Looking for Dolphins and Dugongs in Mandubarra Sea Country

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Executive Summary

Background
In 2013, funding for this project ‘Looking for dolphins and dugongs in Mandubarra sea country’ was provided by the Norman Wettenthal Foundation (http://nwf.org.au/grants/awarded-grants/2013-august).

The aims of this project are to:
1. increase local indigenous capacity to monitor dolphin and dugongs in Sea Country,
2. monitor dolphin and dugong populations in Sea Country to contribute to State and Commonwealth conservation assessments, and
3. raise local community awareness of the conservation status of marine megafauna

As part of this project, boat-based surveys were conducted in Mandubarra Sea Country from 26-28 September 2016 and 16 October 2016.

Survey Effort
Four days of surveys were conducted throughout Mandubarra Sea Country. From the start to end of each day, a total of 167.9km was travelled over 13 hours. Of this effort, a total of 91.2km over 9 hours was spent ‘on transect’ searching for dolphins, dugongs and other marine megafauna.

Sea conditions were generally very good, with the majority of surveys undertaken in Beaufort 2 conditions (Table 1; Figure 13).

Dolphin Sightings
One bottlenose dolphin group was sighted during surveys, consisting of 2 adults and 2 calves:

Megafauna Sightings
During surveys the following megafauna were sighted:
- 1 shark
- 4 turtles – unknown species
- 1 flatback turtle

Photo-identification
A total of 199 images were taken of the bottlenose dolphin group. The two adults were photo-identified, while the two calves were unidentifiable.
Discussion

Dolphin Sightings
- One bottlenose dolphin group was sighted during surveys. The low number of sightings was not unexpected as Mandubarra Sea Country is relatively deep, with few coastal/mangrove ecosystems along the coast.
- Future surveys in Mandubarra Sea Country are therefore a high priority in order to determine habitat preferences of inshore dolphins along the North Queensland coast.

Megafauna Sightings
- Numerous turtles were sighted during surveys, including confirmation of a flatback turtle in Mandubarra Sea Country.
- The flatback turtle that had floaters disease and was rescued would almost certainly have perished had she not been recovered. The easy access to the Mandubarra Turtle Rescue Centre highlighted the importance of this centre to turtle conservation and rehabilitation efforts in the region.

Future Survey Schedule
- Mandubarra Aboriginal Land and Sea Inc. was provided funding for a vessel in late 2016 by the Lotteries Board. This vessel will now enable Mandubarra Aboriginal land and Sea Inc. to conduct more turtle and dolphin monitoring in their Sea Country.
Background

Introduction
Mandubara Traditional Owners and local community of the south Innisfail region, north Queensland, have an on-going commitment to conservation of marine megafauna.
Mandubara Traditional Owners have recently submitted an application to the Great Barrier Reef Marine Park Authority (GBRMPA) for a Traditional Use of Marine Resources Agreement (TUMRA), and are subsequently eager to begin monitoring marine megafauna in Sea Country to enable effective management of their TUMRA region.

As part of increased management of Sea Country, Mandubara and have recently been awarded a State Government Grant to establish a marine turtle rehabilitation center at Coquette Point, Innisfail in co-operation with Cairns Turtle Rehabilitation Centre (http://www.ehp.qld.gov.au/coastal/management/indigenous-sea-country-grants.html).

Inshore Dolphin and Dugong Monitoring
The conservation status of inshore dolphins and dugongs in Mandubara Sea Country remains unknown, although opportunistic sightings are often reported. Mandubara Traditional Owners are particularly interested to gain an understanding of the conservation status of the Australian snubfin dolphin (Orcaella heinsohni), which is an endemic dolphin species facing continued and increasing threats along the Queensland coast. These threats include accidental catch in shark nets and fishing gear, habitat degradation and loss from port and coastal developments, and exclusion from important areas from coastal construction disturbance. Monitoring Australian snubfin dolphin populations is now a national priority to enable State and Commonwealth status assessments, which this project hopes to contribute towards.

Dugong and Turtle Monitoring
The key species for management of TUMRA regions are turtle and dugongs. Through the Mandubara TUMRA, there will be no take of turtles or dugongs, given that populations are currently facing great pressure as a result of recent floods and associated habitat loss (i.e. seagrass). This project hopes to contribute to monitoring of dugong and turtle populations, to assess status and have a presence on the water to ensure compliance with TUMRA regulations.

Continuing Threats
Continued threats to marine megafauna in Mandubara Sea Country and along the Queensland coast are illegal take for human consumption, coastal development (i.e. the proposed development at Ella Bay - http://www.ellabay.com.au), accidental bycatch from the inshore finfish fishery (i.e. an Indo-Pacific humpback dolphin was found in February 2013 that appeared to have been caught in a gillnet) and degradation of habitat. It is therefore to raise awareness within the local community about conservation status of marine megafauna, and threats facing populations.

In 2014, funding for this project ‘Looking for dolphins and dugongs in Mandubara sea country’ was provided by the Norman Wettenhall Foundation. As noted on the Norman Wettenhall Foundation website (http://nwf.org.au/grants/awarded-grants/2013-august):
Mandubarra Land and Sea Inc

Looking for dolphins and dugongs in Mandubarra sea country

Mandubarra Traditional Owners and local community of the south Innisfail region, north Queensland, have an on-going commitment to conservation of marine megafauna. This project aims to carry out important monitoring of marine megafauna, as well as begin collaborations with the adjacent Traditional Owner groups, to encourage management across Sea Country.

Collaboration with university researchers will enable and assist with training and capacity building, development of appropriate community awareness materials, and ensuring that information gathered from this project will contribute towards a national assessment of the status of the Australian snubfin dolphin. The collaboration between James Cook University and Mandubarra provides Mandubarra people with the opportunity to increase their scientific knowledge, which can complement their cultural knowledge.

Project Objectives

The aims of this project are to:
1. increase local indigenous capacity to monitor dolphin and dugongs in Sea Country,
2. monitor dolphin and dugong populations in Sea Country to contribute to State and Commonwealth conservation assessments, and
3. raise local community awareness of the conservation status of marine megafauna

Figure 1. Australian snubfin dolphin, a focus species of this project (Photo – Isabel Beasley)

Norman Wettenhall Foundation Background

Established in 1997, the Norman Wettenhall Foundation acted as the culmination of Norman Wettenhall’s lifelong love affair with the Australian bush and the birds and plants that inhabit it. Funds for the Foundation were raised from the sale of Norman’s treasured natural history book collection, which was widely regarded as the most complete private collection celebrating the wonder and beauty of Australia’s fauna and flora.

Norman Wettenhall had from his youth a great love and appreciation for Australian art, culture, history and this continent’s unique ecosystems. Like many people who make a difference, while he was out of step with public opinion of his time, he possessed the necessary selflessness and stubbornness, the dedication and determination to convince others to share his vision and walk alongside him (http://nwf.org.au/about/the-founder/).
Study Area

Mandubarra Sea Country extends from Maria Creek north to Mourilyan Harbour, Innisfail, north Queensland (Figure 2).

Figure 2. Location map of Mandubarra Sea Country, Innisfail (left), with a close up of Mandubarra Sea Country (right).
September 2016 – Boat-based Surveys

Boat-based surveys for the Norman Wettenhall Foundation funded project ‘Looking for dolphins and dugongs in Mandubarra sea country’ were conducted from 26-28 September 2016 and 16 October 2016. This project was also part of a larger regional-wide survey conducted by James Cook University.

Project Participants

<table>
<thead>
<tr>
<th>Mandubarra Land and Sea Inc.</th>
<th>James Cook University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henry Epong</td>
<td>Isabel Beasley</td>
</tr>
<tr>
<td>Jason Epong</td>
<td>Mathew Golding</td>
</tr>
</tbody>
</table>

Vessel Used

The vessel used for these surveys was ‘Warranaka’, a 5.8m Formosa centre console, which was donated to James Cook University by WWF-Australia and Tassal (Figure 3).

![Image](Photo – Isabel Beasley)

Figure 3. Survey vessel sponsored by WWF-Australia and Tassal (Photo – Isabel Beasley)

Transect Lines

Transect lines were pre-designed, and aimed to systematically cover Mandubarra Sea Country. Transects were spaced 5km apart, and extended 10-20km from the coast (i.e. one section was 20km from the coast, followed by one section 10km from the coast; Figure 4).

A total of 89km of transect lines were pre-designed for Mandubarra Sea Country.
Data Collection

Methods for data collection are discussed in the ‘Mandubarra Survey Manual for Dolphins and Dugongs’. Key points are:

- the survey vessel travelled at 10-12km/hr (5-7kts/hr) while ‘on effort’
- surveys were only conducted in Beaufort 1-3 conditions
- while ‘on effort’ two observers searched on the left and right sides of the vessel, with one recorder position when enough personnel were available (Figure 5)
- observers rotated positions every 30 minutes to reduce observer fatigue
- data sheets and GPS were used to collect survey information (total km travelled, total time, Beaufort state)
- a PDA with Fulcrum sequence was simultaneously used to collected effort and sighting information
- when a dolphin group was sighted, effort ceased and the vessel approached the group to take photographs and record associated information (i.e. group size and composition). Once enough photographs were taken, or the group was lost, the vessel would return to the transect line and continue ‘on effort’
Survey Effort
Four days of surveys were conducted throughout Mandubarra Sea Country. From the start to end of each day, a total of **167.9km was travelled over 13 hours**. Of this effort, a total of **91.2km over 9 hours** was spent ‘on transect’ searching for dolphins, dugongs and other marine megafauna (Table 1).

Table 1. Effort summary information from Mandubarra surveys conducted in September/October 2016

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Total KM Travelled</th>
<th>Total Time</th>
<th>Total Transect KM</th>
<th>Total Transect Time</th>
<th># Sightings</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-Sep-16</td>
<td>Innisfail South</td>
<td>80.3</td>
<td>7:29</td>
<td>60.1</td>
<td>6:07</td>
<td>1</td>
</tr>
<tr>
<td>27-Sep-16</td>
<td>Innisfail South</td>
<td>48.2</td>
<td>3:02</td>
<td>15.4</td>
<td>1:35</td>
<td>0</td>
</tr>
<tr>
<td>28-Sep-16</td>
<td>Innisfail South</td>
<td>29.0</td>
<td>2:09</td>
<td>15.7</td>
<td>1:44</td>
<td>0</td>
</tr>
<tr>
<td>16-Oct-16</td>
<td>Innisfail South</td>
<td>10.4</td>
<td>1:00</td>
<td>0.0</td>
<td>0:00</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>167.9</td>
<td>13:40</td>
<td>91.2</td>
<td>9:26</td>
<td>1</td>
</tr>
</tbody>
</table>
Surveys from 26-28 September covered all of Mandubarra Sea Country (Figures 6-8). Unfortunately no surveys were possible on 16 October 2016 because of poor weather conditions.

Figure 6. Complete survey lines completed in Mandubarra Sea Country

Figure 7. Survey lines completed on 26 September (left) and 27 September (right)

Figure 8. Survey lines completed on 28 September (left) and 16 October (right)
Sea conditions were generally very good, with the majority of surveys undertaken in Beaufort 2 conditions (Table 2; Figure 9).

### Table 2. The number of kilometers surveyed in each Beaufort state throughout Mandubarra Sea Country

<table>
<thead>
<tr>
<th>Beaufort</th>
<th>Kilometers surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4.0</td>
</tr>
<tr>
<td>1</td>
<td>23.9</td>
</tr>
<tr>
<td>2</td>
<td>36.4</td>
</tr>
<tr>
<td>3</td>
<td>26.9</td>
</tr>
<tr>
<td>4</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>91.2</strong></td>
</tr>
</tbody>
</table>

Figure 9. Bar graph showing the number of kilometres travelled in each Beaufort State throughout Mandubarra Sea Country

### Dolphin Sightings

One bottlenose dolphin group was sighted during surveys (Figure 10):
- 1 bottlenose dolphin group (total group size = 4)
Relative Sighting rate

The sighting rate for inshore dolphins in Mandubarra Sea Country is shown in Table 3.

Table 3. Group and individual sighting rate for each dolphin species.

<table>
<thead>
<tr>
<th>Species</th>
<th>Groups/km surveyed</th>
<th>Individuals/km surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlenose</td>
<td>0.01</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Bottlenose dolphins

One bottlenose dolphin group (total group size = 4) was sighted (Figure 11), consisting of:
- 2 adults
- 2 calves

No juveniles were sighted. This groups was sighted out from Mourilyan Harbour, with the following environmental parameters collected at the sighting location (Table 4):

Table 4. Environmental parameters at the humpback dolphin sighting location.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Depth (m)</th>
<th>Temperature (°C)</th>
<th>Salinity (ppt)</th>
<th>Turbidity (NTU)</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure</td>
<td>23.6</td>
<td>26.9</td>
<td>35.9</td>
<td>0.0</td>
<td>8.4</td>
</tr>
</tbody>
</table>
Figure 11. Bottlenose dolphins sighted in Mandubarra Sea Country

Megafauna Sightings

During surveys the following megafauna were sighted (Figure 12):

- 1 shark
- 4 turtles – unknown species
- 1 flatback turtle

Figure 12. Megafauna sighted in Mandubarra Sea Country
During surveys on 28 September 2016, an adult female flatback turtle was found floating at the surface, unable to dive, at 1340pm (Figures 37 and 38). It was at location: -17.75957, 146.19206 (21.6m water depth and 26.5 degrees water temp). The turtle was collected and taken back to the Mandubarra Turtle Rehabilitation Centre (Figures 13-15). The turtle, later named ‘Isabel’, was released at Kurramine Beach on 4 February 2017.

Figure 13. Flatback turtle recovered on 28 September 2016

Figure 14. Flatback turtle recovered on 28 September 2016
Figure 15. Flatback turtle recovered on 28 September 2016
A total of 199 images were taken of the bottlenose dolphin group. The two adults were photo-identified, while the two calves were unidentifiable (Figures 16-18).

Bottlenose dolphins

![Image](image16.png)

**Figure 16. TADU01_26 September 2016_Sighting 1**

![Image](image17.png)

**Figure 17. TADU01 (with calf)_26 September 2016_Sighting 1**

![Image](image18.png)

**Figure 18. TADU02 (with calf)_26 September 2016_Sighting 1**
Discussion

Dolphin Sightings
- One bottlenose dolphin group was sighted during surveys (Figure 19). The low number of sightings was not unexpected as Mandubarra Sea Country is relatively deep, with few coastal/mangrove ecosystems along the coast.
- Future surveys in Mandubarra Sea Country are therefore a high priority in order to determine habitat preferences of inshore dolphins along the North Queensland coast.

Megafauna Sightings
- Numerous turtles were sighted during surveys, including confirmation of a flatback turtle in Mandubarra Sea Country.
- The flatback turtle that had floaters disease and was rescued would almost certainly have perished had she not been recovered. The easy access to the Mandubarra Turtle Rescue Centre highlighted the importance of this centre to turtle conservation and rehabilitation efforts in the region.

Future Survey Schedule
- Mandubarra Aboriginal Land and Sea Inc. was provided funding for a vessel in late 2016 by the Lotteries Board. This vessel will now enable Mandubarra Aboriginal land and Sea Inc. to conduct more turtle and dolphin monitoring in their Sea Country.

Figure 19. Bottlenose dolphins (TDAU02+calf) sighted near Mourilyan Harbour on 26 September 2016