Curtin Artificial Reef, Moreton Bay Marine Park
Underwater Clean-up 2015 - 2017
Annual Progress Report 2015

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November 2015
Curtin Artificial Reef Underwater Clean-up
Progress Report 2015

Background
This project was proposed by The Underwater Research Group of Queensland Incorporated (URGQ) and funded by the State government Everyone’s Environment Grant Program.

URGQ was founded over 60 years ago by a group of spear fishers and since then had an affiliation of over 1000 members. URGQ owns its own Club house at Yeronga and a 6.8 ridged-hull inflatable vessel Diver 1. URGQ is a not-for-profit volunteer community group whose aim is to promote diving and research. Members meet every Wednesday and dives are organised for and by members. Trips are organised using Diver 1 or chartered vessels wherever there happens to be somewhere to dive e.g. West Timor, Truk Lagoon, PNG, Boreno, Cairns, Capricorn Bunker Group, Northern New South Wales.

Today URGQ is an exploratory SCUBA diving Club with over 70 active members. As the name suggests, URGQ members have a keen interest in research and as a group aim to promote diving and research. Members have wide ranging experience from novice recreational divers to professional underwater rig, scientific and explosive experts. URGQ has qualified instructors who volunteer their experience and expertise to assist during routine dives and on special projects such as this Underwater Clean Up.

Curtin Artificial Reef (Curtin / the reef) is located in Moreton Bay Marine Park one mile north of Cowan Cowan, Moreton Island (Fig 1). Curtin was established in 1968 after the State government passed an Order in Council to lease an area of seabed to the URGQ for 100 years. The reef was established with significant assistance from the late Frank Curtin, after whom the reef was named. Curtin Artificial Reef occupies an area of approximately 300m by 100m. The first wreck sunk to establish Curtin was the Amsterdam Barge which marks the northern end of the reef. The last vessel to be sunk on the reef was The Enterprise in 1998. There are 26 wrecks plus a variety of other structures that make up Curtin (Fig 2).

Curtin represents a significant natural and economic resource to the local and broader diving and fishing communities. Curtin has been colonised by benthic species which support a rich variety of resident and temporal fish populations. Mega fauna such as turtles, sharks and COD are regularly sighted. Curtin represents a monetary resource as it promotes diving and fishing to the general public. It is a significant resource donated to the diving and fishing community visiting Moreton Bay Marine Park by the URGQ.

The diving community has a unique opportunity to see firsthand the good, the bad and the ugly that Curtin offers:
- The specular marine communities,
- The marine debris and its effects resulting from boating and fishing, and
- The interactions between user groups such as divers and fishers.

The purpose of this project is to gather data to highlight the impacts of fishing gear on threatened marine species and share the information with school students and stakeholder groups such as fishers.

**Methodology**

The protocols and equipment used in previous clean-ups undertaken by the URGQ and NARC (UK group) were used as a basis for this project. A small group of Club members met to review protocols and ensure that up to date safe diving practices would be met.

The group considered the equipment detailed in the initial project proposal and made adjustments to ensure that clean-up dives could be conducted in a safe manner by divers with a variable amount of experience. The method of clean-up meets at least the following two basic criteria:

1. The equipment and method could be used by inexperienced divers; and
2. The equipment is specifically designed to contain and retain marine debris that is largely fishing line, weights, lures and anchors.

To trial the equipment and methodology a dive was planned and undertaken on 1 August 2015. To participate in the clean-up project pool training in the use of lifting bags was mandatory and is ongoing. Both the equipment and protocols described below are evolving with experience.

**Equipment**

The equipment purchased and modified for this project includes the following:

- 60 kg lifting bags with an automatic safety relief valve, shackles and lanyards,
- Cray bags,
- Onion sacks,
- An open topped milk crate with a lifting bag and knife attached (Figure 3),
- A solid bucket with a lid and a whole cut into the lid (Figure 4),
- Knives or shears with lanyards are available to divers taking part in the clean-up,
- VHF hand held radio is used to communicate ship to shore to maximise the number of divers who can dive on a single slack tide,
- A second vessel has been sourced and provided as in-kind support should one be required to put the marine debris once it has been brought to the surface, - Buoyed shot line.
Clean-up Protocol
For the purposes of this project marine debris is defined as lost or discarded equipment that represents a threat to marine species. At Curtin marine debris is mostly fishing line and lures. Lost bottles were specifically excluded from being collected as they are known to be habitat for blue ringed octopus and if they break represent a safety risk to divers.

The dive plan was altered from the initial proposal to include trips departing from Cowan Cowan, Moreton Island. This enabled greater participation by members and significantly increased project outcomes. The close proximity of Cowan Cowan to Curtin allows more divers to participate in clean-ups per day and enables access the reef when the weather would not permit a boat crossing from Manly. The new approach was trialled 22 – 23 August 2015. In partnership with QPWS rangers and the Cowan Cowan community the proposed project deliverables were achieved in a safer and more efficient manner. Valuable partnerships were formed for future trips.

Each clean-up dive is performed by two divers who use their preferred equipment of a lifting bag attached to either a crate; a bucket or an onion bag. Dives are planned to occur when the tide is slack or there is little current flowing. A descent is usually down an anchor line and divers clean-up the immediate area.

At the end of the dive, divers return to the anchor/shot line. Using a clip they attach the lifting bag and crate containing marine debris to the anchor/shot line and put enough air into the lifting bag to enable it to float gently to the surface carrying the marine debris. This technique also prevents lifting bags from floating away from the anchored boat. At the surface the boat handler lifts the crate into Diver 1. The divers are now free to ascend to the surface unencumbered and perform a decompression safety stop on the way.

Pool Training
Pool training is mandatory for members wishing to participate in underwater clean-ups. Training is scheduled for an hour once a month in a 4m pool. Participants were shown and practice how to inflate a lifting bag so that the attached crate with collected marine debris becomes weightless and can be manoeuvre it around easily (Figure 5). They are instructed NOT to ascend with the lifting bag and ensure they are not beneath it in case it tips over.

Figure 5 - Pool Training safe use of lifting bags
Educational Talk
Due to the delay in receipt of grant funds the educational talk has been postponed until April 2016. This allowed for some data collections, information and photos to be obtained. To coincide with the Clean-Up Australia initiative a clean-up event has been organised for the first weekend in March 2016. The first educational talk will be presented shortly after.

Results
A total of 26 dives have been performed to date covering some of the southern and mid-section wrecks fund at Curtin. The weight of fishing line collected is 28 kg and fishing weights 23kg. 17 anchors and 50m of chain and line were also collected (Table 1).

<table>
<thead>
<tr>
<th>Date</th>
<th>Curtin wrecks</th>
<th>No. Dives</th>
<th>Fishing Line (kg)</th>
<th>Fishing Weights (kg)</th>
<th>Anchors &amp; Line/Chain (m)</th>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td></td>
<td>26</td>
<td>28</td>
<td>23</td>
<td>17 &amp; 50</td>
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<tr>
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<td>Southern</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>3 &amp; 10</td>
<td></td>
</tr>
<tr>
<td>22 Aug 15</td>
<td>Southern</td>
<td>10</td>
<td>11</td>
<td>7</td>
<td>9 &amp; 20</td>
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</tr>
<tr>
<td>23 Aug 15</td>
<td>Mid</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>5 &amp; 20</td>
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</table>

The following is a list of project developments:
- The plastic bins were devised after the trail dive. These are an alternative option for divers and don’t necessarily need a lifting bag to bring to the surface (Fig 4).
- Gloves should be worn as the line and lures cut into divers hands (Fig 5).
- Fishing line was seen in the sand and by gently digging around it with a knife fishing weights and lures were usually revealed (Fig 6).
- It was decided that encrusted rope should not be cut away from wrecks as it is now deemed habitat.
- Fishers at Curtin were not pleased about divers undertaking the clean-up dives.
- A total of 15 divers have participated in the pool training sessions.
- It seems it is best not to coincide pool training with Club meeting nights and new options for training are being considered.
Conclusion
The project is on track. The amount of marine debris found at the site is quite significant and ways of being more efficient have been discussed and implemented for example clean-up dives are being organised from Cowan Cowan, Moreton Island rather than Manly.

The area of Curtin that has not as yet been dived is the wrecks in the northern section. This was due to tide and weather conditions and a delay in the receipt of the grant funds. These wrecks will be the focus of clean-up in the coming months.

The expenditure is provided as a separate document and details expenses in accordance with the original grant proposal. A summary of funds and expenditure is as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tr>
<td>Total Allocations</td>
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<tr>
<td>Amount withheld 25%</td>
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<tr>
<td>Amount receipted 75% total</td>
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<tr>
<td>Total expenditure YTD</td>
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<td>Surplus cash at bank</td>
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