

# SHARKS & RAYS

## of Northern Australian Rivers: a cultural perspective



### The art - Berelh

Berelh is the Kunay word for the flat one, 'stingray'. This is a female one. In the day she stays down in the sand ground, where it is cool. At night she swims around looking for tucker, looking for prawn, crab and other tucker. All night she swims, then goes back and rests herself, she covers herself back up with sand. This stingray is swimming around, she sees the sawfish, the shark and the prawn.

The sawfish we call Djenkundamen, he is dangerous when we are hunting so we be careful. The shark, he's dangerous too, same like crocodile. The shark we call Wamba.

The little prawn, he's a day time, night time man, walking around under the water enjoying himself.

These all live in the river where they hunt tucker. They are all tucker for us too on our country.

### The artist - Graham Rostron

<b>Clan</b>	Baraba
<b>Skin</b>	Balang
<b>Language</b>	Kunay
<b>Mother's Country</b>	Kutji
<b>Father's Country</b>	Korlorbirrahda
<b>Dreaming</b>	Narin (Quiet Snake)

Graham Rostron is a cultural teacher, artist, dancer, musician and song man.

*"My Father died when I was just crawling. I did not know him. Then we were living at Madjinbardi. Then we went to Maningrida to be with family, following my mother.*

*My second dad brought me up at his outstation at Korlorbirrahda. His name is Tom Noytuna – you may have seen a photograph of him on an orange phone with lots of ceremonial paint on his face. Korlorbirrahda is a long way out into the Great Arnhem Plateau. He was keeping me*

*when I was little and he showed me hunting and painting and explaining to me everything.*

*He gave me confidence."*



Berelh © Graham Rostron



# SHARKS & RAYS of Northern Australian Rivers

## Spear-tooth Shark *Glyphis glyphis*



EN IUCN  
CR EPBC

- A euryhaline species of large turbid tidal rivers and estuaries
- Adelaide River (NT), South Alligator River (NT) and Wenlock River (QLD) are core population centres; each population is genetically distinct
- Juveniles use rivers as nursery areas; adults of this species have never been seen and their habitat is unknown
- Juveniles undertake a downstream migration in the wet season and animals are confined to narrow (20–40 km) stretches of river during the dry season

## Northern River Shark *Glyphis garricki*



CR IUCN  
EN EPBC

- A euryhaline species of large turbid tidal rivers and estuaries
- Catch rates high in the Alligator Rivers region; previously known from only 8 records in the NT, recent surveys have tagged >350 individuals
- Juveniles use rivers as nursery areas; adults also occur in rivers, as well as in marine waters
- This species has highly seasonal distribution patterns within the South Alligator River. In the dry season, animals are located mainly 40–80 km upstream; in the wet they remain around the river mouth, with limited movement to adjacent rivers

## Bull Shark *Carcharhinus leucas*



NT IUCN  
nl EPBC

- Widespread globally in tropical and subtropical waters; euryhaline with adults in marine waters and juveniles in rivers, lakes and floodplain billabongs
- Juveniles recorded regularly in all rivers surveyed for sawfish and river sharks in the NT
- Often aggregate below barriers (rock bars, road crossings) in rivers during the dry season where they can be a significant predator
- Can survive dry seasons trapped in small isolated billabongs on the floodplain

## Dwarf Sawfish *Pristis clavata*



EN IUCN  
VU EPBC

- Once widespread in the Indo-West Pacific Ocean region, this species is now found only in northern Australia
- The smallest of the sawfishes, reaching a maximum length of ~3.3 m
- Primarily occurs in very shallow coastal and estuarine waters; juveniles occur upstream in tidal reaches of rivers (>50 km upstream of river mouth in the South Alligator River; >100 km upstream in the Victoria River) but not into freshwater upstream reaches
- A poorly-known species, but records from across the NT suggests it remains widespread

## Largetooth Sawfish *Pristis pristis*



CR IUCN  
VU EPBC

- Once widespread globally in tropical waters; now restricted to a few critical areas including northern Australia
- Euryhaline; adults give birth in estuaries/river mouths; juveniles migrate upstream to freshwater reaches of rivers and floodplains
- One of the largest fish on the planet: adults can reach at least 6.5 m length; sexual maturity not reached until 3 m length
- Many northern Australia rivers represent genetically distinct populations, with females returning to their natal river to give birth

## Freshwater Whipray *Himantura dalyensis*



LC IUCN  
nl EPBC

- Euryhaline in estuaries and rivers; presently known only from northern Australia (although may also occur in New Guinea)
- Probably common in northern rivers but status is poorly-known; for example recent surveys have recorded first records for the Victoria and Adelaide Rivers (NT)
- Reaches at least 1.2 m in width, although anecdotal reports suggest it may get significantly larger

## Our work

Populations of sawfishes and river sharks in the Northern Territory (NT) are thought to have declined dramatically in recent decades, raising concerns about their viability. Research under the National Environmental Research Program (NERP) has provided information on the distribution, ecology and population dynamics of sharks and rays of northern Australian rivers to assist in their conservation, management and recovery. This project has generated a better ecological understanding of the habitat use and habitat requirements, short and long-term movements, connectivity and spatial dynamics of these species and collected tissue samples for population structure and abundance estimation.

Fisheries-independent surveys in selected river systems were conducted using gillnets and rod and line. Captured sharks were tagged and monitored with acoustic telemetry. This uses networks of moored acoustic receivers to detect tagged fish when they pass within range of a receiver. Extensive arrays of acoustic receivers provide long-term monitoring of tagged animals. Mitochondrial genome sequencing of Spear-tooth Sharks and Largetooth Sawfish was used to help profile their population structure. The mitogenome, which is inherited through the mother, offers clues to how widely females disperse to breed (for example, between river systems).

## Threats to euryhaline species

- River sharks (*Glyphis* species) and sawfishes (*Pristis* species) are protected species; if they are caught they must be released safely back into the water
- These species are still caught incidentally in commercial net (gillnet and trawl) fisheries. These 'bycatch' species may die as a result
- Artificial barriers on rivers (such as barrages, road crossings or dams) can impede upstream migration of euryhaline species. This is a particular concern for Largetooth Sawfish which undertake extensive migrations

## Definitions

- **Euryhaline:** an aquatic animal able to live in a wide range of salinities (from freshwater to seawater; very few sharks and rays are capable of this)
- **Turbid:** water characterised by high levels of suspended matter (such as the muddy waters typical of northern Australia tidal rivers)
- **Billabong:** an isolated waterhole on the floodplain or ancient channel of a river
- **EPBC:** Australian Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (defines the status of a species in Australia)
- **IUCN:** IUCN Red List of Threatened Species (defines the status of a species globally)

- CR Critically Endangered
- EN Endangered
- VU Vulnerable
- NT Near Threatened
- LC Least Concern
- nl not listed



National Environmental Science Programme

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The NESP Marine Biodiversity Hub is funded by the Australian Government's National Environmental Science Programme. Our goal is to assist decision-makers to understand, manage and conserve Australia's environment by funding world-class biodiversity science.

