

adapt or fail

Assessing how the Queensland commercial fishing industry responds to change

Change in the commercial fishing industry is inevitable, ongoing and it builds up over time. Change can be gradual or rapid, and can relate to management, economic, or environmental change. We know from previous research that individual fishers have different abilities to adapt to all sorts of change. In part, this relates to a fisher's own capacity to cope with uncertainty and risk, but also to how individuals structure and operate within their business, and whether they can identify and benefit from opportunities.

A study led by James Cook University (JCU), in partnership with the CSIRO, Fisheries Queensland and the Queensland Seafood Industry Association (QSIA) and funded by the Fisheries Research and Development

Corporation (FRDC), explored how different types of fishing businesses are affected by and adapt to different types of change.

To understand the structure of the Queensland east coast fishing industry, we first developed a typology of businesses based on available licence and harvest data from the Department of Agriculture (DAF). We found eleven different business types, with similar business characteristics within each group.

Meeting with and surveying 206 business owners (operators and investors) and lessees, we then assessed, (a) the types of change businesses have been affected by in the past, (b) common current constraints, and (c) upcoming challenges. We also explored potential and actual adaptation

responses to these changes and constraints, and examined whether there were any consistent characteristics (including business type) that could determine success when adapting to different types of change.



Adaptive capacity results

Individual characteristics: Operators had a high attachment to and dependency on fishing (less so for investors), but most businesses had a medium level of inherent resilience, based on their own inherent ability to cope, plan, learn and manage risk. Operators in Type A (roaming trawlers), B (homing trawlers) and C (big reef liners) groups were the most dependent on commercial fishing for individual and household income; Type D (small reef liners) operators appeared less dependent.

‘Most operators and investors maintain a financial buffer in case of emergencies.’

Business characteristics: Operators in Types A, B and C had the greatest investment in primary vessels and the highest total business costs. Operators in all other business types (D-K) had a much lower total level of investment in primary vessels, which always came second to licences/quota/symbols. The mean level of investment in licences was generally higher in the roaming generalists (Type J) than in any other business type. Mean revenues were highest for roaming generalists (Type J) and big reef-liners (Type C), although there was high variation within business types, and no clear relationship between business type and profit. Most operators and investors said they maintain a financial buffer in case of emergencies (which becomes important in later results).

Current capacity / practice: Most respondents (39%) were maintaining business as usual, but many were also increasing the size of their business (21%), or diversifying their operations (20%) (some were doing both). About half of the operators, but only one quarter of investors, were satisfied with the current profitability of their fishing business. While most felt their business was in the same financial position as it was at the same time in the previous year, many felt they were worse off compared to five years prior to the survey. Many fishers felt the success of their business was determined by factors beyond their control (i.e. externalities) and felt less secure in their fishing business than they had five years prior. Respondents were not overly optimistic about the future of their business or the future of the Queensland east coast fishing industry.

Ability to take up options: Based on their current fishing behaviour and business practices, if a sudden change occurred most operators said they would find it difficult to take up various behavioural adaptation options. Responses to the adaptation

options questions were combined to create an overall score and rank of adaptation ‘options’: the options score suggests only a few businesses have a large number of options available. Most businesses fit within the ‘medium’ options rank. The differences between business types were not marked. Greater adaptive capacity was generally associated with education, quota ownership, financial buffer, vessel insurance, access to other fisheries, dependency for individual income, more experience relative to age, and higher inherent resilience.



Barriers and constraints (including externalities)

We asked businesses what the main constraint was on their ability to maintain a viable business, or to grow. Open responses were coded into modified PESTEL categories (*Political, legal governance; Economic; Social, cultural, functional; Business, fleet, technological; and Ecological and Environmental*).

Most businesses listed constraints within the *Political, legal and governance* category. Within this category most answers related to regulation or over-regulation, area restrictions, or feelings of uncertainty or lack of security.

Homing trawlers (Type B) were associated with economic constraints, while homing non-quota generalists (Type H) were associated with area restrictions, roaming specialists (Type E) with regulation, and small reef-liners (Type D) with both ecological and social constraints. When relating individual and business characteristics to constraints, we found a more experienced business is less likely to be constrained by uncertainty.

During the survey period, the Queensland Fisheries Management Review was underway. We asked fishers what one management change they would like to see. Despite the request to focus on a State

fisheries issue, rather than a Federal Marine Park issue, changes to area restrictions (including green and yellow zones) were most common responses.

Adaptation behaviour

We asked operators how they had responded to the greatest change their business had faced in the decade preceding the survey. Most responses fell within the *Business, fleet and technological* PESTEL category (i.e. they commonly made changes to their business / vessel). *No response* was the second likeliest answer. At a finer level, responses were most commonly (in decreasing order of frequency), *Moved, No response, Changed fishing* and *Vessel changes* (many businesses did more than one of these things).

A slight majority overall (but 70% of investors) felt their response to change had placed their business in a worse position in the short term. The result was similar for the long-term perspective.

Success scores and ranks were developed using related questions as indicators: the distribution was fairly balanced between high and low success scores, and most businesses fell within the ‘medium’ success rank. When compared between business types, there were a wide range of success outcomes, and no clear distinction between the types. The same was true when we split by main fishery, although long-term success (as an indicator within the score) appears to be better for roaming trawlers (Type J). While some characteristics (e.g. having a financial buffer) appeared to be potential predictors of success, statistical confidence was low. Most of the variation in success is unexplained, and therefore the main message is that success or otherwise is mainly due to unknown factors within each business: there is no ‘recipe for success’ obvious in the data we collected.

‘Many fishers felt the success of their business was determined by factors beyond their control.’

Success stories

We were disappointed we could not identify consistent characteristics or responses to change that led to success. However, we did uncover some success stories, including operators who felt their business had improved in the short or long term, or that their response to a change had placed them in a better position than previously. The following examples highlight the type of information we collected through the surveys. Other stories can be found in the final project report (see Contact information).

The Roaming Trawler (Type A)

Individual Characteristics

This fisher has been fishing for more than thirty years and has a high attachment to fishing. All personal income, and 80% of household income is provided by the fishing business. He is 60 years old and has a partner and dependent children to support with the business. This fisher has a medium level of inherent resilience according to our measures. He doesn't have a trusted source of information about fisheries in Queensland, though does regularly source or receive information from other commercial fishers, and at times from the Queensland Boating and Fisheries Patrol (QBFP) and public media.

Business characteristics

This fisher is dependent on one fishery (T), but harvests multiple species within that fishery, and accesses two ports. He owns and operates one licence plus quota, but does not lease. He sells to one local buyer.

He does not maintain a financial buffer for emergencies, but does have vessel insurance.

Capacity to implement options

This fisher is considered to have high practical adaptive capacity because he feels he could change fisheries and species, and has previous experience of doing so. However, while he could move ports, he would prefer not to, and he would not be able to stop fishing, move to grounds further away, or change markets.

Challenges

At the time of the survey, the greatest change experienced during the ten years prior was the removal of unused symbols, which he thought he could sell for some value in the future, and loss of ability to take line caught fish and specific bycatch species from the trawler, resulting in wasted fish (now discarded). This was something he thought he could rely on. The main current constraint is the weather, combined with age (he is 'taking fewer risks'). The main

upcoming challenge is potential fuel cost increase.

Externalities

Weather; fuel; input controls.

Adaptation behaviour to change

In response to the previous change, this fisher stayed with the trawl fishery, but tried new things with fishing gear to increase catches.

Success

Business was considered to be better than it was five years prior, but was about the same as twelve months prior due to increased catches. His optimism had improved and he felt secure in his business. Increased catches provided enough financial buffer to allow him to experiment with gear and improve efficiencies. He is maintaining business as usual and is satisfied with the current situation. 'Business is good'.

The Big Reef-Liner (Type C)

Individual Characteristics

This fisher has been fishing for more than forty years, and has a high attachment to fishing. All of his personal and household income is provided by the fishing business. He is in his 60s with a partner but no dependent children. He has a medium level of inherent resilience. The Queensland Boating and Fisheries Patrol (QBFP) is his most trusted source of information regarding fisheries. He does source/receive fisheries related information from other commercial fishers, including DAF, but not Industry groups, GBRMPA, researchers, or the public media. This fisher would seek legal advice if he needed to make more changes to the business.

Business characteristics

He is dependent on one fishery and species (SM), and accesses two ports. He owns one licence and some quota, but also leases

in quota (it was more economical at the time to lease rather than buy). He sells to multiple buyers within and beyond the local area. He maintains a financial buffer for emergencies, but does not have vessel insurance.

Capacity to implement options

This fisher has a low practical adaptive capacity due to current specialisation, costs of change and current age and health.

Challenges

The greatest change during the ten years prior was the introduction of quota to his fishery. The main current constraint is imported products, and larger companies that sell sliced fish rather than whole fish or quarters. His main upcoming challenge relates to his own health, rather than external factors.

Externalities

Output controls; markets.

Adaptation behaviour to change

In response to the previous change (quota introduction), this fisher improved his product and marketed it over the internet to receive a premium (but fair) price for his product.

Success

At the time of the survey, business was better than it had been twelve months prior, and better than five years prior. He believes stocks are increasing and catches improving. He is satisfied with his current profit and income, and feels the success of his business is mostly in his own control, rather than in the control of outside factors. He is optimistic about his business, but not about the future of the industry. He feels secure in business due to experience and knowledge. He intends to maintain business as usual, due to age.



The Small Reef-Liner (Type D)

Individual Characteristics

This lessee has been fishing for 13 years and has a medium to high level of attachment to fishing. He receives all of his individual income, and 60% of his household income, from the fishing business. He is in his 40s, with a partner and dependent children. He has a medium level of inherent resilience, according to our scores. He considers DAF to be a trusted source of fisheries information, but wouldn't go to anyone for advice if he needed to make changes to business. He sources or receives information from DAF, QBFP and researchers, but not GBMPA, other fishers or any Industry groups.

Business characteristics

This fisher accesses multiple ports and line fishes for multiple species, especially Spanish mackerel. He sold his licence and quota in recent years due to uncertainty in licence prices, and instead now leases one licence with associated symbols and quota. He used

finance from the sale of his licence to buy a retail van (i.e. added a point-of-sale business). He also sells to multiple buyers outside of the local area. He maintains a financial buffer for emergencies, but has no vessel insurance.

Capacity to implement options

This fisher ranks 'high' in our adaptive capacity scores – he cannot cease fishing due to his need for income, but could change species, fisheries, products, ports or grounds (but not further away), given current practice and experience.

Challenges

The greatest change in the ten years prior to surveying was green zone increases in the Great Barrier Reef and Moreton Bay Marine Parks. His main current constraint is green zones, plus 'duplication' of regulation (e.g. '[temporal] spawning closures that are no longer needed given green zones now cover the spawning grounds'). The main upcoming challenge relates to input regulations (however, nothing specific was outlined in the survey).

Externalities

Input controls; area restrictions.

Adaptation behaviour to change

While this fisher said he didn't feel he could do anything given the previous challenge of green zone application, the recent sale of his licence provided for diversification (adding a retail business), allowing him to value-add product.

Success

While he is not currently satisfied with business profitability, he agrees it does support the lifestyle he prefers. He feels the success of his business is mostly determined by factors beyond his control, and is not optimistic about the future of his fishing business or the Industry. However, he is optimistic about the retail business, which is currently his main focus. He intends to continue diversifying his business in this way, as this has put his business in a better financial position than in the twelve months and five years prior to the survey.

Implications and conclusion

Examining the Queensland commercial fishery via business typology provided some useful insights into the structure of the industry, which may assist both fishery and marine park managers in exploring likely impacts and flow-on consequences of change across this diverse industry. There were some consistencies in the types of challenges or constraints experienced by business type, which may help inform future communication and consultation when it comes to management of and adaptation to change.

Unfortunately, there were no consistencies within business types in terms of responses to change and the success of those responses, and there were no specific business or individual characteristics that contributed to the success of a fishing businesses, except perhaps the existence of a financial buffer. These findings highlight the complexity of the industry and the individual nature of responses to change.

With respect to this individualism, we found that commercial fishing businesses generally do not seek information or advice from others. When they do, it is mostly from other fishers, rather than external organisations. Lack of communication within the industry, and between fishers and management agencies is a particular issue of concern. Lack of communication and engagement likely contributes to fishers' feelings of uncertainty and lack of security, particularly in relation to regulations or area restrictions. Industry representative groups provide one method of improving two-way communication and involvement of fishers in management; however, we found less than half of the respondents were members of any industry group. Plus, the industry groups themselves have splintered in recent years, with multiple groups claiming to represent their members' interests and voice. This can only reduce the effectiveness of communication between a diverse industry and fishery and marine park managers.

We believe improved communication and learning is the key to improving adaptation and success across the industry.

Thank you

We would like to thank the fishers and investors that gave their time to answer our questions and tell us their story. We are grateful to be able to learn about your businesses.

Contact

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