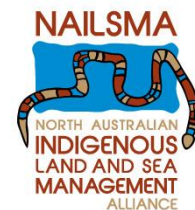


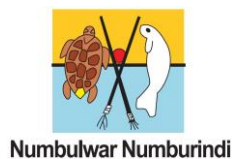
2016 SAWFISH RANGER EXCHANGE: ROPER RIVER REGION



INTERNAL PROJECT REPORT



This work was undertaken for the Marine Biodiversity Hub, a collaborative partnership supported through funding from the Australian Government's National Environmental Science Programme.



National Environmental Science Programme

Background

Why are people interested in the sawfish found in Northern Territory rivers?

The Largetooth Sawfish (scientific name *Pristis Pristis*, pictured below) can be found in the freshwater section of a number of big rivers in north Australia and so some people call it the Freshwater Sawfish (although the adults live in the ocean). It used to be found in many regions across the world, but has disappeared from many of these, and scientists have found that north Australia is one of the last places where there are still good numbers. The worldwide population has gone down so much that they are said to be Critically Endangered on a global scale, meaning scientists predict that they could go extinct in the near future, and so they have been given special legal protection in Australia.



The Largetooth Sawfish, commonly called the Freshwater Sawfish because it is often caught in freshwater

The Malak Malak Rangers have been working with researchers in the Daly River region for a number of years, learning more about the sawfish. In that region Malak Malak elders knew that sometimes sawfish get trapped in waterholes on the Daly River floodplain. During the part of their lifecycle when they live in freshwater they sometimes follow flood waters out of the main river channels and into waterholes. Usually they would try to swim back to the river before things dry out again, but sometimes they get stuck. This is a natural process, and it normal that some of them might die if the waterhole they are in dried up before the next wet season arrived. But there are two problems these days 1) There aren't many left to keep to population going; and, 2) the weather is changing so they are drying out more often and the waterholes that do still hold water are not as safe anymore; feral buffalo and pigs are making the water unhealthy. This process is likely to occur across much of the species' range in northern Australia, including in the Roper River region.

Why the Roper River region?

The Yugul Mangi Rangers from Ngukurr have been working with other scientists who are tracking the movement of the Barramundi (scientific name *Lates calcarifer*) in the Roper River. For that project there is an array of acoustic receivers installed throughout the river, which is both expensive and quite time consuming to maintain. These receivers pick up a signal from acoustic tags which are surgically implanted in the animals of interest when they are nearby. Acoustic tracking has been used to learn more about Largetooth Sawfish in other Northern Territory rivers, so the researcher team decided to try to tag some sawfish in the Roper, to take advantage of array that was already in place.

The researchers also recognised that there could be multiple benefits to bringing together rangers from a number of groups who had interest in the sawfish. In addition to the scientific information that could be collected there would be good opportunities to explore any traditional ecological knowledge, cultural values and uses of Largetooth Sawfish, and capture content for a variety of communication products being produced as part of the project. The Numbulwar Numburindi Rangers are the northern neighbours of the Yugul Mangi Rangers, and the groups work quite closely together on a number of issues including fire management. These links and the proximity of the groups provided a good opportunity to get them involved. It is also likely that the species could be found in the Rose River system in Numbulwar, so it is possible the rangers could use what they learned to undertake work in their management area in future.

NESP project

This work was undertaken as part of a larger collaborative research project “Northern Australian hotspots for the recovery of threatened euryhaline species” lead by Charles Darwin University (CDU) researcher Peter Kyne. The project is funded by the Australian Governments’ National Environmental Science Programme (NESP), and delivered under the NESP Marine Biodiversity Hub (the Hub). The North Australian Indigenous Land and Sea Management Alliance Ltd (NAILSMA) is a project partner, involved with delivering Theme 2 of the project: Indigenous partnerships for management of euryhaline species. There are three parts to Theme 2, with this work coming under Part 2 which focused on developing partnerships to explore Indigenous knowledge and develop education outputs for participating communities.

Aim

The aims of the trip were to capture, tag and release juvenile sawfish in the Roper River region; and to explore community knowledge and experiences relevant to sawfish conservation and related ranger work. The movement of tagged animals could be tracked by the array of acoustic receivers for the next few years, providing valuable scientific information about how and when the species uses different parts of the river. The trip would also allow rangers to build their capacity to be involved in scientific research by learning to apply common techniques including catching, handling and processing aquatic animals.

Survey trip

The team

Rangers participating from the Malak Malak Rangers were Amos Shields, Aaron Green, Theresa Lemon and Travis Maloney; with their vessel *Malak Malak Rangers 1*. Yugul Mangi Rangers included Maritza Roberts, Pollyanne Ponto, Simon Ponto, Clary Rogers, Kelvin Rogers, and Stuart Daniels; with their vessel *Mutju*. Numbulwar Rangers included Adam Manggurra, Clive Nunggarrgal, Rheelan Ngalmi and Samson Ngalmi; with their vessel *Ngarri Larni*. Researcher Peter Kyne led the sampling, with research vessel *Tyeyu*; supported by NAILSMA staff member Christy Davies. Assisting with knowledge recording and photography was Dr Ruth Leeney who has been working on sawfish conservation in Mozambique and other countries for several years.



The sampling team gathered at Flat Rock on the Wilton River near Urapunga.

Dates

Work was undertaken Monday 31st October – Thursday 6th November 2016 (sampling was cut short by one day due to mechanical breakdowns).

On Monday the researchers visited the Ngukurr Art Centre to examine sawfish in local art. They met with Norman Wilfred who had painted a piece which was purchased by the project. We interviewed Norman to learn about meaning behind the painting, and hear about his knowledge of sawfish.

The first nets were set on Monday evening, and the last nets brought in just before midnight on Wednesday. The Ranger vessels went out again on Thursday to look for other suitable sites for a future sampling effort, however a mechanical issue meant they had to return early.

Method

The Rangers' recollection was that the Roper River had not experienced a significant flood event in at least 5 years, and possibly more than a decade. Compared to the Daly River, it appears the frequency of large flow events (where the river breaks bank and inundates adjacent floodplains) is much lower in the Roper; providing less opportunities for sawfish pups to move into floodplain waterholes. Also, many of the waterholes historically known to have contained sawfish are now inhabited by large Saltwater Crocodiles. These factors meant it was highly unlikely any sawfish would be found in these off channel habitats, so it was decided that it wouldn't be worthwhile sampling the waterholes, but instead focus on the river.

All sampling was carried out under a research permit (number S19/3364) from the NT Department of Primary Industries and Resources. A total of 44 set hours were accumulated across the sites which included immediately upstream and downstream of Roper Bar, the mouth of the Wilton River and Flat Rock near Urapunga.

Sites were sampled by setting 6 inch gill nets (29m or 58m length), with the exception of Flat Rock where hand lines and rods were used. Nets were always set with one end on land, to ensure any

animals swimming in the shallows near sandy banks would be captured, as sawfish tend to move in these areas.



Gill nets were checked at regular intervals and any animals caught were processed and released immediately

Catches were recorded, and some basic measurements were taken of species including Bull sharks (*Carcharhinus leucas*) which were all marked with a pit tag (below). This will provide the opportunity to collect useful data at a future date, should the individuals be recaptured by any researchers working in the area.

The following water quality parameters: temperature, pH, electrical conductivity, salinity, turbidity and dissolved oxygen, were measured at each sampling location using a Hydrolab® Quanta multiprobe.



Animals like this Bull Shark pup were tagged with a PIT tag just under the skin

Discussion

There were a number of promising sites identified on Roper River tributaries, including Rocky Bar (pictured below) on the Hodgson River. Unfortunately, some of these were located within the boundaries of Limmen National Park, and the research permit did not cover sampling on Northern Territory National Parks.



Clarry sharing the story of Rocky Bar (a promising sawfish site on the Hodgson River) with the team

Despite not being able to sample at some of these locations, visiting them was a valuable exercise as it provided one of many good opportunities to share stories. No individuals on the trip identified the species as a totem, nor as something specifically targeted as a bushtucker; however, two people did say that they had eaten sawfish in the past. There were historic stories of people interacting with sawfish whilst fishing and swimming, including a story of the rescue of a very large sawfish around Ngukurr.



The team used the times not spent sampling to share stories, experiences and knowledge; including record interviews and content for videos to be generated as project outputs.

No sawfish were caught during the sampling. Even in northern Australia Largetooth Sawfish are now a rare species, with less adult female sawfish around to give birth. Sawfish recruitment (the number of pups born per year) can be highly variable from year to year. This is thought to be linked to the extent of wet season rains (which may drive the productivity of the river overall and so the food that is available for young sawfish); so some years there may be more sawfish pups in a river than other years. Furthermore, neap tides are optimal for gill netting in rivers, unfortunately sampling could not be carried out during neaps so conditions were not optimal. Ideally, one would fish over a couple of weeks at various locations to locate sawfish. Very few other fish species caught during netting, with no Barramundi or other large bodied fish, which was unusual. The exception to this were Bull Shark pups, which were abundant.

Because no sawfish were caught and tagged there are still acoustic tags, purchased by the Yugul Mangi Rangers remaining. The researchers will look for opportunities to return to sample the Roper River with Yugul Mangi Rangers in 2017.