Marine Biodiversity Hub

National Environmental Science Programme

Malak Malak Sawfish Patrol & Relocation Protocol

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

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Important Disclaimer

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1. Background

Why are Tyemirerriny important?

The Largetooth Sawfish (scientific name *Pristis pristis* language name ***Tyemirerriny***) can be found in the freshwater section of big rivers in north Australia and so some people also call it the Freshwater Sawfish. It used to be found in many regions across the world, but these days they have disappeared from many of these, and north Australia is now one of the last places where there are still good numbers anywhere in the world. The population has gone down so much that they are said to be 'Critically Endangered' on a global scale, meaning scientists think they could go extinct in the near future. Because of this, they have been given special legal protection in Australia.

This sawfish has a very interesting lifecycle, and can be found in different places at different ages. The mothers give birth to babies (called pups) in an estuary. The pups then swim upstream to the freshwater section of rivers, where they live for several years (up to 4–5 years). Once they are older they swim downstream and back out to the ocean where they live as adults. When they are old enough to breed the females come back to the same estuary where they were born to have their own babies.

While they are living in the freshwater they sometimes follow flood waters out of the main river channels and into waterholes. As water levels recede in the dry season, they are forced into remaining isolated waterholes, where they become stuck until the next wet season. This is a natural process, and it normal that some of them might die if they waterhole they are in dries up before the next wet season arrives. But there are two problems these days: 1) There aren't many sawfish left to keep the 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, and feral buffalo and pigs are making the water unhealthy.

Tyemirerriny on Malak Malak country

Malak Malak Traditional Owners heard about how few ***Tyemirerriny*** are left in the world when working with researchers. Elders already knew that sometimes they got trapped in waterholes on the Daly River floodplain so when they found some trapped, they called scientists to help with a rescue. The Traditional Owners, Rangers and scientists worked together to remove the sawfish from a tiny waterhole that was fast drying, and release them alive into the Daly River. This worked very well and afterwards the Rangers decided that it would be good to do an on-country patrol every year to search for trapped sawfish which might need rescuing. This is part of the Malak Malak community's contribution to protecting the sawfish for future generations, and is the only known place in the world where this patrol and rescue occurs.

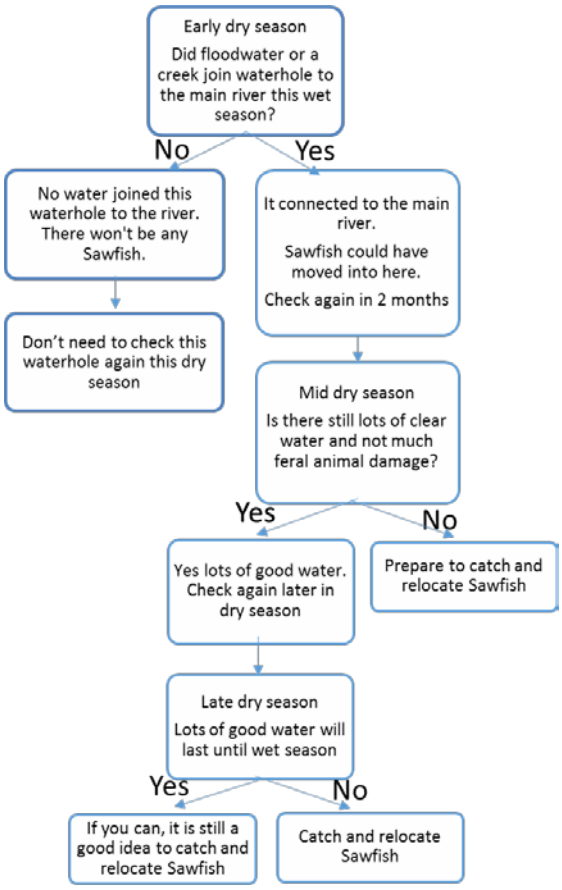
2. Sawfish patrol & relocation

Aim

To patrol floodplain waterholes on Malak Malak country, checking for any sawfish, and relocate trapped sawfish if they are unlikely to survive the dry season.

How to decide if/when to move Tyemirerriny

If the river floods (breaks its banks) during the wet season there could be sawfish trapped in any of the waterholes that the floodwaters connected with. Even if it didn't flood, some sawfish may have swum up creeks that were connected to waterholes, but not swum back down to the river. If you think there could be Sawfish it is recommended that sites (Kilfoyle, Tyumalagun, Dalagarr and Copper Mine) get checked 2 -3 times during the dry season. The first time should be in ***Punggulerrp***, as soon as country is dry enough. Check again around late ***Aridangit*** to see how quickly waterholes are drying out, and how clean or dirty the water is. You should start to get an idea if the waterholes will dry out, or if the water quality will be too low for the Sawfish to survive. Do a final check in ***Pundumirri***, before the early rains start. Follow the diagram below for each waterhole, to help decide if you will try to do any relocations.



3. Relocating Tyemirerriny

Check the equipment list below at least 1 month before you plan to move sawfish, use it as a checklist on the day.

Equipment List

Begin checking for items on this list 1 month before you plan to do the activity, some things will need time to prepare.

- Oxygen cylinder and regulator (hire from Air Liquide or BOC)
- Transport container (check for leaks ahead of time)
- Rubber matting
- Straps for tying down transport container
- Water pump
- Nets and floats
- Boat (depending on site)
- Sawfish measuring equipment
- Fully charged I-Tracker with Sawfish Application loaded (it would be a good idea to go through the application on the computer in 'Test Mode' so you remember how to use it)
- PIT tags, tag reader, injector and steriliser.
- Old towels/mat/carpet
- First aid kit
- 3 x 20 L water containers (for spare river water)
- Buckets (in case water pump stops working)
- Big umbrella (if there isn't much shade at the site)
- Camera
- Notepad and pencil

Patrol and relocation

Unless the water in the waterhole is very healthy looking it is best to put the newly caught sawfish into river water straight away. They will be stressed from being caught so this better water will help them recover.

- Load gear, check oxygen is working, then '**Start patrol'** in the I-Tracker Sawfish Application.
- Drive to the river to fill up the transport container. Let water run through the pump first to flush out any contaminants. Rinse the container first, then fill right to the top and close the lid tight. Also rinse and fill 3 jerry cans with river water, in case the tank needs topping up.
- Drive to the waterhole, try to park the vehicle with the transport tank in the shade, to keep the water cool. Check for presence of crocodiles which may require surveys to be postponed.

- If you have equipment, the first thing is to record the water quality data before you disturb the water. Then go for a walk to get a good look at the condition of the whole waterhole (if you can). Record the 'Habitat condition' information including water level, time since last rain, feral animal damage on the banks, the amount of waterplants (remember there are 'Help' screens in the Application to explain what this means and how to do it) and if there is Salvinia weed here.
- When you start to set nets (or rods), making sure you record all the data in the I-Tracker Application. It is important to record the type of gear being used (gill net/throw net/rod etc), and the time spent fishing etc. Have an area near the vehicle set up for processing, with wet towel/mat/carpet, buckets, measuring equipment etc laid out ready for use. The Application will take you step-by-step through processing all the animals.
- Sawfish being relocated will be processed at the release site, but all other animals will be processed as they are caught. When you catch an animal in a gill net you need to measure the depth it was caught at. For some things like fish you should also record basic measurements, and if you catch a Bull Shark it would be good to tag it using a PIT tag, so if it is caught again later by researchers they can collect important information like movement and growth data.
- Remember the correct way to hold sawfish. Wear soft gloves, with one hand firmly around the base of the saw (being careful to avoid the eyes) and the other firmly holding just in front of the tail (being careful to not squeeze too tightly). Carry the sawfish with the saw facing away from your body.
- When the first sawfish is caught someone should turn the oxygen on and get it bubbling at the right rate so the sawfish can breathe. Place the sawfish gently in the transport container, make sure the oxygen is bubbling and the water isn't getting too hot. Once all the sawfish have been caught, or you think no more should be put in the tank, it is time to take them to the river.
- Make sure you bring in ALL the nets/rods and '**End Set**' in the Application before leaving. Check the oxygen is bubbling, and top the tank up if needed. Close and tighten the lid carefully. Check the tie down straps to make sure the tank doesn't slide around. Making sure there is a good oxygen supply is very important to prevent the Sawfish getting too stressed because when they are stressed they release a chemical (ammonia) through their gills into the water. This chemical changes the water and it can become poisonous if there is too much.
- Drive as carefully as you can to the release site so the Sawfish don't get hurt. The release site for all sawfish is the Woolianna Road boat ramp (so their survival can be monitored with nearby acoustic receivers). If it takes more than 30 mins to get there it is a good idea to stop and check the oxygen is still working, and the water is still full.
- Record the time you arrive at the release site in the Application, then find some shade and get all the processing equipment prepared again. Remember the Application takes you through taking the measurements, tagging, getting photos etc.
- It is generally best to not have a sudden change in the water, so you need to gradually get the Sawfish used to the fresh river water. Do this by slowly replacing the tank water with river water. Open the bottom drain and let out about 1/6 of the

water out, then top up with river water. Repeat every 10 minutes, 5 more times until all the old water has been replaced.

- Release each sawfish immediately after it has been processed. Don't forget to double check the PIT tag is working, and record the condition of the animal as it is released. Release sawfish 'softly' (avoid throwing it or dropping it into the water).
- **Finish Patrol** in the Application when you get back to the ranger station, then download the data.

This information belongs the ranger group, but it is also very valuable to researchers, so if you are happy to share it call Pete Kyne on 0477 306 344 or email peter.kyne@cdu.edu.au.

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