Australian Government
Australian Fisheries Management Authority

NPF Industry Pty Ltd
Producing the finest quality prawns from a sustainable marine ecosystem

Northern Prawn Fishery

STRATEGIC RESEARCH PLAN

2014-2018

Version 1.0

Introduction

The Northern Prawn Fishery (NPF) is significant from both a spatial and economic perspective. Extending from Cape Londonderry in Western Australia to Cape York in Queensland, the fishery encompasses some 770,000 km^2 of Australia's rich and pristine northern waters. The NPF is also Australia's most valuable Commonwealth-managed fishery with the value of catch in recent years estimated at around $89 million. Total prawn catch in 2013 was 5,802t caught by 53 vessels (only 52 fished at any one time).

The NPF targets nine commercial species of prawns including White Banana (*Fenneropenaeus merguiensis*), Red-legged Banana (F. *indicus*), Brown Tiger (*Penaeus esculentus*), Grooved Tiger (P. *semisulcatus*), Blue Endeavour (*Metapenaeus endeavouri*), and Red Endeavour (M. *ensis*). Incidental catches of other commercial species of prawns, other crustaceans, squid and some fish are taken in both the banana prawn and the tiger prawn fisheries (by-product). White banana and tiger prawns dominate the catch.

NPF operators employ a variety of measures to reduce interactions with bycatch species (species not retained), and fishers and researchers are regularly trialling innovative new approaches to try and reduce bycatch levels further.

Research and Development (R&D) is pivotal to the management of the Northern Prawn Fishery, with a long history of research results being used as a primary input into management decisions. The sustainable management of the NPF was recognised through certification of the fishery by the Marine Stewardship Council in 2012, reaffirming the importance of detailed and robust R&D/monitoring to ensure that this certification is maintained.

This Strategic Research Plan summarises the priorities for investment in Research, Development and Extension (RD&E) to pursue strategic objectives for the Northern Prawn Fishery for the period 2014-2018. Long-term, This Plans seeks to inform a balanced investment portfolio across the environment, development, social and economic research, and extension relevant to end-users.

Review

As with all fisheries, the social, economic and environmental factors which impact on the NPF are constantly changing, necessitating a process for periodic review of research needs to address key issues.

Research priorities for the NPF are reviewed annually by the Research Advisory Group (NPRAG) and the Management Advisory Committee (NORMAC) and included in an Annual Research Statement. These priorities are then pursued by research providers, often in partnership with industry and/or fisheries managers with the help of the below research advisory bodies:

1. The AFMA Research Committee (ARC) which considers essential stock assessment type research for funding by AFMA in the following financial year.

2. The Commonwealth Fisheries Research Advisory Body (ComFRAB) which considers Commonwealth fisheries research priorities for potential Fisheries Research and Development Corporation (FRDC) funding two years hence) - the FRDC research cycle is an 18 months' cycle compared to the ARC which is a 12 months' cycle.

This strategic research plan will be renewed in early 2018.

Identifying Research Priorities

Management Advisory Groups (MACs), with input from Research Assessment Groups (RAGs) are required by AFMA to develop fishery-specific R&D plans in identifying research priorities including annual research plans and a five-year strategic research plan. The plans should include fishery priorities for both AFMA and FRDC funding in its various forms to make the most of funds available i.e. Tactical Research Fund, cross-jurisdictional and annual competitive round funds.

This 5-year research plan was developed as part of an overall strategic planning process undertaken in the NPF in 2014. The Plan describes research needs over the five-year time horizon from 2014 to 2018.

Goals	RD&E Themes	2014 – 2018 R&D Priorities
• Understand and influence community perceptions around fishing, particularly trawling • Ensuring ongoing sustainability of fishing operations • Deliver continual improvement in bycatch reduction • Increase competitiveness with alternative protein sources • Improve economics of fishing • Capitalise on eco-certification	• Deliver functions critical to inform stock assessment • Enhance industry image and capacity building/skilled retention opportunities • Build the NPF brand through improved market access. • Continue to improve bycatch reduction • Reduce food manufacturing costs and maximise asset values	**Ongoing monitoring and analysis** • Collect information to inform annual RAG assessment to set the Total Allowable Effort (TAE) for tiger, common and red-legged banana prawns in accordance with NPF harvest strategies • Provide key data used to set TAE through at-sea monitoring projects (ie recruitment and spawning surveys) • Undertake annual analysis of CMO and Scientific Observer data to confirm it meets criteria for use in monitoring populations of Threatened, Endangered and Protected (TEP) and at-risk species • Undertake a Sustainability Assessment of Fishing Effects (SAFE) assessment for the Joseph Bonaparte Gulf sub-fishery.

Goals	RD&E Themes	2014 – 2018 R&D Priorities
• Minimise impacts of development plans in northern Australia and altered river flows, ecosystem health and fisheries productivity on the NPF • Manage risks associated with imported pests, biosecurity • Preserve & enhance skills within the workforce to increase staff retention and reduce the risk of severe injury or death • Increase focus on Co-management • Ensure science-based use of Marine Protected Areas • Climate change adaptation and mitigation	• Policy and science to maintain sustainability	**Strategic Research Needs continued** • Explore technological innovations in Australia and overseas to reduce fuel consumption and improve economic efficiency • Undertake a survey of current and past crew members in the NPF to improve understanding of motivations of being an NPF fisher • Improve methods for product traceability and chain of custody • Develop and implement TAFE accredited training for CMOs from the Seafood Industry Training Package to improve scientific data collection skills, increase participation in the CMO program and industry empowerment • Develop and implement training initiatives, including an efficient and effective on-line induction program for crew to better skill the NPF workforce Advance co-management trials including through investigation of a 'standards' approach to auditing management functions undertaken by NPFI • Develop an understanding of ecological and economic trade-offs of the impact of existing and proposed water resource development in Northern Australia, including: • the extent of estuarine prawn habitat, habitat productivity, prawn migration and estuarine nutrient fluxes; and • comparing economic loss due to water diversion for upstream agricultural production. Research will focus on both reduction in and cessation of low-to-moderate flood-flow due to extraction or impoundment. • Continue research to identify devices and techniques to enhance bycatch reduction, and respond to changes in bycatch policy.

		Strategic Research Needs continued
		• Address gaps in the biology of target and byproduct species such as red-leg banana prawns, red endeavours, bugs, squid and scallops. Look at the potential contribution of these to income and how it may affect MEY calculations
		• Confirm a baseline and monitor medium-term change of temperature and other environmental drivers on GOC littoral habitats focussing on seagrass communities. mangrove forests and the ecological services that they provide to juvenile tiger and banana prawn recruitment and survival
		• Extend historical monitoring series to track food-web, seagrass health/extent and other indicators of ecological health and stability, and respond to coastal and catchment development in the Gulf of Carpentaria

Table 1: NPF at-sea monitoring activities

Assessment	Need	2014	2015	2016	2017	2018	Priority	Potential Funding Source
Recruitment Surveys (January/February)	Provide key data for input to the assessments that are used to set TAEs	✓	✓	✓	✓	✓	H	AFMA
Spawning surveys* (July)	Provide key data for input to the assessments that are used to set TAEs	✓		✓		✓	H	AFMA
CMO Program	Cost effectively provide key data on TEP and at-risk species, and total bycatch estimates	✓	✓	✓	✓	✓	H	NPFI
CMO Program Analysis	Annual analysis of Crew Member Observer (CMO) and Scientific Observer data to confirm it meets criteria for use in monitoring populations of TEP and at-risk species, with sustainability assessment every third year	✓	✓	✓	✓	✓	H	AFMA
Scientific Monitoring Program	Provide an independent data on TEP species, bycatch species composition and reproductive staging of target species	✓	✓	✓	✓	✓	H	AFMA

*Timing of spawning surveys may change subject to the outcome of MSE on the impacts of undertaking the survey biennially.

Table 2: Proposed sequencing of R&D to address priorities identified

R&D Need	2014	2015	2016	2017	2018	Priority	Potential funding source
1. NPRAG assessments: To set the Total Allowable Effort (TAE) for the NPF tiger prawn fishery (including endeavour prawns) in accordance with the NPF Harvest Strategy	✓		✓		✓	H	AFMA
2. NPRAG assessments: To set the Total Allowable Effort (TAE) for the red legged banana prawn fishery in accordance with the NPF Harvest Strategy	✓	✓	✓	✓	✓	H	AFMA
3. Annual analysis of Crew Member Observer (CMO) and Scientific Observer data to confirm it meets criteria for use in monitoring populations of TEP and at-risk species, with sustainability assessment every third year	✓	✓	✓	✓	✓	H	AFMA
4. Undertake a Sustainability Assessment of Fishing Effects (SAFE) assessment for the Joseph Bonaparte Gulf sub-fishery.	✓	✓				H	AFMA
5. Continue research to identify devices and techniques to enhance bycatch reduction, and respond to changes in bycatch policy.	✓	✓	✓	✓	✓	H	AFMA/FRDC/Other
6. Develop an understanding of ecological and economic tradeoffs of the impact of existing and proposed water resource development in Northern Australia both on the extent of estuarine prawn habitat, habitat productivity, prawn migration and estuarine nutrient fluxes; and comparing economic loss due to water diversion for upstream agricultural production. Research to focus on both reduction in and cessation of low-to-moderate flood-flow due to extraction or impoundment.	✓	✓	✓	✓	✓	H	FRDC/Other
7. Extend historical monitoring series to track food-web, seagrass health/extent and other indicators of ecological health and stability in response to coastal and catchment development in	✓	✓	✓	✓	✓	H	FRDC/ Other

R&D Need	2014	2015	2016	2017	2018	Priority	Potential funding source
the Gulf of Carpentaria.							
8. Reduce fuel consumption and improve economic efficiency through monitoring and/or exploration of technological innovations in Australia and overseas.	✓	✓	✓	✓	✓	L	NPFI/ Researchers
9. Develop an on-line induction course for NPF crew.	✓	✓				H	Seafood CRC Quality & Consistency project
10. Develop and implement TAFE accredited training for CMOs from the Seafood Industry Training Package to improve scientific data collection skills, increase participation in the CMO program and empower crew.		✓	✓			M	Industry Skills Fund
11. Develop and implement training initiatives to better skill the NPF workforce to improve skilled staff retention and provide more effective OH&S training to reduce the risk of severe injury or death.		✓	✓			H	RIRDC - Primary Industries Health and Safety Partnership
12. Advance co-management including through investigation of a 'standards' approach to auditing management functions undertaken by NPFI.	✓	✓	✓	✓	✓	H	AFMA/ FRDC
13. Undertake a survey of current and past crew members in the NPF to improve understanding of motivations for involvement in fishing in the NPF, and factors that may positively influence skilled		✓	✓			M/L	FRDC – Open Call

R&D Need	2014	2015	2016	2017	2018	Priority	Potential funding source
crew retention that are able to be emphasized. Investigate the influence of other sectors (e.g. mining) on crew recruitment and retention. Should be Australia-wide							
14. Establish improved methods for traceability and chain of custody.		✓	✓			L	Researchers
15. Confirm a baseline and monitor medium term change of temperature and other environmental drivers on GOC littoral habitats focussing on seagrass communities and mangrove forests and the ecological services that they provide to juvenile tiger and banana prawn recruitment and survival.				✓	✓	L	FRDC/Other
16. Address gaps in the biology of target and byproduct species such as red-leg banana prawns, red endeavours, bugs, squid and scallops. Look at the potential contribution of these to income and how it may affect MEY calculations.				✓	✓	L	FRDC

Proposed timing for delivery

Priority: H - High

M - Medium

M/L - Medium/Low

L - Low