Marine Biodiversity Hub

National Environmental Science Programme

Species Overview
Largetooth Sawfish *Pristis pristis*

Peter Kyne, Richard Pillans

Review of Largetooth Sawfish
Euryhaline Shark & Ray Working Group
Brisbane, 21 February 2017

Project A1 -
Northern Australian hotspots for the recovery of threatened euryhaline species

Milestone 1.8, Research Plan v3, June 2017

Australian Government
Australian Institute of Marine Science

CSIRO

Charles Darwin University

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Important Disclaimer

Contents

1. INTRODUCTION

Under NESP Marine Biodiversity Hub Project A1 (Northern Australian hotspots for the recovery of threatened euryhaline species), the Euryhaline Shark & Ray Working Group met in Brisbane on 21 February 2017 (Attachment 1). Actions arising from that Working Group included the preparation of a briefing document on the current status and future research and management needs of the *EPBC*-listed Largetooth Sawfish *Pristis pristis*. This document provides a review of knowledge gained from NERP and NESP Marine Biodiversity Hub projects and an overview of discussions on this species from that Working Group.

2. SPECIES OVERVIEW

Largetooth Sawfish
Pristis pristis

***EPBC*: Vulnerable**
IUCN: Critically Endangered

The following overviews the key points from research undertaken under the NERP and NESP Marine Biodiversity Hubs:

- Low catch rates throughout the NT, although overall catch-per-unit-effort (CPUE) in the Adelaide River was comparable to the Fitzroy River (WA) (research undertaken by Murdoch University)
- Zero catches in 2016 short surveys in the Daly River and Roper River (NT), in areas of known sawfish occurrence
- Catches from 2012–2016 (n= 70) dominated by 0+ age-class
- Neonate survival of acoustically tagged animals in Adelaide River very low, including survivorship of aquarium-held animals
- Off-stream floodplain billabongs were found to be nursery areas on the Daly River; juveniles also found in main river but 'harder' to survey with animals spread over a large area. Floodplain billabongs likely to be important in 'big wet' years but animals subject to increased mortality if this is followed by 'dry years'
- Mitochondrial DNA revealed strong population structuring across northern Australia: except for at least three of the rivers flowing into the Gulf of Carpentaria, all river drainages appeared to host a genetically distinct population (further samples required from Gulf of Carpentaria rivers to improve confidence of the apparent lack of population structure)
- Traditional knowledge of sawfish habitat provided evidence for the previously-unrecognised importance of off-stream floodplain billabongs for sawfishes in the Daly River region
- Indigenous desire to protect species is considerable where project worked with communities (Daly River, Roper River, Tiwi Islands)
- Potential long-distance wet season movement from Daly River floodplain to Adelaide River and West Alligator River (based on juvenile tagged on Daly floodplain, and tag detections on acoustic receivers; however, cannot be sure that not tracking an Estuarine Crocodile)

3. EMERGING ISSUES

- Low catch rates throughout the NT suggesting poor recruitment or low population size
- Adelaide River highlighted as a potentially critical nursery area
- The very low CPUE of animals aged one year and above is of concern, suggesting that few juveniles survive more than a year
- Ongoing fisheries bycatch in an issue
    - While NT rivers are essentially protected from gill netting (removing fishing as a threat for juveniles), capture outside of rivers remains a concern; bycatch data is poor to non-existent in the NT Barramundi Fishery due to a lack of observer coverage, and poor logbook reporting
    - Gillnetting is still permitted in the majority of rivers in the remaining Queensland range of the species (Gulf of Carpentaria and east coast), and bycatch in rivers as well as outside rivers remains a concern; bycatch data is poor due to the cessation of any observer coverage, and poor logbook reporting (there has been no targeted research into the species' status, catch rates and distribution in Queensland since the work of Stirling Peverell)
    - Trawl bycatch remains a key issue; species identification and reporting in the Northern Prawn Fishery (NPF) requires improvement. There is a need to work with Industry to enhance identification and reporting
- Cumulative impact of ongoing fisheries bycatch mortality, together with predation in predator-rich nursery areas (estuarine crocodiles, sharks) is not well understood, but may be inhibiting recovery and urgently requires examination
- Limited capacity for the re-colonisation of localised populations that are depleted due to juvenile and adult mortality

4. FUTURE DIRECTIONS

- *Pristis pristis* remains a high priority species for research and management in light of Northern Australian development agenda with an explicit need for population estimates and understanding of critical habitats
- Application of close-kin mark-recapture remains a priority and tissue samples should continue to be collected to ensure this approach can be applied in the future
- There is a need to place conditions on referral approvals, in particular the requirement for consultants to collect tissue samples when undertaking surveys
- There is a need to define management units based on molecular population structure; from there define 'critical populations'
- There is a need to understand persistence of populations in potentially important rivers outside of the current research focus on recognised key nurseries (i.e. Fitzroy River, Adelaide River)
- There is a potential need for a *Pristis* species and *Glyphis* species portal (all *EPBC*-listed species within these genera), or to better link Hub products and outputs to SPRAT
- Identified the need for the continual update of SPRAT and BIAs with new data
- Identified need for survey of Princess Charlotte Bay (Queensland east coast)
- Population Viability Analysis may be a useful future approach to examine the probability of extinction for *P. pristis* (and possibly contribute to reassessment of using under Criterion E: Quantitative Analysis)
- Recognised that bycatch in commercial fisheries is a priority issue for further consideration, including need to make fishers aware of the Recovery Plan; NESP MBH Project A12 to consider bycatch issues, including research needs, mitigation measures and ways to achieve better identification and reporting
- Recognised that a population estimate along with bycatch/fishing mortality estimates would allow the exploration of monitoring scenarios
- Consider the development of referral guidelines for *Pristis* and *Glyphis* species

5. CONCLUSIONS

- The overall low catch rates in the NT (during extensive field work) during 2012-2016 raises a renewed concern for *Pristis pristis* in Northern Australia;
- The near absence of age 1+ year animals and acoustic tagging suggests high mortality of age 0+ animals; the cumulative impacts of human-induced mortality and natural mortality (i.e. predation) are not understood
- The lack of targeted research in Queensland prohibits any assessment of improved status there, particularly with ongoing bycatch issues in gillnet and trawl fisheries
- On current knowledge, the sum of all harvests is unknown, and cannot be assessed in terms of whether the harvest is sustainable or otherwise
- Overall, across the distribution, there are current no signs of recovery as evidenced from NERP and NESP research; there is no new data to suggest that the status of the species has improved
- It may be opportune to convene the multi-species Recovery Team
- This document will form the basis for further discussions at a NESP Marine Biodiversity Hub euryhaline species data analysis and synthesis workshop in October 2017

APPENDIX A

NESP Marine Biodiversity Hub (MBH)
Research on threatened euryhaline elasmobranchs to inform management and recovery
Euryhaline Shark & Ray Working Group
Tuesday 21 February 2017

Venue

Rinyirru Room (2.A.601)
Ecosciences Precinct
41 Boggo Rd, Dutton Park QLD 4102
https://www.csiro.au/en/Locations/Qld/Dutton-Park

Objectives

1. Review previous research and outputs due end of NESP MBH Project A1 (end 2017)
2. Consider progress on Recovery Plan objectives, and identify future priorities
3. Examine knowledge gaps, future directions and priorities
4. Consider 'stopping-rules' for investment in research
5. Discuss species status reassessments
6. Discuss approach to providing expert advice to referrals
7. Plan effective communication of outputs to DoEE and other stakeholders

Participants

Nic Bax (NESP MBH)
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NESP Marine Biodiversity Hub (MBH)
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Agenda

Time	Session
08:30	Meet at reception & sign-in
09:00-10:30	Session 1 - Introduction & NESP Marine Biodiversity Hub overview - Key findings from NERP & NESP projects - CKMR update - Ecology update - Indigenous partnerships update
10:30-10:50	Morning tea
10:50-12:30	Session 2 - Progress against Recovery Plan objectives
12:30-13:30	Lunch (Café Eco)
13:30-16:00	Session 3 - Knowledge gaps & future directions - Stopping rules - Species status reassessments - Expert advice for referrals - Communication of science to stakeholders
16:00	Meeting close

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