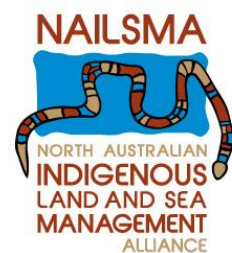


MALAK MALAK FLOODPLAIN SAWFISH SURVEY 2016

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 Sawfish on Malak Malak country

The Largetooth Sawfish (scientific name *Pristis pristis*, known locally as **Tyemeririny**) 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 (but 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 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.

Malak Malak Traditional Owners heard about how few Largetooth Sawfish are left in the world when working with researchers. Elders already knew that sometimes they got 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. So in late 2012 when Traditional Owners found some trapped they called scientists to organise a rescue. This worked very well and afterwards the Rangers decided that it would be good to do a patrol (and if necessary, a rescue) every year, as part of the Malak Malak community's contribution to protecting the sawfish for future generations.

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:- 'Develop protocols and methodologies for implementing annual Malak Malak sawfish survey (Billabong fishing survey and relocation of trapped animals to main channel; I-Tracker application development; deploy small-scale acoustic receiver array for monitoring effectiveness of relocation program)'. This project builds on a previous collaboration between researchers and the Malak Malak Rangers under NESP's predecessor, the National Environmental Research Program (NERP).

Aim

The overall aim was to build the capacity of the Malak Malak Rangers to undertake the annual floodplain sawfish patrol and relocations. This trip was the first opportunity to trial a draft sampling protocol, implementing sampling techniques using specialist equipment and trialling a draft I-Tracker application data collection tool, created using Cybertracker™ software.

Survey trip

Dates

Work was undertaken Monday 19th – Friday 23rd September 2016. Monday was spent on gear preparation and sampling occurred Tuesday through Friday.

A previous reconnaissance trip, carried out June 22nd and 23rd helped the team to decide on timing for the survey, by assessing how quickly the waterholes were drying out; and also identified a new site for sampling, Coppermine.

Personnel

Rangers participating were Amos Shields, Aaron Green and coordinator Rob Lindsay. Researcher Peter Kyne led the sampling, NAILSMA staff member Christy Davies assisted with sampling and guided the rangers through the draft I-Tracker data collection application. Videographer Michael Lawrence-Taylor was also present on Tuesday, Wednesday and Thursday. Michael was there to document the trip and also to capture footage and photographs for use in outputs for another part of the project which involves generating education products for the communities participating in the partnership project more broadly.



Sampling team from left to right: Amos Shields, Christy Davies, Aaron Green, Peter Kyne and Rob Lindsay.

Sites sampled

Floodplain waterholes sampled were Tyumalagun (also known as Shark Swamp), Dalagarr (plus small remnant waterbodies on the east channel (upstream) and west channel (downstream) of Dalagarr and Wunullan which have all been sampled under the previous NERP research project, and Coppermine, an additional waterhole (Figure 1). Because of its large size Wunullan is divided into two 'sites', north and south.



Figure 1: Relative locations of floodplain waterholes surveyed, from north to south. Dalagarr, Tyumalagun, Coppermine and Wunullan.

Method

All sampling was carried out under a research permit (number S19/3364) from the NT Department of Primary Industries and Resources. Sites were generally sampled by setting 6-inch gill nets (29m or 58m length), with the exception of the smallest site Dalagarr East channel, which was sampled by carrying out a physical search, and Dalagarr and Dalagarr west channel which were swept with a gill net. A total of 127 set hours were accumulated across the sites.



Left: Sampling of Dalagarr East channel. Right: Dalagarr West channel

All catches were recorded during netting, measurements taken on most species including Barramundi, Catfish, Sleepy Cod and Tarpon; and the fate of the animal was recorded.

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.



Using a multiprobe to take water quality measurements and recording them in the I-Tracker application

Despite the extensive sampling effort, no sawfish were caught. Even in northern Australia Largetooth Sawfish are also 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. In the 2015/2016 wet season the flood was very early in the season, and may have occurred before sawfish pups were born, so by the time young sawfish were moving up the river the river was no longer connected to the floodplain, so there weren't opportunities to move out to the waterholes. The lack of sawfish in the surveyed waterholes may be explained by a naturally poor recruitment year, and also the timing of flooding. We know that there are sawfish in the main channel of the Daly River this year as we have received several reports from locals and other researchers.

Because no sawfish were caught and tagged it was not necessary to deploy any acoustic receivers in the main river channel to test the effectiveness of relocations. It was possible to partly test the I-Tracker data collection tool, and also partially test the sampling protocol. Some changes were made to both these after the trip, however more may be necessary after a relocation is undertaken.

Notwithstanding that gill nets can only be used under licence and surgical procedures to implant acoustic transmitters can only be carried out by trained technicians; after this and a subsequent field trip the Malak Malak Rangers are now equipped with many of the skills needed, as well as access to some of the specialist equipment and tools needed to undertake annual survey and relocations on an annual basis. This includes a custom-designed sawfish transport tank (pictured below), delivered to the Malak Malak Rangers during this field trip.



The custom made fibreglass sawfish transport tank..

Opportunities for researchers to join the rangers for a 2017 survey will be explored, however if this does not eventuate as much support as possible will be offered to continue this significant community driven conservation activity.