Northern Prawn Fishery
Bycatch Strategy 2015-2018

Vision
To reduce the capture of small fish and other bycatch in the Northern Prawn Fishery (NPF) by 30% within three years through a voluntary industry initiative

Objectives
1. Reduce the capture of small fish and other bycatch by 30% to continually improve and build on past successes in bycatch reduction
2. Achieve bycatch reductions by July 2018
3. Provide ongoing monitoring and reporting
Objectives

1. Reduce the capture of small fish and other bycatch by 30% to continually improve and build on past successes in bycatch reduction

Need:
Small fish makes up the largest component of bycatch in the NPF.

Monitoring:
Reductions in the capture of small fish and other bycatch will initially be assessed through industry trials to identify devices and/or gear modifications which show potential to achieve the targeted goal. These devices/modifications will then undergo scientific trials to assess and validate their effectiveness.

Performance of new or modified Bycatch Reduction Devices (BRDs) and/or gear will be measured and expressed in percentage terms against current BRD performance.

Implementation:
Devices and/or gear modifications found to be effective in substantially reducing the capture of small fish and other bycatch will be implemented into the fishery through Government regulations.

2. Achieve bycatch reductions by July 2018

Need:
The NPF has been a world leader in implementing initiatives to minimise the impacts of fishing on bycatch and seeks to continually improve on bycatch reduction and maintain MSC certification.

Monitoring:
Industry trials will be conducted during the 2015 and 2016 fishing seasons. Scientific trials will be conducted during the 2016 and 2017 fishing seasons.

Implementation:
An ‘extension and adoption’ strategy will be developed under this strategy for the implementation of effective devices and/or gear modifications in 2017/18.

3. Provide ongoing monitoring and reporting

The NPF has been very proactive and successful in reducing bycatch in the fishery with more than a 50% reduction of bycatch since 1998 through the introduction of Turtle Excluder Devices (TEDs), BRDs, reduced effort and implementation of spatial and temporal closures. The history of bycatch reduction in the fishery shows the NPF is committed to further reducing bycatch as part of its continuous improvement approach to sustainable fisheries management.
**Focus**

NPF Industry Pty Ltd (NPFI) has taken a very pro-active approach to the development of this Strategy, including in relation to the targets and timeframes proposed for further bycatch reduction in the NPF.

The delivery of the Strategy will be led by industry (with support from AFMA and researchers) and will require strong industry focus and involvement in identifying innovative, cost effective and efficient ways of reducing bycatch, whilst minimising prawn loss, to meet the objectives of the Strategy.

NPFI recognises that whilst the aim is to reduce bycatch by 30% across the fishery as a whole, the percentage reduction for any given innovation and/or BRD is likely to vary between fishing areas and sub-fisheries. As such, the Strategy will focus on reducing bycatch in three sub-fisheries of the NPF: 1) Tiger Prawn Fishery; 2) Banana Prawn Fishery; and 3) the Joseph Bonaparte Gulf Fishery.

Bycatch reduction options to be examined as part of this Strategy will include (but not be limited to):

- **New and/or improved BRD designs**
- **Gear modifications**
- **Spatial and temporal approaches**
- **Triggers/move-on provisions**

It is probable that a combination of approaches to reducing bycatch will need to be implemented across the fishery to achieve the aims of this Strategy. Bycatch utilisation has been identified as a potential option but not in the short term and as such is not currently a high priority under this Strategy.

**Financial Incentives**

The NPF Industry Pty Ltd is offering $20,000 in cash incentives to encourage NPF skippers to develop and trial new and innovative approaches to reducing bycatch. Strict rules have been developed against which the performance of new innovations will be measured. Only those innovations which are tested and their performance validated by scientific trials in accordance with NPF TED and BRD testing protocol will be eligible for consideration in the incentive program.
Industry Engagement

NPFI will engage closely with NPF skippers and owners, AFMA and research agencies to encourage participation in the program and to share information regarding new innovations, pending trials and outcomes of trials. In addition to sharing information through fishery newsletters, trial reports and the AFMA and NPFI websites, a limited-access Face Book group will be set up and managed by NPFI for skippers specifically involved in the program.

A workshop will be held in 2017/18 to disseminate the final results of scientific trials, agree on preferred devices/approaches and to discuss options for extension and adoption of successful innovations.

Funding

Further reduction in bycatch in the NPF is a key research priority for the NPF. Direct and In-kind financial support to achieve the aims of this Strategy will be sourced from NPFI, AFMA, research providers and research funding agencies.

Testing

An ‘Industry Trials Guide’ has been developed, in consultation with CSIRO, as part of this Strategy to provide guidance to NPF skippers on how to conduct preliminary trials of bycatch reduction innovations, including minimum data/information requirements, how data should be recorded, and timeframes for reporting the outcomes of industry trials to NPFI.

The NPF fleet currently use Square Mesh Panel or Fisheye BRDs, generally located at 120 meshes. Ad hoc data collection indicates that these devices reduce bycatch by only 8% and 5%, respectively, at this location. The performance of new or modified BRDs and/or gear will be formally measured against existing BRD performance, based on scientific trials using the approved NPF TED and BRD testing
protocols. The NPF testing protocols are based on power analyses that demonstrate the number of shots required to create a high probability of a significant difference in performance being detected.

**Process and Timing to Achieve Objectives**

**Phase 1** of the Strategy will focus on industry innovation and informal industry trials of devices/mechanisms for bycatch reduction.

**Phase 2** of the Strategy will focus on scientific trials of devices/innovations that have shown promise during the informal industry trial period.

**Phase 3** of the Strategy will focus on extension and adoption of successful devices/approaches into the fishery. An ‘Extension and Adoption’ strategy will be developed as part of this Strategy.
The NPF is located off Australia’s northern coast, extending from Cape York Peninsula, Queensland, in the east to Cape Londonderry in Western Australia. The fishery is managed by the Commonwealth through AFMA under Offshore Constitutional Settlement (OCS) arrangements with Queensland, the Northern Territory and Western Australian governments and the Northern Prawn Fishery Management Plan 1995.

The NPF is managed through a series of input controls, including limited entry to the fishery, catch triggers, gear restrictions, bycatch restrictions and a system of seasonal, spatial and temporal closures.

In January 2009, AFMA and NPF Industry Pty Ltd (NPFI) entered a co-management trial aimed at providing industry bodies with a greater role in advising AFMA on operational and commercial matters in the Fishery. Since the trial was completed in 2012 AFMA and NPFI have implemented co-management as a permanent component of the management arrangements in the NPF.
Product
Banana and Tiger Prawns are the main species targeted in the fishery with various other prawns having commercial importance including Endeavour Prawns. The commercial catch is also made up of by-product species including Scampi, Bugs, Scallops and Squid.

Sustainability and Economics
The fishery adopted a Maximum Economic Yield (MEY) target for the tiger prawn fishery in 2005 and implemented an MEY catch trigger for white banana prawns for the first time in 2014. The MEY targets have been adopted to optimise net economic returns to the Australian community from the Fishery and to contribute to the ecologically sustainable development of the Fishery.

The NPF was one of Australia’s first fisheries to explicitly focus on bycatch research and minimization. The Fishery has achieved significant milestones in the management of bycatch, including more than a 50% reduction of bycatch since its first Bycatch Action Plan was implemented in 1998 and through the introduction of Turtle Excluder Devices (TEDs), BRDs, reduced effort and implementation of spatial and temporal closures.

The certification of the Fishery by the Marine Stewardship Council (MSC) as a sustainably managed fishery is testament to the success of the measures which have been adopted to date. NPF Industry is committed to a continuous improvement process to further reduce eco-system impacts, including in relation to bycatch.

Research outcomes have shown TEDs to be successful in the reduction of incidental capture of turtles, with rates decreasing from approximately 5700 interactions (unknown deaths) in the late 1980s (Poiner et al. 1990) to zero fatalities in 2014 (Laird, 2015). Additional benefits include a reduction in the capture of large sharks and rays by 86% and 94% respectively, including a reduction in the capture of the most commonly caught sawfish, the narrow sawfish, by 93.3% (Brewer et al. 2006).
Few BRD designs have been successful in delivering significant reductions in seasnake bycatch. However, trials of the Popeye Fishbox design in 2006 revealed that this design can deliver an 87% reduction in catches of seasnakes when installed at 70 meshes from the codend drawstrings and 48% reduction in small fish bycatch (Raudzens, 2007). Adoption of this device has been hampered to date by concerns regarding crew safety. Trialling a modified Popeye Fishbox has been identified as an action under the strategy’s implementation workplan.

Trials using the square mesh panel in combination with a Witch’s Hat BRD Enhancer in 2009 demonstrated that (when used in conjunction with a TED) a 34% reduction in small finfish bycatch is possible when installed at 100 meshes from the codend drawstrings (Gerner and Maynard, 2010).

The need for further refinements was identified by industry to enhance durability and ease of use. Subsequent trials of a more user-friendly prototype of the Witch’s Hat design demonstrated more modest performance in terms of bycatch reduction (12% when used in conjunction with a modified square mesh panel design with larger openings), though placement of the BRD and enhancer at 120 meshes from the codend drawstrings was identified as a possible factor in reduced performance. Further refinement and trial in 2014 with a modified square mesh panel (with larger holes) only yielded a 5% reduction in small bycatch (Laird et al. 2015).
## Attachment 2 Implementation

### Table 1

<table>
<thead>
<tr>
<th>Management Actions</th>
<th>Risks being addressed</th>
<th>Performance Indicators</th>
<th>Milestones</th>
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</thead>
<tbody>
<tr>
<td>1. Industry engagement to develop innovative options and/or gear modifications for testing.</td>
<td>Seasnake bycatch Small fish bycatch Crew safety</td>
<td>Have sufficient data collected to determine effectiveness of BRD or gear modification. Loss of prawns less than 2.5%</td>
<td>Industry engagement and options developed. Experimental designs established. At sea trials undertaken. Reports finalised. Industry-focused education and extension program developed and delivered.</td>
</tr>
<tr>
<td>2. Develop and trial robust, light-weight and crew-safe BRDs and/or gear modifications</td>
<td>Seasnake bycatch Small fish bycatch Crew safety</td>
<td>Have sufficient data collected to determine effectiveness of BRD. Loss of prawns less than 2.5%</td>
<td>Experimental design established. At sea trials undertaken. Report finalised. Industry-focused education and extension program developed and delivered.</td>
</tr>
<tr>
<td>3. Investigate the feasibility of spatial and temporal approach to reducing bycatch</td>
<td>Small fish bycatch</td>
<td>Have sufficient data from previous BRD trials and scientific observer data.</td>
<td>Analysis of catch data from BRD trials and scientific observer trips. Liaise with NPRAG and NORMAC on potential options. Finalise report, implement recommended changes</td>
</tr>
<tr>
<td>4. Review data collection requirements and observer protocols in the NPF.</td>
<td>Quantitative information gaps Inconsistency with data collection Discards data</td>
<td>Analysis of data collection requirements and protocols completed.</td>
<td>Establish internal review process. Identify information gaps. Liaise with NPRAG and NORMAC on potential research/monitoring solutions.</td>
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<tr>
<td>5. Review and streamline the NPF gear directions.</td>
<td>Use of the most effective bycatch reduction devices.</td>
<td>Permitted gear types complied with.</td>
<td>Finalise report, implement changes.</td>
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<td>Compliance with minimum gear standards (align with US standards).</td>
<td>Minimum standards are met.</td>
<td>Develop list of most effective devices permitted to be used.</td>
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<td>Industry compliance with gear regulations.</td>
<td>Improved compliance rates with gear regulations.</td>
<td>Review minimum gear standards (i.e. align TEDs with US standards).</td>
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<td>Simplify regulations.</td>
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<td>Update the NPF gear direction.</td>
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<td>6. Continue to develop and implement training for Crew Member Observers (CMO) in the collecting and recording of valuable scientific data.</td>
<td>TEP species interactions e.g. Sawfish, Turtles and &quot;at risk&quot; species.</td>
<td>Training delivered and &gt;80% of participants pass.</td>
<td>CMO training program delivered annually</td>
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<td>General bycatch species</td>
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<tr>
<td>7. Compile and report CMO, TEP and bycatch data to NORMAC.</td>
<td>TEP species interactions e.g. Sawfish, Turtles and &quot;at risk&quot; species.</td>
<td>CMO report provided to AFMA and NORMAC at the end of each year.</td>
<td>Recruitment and education of CMOs.</td>
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<td>General bycatch species</td>
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<td>Report provided to AFMA and NORMAC.</td>
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<td>8. CSIRO to complete sustainability assessment of bycatch species.</td>
<td>TEP species interactions e.g. Sawfish, Turtles and &quot;at risk&quot; species.</td>
<td>2014-2016 CMO data collated and analysed Report on bycatch trends completed</td>
<td>Undertake a catch trends analysis of CMO data collected to date and continue attendance at crew-member observer training workshops.</td>
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<td>General bycatch species</td>
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<td>Submission of a milestone report on the CMO data collected to date</td>
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<td>Deliver a triennial sustainability assessment report for the TEP and NPF 'at risk' bycatch</td>
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References


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NPF Industry Pty Ltd, Australian Fisheries Management Authority and David Sterling, Sterling Trawl Gear Services.