Threatened Species Recovery Hub

National Environmental Science Programme

Strategic planning for the Far Eastern Curlew

Special report to Darwin Port on research training trip to Broome, Western Australia

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Charles Darwin University

The University of Queensland

Darwin Port

Larrakia Nation

In partnership with Northern Territory Government

Strategic planning for the Far Eastern Curlew
Special report to Darwin Port on research training trip to Broome, Western Australia

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Front cover: Sarah Rolland and team assessing the moult of a Great Knot caught in Roebuck Bay, WA.
Photo: Amanda Lilleyman

Table of Contents

Objective of the research trip 2

Location 2

Participants and the expedition 2

Catching shorebirds 3

Conditions 5

Networking and sharing knowledge 5

What we learned 7

Highlights of the trip 7

Other activities 8

- Birdwatching in Broome 8
- Satellite tagging workshop 8

Future work 9

Acknowledgements 9

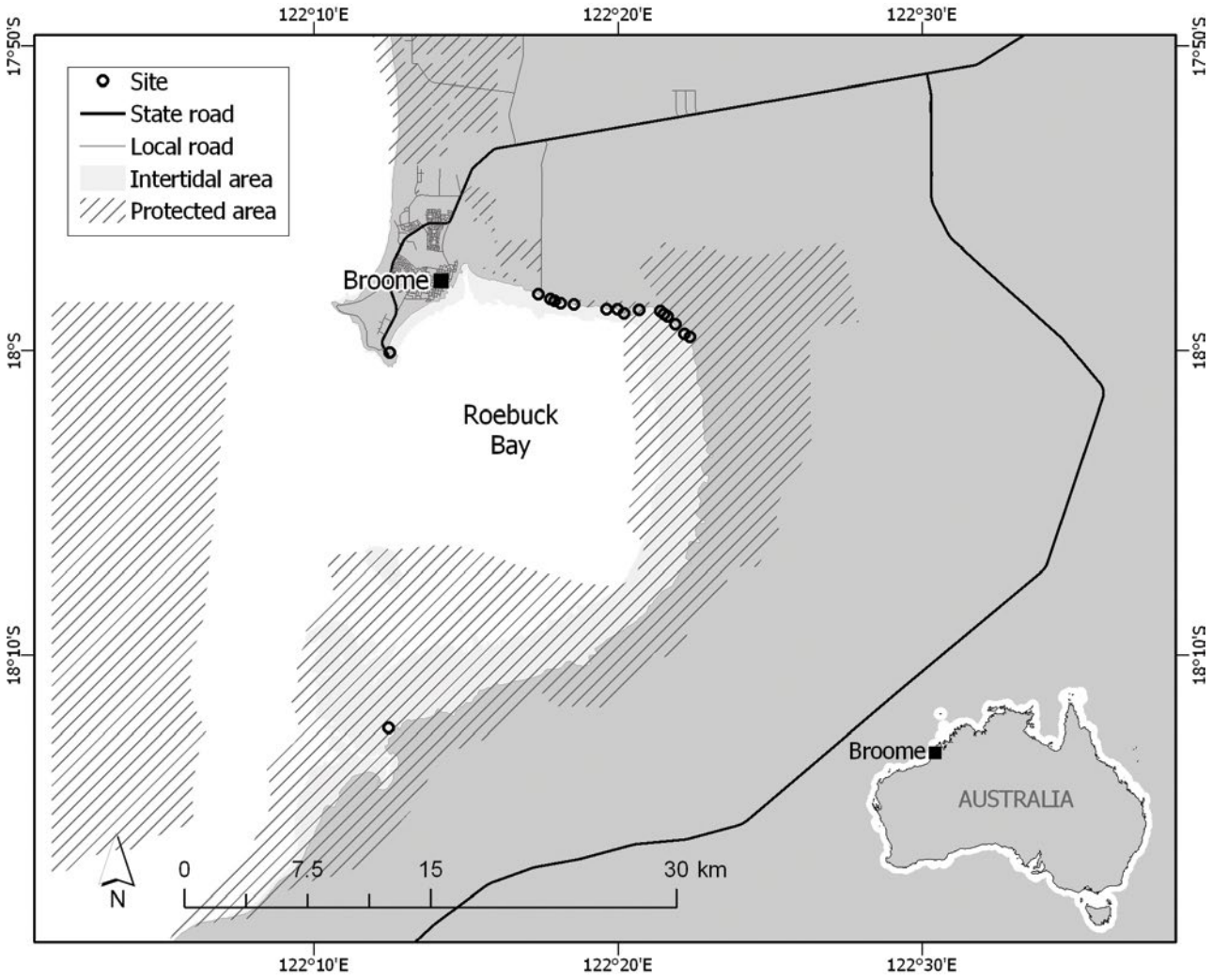
References 9

Objective of the research trip

The objective of this trip to Broome, Western Australia was to join the Australasian Wader Studies Group (AWSG) Annual Wader and Tern Expedition (the expedition) to catch and tag five far eastern curlew to tag with GPS devices. The tagging will allow us to compare local Broome movements with movements of curlew in Darwin Harbour. Two Larrakia Rangers from Darwin's Larrakia Nation Aboriginal Corporation (Sarah Rolland and Nelson Tinoco) joined the expedition to gain skills in catching shorebirds, identifying them and taking their measurements, and attaching GPS tags to the birds.

Location

We joined the expedition for the Roebuck Bay component as the chances of catching curlew were highest near Broome. Roebuck Bay is an internationally significant site for migratory shorebirds. It is classified as a Wetland of International Importance under the Ramsar Convention (Department of Parks and Wildlife 2016). Roebuck Bay has 15 key roost sites where shorebirds retreat at high tide. At low tide the birds feed over the extensive intertidal mudflats.



Participants and the expedition

The expedition team was made up of 32 participants from almost all states of Australia, China and the Netherlands. Participants came from a variety of backgrounds, providing plenty of opportunity to share information and experiences about shorebird research during the expedition.

The trip is run by the Australasian Wader Studies Group (AWSG), which is a special interest group within BirdLife Australia. The overall objectives of the Expedition are:

- "To obtain an estimate of the relative breeding success in the 2017 Arctic breeding season of all the main species of migratory waders. This is achieved by measuring the proportion of juveniles in catches.

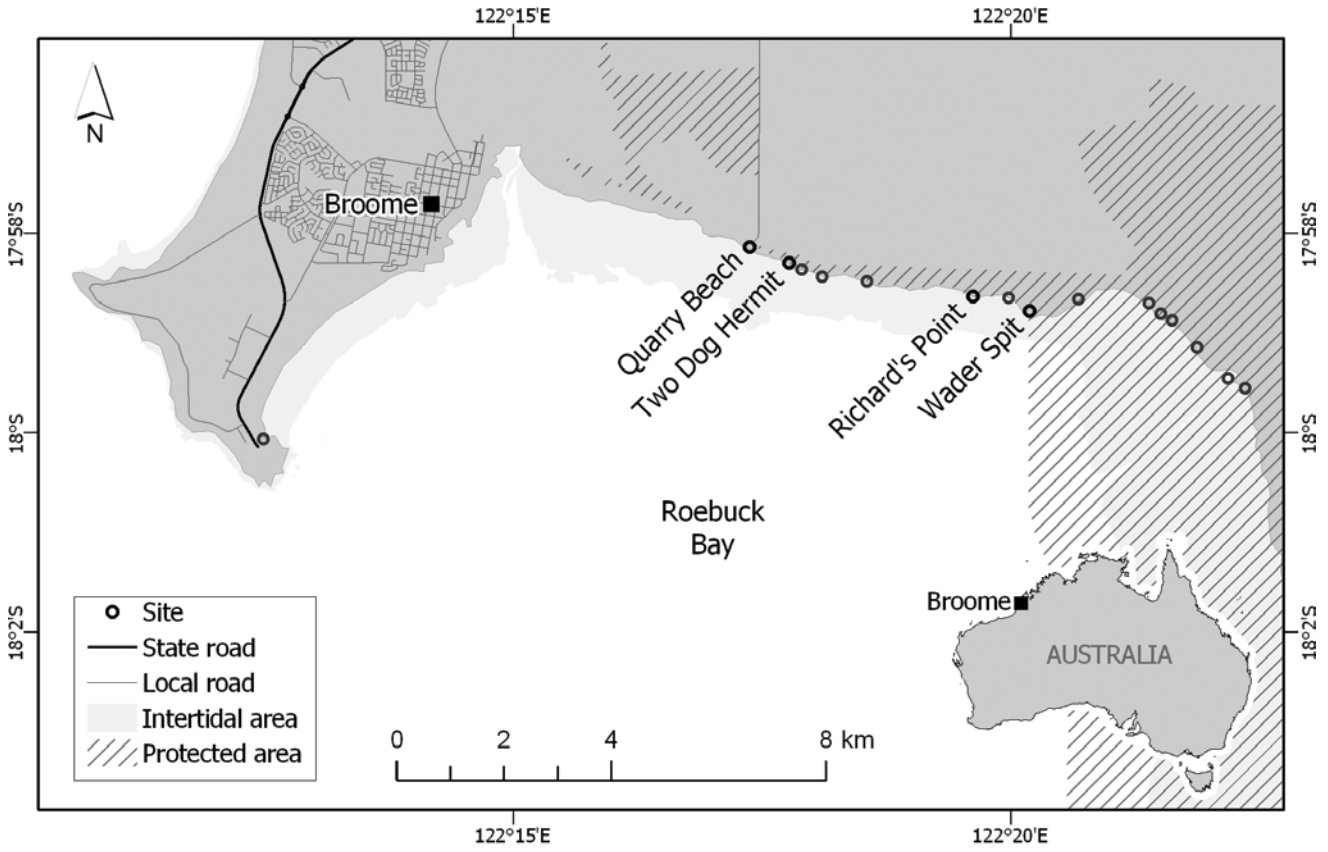
- To catch additional samples of species which are less frequently caught in NW Australia, e.g. Black-tailed Godwit, Whimbrel, Grey Plover, Common Greenshank, Oriental Plover, Far Eastern Curlew, Little Curlew and Oriental Pratincole.
- To continue the program of putting individually lettered/numbered yellow leg flags on all the main medium/large migratory wader species caught at Broome and, several species at 80 Mile Beach. This is to facilitate the collection and calculation of survival rate data in the future and to enhance the information obtained from flagged birds seen overseas."

The connection provided by the expedition of working on shorebirds links communities and cultures together. The birds act as links between cultures in the East Asian–Australasian Flyway.

Catching shorebirds

Thirty-eight migratory shorebird species use Roebuck Bay every year for the non-breeding season in the austral summer. These birds predictably use roost sites throughout the spring-neap tidal cycles, so cannon-net catches were focused on areas where the birds were expected to occur. While there were many targeted catches for specific shorebird species, not all birds were cooperating. On some days, the catching effort was not directed on a target species, so we aimed to catch any shorebird species that was safely in front of the net.

Cannon-netting is a successful method for catching many shorebirds that roost communally. It has been the primary method for shorebird catching in Australia for over 30 years.



We had five days when we were able to attempt to catch shorebirds in Roebuck Bay. Of these five cannon-net attempts, we caught 528 birds from eight species of shorebird and one species of tern (see Table 1).

Table 1. Summary of shorebirds caught in Roebuck bay during our trip.

DATE	SITE	SPECIES	CATCH TOTAL
1/03/2018	Wader Spit	Bar-tailed Godwit	43
		Great Knot	152
		Greater Sand Plover	4
		Red Knot	24
		Ruddy Turnstone	1
		TOTAL	**224**
2/03/2018	Two Dog Hermit	Bar-tailed Godwit	1
		Great Knot	132
		Greater Sand Plover	2
		Grey-tailed Tattler	7
		Red Knot	30
		Ruddy Turnstone	5
		TOTAL	**177**
3/03/2018	**Richard's Point**	Broad-billed Sandpiper	7
		Great Knot	2
		Greater Sand Plover	77
		Red-necked Stint	38
		Little Tern	3
		TOTAL	**127**
4/03/2018	Quarry Beach	-	0
5/03/2018	Quarry Beach	-	0
		TOTAL BIRDS	**528**

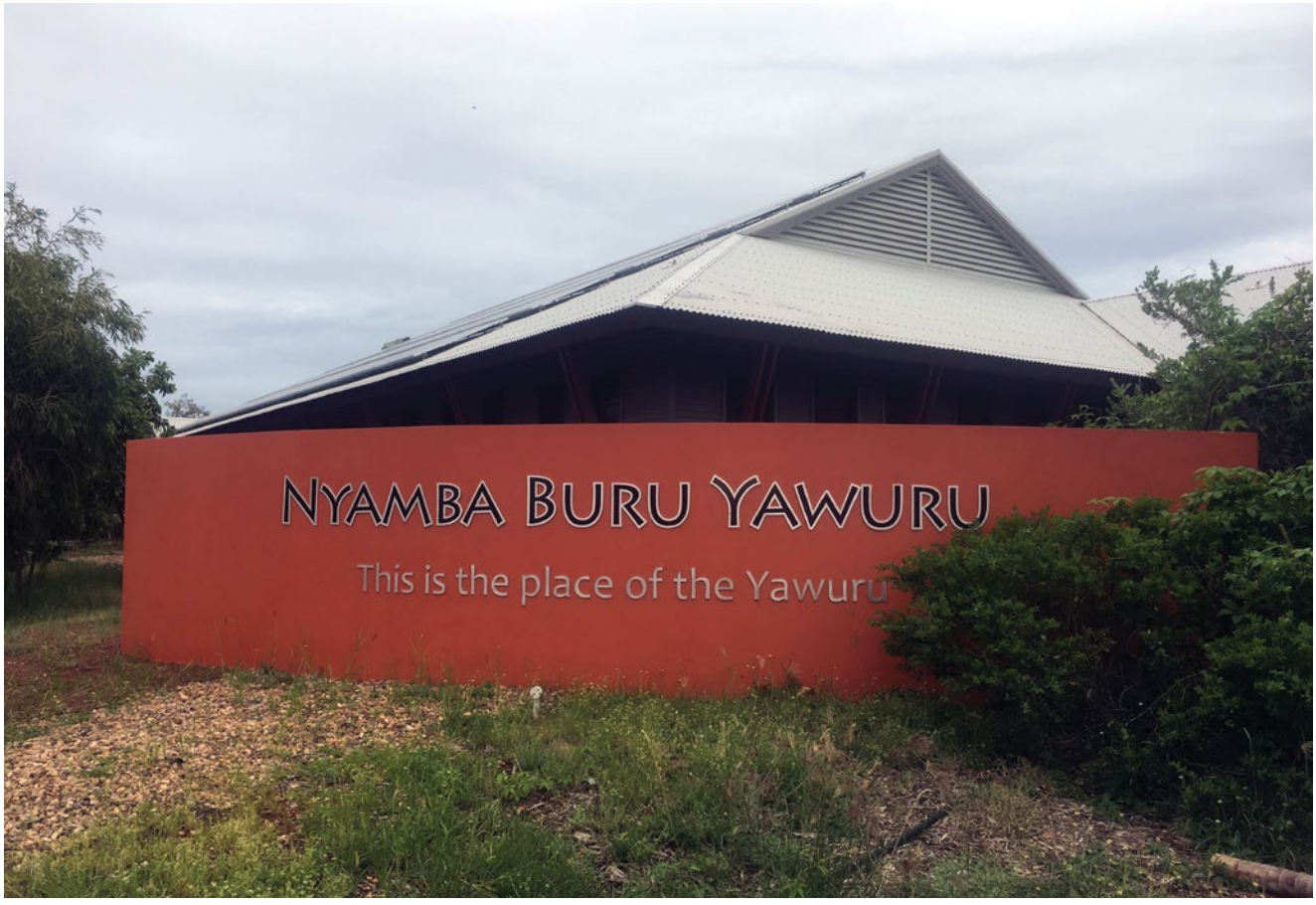
Conditions

The conditions in northern Western Australia had been extreme in the week before we arrived in Broome. Cyclone Kelvin had just passed Anna Plains at Eighty-mile Beach on 18 February and the team had to be evacuated from the Anna Plains camp site. These extreme weather events dumped close to 1500 mm of rain, which meant that marshes and saltpans behind the beaches and mangroves were suitable for roosting shorebirds. We recorded far eastern curlew flying straight from the intertidal mudflats to marshlands during high tide. No curlew were found roosting on beaches in Roebuck Bay during the time that we were there. This meant that we could not target curlew for catching and GPS tagging.

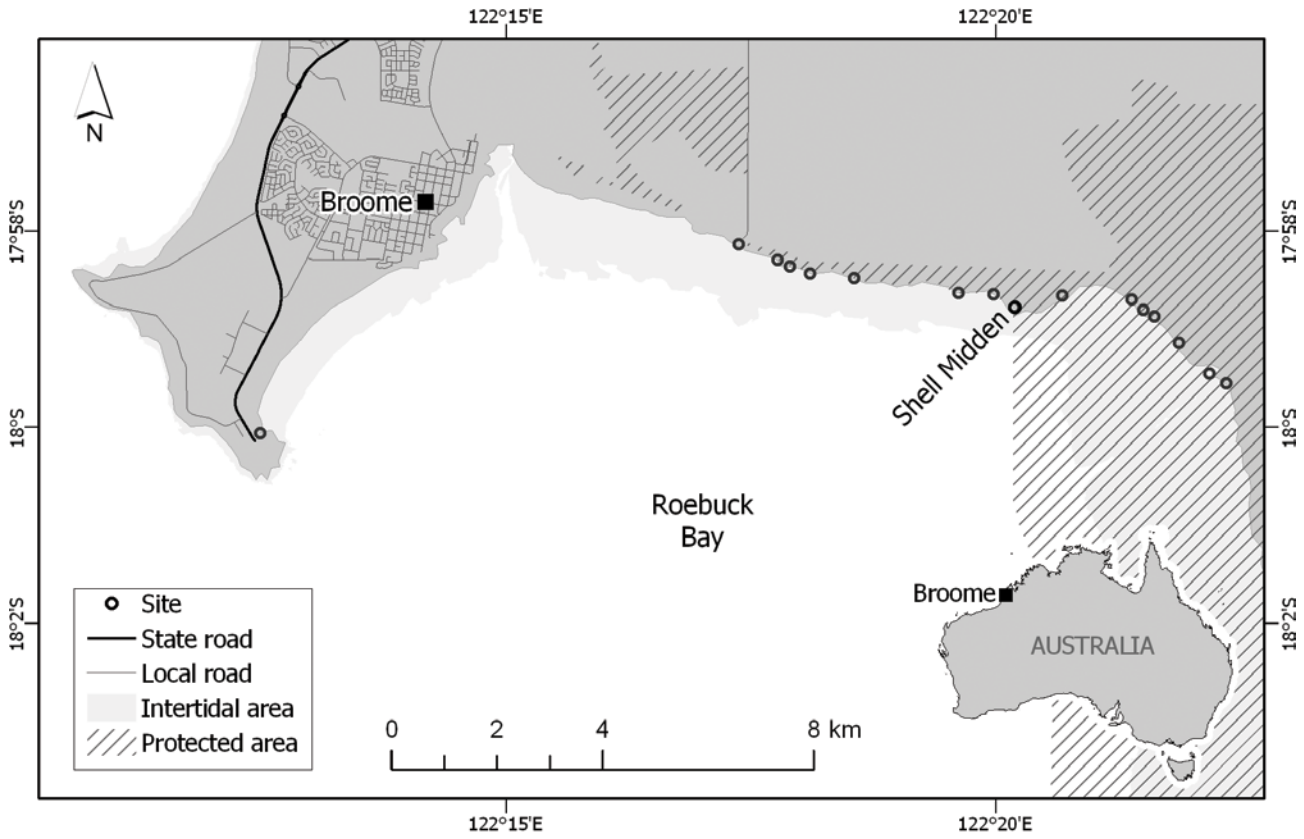
These conditions led to the AWSG making its lowest catch of shorebirds during an expedition in 20 years.

Networking and sharing knowledge

We met with the Traditional Owners of Roebuck Bay, the Yawuru People, to discuss the work that we are doing on shorebirds in Darwin with the Larrakia Rangers. We also met with country managers and ranger coordinators at the Nyamba Buru Yawuru (NBY) head office in Broome and had a tour of their language centre (http://www.yawuru.com/). In addition, we met with the Yawuru Rangers in the Parks and Wildlife Services office to share knowledge and experiences of working on country and various field programs.



At one of the shorebird catching sites, we found a shell midden along the coast that was made up of thousands of ancient cockle shells. We discovered from Yawuru country managers that some of the shell middens in Roebuck Bay were undergoing assessment to determine their origin. Some shell middens in the area have been formed by historic Asian communities in Broome, as well as by local Indigenous people.



We were invited to join the monthly seagrass monitoring in Roebuck Bay to work with Yawuru sea rangers, Environs Kimberley and the Broome community in this citizen science program. This presented an opportunity to talk about management of the environment, threats to marine and coastal ecosystems, and what species of birds and invertebrates rely on the intertidal system. The Broome Community Seagrass Monitoring Program is funded by Coastwest and the Kimberley Ports Authority. It is co-managed by Environs Kimberley and the Department of Parks and Wildlife and supported by Seagrass-Watch (https://www.environskimberley.org.au/seagrass_project).

We also learnt about the toxic blue-green algae (Lyngbya majuscula). These algal blooms can occur across the mudflats of Roebuck Bay during monsoonal weather, when increased nutrients flow from urban areas into the intertidal zone. The blooms can impact seagrass, fish, dugongs and marine life, including the invertebrates that migratory shorebirds feed on.

What we learned

This research trip to Roebuck Bay allowed us to work together to catch shorebirds in a large team and to share our knowledge of curlew in Darwin Harbour with other participants from the Expedition. We also had the opportunity to listen to lectures and discussions during rainy days when it was not suitable to catch.

We processed all individual shorebirds that we caught. This involved taking measurements of weight, age, sex, moult, wing length, bill length, head-bill length; and banding and flagging birds. We also gained valuable skills in setting nets, constructing keeping cages and shade houses, and in the general methods required to successfully communicate during shorebird cannon-netting.

We learned a great deal about the culture and heritage of the Yawuru People in Broome, their management of the environment, the programs that they are involved in, and how they engage with local Broome community members through activities such as the Broome Community Seagrass Monitoring Program.

Highlights of the trip

Sarah:

"I enjoyed learning the method for setting up the cannon nets. I also enjoyed conversing with a diverse range of people and that they were all really enthusiastic about birds. It was good to get hands-on experience banding and measuring birds. It was quite fun looking for the seagrass seeds during the seagrass monitoring program. It was really good to see the methods of how they monitored seagrass. Sharing information and meeting the Yawuru Rangers was really rad."

Nelson:

"I enjoyed learning about handling and banding birds and discovering what kind of breeding plumage the birds had. We learnt about Broome's cultures and the local knowledge that people had about shorebirds in Roebuck Bay."

Amanda:

"My favourite part of the trip was joining the seagrass monitoring program and working with the Yawuru Rangers and the local Broome community. This was a great opportunity to get out onto the mudflats where shorebirds feed and have a poke around in the mud. There was also a great wealth of knowledge and enthusiasm within the citizen scientists and that is also so inspiring to be a part of."

Other activities

Birdwatching in Broome

We had opportunities to go birdwatching when the conditions for catching shorebirds were not ideal. We went birdwatching in the mangroves at Streeter's Jetty in Broome one morning and at the Broome Waste Water Treatment Plant (sewage plant) and along the coast near Broome Port one afternoon.

Satellite tagging workshop

This expedition brought together several experts in the field of satellite tagging shorebirds. It lent us the opportunity to workshop the methods and lessons learned from catching and tagging shorebirds from around the world. This workshop led to several discussions between key individuals and will result in a research paper collating the best practices for shorebird tagging. We will hold our second workshop on satellite tagging migratory shorebirds at the Australasian Ornithological Conference in Darwin on 3–5 July 2019. Participants from the expedition will have another opportunity there to work together again.

Future work

Following the success of this research training trip, we are developing a fieldwork protocol for collecting environmental measurements from saltpans in Darwin Harbour. We plan to continue our curlew catching efforts in Darwin, with more catching attempts during the dry season and more intensive efforts from August onwards.

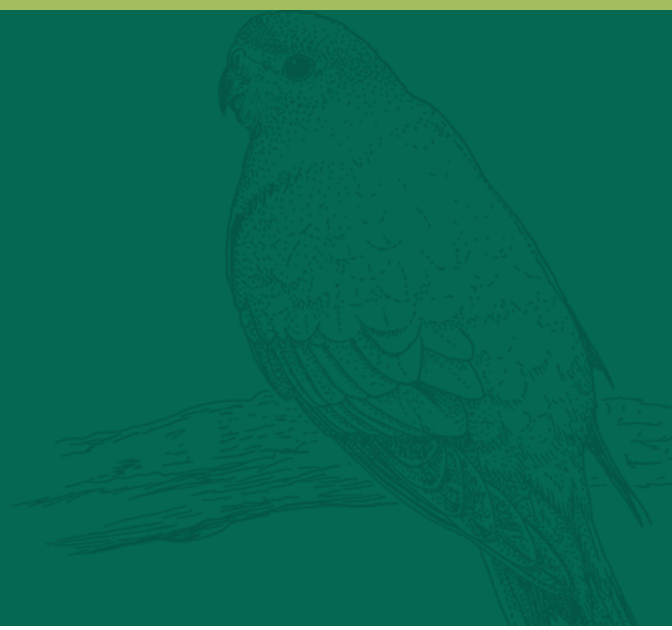
The Larrakia Rangers will be presenting a summary recount of the research training trip to the Darwin community at a World Curlew Day event, run by Conservation Volunteers Australia on 21st April 2018. We are also working together to have a team from Larrakia present the research outcomes from our curlew project at the Territory NRM Conference in Darwin in November 2018. We are planning on running a symposium on 'Bird Research by Indigenous Rangers' at the Australasian Ornithological Conference in Darwin on 3–5 July 2019.

Acknowledgements

We acknowledge Darwin Harbour's Traditional Owners, the Larrakia People, and their elders past and present. We also acknowledge the Traditional Owners of Roebuck Bay, the Yawuru People, and their elders past and present. We thank our project partners Darwin Port for funding this project on the far eastern curlew and, more specifically, for supporting our travel to Roebuck Bay to work with other shorebird researchers and the local Yawuru Rangers. Thanks also go to the National Environmental Science Programme Threatened Species Recovery Hub for funding this project (Project 5.1.1). We are grateful to Ian Leiper for providing the maps for this report.

References

Department of Parks and Wildlife. 2016. Yawuru Nagulagun / Roebuck Bay Marine Park Joint Management Plan 2016. Perth.



Further information:
http://www.nespthreatenedspecies.edu.au/

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