



Australian Government
Australian Fisheries Management Authority



Northern Prawn Fishery

STRATEGIC RESEARCH PLAN

2019-2023

Introduction

The Northern Prawn Fishery (NPF) extends from Cape York in Queensland to Cape Londonderry in Western Australia, and encompasses some 770,000 km² of Australia's productive northern waters. The NPF is also Australia's most valuable Commonwealth-managed fishery, with annual catches in recent years ranging between 4000-7000 t worth between \$100 - 125 million per annum.

There are 52 NPF operators that target commercial species of prawns including White Banana (*Penaeus merguensis*), Redleg Banana (*P. indicus*), Brown Tiger (*P. esculentus*), Grooved Tiger (*P. semisulcatus*), Blue Endeavour (*Metapenaeus endeavouri*), Red Endeavour (*M. ensis*) King Prawns (*Melicertus* sp.) and Leader Prawns or Black Tigers (*P. monodon*). Scampi, squid, scallops, bugs and some fish are taken in both the banana prawn and the tiger prawn fisheries as byproduct. White banana prawns and tiger prawns dominate the catch.

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

Research, Development and Extension (RD&E) is pivotal to the management of the NPF, with a long history of research underpinning its management. The sustainable management of the NPF was recognised through recertification of the fishery by the Marine Stewardship Council in 2018, reaffirming the importance of detailed and robust RD&E and monitoring programs to ensure that this certification is maintained.

This Strategic Research Plan summarises the priorities for RD&E investment for the Northern Prawn Fishery for the period 2019-2023. Long-term, this Plan 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 that impact 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 Resource Assessment 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 Research Advisory Committee (ComRAC) which considers Commonwealth fisheries research priorities for potential Fisheries Research and Development Corporation (FRDC) funding.

This Strategic Research Plan will be reviewed on an annual basis to ensure it remains relevant to the sound management of the fishery.

Identifying Research Priorities

Management Advisory Committees (MACs), with input from Resource Assessment Groups (RAGs) are required by AFMA to develop fishery-specific RD&E 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 competitive round funds.

This 5-Year Research Plan was developed as part of an overall strategic planning process undertaken in the NPF in 2019. The Plan describes research needs over the five-year time horizon from 2019 to 2023.

Theme	Idea	2019 – 2023 R&D Priorities
Fisheries	Presentation of data for skippers (seasonal forecasting)	Provide skippers with key fishery data in a simple, readable format before the fishery opens including a time series of recruitment surveys and actual catch records.
Fisheries	Research into the implications of tiger prawn fishing in the banana prawn season	Undertake research to better understand the sustainability and profitability of the tiger prawn fishery including spatial research, understanding the economics of specific areas and the influence of fishing for tiger prawns during the banana prawn season.
Fisheries	Accounting for spatial structure on assessment of tiger prawns	Research the spatial structure of tiger prawns and update the stock assessment model to determine if the inclusion of more defined spatial data improves the assessment.
Environment	Gulf of Carpentaria river flow impacts	Continue to improve understanding of the impacts of altered flow regimes on prawns in the Gulf of Carpentaria.
Environment	Terrestrial development risk assessment and professional representation	Support a professional NPF representative to work in conjunction with agencies concerned with the terrestrial environment to understand the impact of land based developments and environmental issues on the fishery.
Environment	Impact of global warming on fishery	Continue research to identify the potential impact of climate change on the fishery and options to adjust to changes.
Bycatch/TEPs	Understanding risks to sawfish	Collaborate with relevant stakeholders to undertake research on sawfish including population dynamics, improved data through species identification in logbooks and investigations into ways to reduce interactions and improve escapement.
Bycatch/TEPs	Bycatch and byproduct utilisation and value-adding	Explore ways to use bycatch more productively and add value to the total catch.
Bycatch	Testing of Bycatch Reduction Devices	Continue to explore ways to test the effectiveness of BRDs at reducing unwanted catch. E.g. modelling, flume tank testing.
Technology	Big data - using all data available effectively	Explore techniques for synthesising and analysing large data sets that may reveal patterns, trends or associations and provide useful fishery information.

Technology	Strengthen supply chain resilience	Research ways to strengthen supply chain resilience including aspects related to quality, traceability, temperature monitoring and electronic communication.
MSC	Maintain standards	Maintain up to date information and high quality data to ensure the NPF continues to meet the MSC criteria.
Profitability	Fuel efficiency	Continue to explore methods of reducing fuel use in the fishery.
Careers	Attracting and retaining crew	Explore ways to attract and retain crew by researching how other industries approach the issue.
Other	Electronic monitoring to support reliable and efficient data collection	Explore the benefits of on-board cameras and the value they could add to the fishery, e.g. improved confidence in bycatch and TEP data, cost effective data collection, targeted training.

Table 1: NPF at-sea monitoring activities

Assessment	Need	2019	2020	2021	2022	2023	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	AFMA
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

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

R&D Need	2019	2020	2021	2022	2023	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 Redleg 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. Provide skippers with key fishery data in a simple, readable format before the fishery opens including a time series of recruitment surveys and actual catch records.	✓	✓	✓	✓	✓	H	CSIRO/NPFI
5. Continue to improve understanding of the impacts of altered flow regimes on prawns in the Gulf of Carpentaria.	✓	✓	✓			H	FRDC
6. Support a professional NPF representative to work in conjunction with agencies concerned with the terrestrial environment to understand the impact of land based developments and environmental issues on the fishery.	✓	✓	✓	✓	✓	H	NPFI – currently funded for 2 years through the MICE project
7. Continue research to identify the potential impact of climate change on the fishery and options to adjust to changes.	✓	✓	✓	✓	✓	H	FRDC
8. Collaborate with relevant stakeholders to undertake research on sawfish including population dynamics, improved data through species identification in logbooks and investigations into ways to reduce interactions and improve escapement.	✓	✓	✓	✓	✓	H	FRDC/ AFMA/ NPFI/ Parks Aust./CSIRO
9. Maintain up to date information and high quality data to ensure the NPF continues to meet the MSC criteria.	✓	✓	✓	✓	✓	H	AFMA/NPFI/CSIRO
10. Impact of seismic testing		✓	✓	✓	✓	H	Industry
11. Update consideration of NPF byproduct species in line with the updated Commonwealth Harvest Strategy Policy.		✓	✓			H	AFMA/CSIRO

12. Undertake research to better understand the sustainability and profitability of the tiger prawn fishery including spatial research, understanding the economics of specific areas and the influence of fishing for tiger prawns during the banana prawn season.		✓				M	CSIRO – preliminary research is being undertaken as part of the MICE project
13. Research the spatial structure of tiger prawns and update the stock assessment model to determine if the inclusion of more defined spatial data improves the assessment.		✓		✓	✓	M	CSIRO – preliminary research is being undertaken as part of the MICE project and the species split project
14. Research ways to strengthen supply chain resilience including aspects related to quality, traceability, temperature monitoring and electronic communication.						M	Various work external to the fishery already being undertaken
15. Continue to explore ways to test the effectiveness of BRDs at reducing unwanted catch. E.g. modelling, flume tank testing.	✓	✓	✓	✓	✓	L	Industry – ongoing work in this area
16. Continue to explore methods of reducing fuel use in the fishery.	✓	✓	✓	✓	✓	L	Industry
17. Explore ways to attract and retain crew by researching how other industries approach the issue.	✓	✓	✓	✓	✓	L	Industry
18. Explore the benefits of on-board cameras and the value they could add to the fishery, e.g. improved confidence in bycatch and TEP data, cost effective efficient data collection, targeted training.						L	Low priority – no defined years for funding
19. Explore techniques for synthesising and analysing large data sets that may reveal patterns, trends or associations and provide useful fishery information.						L	Low priority – no defined years for funding
20. Explore ways to use bycatch more productively and add value to the total catch.						L	Low priority - no defined years for funding



= Proposed timing for delivery



= Project work



= Areas of research

Priority: H – High, M – Medium, L – Low