



TURTLES IN TROUBLE

Dr Kathy Townsend  
University of Queensland (Australia)



# Expedition Briefing 2011

EVERYTHING YOU NEED TO KNOW BEFORE YOU GO



Image © Earthwatch

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Dear Earthwatcher,

**Welcome to Earthwatch!** We greatly appreciate your decision to contribute to important hands-on environmental science and conservation. As an Earthwatch volunteer, you have the opportunity to create positive change for our world while having a life-changing experience. Each year we send thousands of people just like you into the field to understand and help an array of species, habitats, and cultures on approximately 60 research projects in more than 40 countries. These projects focus on: **Climate Change, Cultural Heritage, Ecosystem Services, and Oceans.**

**We place the highest priority on the health and safety of all those involved in our activities anywhere in the world.** Although risk is an inherent part of the environments in which we work, careful risk management and diligent planning means all participants can have safe, educational, and inspirational Earthwatch experiences. Our dedicated Field Management team works around the clock to assess and manage the risks of conducting field research in a variety of locations and conditions. We've been providing safe experiences **for more than 35 years**, so you're in good hands.

To keep Earthwatch teams safe and happy, **we require all expedition participants prepare for their experience by reading this Expedition Briefing and completing the necessary volunteer forms.** Volunteers signing up through Earthwatch Australia can find forms online at [http://www.earthwatch.org/australia/expeditions/volunteer\\_forms/](http://www.earthwatch.org/australia/expeditions/volunteer_forms/). If you do not have access to the internet, please notify Earthwatch and forms will be sent to you in the post.

#### **Volunteers Forms to be Returned to Earthwatch**

- Scientist for a Day form

**How to return your forms:** Your form requires a written signature and must therefore be printed out and signed. You may return your form to your Earthwatch office by mail, fax or email (forms requiring signatures may be scanned and emailed).

**Deadline:** Your volunteer forms must be completed and returned to Earthwatch no later than 7 days prior to your expedition.

**If you sign up within 7 days of your expedition** please complete and send the form back to Earthwatch immediately.

#### **Other Forms for Your Reference**

The forms listed below are for your reference only and do not need to be returned to Earthwatch. However, **it is very important that you read and understand these forms.**

- Earthwatch Policies and Participants' Rights and Responsibilities
- Financial Terms and Conditions

**It is essential that you carefully read your Expedition Briefing, which includes important logistical information** such as instructions for reaching the project site, what to bring, and how to physically prepare for your expedition. Your Expedition Briefing also explains the research being conducted on the project, why it's important, and what role you'll play as an Earthwatch volunteer.

**Well prepared volunteers are better able to enjoy the unique and exciting experiences that an Earthwatch expedition offers**, and are also a greater help to the scientists' important work. Most expeditions do not require prior experience. Volunteers who are attentive and open-minded, can work in a team environment, and are eager

to learn will be most successful. Your expedition may have fitness requirements, so please review the *Project Conditions* section. Those with photography and film skills are encouraged to share media from the expedition with Earthwatch.

We hope this expedition will inspire you to get more involved in conservation and sustainable development priorities – not just out in the field but also when you return home. We hope you will share your experiences with others, to transfer your skills and enthusiasm to environmental conservation efforts at a more local level—in your workplace, in your community and at home.

If you have questions as you prepare for your expedition, contact your Earthwatch office. Thank you for your support, and enjoy your expedition!

Sincerely,



Richard Gilmore  
Executive Director



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# GENERAL INFORMATION

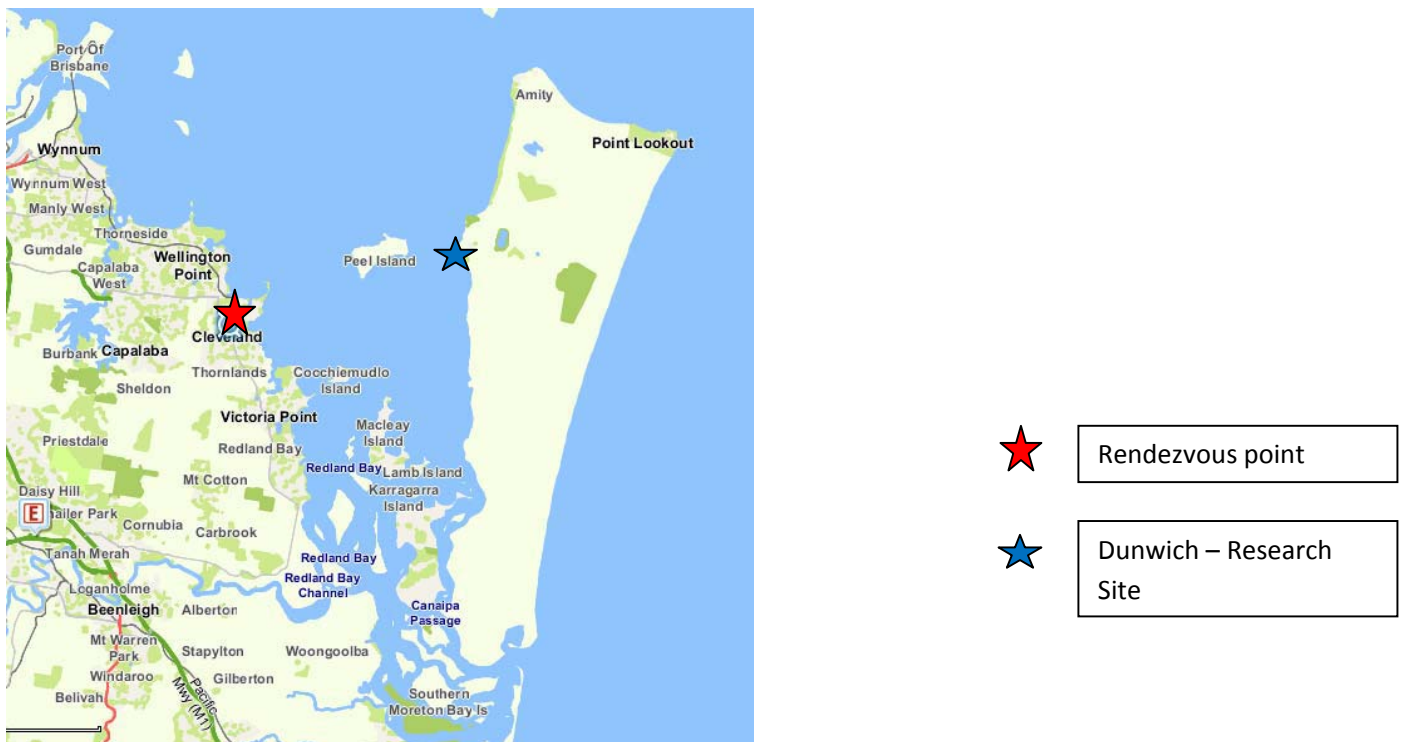
PROJECT TITLE:	TURTLES IN TROUBLE
EARTHWATCH SCIENTIST(S):	DR KATHY TOWNSEND, UNIVERSITY OF QUEENSLAND
RESEARCH SITE:	Moreton Bay Research Station, North Stradbroke Island
RENDEZVOUS POINT:	Stradbroke Flyer/Gold Cats Water Taxi Ferry Terminal
EXPEDITION DATES:	Team III: 15 <sup>th</sup> March 2011 Team IV: 19 <sup>th</sup> April 2011 Team V: 19 <sup>th</sup> May 2011 Team VI: 31 <sup>st</sup> May 2011 Team VII: 14 <sup>th</sup> July 2011 Team VIII: 18 <sup>th</sup> August 2011 Team IX: 16 <sup>th</sup> September 2011 Team X: 29 <sup>th</sup> November 2011
EXPEDITION LENGTH:	1 day
TEAM SIZE MINIMUM/MAXIMUM:	6/10 volunteers
MINIMUM AGE OF PARTICIPATION:	18

# 1. PROJECT OVERVIEW

Climate change and plastic waste in the ocean are among the biggest threats to the world's seven marine turtle species, all of which are at risk. Urgent measures are required to address the problems of marine pollution, particularly since the impact of human rubbish has spread far beyond our immediate shores. Data collected will assist ground breaking research on the impact of the ingestion of marine debris on turtles found in Australian waters.

**Note:** See *Turtles in Trouble: The Research* in the Appendix of this Expedition Briefing for information on the project.

# 2. RESEARCH AREA



## Physical Environment

North Stradbroke Island, one of the world's largest sand islands, is situated at the southern end of Moreton Bay, one hour from Brisbane and accessible by vehicular ferry or water taxi from Cleveland.

The island's sandy white dunes and beaches are sparsely vegetated and can be extremely fragile. The eastern side of the island contains the Blue Lake National Park and the southern part of the island is closed to the public due to sand mining. The centre of the island contains a series of ecologically important wetlands and freshwater lakes which are not regularly flushed out, and consequently are particularly sensitive to pollution and artificially increased nutrient levels.

The waters off North Stradbroke Island have a unique mix of colder southern waters and warmer northern waters. This combination provides a home for manta rays in the summer and other marine life including sea turtles, dolphins, eagle rays, barracudas and Spanish mackerel throughout the year.

Between June and November humpback whales pass the island on their annual migration from Antarctica to their calving grounds near the Great Barrier Reef. While the calves are still quite young, they make their return journey passing close to the island where they can be easily spotted from various lookouts.

Moreton Bay Marine Park surrounding the island is one of the few places in the world where large numbers of dugongs can be found. There are believed to be between six and seven hundred in the area. These shy marine mammals live in shallow tropical waters and feed almost exclusively on local species of seagrass.

The island's climate is subtropical, with temperatures in ranging from an average of 20°C in July to 28°C in February.

### 3. PROJECT STAFF

#### Lead Earthwatch Scientist(s)

**Dr Kathy Townsend, University of Queensland** Born in Calgary, Alberta, Canada, Dr Kathy Townsend did a year of undergraduate study at the University of Calgary before immigrating to Australia to complete her undergraduate, Honours and PhD at The University of Queensland in Brisbane.

Dr Townsend is a marine ecologist with eclectic professional interests, which include manta ray biology, mudskipper ecology, coral reef ecology, shark reproduction, impact of ingested rubbish on sea turtles and human impacts on the marine environment. She is a lecturer and Manager of Research and Education at the Moreton Bay Research Station on North Stradbroke Island off of Brisbane.

Dr Townsend has been working and living on tropical research stations for over 10 years. One of the many roles she plays within the station is as a carer to injured marine wildlife. She regularly attends to injured turtles, dugongs and stranded marine mammals.

#### Research Assistant

**Qamar Schuyler** is a PhD student at the University of Queensland, studying the impacts of marine rubbish on sea turtles. Her love of sea turtles began in Far North Queensland, where she conducted month-long nesting beach surveys on remote Milman Island. She has also worked with turtles on Raine Island and the Howick group, north of Lizard Island. Qamar loves boats and islands, and has lived on several of each. She brings to the project a background in education and outreach, as well experience in the marine research tourism industry.

#### Current Staffing Schedule (Subject to Change)

Staff Member Present	Team IV	Team V	Team VI	Team VII	Team VIII	Team IX	Team X
Kathy Townsend	X	X	X	X	X	X	X
Qamar Schuyler	X	X	X	X	X	X	X

## 4. VOLUNTEER TRAINING AND ASSIGNMENTS

### **Training and Activities**

Participants will receive an orientation and safety briefing upon arrival. If participants have any concerns or questions they should address them with the project staff.

Kathy will give an overview of the project and then following a morning tea break participants will assist in a turtle 'necroscopy', or turtle autopsy. You will assist Kathy analyse the gut contents and figure out what contributed to their mortality.

Following lunch you will visit one of the beaches along North Stradbroke Island to survey for pollution and collect the offending plastic material. This will then be sorted and analysed and comparisons will be made with the material found on the beach to the material found in the gut of turtles.

The day will end with a wrap up session back at the Moreton Bay Research Station, with plenty of time left for questions and discussions about the day and Kathy's research

Participants are not expected to have any previous skills. All tasks will be explained in detail, and if you have any queries the research team is there to help.

The only thing expected is that participants are patient and understand that field work is not always predictable. Therefore, an ability to be flexible due to weather or other unforeseen circumstances is appreciated.

## 5. DAILY SCHEDULE

Below is an approximate timetable for the day. Please be aware that schedules can and do fluctuate due to weather, research needs, etc. Your cooperation and understanding are appreciated.

7:30am: Rendezvous at the Stradbroke Flyer/Gold Cats Water Taxi Ferry Terminal

7:55am: Ferry Departure

8:30am: Arrive at Dunwich Ferry Terminal and collected by Kathy in project vehicle

8:45am: Orientation/Safety and Project Brief

10:00am: Morning tea break

10:30am: Turtle Necroscopy

12:30pm: Lunch

1:30pm: Beach Survey

3:30pm: Wrap up and Discussion

4:45pm: Participants dropped back at the ferry terminal

4:55pm: Ferry departs back to Cleveland arriving at approximately 5:20pm

### **Earthwatch Recreational Time Policy**

Earthwatch has a duty of care for our participants from the rendezvous to the end of the expedition. In order to ensure you are as safe during your recreational time as you are during research time, we have put a number of measures in place.

If there is a period of free time scheduled into a regular research day, the staff will ask you to sign out (using a means which may vary by project and project location) if planning to leave the group. This will include your destination and estimated time of return. If participants do not show up to the next activity, this will alert the project staff and they will know where to begin a search.

## 6. FOOD

Participants will have a scheduled morning tea break, where you will be able to help yourself to a tea, coffee, juice or water using the facilities in the canteen. Cakes and fresh fruit will also be provided. Lunch will be served buffet style in the canteen, and will offer a small selection of hot dishes, plus salad. Tea, coffee, water and juice will be available during lunch as well as a selection of fruit.

### **Special Dietary Requirements**

Please alert Earthwatch to any special dietary requirements (e.g. diabetes, lactose intolerance, nut or other serious food allergies) as soon as possible, and note them in the space provided on your volunteer forms. Accommodating special diets is not guaranteed.

## 7. PROJECT CONDITIONS

### **General Conditions of the Research Site**

North Stradbroke Island has a subtropical climate with an average year round temperature of approximately 23°C.

Summer temperature range: 22.0°C overnight – 33.0°C during the day

Winter temperature range: 13°C overnight – 18°C during the day

### **Physical Demands**

The project requires a fairly low level of fitness, though participants should be prepared to spend most of the day outdoors (weather permitting), either in the outdoor lab, or on one of the beaches during the pollution survey.

Below are the expected demands of the project, but please keep in mind that conditions may change and the project could potentially be more or less strenuous than the chart indicates.

<b>Activity</b>	<b>Workload/Intensity</b>
Sitting	1 – 2 hours for presentations and discussion
Standing	3 – 4 hours during the necroscopy and beach survey
Bending	Frequently during beach survey
Walking	1 - 2 hours during the beach survey
Carrying	Participants will be expected to carry their own backpacks and assistance with carrying the research equipment will be appreciated

### **Potential Hazards**

<b>Transportation</b>	Transportation during the day will be by ferry to get to and from North Stradbroke Island and by The Moreton Bay Research Station's 12 seater project vehicle. When travelling by ferry participants are advised not to lean over the railings or dangle body parts or personal effects over the sides of the ferry, remain seated whilst boat is in motion when on the top open deck and take caution when walking up and down stairs, especially if boat is in motion. Life Jackets are located under seat benches and clearly marked. Participants are not permitted to drive at anytime during the day. Licensed Project staff with experience of driving in North Stradbroke will drive the project vehicle and will strictly follow the rules of the road. Seatbelts should be worn by all at all times.
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<b>Wildlife</b>	During the beach survey it is recommended that participants wear appropriate closed shoes as sand flies, stone fish, blue bottles, and blue ring octopuses may be present. There are also poisonous snakes on the island, but they are rarely encountered. Mosquitoes can be a nuisance in summer, therefore participants are advised to wear insect repellent. If participants are allergic to bee or wasp stings or insect bites, they should bring the necessary medication with them and alert Earthwatch before their team.
<b>Equipment</b>	It is essential that all participants wear closed shoes in the lab, this is a healthy and safety requirement. During the necroscopy, Kathy Townsend will be the only one using the scalpels to cut into the animal. However, participants may be asked to pass the blades to Kathy, and should be aware of any lying on the bench top. Participants should be cautious of all sharp objects used in the lab. There may also be chemicals used to preserve parasites, and participants should be careful around these substances. During the beach clean, participants may find glass, or needles, or other sharp items. Participants should avoid picking up sharp items without proper protection such as gloves provided.
<b>Climate</b>	Long sleeves, high factored sun-block, a hat and sunglasses are essential and should be worn even when the sky turns overcast. Participants should ensure they bring these items with them. Working for long periods in warm conditions can result in rapid fluid loss, so drink plenty of water to avoid dehydration.

### **Medical Conditions of Special Concern**

Extreme sensitivity to heat/sun could cause a problem for day work. The project involves a fair amount of walking and standing, so participants should have good mobility/agility and a moderate fitness level.

### **Health Information**

See [www.internationalsos.com](http://www.internationalsos.com) for information on the current health conditions in Australia. At the homepage, enter Earthwatch's member identification number: 14ACPA000075. Under "Select Resource" choose "English Country Guide," and then select Australia from the list.

**Australian residents only: Please bring your Medicare card and (if applicable) your private health insurance and ambulance cover policy numbers.**

### **Routine Immunisations**

All volunteers should make sure to have the following up-to-date immunisations: DPT (diphtheria, pertussis, tetanus), polio, MMR (measles, mumps, rubella) and varicella (if you have not already had chicken pox). Please be sure your tetanus shot is current.

## 8. BEFORE YOU LEAVE

### What to Bring:

#### Essential Items

- This Expedition Briefing
- Australian residents only: Please bring your Medicare card and (if applicable) your private health insurance and ambulance cover policy numbers.

#### Required Items

##### ***Clothing/Footwear for Fieldwork***

- Lightweight, quick drying clothing (long-sleeved shirts and pants/trousers recommended for sun protection)
- Light waterproof jacket in case of wet weather
- Wide brimmed hat, for sun protection
- Sunglasses

##### ***Clothing/Footwear for Leisure***

- Comfortable closed walking shoes or runners (it is essential that shoes are closed for lab work and the beach survey)
- Spare footwear in case other pair gets wet

##### ***Field Supplies***

- Small daypack/rucksack
- Water bottle(s)

##### ***Personal Supplies***

- Antibacterial wipes or lotion (good for “washing” hands while in the field)
- Personal First Aid kit (e.g. anti-diarrhoea pills, antibiotics, antiseptic, itch-relief, pain reliever, bandages, blister covers, etc.) and personal medications
- Sunscreen lotion with SPF 30 or higher

#### Optional Items

- Insect repellent spray
- Spending money (see *Other Advice/Information* in the *Before You Leave* section.)
- Camera, film/memory card(s), extra camera battery (if you bring a digital camera, bring your interface cables for downloading )
- Pen/Pencil and Notebook - if you wish to make notes on the day
- Drybag or plastic sealable bags (good for protecting equipment such as camera from dust, humidity, and water)

## **Insurance**

Limited insurance coverage is automatically included in the project cost you pay to Earthwatch. It is strongly advised that participants have up to date ambulance insurance.

For more details on the insurance coverage please contact Earthwatch.

## **Other Advice / Information**

- *Personal funds:* Participants may wish to bring cash with them for purchasing snacks at the nearby Cleveland ferry terminal café before or after the project or to purchase souvenirs at the Moreton Bay Research Station.

## **9. RENDEZVOUS**

This information is provided in the printed version of this briefing.

## **10. EMERGENCIES IN THE FIELD**

In the event of a medical emergency an ambulance will be called to the research site. There is a North Stradbroke ambulance service that is located just behind the Moreton Bay Research Station. The Stradbroke Island Medical Centre can deal with minor injuries or illnesses, and if needed evacuation to the Redland Hospital in Cleveland can be arranged. The project vehicle carries a First Aid kit sufficient to deal with minor injuries, and Kathy Townsend and Qamar Schuyler are First Aid certified.

**In an emergency, you can contact Earthwatch during office hours on (03) 9682 6828, or after hours on 03 9625 0822.**

### **Proximity to Medical Care**

Physician, nurse, or EMT on staff	There isn't a doctor, nurse or EMT on staff
Staff certified in safety training	First Aid: Kathy Townsend, Qamar Schuyler
Nearest hospital and/or clinic	Stadbroke Island Medical Centre 2/4 Kennedy Drive Point Lookout, QLD 4183 (07) 3409 8660 or Redland Hospital, Wellington Street Cleveland, QLD 4163 (07) 3488 3111
Distance	Approximately 30 minutes drive to medical facilities and 45 mins to 1.30 hour to Redland Hospital

# 11. COMMUNICATIONS

## **Emergency Communications in the Field**

There is good mobile phone coverage on North Stradbroke Island. The project staff will carry a mobile phone in the field and will often be near a public telephone in the event that emergency services need to be contacted.

**The emergency contact number at Earthwatch headquarters in Australia is +61 3 9625 0822.** After business hours, leave your message with the live answering service. State that you have an emergency communication and leave a clear message with the name of the expedition, your name, location from which you are calling, and if possible, a phone number where you can be reached. An Earthwatch staff person will be contacted and will respond to your call within one hour.

## **Personal Communications**

**PLEASE NOTE:** Family and friends of Earthwatch volunteers should be aware that personal communication with outsiders is not always possible while participating in an expedition. Earthwatch encourages volunteers to minimise outgoing calls; likewise, family and friends should restrict calls to urgent messages only. Measures have been taken to ensure that appropriate communication tools are available in cases of emergency.

If necessary, volunteers can be reached via Earthwatch Australia on 03 9682 6828

# 12. HELPFUL RESOURCES

## **Project-Related Websites**

- Turtles in Trouble Facebook Group:  
<http://www.facebook.com/home.php?#/group.php?gid=51132618634&ref=ts>
- Cleveland  
<http://www.queenslandholidays.com.au/destinations/brisbane/places-to-visit/cleveland/index.cfm>
- North Stradbroke Island  
<http://www.stradbrokeholidays.com.au/>

# APPENDIX

## TURTLES IN TROUBLE: THE RESEARCH

The six species of marine turtles that occur off the Queensland coast are all listed as endangered or vulnerable to extinction by IUCN Red List. Preliminary studies by Dr Kathy Townsend and her team indicate that ingested marine rubbish is having a huge impact on Australian marine turtles, with close to 40% of stranded turtles dying due to eating marine debris. A hidden killer, large numbers of sea turtles are suffering long, painful deaths from having eaten items such as plastic bags, balloons, plastic bottle tops and fishing line. Sea turtles are susceptible to complications due to ingested marine rubbish as they have downward facing spines in their throats, which prevent them from regurgitating. Ingested rubbish gets trapped in the gut, causing gut paralysis and preventing food from going down. Trapped organic matter decomposes, leaking gases into the body cavity, causing the animal to float. The turtle then slowly starves to death or succumbs to other secondary life threatening conditions such as predation, solar radiation damage or boat strike. This project investigates the origin of and the lethal and sub lethal effects of particulate plastic on endangered marine turtles with the overall goal being to provide information for policy makers on sea discharge of waste disposal and pollution legislation. Assessments are made of both live and dead stranded turtles. Initial investigations appear to point to the turtles actively consuming some types of rubbish such as plastic bags, while accidentally consuming others such as small hard plastics. The project will increase understanding of the motivation for the consumptive patterns of sea turtles through investigations of the animal's behaviour and visual pathways.

Although it is currently not possible to provide reliable estimates of the amount of plastic debris that enters the marine environment, the quantities are quite substantial. For example, it is estimated that over 639,000 plastic containers are dumped each day from merchant ships alone (Horsman 1982). Ships are not the only source of marine debris, however they are estimated to contribute approximately 50% (UNESCO 1994). Recent work presented by Kathy at the 29<sup>th</sup> International Sea Turtle Symposium indicates that the impact that marine rubbish is having on the Australian shores has been grossly underestimated. Kathy and her team found that of 66 stranded sea turtles studied, 37% had such a large amount of marine rubbish within their intestinal track that it was the main cause of death.

Initial observations indicate that size, shape, composition of the rubbish and the size of the turtle all play an important role in whether the ingested debris will result in the turtle eating it and if the gut becomes impacted. Fully identifying the direct and indirect health impacts of ingested marine rubbish is an important focus of this study.

Australia is a signatory to numerous international conventions and has wide-ranging domestic laws regarding the dumping of marine rubbish including Annex V of the MARPOL act (White 2007). These laws could be modified to be more effective based on the results of this study. To this end the project will:

- i) Provide scientific information on the impact of marine debris to policy makers drafting marine pollution legislation.
- ii) Underpin an awareness raising campaign to change human behaviour towards plastics in the environment in Australia
- iii) Have global ramifications for the manufacturing and materials science of plastics