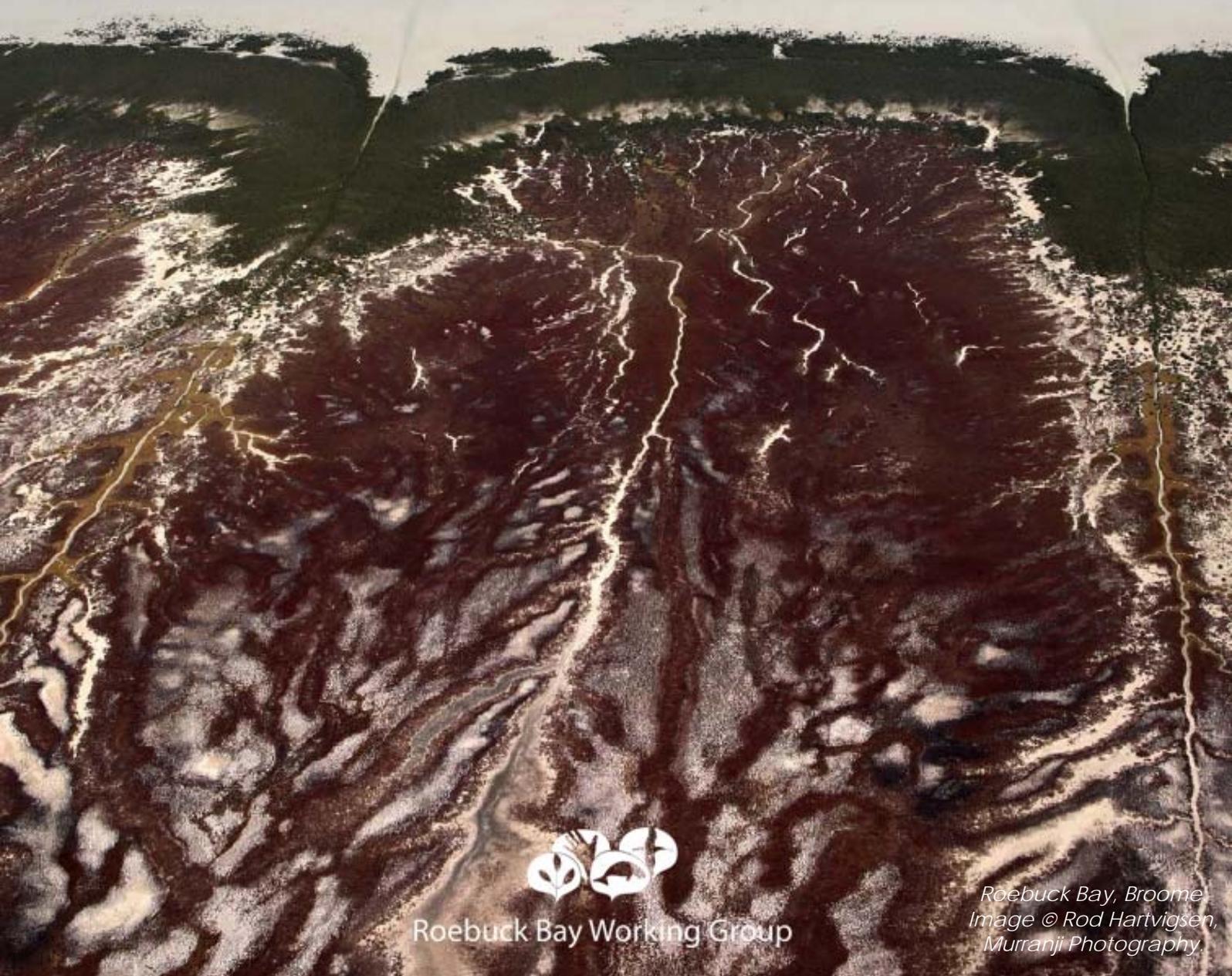


ROEBUCK BAY WORKING GROUP

Newsletter

INFORMATION for the COMMUNITY on SUSTAINABLE MANAGEMENT OF ROEBUCK BAY

July 2010



Roebuck Bay Working Group

*Roebuck Bay, Broome
Image © Rod Hartvigsen,
Muranji Photography*



CARING
FOR
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Rangelands NRM
Western Australia

Brand New Roebuck Bay Website

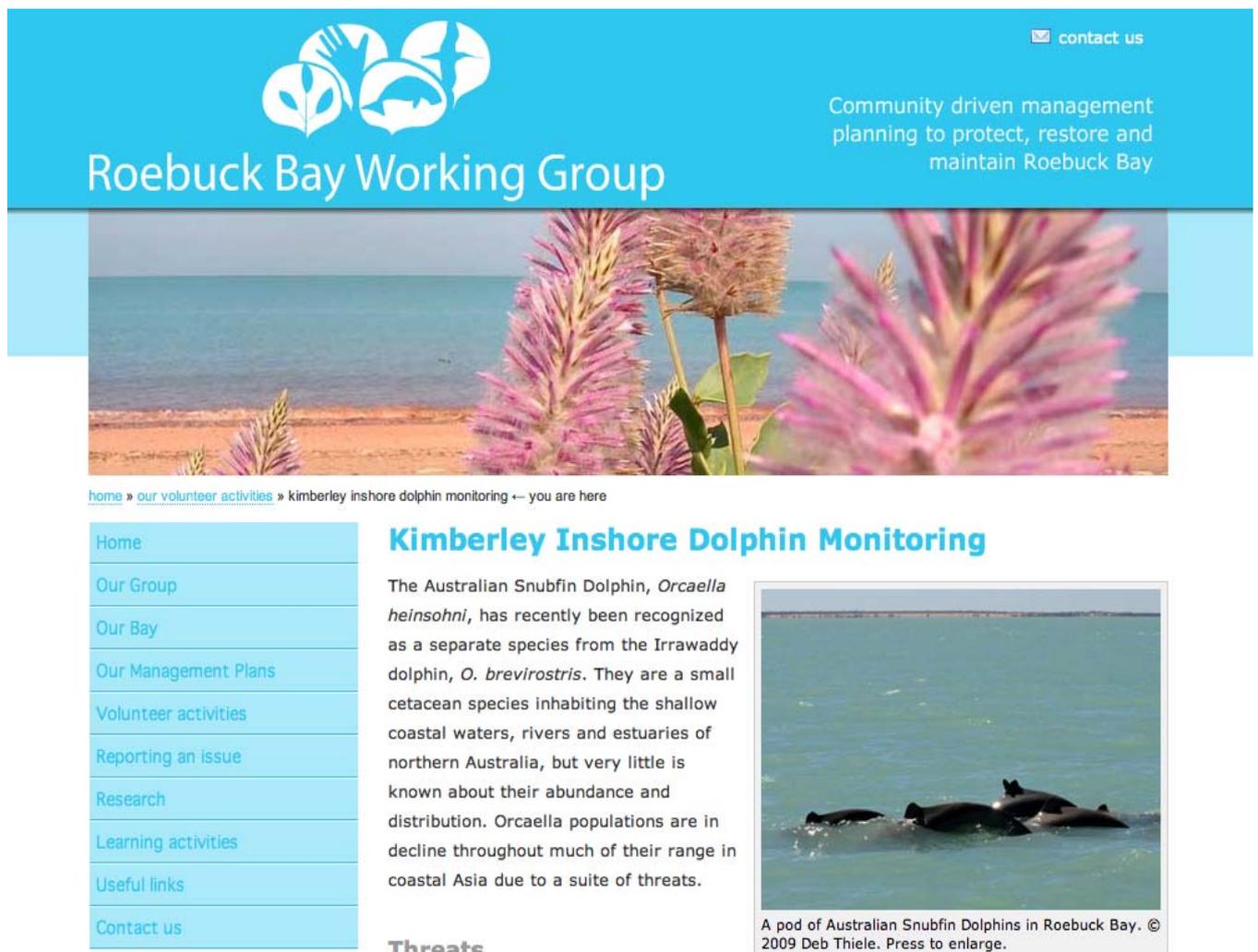
www.roebuckbay.org.au/

The RBWG's brand new website on Roebuck Bay is nothing short of fantastic. Created by the RBWG & freshr web design & funded by Coastwest, the website tells you about:

- Roebuck Bay's unique natural and cultural values e.g. migratory shorebirds, snubfin dolphins, dugongs, seagrass, mangroves, fish and millions of squirming invertebrates in the intertidal mudflats;
- How to report an issue in and around Roebuck Bay;
- Volunteering opportunities on the Bay: benthos monitoring, seagrass monitoring, dolphin monitoring, shorebird monitoring, turtle monitoring;
- The community based management plans for Roebuck Bay that have been developed by the RBWG;
- Scientific research that is currently underway in Roebuck Bay;
- The history of the RBWG, who are the members, and how to download the RBWG E Newsletter!
- Roebuck Bay's migratory shorebirds delivered through a learning program...

And coming soon on the website...

- Learning programs about the Yawuru Six Seasons and food webs of Roebuck Bay;
- Information sheets on what you can do to help reduce nutrients from entering Roebuck Bay and contributing to algal blooms ...in your home, garden, community and business.



The screenshot shows the website header for the Roebuck Bay Working Group. The header is blue with a logo on the left and a 'contact us' link on the right. Below the header is a large image of pink flowers in the foreground and the ocean in the background. The main content area is white with a blue sidebar on the left containing navigation links. The main content area features the title 'Kimberley Inshore Dolphin Monitoring' and a paragraph of text about the Australian Snubfin Dolphin. To the right of the text is a photograph of a pod of dolphins. Below the photograph is a caption: 'A pod of Australian Snubfin Dolphins in Roebuck Bay. © 2009 Deb Thiele. Press to enlarge.'

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Kimberley Inshore Dolphin Monitoring

The Australian Snubfin Dolphin, *Orcaella heinsohni*, has recently been recognized as a separate species from the Irrawaddy dolphin, *O. brevirostris*. They are a small cetacean species inhabiting the shallow coastal waters, rivers and estuaries of northern Australia, but very little is known about their abundance and distribution. Orcaella populations are in decline throughout much of their range in coastal Asia due to a suite of threats.

Threats

A RECENT EXPANSION in human activities targeting the Kimberley's rich resources, remoteness and grandeur has resulted in intrusions into dolphin habitat with commercial fishing; coastal boat based ecotourism; recreational line and net fishing; illegal Indonesian fishing; oil and gas developments and extensive marine (pearl) farming.

A pod of Australian Snubfin Dolphins in Roebuck Bay. © 2009 Deb Thiele. Press to enlarge.

Yawuru Conservation Estates for Broome

The future management of Broome's coastal environs promises to be vastly improved, with the signing of a comprehensive agreement between the State and Yawuru Traditional Owners, the legally recognised native title holders of Broome.

The native title claim, originally lodged in 1994, extends from Waterbank station north of Broome to Yardoogara in the south and covers the Broome townsite and two pastoral leases, Roebuck Plains and Thangoo.

The Native Title Global Agreement, consisting of two Indigenous Land Use Agreements, (ILUA) between Yawuru, the State Government and Shire of Broome, was signed in February 2010 and came into force on 6th August 2010 after a six month registration process in the National Native Title Tribunal.

The Yawuru agreement is a comprehensive package for economic and social development, cultural enhancement and conservation estate management. The package however, does not include royalties for individual benefit; instead, Yawuru people will receive income through employment and enterprises that are generated by the agreement.

Peter Yu, the Chief Executive Officer of Nyama Buru Yawuru Pty Ltd, the company set up by the Yawuru people to implement and manage the Agreement, describes how the coastal conservation estates in Broome will be managed over the next five years.

"In essence, the agreement provides a platform for Yawuru people to manage conservation lands in partnership with the Shire of Broome and Department of Environment and Conservation. An important part of the agreement is employing Yawuru people to jointly manage the coastal conservation estates.

"The proposed Yawuru conservation estate will comprise freehold area, township areas, Cable Beach intertidal zone reserves, Roebuck Bay intertidal zone reserves and the Roebuck Bay marine park. The conservation areas will not be gazetted until management plans are developed. The conservation estate will be jointly managed by the Yawuru Corporation, Department of Environment and Conservation and the Shire of Broome for the purposes of conservation, recreation and customary Aboriginal use and enjoyment. The conservation reserves cover a large part of the Yawuru coastline between its most northern boundary at Willie Creek to its most southern boundary, just below Eco Beach."

The management of Roebuck Bay's coastline will be supported by a recently announced Caring For our Country Coastcare community grant that Yawuru will manage. The project will record Yawuru knowledge of the coastline and develop a management plan for the area. That plan will focus on access by non-Yawuru people, preservation and management of the coastline and interpretive information for visitors.

The Yawuru coastline includes a significant site for migratory shorebirds and extensive seagrass beds, which are important feeding areas for dugong. The project will include cultural mapping, taking old people back to country, recording language names and stories for places, flora and fauna and the history of these places. The cultural mapping exercise will feed into a preliminary planning process for the area which Yawuru people will use to develop a Land and Sea Management Plan.



Junie Djiagween, Jimmy Edgar, Sarah Yu & Dean Mathews on a field trip on Yawuru land to identify priorities for management. © Kandy Curran.



Mathew Dean, Junie Djiagween, Jimmy Edgar and Sarah Yu inspect two of the 23 uncontrolled drains that carry stormwater into Roebuck Bay. Image © Kandy Curran

A Brief Update on the Roebuck Bay Working Group

The RBWG boasts 48 members and includes Yawuru Traditional Owners, representatives from the community, conservation, ornithology, government and industry including pearling, tourism, shipping and fishing. Without any management plans to protect Roebuck Bay into the future, the RBWG formed in 2004 with the aim of progressing a community based management plan to protect the high natural and cultural values and compatible uses. The RBWG's success is based on a commitment to Traditional Owner and community involvement in management planning, and dedication to building local capacity to care for the natural and cultural heritage of Roebuck Bay. The RBWG's achievements, which include a Western Australian Coastal award include:

Roebuck Bay management planning

- Raising awareness of shorebird conservation and protection;
- Mapping community values and issues (2009);
- Developing a Lyngbya Contingency Plan (2009);
- Contributing to development of an Ecological Character Description (2009) of the Bay;
- Developing a community based management plan for the Crab Creek area (2010);
- Developing a Preliminary Draft Management Plan for the Ramsar site (2010);
- Developing Roebuck Bay Interim Management Guidelines flyers in 2009 to guide the community on the wise use and management of Roebuck Bay:

<http://www.roebuckbay.org.au/pdfs/Interim-Management-Guidelines.pdf>



Cover of the Roebuck Bay Interim Management Guidelines, launched by the Roebuck Bay Working Group in 2009.

Building capacity and education

The RBWG has been working hard to increase understanding of Roebuck Bay's natural and cultural values and build local involvement in its management. Examples include:

- Flyers and signage on Roebuck Bay's natural and cultural values;
- Involvement in 'Celebrate the Bay' Forums in Broome in 2004 and 2006;
- Formation of RBWG Sub-Group to address Lyngbya blooms in the bay (2006/7/8);
- Co-hosting a Lyngbya Forum to inform the community about algal blooms in bay;
- **A WA Coastal Award in the Outstanding Community Group Effort (2007);**
- Media output in newspapers and magazines about Roebuck Bay;
- Promoting community involvement in projects monitoring key species in Roebuck Bay: Australasian Wader Studies Group (BBO), Benthos Monitoring (BBO), Shorebird Disturbance Monitoring (BBO), Seagrass Monitoring (EK); Dolphin Monitoring (WWF);
- Promoting community events to remove rubbish from Roebuck Bay;
- Producing a quarterly RBWG Newsletter to build capacity and education;
- Building an awesome website about Roebuck Bay and work of the RBWG www.roebuckbay.org.au/

Roebuck Bay Working Group

Member Profile

Tanya Vernes (WWF Kimberley Program Manager)

When Tanya Vernes first flagged the idea of forming a group to begin a community driven management planning process to protect Roebuck Bay's values, she distinctly recalls being told not to pursue the idea.

"With native title not determined back then, and overlapping tenure meaning no one agency or group was responsible for the bay it was thought to be too hard. I considered this advice for about... five seconds then went ahead because the one thing that was clear to me, regardless of people's interests or lifestyle, was that everyone wanted to see the bay managed. There was an overriding sense of unity on that front. It didn't matter who they were, they just wanted the bay's natural and cultural values protected," Tanya Vernes said.

When the Roebuck Bay Working Group (RBWG) formed in 2002, Yawuru Traditional Owners made up 50 percent of the membership. Although it was slow to get going at the outset, the group worked together to develop Terms of Reference, then began a values mapping project to identify the natural and cultural values that needed to be managed and protected.

The group identified bite sized projects that could be tackled by a voluntary group with little funding, but also planned projects to enable the community to come along on the journey step by step, without having anything surprised upon them, basing the approach on education, inclusion and responsibility.

Whilst WWF provided the initial funds for the first few years, Tanya's next hurdle was to secure funds for the longer term including the employment of a RBWG secretary.

"It was really hard to find funding in the beginning but DPI came through with some small grants to fund part time employment and we were able to build on this," Tanya Vernes said.

So what has inspired Tanya to stay with the award winning project over the last eight years?

"I love Roebuck Bay, there is nothing like it. If I need a lift in my day, I will go and get a view of the bay. I can't imagine Broome without Roebuck Bay.

"I am in awe of the values of the bay, the snubfin dolphins, mangroves, seagrass, benthos, the big tides, the whales and the turtles - you can just go on and on.

"What I also love is that it is a people's bay. We all use and depend on it, from Aboriginal people fishing and hunting to people kayaking or birdwatching.

"I am concerned though, that local people are not aware of just how unique Roebuck Bay is and the urgency to protect it. There are a lot of issues on Broome's doorstep, including industry, that require more attention and management now, so we are not trying to fix mistakes in the future. Roebuck Bay is internationally recognised as an incredibly rare and significant place, yet we are falling down locally. We need more awareness but also commitment to protect it into the future. We are in a unique position to set the bar high, and Roebuck Bay deserves nothing less," Tanya Vernes said.



Tanya Vernes is one of 49 members on the RBWG who work together to develop management plans to protect and manage Roebuck Bay's unique values into the future. Image © Kandy Curran.

Book Review

Invisible Connections. Why migrating shorebirds need the Yellow Sea by Jan van de Kam with Phil Battley, Brian McCaffery, Danny Rogers, Jae-Sang Hong, Nial Moores, Ju Yung-Ki, Jan Lewis & Theunis Piersma.

Each year, invisible to the naked eye, millions of migrating shorebirds fly from Australasia towards the tidal flats of the Yellow Sea bordering China and Korea. Many of them begin their journey from Roebuck Bay or Eighty Mile Beach. For those of you who would like to broaden your knowledge about the risks inherent in a shorebird's migratory lifestyle, check out a fantastic new book published by the CSIRO.

The book, titled ***Invisible Connections***, provides fascinating detail about shorebird feeding, migration, breeding and survival challenges. It also contains some 240 splendid photographs by Dutch photographer Jan van de Kam, whom you may know from a previous publication, ***Life along Land's Edge***.

The book reveals the crucial role that the shoreline of the Yellow Sea plays in shorebird migration and how shorebirds' very survival is being threatened by developments. If proof of the magnitude of the threat is needed, the recent news about the Great Knot, a shorebird whose non-breeding stronghold is Roebuck Bay and 80 Mile Beach, is more than enough. Data gathered by the Broome-based Global Flyway team has revealed that Great Knot numbers have declined so dramatically that the species has had its official conservation status on the IUCN's Red List of Threatened Species (the most objective and authoritative system for classifying species according to their risk of extinction) upgraded from of Least Concern to Vulnerable: they are now considered to be at 'high risk of endangerment in the wild'. The same has happened with the Eastern Curlew. The cause of the decline in numbers is at least in part the loss of feeding grounds in South Korea, following the development at Semangeum (reported in EK News in 2008 and 2009). But, as recent reports from China reveal, it is also because alternative sites where the birds might have moved to are also disappearing — being reclaimed and re-engineered at an amazing rate, turned into fish ponds, oil exploration sites, industrial zones, housing estates etc. At one site important for Red Knots there is only 7 km left of the 17 km that used to support 50,000 plus birds.

Copies of *Invisible Connections* are available from Broome Bird Observatory for \$50.00. Giving the book as a present is a positive way of raising awareness about the vulnerability of these amazing shorebirds and the crucial importance of their habitat in Roebuck Bay and along the East Asia-Australasian flyway to their breeding grounds in Siberia. And, if you are into volunteering, give the Bird Observatory a call to find the date of the next shorebird monitoring activity: Ph: 91935600.

For more information on *Invisible Connections*: <http://www.publish.csiro.au/nid/20/pid/6278.htm>

Book Launch

The book launch of ***Invisible Connections*** will be held at the Broome Library, on October 13th 2010, at 6.30pm.





Human Impacts on Roebuck Bay

Lyngbya in Roebuck Bay

Outbreaks of the blue-green cyanobacterium, Lyngbya, have been detected in Roebuck Bay once again.

The blooms of *Lyngbya* which may be caused by increasing nutrient run-off and higher temperatures during the wet, have been sighted in large sections of water, mangroves, mud and rocks near Dampier Creek and on the seagrass meadows and northern shores of Roebuck Bay during the 2009/10 wet.

Since 2005 Lyngbya has been increasing each year and in 2009 was recorded within the Ramsar site boundaries for the first time.

Chris Hassell, shorebird researcher for the *Global Flyway Network* and *Australasian Wader Studies Group* in Broome, said that during the summer of 2009/10 the Lyngbya outbreaks on the northern shores, both on the beaches and the inter-tidal flats were the worst seen in 13 summers of research.

“In my early years I never saw any Lyngbya on the northern shores, then in 2004 I started to see it but only in the west of the bay near the Dampier Creek mangroves. The 2009/10 outbreak was the most severe with large swaths of it on the inter-tidal mudflats and also in the waves at high tide and in thick drying mats left by the receding tide. This was very different to previous years as it stretched all the way to the Crab Creek mangroves. I had never seen mats of Lyngbya left on the high tide until summer 2009/10.”

Lyngbya majuscula can occur naturally at low levels but can also bloom forming thick algal mats, as in Roebuck Bay. The blooms which can be toxic at certain stages of growth, can impact negatively on essential marine ecosystems such as seagrass and mangroves and their associated fauna. In its toxic state it can cause a range of symptoms in people in contact with it, which may include a burning sensation on the skin and eye irritation.

The Broome Community Seagrass Monitoring Project, co-managed by Environs Kimberley and the Department of Environment and Conservation, monitors the presence of algae in three set monitoring sites in Roebuck Bay. Coordinator Fiona Bishop said that Lyngbya can impact on the health of seagrass beds.

“Lyngbya can lead to a reduction in the density of seagrass meadows and it can adversely impact on animal species ranging from fish to dugong and turtles.

“Continued research into the presence and cause of these algae is important to keep the public safe and to protect the health of Roebuck Bay, which is of global significance.”

DEC have lodged a Caring For our Country grant application to investigate the cause of the Lyngbya nuisance and joint funded a project by Dr Sora Estrella - ***Tracking nutrient enrichment through the food web of migratory shorebirds of Roebuck Bay, Western Australia*** (full story page13).

HOW YOU CAN HELP - IN YOUR GARDEN

- If your garden requires fertilising, **READ the DIRECTIONS** so you don't overdo it.
- Fertilise in hotter months coming into the 'wet' to avoid run-off during large rainfall events.
- Use slow release fertilisers & avoid run-off.
- Better still, plant more natives & less lawn & use less fertilisers, water & money!
- Only rain down the drain - no garden wastes.
- Mulch & compost your lawns & gardens to increase water & nutrient retention.

HOW YOU CAN HELP – WITH YOUR CAR

Wash your car with a bucket and sponge on the lawn rather than the driveway or road and **ALWAYS USE** a **PHOSPHOROUS FREE (P-Free or NP)** detergent.

Members of the public are advised to avoid contact with Lyngbya in Roebuck Bay.

VOLUNTEERS NEEDED for projects in Roebuck Bay that are worthwhile and fun



Claudia Curran experiencing the joy of releasing a Bar-tailed Godwit. Image © Kandy Curran.



The muddy pleasures of volunteering and discovering the many creatures in the mudflats. Image © Kandy Curran.

Mud Sampling

Each month a small team takes mud samples at two sites in **Roebuck Bay**, which has the **richest biodiversity of any mudflat in the world**. These samples are sorted in the Broome Bird Observatory's 'mud lab', and then sent to a specialist team in the Netherlands (Netherlands Institute for Sea Research) for identification. The long term monthly sampling (14 years) enables the monitoring of seasonal and annual changes in invertebrate abundance in Roebuck Bay. Everyone is welcome to join the sampling sessions.

Contact: Peter Struik and Toni Marsh
T: 91935 600 E: bbo@birdsaustralia.com.au
W: www.broomebirdobservatory.com/

The mud sampling project is supported by



Shorebird Monitoring

Our group regularly undertakes research on the migratory shorebirds of Roebuck Bay. These shorebirds breed in the northern hemisphere as far away as Siberia, and spend the remainder of their year here in Roebuck Bay. The main activity is the capture, banding and release of birds for survival and migration studies. It is a privilege to hold these magnificent travelers in your hand. Newcomers and children are very welcome and will be given instruction in handling birds. The work is hot and hard and immensely rewarding!

Contact: Chris Hassell
M: 0408 954 655 E: turnstone@wn.com.au
W: www.globalflywaynetwork.com.au/



AWSG volunteers enjoying the work! Image © Kandy Curran.

The Australasian Wader Studies Group project is supported by



Come seagrass monitoring in Roebuck Bay

July 2010:

Wed 14th - 5am Fort Slipway

Thurs 15th - 5.30am Demco Carpark

Fri 16th - 6am Town Beach Carpark



Fun &
fascinating!
Help protect
an important
marine ecosystem

Free muffins &
freshly brewed
coffee!



Volunteering on Roebuck Bay

Seagrass Monitoring

Under the guidance of a team leader, volunteers from the Broome community meet every three months to monitor seagrass cover in the Bay. Inevitably the many unique marine creatures, dugong trails and peculiar animal tracks and traces divert our attentions temporarily, but ushered by the tide, our monitoring objectives are usually met within two hours at each of our three sites. New volunteers are always welcome, both adults and children, no experience necessary.

Contact: Fiona Bishop

M: 0422 244 145

E: seagrassmonitoring@gmail.com

Marine and Coastal Training in Roebuck Bay

Seagrass Watch Training

In September this year the wider community will have the opportunity to participate in a seagrass methodology training workshop to be delivered by scientists from Seagrass Watch. This workshop is important in building capacity in our region and is also interesting and fun, with rave reviews from a sell out crowd last year!

For more information and to register go to: www.seagrasswatch.org/training.html#workshop10 or contact the Broome Community Seagrass Monitoring Project Coordinator at seagrassmonitoring@gmail.com or by calling: 0422 244 145.

Broome Community Seagrass Monitoring Project presents

Seagrass Watch Training

WHEN: 10 - 12 September, 2010
WHERE: Department of Environment & Conservation, 111 Herbert Street, Broome
REGISTER: www.seagrasswatch.org/training.html#workshop10
COURSES: Level 1 (basic) & Level 2 (refresher)
COST: FREE with refreshments provided
MORE INFO: Phone 0422244145 / 91921922 or email seagrassmonitoring@gmail.com

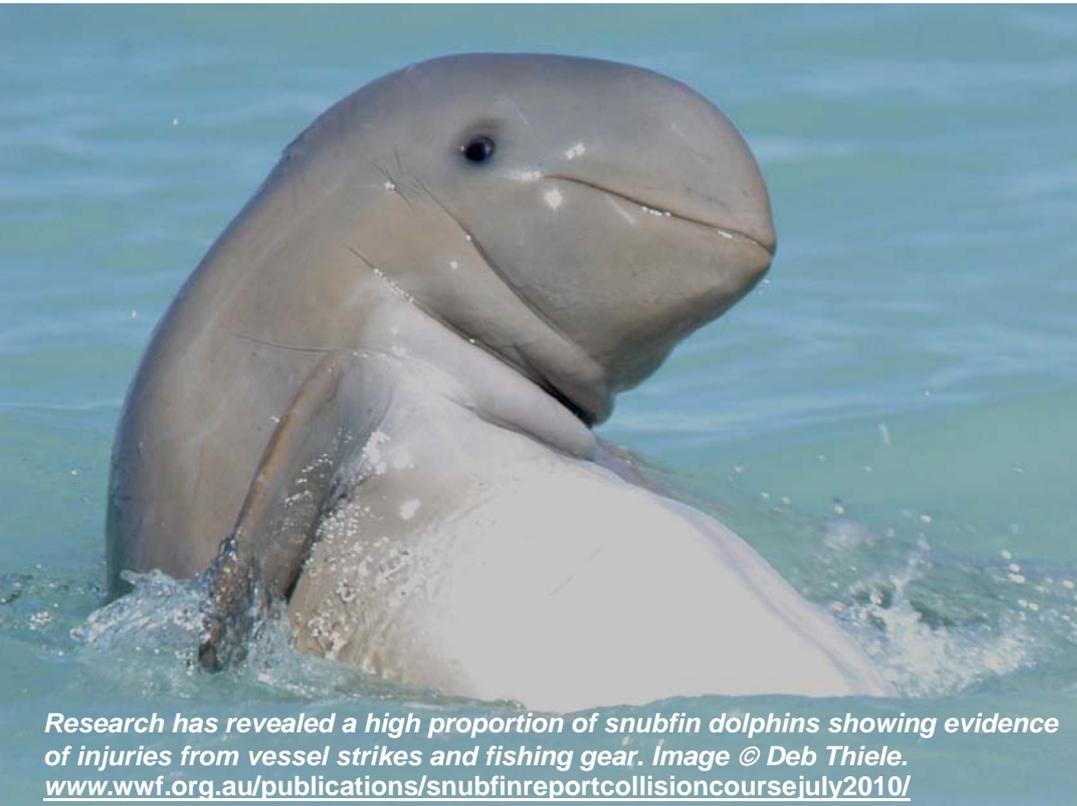
This Free Community Workshop will train participants in seagrass biology, ecology, identification & monitoring.

Participants will venture onto Roebuck Bay's mudflats to practice monitoring a site using the methodology of Seagrass-Watch, the world's largest scientific seagrass monitoring & assessment program.

Marine and Coastal Research in Roebuck Bay

Working to save Australia's only endemic dolphin: the Australian snubfin dolphin

By Tanya Vernes and Dr Deb Thiele



Research has revealed a high proportion of snubfin dolphins showing evidence of injuries from vessel strikes and fishing gear. Image © Deb Thiele. www.wwf.org.au/publications/snubfinreportcollisioncoursejuly2010/

Australian waters are home to Australia's only endemic, yet highly endangered dolphin: the Australian Snubfin Dolphin (*Orcaella heinsohni*). The Australian Snubfin Dolphin was recently described as a new species in 2005. This was the first time that scientists had described a new dolphin species since 1960.

Snubfin dolphins are found in the shallow estuarine and coastal waters of Australia's tropical north. Roebuck Bay on the shores of Broome appears to have the largest concentration of this enigmatic species.

Snubfin habitat includes nearshore areas of mangrove, seagrass and tidal mudflats, which are some of the most biologically productive of all marine ecosystems. As top level predators this species has an important role in the food web of ecosystems as well as indicators for ecosystem health. However, coastal dolphins are among the most threatened of all the world's cetaceans, because they live in the world's most heavily fished, polluted and developed environments. Snubfin dolphins are generally found in small and highly localised groups, making them particularly vulnerable to site-specific threats and local extinction. A loss of just three or four individuals from these areas in one year could see local populations disappear. Only a very few areas of high snubfin dolphin density have been identified in northern Australia, **Roebuck Bay is the only 'hotspot' for this species found so far on the West Kimberley coast, and has the highest known populations across Australia.**

Alongside coastal development, one of the possible biggest threats to these species is the direct and indirect impact of fishing activities (vessel strikes, discarded line, nets and marine debris). Because they feed in the shallow intertidal zones and move slowly boat strike is a serious threat. We have good indications of coastal migration for some proportion of the snubfins along the Kimberley Coast. However, we still know very little about this aspect of their lives, and if or to what extent activities such as increased shipping interfere with seasonal movements.

Very little is known about the snubfin dolphin. One of the first steps to help conserve a species so rare and endangered, is to understand them better – their biology (how often they reproduce and how long they live), their ecology (what they feed on and where they breed) and their distribution (their favourite habitats).



Roebuck Bay is a 'hotspot' of concentration for the endemic snubfin dolphin only found in northern Australia, with 161 individuals identified so far in the Bay. Image © Deb Thiele.

Marine and Coastal Research in Roebuck Bay

WWF-Australia Snubfin Dolphin Research Project in the Kimberley

Our project aims to improve the health and viability of snubfin dolphins in the Kimberley coast by strengthening population estimates, identifying the source and extent of current human interactions and reducing threats via mitigation efforts. WWF-Australia and Dr Deb Thiele have established a long term intensive survey program in Roebuck Bay and we are working with Aboriginal Sea Rangers to assist us identify critical habitat for this species and undertake surveys in the remote Kimberley coast.

Roebuck Bay, on the WA Kimberley coast is a 'hotspot' of snubfin dolphin concentration. In 2009 regular surveys were conducted in the bay resulting in a photo identification catalogue of >154 snubfin dolphins, 20 bottlenose and 7 Indo Pacific humpback dolphins. Our survey work from past years has shown that this relatively high density is rare, if not unique for the Kimberley Coast, and possibly Australian waters. However, the pressures on Roebuck Bay are rapidly expanding (for example, unprecedented population growth, 700% increase in Broome Port shipping activities over the last 2 years, and the threat of oil and gas developments). Correspondingly, preliminary observations indicate that boat strike incidences in the area are high.

In September 2009 the community based Roebuck Bay Working Group (RBWG) introduced voluntary Interim Management Guidelines (IMGs) for Roebuck Bay to protect the area until permanent management arrangements could be put in place. In an effort to mitigate the injuries to dolphins, and as a direct result of our research, the IMGs included **recommendations for boaters to reduce speed to less than 5 knots and to maintain a stable course in shallow areas of the bay where the dolphins forage and are more vulnerable to high speed/erratic boating**. We are working closely with the RBWG to inform the community of these guidelines through upcoming community field days.

Although Roebuck Bay supports a significant concentration of animals, many of the other sites of snubfin occurrence along the Kimberley coast support only small numbers. Remote parts of the Kimberley which may be expected to be safe havens for the dolphins are increasingly sought out by tourists and charter boats as interest in the Kimberley as a tourism destination grows.

The more equipped we are with data the more likely we can achieve effective conservation outcomes. We have a rare opportunity to act now as it is vital not to repeat the mistakes of the past and let Australia's unique native dolphin species disappear forever.

WWF's snubfin dolphin project is supported by Australian Government Coastcare and ING DIRECT. More information can be found at: www.wwf.org.au/publications/snubfin-dolphin-fact-sheet/
For more information on the dolphin sighting network and how you can get involved, go to www.kimberleydolphins.com/



*'Protect dolphins, dugongs and turtles from boating injuries by keeping a steady course and reducing boat speed to less than 5 knots around creeks, mangroves, seagrass and shallow turbid water' - words from RBWG's **Interim Management Guidelines**.*
Image © Deb Thiele.

Sustaining Seagrass by Fiona Bishop Broome Community Seagrass Monitoring Project

Only in recent decades has the ecological and economic value of the fragile marine plant seagrass been recognised. It was the Fisheries Research and Development Corporation along with CSIRO's Marine Research Department that a decade ago recommended that seagrass mapping and monitoring be undertaken in the Kimberley as a matter of priority. Ten years on, the Broome Community Seagrass Monitoring Project is nearing completion of its baseline data collection phase, and bringing awareness about the importance of seagrass to hundreds of volunteers through first hand engagement with scientific monitoring in the meadows of northern Roebuck Bay. The project helps ordinary people to learn what scientists and the fishing industry now know, that seagrass is extraordinarily valuable.



Roebuck Bay's seagrass meadows are efficient at capturing & storing carbon, another reason to look after them!

Seagrass is the main food of turtles and dugongs and provides a home for hundreds of species of marine animals. As a nursery for hatchling fish, seagrass helps sustain commercial and recreational fisheries, and is an efficient "blue carbon sink", helping to remove harmful levels of carbon from our atmosphere. As it decomposes into detritus, it feeds invertebrates such as crustaceans, molluscs and worms, thereby supporting the food chain right up to the seafood on our dinner plates. Via the food chain, seagrass also supports more than 100,000 shorebirds that come to the Bay to feed. Seagrass absorbs nutrients from coastal run-off and stabilises sediment, helping to keep water clean. It oxygenates the ocean, and is an "indicator species", its health state indicative of the health of the wider coastal area.

Unfortunately, seagrass loss is accelerating in Australia and internationally. Before 1940 we were losing 1 percent per year globally, but since 1990 it has increased to 7 percent per year. Cockburn Sound, south of Perth, is a notorious example of how quickly seagrass can vanish. Marine biologists estimated that the seagrass meadows were reduced from some 4200ha to 900ha during a period of industrial development on the shore between 1954 and 1978.

While the status of seagrass in Roebuck Bay cannot be properly calculated until baseline data studies are complete, there has been concern for the seagrass meadows in recent years following increasingly severe outbreaks of the blue-green cyanobacterium *Lyngbya majuscula*. The *Lyngbya* forms thick slimy mats that smother the delicate seagrass plants, preventing light from penetrating and causing leaf death. There is concern that every year that the *Lyngbya* chokes the seagrass ecosystem, our fisheries and surrounding coastal area also suffer. *Lyngbya majuscula* is also a human health risk, becoming toxic at certain stages.

Given global seagrass loss and local threats, it is important to conduct regular scientific monitoring of Roebuck Bay's seagrass meadows so that their health status can be mapped over time and data made available to coastal managers.

The Broome Community Seagrass Monitoring Project, which is co-managed by Environs Kimberley and DEC and currently funded by Coastwest and Broome Port, engages community volunteers to monitor three sites in Roebuck Bay, using the methodology of Seagrass-Watch (www.seagrasswatch.org/home.html), the largest scientific seagrass assessment and monitoring program in the world. Each monitoring session must be completed within a small window of time at very low tide when the meadows are exposed. This means that volunteers are vital to the success of monitoring activities; the more participants there are, the faster the work is completed. It's lucky that seagrass monitoring is such an enjoyable activity. Volunteers report that they also enjoy learning the methodology and putting it into practice, knowing that they are contributing to science in an important way.



Seagrass monitoring is a great way to learn about Roebuck Bay's incredible natural values. Image © Fiona Bishop.



Dr Sora Estrella tests for nutrients at Town Beach. Image © Sharon Ferguson.

Nutrient Enrichment and Lyngbya Blooms in Roebuck Bay, are they affecting the Nature Values?

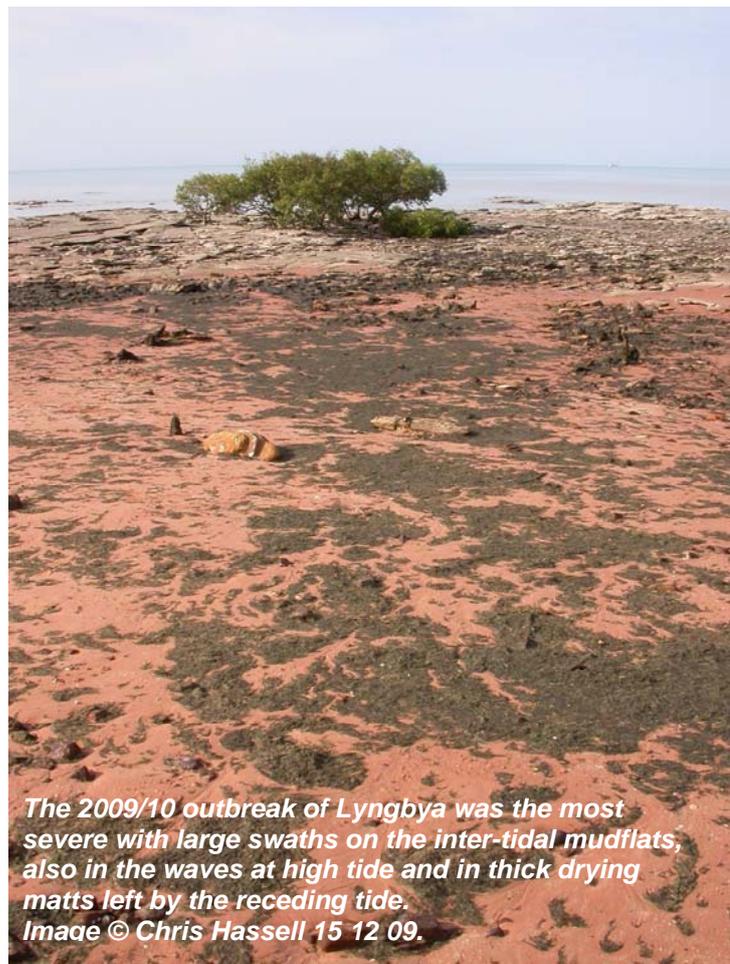
By Dr Sora M. Estrella (School of Animal Biology, University of Western Australia).

One group of organisms fundamental to coastal ecosystems are migratory shorebirds. They represent a significant part of the biodiversity of coastal wetlands and play a pivotal role in mass and energy flow within estuarine food webs. Many species undertake long distance migrations, and depend on a limited number of intertidal habitats as stop-over points, which make them extremely vulnerable to the loss or degradation of these locations. Recent studies on population trends for a number of species of migratory shorebirds have demonstrated that on a worldwide scale on known population trends, 48% of shorebirds are in decline. But as yet the underlying causes of declines have not been identified, although habitat loss or degradation is likely.

North-western Australia is the main region for shorebirds on the continent and Roebuck Bay is one of the principle sites for wintering and migratory shorebirds in this region. The importance of Roebuck Bay appears to relate to the incredibly high diversity and biomass of benthic invertebrates, which places this tropical intertidal area among the richest mudflats in the world. In fact **Roebuck Bay** was designated as a Wetland of International Importance in 1990 under the Ramsar Convention (1971), and it **currently ranks in the top eight shorebird migratory stop-over sites in the world**. It is, therefore, a highly significant bird habitat worthy of preservation at a national and international level.

However, **recent studies in Roebuck Bay indicate a developing issue with respect to nutrient enrichment**. A study of regional groundwater has shown elevated nutrient levels in water originating from the area of Broome and moving into the bay, stable isotope studies have detected elevated $\delta^{15}\text{N}$ signature in phytoplankton and filamentous algal from the bay, indicative of nutrient enrichment of the food web and preliminary assessment of the nutrient loads in sediments adjacent to Town Beach indicating elevated levels of P and N, are indicative of nutrient enrichment. However, it is unknown if nutrient enrichment is affecting the shorebirds that use the bay during migration.

Given the international importance of Roebuck Bay, and developing pressures on the bay, the project *Tracking nutrient enrichment through the food web of migratory shorebirds of Roebuck Bay, Western Australia* funded by the Department of Environment and Conservation and Broome Port, has the main objective to assess potential effects of nutrient enrichment on the food webs and shorebirds in Roebuck Bay.



The 2009/10 outbreak of Lyngbya was the most severe with large swaths on the inter-tidal mudflats, also in the waves at high tide and in thick drying matts left by the receding tide. Image © Chris Hassell 15 12 09.

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A common effect of nutrient enrichment is that it can significantly alter biodiversity, producing shifts in the composition of primary producers' and favouring for example cyanobacterium blooms.

In fact, since 2005 outbreaks of cyanobacterium *Lyngbya majuscula* have been recorded in Roebuck Bay, and the extent and biomass of these blooms is increasing every year. In February 2009 *Lyngbya* was recorded within the Roebuck Bay Ramsar site boundaries for the first time. However, it is unknown if *Lyngbya* blooms are affecting the bay shorebirds and macroinvertebrate populations.

The main aims of the project "*Effects of nutrient enrichment and toxic Lyngbya blooms on benthic invertebrates and migratory shorebird communities of Roebuck Bay Ramsar site*", funded by the State Natural Resource Management, are:

- i) determine the extent, duration and intensity of the cyanobacteria blooms in Roebuck Bay and endeavour to identify triggers,
- ii) examine the impacts of *Lyngbya* on benthic invertebrate diversity and foodwebs of shorebirds,
- iii) recommend management actions to control/limit the effects of *Lyngbya* blooms, and
- iv) raise community awareness of risks of *Lyngbya* on human and ecosystem health.

Both projects are possible due to the collaboration of The University of Western Australia, the Broome Bird Observatory, the Australasian Wader Studies Group, the Department of Environment and Conservation (West Kimberley District), Andrew Storey (UWA), Theunis Piersma (NIOZ and University of Groningen), Grant Pearson (Bennelongia Pty Ltd), Chris Hassell (Global Flyway Network) and John Curran. S.M.E. is supported by a postdoctoral grant of the Spanish Ministry of Science and Innovation.



A common effect of nutrient enrichment in wetlands are cyanobacterium blooms. Lyngbya (cyanobacterium) has been occurring in the Bay since 2005. Image © Fiona Bishop.

Funding of Roebuck Bay Working Group Projects for 2009/10



CARING
FOR
OUR
COUNTRY

A Caring For our Country application has resulted in Rangelands NRM funding for the RBWG to deliver the project: ***'Increased community understanding, participation and stewardship in the management of Roebuck Bay and the Ramsar site.'*** As a result the RBWG will be:

- Facilitating volunteer engagement in the RBWG and on ground projects that protect, restore or maintain the natural and cultural values of the Ramsar site;
- Identifying and prioritising on ground projects which address Ramsar threats consistent with Rangelands objectives;
- Facilitating and supporting the implementation of contracted on ground works with identified delivery organisations.

Rangelands NRM Coordinating Group is one of the 56 Natural Resource Management Groups in Australia and encompasses most of WA – that is everything beyond the WA Wheat belt agricultural zone. Rangelands currently have offices located in Carnarvon and Kununurra.

Originally from Derby, John Silver has been the Program Manager at Rangelands for four years and is setting up an office at Broome Lotteries house this year.

“The move from Derby to Carnarvon was always going to be temporary (about two years). We’ve met some great people, but looking forward to coming back home.

“Rangelands have funded a number of NRM projects in the West Kimberley, focusing on the Ramsar values of 80 Mile and Roebuck Bay, Monsoon Vine thickets on the Damper Peninsular, fire management, invasive weeds and feral animals.

“Most projects have an environmental, pastoral and Indigenous element. For example, “Rangelands NRM is currently funding the Co-ordinator for Roebuck Bay Working Group and hopes to fund a number of projects aimed at protecting the Ramsar values of the Bay.

“I expect the Broome Office will employ a Landcare Facilitator, Indigenous Facilitator and Projects Coordinator. Geographically the Broome office will support NRM projects across the Pilbara and Kimberley,” John Silver said.

Rangelands Broome Office opens 11 October.



NRM Rangelands Program Manager John Silver is expected on Roebuck Bay sooner rather than later, with a move to Broome in October 2010.

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To find out more about Roebuck Bay's values and management

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The Roebuck Bay Working Group has made every effort to verify all facts in this newsletter.