine Safety Council (1992 – 2008)[36,37 &38]; and the last by the Department of Agriculture, Fisheries and Forestry (DAFF) (2006)[39]. With the exception of the

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[31] Pers Com – Seafood Industry Victoria. 24/5/10

[32] Australian Government Seafarers Safety, Rehabilitation and Compensation Authority (2009), Seacare Authority Occupational Health and Safety (OHS) Strategy 2007-08 TO 2009-10 for the Seacare Scheme under the Occupational Health and Safety (Maritime Industry) Act 1993, Canberra, July.

[33] National Health and Safety Commission, (1999), Fishing Industry, Sydney, May.

[34] National Occupational Health and Safety Commission, (1999) Work-related fatal injuries as a result of fishing and maritime activities in Australia, 1989 – 1992. Information from the second work-related fatalities study, 1989 to 1992, Epidemiology Unit, Sydney, June.

[35] SafeWork Australia, (2008) National Hazard Exposure Worker Surveillance 2008 Survey; Research and Data Branch ,Safe Work Australia, Canberra updated March 2009.

[36] O'Connor, P., (2008), National Assessment of Boating Fatalities in Australia 1999 – 2004, Prepared for the national Marin Safety Committee Inc., Sydney, May.

[37] O'Connor, P., (2004), National Assessment of Boating Fatalities in Australia 1992 – 1998, Prepared for the National Marine Safety Committee Inc., Sydney, March.

[38] National Marine Safety Committee Inc., (2009) Commercial Vessel Incidents in Australia 2005- 2008, Sydney, November

[39] Department of Agriculture, Fisheries and Forestry, Australia, (2006), Milestone 17 – Final Report 15 May 2006, Canberra.

DAFF and SeaCare reports, all were reviews of the status of injuries, fatalities and hazards in the fishing industry (amongst other industries in some cases).

Of the two publications produced by the National Occupational Health and Safety Commission; both related to the period 1989 – 1992. While both cover the same period and take a national perspective, they have a slightly different purpose; the first[40] is a brief summary, focussed specifically on those directly employed in the fishing industry; the latter larger report[41] also included deaths from any maritime incident. Most notably the reports were compiled from coronial records, rather than workers compensation records. The summary report identifies that in the 55 deaths that occurred during the period, the recurring factors included; vessel capsizes; crew member or lone fishermen falling overboard and drowning (usually not wearing PDFs); swimming in breaks and subsequently drowning; crew becoming entangled in nets or ropes and being dragged overboard; and divers hoses being too close to sources of carbon monoxide fumes. The larger report[42] identifies that the majority of people who died in commercial fishing and maritime activities 'most commonly occurred in waters surrounding Queensland and Western Australia (30% and 19% respectively)'(p.2), and that 'drowning (82%), inhalation of carbon monoxide (7%) and head injuries (5%) were the most common causes of death for fishing industry workers'(p.10). Given that the data collated in this report was from coronial information, it was cross referenced with workers compensation claims data, which revealed that only 18% of fatalities in the industry were covered by the Workers Compensation system. This is due to the share fishing and contract nature of employment in the industry which more often than not results in individuals having to take out their own workers compensation insurance; which, more often than not, they do not. Only 15% of the deaths were investigated, and reported on, by a Maritime Authority. The reports made no recommendations, or conclusions in relation to the data, nor did they identify any interventions that had or may have influenced OH&S outcomes for the industry.

The third report that was identified, published by SafeWork Australia (the present incarnation of the NOHSC), was a survey of National Hazard Exposures[43]. This identified that the industry sector of Agriculture, Fishing and Forestry had the highest exposure to sunlight; and, was the second highest industry for exposures to; vibrating tools; equipment and vehicles; biological materials; and chemicals. Discussions with SafeWork Australia also allowed a separate report[44] to be generated in regard to the psychosocial factors affecting the fishing industry, which identified largely that this sector reported that employers do not provide policies or support in regard to anti stress and anti bullying; or how to manage stress. However, the majority did believe that their employer provided counselling services. In the main, workers felt they had co-worker and supervisor support; had never been bullied or sexually harassed; and had adequate resources to undertake their jobs. In combination,

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[40] National Health and Safety Commission, (1999), Fishing Industry, Sydney, May.

[41] National Occupational Health and Safety Commission, (1999) Work-related fatal injuries as a result of fishing and maritime activities in Australia, 1989 – 1992. Information from the second work-related fatalities study, 1989 to 1992, Epidemiology Unit, Sydney, June.

[42] National Occupational Health and Safety Commission, (1999) Work-related fatal injuries as a result of fishing and maritime activities in Australia, 1989 – 1992. Information from the second work-related fatalities study, 1989 to 1992, Epidemiology Unit, Sydney, June.

[43] Australian Government Australia Safety and Compensation Council, (2008), National Hazard Exposure Worker Surveillance (NHEWS) Survey: 2008 Results, Canberra, March, updated 2009. http://www.safeworkaustralia.gov.au/NR/rdonlyres/A86582B6-F3B9-42F8-AE48-EB46CA92AB46/0/NationalHazardExposureWorkerSurveillanceREVISED_March09.pdf.

[44] SafeWork Australia, 2010 "Descriptive Statistics, Fishing Industry" derived from the National Hazard Exposure Worker Surveillance 2008 Survey; through Dr J. Job, Director Research & Evaluation, Research and Data Branch ,Safe Work Australia.

the reports did not identify the commercial fishing industry as amongst the highest risk of exposure to hazards (generally the sector came third behind mining and construction), nor that factors traditionally impacting mental health were perceived to be of concern to survey respondents in the industry[45].

The fourth document was produced by the Seacare Authority and was an Occupational Health and Safety Strategy[46]. The strategy was developed and adopted in response to Australia's statutory responsibilities and international treaty obligations in the context of the relationship of these to OH&S factors in the Australian Maritime industry. It built on previous Seacare Authority OH&S Strategies dating from the first implemented in 2002[47]. Notably, this strategy was targeted at seafarers generally, not specifically at commercial fishermen. The Authority used 2001 as the baseline year for all targets to align with national targets set by the Australian Safety and Compensation Council (ASCC). In relation to this, a target of zero fatalities had been set for the years up to 2010, and a 20% reduction in injury incident to 2007, with a 40% reduction up to 2012[48]. In order to achieve the targets, the Strategy identified five national priority areas, which included:

1. Reduce high incidence/severity risks – through use of OHS and compensation claims data to identify risks/hazards and location of them and advice to employers;

2. Improve the capacity of business operators and employees to manage OHS effectively – through the implementation of the SeaCare Leaders Program aimed at assisting employers to build OHS capacity;

3. Prevent occupational disease more effectively – through the identification and reporting of current and future disease risk factors and exposures;

4. Eliminate hazards at the design stage – through identification and review of design elements which lead to high risk hazards on prescribed ships and unity, with the aim of reducing or eliminating hazards at the source where possible; and

5. Strengthen the capacity of government to influence OHS outcomes – through development of Memorandums of Understanding (or similar) with OHS regulatory agencies, where mutual responsibilities under respective legislations exist, to improve service to the industry.[49]

These five were in addition to the nine areas that had been identified previously, which included; comprehensive data collection; a coordinated OHS research effort; nationally consistent regulatory framework; strategic enforcement; effective incentives for strong OHS performers; Compliance support; practical guidance; OHS awareness; and OHS Skills development. A summary review of the OHS outcomes for the period from 2001-02 to 2006-07 identified that there had be a trend of declining injury incidence rate, which had in fact declined below the target levels set by SeaCare (32.5 injuries per 1000 seafarers) by 2006-07, and were at 27.7 injuries per 1000 seafaring workers

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[45] It is necessary to note that respondents who represented the fishing industry totalled 14 from 4,500 or 0.31%.

[46] Australian Government, Seafarers Safety, Rehabilitation and Compensation Authority, 2007, "Seacare Authority Occupational Health and Safety (OHS) Strategy 2007-08 to 2009-10, For the Seacare Scheme under the Occupational Health and Safety (Maritime Industry) Act 1993. Canberra, July.

[47] Ibid, p.3

[48] Ibid

[49] Ibid, p. 4-5

(there was no analysis of death rates). This decline was also in spite of the average number of hours worked per employee increasing by 40.6% (2071.6 hours per annum in 2001-02 compared to 2,913.36 hours per annum in 2006-07)[50], and fatigue being identified as a factor in incidents elsewhere. The information contained in the Strategy identifies a change in circumstance that appears to indicate a trend of a decrease in OHS incidents and accidents in the industry from 2002 onwards. It is noteworthy however, that the primary target audience of this strategy was commercial shipping rather than the fishing industry.

The three reports generated by the National Marine Safety Committee, covered the years of 1992 – through to 2008. Two of these reports related to National Assessments of Boating Fatalities in Australia up to 2004[51 &52], and the third related to Commercial Vessel Incidents in Australia between 2005 and 2008[53]. The main findings of the first report (1992 – 1998), which examined both Australian Bureau of Statistics (ABS) and coronial data for all vessel fatalities (not just commercial fishing) related to the identification of drugs and alcohol as one of the most important risk factors. This was followed by over-powered vessels, vessel stability and buoyancy; overloading of vessels; personal flotation devices; dinghies, capsizing and falling overboard[54]. It also noted that the data indicated a 'substantial drop in the death rate of fishermen'[55] - presumably in the period under examination – however, no explanation for this was included. The report did make recommendations, which related to the ongoing collection and analysis of data; that a review of breath and blood testing for alcohol and usage of alcohol[56] should be undertaken; and that consideration should be given to modifying the NMSC data standards in order to capture new and relevant information[57].

The second National Marine Safety Committee report examined all boating fatalities in the years from 1999 to 2004[58]. The data was collated through identification of cause of death recorded by the ABS, and then the details of boating fatalities were examined through coroner's records either directly from Coroners files or through the National Coroners Information System. While the study focused on all boating fatalities and injuries, it identified that 54% of vessels involved in incidents resulting in fatalities were undertaking fishing[59] (with no delineation between commercial or recreational). Deaths

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[50] Ibid, p.8

[51] O'Connor, P. (2004). National Assessment of Boating Fatalities in Australia 1992 - 1998. Sydney, National Marine Safety Committee Inc.,.May

[52] O'Connor, P., (2008), National Assessment of Boating Fatalities in Australia 1999 – 2004, Prepared for the National Marine Safety Committee Inc., Sydney, May.

[53] National Marine Safety Committee Inc., (2009) Commercial Vessel Incidents in Australia 2005- 2008, Sydney, November

[54] Ibid, p. 6-8

[55] Ibid, p.7

[56] It is worth noting that this comment about the use of alcohol was not endorsed for fishermen in the NOHSC 1999 report (reference 20) which noted that 'Fifty one percent of fatally injured workers had a blood alcohol test conducted. Of ...[those], 82% had a nil blood alcohol reading (BAR), 7% had a BAR between 0.001% and 0.05% and 11% had a BAR of 0.05% or greater'. P.10

[57] Ibid, p.8

[58] O'Connor, P. (2008). National Assessment of Boating Fatalities in Australia 1999 - 2004. National Marine Safety Committee Inc.,.

[59] Ibid, p.8

and injuries most commonly occurred as a result of falls overboard (33%[60]), and other data indicated no significant change in the causes of deaths from boating activities, as compared to the period 1992-1999. Overall, the key contributing factors to fatalities and injuries were; an error of judgement; alcohol; failure to keep a proper lookout; hazardous wind and/or sea conditions; and failure to wear a PFD[61]. Again, it should be noted that this study covered all boating incidents, and in fact, only 19% of the incidents examined in this study related to commercial vessels, which were 'mainly commercial fishing vessels'[62], and these occurred largely in offshore waters, resulting in 31 incidents involving 36 deaths and five injuries[63]. While it did note that commercial vessel deaths are not as common as recreational vessel deaths, this study identified 19% (as compared to 18% in the previous study[33]) of fatal incidents involving (all) commercial vessels involved alcohol as an initial contributing factor – one of the key factors in falls overboard identified and confirmed in this study as compared to the first undertaken for the years 1992-1999. Surprisingly however, while this study concluded that awareness campaigns regarding appropriate number of PFDs had been taken up positively by the boating community[64], none of those killed in commercial vessel incidents were wearing a PFD at the time of their deaths (75% of fatalities[65]). The report made no recommendations.

The third report issued by the National Marine Safety Committee[66] focused on Commercial Vessel Incidents in Australia, in the years 2005 to 2008. While this was a study of commercial vessels only (that is no recreational vessels were included), it did include passenger vessels, and found that these were the most common vessel to be involved in reported marine incidents in Australia. Fishing vessels were the next most likely commercial vessel to be involved in a reported incident[67]. The top three factors contributing to incidents were; collision of vessels; unintentional grounding; and collision with a fixed object. In relation to fatalities, the top four factors were; alcohol or drugs (14%); other environmental factor (13%); wind/sea state (11%) and inexperience (11%). In relation to serious injuries, the top three factors were wind/sea state (20%); other human factor (19%); and error of judgement (16%)[68]. The report came to the conclusion that in the majority of commercial vessel incidents, human factors were a contributing factor, and that the majority of events occurred on clear weather days, indicating that there is not a safety culture in the industry[69]. Overall, this and the previous two reports from the National Marine Safety Committee, identify the lack of use of PFDs as being a major factor in deaths, and a general lack of acknowledgement by the industry that OHS issues were a risk factor that could, or needed to, be reduced. The findings were in line with those of the State (incident) reports despite coming from different sources, and from different researchers.

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[60] Ibid, p.10

[61] Ibid, p.12

[62] Ibid, p.15

[63] Ibid, p.32

[64] Ibid, p.36

[65] Ibid, p.32

[66] National Marine Safety Committee Inc., (2009) "Commercial Vessel Incidents in Australia 2005- 2008", Sydney, November.

[67] Ibid, p.8

[68] Ibid, p.9-10

[69] Ibid, 70

The next report identified was published by the Australian Department of Agriculture, Fisheries and Forestry, through the National Heritage Trust[70]. This report summarised the National Environmental Management System (EMS) Pilot project which sought to devise and implement an EMS for the Seafood Industry, and was also supported by Seafood Services Australia as a participant in the project. While EMS itself does not focus on OHS, one project within the scope of this project – the Clean Green Program for the South Australian Rock Lobster Industry[71] - was developed to address poor community perceptions of the industry. One component of the program was OHS in the supply chain and establishing care and competency in the industry, which was developed, trialled and established in the years 2001 to 2005. The program was seen as a major success and validated through being awarded first place in the 'Business Enterprise Awards Section – Environmental Best Practice Program for the United Nations World Environment Day Awards in 2005[72]. It was noted that one of the 'overwhelming benefits' of the program had been the public recognition of the industry, and as a result the South Australian agency, Workplace Services, investigated the OHS component of the program and deemed it to be a benchmark of EMS in the seafood industry. Further to this, it was stated that the 'system has provided compelling benefits to the industry by allowing them to own and respond to OHS issues and address them proactively.'[73] This identifies a key OHS event in the seafood industry in 2005 which may be a marker of changed OHS outcomes.

Summary

The reports generated by the Federal government departments or agencies were more often than not focussed on the maritime industry overall, including recreational and commercial shipping as well as fishing, activities. In relation to commercial fishing – where this was explicitly examined - the reports commonly agreed that the key factors affecting rates of fatalities and injuries in the commercial (fishing) vessel industry were a lack of culture of safety in the industry. Significantly, a declining trend in accidents for the maritime industry generally was identified during the period, despite an increase in the number of hours worked in commercial fishing. The following outlines a summary time line of the reports in regard to their findings and recommendations.

1989 – 1992: The National Maritime Safety Commission reported that for those directly employed in the fishing industry, the recurring factors associated with accidents included; vessel capsizes; crew member or lone fishermen falling overboard and drowning (usually not wearing PDFs); swimming in breaks and subsequently drowning; crew becoming entangled in nets or ropes and being dragged overboard; and divers hoses being too close to sources of carbon monoxide fumes. Drowning accounted for 82% of deaths. The recommendations made by the report related to the ongoing collection and analysis of data; a review of breath and blood testing for alcohol and usage of alcohol; and that consideration should be given to modifying the NMSC data standards in order to capture new and relevant information.

2002: Nine areas of strategic focus were identified by the SeaCare Authority which were; comprehensive data collection; a coordinated OHS research effort; nationally consistent regulatory framework; strategic enforcement; effective incentives for strong OHS performers; Compliance support; practical guidance; OHS awareness; and OHS Skills development.

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[70] Department of Agriculture, Fisheries and Forestry, Australia, (2006), Milestone 17 – Final Report 15 May 2006, Canberra.

[71] Ibid, p.42

[72] Ibid, p.43

[73] Ibid, p.46

2001-02 to 2006-07: A review of OHS incidents identified that at 27.7 injuries per 1000, there was a declining trend in injury incidence rates; and it exceeded the target levels set by SeaCare of 32.5 injuries per 1000 seafarers for 2006-07. This decline was in spite of the average number of hours worked per employee increasing by 40.6%. Fatigue was, however, a new factor in accidents that was identified.

2007 – A revised OHS Strategy set a target of zero fatalities for the years up to 2010, and a 20% reduction in injury incident to 2007, with a 40% reduction up to 2012. It added a further five areas to OHS Strategic focus; reduction of high incidence/severity risks; improvement of effective management of OHS through SeaCare Leaders Program; prevention of occupational disease risk factors though identification and reporting; elimination of hazards at the design stage; and strengthening of the capacity of government to influence OHS outcomes through MOUs with States and associated bodies.

1992 – 1998: In a review of maritime activity overall (notably including recreational maritime activities), drugs and alcohol were identified as the most important risk factors. This was followed by over-powered vessels, vessel stability and buoyancy; overloading of vessels; personal flotation devices; dinghies, capsizing and falling overboard. Recommendations made from the report were; ongoing collection and analysis of data; a review of breath and blood testing for alcohol and usage of alcohol should be reviewed; and that consideration should be given to modifying the NMSC data standards in order to capture new and relevant information.

1999 – 2004: Again for the maritime industry overall, it was found that deaths and injuries most commonly occurred as a result of falls overboard (33%[74]), and other data indicated no significant change in the causes of deaths from boating activities, as compared to the period 1992- 1999. Overall, the key contributing factors to fatalities and injuries were; an error of judgement; alcohol; failure to keep a proper lookout; hazardous wind and/or sea conditions; and failure to wear a PFD.

2005 – 2008: A review of maritime activities found that the three key factors contributing to incidents were; collision of vessels; unintentional grounding; and collision with a fixed object. Fatalities most commonly resulted from alcohol or drugs (14%) environmental factors (13%) wind/sea state conditions (11%) and inexperience (11%). It identified there was not a safety culture in the industry and that lack of use of PFDs was a major fact in deaths.

2006: The development of an EMS for the Seafood Industry, the OHS component of which, gave a level of ownership of OHS issues to the South Australian Rock Lobster Fishery, and was perceived by the industry as being a potential catalyst in industry proactively responding to OHS issues.

2008 Hazards survey results did not identify the industry as amongst the highest risk of exposure to hazards (generally the sector came third behind mining and construction), nor that factors traditionally impacting mental health were perceived to be of concern to survey respondents in the industry.

Industry Projects

The industry reports generated in the period consisted of two funded by the Fisheries Research and Development Corporation (FRDC). The first, entitled 'Occupational Health and Safety National Extension'[75] was aimed at creating a 'node' in the industry to deliver Occupational Health and Safety programs to the industry nationally, and provide each State with a comprehensive set of tailored

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[74] Ibid, p.10

[75] Adams, T. (2009). Occupational Health and Safety National Extension. Taylored Health and Safety Pty Ltd. Canberra, Fisheries Research and Development Corporation;. **Project No. 2002/231**.

OH&S guidelines for each jurisdiction. This was arrived at as a result of the identified issue of inconsistent application of marine safety legislation in each State and onboard individual vessels[76]. A code was developed with varying degrees of support from the different States (Western Australia and South Australia were very supportive). Western Australia had had an OHS Code of Practice in place since 1992, which the author of the FRDC project had also worked on. As a result of that and the FRDC project, a draft code was developed and released to South Australia as part of the Southern Rock Lobster Clean Green Program through late 2003 and early 2004[77], and was confirmed in a form consistent with the Clean Green Program by 2008. The code was also translated to be applicable to the South Australian Marinescale Fishery, Blue Crab and Lakes and Coorong Fishery. No information was presented as to its adoption. The code was introduced in Tasmania via the Southern Rock Lobster Fishery from 2005 and to all other fisheries in Tasmania by 2008. The NSW code was released in 2008 and a code for the Northern Territory in the same year. Tailored Codes for both Queensland and Victoria were released in mid 2009 and were ostensibly still with the respective industry bodies (Seafood Industry Victoria (SIV) and Queensland Seafood Industry Association (QSIA)) for review[78] at the time of this report being written in 2010. Overall, the project identified that a 'node', or central point, for the coordination of OHS training was not practicable at the time of the report. However, the second objective, of identifying a Code to bring the industry in each State up to speed with their respective Occupational Health and Safety legislation and Marine Safety Legislation, was met. The report identified that motivating members of the industry to be 'interested' in the subject of Occupational Health and Safety was difficult, which was attributed to often being because of a perceived inapplicability to the fishing industry[79].

The second project report, also funded by the Fisheries Research and Development Corporation, was initiated in 2003 and entitled "Development of an OH&S induction training video for the post harvest sector of the Seafood Industry"[80]. The project was also supported by Seafood Services Australia, and the Master Fish Merchants Association of Australia. The objective of the project and the report was to create a video consisting of three modules to cover, general OHS induction; manual handling and contractor induction. A companion user guide and workbook was also to be produced. However as the project unfolded it identified that the best form of delivery would be a DVD covering, general induction; Seafood Industry hazards; and contractors. The DVD was developed along with a Workbook Companion, both of which were recommended for sale through the Seafood Services Australia website, and as of May 2010 was on sale for a price of $50.00. The project was deemed to have raised awareness and understanding of OH&S in the post harvest sector, and therefore was credited with the potential to reduce workplace accidents and injuries[81].

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[76] Ibid, p.8-9

[77] Ibid, p. 15

[78] Ibid, p.14-18

[79] Ibid, p. 21

[80] Skepper, B. (2007). Development of an OH&S induction training video for the post harvest sector of the seafood industry. Sydney Fish Market. Sydney, Fisheries Research and Development Corporation. **Project No. 2003/415**.

[81] Ibid, p. 11- 12

The Fisheries Research and Development Corporation has also undertaken the extension of report findings and timely reminders of Health and Safety issues, through its' FISH publication[82]. These have focused on sun exposure in the commercial fishing industry and diving industry OHS and Welfare best practice, and have also included a focus on accidents in the recreational sector on occasion.

Summary

Industry projects were aimed at providing clear guidelines to the harvest and post harvest sectors as to what their responsibilities were under the legislation and how they should go about acting upon those obligations. While both were seen as successful within their scope, it was noted in each that it was an ongoing requirement to update the manuals and reaffirm to the industry the importance of compliance. Compliance was deemed important both from a personal safety perspective of workers in the industry, but also a public perception perspective of the industry as a responsible employer in the community.

Academic Reports

Seven papers were identified dealing with the subject of Occupational Health and Safety in Australia and commercial fishing, from extensive searches of numerous sociological, psychological, safety, risk, Occupational Health and Safety, Occupational, and medicine databases, and ranged in publication years from 1994 to 2007. The earliest paper (published in 1994) that discussed fatalities in commercial fishing for the years from 1982 to 1984[83]. This paper, by Driscoll, identified what is ostensibly the baseline OHS status in fishing for Australia, the incidence of fatalities in commercial fishing was 18 times higher at that time than the entire workforce. The majority of fatalities resulted from drowning, while rough weather, non-seaworthy vessels, inadequate use of personal flotation devices, and inexperience were also associated with many of the fatal incidents. This report, resulting from the examination of coronial records, found that the incidence of fatality was 143 per 100,000 person-years, which while being 18 times higher than the incidence of fatality for the entire workforce, was also deemed to be considerably higher at that time than the mining and agricultural workforces. Aside from the 68% of deaths occurring due to drowning, a further 13% died from physical trauma occurring in the work place from events such as falling or unsupervised moving equipment. The remainder of deaths resulted from electrocution, effects of diving, shark attack and smoke inhalation and 1% were from uncertain causes[84]. Rough weather, combined with a lack of seaworthiness in vessels and of life rafts, was identified as an important contributing factor to the number of drowning deaths. This combined with inadequate use of personal flotation devices, and inexperience, resulted in the key factors associated with the majority of the fatal incidents. The paper concluded that a focus on improving the level of vessel and equipment maintenance, combined with (better) training of workers, and the development of improved clothing and personal flotation devices to encourage greater use, would lead to improved safety and decreased fatalities in the industry[85].

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[82] Pearl Producers Association (2008). "Industry Benefits from a Pearl of Wisdom: Safety First." FISH **16**(2): 24-26, Fisheries Research and Development Corporation (2009). "Sun safety reminder: the 'danger period' has begun." FISH **17**(4): 32.

[83] Driscoll, T. R., G. Ansari, et al. (1994). "Traumatic work related fatalities in commercial fishermen in Australia." Occupational and Environmental Medicine **51**(9): 612-616.

[84] Ibid. p.613

[85] Ibid. p.616

This was followed by a further paper by Driscoll in 2003 reporting on data collected for the period 1989 to 1992[86]. This paper covers all industries, and was aimed at determining the level of cover by official occupational health and safety, and compensation agencies, in Australia, of work related traumatic deaths (it did not include injuries). It identified that working deaths not covered by any agency was 34% over all, and for the fishing and hunting industry this increased to 80.9% (second only to the defence industry at 93.9%)[87]. This report attributed the potential cause of low coverage rates in the fishing industry to collection of data by marine safety authorities. However it did make the recommendation that additional non sectoral agency(ies) be involved which can examine incidents from a broader perspective, providing the advantage of non industry objectivity, and the application and sharing of knowledge from a broader domain[88]. In relation to the fishing industry, where many workers are 'share fishers'[89], the report also identified that "*The compensation agencies had reasonable (...) coverage of employees, but not of persons deemed to be self employed for practical purposes. In addition, some persons who are for practical purposes self employed have arrangements that make them legally employees of their own company*"[90], such as in the case of fishermen, and therefore did not capture OHS data relating to them. In summary, the report identified that the commercial fishing industry is extremely poorly covered by official OHS and workers compensation agencies, either directly with support or in being able to provide intelligent data on the circumstances of OHS in their industry. It concluded that at the time of writing the paper (2002-03) the only reasonable source of OHS data for industries such as fishing was the National Coroners Information System[91].

The next paper, published in January 2005[92] by Evans et.al, examined the use of drugs and alcohol in the seafood industry in South Australia. It was a self reported questionnaire of 200 respondents undertaken in approximately 2001, examining recreational drug use across both casual and permanent, shore and offshore, based employees. This was the only piece of work that dealt exclusively with drug and alcohol use in the industry that could be identified in the course of this current report. It identified that all the companies that had cooperated in the survey had workplace drug policies in place, however the survey still identified that 50% of all respondents had used cannabis in their lifetimes, and 44.2% were using or had used cannabis within the preceding year, the majority of which were onshore workers. While amphetamine use was in line with national figures,

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[86] Driscoll, T., R. Mitchell, et al. (2003). "Coverage of work related fatalities in Australia by compensation and occupational health and safety agencies." Ibid. **60**(3): 195-200.

[87] Ibid, p.198, Table 3

[88] Ibid, p.199

[89] "A share fisherman carries on with another or others a business of fishing operations. (...) A true share fishing arrangement is a joint venture business and is usually evidenced by a written contract which specifies the rights and obligations of the parties. A person participating in a true share fishing arrangement is considered an independent contractor."p.4, Australian Government Australian Taxation Office, Position Paper, External, 07/09/07 URL: http://www.wafic.com.au/images/wafic---sapee.pdf

Accessed 11/05/10

[90] Driscoll, T., R. Mitchell, J. Mandryk, S. Healey, L. Hendrie, B. Hull, (2003) "Coverage of work related fatalities in Australia by compensation and occupational health and safety agencies", *Occupational Environmental Medicine*, Vol.60, p.200

[91] Ibid.

[92] Evans, Alan R., R. Tait, P. Harvey & J. Newbury, (2005), "Recreational drug use within the employees of the mariculture and seafood industry in South Australia", *Drug and Alcohol Review*, January, Vol. 24, pp. 67-68

the data indicated that offshore workers were the highest users of these, and in regard to alcohol use, while one fifth of respondents were 'at risk' drinkers, the total number was again in line with national statistics.[93] The paper concluded that the workforce would be reduced by 40%, if all companies enforced the drug policies; economically compromising the industry[94].

In 2003, Mayhew[95] undertook an overview of the working environment of British fishermen due to the more readily available data in this group, and where appropriate and possible compared the findings to Australia data to evaluate key risks. It argued that there were key lessons to be learnt for the Australian commercial fishing industry from the comparison, which was that boat size is a significant factor in, capsizes and other incidents which are precursors to situations causing drowning. From this, and the overall data analysis, the paper also identified that the causes of drowning should be addressed through a focus on prevention strategies around reducing the risks that lead to fishermen being in the water.

A further two papers were both written from research undertaken in South Australia in 2005 and 2007. The first dealt with the occupational safety culture in a south Australian Commercial fishing port[96], and the second focussed on an analysis of the decision frameworks of commercial rock lobster fishermen regarding when to fish and whether or not to wear a life jacket [97]. The significant observation from the first report is that the introduction of Individual Fishing Quotas (IFQs[98]) in the Marinescale fishery markedly changed the culture of the fishery in regard to risk taking[99]. Fishers were not incentivised to go out in bad weather, were out for shorter periods of time staying closer to shore, and spent more time connected with family and friends. This behaviour was also observed and reported on in the same context in Victoria in the Abalone Fishery in the Mornington Peninsula[100]. Further, Brooks quoted Woodley[101] who identified that;

> 'Not only can quota based systems reduce over-capacity, they can reduce the speed of the fishery, and reduce the emphasis in catching power. In terms of safety, this can translate into less fatigue, reduce the need to overload a vessel, and allow a master flexibility as to what type of weather in which he fishes.'

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[93] Ibid,p.68

[94] Ibid.

[95] Mayhew, C. (2003). "Fatalities among fishing workers: does size matter?" Journal of Occupational Health Safety - Aust NZ **19**(3): 245-251.

[96] Brooks, B., (2005), "Not drowning, waving! Safety management and occupational culture in an Australian commercial fishing port." *Safety Sciences,* Vol. 43, pp. 795-814

[97] Brooks, B., (2007), "Mapping the risky decision space of commercial rock lobster fishermen", *International Journal Risk Assessment and Management*, Vol. 7, No. 2, pp.248-262

[98] IFQs were introduced in the Southern Rock Lobster Fishery in 1993 and in the Northern Rock Lobster Fishery in 2003 – both South Australian Fisheries. However quota's were progressively introduced in fisheries across Australia in the same period.

[99] Brooks (2005), p.799.

[100] Ibid.

[101] Woodley, C. (2000). Quota-based fishery management regimes. The International Fishing Industry Safety and Health Conference,. National Institute of Occupational Safety and Health. Woods Hole, Massachusetts, USA**:** 165 - 173. p.169

Despite this, Brooks did identify that fishers in this fishery did not choose to conduct emergency procedure drills, nor to wear life jackets (PFDs), perceiving no (increased) vulnerability due to these omissions. Perhaps alarmingly, the fishermen involved in this study did not train deckhands in OHS or renew their first aid certificates, acknowledging 'that their ability to respond to medical emergencies would be suspect'[102]. Ultimately it was identified that the culture of these fishers values a focus on 'vessel and safety equipment management and risks that can be controlled through personal skill.'[103]

Greater accountability required by supply chain management has focused the industry on several issues in its processes, including OH&S. The Clean Green Program (referred to earlier under Federal Government reports) was one which focused the Rock Lobster Fishery on OH&S and was observed again in this study as being a positive influence on the culture of the industry. Despite this, the wearing of PFDs was identified by fishermen in this study as being unnecessary, when they considered their perception of the risk of them falling overboard compared to the impracticalities of undertaking their work while wearing current forms of PFDs. However it was concluded that regulatory changes in the form of IFQs had 'made the occupational environment significantly safer'[104]. The second paper by Brooks[105] builds on the work of the first, to explore how the Rock Lobster fishermen make decisions about when to fish and whether to wear a life jacket. The first question was addressed through the identification of a complex mind mapping exercise and the ritual undertaken by the skipper of the craft, whose decision is deemed law by all other fishers on that craft. There were fundamentally two criteria identified: the first being, was the risk low enough to fish, based on the information about environmental circumstances; the second related to the rituals of fishing and local knowledge lore and beliefs – 'a complex, multi layered approach'[106]. In regard to whether or not to wear PDFs; historically these had not been worn as they are traditionally too bulky to work in, however self inflating PDFs that do allow work to continue have been available since the mid 1990s[107]. While incompatibility of PFDs with the working environment is still muted as the cause for low rates of adoption, this study found that for fishers, PDFs were associated with loss of control; this coupled with fishers low risk perception of the possibility of them falling overboard and the belief that wearing the life jacket raises question in their minds over safety issues, rather than allowing them to focus on the job at hand, was the fisher's justification for not wearing them[108]. It was concluded in this paper that efforts to address rates of PFD adoption should be aimed at addressing the conflict between perceptions of uncertainty and professionalism, and that it is suggested that linking wearing a PDF with the professionalism of the industry, may address behavioural patterns.

Another paper, in the group of academic papers, is related to overall maritime fatalities[109], and follows on from the work undertaken by Driscoll et al[64], in that it examines Coronial records of Australian boating fatalities, but from the years of 1992 – 1998 (subsequent to the previous study). It identified

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[102] Brooks (2005), p.801-803

[103] Ibid, p.803

[104] Ibid, p. 812

[105] Brooks, B., (2007), Mapping the risky decision space of commercial rock lobster fishermen", International Journal Risk Assessment and Management Vol. 7, No.2, 2007

[106] Ibid, p.255

[107] Ibid, p.256

[108] Ibid, pp.257-258

[109] O'Connor, P. J. and N. O'Connor (2006). "Work-related maritime fatalities." Accident Analysis and Prevention **38**: 737-741.

that death rates amongst fishermen had declined in the period between 1982 and 1998. While this paper identified alcohol and PFDs as the two leading causes of deaths and injury on vessels it did identify that alcohol was more of an issue in relation to recreational boating accidents. It did however make several recommendations: that consideration should be given to lowering the allowable blood alcohol limit for maritime activity to possibly zero (as with other high risk industries such as aviation); and that 'occupational health and safety authorities and transport authorities should investigate PFD availability on fishing boats'[110]. The paper cited the recent improvement in statistics as proof that the industry was capable of making improvements – it did not consider if these were due to other interventions or legislation.

A further paper looking into the role of industry associations in developing OHS was undertaken in 2007 [111], which, although it focused on the mining industry in Australia and the lessons to be learnt from international experience, it did also identified lessons that may well be salient to the Australian commercial fishing industry. This paper argued;

> "that industry associations can and should play a role in improving the OHS performance of their members.....particularly those which are vulnerable to low frequency- high consequence events.... and those which are reputation sensitive and have a need to protect their social licence"[112].

This point may be particularly useful in the review of the specific messages that need to be communicated to the industry in regard to OHS and how best to give credibility to them.

Summary

Academically, the conclusions concur on several issues. The first being share fishers fall outside the Occupational Health and Safety system and therefore issues are often not picked up let alone focused upon. Secondly that the wearing of PFDs is the key factor that could bring about the largest change to the number of commercial fishing fatalities. That alcohol, while a factor that needs to be considered, is not any more significant, and in fact indicated to be less of, a factor in commercial fishing incidents than it is in recreational maritime incidents or the general public. Most notably, the improvement in fishing fatality rates is indicated as likely to have come about as a result of the introduction of quota's in the 1990s and early 2000s.

Summary

The literature identifies a number of intertwined threads. While the State reports agreed that OH&S events were in the main attributed to human error, they did acknowledge that a common lack of awareness or concern about OHS issues or personal safety was a contributing factor. This was also identified by the academic reports, but with greater exploration of the factors contributing to this. Specifically, the pressures placed upon fishers to fish at sub-optimal times, and the need to link those industries such as commercial fishing and 'share fishers' more effectively and comprehensively into the OH&S reporting and policy development systems. Despite this and significantly, a declining trend in the rate of accidents for the maritime industry generally was identified during the period, despite an increase in the number of hours worked in commercial fishing identified by the Federal government

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[110] Ibid, p.741

[111] Gunningham, N. and J. Rees (2008). "The role of industry associations in improving OHS performance." Journal of Occupational Health Safety - Aust NZ **24**(1): 23-31.

[112] Ibid. pp.29-30

reports. These reports did not examine the potential cause of this, however the work by Brooks [113] did highlight that the introduction of ITQs appeared to be linked to safer fishing practices through a reduction of pressure on the fishers to fish. As identified by Mayhew, changes in boat size restrictions may also have played a part in this in different States at different times.

The State agencies do demonstrate through the nature and number of reports, an increasing awareness and concern for the lack of attention being paid to Occupational Health and Safety issues in commercial fishing. Victoria was one of the most active in this with the set up the Fishing Industry Safety Advisory Committee in 2001. The industry also acknowledged this with the commissioning of work in 2002 which were aimed at providing clear guidelines to the harvest and post harvest sectors as to what their responsibilities were under the legislation, and how they should go about acting upon those obligations. These projects identified compliance as fundamental from both a personal safety perspective of workers in the industry, and also in regard to building the public's perception of the industry as a responsible employer.

In regard to the factors that led to human error, while alcohol was raised in a number of the State and federal government reports, it was commonly identified that this was a greater issue in the recreational fishing community. An academic report[114] identified that in fact drug and alcohol use in the commercial fishing industry was aligned with average national rates of drug use. The most significant factor in fatalities in commercial fishing was attributed to the lack of wearing of PFDs; this was commonly identified across all groups as the greatest opportunity to reduce the number of commercial fishing fatalities. However it is essential to note, as pointed out by Mayhew and a number of international papers[115], that it is the culture of safety or lack thereof that is the most significant factor in the accident and incident rates in the commercial fishing industry. The number of these could be most effectively reduced through an overall focus on raising the awareness and perception of real risk amongst fishermen, and providing them with clear directions as to what actions will keep them safe and to avoid ending up in the water in the first place.

To date, the most notable cause of a reduction in fishing fatality rates is indicated as likely to have come about as a result of the introduction of quota's in the 1990s and early 2000s. The outstanding issue responsible for the majority of deaths that has still failed to be effectively dealt with across all States of Australia is the raising of OH&S awareness, and its importance in the day to day operation of a sustainable profitable business.

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[113] Brooks, B. (2005). "Not drowning, waving!: Safety management and occupational culture in an Australian commercial fishing port." Safety Science **43**(10): 795-814, Brooks, B. (2007). "Mapping the risky decision space of commercial rock lobster fishermen." International Journal of Risk Assessment and Management **7**(Number 2).

[114] Evans, A. R., R. Tait, et al. (2005). "Recreational drug use within the employees of hte mariculture and seafood industry in South Australia." Drug and Alcohol Review **January**(24): 67-68.

[115] Hopper, A. G. and A. J. Dean (1992). "Safety in fishing - learning from experience." Safety Science **15**: 249-271, Van Noy, M. (1995). "Toward a Systematic Approach to Safety in the Commercial Fishing Industry." Journal of Safety Research **26**(1): 19-29, Kaplan, I. M. and H. L. Kite-Powell (2000). "Safety at sea and fisheries management: fishermen's attitudes and the need to co-management." Marine Policy **24**: 493 - 497, Bye, R. and G. M. Lamvik (2007). "Professional culture and risk perception: Coping with danger on board small fishing boats and offshore service vessels." Reliability Engineering & System Safety **92**: 1756-1763, McDonald, M. A. and K. L. Kucera (2007). "Understanding non industrialized workers' approaches to safety: How do commercial fishermen "stay safe"?" Journal of Safety Research **38**: 289-297.

Chapter 2 – Intervention Identification

Introduction

The following is a summary (chronological) of the OH&S interventions that have occurred between the years 1988 and 2010 in the fishing industry (commercial - both marine and aquaculture and, if identified, recreational). It also clarifies the purpose of those findings or interventions in regard to modifying and/or improving occupational health and safety outcomes for the industry.

Interventions

1989 – 1992 (Fed): The **National Maritime Safety Commission** reported that for those specifically directly employed in the fishing industry, it recommended the ongoing collection and analysis of data; a review of breath and blood testing for alcohol and usage of alcohol should be reviewed (this mostly related to recreational craft); and that consideration should be given to modifying the NMSC data standards in order to capture new and relevant information.

1993: Occupational Health and Safety (Maritime Industry) Act 1993[116]. This Act was put in place to provide detail regarding the required "General duties relating to occupational health and safety" in the maritime industry. It built on the 1912 Navigation Act.

1993 Forward: Introduction of ITQs & IFQs which had the indirect effect of reducing the level of risk taking by fishermen due to decreased pressure to maximise their catch at any cost.

1992 – 1995 (WA): Fisheries WA report 1992 'Saint Maddalena' & 1995 'Harmony' and 'Lady Pamela': The reports on these incidents called into question the responsibility of the practices of Fisheries Western Australia in regard to how they regulated the industry and how these may have contributed to the tragedies through limitations placed upon the operations of the vessels. There were five recommendations made as a result of this review, the key one of which was that the Fisheries Department should reconsider any constraints placed upon the industry and remove them if possible. This may be noteworthy, for any effect it may have had in focusing the industry on safety issues and practices, and consequently any OH&S data analysis must bear this event in mind.

1992 – 1998: National Maritime Safety Council, reviewed maritime activity overall (notably including recreational maritime activities) and made recommendations that; ongoing collection and analysis of data; a review of breath and blood testing for alcohol and usage of alcohol should be reviewed; and that consideration should be given to modifying the NMSC data standards in order to capture new and relevant information.

1999: Code of Safe Working Practice for Australian Seafarers, 1999[117] (Seacare Australia). This Act also relates to commercial vessels other than fishing, and was aimed at addressing the need for and to engender a safety culture backed up by safe systems of work. It incorporated international

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[116] Commonwealth of Australia (1983). OCCUPATIONAL HEALTH AND SAFETY (MARITIME INDUSTRY) ACT 1993 Canberra, Australasian Legal Information Institute.

[117] Australian Maritime Safety Authority, 1999,*Code of Safe Working Practice for Australian Seafarers* Date of Issue: 16 November, Published by the Australian Maritime Safety Authority 1999. URL: http://www.amsa.gov.au/Publications/Shipping/Code_of_Safe_Working_Practice_for_seafarers/spwcode_toc.pdf

standards of with specific Australian occupational health and safety work practices. It provided extensive details and guidelines as to undertaking operations aboard commercial vessels.

2001: Fishing Industry Safety Advisory Group (FISAG) –Victoria, set up to advise policy development and OH&S bodies on issues in Marine safety.

2002: Strategic focus by **SeaCare Authority** identified the need to develop or focus upon

- comprehensive data collection;
- a coordinated OHS research effort;
- nationally consistent regulatory framework;
- strategic enforcement;
- effective incentives for strong OHS performers;
- Compliance support;
- practical guidance;
- OHS awareness;
- and OHS Skills development.

The objective of this was to continue to develop and engender a safety culture in the industry.

2005: Seafood 'Clean Green Program'. The Clean Green Program for the South Australian Rock Lobster Industry was developed to address poor community perceptions of the industry. One component of the program was to address the Occupational Health and Safety aspects of the industry throughout the supply chain, to establish care and competency in the industry,. The programme was developed and trialled in the 2001 to 2005.

2006: Environmental Management System (EMS) for the Seafood Industry. The development of an EMS for the Seafood Industry contained an OH&S component which gave a level of ownership of OH&S issues to the South Australian Rock Lobster Fishery, and was perceived by the industry as being a potential catalyst in industry proactively responding to OH& S issues.

2007: SeaCare Authority. A revision of the OH&S Strategy to set a target of zero fatalities for the years up to 2010, and a 20% reduction in injury incident to 2007, with a 40% reduction up to 2012. It added a further five areas to OHS Strategic focus; reduction of high incidence/severity risks; improvement of effective management of OHS through SeaCare Leaders Program; prevention of occupational disease risk factors though identification and reporting; elimination of hazards at the design stage; and strengthening of the capacity of government to influence OHS outcomes through MOUs with States and associated bodies.

2007: Pearl Producers Association. FRDC funded an industry report on the development of OHS and welfare (OHSW) processes in the Pearling industry which was a benchmark in world's best diving practice. This report and OHSW process has been adopted by the Australian Pearling industry as promoted by Pearl Producers Association for the industry. It was developed in conjunction with

the industry and divers and as a result has been well received and adopted by the industry as reported in FISH[118].

2002 – 2009: Occupational Health and Safety National Extension. This was undertaken to work with Seafood Services Australia to deliver Occupational Health and Safety programs nationally, and provide each State and Territory with a comprehensive set of OH&S guidelines tailored to each jurisdictions legislation and industry specific requirements. The first objective was only partially achieved due to a lack of available support from the industry body (Seafood Services Australia). The second objective was successful in some states but only partially in others. This work fundamentally supported the development of the Clean Green Program with the Southern Rock Lobster Industry.

2009: Sun Safety Reminder. Fisheries Research and Development Corporation Magazine – FISH – article reminder about sun exposure was published to raise awareness in the industry. [119]

2010: WA Code of Practice. Man overboard: prevention and response. The Code was developed to provide general guidance for all commercial fishing industry vessels in Western Australia on the management of occupational safety and health issues relevant to the prevention of and response to man overboard incidents. It is an intervention that directly addresses to the main cause of fatalities in the industry – drowning – however it would also be reasonably be expected to address many of the injuries occurring in the industry due to a raising of awareness around risk and the necessity for a culture of safety in the industry. This Code was released in August 2010.

Summary

Many of the above interventions have not been assessed for effectiveness at all, or if so, have been self assessed, or have not been in place long enough to be able to be reasonably assessed. Consequently it is not possible, at this juncture in the current project, to make comment on the factors that have led to successful or non successful interventions as these have not been investigated, nor was that a specified activity of this project. However, the examination of the data in the second phase of this project will specifically reflect on these interventions to identify any apparent nexus that may indicate successful interventions.

[118] Pearl Producers Association (2008). "Industry Benefits from a Pearl of Wisdom: Safety First." FISH **16**(2): 24-26.

[119] Fisheries Research and Development Corporation (2009). "Sun safety reminder: the 'danger period' has begun." Ibid. **17**(4): 32.

Chapter 3 – National Data Analysis

Introduction

Subsequent to the review of all previous work and interventions in OHS in the Australian fishing industry, this part of the project undertook to review the existing commercial fishing data in the NOSI (or National Online Statistics Interactive) system. This database holds all, national and some State data sets on OHS in the industries included in the Agriculture, Fisheries and Forestry industry group, from 1997 to 2008 and is able to provide selected (subject to confidentiality and State government agreements) data for examination. This period covers most of the essential years of interventions which were undertaken in the commercial fishing industry.

The objective was to identify what was occurring in commercial fishing in relation to Occupational Health and Safety trends, where the greatest issues lie, and how these compare to the other industries in the Agriculture, Fishing and Forestry industry group. Further the objective was to identify any differences in trends between marine and aquaculture to provide foundation information for both further research and the development of some baseline industry communications in regard to OHS.

The following piece of work has been undertaken and presented in three parts. The first is a presentation of the key features of the following national data analysis, this is then followed by an overview of employment trends in the commercial fishing industry and a comparison of commercial fishing with those industries included in the Agriculture, Fishing and Forestry Group – being Agriculture; Services to Agriculture; and Forestry and Logging. Lastly, the detailed analysis of the commercial fishing data is presented with appropriate graphs to demonstrate the emergent trends where they may exist.

Overall, within the range of the data available, the industry first experienced a drop in the rates of claim numbers in 1999/2000 (commensurate with the restructuring of many sectors of the industry). From this point the levels of claims varied within a relatively small range until 2002/03, from which point on there was a sustained and noteworthy decline until 2005/06 when they have commenced to increase again in the majority of instances. There was a change in the methodology used to collect the data in 2005/06, however the previous data was adjusted to account for this, and therefore the change in trend cannot be attributed to a technicality of data collection. However it must be noted that, relatively, the data represents a small component of the industry and in some cases the relative standard errors may create anomalies in the data. Additionally 2007/08 data was still regarded as 'preliminary' at the time of this analysis. Further, although analysis by rate of incidence would be the preferred level (as compared to the number of claims, given the difference in employment levels in the different sectors (marine and aquaculture) of the industry and compared to the Agriculture, Fishing and Forestry industry group overall) this analysis option was not possible on many occasions due to the high relative standard error that existed in the incidence data.

The industry has been experiencing declining numbers of claims against, and incidences of, OHS accidents and injuries since 2001/02, albeit with an increase in 2006/7. The only intervention that may have contributed to this reduction was the implementation of a 'Code of Safe Working Practice for Australian Seafarers' that was implemented in 1999 by Australia's SeaCare Authority and its subsequent focus on OHS with an initial strategic OHS plan implemented in 2002. However the industry themselves claim this body has not well regarded by commercial fishing, and is seen as solely relevant to commercial shipping only. The national data does not convincingly reflect any further impacts of interventions that were occurring during this 1997 to 2008 period.

Methodology

The methodology used was a frequency analysis examination of the NOSI data base (National Online Statistics Interactive (system)) held and operated by SafeWork Australia. Data included in this system is comprised of those workers compensation claims that have been accepted by a jurisdiction and involve either a death, permanent incapacity, or a temporary incapacity for which payments have been made (including common law, but excluding claims for which only payments for medical and like services have been made). The scope is further limited in publications to non-journey claims involving more than one working week lost from work. The data is collated from the individual Australian States and aggregated to a national level. This has been undertaken for data since 1997, but rounded to comply with State confidentiality restrictions and agreements.

Where possible data used was based on incidence rates per 1000 employees to allow direct comparison between sectors despite the difference in employment levels. However where this was not possible, the data presented was based on the number of claims, which are defined as "All accepted workers' compensation claims (excluding journey claims) that resulted in a fatality, permanent incapacity or temporary incapacity with an absence from work of one working week or more"[120]. SafeWork Australia also integrates data from the National Coroners Information System (NCIS) and all deaths identified here are taken from that data set. To that end there are limited notes that can be made available at the national level on the events surrounding a death, which have been provided by Safe Work Australia for this report (refer

[120] http://nosi.ascc.gov.au/Default.aspx

Table 2). The data does also provide indications of those events giving rise to the greatest number of injury causing events, providing an indication of those events most likely to give rise to OHS outcomes.

Summary of Key Factors

Overall declining trend in both fatal and non fatal events in the commercial fishing industry. **Fatal claims increased in aquaculture. Non fatal claims increased in marine fishing**.

Commercial fishing has the same downward trend in claim rates as other industries in the Ag., Fish and Forestry group.

The ***rate of claims by females is consistently higher in aquaculture*** compared to females in the marine sector, contrary to the same comparison between males.

Incidence rate for males in commercial fishing is the only sector to have been increasing since 2004/05 in the Agriculture, Fisheries and & Forestry industry group.

Unskilled or low skilled workers had the highest level of claims across both sectors in the fishing industry.

Labourers and related workers (unskilled) had the highest number of claimants in aquaculture.

Fatal and Non Fatal Claims

In regard to the incidence of both fatal and non fatal incidents, there is a declining trend over the period for the industry overall, however that trend is facilitated by the gains made in marine fishing compared with the aquaculture sector of the industry. It is particularly noteworthy however, that in the rate of fatal incidents, aquaculture has an increasing trend of claims, while it has a declining trend in non fatal incidents of claims. By contrast, the reverse is the case for the marine sector – decreasing rates of incidents of fatalities, but increasing rates of non fatal claims.

In comparison to the overall Agriculture, Fishing and Forestry sector, commercial fishing is displaying the same downward trend as all the other sectors in this industry group, and to largely the same degree when comparing incidence rates per 1000 employees.

Incidence of Claims and gender balance by sector

Not surprisingly, the number of claims by women in both sectors is lower than that of their male counterparts. In summary, the sustained reduction in numbers of claims by both males and females largely came to an end in 2005/06 and appear to have started to increase again. Additionally, the number of claims by females is consistently higher in the aquaculture sector as compared to females in the marine sector, contrary to the same comparison between males. The overall trend of claims made by men is downward due to the significant reduction in claims (fatal and non fatal) made by men in the marine fishing sector.

When compared to the overall Agriculture, Fisheries and Forestry industry group, the data indicates that the incidence rate for males in commercial fishing is the only sector in the group to have been increasing since 2004/05, and has moved from third behind 'Forestry and Logging' and 'Services to Agriculture', to second to 'Services to Agriculture'. Due to the high relative standard error (resulting from low numbers) the data generated for a comparison of rate of incidence in female workers is unreliable.

By Occupation:

The four categories of occupation that identified any trends by occupation in commercial fishing were those of 'Professionals', 'Tradespersons and related workers'; 'Labourers and related workers', and 'Intermediate production and transport workers'. Within these, 'labourers and related workers' and 'intermediate production and transport workers' were the two groups that had higher numbers of claims, with the trend displayed in claims of intermediate production and transport workers (certificate level of skill training) running contrary to all other occupations by being continually on the increase

which had higher numbers of claims for the marine sector, while it was the occupation group of Labourers and related workers (unskilled, school leaving qualifications only) that had the highest number of claims in the aquaculture sector. In both groups, the numbers of claims fell in 2005/06 to the lowest point since 1997/98, but have subsequently proceeded to climb again, with them levelling out in the aquaculture sector between 2006/07 and 2007/08. This industry occupation group experienced more OHS claims in aquaculture than the marine sector.

Intermediate production and Transport workers were the highest claimants in Marine Fishing.

It was not possible to compare data on occupation between industries within the Agriculture, Fishing and Forestry industry group, as the low relative numbers of claims did not allow a comparison of incidence rates.

Agency of injury or disease

Non powered hand tools, appliances and equipment give rise to the greatest number of claims in all sectors of commercial fishing

The agency of injury or disease in the NOSI database refers to the object, substance, or circumstance (that is, the agent) which was the direct cause of the most serious injury or disease that gave rise to the claim. In the case of both the marine and aquaculture sectors, the agency of injury giving rise to the most claims in both sectors was that of 'non powered hand tools, appliances and equipment'. However, when comparing incident rates, claims appear slightly higher in the aquaculture sector. 'Mobile Plant and Transport' took over in the marine sector in 2006/07, as the next most dangerous agent, and has replaced environmental agencies in both the marine and aquaculture sectors, as the second most likely agent of injury or disease.

For injuries caused by mobile plant and transport, commercial fishing exceeded all other Agriculture sectors.

Compared to the overall Agriculture, Fishing and Forestry sector, commercial fishing was on par with, or only marginally higher than, the 'Forestry and Logging' or 'Agriculture' sectors for injuries caused by 'machinery and fixed plant', but was notably exceeded by those claims in the 'Services to Agriculture' sector. Generally, however, the Commercial Fishing sector exceeded all other sectors for injuries caused by 'mobile plant and transport' during the ten year period.

Mechanism of Injury

The single biggest mechanism of injury in commercial fishing was 'Body Stressing'.

Mechanism of injury refers to indentifying the action, exposure or event (that is, the action resulting from interaction with the agent) which was the direct cause of the most serious injury or disease. This category was not broken down into marine and aquaculture sectors as the resultant figures were generally too small (that is, non publishable) to provide data over the period of any value. Overall commercial fishing industry 'Mechanism of Injury' data identified the single

Fishing has one of the highest incidences of claims for body stressors in the Agriculture, Fishing and Forestry sector.

biggest mechanism in commercial fishing to be 'Body Stressing' which refers to '*stress placed on muscles, tendons, ligaments and bones'*[121]. This was followed by 'Falls, Trips and Slips', 'Being hit by moving objects' and 'Hitting objects with a part of the body'. Of all the factors in this denominator, 'Heat, Radiation and Electricity' and 'Mental Stress' were the only mechanisms that had increased numbers of claims since 2006/07. Compared to the overall Agriculture, Fisheries and Forestry sector, commercial fishing has one of the highest rates of incidence for claims caused by body stressors. It is on par with 'Services to Agriculture, Hunting and Trapping' in regard to this mechanism of injury. In relation to falls, trips and slips commercial fishing is second to 'Forestry and Logging' in the overall Agriculture, Fishing and Forestry sector.

The most common nature of injury or disease, across sectors, included ***sprains and strains*, then *lacerations, fractures, punctures, poisoning, drowning, internal injuries and burns.***

Nature of Injury or disease

This denominator refers to the identification of the most serious injury or disease reported on the initial claim for workers' compensation.

Commercial fishing has overtaken forestry and logging to have the second highest incidence rate of injury and poisoning in Agriculture, fishing and forestry industry group.

In both sectors, 'injury and poisoning' (which encompasses burns, lacerations, fractures, punctures, poisoning and toxic effects, and all environmental effects (including drowning and electrocution), internal injuries, dislocation, sprains and strains), was the most common cause of claims, and has been declining over the period. This was followed (not closely) by 'diseases of the musculoskeletal system and connective tissue', which refers to disorders of the joints, muscle, tendons or soft tissue and acquired musculoskeletal deformities. Mental stress could only be identified as the nature of the injury or disease in the aquaculture sector in the years 2005/06 and 2006/07.

For both sectors, ***the upper limbs are the primary location of injury on the body.***

The downward trend in incidence rates of injury and poisoning displayed in commercial fishing is displayed in all other Agriculture and Forestry industry groups. While the incidence rate of injury and poisoning in commercial fishing is slightly greater than that occurring in 'Services to Agriculture' and 'Forestry and Logging', the decline in commercial fishing is on par with the agriculture sector generally. That rate of decline has however, been only slightly less than that of the decline in the 'Forestry and Logging' sector.

Bodily Location of Injury or Disease

This denominator refers to the locations that are most commonly injured resulting in a workers' compensation claim. For both sectors, the upper limbs are the most common location of injury on the body. This is followed by the trunk, lower limbs, multiple locations and then head. Injuries to the upper limbs and trunk decreased from 2002/03 until 2005/06, when they began to increase again. Injuries to the lower limbs followed this same pattern but have continued to steadily reduce over the period up to 2007/08. Numbers of lower limb claims are still

[121] National Occupational Health and Safety Commission, 2002, *Type of Occurrence Classification System, Revised 2.1 Edition,* May, Canberra. p.164

Commercial fishing is the same as other Agriculture, Fishing and Forestry group industries in trends in upper limb injuries.

above claim rates for injuries to multiple locations, the head, neck, systemic locations or non physical locations.

All other sectors in the 'Agriculture, Fishing and Forestry' industry group show the same downward trend in injuries to the upper limbs as has commercial fishing. To that end commercial fishing is in line with its industry counterparts in this regard. At 1.2% commercial fishing claims as a result of injuries to the upper limbs are second only to 'Services to Agriculture Hunting and Trapping' (1.38%), but above 'Agriculture' (0.83%) and 'Forestry and Logging' (0.83%).

Age Group

Across both sectors of the industry, highest number of claims was those 25 to 29 years of age over the period.

The age group with the highest number of claims across both sectors of the industry over the period were those in the 25 to 29 year age group. However, most recently a rise in numbers of claims has become evident in the 20 to 24 year age group, which was also evident in the under 20 year age group.

Claims were ***consistently higher in Aquaculture in all age brackets up to 39 years.***

By comparison, those claims from age groups between 25 and 34 have levelled off since 2006/07, and those from 35 to 44 have been reducing. The claims from those in the age group between 45 and 49 have been volatile since 2001/02. Injury rates were higher in all age groups from under 20 though to 39 years, in aquaculture when compared with marine fishing.

Most recently the age groups <20 and 20 – 24 exhibit an increasing trend in claim numbers.

This data could not be compared to overall Agriculture, Fishing and Forestry Industry group data, as the data was equal to zero or the relative standard error was greater than 25% making a comparison of rate of incidence, meaningless.

Time Lost

Losses of 2 to less than 12 weeks were the highest category in commercial fishing with the ***highest incidence generally being in aquaculture.***

The time lost recorded by the NOSI database, refers to those injury claims (including fatalities) that resulted in loss of time at work of one working week or more. Losses of two weeks to less than twelve weeks were the highest category in both sectors of commercial fishing, with aquaculture commonly having the highest incidence of claims. Losses of one to less than two weeks in aquaculture has however, been reducing steadily, appearing to fall in line with the incidence rate of marine fishing since 2006/07.

Commercial fishing declines in regard to the incidence of 2 – 12 weeks loss of work is ***on par with Agriculture and Forestry and Logging***

The commercial fishing sector was second only to 'Services to Agriculture' in regard to the incidence of claims that resulted in between two and twelve weeks loss of work. There has been a declining trend in all sectors of the Agriculture, Fisheries and Forestry industry group in regard to this amount of lost time. The decline in this category in commercial fishing is on par with the 'Agriculture' and 'Forestry and Logging' sectors of the industry group.

Data Analysis

The following presents a detailed discussion of the items examined by the overall commercial fishing industry and also by each of the marine and aquaculture sectors. The objective is to provide information on the state of OHS trends in the Australian commercial fishing industry, over the last ten years, to identify areas requiring the greatest focus and attention for further investigation, communication with the industry, and potential research into how interventions might be made more effective in the future.

Employment

The following figures are those supplied by the Australian Bureau of Statistics (ABS) and are adjusted labour force data, using a number of other ABS surveys to ensure (as far as possible) employee numbers also reflect the people covered by workers compensation in each sector, thereby providing a frame of reference for the data to follow. That is, given the number of contract and self employed share fishers in the industry, an unidentified number are unlikely to be covered by standard workers compensation arrangements and therefore any injuries they may incur would not be reflected in the standard NOSI or ABS data.

The following figures identified the employment levels in the commercial fishing industry for the period under analysis (1997/98 – 2007/08), and include rounding to honour State confidentiality agreements. The implementation of these agreements as of the 1997/98 year also account for the availability of comparable nationally collated OHS data only from this time to the latest data release of 2007/08.

Table 1: National Employment in Commercial Fishing

Industry of employer	FY 1997-98	FY 1998-99	FY 1999-00	FY 2000-01	FY 2001-02	FY 2002-03	FY 2003-04	FY 2004-05	FY 2005-06	FY 2006-07	FY 2007-08	FY 2008-09p
Aquaculture	3,500	3,100	2,400	3,400	4,500	4,700	5,000	5,000	3,400	3,300	4,800	5,100
Marine fishing	4,800	5,300	6,600	6,500	6,100	5,500	4,700	4,500	4,300	2,900	3,800	4,200
Total Com. Fishing	**8,400**	**8,400**	**9,100**	**9,900**	**10,600**	**10,200**	**9,700**	**9,500**	**7,700**	**6,200**	**8,500**	**9,300**

Note: Source: the Australian Bureau of Statistics. Data from each cell has been rounded (for confidentiality reasons), and the total separately, consequently totals may not add up.

Overall, the industry demonstrates a decline in employment over the period, which unadjusted labour force figures are concurrent with the buyback of quota from 2001 and the notable drop in employment in the industry from that point on. In the period (1997/98 – 2007/08), aquaculture has taken over from marine fishing as the major employer. A trend which is also subsequently reflected in the injury data, as numbers of claims are consistently higher in the aquaculture sector.

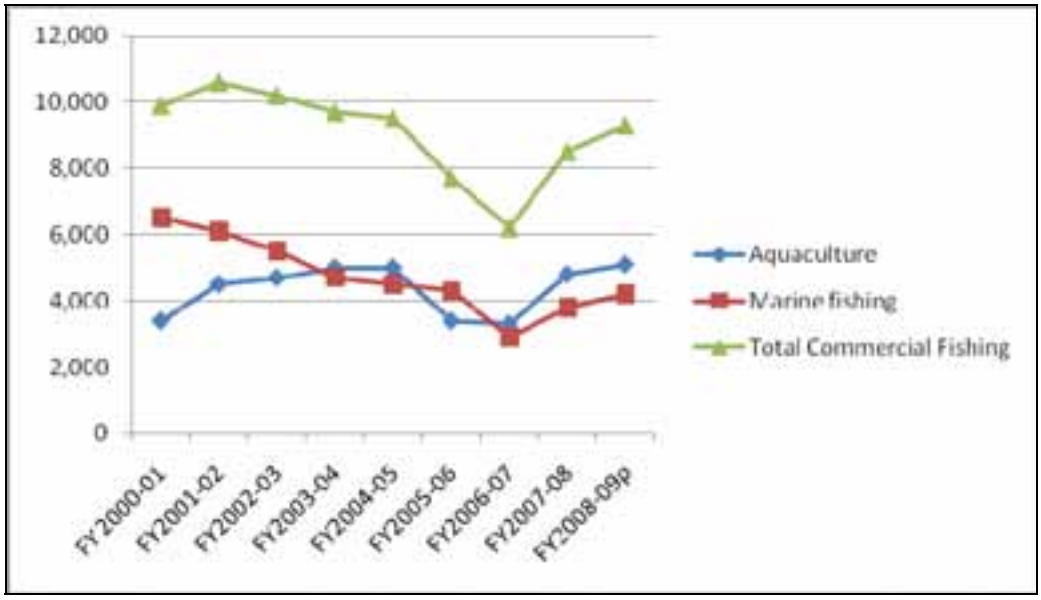

Figure 1: Average Employment in Commercial Fishing Financial Years 1997 - 2008

Note: In the 2008/09 year, 'p' indicates 'provisional data'

Comparative Injury Incident Rates

The industry group into which commercial fishing falls is 'Agriculture, Fishing and Forestry'. This Industry group contains the industry sectors of 'Agriculture', 'Services to Agriculture, Hunting and Trapping', 'Forestry and Logging' and 'Commercial Fishing'. Injury rates in fishing for the period ('97- '08) compared to the overall industry group of Agriculture, Fisheries and Forestry, identify 'Commercial Fishing' as the second highest industry for incidences of workers compensation claims. Although rates of claims have reduced in commercial fishing overall in the period, they remain higher than 'Agriculture' and 'Forestry and Logging', despite having dropped below those of 'Services to Agriculture'. In 2007/08 'Commercial Fishing' rate of claims was 28.8% compared to 35.1% for 'Services to Agriculture'.

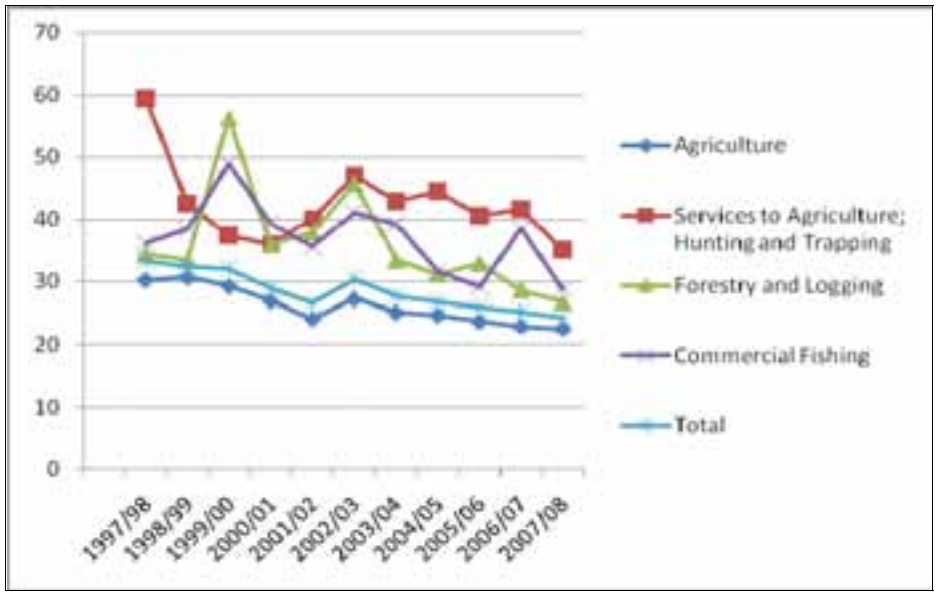

Figure 2: Incidence rate of Claims per 1000 employees by Agriculture, Fisheries and Forestry, and sectors

There was a spike in the incidence of commercial fishing injury claims in 2006/07 which is consistent with the number of claims increasing in this period, and the rebound in employment in the sector from 2006/07 (see Table 1). More inexplicable, is the drop again in incidence rates in 2007/08, despite the increasing employment levels in this period. It may be due to the preliminary nature of the data or may be attributable to other unpublished industry activity aimed at reducing the incidence of OHS claims.

Fatal and Non Fatal Claims

In regard to the incidence of both fatal and non fatal incidents, there is a declining trend over the period for the industry overall, which is a positive development. This trend is, however, facilitated by the gains made in marine fishing in reducing the number of claims, compared with the increase that is occurring in claims in the aquaculture sector of the industry. In fatal incidents, aquaculture has an increasing trend in the incidence of claims, in line with the increase in employment. However that trend is reversed in non fatal incidents.

In regard to fatal accidents, the following represents all accepted workers claims that resulted in a fatality in both the commercial marine and aquaculture sectors. It clearly identifies that although the overall incidence rate of claims in the commercial fishing industry has reduced over the period, this has been at the expense of the aquaculture industry. The trend lines in the following graph (Figure 3) demonstrate the declining trend of claims for both the overall 'Total' industry and 'Marine Fishing', contrasting with increasing claims in the 'Aquaculture' sector since 2003/04. It is important to note that this graph is dealing with incidence rates, however the number of claims represented is in the order of between 1 death per 3,400 (2005/06) or 0.029% for the aquaculture sector, and 2 deaths per 4,300 (2005/06) or 0.046% for the marine sector.

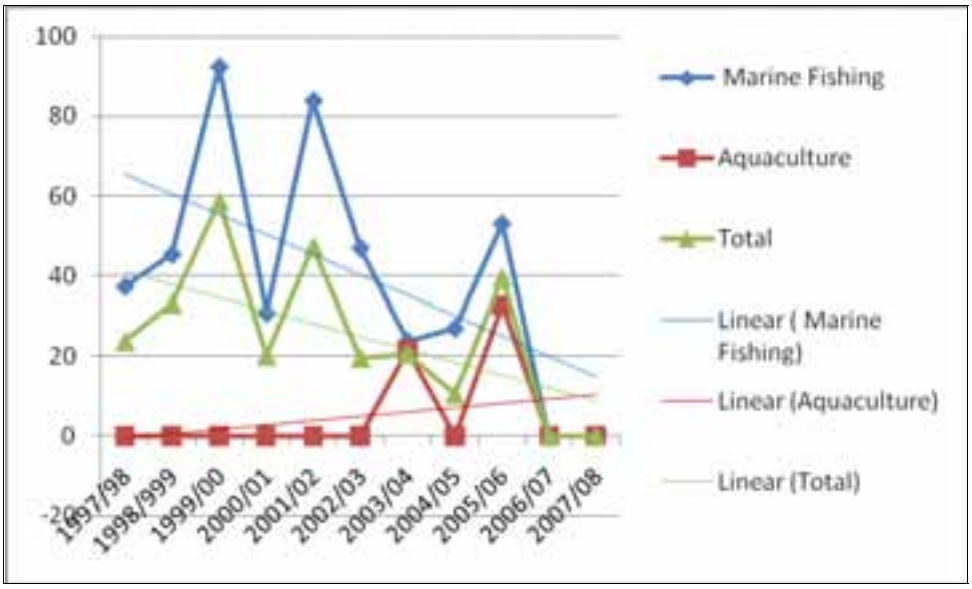

Figure 3: Incidence rate of Fatal claims in the Commercial Fishing Industry

The compilation of each jurisdiction's notifiable fatalities into a national dataset did not start until July 2003 – therefore these are not part of the OHS compensation data held under NOSI. The data here is compiled from details of fatalities that must be notified under State or Territory OHS legislation. The details of the deaths that have been recorded since 2003 identified the following information in regard to the 19 deaths recorded.

Table 2: Details of recorded deaths in commercial fishing 2003 - 2010

Count of ID		Fin Year						
STATUS	Industry workplace detailed	2003-04	2004-05	2005-06	2007-08	2008-09	2009-10	Grand Total
By-stander	0413 - Finfish trawling		1					1
	0411 - Rock Lobster fishing	1						1
By-stander Total		**1**	**1**					**2**
Worker	041 - Marine fishing (not sure of type)		1					1
	0412 - Prawn fishing	1				3		4
	0413 - Finfish trawling	2	1	1	1	2		7
	0419 - Marine fishing n.e.c.*	1			1			2
	042 - Aquaculture							
	0420 - Aquaculture					1	1	2
	Fishing type unknown (likely marine)	1						1
Worker Total		**5**	**2**	**1**	**2**	**6**	**1**	**17**
Grand Total		6	3	1	2	6	1	19

Note: This table provided courtesy of SafeWork Australia, Canberra, 2010.
*N.E.C. = Not Elsewhere Classified.

The causes of deaths fell into three main categories, which included drowning, interaction with equipment, and interaction with external factors. The specific details of these deaths (

Table 2), were recorded as follows:

1. Drowning:
   - 4 fisheries workers drowned when they were washed off or fell overboard
   - 3 fisheries workers drowned when their boat was swamped by waves
   - 3 fisheries workers drowned when their net snagged and sank their boat
   - 1 fisheries worker drowned after entering a sinking boat
   - 2 divers drowned while diving for pearls or beche de mer
2. Interaction with equipment:
   - 2 fisheries workers died when they became entangled and crushed in the net winch drum
   - 1 fisheries worker died when a winch rope mounting failed
   - 1 aquaculture worker died when crushed by an onboard crane
3. Interaction with external factors:
   - 1 worker was electrocuted while working on a switchboard
   - 1 bystander died when their boat was hit by a cray boat

This pattern of higher claims in aquaculture compared to marine fishing (Figure 3) is reversed when looking at the incidence rate of non fatal claims in the industry. Contrary to the situation with fatal claims, the incidence of claims for non fatal incidences in the commercial fishing industry has declined in the period, (attributable to declines in the aquaculture sector), despite the actual increase in the incidence of claims in the marine sector. The decline in overall commercial fishing incidence rate of claims for non fatal accidents over the period is a noteworthy improvement, represented by a sustained decline since 1999/2000.

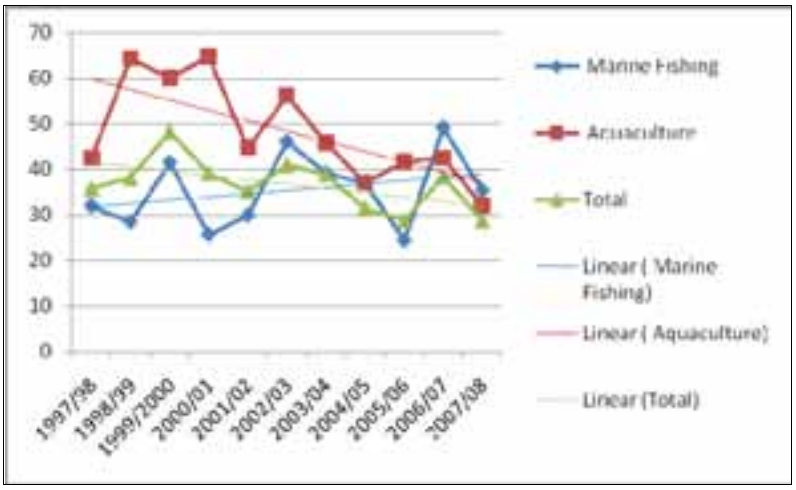

Figure 4: Incidence rate for Non Fatal claims in the Commercial Fishing Industry

The point of note in these two set of data, that has no obvious explanation, is the upward trend in fatal accidents in the aquaculture sector, concurrent with a decrease in the non fatal incidents. This may be due to a reporting lag, in that deaths are immediately obvious claims and claims for injuries may not have occurred until the following collection year (data collection is allocated to July to June years).

Gender

Not surprisingly, the number of claims by women in both sectors is lower than that of their male counterparts, and has essentially stayed stable over the period. However, it is notable that when marine and aquaculture are compared, the number of OHS claims for females in aquaculture is consistently higher than for those in the marine sector, contrary to a reduction over the period in male aquaculture claims. Additionally, while the number of claims for males has reduced over the period in both the marine and aquaculture sectors, this reduction is more notable in the marine sector.

It is also notable that the commencement of improvements (or declines) in the number of claims by females lag slightly behind males. That is, the largest prolonged drop in male OHS claims was initiated in 2002/03, while those for women were initiated in 2003/04. However this may be due to a lag in reporting, but also may be worth investigation in relation to potential gender differences in the ways in which OHS issues are dealt with.

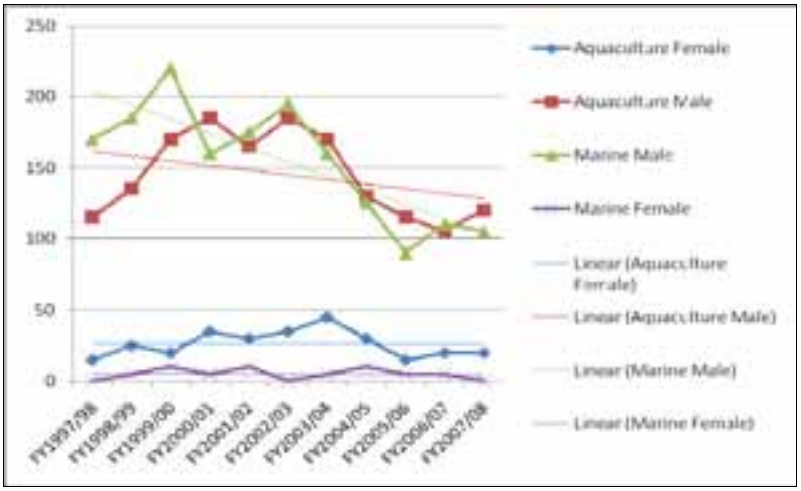

Figure 5: Number of Claims by industry sector and gender

It is also notable, though the figures are very small and consequently must be interpreted with caution that although number of claims by aquaculture industry females and marine industry males began to increase in 2005/06, those made by females in the marine industry did not.

In summary the sustained reduction in numbers of claims by both males and females both largely came to an end in 2005/06 and appear to have started to increase again. Additionally, the number of claims by females is consistently higher in the aquaculture sector as compared to females in the marine sector, contrary to the same comparison between males, despite the common disparity in employment rates.

Occupation

While originally there were six categories of occupation identified as existing in the commercial fishing industry (Managers and Administrators; Professionals; Associate Professionals; Tradespersons and related workers; Elementary, Clerical, Sales and Service Workers; and Labourers and related workers) only four had sufficient data to identify any trends by occupation in commercial fishing. These four were 'Professionals', 'Tradespersons and related workers'; 'Labourers and related workers', and 'Intermediate production and transport workers' (for details of the types of activities covered by each of these categories, please refer to Appendix 1 - Definitions of Occupations). Within these, 'labourers and related workers' and 'intermediate production and transport workers' were the two groups that had higher rates of claims. The trend displayed in the number of claims of 'intermediate production and transport workers' (certificate level of skill training) runs contrary to all other occupations in the marine sector, in that it has been continually on the increase since 2005/06. Contrary to this, the occupation group of Labourers and related workers (unskilled, school leaving qualifications only) had the highest number of claims n the aquaculture sector. In both groups claims fell in 2005/06 to the lowest point since 1997/98, but have subsequently proceeded to climb again, with them levelling out in the aquaculture sector between 2006/07 and 2007/08.

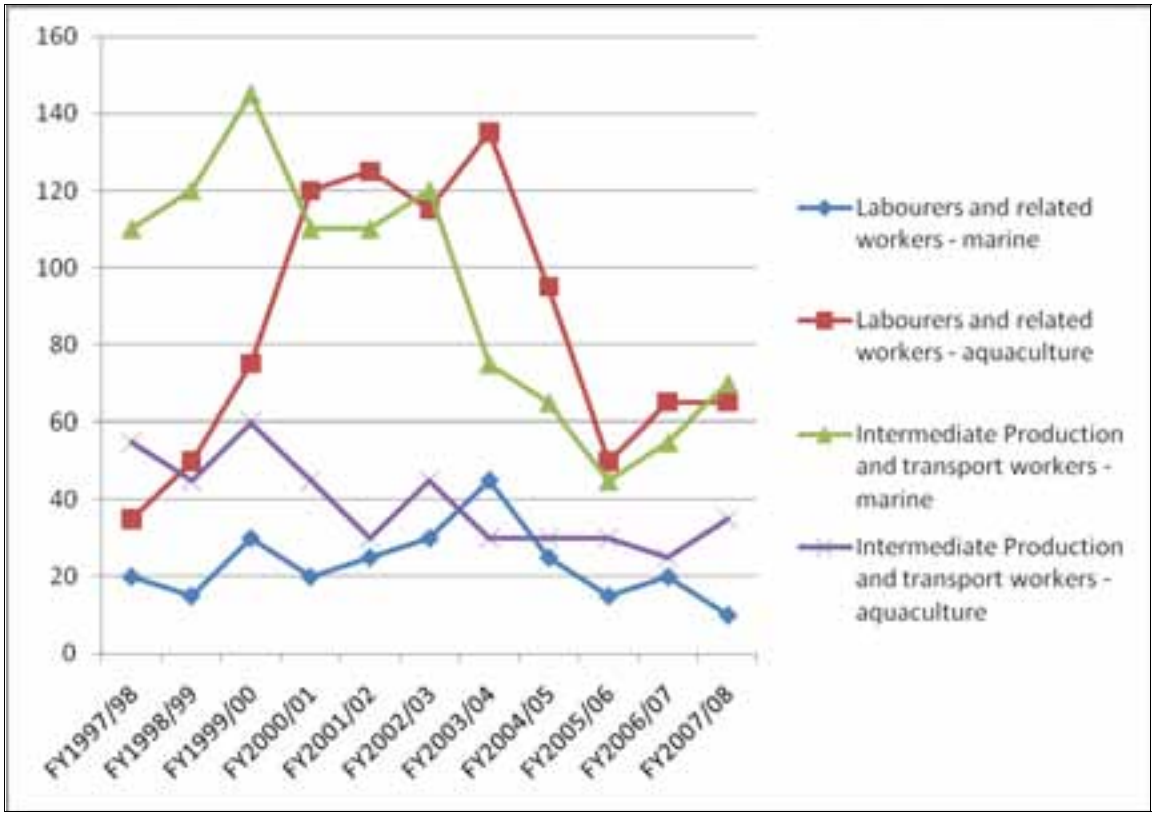

Figure 6: Number of claims by two highest claim occupations - Marine and Aquaculture Sectors

Trend lines overlaid for the entire period on the above graph indicate that while the number of claims from 'labours and related workers' in the marine sector are indicating a slight overall decrease in the period, trend lines for the aquaculture sector indicate an overall increase in the number of claims in the same period, despite a steep drop in claim numbers from a high in 2003/04. Similarly, in relation to Intermediate Production and Transport Workers, although there has been a very notable reduction in the number of claims in the marine sector, claim numbers have not dropped to the degree in the aquaculture sector. Overall, those in these two industry occupations generally experience more OHS claims in the aquaculture sector than they do in the marine sector.

Agency of injury or disease

The agency of injury or disease in the NOSI database refers to the object, substance, or circumstance (that is, the agent) which was the direct cause of the most serious injury or disease, giving rise to the claim. In the case of both the marine and aquaculture sectors, the agency of injury giving rise to the most claims was that of 'Non Powered Hand tools, Appliances and Equipment'. This category of agents includes; hand tools, non-powered, edged; other hand tools; fastening, packing and packaging equipment; furniture and fittings; other utensils; ladders, mobile ramps and stairways, and scaffolding; and other non-powered equipment. 'Mobile Plant and Transport' in the marine sector took over as the next most dangerous agent in 2006/07, replacing environmental agencies in both the marine and aquaculture sectors, as the second most likely agent of injury or disease. This category of agent includes: mobile garbage compactors; other self-propelled plant; pneumatic tools; compressors and pumps on trailers; concrete pumps; truck mounted pumps and compressors; air compressors on boats; portable air compressors for tyres; hydraulic equipment, not elsewhere classified; other semi-portable plant; wheelbarrows; tractors - agricultural or otherwise; ride-on mowers; trucks, semi-trailers, lorries; buses, trolleybuses, minibuses; cars, station wagons, vans, utilities; motorcycles and sidecars, scooters, trail bikes, pushbikes; industrial aircraft (including non-passenger aircraft, surveying, fish-spotting,

fire-fighting, crop-dusting aircraft and non-passenger helicopters); water motorised and non motorised craft; buoys, navigation beacons, floating docks and pontoons.

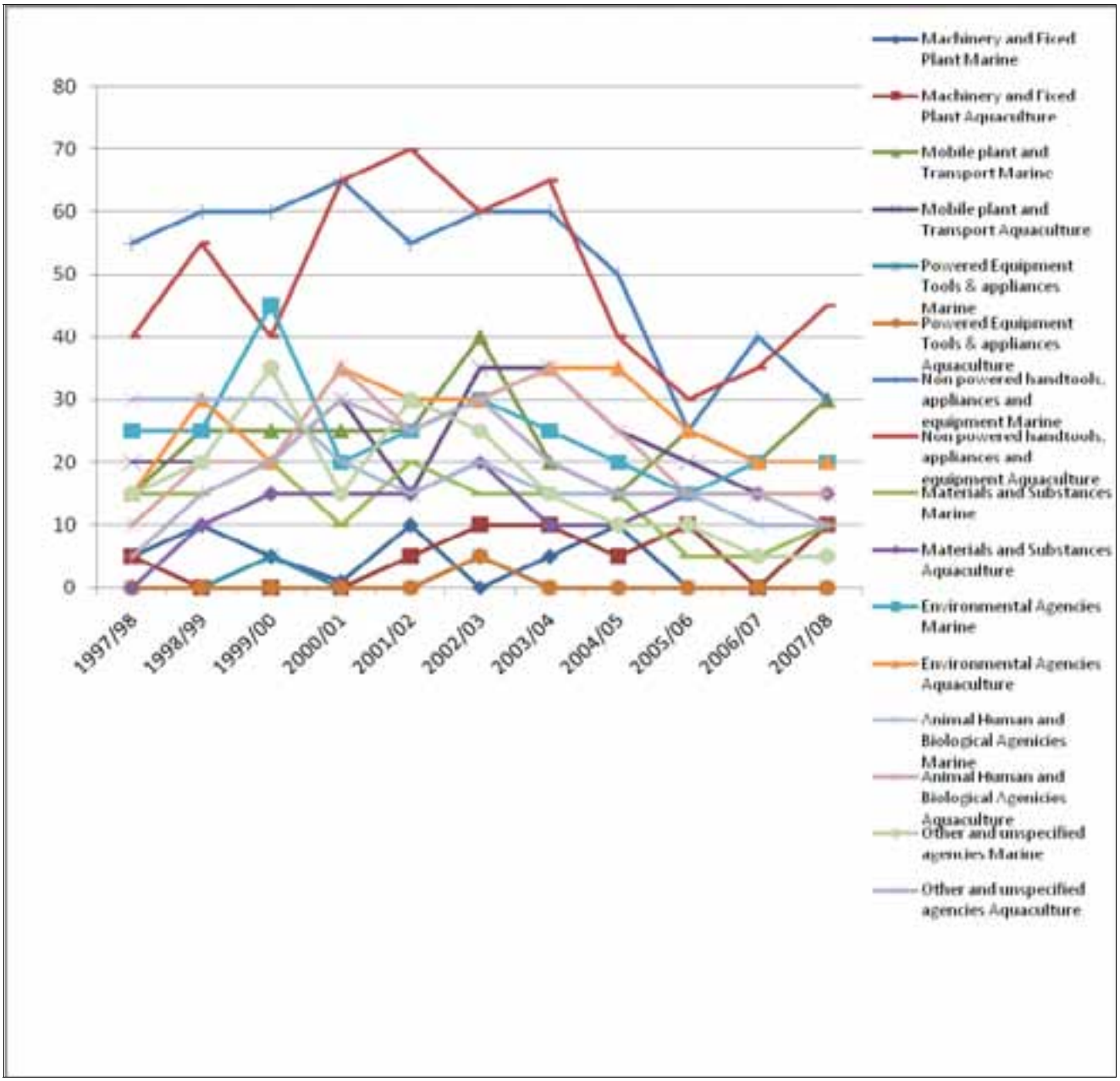

Figure 7: Number of Claims Marine and Aquaculture in relation to Agency of Injury or Disease

Although the incidences of claims in relation to non powered hand tools appear to be slightly higher in the aquaculture than the marine sector, when trend lines are imposed over the data on incidence rates (Figure 8) a contrary trend appears, indicating that the incidence rate in aquaculture is declining, while simultaneously increasing in the marine sector.

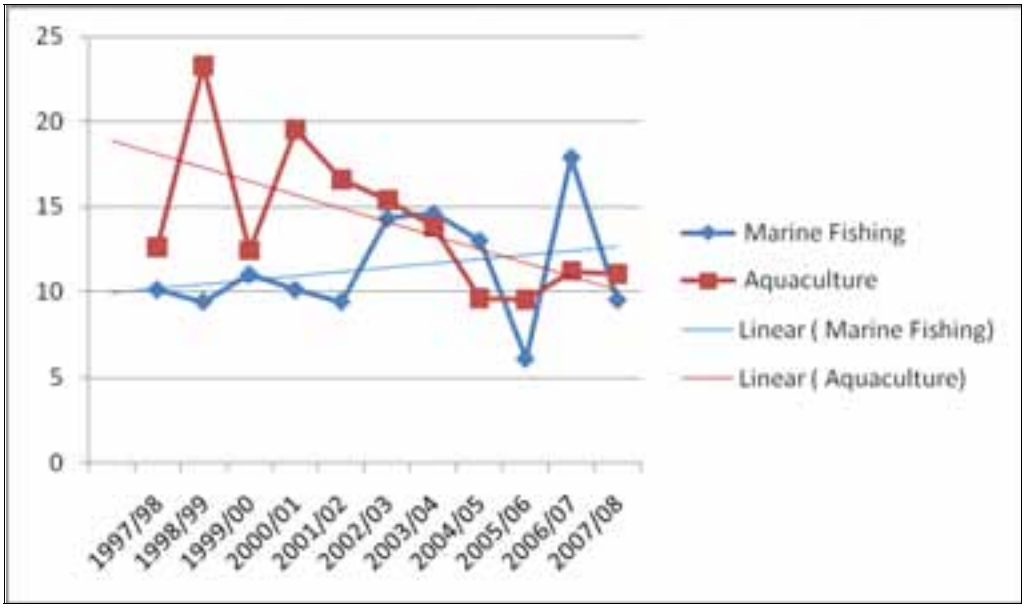

Figure 8: Incidence Rate of Non powered hand tools and appliances in both Aquaculture and Marine sectors.

However it must be noted that there are relative standard errors of greater than 25% in the years 2006/07 (for the Marine sector) and 1997/98 & 1998/99 (for the aquaculture sector) for both sectors which may in fact have created this apparent cross over in direction of incidence rate. If this is the case it is most likely that aquaculture may have a higher rate of incidence than that of the marine sector.

Mechanism of Injury or Disease

Mechanism of injury refers to indentifying the action, exposure or event (that is, the action resulting from interaction with the agent) which was the direct cause of the most serious injury or disease. This category was not broken down into Marine and Aquaculture as the figures were too small (that is, non publishable) and relative standard error was also too great, to provide data of any value. The data for the commercial fishing industry 'mechanism of injury' identified however, that the single biggest mechanism of injury in commercial fishing was 'Body Stressing' which refers to '*stress placed on muscles, tendons, ligaments and bones*'[122]. This was followed by 'Falls, Trips and Slips', 'Being hit by moving Objects' and 'Hitting Objects with a Part of the Body'. Of all the factors in this denominator, 'Heat, Radiation and Electricity' and 'Mental Stress' appear to be the only mechanisms that may have increased claims since 2006/07. This is very difficult to confirm as the number of claims was either non publishable ('np') or are rounded to the nearest five claims, hence the margin for misinterpretation is large in regard to the specifics of the likely number of claims.

The following (Figure 9) provides a graphic of the movement of claims generally in each of the categories over the period.

[122] National Occupational Health and Safety Commission, 2002, *Type of Occurrence Classification System, Revised 2.1 Edition,* May, Canberra. p.164

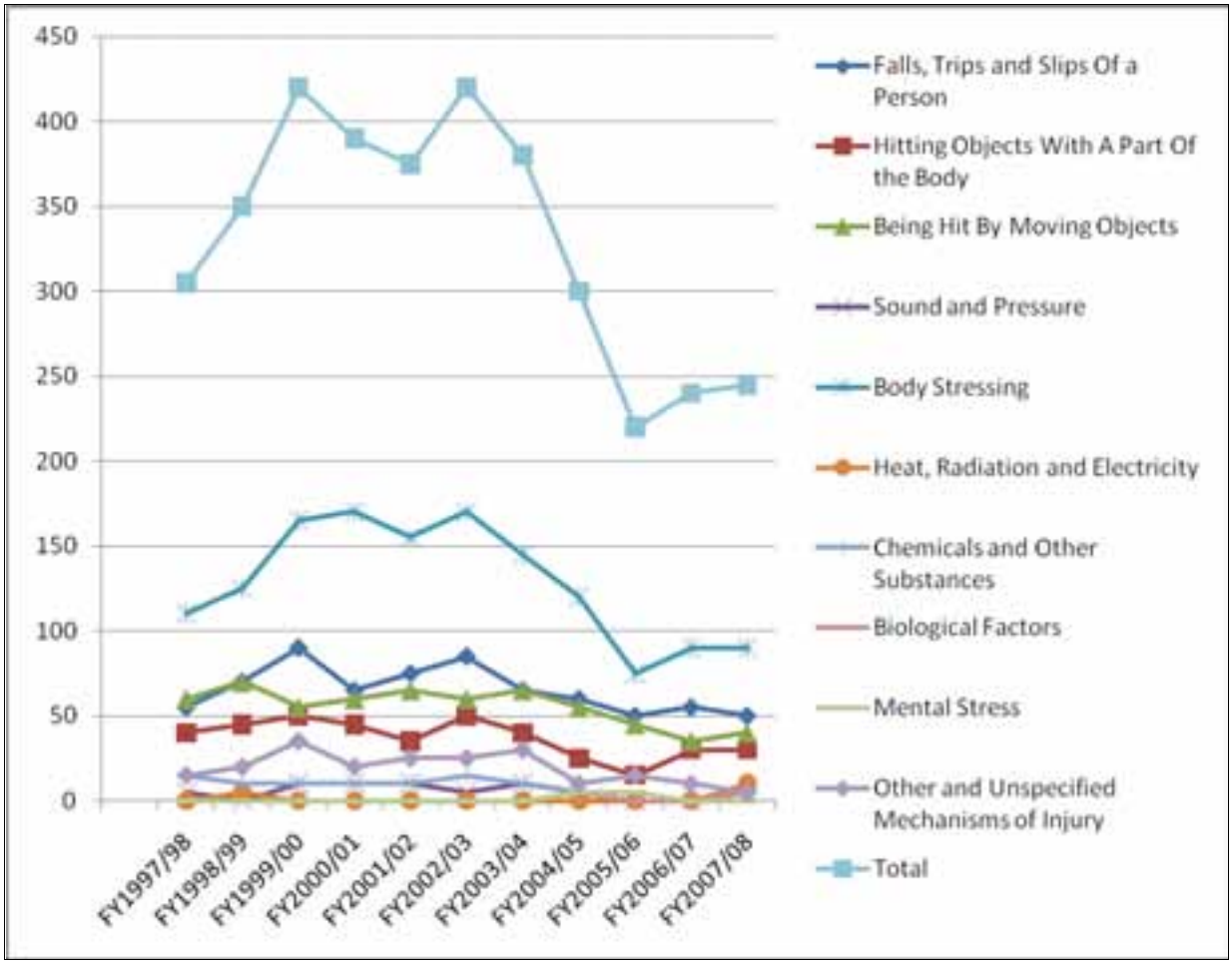

Figure 9: Number of Claims for Commercial Fishing in relation to Mechanism of Injury.

Nature of Injury or disease

This denominator identifies the most serious injury or disease reported on the initial claim for workers' compensation.

In both sectors – marine and aquaculture - 'injury and poisoning' was the most common cause of claims. This category encompasses burns, lacerations, fractures, punctures, poisoning and toxic effects, and all environmental effects (including drowning and electrocution), internal injuries, dislocation, and sprains and strains. This was followed (not at all closely) by 'diseases of the musculoskeletal system and connective tissue', which refers to disorders of the joints, muscle, tendons or soft tissue and acquired musculoskeletal deformities.

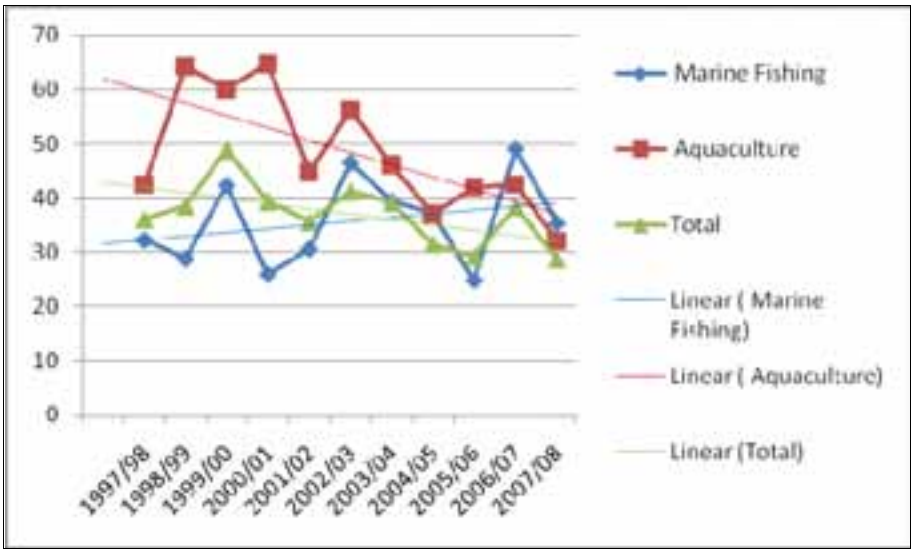

Figure 10: Incidence Rate of Claims by Nature of Injury or Disease

The trend lines overlaid on both the sector's incidence rates identify that, overall, there is a downward trend in incidence rates of injury and poisoning in commercial fishing. However, this is resulting from a marked reduction in the aquaculture sector, as compared to an increase in the rate of incidence of claims in the marine sector. There are ten sub categories which are covered by this denominator, however only six of these identify claims that can be published (that is; numbers of 3 or greater per collection year). These categories include; Injury and Poisoning; Diseases of the Musculoskeletal System and Connective Tissue; Diseases of the Skin and Subcutaneous Tissue; Diseases of the Nervous System and Sense Organs; Diseases of the Digestive System and Mental Disorders. The last three categories only had reportable numbers of claims in two years of the ten year period (not the same years). The highest category of Injury or Disease is 'Injury and Poisoning' – which was the case for both marine and aquaculture sectors. This category includes, fractures; Contusion with intact skin surface and crushing injury excluding those with a fracture; Poisoning and toxic effects of substances; Effects of weather, exposure, air pressure and other external causes, not elsewhere classified; Dislocation; Sprains and strains of joints and adjacent muscles; Open wound not involving traumatic amputation; superficial injury; and traumatic amputation including nucleation of eye (loss of eyeball). Of all these, sprains and strains of joints and adjacent muscles were the most consistent injuries to claimants in both sectors: marine and aquaculture. However the incidence rates of these injuries has been reducing steadily over the period (1997/98 – 2007/08) most notably after 2002/03, as demonstrated in the following (Figure 11). However, aquaculture does have a consistently higher incidence rate of this, the most common nature of injury.

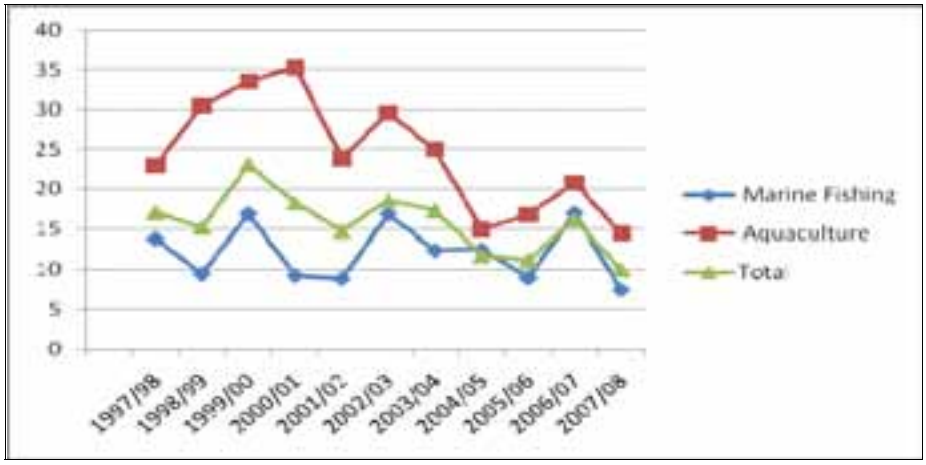

Figure 11: Incidence rate of Sprains and Strains to joints and adjacent muscles

In regard to the decline in the number of claims in the marine sector, the only other 'nature of injury' that has been reducing over the period was 'Contusion with intact skin surface and crushing injury excluding those with fracture' (see Figure 12). In this sector, fractures, dislocation and open wounds not involving traumatic amputation had all increased from the period 2005/06, but had since levelled out.

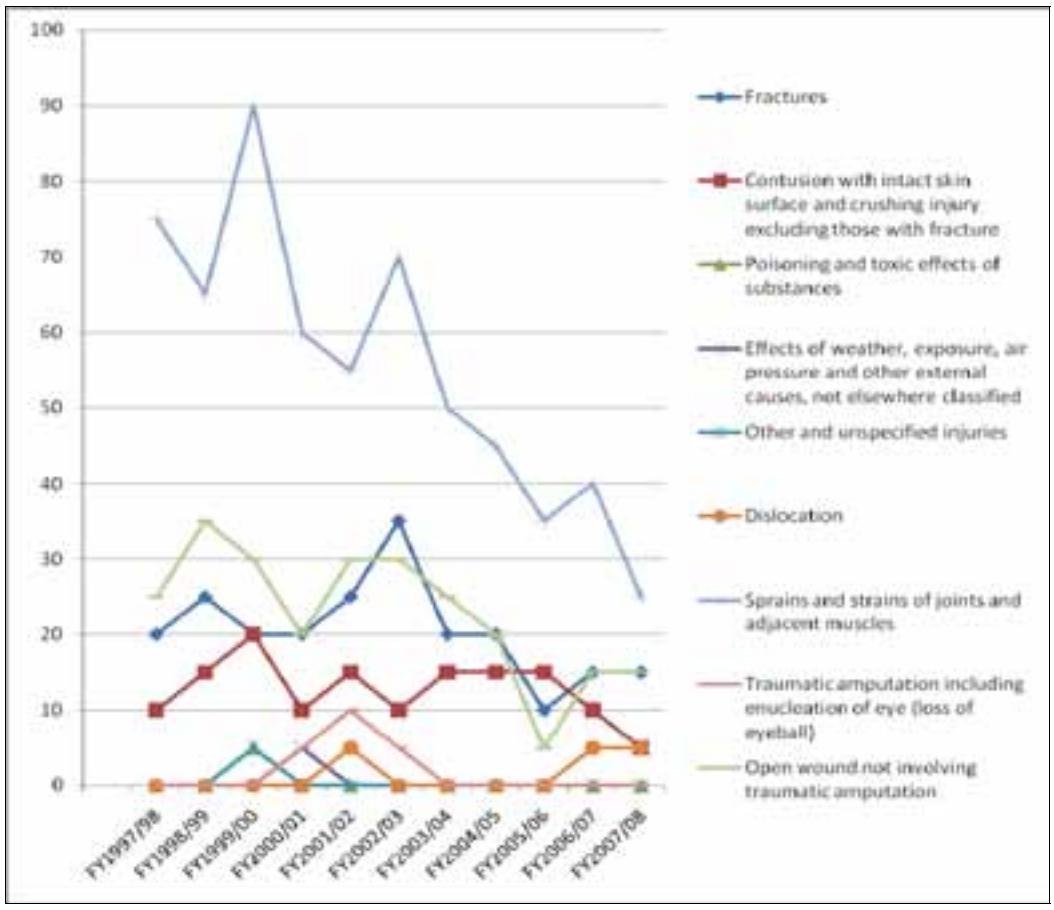

Figure 12: Number of Claims related to 'Injury and Poisoning' – Marine fishing.

This reduction in 'contusion with intact skin surface' in marine fishing experienced the reverse trend in aquaculture – being the only denominator (aside from Sprains and Strains) that appears to exhibit an increase in the period (subject to variances caused by reporting). Further, the only injury reducing in the number of claims in the period in aquaculture was 'open wound not involving traumatic amputation'. The numbers of claims attributed to the various denominators within Injury and Poisoning for the aquaculture sector are detailed in Figure 13, below.

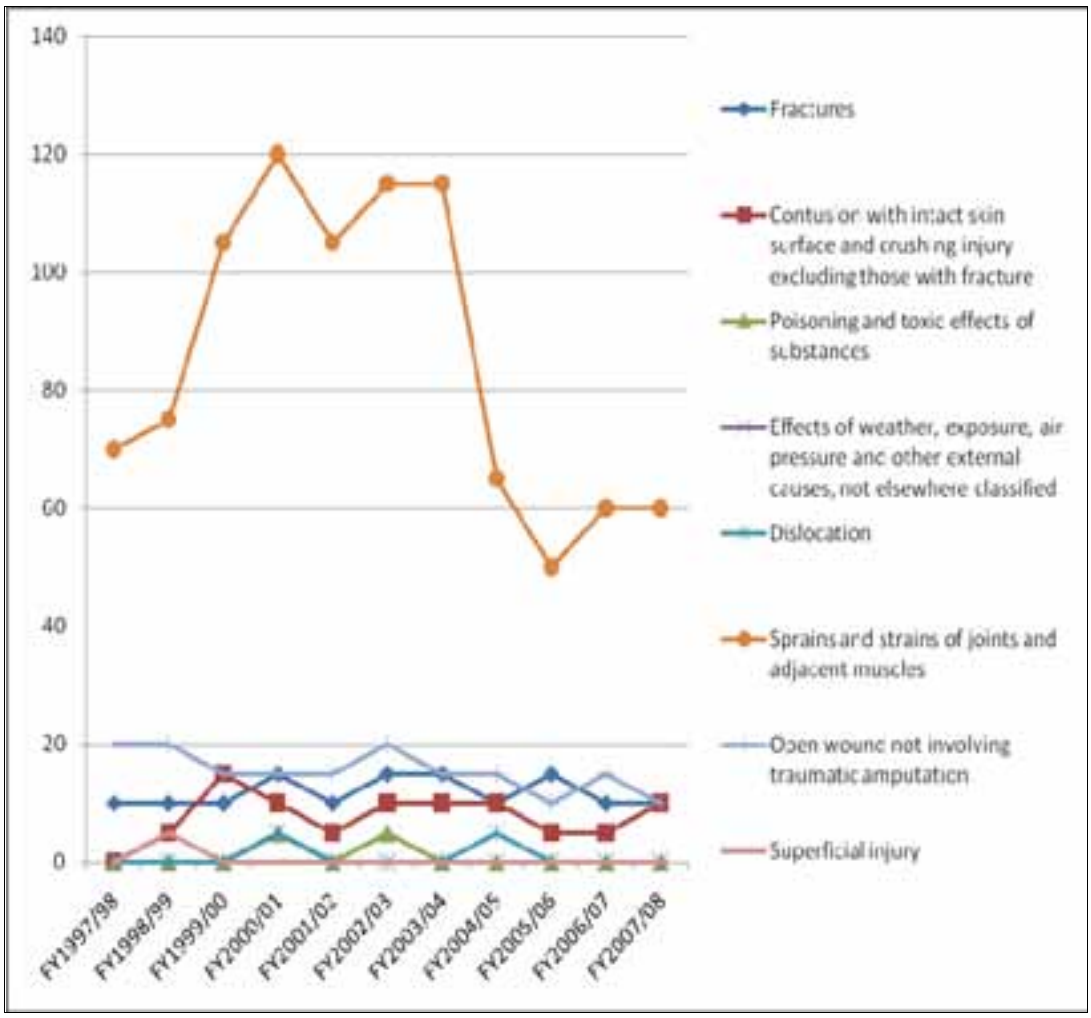

Figure 13: Number of Claims related to 'Injury and Poisoning' - Aquaculture

In summary, sprains and strains are the predominant injury within the key category of Injury and Poisoning in relation to the Nature of the injuries most commonly incurred that result in OHS claims. Sprains and strains have been reducing since 1999/2000 in the marine sector, but have had a slight increase and plateau in the number of claims in the aquaculture sector since 2005/06. Additionally, while all other sub categories within Injury and Poisoning have either reached a plateau or have been reducing in the marine sector, contusion with intact skin surface and crushing injuries have increased in the aquaculture sector.

Bodily Location of Injury or Disease

This category of claim identification refers to the locations that are most commonly injured resulting in a workers' compensation claim. For both sectors, the upper limbs are the primary location of injury on the body. This is followed by the trunk, lower limbs, multiple locations and then head. Injuries to the upper limbs and trunk dropped consistently and notably from 2002/03 until 2005/06, when they began to increase again. Injuries to the lower limbs followed this same pattern but have continued to steadily reduce over the period up to 2007/08. Numbers of lower limb claims are still above claims for injuries to multiple locations, the head, neck, systemic locations or non physical locations (see Figure 14).

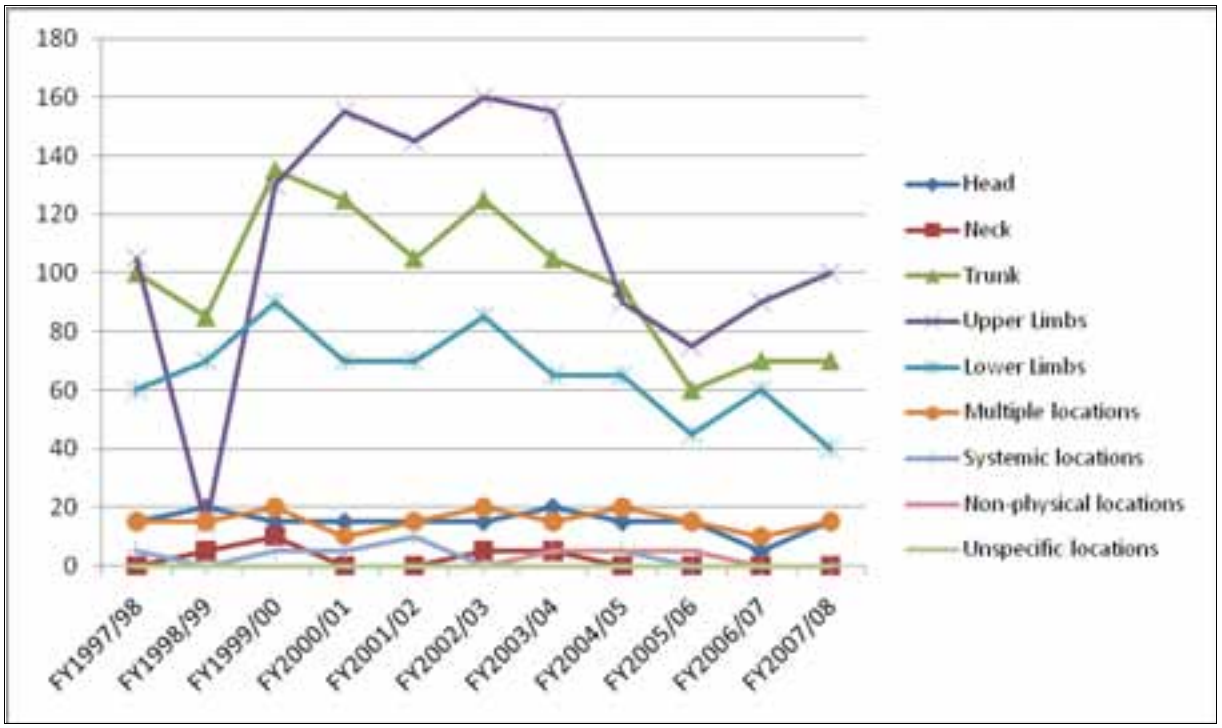

Figure 14: Numbers of Claims for Bodily location of injuries - Marine and Aquaculture

In regard to upper limbs, the figure below (Figure 15) identifies that since 2000, aquaculture has consistently had a higher incidence rate of injury claims. This is with the exception of 2006/07, when the figure for marine fishing had a relative standard error of greater than 25% and is therefore unreliable, and the 2007/08 represents preliminary figures at the time of publishing. However, the tendency to higher rates of injury to this part of the body in the aquaculture sector is evident. Despite this, it is noteworthy that neither sector has achieved a net reduction in injuries to this part of the body over the period.

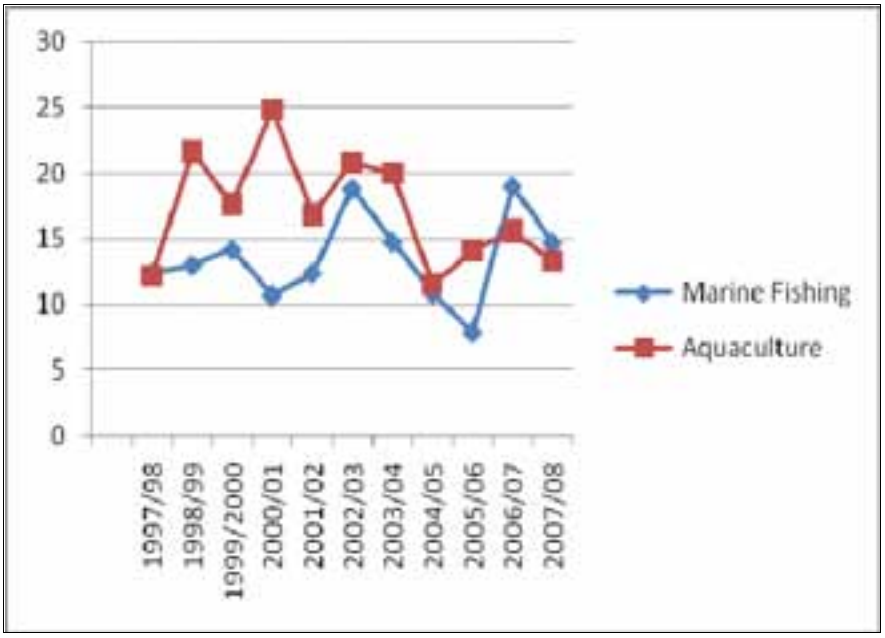

Figure 15: Incidence rate of Claims - Upper Limbs

The incidence rate of claims for injuries to the trunk, in the marine and aquaculture sectors display a slightly different picture; that of a marked improvement in the aquaculture sector in relation to a more consistent reduction the incidence rate over the ten year period (see Figure 16). Again it must be noted that the figures for 2006/07 for the marine sector had a greater than 25% relative standard error and therefore cannot be considered reliable.

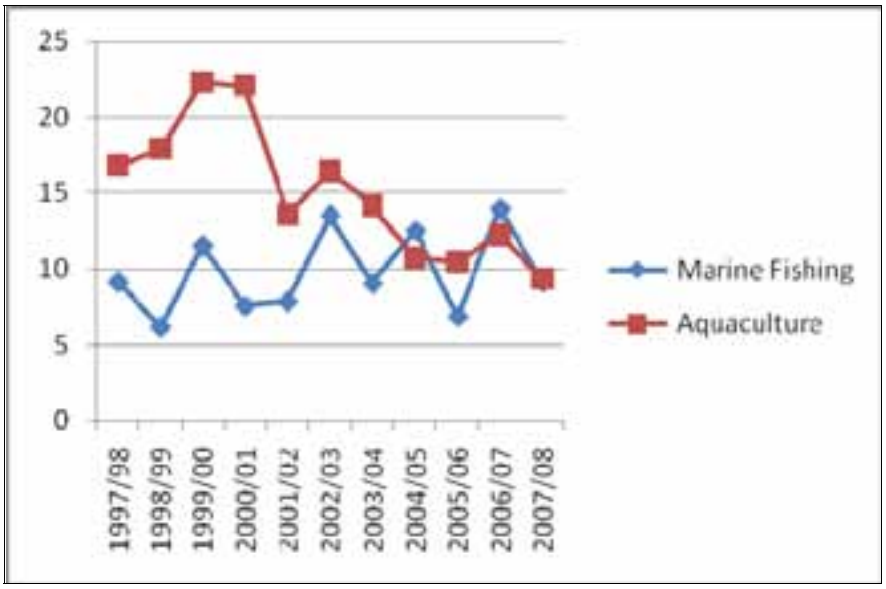

Figure 16: Incidence rate of claims for injuries to the Trunk.

Overall, the above identifies that injuries to the upper body – trunk and limbs – should be the primary focus of OHS communications and procedure reviews. Additional attention might also be considered for those activities resulting in injuries to the head given the slight increase in these in the period 2006/07 (see Figure 14).

Age Group

The age group with the highest number of claims across both sectors of the industry over the period were those in the 25 to 29 year age group. The data here has been collated according to number of claims as the incidence rate is so low (0.1 per 1000 employees is the highest in any year/age group category) as to be of little value in understanding the relative change of claim rates. Consequently, the data has been separated by marine and aquaculture and only compared within in sector by number of claims.

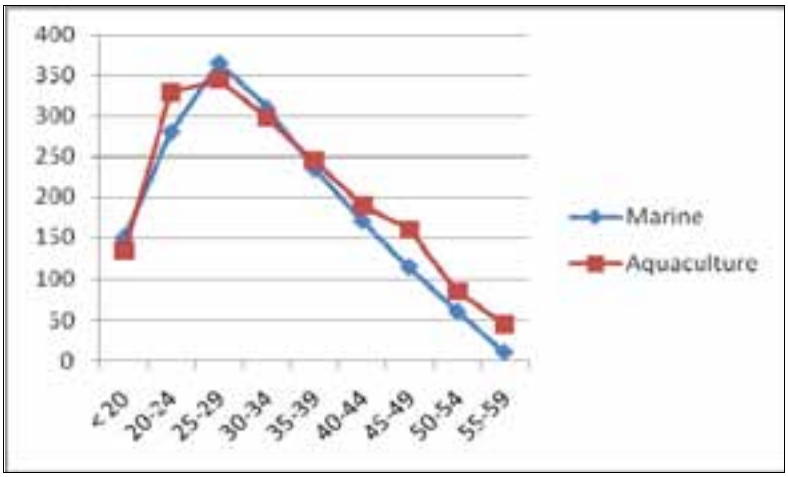

Figure 17: Number of Claims by sector and age group.

While the above figure identifies 25 to 29 year olds as the most 'at risk' group over the entire period, when the data is split out to the individual sectors (marine and aquaculture) it allows for examination of the age groups by year from 1997/98 to 2007/08.

In the aquaculture sector, while previously the levels of 25 to 34 year olds were the most common group to have the highest claim rates, closely followed by the 20 to 24 year olds, in recent years this last group appears to have 'taken over' from the other age groups as being the group with the highest number of claims. This increasing trend in claim numbers appears to also be occurring in the under 20 year old age group since 2006/07.

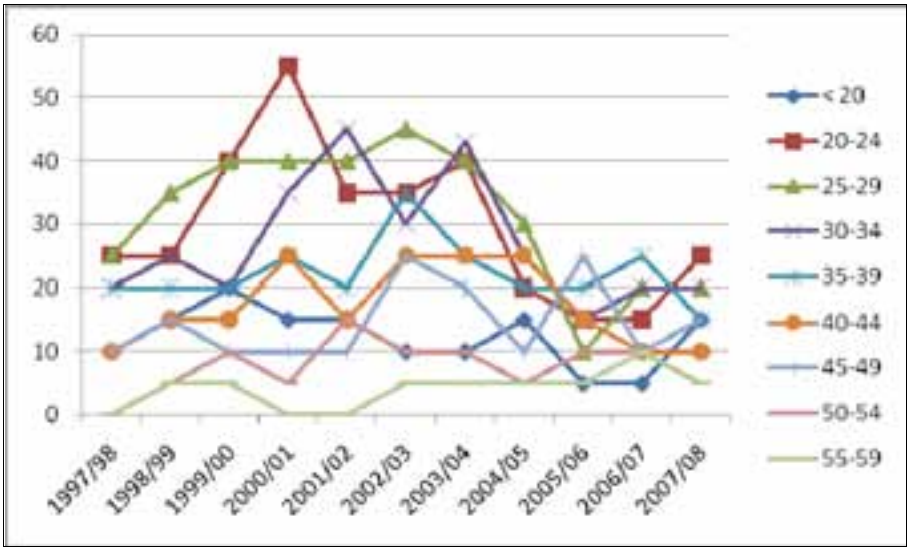

Figure 18: Aquaculture - Number of claims by age group and year

By comparison, those claims from age groups between 25 and 34 have levelled off since 2006/07, and those from 35 to 44 have been reducing. The claims from those in the age group between 45 and 49 have been volatile since 2001/02. Injury rates were higher in all age groups from, under 20, though to 39 years in aquaculture when compared with marine fishing.

In contrast, the marine sector, while having a recent upturn in the number of 20 – 24 year olds making claims, has not seen the same occurring in the under 20 year old age group (contrary to aquaculture). Rather all other groups have either levelled off in the number of claims since 2006/07 or have reduced. By contrast with the aquaculture sector, the marine sector has reduced the gap in claims between age brackets earlier, bringing those in the 25- 29 year old age group into greater alignment with the other age groups since 2001/02.

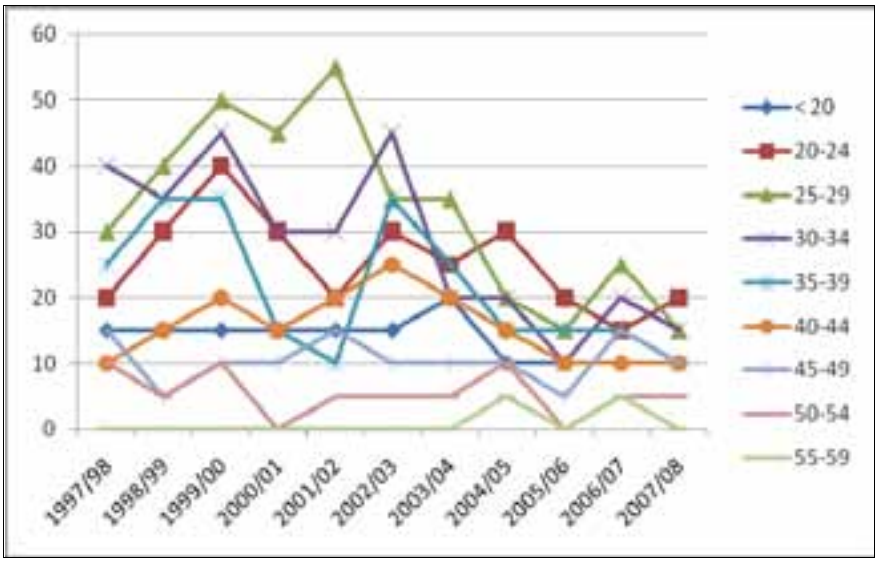

Figure 19: <u>Marine</u> – Number of claims by age group and year

In summary, in both groups the trend has changed over time from injury claims being made by older employees in the industry (25 to 29 years of age) to younger, 20 – 24 year old employees. This may also be a reflection and affirmation of the data discussed earlier that identifies the unskilled or lowly skilled workers who are most likely to make claims as a result of injuries at work.

Time Lost

The time lost recorded by the NOSI database refers to those claims due to an injury (including fatalities) that resulted in loss of time at work of one working week or more. Overall the amount of time being lost by both the aquaculture and the marine sectors in the commercial fishing industry due to OHS claims has been reducing since 2002/03 as illustrated by the following (Figure 20). The notable element in the data in this figure is the divergence of the total amount of time lost in 2006/07 between the two sectors, with aquaculture increasing the amount of time lost in the preliminary figures for 2007/08, while the marine sector identified a decrease. This may, however, simply be due to employment numbers or an anomaly of the preliminary data.

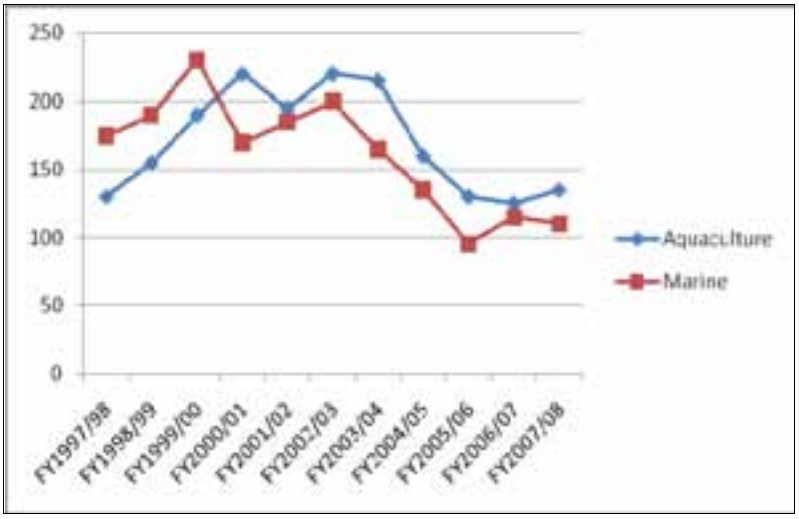

Figure 20: Total Weeks lost due to OHS claims - Commercial Fishing

Losses of two weeks to less than twelve weeks were the highest category in both sectors of commercial fishing, with aquaculture being the sector with the highest number of claims. However, while the incidence of losses of two to less than twelve weeks in aquaculture has been consistently higher than the marine sector, the aquaculture sector appears to have closed this gap in recent years, as demonstrated n the following figure (see Figure 21).

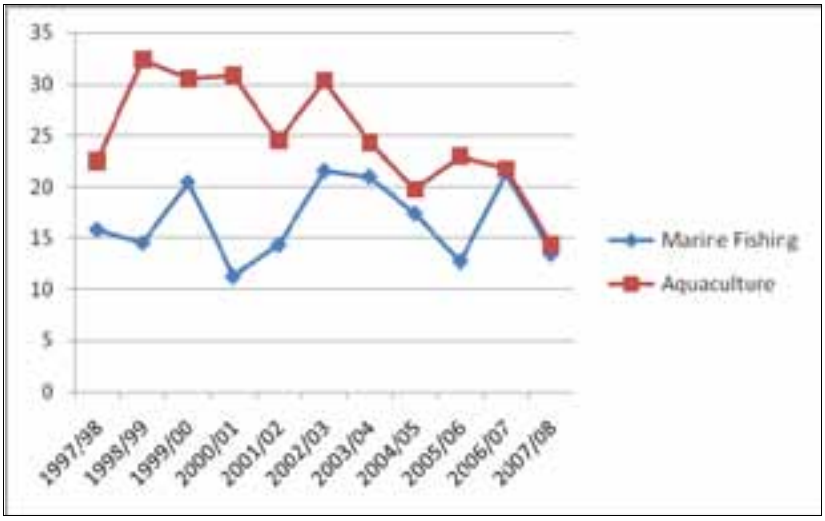

Figure 21: Incidence rate of claims result in time losses of between 2 and 12 weeks by sector in commercial fishing

Overall, while the amount of time lost in both sectors of the commercial fishing industry has been reducing since 1999/2000, the highest category of lost time is of two to up to twelve weeks (or three months) duration. The incidence of this is at least declining and the higher rates of this occurring in aquaculture appear to have fallen to levels in line with marine fishing.

Summary

The preceding data analysis can be interpreted in a number of ways, and could be mined further in its individual parts to elucidate different aspects of OHS in the commercial fishing industry. However for the purposes of this task, which was to identify what the trends in the data have been in the period from 1997 to 2008, it is clear that reductions in all areas of OHS claims began to occur from at least 2002/03 if not slightly earlier, in some cases as early as 1999/2000. This is in line with the introduction of the Code of Safe Working Practice for Australian Seafarers (introduced by SeaCare Authority Australia in 1999), and SeaCare Authority's development of a Strategic Plan to guide industry and management bodies in OHS issues (training and regulation) in 2002. There is however an interesting trend of increases in rates of incidences and numbers of OHS claims in 2005/06 in many instances that is not immediately explicable.

Overall, where comparisons can be made with the larger Agriculture, Fishing and Forestry industry group, commercial fishing does not exhibit any outstanding or contrary trends. It is however, consistently above 'Agriculture' and 'Forestry and Logging' in incident rates in identifiable categories, but has remained below 'Services to Agriculture, Hunting and Trapping' in its claim rates. The commercial fishing sector also displayed declining trends in incidences of claim rates that were in line with declining trends for all other industry groups in the Agriculture Fisheries and Forestry group. In summary, commercial fishing, while being the second highest sector of OHS claims in general (with, therefore, room for improvement) is not out of alignment with overall trends in the sector.

In regard to the comparison of the marine and aquaculture sectors in the commercial fishing industry, the overriding message communicated by the data is that in general, although aquaculture has a trend of decreasing incidences of claims overall, this incidence rate has remained in general higher than that of marine fishing.

For the purposes of current industry focus and OHS training and messages, the current analysis identifies that the groups most 'at risk' in the industry overall are; low skilled or unskilled workers in the age group of 20 to 24 years of age, who will receive injuries to their upper bodies (limbs and trunk) due to stresses on their muscles, tendons, ligaments and bones, resulting in sprains or strains on the joints or adjacent muscles and tendons, caused by non powered hand tools and they will most

commonly be absent from work as a result, for between two and twelve weeks. If in the aquaculture sector, given the number of claims it appears likely as a female you are more likely to make an OHS claim than if you were in the marine sector**.**

Chapter 4 – State Data Summary

Introduction

This part of the project (Part D) seeks to gain further insight to the status of occupational health and safety by examining four specific States where more detailed data is available. These States were identified in the initial phase of the project, being those States where the greatest level of activity occurred to address Occupational health and Safety in the industry.

The objective here is to identify if this greater data detail (than that available at the national level), can shed any further light upon Occupational Health and Safety trends in commercial fishing, and if interventions that largely occurred between 2002 and 2009 could be identified as having any apparent influence on the levels of OHS claims. Further, the objective is to identify any differences in trends between marine and aquaculture in the State data, to provide foundation information for the development of some baseline industry communications in regard to OHS, and for any further research that may be required.

The States selected for this component of the project were Queensland, South Australia, Victoria and Western Australia. This was as a result of the literature review undertaken in Parts A & B of the project, which identified the following activities in each of those States:

1. **South Australia**:
   2005 - Clean Green Program;
   2002–2009 - OH&S National Extension
   2002 – 2004 – B. Brooks' research
   2005 – Seafood Clean Green Program
2. **Victoria:** 2001 – setting up of FISAG;
   2002-2009 - OH&S National Extension
   2005 – Seafood Clean Green Program
3. **Queensland:**
   2006 – EMS development and focus on OHS;

   2002–2009 - OH&S National Extension (2002-2009)
4. **Western Australia:**
   1990s focus on safety
   2002–2009 - OH&S National Extension (2002-2009)
   2007 - Pearl Producers Association report on the development of OHS and welfare (OHSW) processes in the Pearling industry which was a benchmark in world's best diving practice

All States:
2002 – SeaCare Authority Strategic Focus
2007 - SeaCare Authority. Revision of the OH&S Strategy

The following piece of work has been undertaken and presented in two parts. The first is an overview of employment and claim trends (as a percentage of employment) for the States under review both overall and by sector. The second part of the analysis turns to the detail of the factors examined in the national component (Part C) of the project.

Due to the small numbers and the requirement to retain confidentiality, while this part of the analysis was undertaken with actual unrounded numbers, it is largely presented as a narrative to retain the

confidentiality required by Safe Work Australia to allow data access. Employment numbers for the States has allowed some analysis here by the percentage of employees making claims, producing a comparable perspective to that in the national data of incidences of claims per 1000 employees.

Methodology

The information for this part of the project is, as with Part C, taken from the NOSI (or National Online Statistics Interactive) system. Subsequent to agreements made with the States and Territories in approximately 2000, this database now holds and can make available some State's data sets on OHS in commercial fishing from 2000/01 to 2008/09. This period covers the essential years of interventions undertaken in the commercial fishing industry, in the States most active in addressing OHS issues.

Confidence intervals have generally been getting narrower since 2001 therefore increasing the reliability of the data provided since that time. It must be noted that since all data is from the July to June year (e.g. 2000/2001 is the 2001 year and so on), data presented here for the 2009 year is preliminary (denoted with a 'p') as Safe Work Australia was awaiting the finalisation of the data at the time these data were provided. Consequently, it is subject to the provision of final statistics from all jurisdictions, at which time figures generally undergo an increase of approximately three percent[123] (3%).

Additionally, explicit graphs for the State data have not been provided where the numbers would become identifiable, to ensure adherence to Safe Work Australia's confidentiality practices which endeavour to protect the confidentiality of State information regarding industry OHS. This involves the suppression values less than five (normally replaced with 'np' = not publishable) and the rounding of all values to the nearest five. Additionally, where the alternative of presenting data as a percentage of employment may have been used but has been precluded, it is due to the percentages being too small to generate information of any value in a graphical form.

[123] 21st Sept 2010, Pers com [email]; Keith Mallett, Safe Work Australia, Canberra Australia.

Analysis

Employment

As with the national data analysis, in order to place the number of claims in context it is essential to have an understanding of the nature of employment by sector in the commercial fishing industry in each of the States, at the outset of the analysis.

The following looks at employment which has been adjusted to reflect those people employed in the industry and its sectors, also covered by workers compensation arrangements. As noted in the national data analysis, the nature of the industry means that a number of people who are employed in the commercial fishing industry are not accommodated in standard workers compensation cover. The following employment data have therefore been adjusted to reflect the number of those employed in the industry that would also be covered by workers compensation; thereby allowing comparison of claim numbers with those of employment.

The following (Figure 22) identifies that Western Australia experienced a decrease in employment in the industry in 2002 and subsequent to revivals in 2003 and 2008, employment levels decline in 2004 and 2009. Similarly, Queensland experienced a drop in employment levels in 2004, which have been recovering very gradually since 2005. South Australia appears to have reached a low point in 2005 after a drop in 2003; the growth in employment appears to have halted and become a decline again in 2008/09 (provisional figures, which are likely to increase by up to 3% when confirmed).Victoria appears to have followed the same employment patterns as South Australia albeit at much lower levels.

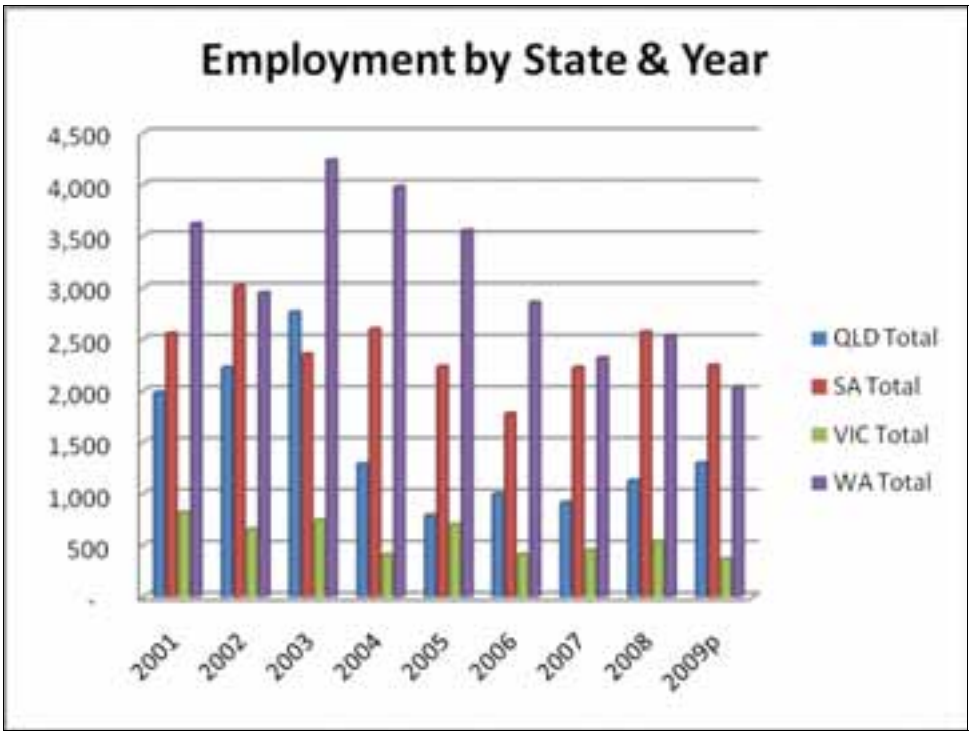

Figure 22: Employment in Commercial Fishing by State and Year

In order to also be able to look at the data of specific OHS elements in the context of the separate sectors as well as the industry overall, the following (

Figure 23) identifies the levels of employment by sector in each State. In aquaculture, it identifies that employment in Queensland and South Australian has increased over the period, while Victorian aquaculture has remained largely unchanged (there are years without any employment numbers being

recorded, so this data is questionable). By contrast, employment in Western Australia aquaculture has experienced peaks and declines during the period, with a decline from 2003 to 2007, addressed with an upturn in 2008, which may be sustained, to some degree, by final 2009 data.

In marine fishing, the contrary position is the case for Queensland and South Australia which both experienced declines in marine fishing employment in the period, not compensated for by the gains in aquaculture. Victorian marine fishing has also experienced a decline, albeit small comparatively speaking with South Australia. Western Australia had a peak in marine fishing employment in 2005 which, while it subsequently declined, remained greater than employment in aquaculture from 2004 until 2008.

Preliminary 2009 data indicate that employment in aquaculture, now outstrips that of marine fishing employment in three of the four states, with the exception of Victoria which appears to have yet to supply data, at the time of the analysis.

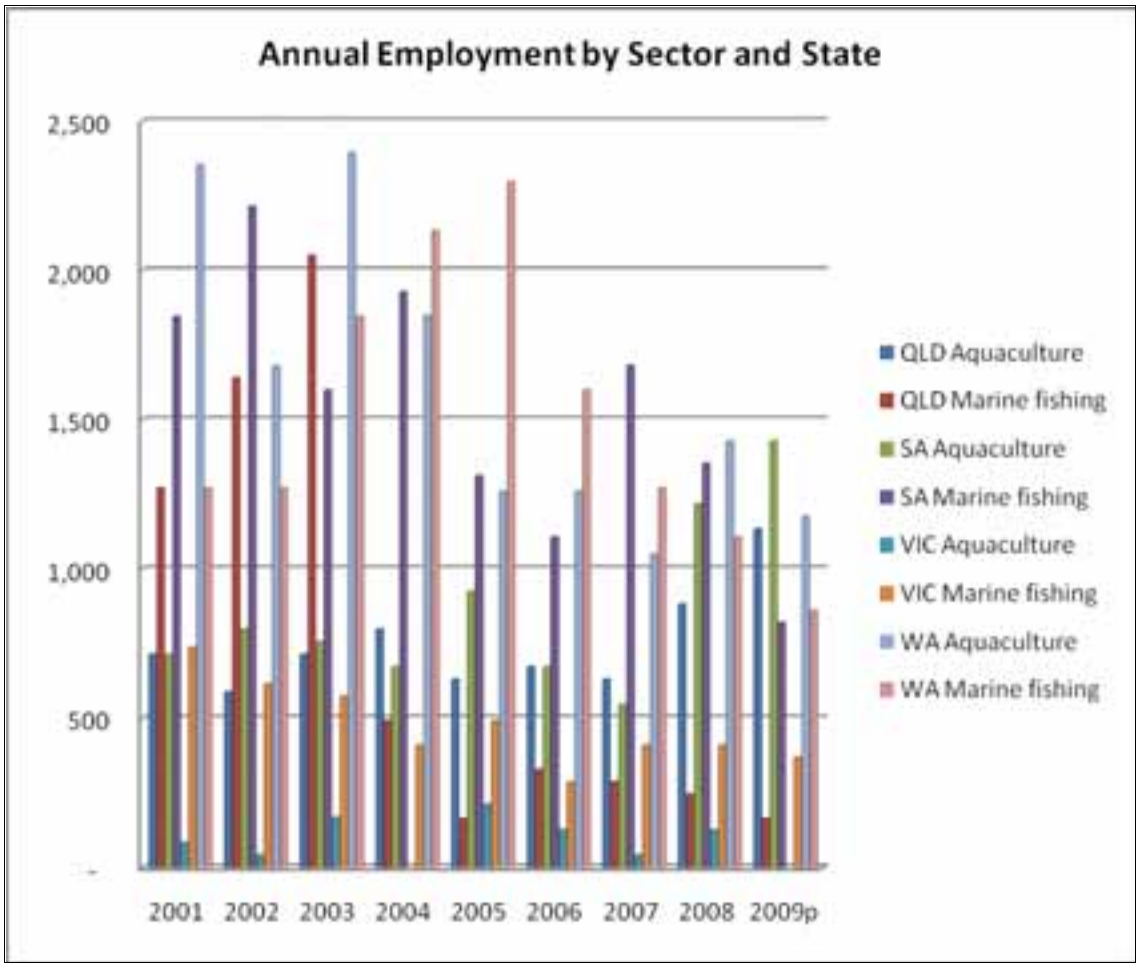

Figure 23: Annual employment by Sector and State

OHS CLAIMS

Initial examination of the number of claims data in both marine and aquaculture sectors at the State level, identifies a concurrence with the national data, being an overall declining trend in claims. There was a definite reduction in claims in all States, variously between 2004 and 2007. However, with the exception of Victoria (noting that no aquaculture data is evident for 2009), this reduction has been reversed in the number of claims since 2007. On this basis, of claim numbers only, there is a reduction in claims; this must however be taken in the context of employment numbers.

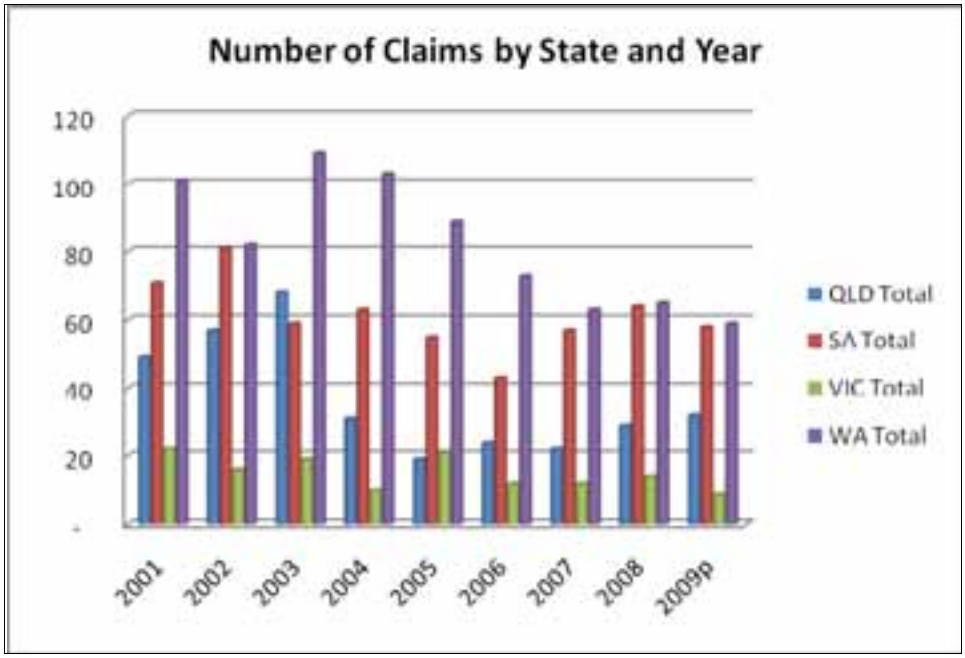

Figure 24: Number of Claims by Year and State

Compared to the employment data for the States, the percentage of claims per number employed in commercial fishing in each State is *not* consistent with the assertion that claims are decreasing. This is demonstrated by examining the total number of claims as a percentage of each State's employment

Victoria has the second highest percentage of claims per capita employed, however the lowest number employed. The other three States have a percentage of claims that is largely commensurate with the number employed; the highest percentage of claims being up to 2.65% of those employed in commercial fishing. (Figures

Figure 25 & 26).

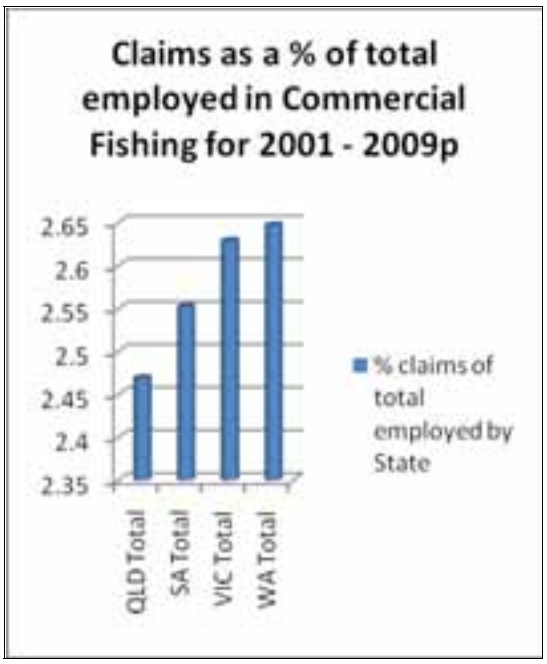

Figure 25: Claims by State as a % of total employed

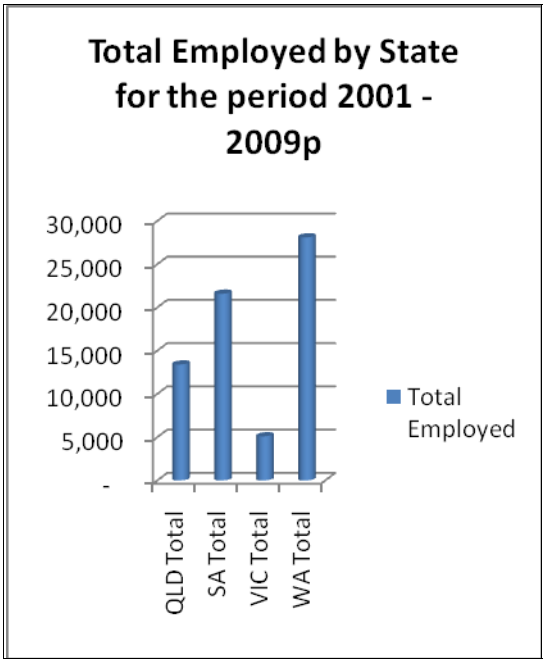

Figure 26: Total Employed by State

When this is broken down into the different sectors (

Figure 27) all States generally have, with the exception of Victoria, a higher percentage of claims in marine fishing than aquaculture for the period 2001 to 2009. The outstanding exception to this, Victorian aquaculture, has a notably higher percentage of OHS claims for the number of employees in the sector.

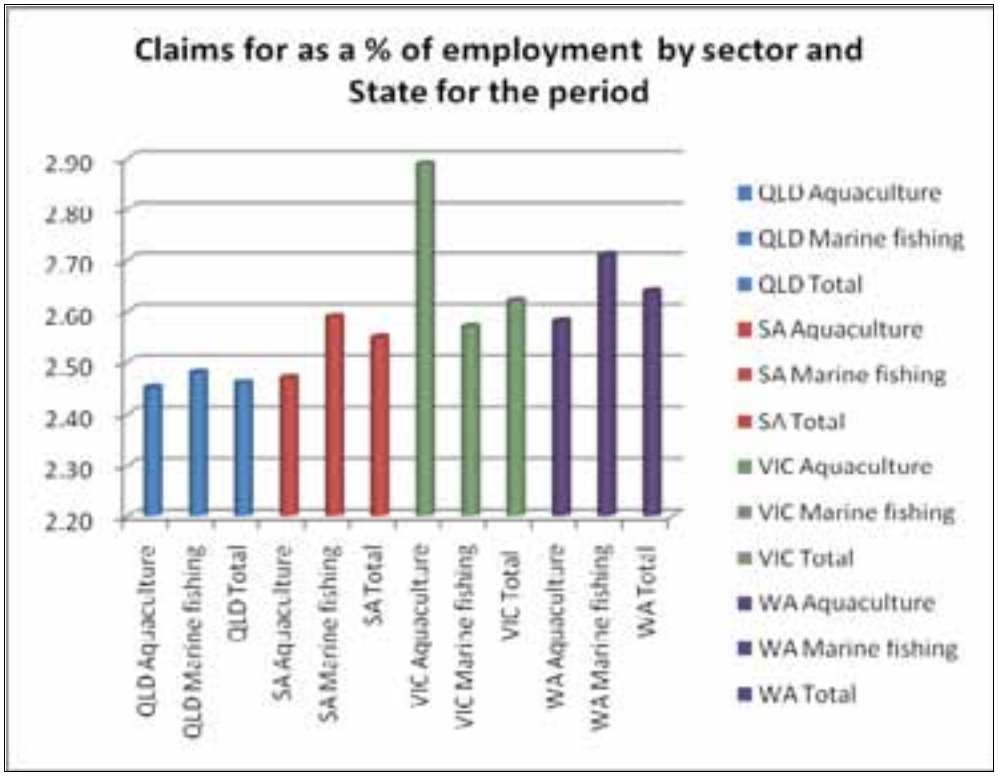

Figure 27: Claims as a % of Employment by Sector & State for the period

When this is broken down further into the individual years, it provides greater context, as follows in Figure 28. This figure allows us to see that claims in both sectors have remained reasonably constant in Queensland and South Australian aquaculture. Percentages of claims have reduced in both South Australian marine fishing and aquaculture since 2003. However they unfortunately climb again in marine fishing again from 2007. In 2007 in South Australia there was also a spike in aquaculture OHS claims, raising a question over what may have been occurring in South Australia in that year. The data for Victorian aquaculture depicts a very unstable situation (either for OHS adherence or reporting), with the percentage of employees making claims varying markedly over the period. This does not appear to be associated with any particular activity, except perhaps the introduction of FISAG in 2001, when there was a drop in the claims to some of the lowest levels in 2002 – 2004, of the period under review. However this is skewed by the lack of reporting of Victorian figures in aquaculture for the 2003-04 year. In Western Australia claims as a percentage of those employed in the sector are consistently higher in marine fishing compared with aquaculture since 2006 (varying by up to 0.91% higher than aquaculture) which does not appear to be associated with any particular activity in WA during those years. In WA aquaculture in the same period, claims have only fluctuated by 0.09% of a percent, while marine fishing has varied by up to .91% of a percent.

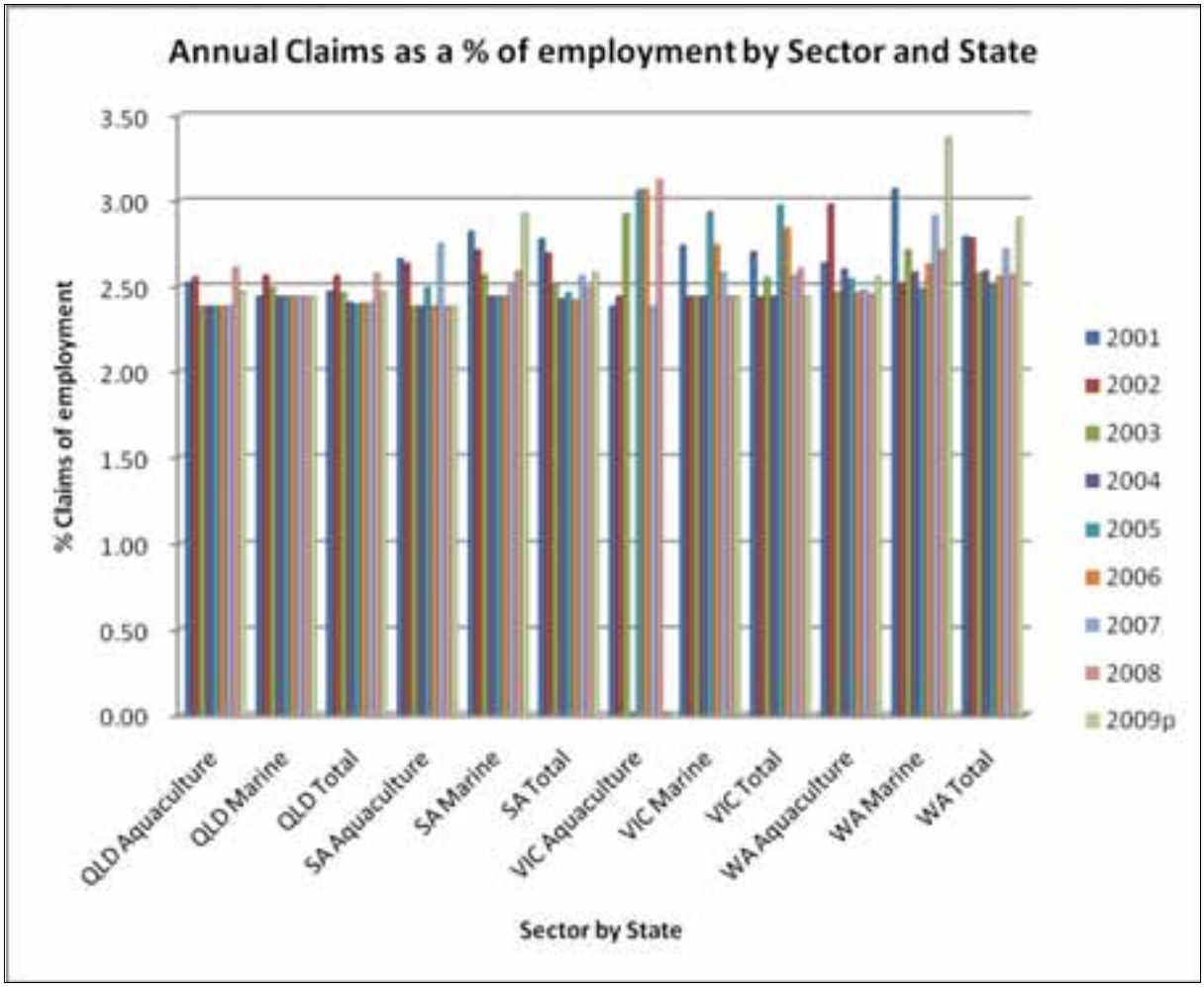

Figure 28: Annual Claims by Sector and State as a % of employment

In summary,

Figure 27 indicates that South Australian Marine, Victorian Aquaculture, and WA Marine and Aquaculture sectors have higher OHS claims at 2.7% of the workforce making claims. This is compared to the overall average of 2.5% of the other State sectors' claims, as a percentage of their workforce. In aquaculture, Victoria had the highest claims as a percentage of its workforce in any one year with a rate of 3.12%; and in 2009 WA marine fishing had the highest claims as a percentage of its workforce, at 3.37% (this is provisional data and the figure is likely to increase when revised data is supplied by the jurisdictions in 2010[124]).

Fatal and Non Fatal Claims

Fatal Claims

In regard to fatal claims, three out of the four States under review had fatal claims in the period. Queensland, Western Australia and Victoria recorded fatalities in the years 2002, 2003 and 2006, with the numbers declining over that time. The numbers are such (lower than 5) that they cannot be divulged without breaching confidentiality agreements.

[124] K. Mallett – Safe Work Australia, Data & Analysis; Assistant Director Strategic Policy, Canberra ACT. Pers Com, 21/09/2010

All Claims

When compared to the percentage of claims by employment by State, the picture is not as positive as that presented by an overall number of claims assessment (see Figure 29). This Figure identifies the same small reduction in claims between 2004 and 2007 (depending on the State), however, the percentage of the workforce making claims is, while falling marginally in 2008 compared to 2001 figures, indicated to exceed 2001 figures in the 2009 year (based on the expected 3% increase from preliminary data).

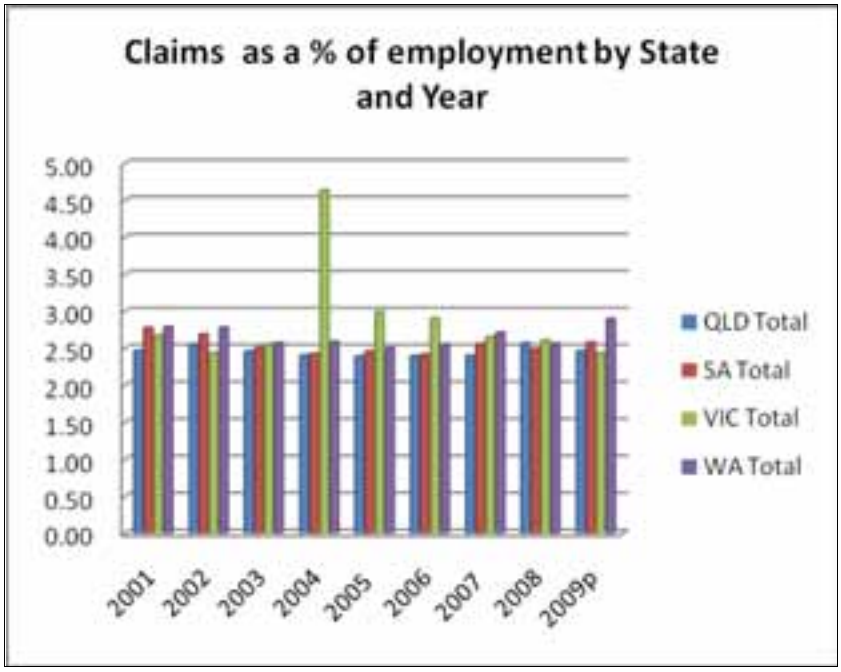

Figure 29: Commercial fishing Annual Claims as a % of Employment by State

When comparing the percentage of claims in marine fishing across the States, the small reduction is again there (in 04/05 for QLD and SA; 04 for Victoria and 05 for Western Australia), but the claims also return to the same levels as 2001, albeit .05% lower in some cases. The figures for 2009 are inconsistent with previous years, however as they are preliminary it would be pre-emptive to make any conclusions from these data at this time. Overall, the marine fishing sectors of Western Australia and South Australia have consistently higher percentages of claims across all years (with the exception of 2009) which identifies a potential issue of what is occurring differently in these states that their percentages of claims is higher?

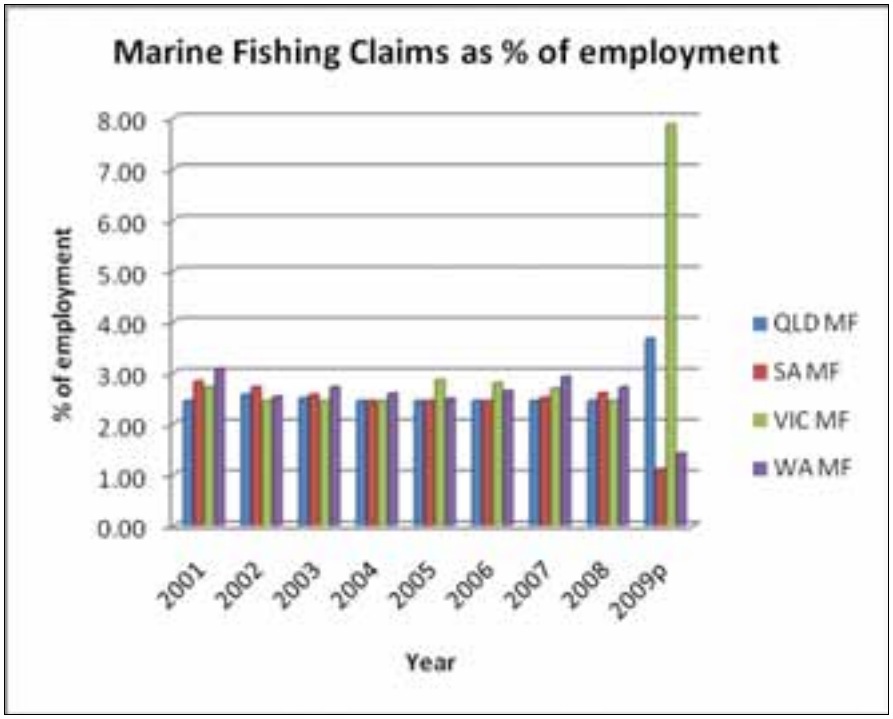

Figure 30: Marine Fishing Annual claims as a % of Employment by State

In regard to aquaculture claims, contrary to marine fishing, it is Victoria that consistently has the highest percentage of claims, followed by Western Australia and then South Australia. South Australia did have a peak of higher claims than WA in 2001 and 2007 that may have been associated with particular activities or changes in industry practice. These points in time do not appear to be related to any OHS interventions or activities identified earlier in this project.

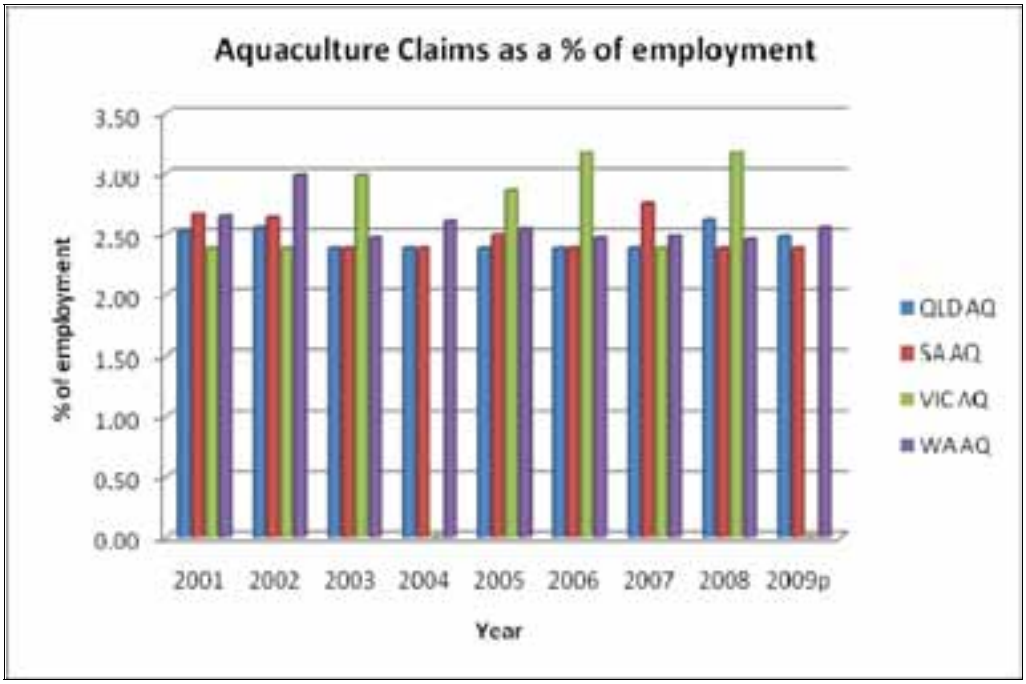

Figure 31: Aquaculture Annual Claims as % of Employment by State

To summarise the above, a comparison by State of marine fishing and aquaculture of all reported claims of OHS accidents as a percentage of employment identifies the variance across the sectors at different times in the different States:

- In **Victoria**, claims in aquaculture have been inconsistent in relation to those of marine fishing. The State's aquaculture sector has, on average, higher claims for the overall period. However this must be considered in light of the claims as a percentage of employment by sector, where the data may be unreliable.

- In **Queensland** the percentage of claims in aquaculture remained on par with those in marine fishing until 2008 when they exceed marine fishing. However this appears to be reversed significantly in 2009. Claims as a percentage of employment by sector for the overall period place marine fishing slightly higher than aquaculture as the sector of most claims.

- In **South Australia**, the percentage of claims in aquaculture only overtook marine fishing in 2007; which is broadly reflected in the average claims as percentage of those employed in the sector being marginally higher in marine fishing for the period.

- In **Western Australia** the percentage of claims for OHS incidents were higher in Aquaculture in 2002, 2004, 2005 and 2009. In 2001, 2003, 2006, 2007 and 2008 claims in marine fishing were higher.

The following (Figure 32) draws together the previous two and the information above. It serves to demonstrate that marine fishing in these States (QLD, SA, VIC and WA) remains the sector of greater risk, for those employed in the industry in regard to serious injuries at work resulting in OHS claims. Simultaneously, it must be recognised that the aquaculture sector (with the exception of Victoria) has remained largely stable in its percentage of claims over the period under review, despite the small reduction in claims in 2003, 2004 and 2005.

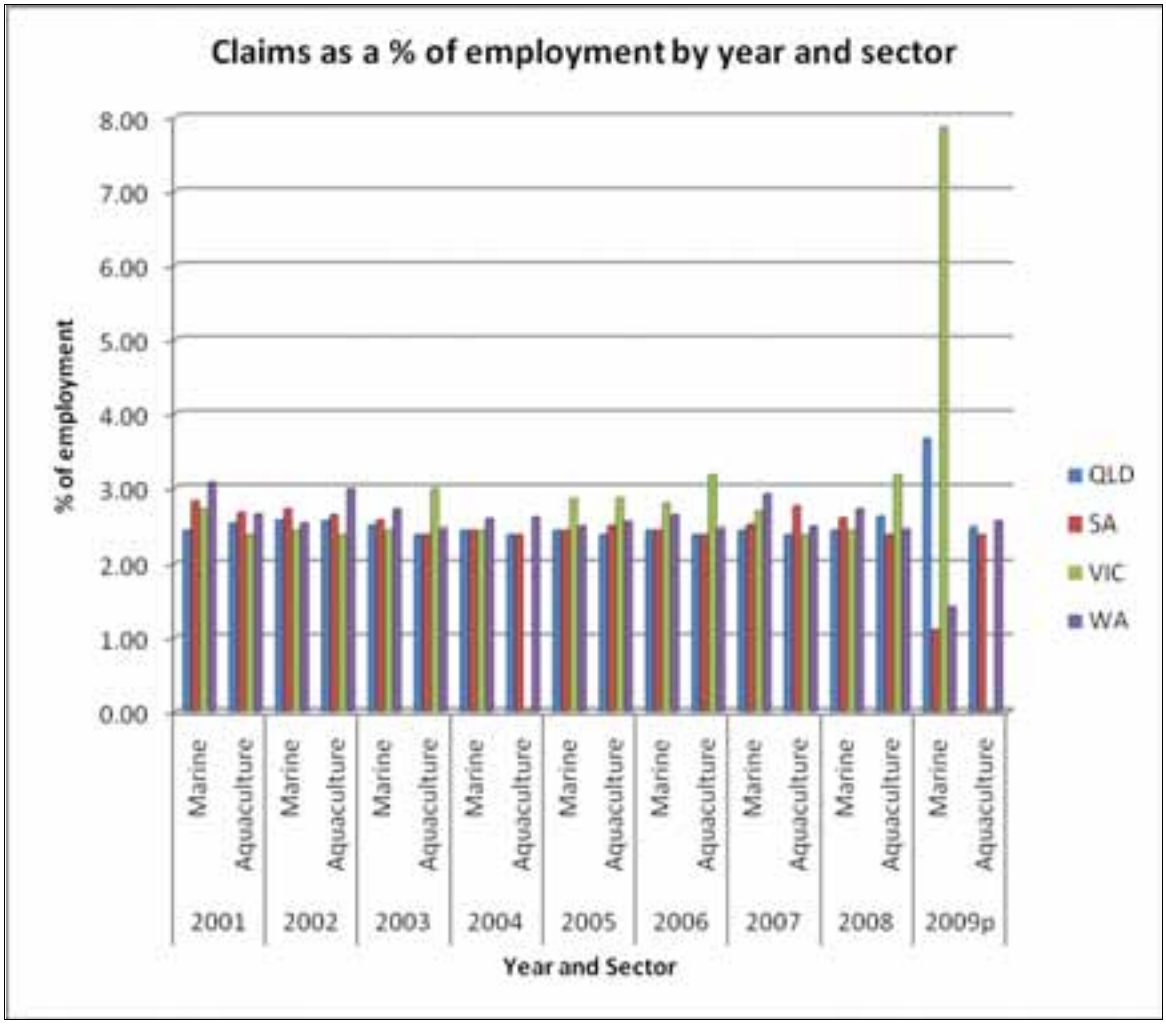

Figure 32: Annual Claim Comparison by % of Employment by Sector and State

The above figure (32) identifies the very slight drop in claims in the aquaculture sector in 2003 and 2004, followed by a drop in 2004 and 2005 in marine fishing. However, it must be noted that the changes being discussed are in the order of 0.05% of those employed in the sector.

Gender

No detail could be provided on gender by States as the numbers for female employees were too small to provide details that did not breach confidentiality or incur an unreasonable level of relative standard error.

Age Group

Overall, the data indicate that marine fishing has both a higher incidence of claims in the 25-34 year old cohort, and the level of incidence in aquaculture is marginally greater over a wider age range, being to 54 year olds.

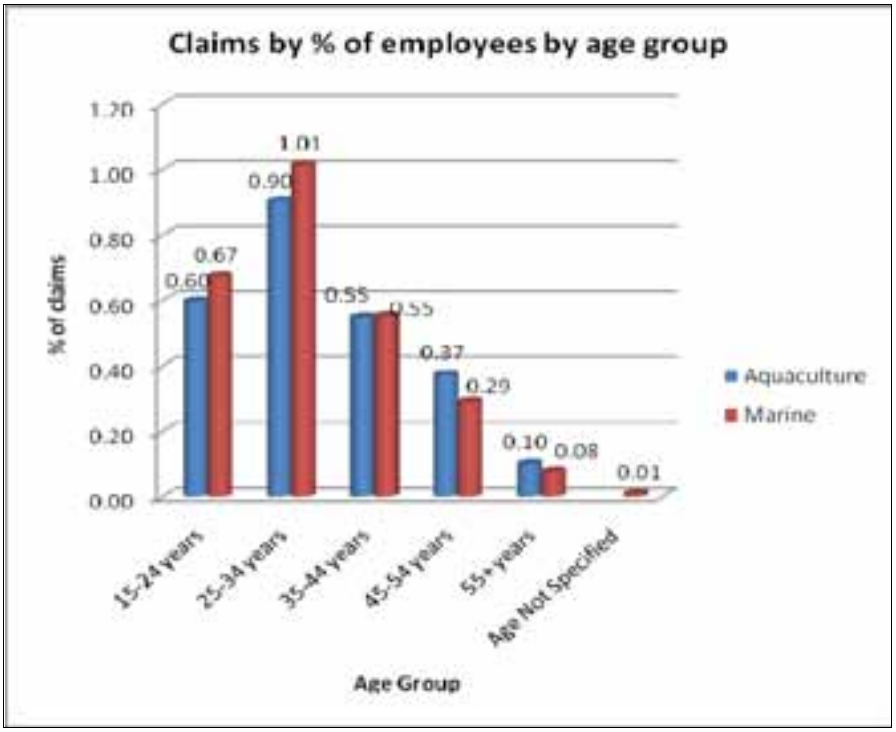

Figure 33: Claims by % of employees by Sector and Age Group

In Marine Fishing for the States, the age group recording the highest number of claims is consistent with the National data, in that it is the age group of 25 – 34 years old most at risk for all States, with the highest claims being recorded in Victoria and Western Australia for these groups. The factors of the youngest age group (15 – 24 year olds) being increased in the amalgamated sector data, can be identified in the State data as being contributed by unusually high levels of claims in this age group from South Australia; which is identified as the second most 'at risk group' in marine fishing. Statistics indicate that in WA the numbers of claims in these age brackets have remained consistent in the period 2001 – 2009 for marine fishing, however in the remainder of the States (SA, VIC and QLD) there has been reduction of between 50% to 90% in claims (as against a percentage of employment) in these age brackets over the period. This reflects the picture that was emerging from the national data (that is a reduction in the number of claims which is commensurate with the reduction in employment in commercial fishing). There is a notable shift in the number of claims (downwards) in all states from 2006 onwards in Marine Fishing.

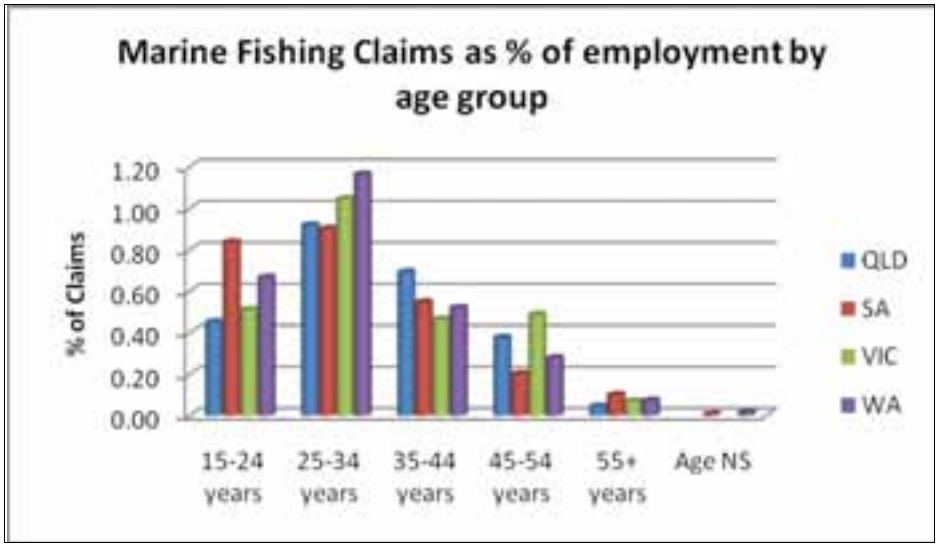

Figure 34: Marine Fishing Claims as % of Employment by Age Group

By comparison, the age groups at risk in Aquaculture are both the 25-34 year olds and35-44 year olds; an older cohort, contrary to marine fishing. The high percentage of claims in the 35-44 year old group in the overall analysis is generated by a percentage of claims from Victoria. Some variation to this pattern is evident in WA and SA where the age group of 15-24 year olds was also exhibiting as high a level of claims as the two older age groups in those States. This compares with Victoria and Queensland where the most claims were made in the groups 25 – 44 and with Queensland also exhibiting notable claims into the 45-54 age brackets. In summary claims in Aquaculture overall, indicate higher age group claimants. The figures for South Australia identify it as the one noteworthy State that exhibits an increase in the number of claims across all age groups between 2001 and 2009 which is consistent with the number of recorded employees in Aquaculture in the State doubling (715 to 1430) in the same period. The indication from this is that OHS endeavours have not reduced the number of claims relative to employment in this sector or State in the period from 2001 to 2009.

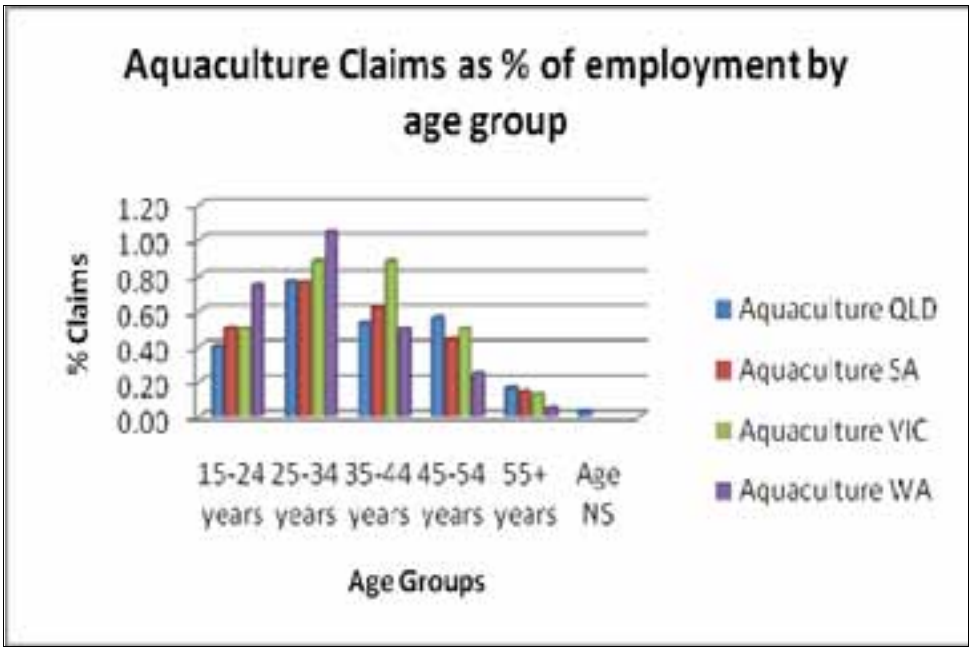

Figure 35: Aquaculture Claims as % of Employment by Age Group

Occupation

The national data identified 'Tradespersons and related workers' and 'Labourers and Intermediate production and transport workers' as being the two occupational groups in commercial fishing most at risk. This is consistently confirmed in the data of the four States. The trend of claims being highest in 'Labourers and related workers' in aquaculture was maintained at the State level across all States examined, as was that of higher claims in the 'Intermediate production and transport' workers having higher numbers of claims in the marine fishing sector. The rate of claims in all groups is largely the same across both sectors, being approximately one in four of those recorded as employed in that group.

However, the groups of 'Managers and Administrators', 'Professionals' and 'Tradespersons and related persons', also exhibit consistent and noteworthy numbers of claims in South Australia and Western Australia in both Aquaculture and Marine Fishing and Queensland for Aquaculture at rates consistent with less skilled groups (one claim for every four employees in the classification). These groups are more consistently represented in the data for Queensland marine fishing (to 2003) and Victorian aquaculture (to 2002) and thereafter events are sporadic as with all other State Sectors for these groups.

The delineation identified in the national data between 'Labourers and related workers' being the most at risk in aquaculture and 'Intermediate Production and transport workers' being the most at risk in Marine Fishing was consistently endorsed in the data of the four states reviewed.

Agency of Injury

Non powered hand tools, appliances and equipment continued to the be the most common agent of injury for all four States and in both marine and aquaculture sectors, as previously demonstrated by the national data. Claims as a result of mobile plant and transport were again consistently higher in marine fishing as compared to aquaculture.

Mechanism of Injury or Disease

While the four state data analysis concurred with the national data, that Body Stressing (stress placed on muscles tendons ligaments and bones) as the most common mechanism of injury, the more detailed data available at the State level allowed examination by aquaculture and marine fishing. This identified a clear difference between aquaculture and marine fishing in regard to the mechanism of injury, where 'Body stressing' was more common in aquaculture than marine fishing. In marine fishing, 'Being hit by a moving object' was also amongst the most common mechanism of injury.

In Aquaculture for the period 2001 - 2009, 'Body Stressing' is the most common mechanism of injury, which is then followed (at around 60% of the number of body stressing claims) by 'falls trips and slips' or 'being hit by a moving object'. In all cases, bar Queensland, these two categories represented either the second or third most common mechanism. In Queensland, 'Other and unspecified mechanisms of injury' presented as the third most common mechanism of injury at a little over a third of the claims for body stressing (while Falls trips and slips represented the second most common mechanism). It is noteworthy that WA reduced claims (based on preliminary data) in 2009 compared to 2001 and 2002 (as previously identified in

Figure 27).

In marine fishing for the same 2001 to 2009 period, 'Body Stressing' represented the most common mechanism of injury in South Australia and Western Australia, while 'Being hit by a Moving Object' was the most common mechanism of injury in Queensland and Victoria. The second most common mechanism of injury included 'Hitting an object with a part of the body" (QLD), 'Falls Trips and Slips' (SA); 'Body Stressing' (VIC) and 'Being Hit by a Moving Object' (WA). By comparison data from three of the States identified 'Falls Trips and Slips' being the third most common mechanism of

injury (WA,VIC and QLD) while SA recorded 'Being Hit By a Moving Object' as being the third most common mechanism.

In regard to 'Mental stress', State data indicate the first occurrences of claims in 2001, with a more common occurrence from 2004 onwards. The highest number of claims has been in South Australian Aquaculture with the majority occurring in 2005/06, while Victoria recorded no claims for mental stress in the aquaculture sector. By comparison, no variation between the States in the claims for mental stress in marine fishing was noteworthy for the period from 2001 to 2009. The majority that occurred did so between 2001 and 2005.

Nature of Injury or disease

While 'Injury and Poisoning' and its subcategory of 'Sprains and Strains' was able to be identified as the most common nature of injury or disease at the national level, the relative standard error was too great to allow detailed examination of the sub categories of 'Injury and Poisoning' at the State Level.

As to be expected at the State level, Injury and Poisoning outstripped any other 'Nature of Injury' for the fishing industry overall. South Australia and Victoria are noteworthy however in that the number of claims relating to this particular type of injury was much higher in marine fishing (SA at 67% and Victoria at 89.6% of all the State claims). However in both States is must also be noted that over the period the number of claims has dropped significantly (by between 40 and 70%) from the number of claims in 2001, compared to those in 2009.

Bodily Location of Injury or Disease

This category of claim refers to the locations that are most commonly injured, and which result in a workers' compensation claim. With only one exception, the upper limbs are the primary location of injury on the body for all States in this analysis, followed by the 'trunk' and 'lower limbs' as the next most common location of injury. *Queensland aquaculture was the only State sector to identify a different pattern to this: here the 'trunk' is the most likely location of injury, followed by the 'lower limbs' and then the 'upper limbs'. This may be indicative of a different style of aquaculture fishing in Queensland that poses greater risk to the lower as against upper regions of the body*.

Contrary to the national data, injuries to the upper limbs only dropped in QLD, SA and VIC marine fishing and WA aquaculture in the period from 2001 to 2009. The number of claims increased in SA aquaculture and WA marine fishing over the same period. In all other State sectors the number of claims has remained largely stable.

Injuries to the trunk have either been stable or experienced a decrease during the period. In QLD, SA and Victorian marine fishing as well as WA aquaculture, claims for injuries to the trunk all experienced a general decrease in the period. However in aquaculture in QLD, SA and Victoria, claims for injuries to the trunk have remained stable during the period. In WA marine fishing, while the claims are now (as of preliminary 2009 figures) stable against those of 2001, there was a peak of claims between 2003 and 2008.

By contrast claims for injuries to the lower limbs in Queensland and South Australian aquaculture indicate consistent increases from 2008, while in aquaculture in the other two states claims for injuries to lower limbs are reasonably stable. In marine fishing, claims for injuries to the lower limbs demonstrate slight decreases in Queensland and South Australia, but stable in Victoria and Western Australia.

Time Lost

Unfortunately no State data could be provided for time lost as the numbers for were too small and the level of relative standard error was too great to be able to interpret the data with any level of confidence. However the national data does provide the following information for the period split by aquaculture and marine fishing data.

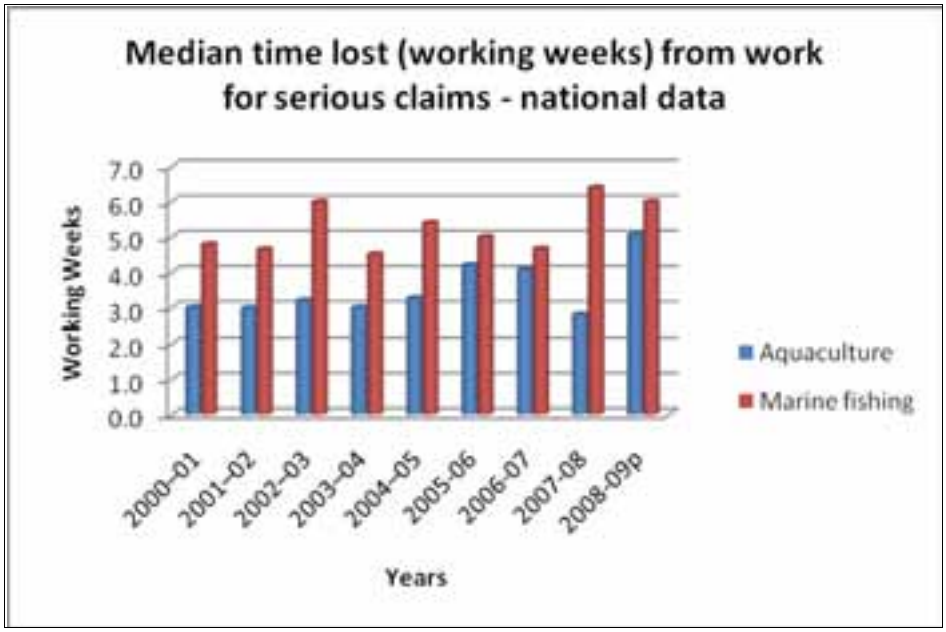

Figure 36: Median Time lost for serious claims

Time lost appears to have been steadily increasing in aquaculture, potentially indicating an increasingly serious nature of injury and claim in this sector. While time lost in marine fishing has also increased over the period, it has not shown the same steady increase as has aquaculture. Further investigations are recommended to understand why the time lost is increasing in both sectors, but with particular focus on aquaculture.

Summary

Overall, the marine fishing sectors of Western Australia and South Australia have consistently higher percentages of claims across all years (with the exception of 2009) which identifies a potential issue of what is occurring differently in these states that their percentages of claims is higher. Victoria demonstrates unusually high levels of claims in a number of years; however the data is erratic and raises questions regarding the reliability of data provision in Victoria.

In regard to the age groups most at risk of OHS claims, 25- 34 years olds are those employees most at risk. Victoria and Queensland were where the most claims were made in the groups 25 – 44 and Queensland exhibited notable claims into the 45-54 age brackets. Claims in Aquaculture overall, indicate at risk groups are a higher age group. The number of claims increased in South Australia across all age groups between 2001 and 2009, consistent with a doubling of the number of recorded employees in aquaculture in the State (715 to 1430) in the same period. Further research is required into why older employees are at greater risk in aquaculture, and how this might be addressed.

'Labourers and related workers' in aquaculture were the highest category of employee occupation making claims, as was that of higher claims in the 'Intermediate production and transport' workers in the marine fishing sector for all the States. The rate of claims in all States for these categories is largely the same across both sectors, being approximately one in four of those recorded as employed in that group. However, the groups of 'Managers and Administrators', 'Professionals' and 'Tradespersons and related persons', also exhibit consistent and noteworthy numbers of claims in South Australia and Western Australia, in both aquaculture and marine fishing and Queensland for Aquaculture. In these States for these occupation groups, the numbers of claims were consistent with less skilled groups (one claim for every four employees in the classification). It is potentially due to the transient nature of the lower skilled employees of the industry that makes OHS training in this group more challenging, however the data indicate that greater focus needs to be placed on educating this group. Similarly further investigations are required into why the groups of Managers Administrators, Professionals and other tradespersons are more notably represented in the States of South Australia, Western Australia and Queensland, or if in fact, there is an under representation of actual claims in Victoria.

Non powered hand tools, appliances and equipment continued to be the most common agent of injury for all four States and in both marine and aquaculture sectors, as identified in the national data. Claims as a result of 'mobile plant and transport' (the second most common agent) were again consistently higher in marine fishing as compared to aquaculture.

'Injury and Poisoning' exceeded any other 'Nature of Injury' for the fishing industry overall, and while analysis as the sub category level was not possible it would be reasonable to assume that 'Sprains and Strains' were the most common subcategory of injury in both sectors. South Australia and Victoria are noteworthy, in that the numbers of claims relating to this particular type of injury were much higher in marine fishing. Specific details should be sought as to the causes of sprains and strains to inform OHS training and education programs to increase avoidance of this type of injury.

With only one exception, the upper limbs are the primary location of injury on the body for all States in this analysis, followed by the 'trunk' and 'lower limbs' as the next most common location of injury. Queensland aquaculture was the only State and sector to identify a different pattern to this, where the 'trunk' is the most likely location of injury, followed by the 'lower limbs' and then the 'upper limbs'. This may be indicative of a different style of aquaculture fishing in Queensland that poses greater risk to the lower as against upper regions of the body. Overall, the data indicate that injuries to the upper limbs increased in SA aquaculture and WA marine fishing, as did injuries to the lower limbs in QLD aquaculture, while lower limb injuries slightly decreased in QLD and SA marine fishing. Injuries to the trunk region have remained stable in QLD, SA and Victorian aquaculture, but decreased in QLD SA and Victorian marine fishing and WA aquaculture. The changing nature of the location of injury is noteworthy and should be examined in light of possible changing fishing practices and methods.

The most time is lost in marine fishing with the highest level being 6 weeks in 2008 (the 2007/08 financial year as the data is presented here). Provisional 2009 data indicate that 'lost time' is increasing in both sectors. Aquaculture, is approaching the levels of marine fishing, with both sectors indicated as having a median (or midpoint of frequency) of between five and six weeks lost time due to serious claims in the 2009 year. While time lost in marine fishing has also increased over the period, it has not shown the same steady increase as has aquaculture. Further investigations are recommended to understand why the time lost is increasing in both sectors, but with particular focus on aquaculture.

Chapter 5 – Industry Workshop

Background and Purpose

This final component of the project undertook to plan, implement and facilitate an industry workshop, to present the findings of the project to date, and utilise the experience of the attendees to ground truth the findings and explore the various strengths and weaknesses of the reports, data and to identify appropriate future activities.

In relation to reviewing the reports, the workshop specifically sought to ascertain from the industry representatives:

- If the OHS activities and interventions, risk groups and trends identified in the reports (Parts A through D) were concurrent with on the ground experience, both directly and anecdotally;
- If the issues and risk groups were agreed to have ongoing relevancy;
- If more in depth analysis will assist understanding of the issues and factors identified, and if so what the nature of that would be;
- Identify, strategically, the training and communication objectives and messages that may be required for different sectors of the industry to address identified relevant OH&S issues; and
- Exploring other factors or issues that may arise from the research requiring industry verification or input.

The participants were identified with the extensive assistance of Mr Brett McCallum in his role as co-ordinator of the National Seafood Industry Alliance - Safety, Education and Training forum. This forum consists of representatives from all States of Australia and sectors of the industry (see a list of participants at Appendix 2). Of the twenty four invitees, sixteen industry representatives were able to attend on the day (aside from the facilitator and the RIRDC Program Manager), with comments received via email regarding the reports from a further two invitees.

All invitees were provided with the four reports (Parts A though D) three weeks prior to the workshop to allow time to consider the content, and where appropriate consult with others to validate, or gather contrary evidence to, the information contained in the reports. This also provided an opportunity for those who were unable to attend the workshop to provide their comments to the facilitator to be integrated into the workshop as appropriate.

The workshop was run in Melbourne, contrary to the original intention to run it in Canberra. This was to minimise travel time for participants and due to the ease of access to a venue at Melbourne Airport. The workshop ran from 10.00am through until 3.15pm, and in addition to the tasks originally outlined, it was also used as an opportunity to review three project proposals that the RIRDC Collaborative Partnership for Farming and Fishing Health and Safety Program was considering. Feedback and prioritisation was given on the projects in light of the discussions during the day and how the proposed research would benefit both the objectives of the Partnership and the industry.

Industry response to the Reports

Comments were generally very positive in regard to the reports. It was indicated that it was an extremely useful tool for those in the industry and in particular for the Safety Training and Education forum, to have this body of work all together in one set of documents.

The very salient point was made that the reports need to be appropriate prefaced with who the intended audience and beneficiaries of the reports is or are, to ensure that they are used correctly now and in the future.

Literature Review:

Overall, the participants agreed that there were no major documents missing from the report. However it was noted that many State incident reports that were locally available to the industry, were missing from the data. It was acknowledged that these may likely to be difficult to access externally. However it was interesting to note that despite the Worksafe /Safework agency, (depending on which State/Territory you are dealing with) in each state being contacted, only those of Tasmania and Western Australia were publicly available or acknowledged to exist. As a result it was only those of WA and TAS that were included in Part A of the report.

It was also noted by one participant of the group that despite the general acceptance in society that all fishers should wear lifejackets (or Personal Floatation Devices – PFDs), it was not within the culture of the industry to do so. This view was endorsed by many in the workshop. It was noted by a Tasmanian participant that Tasmania has had legislation in place since 2004 for all vessels under 6 metres for recreational fishing only that all aboard must wear life vests. That legislation has only recently been extended to commercial fishing vessels. The result is that a culture of safety is developing in Tasmania.

This particular sentiment was echoed by an invitee who couldn't attend the workshop, along with further comments he forwarded subsequent to reviewing the reports, which were also echoed by a number attending the workshop. These comments were that:

- *"Based on reported incidents, there is definitely a level of under-reporting. [...] a few incidents in just one company that involved a broken/crushed arm with the bloke out of work for 6 months (arm crushed between trawl boards in rough weather) and a finger being severed in a sweep winch (user error - fatigue?).*

- *Awareness has improved significantly. The larger companies particularly are well aware of liability issues and in the GABTF, all companies have OHS policies written down and on board, induction etc. GABIA itself just worked with AFMA on a Boat Operating Procedures Manual. As well as the management requirements, it also provides each company the "space" to outline OHS procedures and requirements, HACCP etc. The awareness has also been transferred in many cases to the skippers.*

- *[...] fatigue and on occasion alcohol and drugs are still a risk factor in the industry at times. This can extend to and is probably more of an issue these days for "day vessels" and once boats are back in port after long trips at sea. Risk of consumption of alcohol/drugs at sea is largely determined by the individual attitude of the skipper to such issues. In my experience, most have a zero tolerance policy whilst at sea these days. That is certainly the policy of the companies, and some go to the point of drug testing to enforce this.*

- *The point about PFDs is interesting (to combat high incidence of deaths by drowning). In theory, manual inflatable PFDs these days could be worn with little inconvenience on deck etc or in certain sea conditions. However, in practice the culture would be there for them not to be worn, and more importantly in some cases may lead to higher risks of entanglement and*

injury (e.g. shooting and hauling trawl nets, hook sets etc), depending on design. I for one would not want to be in the business of a blanket requirement without individual PFD styles being trialled in safe conditions to better understand the potential risks...

- *In terms of at sea requirements, consideration should be given to the impacts of "regulation of other concerns" to OHS risk. A few examples, sorting of bycatch and offal management/batching of discards to reduce seabird interactions (higher risk of back injuries, man over board etc?), seabird mitigation devices (deployment etc) can mean potentially dangerous situations and increased risk to crew.*

- *Share of catch arrangements do not help, but I would say on the whole most in the industry are either aware or becoming more aware of the need for effective OHS policies and procedures. Risk of liability for incidents as well as genuine interest in the wellbeing of staff/crews is driving this."*

(J. Moore – GABIA EO and NSW base; pers com. Email: December 3, 2010)

Further to these comments in relation to the positions put forward by the reports, it was also noted by a participant that while the quota impositions may well have led to decreases in incidents, in many cases fisheries legislation imposed dangers to the safety of fishers. For example regulations on boat size and capacity often created unsafe working conditions for fishers. This was also endorsed by another participant in regard to marine safety legislation requiring the number of men per boat in terms of the length of the vessel. In Victoria, experience deems that fishers "*are forced to design their vessel so it is broad and big enough to fish the shelf, but he doesn't want to have to employ the number of deckhands that is legislated with the bigger boat.*"

Marine legislation often sets manning requirements in relation to the length of the vessel rather than the use of the vessel thus costs outweigh the business in which the vessel operates. This was echoed by both NSW representatives at the workshop and in the reports from Western Australia noted in Part A of the Project Report. Ultimately it was strongly noted that there are instances where state fisheries and marine safety legislation creates an unsafe work environment, and that, where possible, all legislation should be reviewed in this light.

Interventions:

It was also reported that while the actions of SeaCare were noted in the reports as being a potential instigator of improvements in safety in commercial fishing, this was extremely unlikely. In fact it was the view of participants that SeaCare's actions had "*no impact at all*" on commercial fishing and were only relevant to offshore shipping. It was asserted that commercial fishing had a culture of "*steering clear*" of SeaCare all together .

It was felt that training in the Maritime colleges and TAFEs had more impact on raising awareness of safety in commercial fishing over the period covered by the project reports.

In addition, it was believed that in Victoria the effect of the industry instigated 'Clean Green Program' was minimal as the take up was not there, hence it has not had any effect in that State. By contrast it was felt that while it had been taken up well in Tasmania, where it had initially had a very positive effect, there had been no follow through in terms of continued focus on the program and fishers compliance with their original endorsement, resulting in the current minimal benefit in any area of the program.

In regard to the Fishing Safety Advisory Group (FISAG) in Victoria, it was believed to be well set up in terms of representation; however that it failed when the director of Marine Safety Victoria at the time of its genesis, resigned. New AMSA arrangements are soon to take over State based safety activities, but there is no expectation that the new arrangements will have a focus on commercial fishing as there has been minimal AMSA engagement in the past with the industry.

It was noted that the data reflected the previous history of land based aquaculture twenty years ago, where there was no induction or training process, but that has now changed. In this area an intervention did occur in 2000, with the training of more people through the vocational training sector which had a core sector specifically set around OHS. It was suggested that this may account for the beginning of a reduction in OHS claims from 2000 onwards, but extensive context specific research would be needed to confirm a causal link.

Data Accuracy:

It is essential to underline that data (non fatal) relating to share fishers (in the marine sector) is extremely unlikely, in fact in the majority of cases – not, included in this report. . Fatality data is most likely included as these are subject to agency or coronial investigations. The extent of share fisher coverage in the commercial marine fishing is unclear, due to self employed members of the industry being outside of a company structure and therefore there is no requirement to be covered by workers compensation insurance. As a result any incidents or accidents involving these share fishers are not covered or recorded by Workcover arrangements, hence do not appear in official statistics. Most aquaculture industry workers are included due to their coverage by workers compensation under employee workplace arrangements.

While it was discussed as to how share fishers might be captured there is no effective way of identifying them, except to interview any who presented at hospitals with injuries who also noted their occupation as being marine fishing.

It was proposed that the only way to improve data collection was to have the industry supply the data directly. Data software has been developed to achieve this outcome but it has not been adopted due to suspicions as to how the data will be used.

The workshop participants were of the view that the data is as good as can be obtained from the industry and highlighted that the trends were valid in determining further action.

In regard to the post harvest sector, the belief was that the reports accurately reflected what was observed in that sector in New South Wales. It was noted that there is a lack of a safety culture amongst deckhands and skippers when on wharfs and jetties and that in the main it was the younger members of crews that were doing most of the lifting of bins and equipment that lead to sprains and strains. It was also agreed that non powered hand tools or equipment[125] were the prime component of these injuries. However in regard to post harvest, injuries from mobile plant/equipment[126] are increasing. Consequently this may reflect the lack of differentiation that could be made in the data between marine fishing at sea and activities on land. The ability to split the post harvest sector out from the data as a separate group to both marine fishing and aquaculture would be very beneficial to being able to interpret the data. This sentiment was endorsed by a participant who saw benefit in separating the data of both wild catch and aquaculture, given that industries such as Pearling and Tuna

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[125] This category of agents includes; hand tools, non-powered, edged; other hand tools; fastening, packing and packaging equipment; furniture and fittings; other utensils; ladders, mobile ramps and stairways, and scaffolding; and other non-powered equipment.

[126] This category of agent includes: mobile garbage compactors; other self-propelled plant; pneumatic tools; compressors and pumps on trailers; concrete pumps; truck mounted pumps and compressors; air compressors on boats; portable air compressors for tyres; hydraulic equipment, not elsewhere classified; other semi-portable plant; wheelbarrows; tractors - agricultural or otherwise; ride-on mowers; trucks, semi-trailers, lorries; buses, trolleybuses, minibuses; cars, station wagons, vans, utilities; motorcycles and sidecars, scooters, trail bikes, pushbikes; industrial aircraft (including non-passenger aircraft, surveying, fish-spotting, fire-fighting, crop-dusting aircraft and non-passenger helicopters); water motorised and non motorised craft; buoys, navigation beacons, floating docks and pontoons.

come under both aquaculture and wild catch and need the opportunity to clarify where OHS issues are arising.

A data result that could not be explained was why the younger people are the ones being injured more frequently, yet there are less of them entering or staying in the industry.

Summary

No major documents were identified to be missing from the literature review, however many State incident reports that are locally available to the industry, were missing from the data. There is also an Abalone Diver Code of Practice (TAS) document that has not been included.

Under reporting is a major issue due to lack of capture of the share fishing data for a significant sector of the wild catch sector of the commercial fishing industry.

The inability to separate post harvest activities from the marine fishing and aquaculture sector was identified as a significant issue in the data as it may be hiding the specific nature of some OHS risks (e.g. mobile plant equipment, or hand powered tools (knives)).

The wearing of PFD's was recommended to be implemented against risk based context and activity and should not be subject to blanket legislation. However it was noted that that the introduction of mandatory wearing of PFDs in Tasmania in recent years has had an impact on raising awareness of the need for an improved culture of safety in commercial fishing in that State.

Comment on the Data Trends and 'At-Risk' Groups

Overall the sentiment of the workshop participants was that the trends identified by the data were in line with anecdotal industry experience. It was agreed that despite the significant gap of the data on wild capture fishers, created by under reporting due to share fishing arrangements, the trends were still accurate.

Further it was noted that, in New South Wales and Tasmania, many of those injured were older and this should be reflected in the data for the age brackets of 45 – 54 years of age. The only explanation for this is that these are in that group of wild catch fishers who are not covered by workers compensation and therefore are not captured in the data. It is however a very notable divergence or additional at-risk group that must be acknowledged when considering target audiences for communications and training. Further research may be required in this area.

The industry participants from those states not covered in the State data (Northern Territory, Tasmania, and New South Wales) were all disappointed that specific statistics were not examined for their States. On the basis of their experience they felt there may well be gaps in the data, but specific details could not be given. It was felt that there may well be issues in regard to how participants in the industry are undertaking their work resulting in injuries that underlie the data. However it was also noted that in order to really understand this aspect of data even if it had been presented, there was a need to obtain the detail of employment activities at the time injuries occurred, in order to know why the types of injuries identified were occurring.

Despite the data deficiencies it was noted that the trends are relevant and that they support the industry point of view that they have improvements to make.

Summary

The lack of correct OHS incident data in all States for wild capture fisheries was noted as a significant deficiency in the data. It was also noted that in New South Wales, and to some extent Tasmania, injuries were also notably occurring in the older age group (45 – 54 year olds), that while appearing in the aquaculture data, didn't appear to be captured in the marine fishing data. It was noted that this should be explored further to ensure it is covered off in any future training or communications activities.

Overall, while there was the addition of an at-risk age group to marine sector, the trends identified by the data were confirmed by workshop participants. With the note that it would be ideal to have further information on why the types of injuries were occurring.

Recommendations:

On the Reports as they stand

There was no recommendation that the reports need to be revised or that critical data which may impact the trends indicated in the report is known to be available.

Trends and risk groups identified were agreed to be those anecdotally identified as the 'at-risk' groups. The exception to this was in wild catch sector that the age groups in NSW of those most at risk could also include those older – potentially being the 45 – 54 year old age group. It was concluded that it was unlikely that this particular age group would have been accurately identified in the data, given the lack of representation of share (or 'marine' as referred to in previous reports 'C' and 'D') fishers in official statistics.

In regard to the confounding data of youths in the industry being the highest 'at-risk' group yet those not joining the industry, the suggestion was made that this may be due to a perception of the industry as 'unsafe'. While the number one injury for the industry might be back strain, it is the view of industry that the broader community perceive 'man overboard as the number on issue stopping people getting involved in the industry. An increase in the culture of safety in the industry may well assist in addressing this perception.

It was generally agreed that the reports as they stand are a useful collation of occupational health and safety information, in regard to both past investigations, actions and the current (to 2008) status of the industry according to the available data. Participants were of the view that spending time and resources on improving the data will not change the trends or recommendations from the reports.

It was generally agreed that accurate information comes from the big incident events and good background information comes from the coronial and hospital reports. However it was again agreed that while this information would be very interesting, it would not significantly alter the path that should be taken by industry in regard to improving workplace safety training and awareness and the development of an improved safety culture in the industry.

It was also noted that drugs and alcohol were two factors not significantly dealt with in the report. This was mainly due to the ethical and practical difficulties in collecting reliable data in this area. The level of drug and alcohol use was raised by one participant who alerted the meeting of a project being conducted using two fishing case studies. Additionally three companies are known to have recently introduced a policy of random drug and alcohol testing which is achieving very positive results in regard to awareness of managing drugs and alcohol in the workplace. Mandatory screening in one industry had initially had a 30% strike rate but this had successfully reduced within 4 months to virtually zero. This is an ongoing issue for many operators, but it was commonly agreed amongst the workshop participants that the most effective means of addressing the issue was education combined with random or (preferably) mandatory drug and alcohol testing at the commencement of work.

Further research required

The participants were asked, given the data trends in the report and their industry experience, if they believed further research would assist the achievement of those recommended outcomes. Participants believed that further research would not greatly enhance or alter the course of recommended future education, training or communications activities although there were six areas where further research was noted as improving the data collected. These were:

1. **Separation of Post Harvest data from Marine fishing and Aquaculture data**. The data would be far more useful if it was split into the three sectors of marine fishing, aquaculture and post harvest operations rather than aggregated as is currently the case. This feedback will be provided to Safework Australia for their consideration.

2. **Psychological factors in culture change:** It was firmly agreed that the culture of the industry needs modifying to one which values safety. It was questioned that if training and induction is currently being undertaken, why it is not more effective**.** Support was forthcoming for specific research in regard to the factors that enhance shifts in psychological perceptions of risk and behaviour which would be fundamental to achieving culture change in the industry and in regard to developing training and communications around the development of a safety culture in the industry.

3. **'At-Risk' Age Groups.** As a result of the query over the most 'at-risk' age groups in marine fishing identified in the data it was agreed that research into the most common age groups of injured marine fishers, and identification of the most common causes, given the low representation of marine (share) fishers in the official statistics, would be beneficial to future training and communications development.

4. **Appropriateness of existing training**. It was noted that in regard to deck machinery and lifting courses, participants may not be getting training on the appropriate equipment. For example being trained with equipment that lifts of handles 500 kilograms, compared with real life circumstances where loads may be in the vicinity of three tonnes. Research into the appropriateness of course content and context may be of assistance to ensure that training is targeted to equip participants with appropriate practical experience.

5. **Code of Practice and Legislation consistency**. In the Abalone diving industry, the lack of a regulation and standards doesn't assist with ensuring consistency in course content. For example while there is a Code of Practice for Abalone Divers in Tasmania, it was not believed that this is enforced in the regulations. While this is not an issue for the pearling industry, further research into the nexus between all codes and practice and legislation may be of assistance in regard to both advising legislative bodies and developing communications strategies.

6. **Legislation and fishing vessel use interaction:** Research into the disconnect between the effects of weather, vessel size, and the type of fishing conducted, and legislation around boat size and power, manning levels; and its effect on potential associated safety issues may be very beneficial to the discovery of underlying causes for fishers placing themselves in dangerous situations.

It was also raised that there would be merit in benchmarking the fishing and aquaculture industries against another industry that the seafood industry may endeavour to emulate in raising the safety awareness of the industry and improving its culture in this regard. The objective would be to set a target in the form of a benchmark of another industry that the seafood industry should endeavour to emulate.

A comparison of other similar risk based industries in the Agriculture, Fishing and Forestry industry, identified those in commercial fishing has currently at a greater risk of injury than those in

Agriculture, but less than those in Forestry. In this regard it may be appropriate to raise the safety standard of the fishing industry to that of the least risk laden sector for OHS claims of any in the group. Such a benchmark could be easily identified from the existing official data however it must be noted, that no other industry has the same issue with workers who are not covered by the official statistics as does share fishers in commercial fishing.

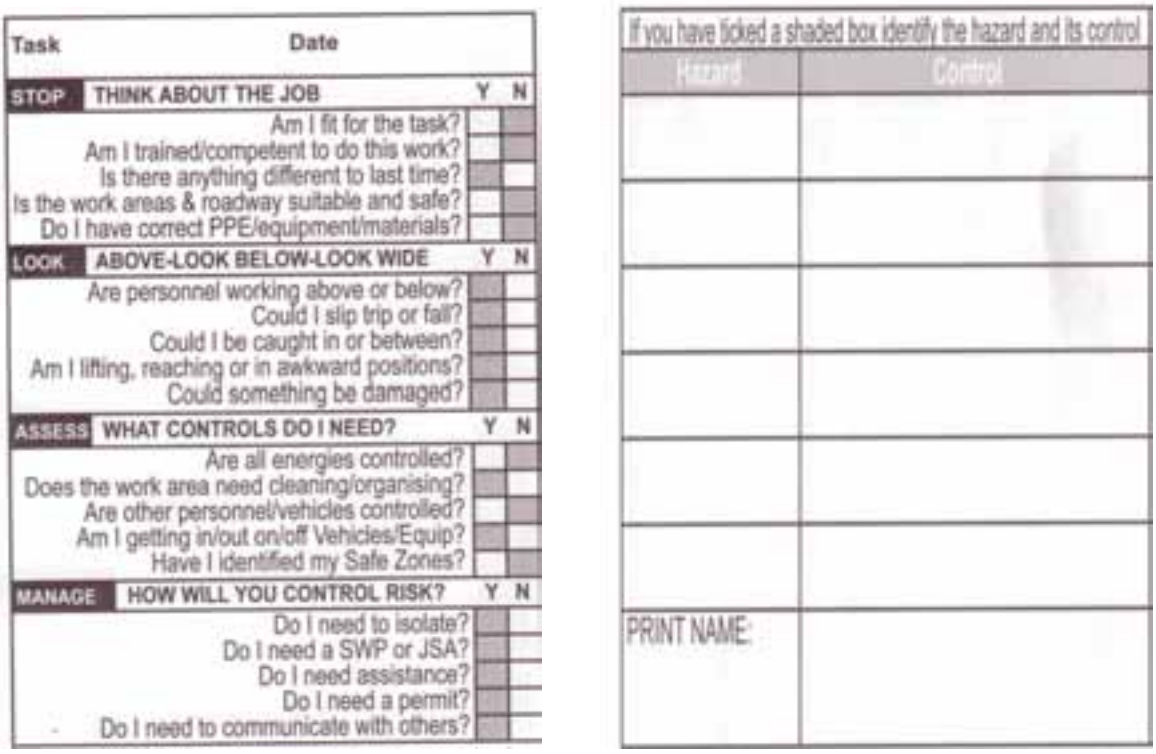
Further Training and Communication activities required.

The prime area of concern and acknowledgement by all participants of the workshop was that of communication and training targeted at improving the industry's safety culture. This was attributed to the lack of training around industry standards, work place induction and supervision of safe work practices. It was noted that often what training is provided is not provided in a work based context; but rather in the class room from State based providers. It was believed that any training would be more effective if it involved industry people delivering the message to provide legitimacy.

It was also noted that there needs to be better coordination and/or information extension to Associations and companies of OHS research and reports. For example, [FRDC] *may have been recognised by the people in the industry in roles where it would be discussed, but on the whole, extension has not been obvious since. It goes both ways, extension needs to be better and more organised and ongoing (researchers who carried out the work, FRDC etc) and Associations, companies and individuals need to be better aware of OHS issues and seek out new and informative information for extension to the vessel/crew level*. (J. Moore)

In regard to the fact that it was mostly unskilled labour that more often sustained injuries resulting in claims, it was suggested that this could be managed through the provision of very detailed and precise induction processes both generally for the industry and then also for specific sites and tasks. This approach has been used and proven very successful in preventions by Paspaley (D. Harrison). The large operators such as Paspaley have also put in a lot of mechanical equipment to avoid the manual labour that results in the stressors and strains most commonly incurred in the industry.

It was suggested that lessons could be learnt from the mining industry where the use of 'SLAM' (**S**top, **L**ook, **A**ssess, **M**anage) Cards was common, and which could easily be adapted for the fishing industry. See the example below



Task	Date		
STOP	THINK ABOUT THE JOB	Y	N
	Am I fit for the task?		
	Am I trained/competent to do this work?		
	Is there anything different to last time?		
	Is the work areas & roadway suitable and safe?		
	Do I have correct PPE/equipment/materials?		
LOOK	ABOVE-LOOK BELOW-LOOK WIDE	Y	N
	Are personnel working above or below?		
	Could I slip trip or fall?		
	Could I be caught in or between?		
	Am I lifting, reaching or in awkward positions?		
	Could something be damaged?		
ASSESS	WHAT CONTROLS DO I NEED?	Y	N
	Are all energies controlled?		
	Does the work area need cleaning/organising?		
	Are other personnel/vehicles controlled?		
	Am I getting in/out on/off Vehicles/Equip?		
	Have I identified my Safe Zones?		
MANAGE	HOW WILL YOU CONTROL RISK?	Y	N
	Do I need to isolate?		
	Do I need a SWP or JSA?		
	Do I need assistance?		
	Do I need a permit?		
	Do I need to communicate with others?		

If you have ticked a shaded box identify the hazard and its control	
Hazard	Control
PRINT NAME:	

Additionally the 'MATES' program – look out for each other and 'LINE OF FIRE' have been found to be helpful in the mining industry. These are where 'mates' are assigned to look out for each other in regard to if they are in the 'Line of Fire'. It was noted that often workers are not thinking about where they are standing (in the line of something potentially going to hit them) and to keep their eyes on the task. There are a number of programs that could be put into the industry. Additionally, it was suggested that workers need more direction and guidance about how things are to be used such as first aid kits; such training was recognised as being a component of and contributing to culture change.

The communication around safety and the need to engender a culture of safety needs to be focused on increasing awareness of the responsibility of both companies and skippers. It was suggested (D. Ellis) that ideally there may be some program initiated where Skippers and owners could get recognised for their standards of workplace safety (similar to an ISO endorsement but not at that level) where they could display their 'tick in the box'. Unfortunately while there is the option to do this currently, there is no refresher or reindorsement so the program fails to maintain legitimacy (this was the problem with the Clean Green program) and they don't keep pace with the changes in the legislation. Any training or OHS safety program needs to be mindful of the requirement to keep skippers and businesses both refreshed with OHS practices and up to date with the legislation.

It was underlined by a number of participants (notably N. Stump & D. Ellis) that OHS and the development of a safety culture has not received appropriate support from the industry because they see it as a cost impost with no benefit attached. In any training program there is the requirement to clarify the hard economic benefit of it in regard to savings from potential expertise, people and fishing time lost. In this vein, it was also noted that inductions must be action based, and not passive, to avoid participants becoming just recipients and 'switching off' (like airplane safety briefs). Additionally, the induction needs to be appropriate to the situation they will find themselves in (e.g. getting up in to life raft, not jumping down into it.) and repeated often enough – which needs to be determined for specific aspects of OHS training.

An important factor in developing training was to consider that good performing larger companies with good systems need a different approach to the small operators in regard to the resources available

- human and financial – and the levels of education of the recipients, while maintaining consistency across the board. There is an unavoidable need to focus on how any programs are structured and to address this audience issue in any and all training and communication materials. It must also be recognised that the motivation to raise safety awareness for big versus small organisations and operators is very different.

An area of opportunity that is often overlooked in developing employee culture is the recruiting process. That is, not enough effort is placed on selecting the correct employees. This was raised due to experience of Paspaley, where they found that the generic backpacker was a less safe employee than Estonians for example who have a very positive work ethic and safety culture. There is the need to recognise the perspectives brought to the workplace by new employees. It was noted that this may be a luxury only available to large corporate organisations, due to the difficulties of owner operators of marine wild catch operations getting reliable and ongoing labour.

In regard to developing a pervasive culture of Safety throughout the industry it was suggested that it will be necessary for the fishing industry councils to drive and take responsibility for the development of an appropriate culture. They will however require assistance in bringing them together with a common goal and focus given the fragmentation of the different sectors of the industry. In this regard, where industry councils assist with business planning, OHS should be prioritised as a fundamental part of business planning, and the profitability of the business. Co-ordination through the industry councils may be an avenue to achieve the continuity required (and previously lacking) in any OHS endeavour. In this regard, an induction sheet commonly used by a Tasmanian operator (S. Richey) was put forward as one method that could be used to bring the industry together in regard to having a common practice and baseline approach to safety practices, that could be applied by all operators, large and small. Richey offered the following example (Appendix 3) which is used in their operations, and is happy for that to be adopted by the industry nationally if that was agreed as a way forward.

Summary

The highest priority was the development of the industry's safety culture, and that communication and training should be primarily targeted at improving this. The current lack of a noteworthy culture of safety in the industry was attributed to the lack of training around industry standards, work place induction and supervision of safe work practices.

It was identified that better coordination and/or information extension to Associations and companies of OHS research and reports was required to ensure all information got out to the industry.

In regard to targeting improved safety for unskilled labour, it was suggested that this could be managed through the provision of very detailed and precise recruitment and induction processes both generally for the industry and then also for specific sites and tasks. Several programs and approaches were suggested.

It was also heavily underlined that the economic benefits rather than cost imposts needs to be put forward strongly to the industry, especially small owner operators.

Consistency in training and communication around OHS issues needs to be ensured to develop a common safety culture across the industry. Additionally industry leaders and context specific circumstances need to be used in training and communication to ensure relevancy to industry members.

Lastly, Industry Councils are seen as the key to addressing the need to pull together a common culture of safety across the industry and avoid the fragmentation that occurs in other areas of the industry.

Future Actions

From the discussion around the types of training and communications that are required, the following suggestions were suggested for further consideration:

Communications Strategy

1. There is a need to develop a communications strategy to raise awareness of legislative requirements on all boat owners and skippers (see Appendix 4, Extract from Victorian OHS News December 6, 2010), along with the legal obligations of business owners and company directors.

2. Development of an awareness program, specifically targeted at small commercial fishing operators, is required to profile the economic benefits of good OHS practices.

3. Profiling of case studies of serious injuries that had impact on the person, the families, and the co workers is required to illustrate graphically what can happen. This should be produced on a DVD to be used in all inductions and distributed to all licence holders. Consideration should be given to sending the final DVDs to the partners (possibly even in a pink envelope?) to ensure that the families understand and communicate the risks, to assist in developing a culture of safety. Development of a DVD along the lines of that developed in New Zealand, using the case studies identified, might be considered; refer to:

   http://www.youtube.com/user/NZFishFed#p/u/4/ZB9fLNoEfvI

   With regard to Case studies the following were suggested and agreed to:

   - Wild catch - S. Richey – Richey Fishing Co Pty Ltd
   - Aquaculture - K. Little – Tassalls Pty Ltd
   - Post Harvest – C. Murray – Sydney Fish Market.
   - A single operator case study – Along the lines suggested by J. Harrison of an operator refusing to put a PFD on board, despite excessive fines.

   It was noted that these case studies should also focus on efficiency gains through fixes that had OHS benefits, as well as the loss of fishing time and life. For example a case study that looks at family business such as the Danish seine and trawl fleet where shore based fathers, because they have previously injured their backs, are coming up with new ways of doing things so that their deckhands don't suffer the same injuries. Changes that have been introduced are those such as the loading of the fish bins into the holds being done by winch, rather than by hand. The suggestion being that the case studies should also identify the good practices and where culture is changing. The objective would be that new entrants get to learn from the experience of the long stayers, adding value to the industry.

4. Use Industry champion/leaders to promote the use of the DVD and the best practice principles.

5. Promote the use of small work teams (i.e. no greater than 5 – 1) as a means to ensure good supervisory control.

6. Investigate broader promotion of the 'man overboard' brochure developed in WA, August 2010.

7. Promote the recording and anonymous reporting of fishing accidents – recommended that they send it to the fishing industry association rather than through the State Work Safe authority - similar to the aviation CARS system. This could be collated and published as a list of incidents

in a publication such as FISH. Further investigation of this and how it would be implemented and co-ordinated is required.

It was noted that communications strategies should be targeted equally to the partners of fishers, as to fishers themselves, in order to initiate conversations about safety in the home as well as the workplace.

Training Options

8. Explore the option of putting work experience students together with employers who meet the requirements – for both work experience and OHS development.

9. Develop a template so that fishers can do their own OHS shipboard safety book. However it needs to be investigated if this can be done so as to cover off on OHS requirements for all the different jurisdictions and departments. The OHS Handbook developed by Richey Fishing Co Pty Ltd, (which they have agreed to make available (S. Richey, 6/12/10)) should be investigated for use as a generic template that could be used across the industry.

10. In regard to training about legislation, developing a program which is easy to understand by cutting the amount of legislation down to an approachable minimum, should be investigated. It needs to be made as simple as "**if you don't do it you can't go fishing**". While the legislation will not always be enforced, but a focus on the duty of care under the legislation, and increased awareness of the liability which no one is exempt must be raised (refer Attachment 3).

11. Ensure that in the Masters course, working through the OHS template is part of the curriculum, and investigate how this is being translated into the workplace.

12. Investigate the methods for broader extension of the 'Ship Board Safety Course' or the appropriate elements of it, as currently not everyone has to do that course.

13. Implementation through the industry councils of the Safety Induction Checklist (see Attachment 2). The objective is to ensure that skippers and crew members understand where all safety items are on a vessel and what the procedures are at the commencement of every trip. Understanding of these items and procedures can be verified by a verbal quiz of all crew members on handing in their sheets. This should possibly be promoted as being provided in triplicate; one for the records, one for the responsible skipper, and one for the crew member - both as a reminder and as a record of their sea time. The training of this should focus on the deckhands and drill in to them the need to take responsibility for their own OHS environment.

14. Consideration to be given to mandatory wearing of vests and hard hats on all commercial fishing docks.

Other activities

15. Investigate the possibility of tying OHS compliance to boat licences.

Summary

There is an underlying need to be aware of the harmonisation process headed up by AMSA. In this regard there may be funds available through that process to assist in implementing the above activities and ensuring that the industry doesn't duplicate or conflict with other activities that are occurring.

There needs to be communication undertaken with the Industry Councils to get agreement with the chosen activities, and a collaborative way forward. It was also advised that focus should be given to potentially collaborating with processors to get messages across. Previously processors have agreed to print messages on the reverse side of weighing dockets, or staple information to catch receipts.

A further meeting needs to be set up with Kondinen, who are currently developing a communications strategy for the industry, to communicate the findings of this workshop and to move the communication project forward.

Results

In relation to the objectives of the research, the report in the first instance provides the primary result of an accessible summary of;

1. All publically available and accessible research and reports on OHS in the commercial fishing industry in Australia since 1983;

2. Identification of all OHS interventions since 1988 in the commercial fishing industry and a broad assessment of their apparent effectiveness;

3. Summary of the national circumstance of commercial fishing both in the context of the broader Agriculture, Fishing and Forestry sector; of itself; and a comparison of the sectors within commercial fishing (marine and aquaculture), for the period 1988 to 2008

4. Analysis of detailed data for four States in Australia for the period from 2000/01 to 2008/09, of commercial fishing by both sector (marine and aquaculture) and where appropriate a comparison of sectors within the industry.

5. Industry comment and verification of the research data trends and findings, and recommendations as of 2010 as to the most appropriate means to progress the circumstances of commercial fishing OHS in a positive direction for the benefit of the industry and the Australian public.

Literature Review

The key finding from the literature review for the period was that the cause of the majority of deaths – lack of awareness of OH&S and a culture of safety - still fails to be effectively dealt with across all States of Australia. It suggested that the most notable factor in reducing fishing fatality rates is most likely to have come about as a result of the introduction of quota's in the 1990s and early 2000s.

It is significant to underline that according to past reviews, only 18% of those employed in commercial fishing are covered by standard works occupational health and safety arrangements. Only those covered are captured in official statistics, leaving some 81% of commercial fishing workers not covered or accounted for in current OHS statistics.

While the literature identified an increasing awareness and concern for the lack of attention being paid to Occupational Health and Safety issues in commercial fishing over the period from 1988 to 2008, it did identify that a reduction in the number of incidents is most likely to be effected through a focus on awareness and perception of real risk amongst fishermen, and the provision of clear directions in regard to safe activities to avoid overboard incidents.

The literature review identified (which was again endorsed by the industry workshop) that the involvement of Industry Associations is pivotal to the creation of change in the commercial fishing industry's safety culture.

Intervention Identification

The process of identifying the interventions into OHS issues during the period provided a list of some nine incidents that may well have been expected to contribute to improved OHS outcomes. However, on examination of the national and State data, no change in trends could confidently be attributed to any of the identified interventions.

Subsequent review at the workshop and examination of the issues in relation to the interventions suggests that this may well be because the majority of these interventions (with the exception of the

more recent 2007 and 2009 ones) were process orientated and did not address the underlying safety culture of the industry. The lack of a safety culture is what is believed to be preventing the uptake and adoption of well founded safety procedures and behaviours.

National Data Analysis

In comparison to the overall Agriculture, Fishing and Forestry sector, the commercial fishing industry does not exhibit any outstanding or contrary trends to the broader primary industry sector, in terms of who the accidents occur to, or the rate of them. There have been reductions in all areas of OHS claims in the commercial fishing industry, which began to notably occur from 2002/03; and as early as 1999/2000 in some cases. There was, however, a trend of increases in rates of incidences and numbers of OHS claims in 2005/06 for which there was no obvious explanation for in the data.

Despite both sectors (marine and aquaculture) have a trend of decreasing number of claims, the number of claims for fatal and non fatal incidents in aquaculture has remained higher than that of marine fishing since 2000.

At Risk Groups in the national and State data:

The at risk group in both the national and State data is that comprised of, low skilled or unskilled workers; aged 20 to 24 years, who are most likely to receive injuries to their upper bodies (limbs and trunk), due to stresses on their muscles, tendons, ligaments and bones, which will result in sprains or strains on the joints or adjacent muscles and tendons. These injuries are most likely to be caused by non powered hand tools; and as a result the worker will most commonly be absent from work for between two to twelve weeks. Further to this, females in the aquaculture sector are more likely to make an occupational health and safety claim than females in the marine sector. This last point was identified in the workshop as being attributable to the knife handling required in aquaculture post harvest work, which is dominated by females.

Emergent Issues from the national and State data:

From the national data an increasing rate of claims for fatalities in the aquaculture sector was evident and should be viewed with concern. By contrast and no less concerning in its own way is the also evident trend of increasing rates of non fatal claims in the marine sector. In terms of focus for OHS messages, the highest risk of injury in either sector is to the upper body region for 20 – 24 year old employees.

In regard to the analysis by State, which did provide only slightly more detail but did affirm that the trends identified in the national data were consistent and not an aberration of data rounding, this data identified that the incidence rate (number of claims as a percentage of those employed) of marine (wild catch) fishing claims is consistently higher in Western and South Australia, that Victoria or Queensland. In addition to this, South Australia and Victoria had higher numbers of claims in marine fishing for sprains and strains, than other States, and Queensland aquaculture was the only State to identify the ‘trunk’ as the most likely location of injury. Further to this, the data identified concerning trends in that older employees (45 – 54) were the next greatest ‘at risk’ group in aquaculture (which was anecdotally believed to also be applicable to marine or wild capture fisheries according to workshop participants), and that the time lost for injuries is increasing in both sectors, but slightly more in aquaculture. These last two issues are a concern for increased imposts on the productivity of the industry.

The data from Victoria in both the National and the State data sets was very erratic with no data being available in one or both of the commercial fishing sectors in some years, identifying a possible issue with data collection and engagement between OHS agencies and commercial fisheries in that State.

Industry Workshop

The lack of correct OHS incident data in all States for wild capture fisheries was noted as a significant deficiency of the data sets available. It was also noted that in a number of States, that the other major at risk group in wild catch (marine) fisheries were those in the age group of 45 – 54 year olds.

Overall, while there was the addition of an at-risk age group to marine sector, the trends identified by the data were confirmed by workshop participants. There was no recommendation that the reports need to be revised or that critical data which may impact the trends indicated in the report is known to be available.

There were six areas identified as recommended to be considered for further research that would be useful to the industry in regard to elucidating the circumstances around many OHS claims.

The highest priority identified by the workshop was the development of the industry's safety culture, and that communication and training should be primarily targeted at improving this. The current lack of a noteworthy culture of safety in the industry was attributed to the lack of training around industry standards, work place induction and supervision of safe work practices.

It was identified that better coordination and/or information extension to Associations and companies of OHS research and reports was required to ensure all information got out to the industry. Further to this, was the need to engage the industry associations to become champions of raising awareness and creating a culture of valuing safety in the industry.

Summary

Overall, the resounding finding is that a lack of awareness of occupational health and safety, and a culture of safety, still fails to be effectively dealt with across all States of Australia. The OHS data identifies that the commercial fishing industry has rates of claims that are average for the overall Agriculture, Fishing and Forestry sector, but that claims for fatal injuries in aquaculture and non fatal in marine (or wild capture) fisheries are both increasing. The most 'at risk' group in the industry are those between the age of 20 to 24 years of age with those aged 45 – 54 years being the next most at risk group, and will receive injuries from non powered hand tools.

If the recommendations of this report are adopted, this research has the potential to benefit the industry by addressing the issue in a manner previously not specifically attempted in previous OHS interventions.

Through proactively engaging with the need and opportunity to change and improve the safety culture of commercial fishing, it is envisaged that there will be a reduction; in injuries to those in the industry; claims and lost economic opportunities; and increased fishing time and therefore food production for the Australian public. This research also provides the industry and funding providers with an opportunity to have assessed the national and State status of the industry both before and after an intervention, enabling (for the first time) assessment of intervention effectiveness.

Implications

The importance of this report is that, on the basis of sound statistical data, it provides some fifteen suggestions and recommendations for the industry and funding agencies to consider in regard to research, communication and training in the commercial fishing industry. It is the most useful basis that has been provided in recent years for framing a coherent and factually based approach to redress the lack of a safety culture in the commercial fishing industry and to arrest increasing rates of OHS claims.

Further the potential implication of successfully addressing the OHS culture and reputation of the commercial fishing industry will be an increased attractiveness to young people to engage with and pursue a career in the industry. This is an essential factor in the ongoing viability and sustainability of the industry, given its current ageing workforce profile.

For communities who both support the industry and the greater Australian public, research such as this, which if appropriately acted upon, will increase the safety of one of Australia's key food producing industries, and therefore its sustainability.

The implications for Policy makers of such research is in the ability to be able to comprehensively understand the background and status of an industry and where certain interventions or policies have and have not had the desired consequence.

Recommendations

The workshop component of this research was specifically aimed at, in the context of the research and data, identifying potential research, communications and training that the industry could undertake with the support of the appropriate government agencies.

The one recommendation identified by this report that was consistently repeated through all previous OHS literature on fishing, was the mandatory wearing of PFDs. This was extensively discussed in the workshop as a result of both, the data analysis identifying that drowning was not the majority cause of claims, and that industry experience is that it is the lack of OHS awareness on board the craft that results in workers ending up overboard and exposed to the risk of drowning. As a result PFDs were not the focus of this report's recommendations, but rather was to increase the culture of safety to prevent industry workers from being in the situation of needing to rely on a PFD to save their lives. It is, however, noted elsewhere in the report that PFDs should be worn as often as physically possible, but that any legislation in relation to the wearing of them must be context and work site specific.

Further Research

While there were six areas of further research the industry identified as being beneficial to industry and agency knowledge about OHS in the fishing industry, it was commonly agreed that in regard to the objectives of this project, further mining of the existing data or collection of new hospital or coronial data would not alter the outcomes or recommendations of this report.

Communications Activities

In regard to communications activities the workshop identified seven areas to be considered for further development and action. The primary one of these was the need to develop a communications strategy to raise awareness of legislative requirements on all boat owners and skippers, along with the legal obligations of business owners and company directors. An added aspect to improve the uptake of this message amongst small single person operators, was to ensure that the message specifically identified the economic benefits to be gained from good OHS practices.

In addition to this, and specifically targeted at commercial fishing industry workers, was the recommendation, though production of a DVD, to profile several case studies of serious injuries that had impacted not only individuals but also their families and co workers, to illustrate graphically the effects of poor in inattentive OHS practices. Equally, it was recommended that such case studies should also include positive practices where culture is changing and has resulted in positive economic gains.

The industry also noted that champion/leaders that had established credibility in the industry should be used to promote activities around culture change and to challenge the current mid set of OHS in the industry.

In regard to workplace environments, it is recommended that in larger organisations, there should be the promotion of the use of small work teams (that is, no greater than 5 persons to one supervisor) as a means to ensure good supervisory control. Additionally, further promotion of the 'man overboard' brochure developed in WA, August 2010, could be undertaken as an extension activity and that the industry Councils should be consulted about these activities and how best to promote them.

In relation to ongoing reporting of accidents and incidents and increased awareness in the industry it was recommended that the recording and anonymous reporting of fishing accidents be investigated in regard to how it could be implemented and the management of ongoing coordination of the data. If this could be achieved it was also recommended that a summary of all incidents should be published on a regular basis in a vehicle such as 'FISH' (FRDC publication).

Training Options

In regard there were a further seven recommendations of actions that should be considered for action. These included reviewing vocational training and work experience options to ensure that there was relevancy of the courses and content being provided in the vocational stages of training, that appropriate work experience options were available to new recruits which would also have the benefit of reinforcing a positive OHS culture with participating employers, and that existing OHS courses (such as the Ship Board Safety Course) were provided adequate promotion given they are not mandatory courses for all in the industry. In addition, consideration should be given to the development of both, a template for OHS shipboard safety and an attendant implementation training program, and a program for simplifying the legislative obligations of industry operators in regard to OHS. Lastly, it was recommended that, through the industry councils, a 'Safety Induction Checklist' be introduced for the industry with the objective of both reinforcing to skippers their OHS obligations and to crew their need to take responsibility for their own OHS environment.

Other (legislative) activities

Two further recommendations were made that fall into the category of 'legislative'actions. These were that consideration to be given to mandatory wearing of vests and hard hats on all commercial fishing docks, and that it the possibility of tying OHS compliance in some form to the issuing of boat licences be investigated. This may be pursued by the National Seafood Industry Alliance - Safety, Education and Training forum.

Appendix 1 - Definitions of Occupations

Professionals - perform analytical, conceptual and creative tasks through the application of theoretical knowledge and experience in the fields of science, engineering, business and information, health, education, social welfare and the arts.

Intermediate Production and Transport Workers - operate plant, machinery, vehicles and other equipment to transport passengers and goods, to move materials, to generate power and to perform various agricultural, manufacturing and construction functions. Most occupations in this major group have a level of skill commensurate with an AQF Certificate II or higher qualification or at least 1 years relevant experience. In some instances relevant experience is required in addition to the formal qualification. Tasks performed by Intermediate Production and Transport Workers typically include setting up, controlling and monitoring the operation of mechanical equipment either directly or by remote control; driving road and rail transport vehicles to scheduled destinations; driving mobile plant to worksites; cleaning equipment and performing minor repairs; and maintaining production records.

Tradespersons and related workers - applying a body of trade or industry specific technical knowledge and operate a wide variety of complex precision machinery or plant to complete several stages in the fabrication and maintenance of products. Most occupations in this major group have a level of skill commensurate with an AQF Certificate III or higher qualification. In some instances relevant experience is required in addition to the formal qualification.

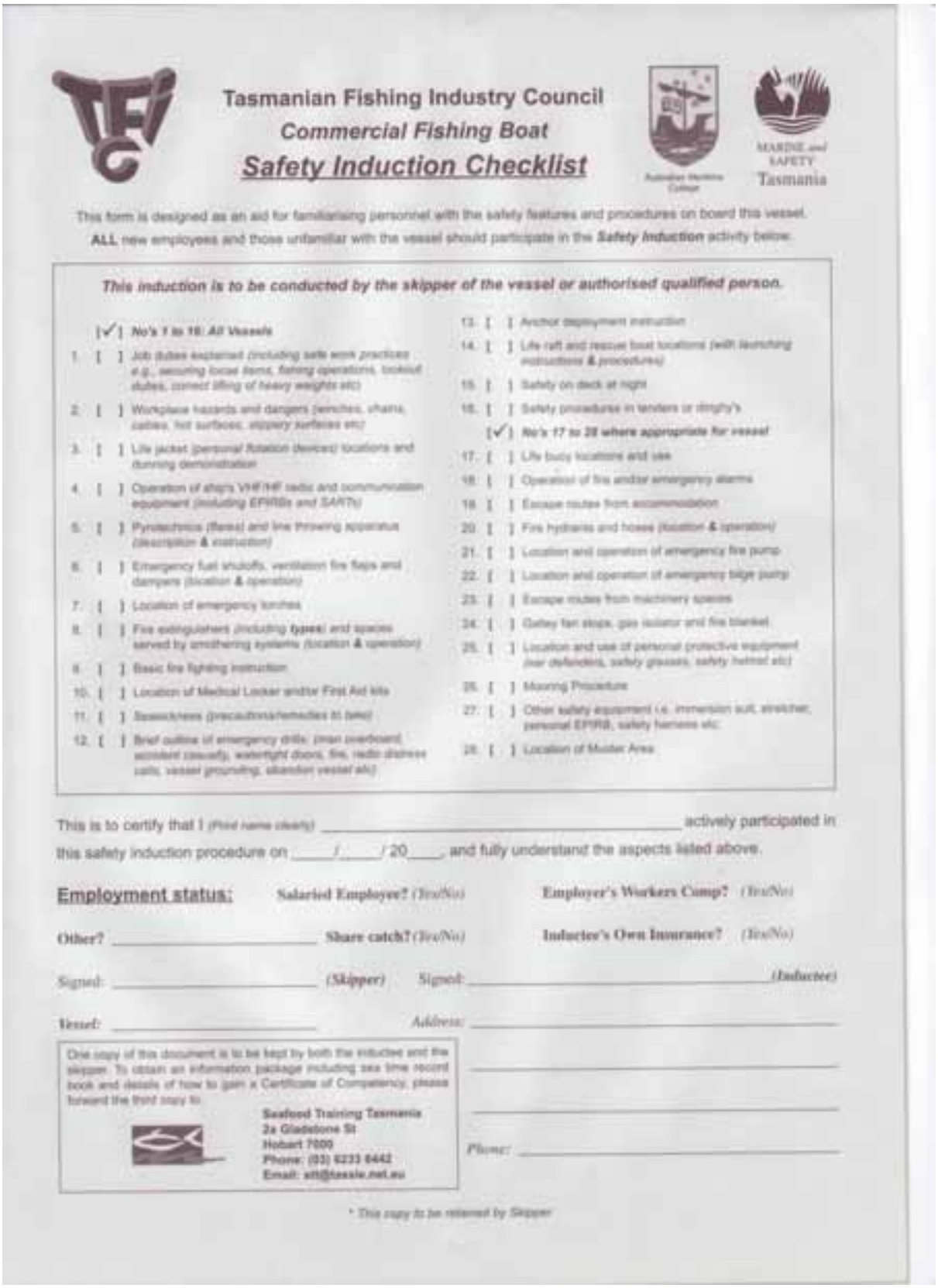
Labourers and related workers - Most occupations in this major group have a level of skill commensurate with completion of compulsory secondary education or higher qualification. Tasks performed by Labourers and Related Workers typically include cleaning various types of premises and machinery; assisting tradespersons; loading, moving, unloading and packing tools, materials, freight, and manufactured articles; assembling components and performing other manual manufacturing and construction tasks; assisting in the cultivation and production of plants and animals; and collecting garbage.

Appendix 2 – Workshop Participant List

Name	State/Organisation
ATTENDING INVITEES	
Brett McCallum (Chair)	WA - Industry
Dave Ellis	SA - Tuna Wild catch & Aquaculture (Southern Bluefin Tuna)
Neil Stump	TAS – Industry Council
Kaylene Little	TAS - Salmon Aquaculture (Tassal)
Ian Miles	TAS – Salmon Aquaculture (Tassal)
Katherine Sarneckis	NT – Industry Council
Dean Harrison	NT - Aquaculture Industry (Paspaley)
Eric Perez	QLD – Industry Council
Jo-Anne Ruscoe	ACT – Industry R&D
John Harrison	NSW – Wild catch Industry (Professional Fishermans Industry Association)
Craig Murray	NSW – Post Harvest Industry (Sydney Fish Markets)
Peter Payne	NSW Dive Industry (Consultant)
Ross McGowen	VIC – Industry Council
Renee Vajtauer	VIC – Industry Council
Trixi Madon	ACT – Commercial Fishing Association.
Stuart Richey	TAS – Wild catch Industry (Richey Fishing Co-op)
Ken Moore	RIRDC
Kate Brooks	Organiser (KAL Analysis)

INVITEES WHO COULD NOT ATTEND - BUT REMAIN ON DISTRIBUTION LIST	
Mark Cody	SA - Primary Industries Skills Council SA (Inc)
Jeff Moore	SA - Trawl Industry (GABIA)
Bruce Zippel	SA - Oyster Aquaculture
John Atkinson	WA – Industry
Annie Jarrett	QLD – Northern Prawn Trawl
Tanya Adams	WA – Industry
Martin Exel	TAS - Industry (Austral Fisheries)
Barbara Bell	WA – Industry (Austral Fisheries)

Appendix 3 – Safety Induction List



Tasmanian Fishing Industry Council

Commercial Fishing Boat

Safety Induction Checklist

Australian Maritime College

MARINE and SAFETY Tasmania

This form is designed as an aid for familiarising personnel with the safety features and procedures on board this vessel. **ALL** new employees and those unfamiliar with the vessel should participate in the ***Safety Induction*** activity below.

This induction is to be conducted by the skipper of the vessel or authorised qualified person.

[✓] ***No's 1 to 16: All Vessels***

1. [ ] Job duties explained *(including safe work practices e.g., securing loose items, fishing operations, lookout duties, correct lifting of heavy weights etc)*
2. [ ] Workplace hazards and dangers *(winches, chains, cables, hot surfaces, slippery surfaces etc)*
3. [ ] Life jacket *(personal flotation devices)* locations and donning demonstration
4. [ ] Operation of ship's VHF/HF radio and communication equipment *(including EPIRBs and SARTs)*
5. [ ] Pyrotechnics *(flares)* and line throwing apparatus *(description & instruction)*
6. [ ] Emergency fuel shutoffs, ventilation fire flaps and dampers *(location & operation)*
7. [ ] Location of emergency torches
8. [ ] Fire extinguishers *(including types)* and spaces served by smothering systems *(location & operation)*
9. [ ] Basic fire fighting instruction
10. [ ] Location of Medical Locker and/or First Aid kits
11. [ ] Seasickness *(precautions/remedies to take)*
12. [ ] Brief outline of emergency drills: *(man overboard, accident casualty, watertight doors, fire, radio distress calls, vessel grounding, abandon vessel etc)*
13. [ ] Anchor deployment instruction
14. [ ] Life raft and rescue boat locations *(with launching instructions & procedures)*
15. [ ] Safety on deck at night
16. [ ] Safety procedures in tenders or dinghy's

[✓] ***No's 17 to 28 where appropriate for vessel***

17. [ ] Life buoy locations and use
18. [ ] Operation of fire and/or emergency alarms
19. [ ] Escape routes from accommodation
20. [ ] Fire hydrants and hoses *(location & operation)*
21. [ ] Location and operation of emergency fire pump
22. [ ] Location and operation of emergency bilge pump
23. [ ] Escape routes from machinery spaces
24. [ ] Galley fan stops, gas isolator and fire blanket
25. [ ] Location and use of personal protective equipment *(ear defenders, safety glasses, safety helmet etc)*
26. [ ] Mooring Procedure
27. [ ] Other safety equipment i.e. immersion suit, stretcher, personal EPIRB, safety harness etc
28. [ ] Location of Muster Area

This is to certify that I *(Print name clearly)* _____ actively participated in this safety induction procedure on ____/____/ 20____ and fully understand the aspects listed above.

Employment status: **Salaried Employee?** *(Yes/No)* **Employer's Workers Comp?** *(Yes/No)*

Other? _____ **Share catch?** *(Yes/No)* **Inductee's Own Insurance?** *(Yes/No)*

Signed: _____ ***(Skipper)*** Signed: _____ ***(Inductee)***

Vessel: _____ *Address:* _____

One copy of this document is to be kept by both the inductee and the skipper. To obtain an information package including sea time record book and details of how to gain a Certificate of Competency, please forward the third copy to:

Seafood Training Tasmania
2a Gladstone St
Hobart 7000
Phone: (03) 6233 6442
Email: stt@tassie.net.au

Phone: _____

* *This copy to be retained by Skipper*

Appendix 3 - Extract from Victorian OHS News 06 December 2010

Owner fined more than self-employed boss after death

Monday, 06 December 2010 1:19pm

The owner of a fishing vessel has been fined four times more than its self-employed skipper after a South Australian court found it had greater authority and control over the systems and plant that caused a worker's death.

In November 2005 the skipper of the Jean Bryant Fisheries Pty Ltd (JBF) vessel was reeling in a net when a piece of rope looped around a worker's neck, drawing him into the spool.

A crew member alerted the skipper, who brought the net to a halt, but the worker had already been strangled and crushed to death.

JBF was charged with breaching s19 of the State *Occupational Health, Safety and Welfare Act 1986*, and its skipper was charged - as a self-employed person - with breaching s22(2)(b). Both parties entered not guilty pleas, each claiming the other controlled the operation.

In July 2010 proceedings, Industrial Magistrate Richard Hardy found JBF had known of the danger posed by the spool, and instituted a "no-go zone" as a precaution, but had relied too heavily on worker compliance. In finding JBF guilty, he said it should have fitted the spool with an adequate emergency-stop device.

Industrial Magistrate Hardy found the skipper, who gave the crew instructions, was also guilty.

Controls should have been physical, not just administrative

In the penalty proceedings at hand, Industrial Magistrate Hardy found JBF's recognition of the risk and the steps it had taken to address it were "to its credit", and reduced its culpability.

However, "the point" was that it should have taken physical as well as administrative measures to mitigate the risk, he said.

In fining JBF $70,000, he said it owned the boat, controlled most aspects of the system of work, configured the plant, and had the greatest authority and control over the plant in question.

The circumstances leading up to the incident were not all of the skipper's "making".

"[The skipper] had no say in the manner in which the JBF winch was set up and his fault lies simply in not maintaining a line of sight to [the worker] and continuing to turn the spool," Industrial Magistrate Hardy said.

He also noted the skipper had suffered post traumatic stress as a result of the incident, which limited his ability to work. The skipper had, "in his own mind", taken responsibility for the death.

In fining him $17,500, Industrial Magistrate Hardy said there was little or no need for specific deterrence, but that general deterrence was still necessary.

Baker v Jean Bryant Fisheries Pty Ltd and Another [2010] SAIRC 33 (29 November 2010)

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Health and Safety in the Australian Fishing Industry

byDr Kate Brooks

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This report is the result of the identification of gaps in occupation health and safety (OHS) data for the fishing industry by the Collaborative Partnership for Farming and Fishing Health and Safety Program.

The key finding is that a lack of awareness of occupational health and safety, and a culture of safety, still fails to be effectively dealt with across all States of Australia.

The primary beneficiaries of this research are the commercial fishing industry, research and funding providers.

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