



Australian Government
Department of the Environment and Heritage

Environment Protection and Biodiversity Conservation Act 1999.

General Permit Application for:

- **Threatened species and ecological communities (section 201)**
- **Migratory species (section 216)**
- **Whales and dolphins (section 238)**
- **Listed marine species (section 258)**



If the person completing this form is representing a small business (i.e. a business having less than 20 employees), please provide an estimate of the time taken to complete this form.

Please include:

- the time taken spent reading the instructions, working on the questions and obtaining the information; and
- the time spent by all employees in collecting and providing this information.

Hours

Minutes

Purpose of this form

This form is for an activity which will affect any species or ecological community listed under the EPBC Act in the above categories where that activity is within a Commonwealth Area, and for whale/dolphins where the activity is within the waters of the Australian Whale Sanctuary, or internationally.

Complete this form in addition to either Supplementary Form A, B or C described in question 1 on the next page. Please return it, along with the relevant Supplementary Form to the Department of the Environment and Heritage (DEH).

Note that it is a requirement of the *Environment Protection and Biodiversity Conservation Act 1999* that details of this application (which may include the applicant's name) and any supplementary forms (A, B or C) be provided to persons or bodies registered with the Department of the Environment and Heritage under section 266A of the Act, for the purposes inviting submissions from those persons or bodies regarding permit applications.

Do not use this form for permits in:

- The Great Barrier Reef Marine Park. These permits are available at: www.gbrmpa.gov.au/corp_site/permits/
- A Commonwealth park or reserve (e.g. Kakadu National Park). These permits are available at: www.deh.gov.au/epbc/permits/parks/

Additional information

Please ensure that you have read the following information sheet:

Permits required for activities affecting EPBC Act listed species in Commonwealth Areas including the Australian Whale Sanctuary

This information sheet is available at www.deh.gov.au/epbc/permits/index.html. Further information is also available by contacting DEH on phone: (02) 6274 1111 or email: epbcwild@deh.gov.au.

Incomplete information

Applications that are incomplete or contain insufficient information cannot be assessed. Delays will occur whilst further information is sought from the applicant.

If you need more space

If there is insufficient space on this form to fully address any of the questions please attach additional pages and list these attachments at question 10.

1 Which of the following best describes the purpose of this application?

Research on whales/dolphins ⇒ You will also need to complete Supplementary Form A for Whales and Dolphins (cetaceans).

Now go to 2

To conduct an activity that will have an incidental impact on whales/dolphins ⇒ You will also need to complete Supplementary Form A for Whales and Dolphins (cetaceans).

E.g. whales and dolphins are not the purpose of the activity but they will be indirectly affected

Now go to 2

Whale and Dolphin watching ⇒ You will also need to complete Supplementary Form B for Whale and Dolphin Watching.

Now go to 2

To kill, injure, take, trade, keep or move a listed species or ecological community in Commonwealth areas ⇒ You will also need to complete Supplementary Form C **Listed species / ecological community, listed migratory species or listed marine species.**

Now go to 2

Import/export of whale/dolphin parts or products ⇒ Please contact the Cetacean Research and Policy Section on 02) 6274 1111.

2 Period of permit requested

Permits are usually not issued for more than 5 years.

Start date: 1 May 2007	End date: 1 May 2012
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3 The permit holder can be a group such as a business, company, or corporation?

Is the proposed permit holder a group?

No ⇒ **Go to next question**


Yes ⇒ **Give details below**

Group Name Southern Cross University Whale Research Centre
Street address: Southern Cross University
Postal address: PO Box 157, Lismore, NSW, 2480
Telephone No.: 02) 6620 3774
Fax No.: 02) 6621 2669
Email address: peter.harrison@scu.edu.au

Now go to 5

4 Is the proposed permit holder an individual?

No ⇒ **Go to next question**

Yes ⇒ **Give details below of each individual to whom the permit would be issued.** If insufficient space, attach a separate list. 

1	Name:
	Residential address:
	Postal address:
	Telephone No.:
	Fax No.:
	Email address:

2	Name:
	Residential address:
	Postal address:
	Telephone No.:
	Fax No.:
	Email address:

3	Name:
	Residential address:
	Postal address:
	Telephone No.:
	Fax No.:
	Email address:

5 Applicant details (if different from proposed permit holder(s))

Name:
Residential address:
Postal address:
Telephone No.:
Fax No.:
Email address:

6 Give the relevant qualifications and experience of all people who will carry out the activities. If insufficient space, attach a list.

1 Name: Assoc. Prof. Peter Harrison

Qualifications and experience: PhD JCU 1989
 27 years experience with marine ecology and marine biology
 Director, SCU Whale Research Centre
 Director of Marine Studies, SCU
 School of Environmental Science and Management

2 Name: Prof. Peter Baverstock

Qualifications and experience: DSc Uni. Adelaide
 >35 years experience with mammal ecology, biology, genetics, conservation
 Pro-Vice Chancellor, Research SCU

3 Name:

Qualifications and experience:

7 Have you applied for or obtained any other approvals, permits or licences relating to this activity under Commonwealth, State or Territory legislation?

No ⇒ **Go to next question**

Yes ⇒ **Attach copies**



8 Have you previously held a Department of the Environment and Heritage permit to conduct this activity?

No ⇒ **Go to next question**

Yes ⇒ **Give details below**

Permit number	Date permit expired

9 Offences

A proposed permit holder is taken to have been convicted of an offence if, within 5 years before the application is made, the proposed permit holder:

- has been charged with, and found guilty of, the offence but discharged without conviction; or
- has not been found guilty of the offence, but a court has taken the offence into account in passing sentence on the proposed permit holder for another offence.

Section 6 of the *Crimes Act 1914* deals with being an accessory after the fact. Sections 7 and 7A and subsection 86(1) of the *Crimes Act 1914* and sections 11.1, 11.4 and 11.5 of the *Criminal Code* deal with attempts to commit offences, inciting to or urging the commission of offences by other people and, conspiracy to commit offences.

Part VIIC of the *Crimes Act 1914* includes provisions that, in certain circumstances, relieve persons from the requirement to disclose spent convictions and require persons aware of such convictions to disregard them.

Has the proposed permit holder been **convicted** of, **or subject to proceedings** for an offence under any of the following?

- offences under the *EBPC Act* or *Regulations*
- a law of the Commonwealth or a State or Territory about the protection, conservation or management of native species or ecological communities;
- section 6, 7 or 7A, or subsection 86(1), of the *Crimes Act 1914* (Commonwealth) or sections 11.1, 11.4 or 11.5 of the *Criminal Code Act 1995* (Commonwealth) in relation to an offence under a law mentioned in (a) or (b) above; or
- a provision of a law of a State or Territory that is equivalent to a provision mentioned in (c) above.

No

Yes ⇒ **Attach details**



10 Attachments

Indicate below which documents are attached.

Additional permit holders

See question 4

Additional qualifications details

See question 6

Copies of other approvals/permits

See question 7

Details of offences

See question 9

Other supporting documentation

List all additional documents below

Titles of all attached documents (*include the document title, the specific section(s) and the page number(s) on which the information appears*)

11 Declaration

I declare that the information contained in this application is correct to the best of my knowledge.

Signature of applicant

Name of person signing

Date



Australian Government

Department of the Environment and Heritage

Supplementary Form A — Whales and Dolphins (cetaceans)

Application under section 238 of the Environment Protection and Biodiversity Conservation Act 1999.



If the person completing this form is representing a small business (i.e. a business having less than 20 employees), please provide an estimate of the time taken to complete this form.

Please include:

- the time taken spent reading the instructions, working on the questions and obtaining the information; and
- the time spent by all employees in collecting and providing this information.

Hours

Minutes

This form has two purposes:

1. To apply for a permit to undertake an activity which will contribute significantly to the conservation of whales and dolphins such as research on whales and dolphins.
2. To apply for a permit to interfere with whales and dolphins, where that interference is incidental to and not the purpose of the activity such as building an underwater structure where you will come into contact with whales or dolphins.

Please supply the following information if you will interfere with, injure, take, trade, keep, move, possess or treat (cut up/divide) a cetacean or part of a cetacean in the Australian Whale Sanctuary or waters beyond the Australian Whale Sanctuary (overseas). If you are proposing to send specimens out of Australia you will also need an export permit. Import permits will also be necessary for bringing parts or products of cetaceans into Australia. For more information on imports and exports contact International Wildlife Trade Section on 02 6274 1900.

This form should be completed in conjunction with The General Permit Application form.

If you need more space

If there is insufficient space on this form to fully address any of the questions please attach additional pages and list these attachments at question 23.

When using additional documentation to answer individual questions in this application, please refer to the document title, the specific section(s) and the page number(s) on which the information appears.

Application fee

There is a \$25 fee for permits where the activity will contribute significantly to the conservation of cetaceans.

Where to send the forms and the application fee

Please send the completed General Permit Application **and this form** and any accompanying attachments to:

Director
Cetacean Policy and Recovery Section
Department of the Environment and Heritage
GPO Box 787
CANBERRA ACT 2601
Fax: 02 6274 1105

1 Details of species that will be affected by the activity. Use the following codes to enter details in columns 3 and 5.

Column 1 Common name of species Common and scientific names are available at the DEH website: http://www.deh.gov.au/erin/applications/biodiversity/sprat/	Column 2 Scientific name of species	Column 3 Conservation status of threatened species under EPBC Act (e.g. the blue whale is endangered) Codes for Column 3 EW Extinct in the wild EX Extinct CE Critically endangered EN Endangered VU Vulnerable CD Conservation dependent	Column 4 Estimated number that will be affected.	Column 5 Type of effect Codes for Column 5 IC Interfering with a cetacean IN Injuring TR Trading TA Taking KE Keeping MO Moving TC Treating PO Possessing OB Observing
Humpback whale	<i>Megaptera novaeangliae</i>	VU	2,000	IC
Bottlenose dolphin	<i>Tursiops truncatus</i> <i>Tursiops aduncus</i>		500	IC
Common dolphin	<i>Delphinus delphis</i>		200	IC
Southern right whale	<i>Eubalaena australis</i>	EN	20	IC
Bryde's whale	<i>Balaenoptera edeni</i>		5	IC
Killer whale	<i>Orcinus orca</i>		25	IC
Minke whale	<i>Balaenoptera acutorostrata</i> <i>Balaenoptera bonarensis</i>		5	IC
Australian snubfin dolphin	<i>Orcaella heinsohni</i>		400*	IC
False killer whale	<i>Pseudorca crassidens</i>		100	IC
Indo Pacific humpback dolphin	<i>Sousa chinensis</i>		400*	IC

* This includes 30 biopsy samples to be collected from each of two populations of snubfin dolphin (60 total) and each of five populations of Indo-Pacific humpback dolphin (150 total), however up to 400 individuals from each species may be affected by non-invasive activities such as photo-identification, behavioural observations, etc.

2 Provide the latitude and longitude of where the activity will be conducted. Latitude and longitude references should be used instead of AMG and/or digital coordinates.

Where the project area is less than 1 square km, provide a single pair of latitude and longitude references.

Where the project area is greater than 1 square km or any dimension is greater than 1 km, attach a list of coordinates to enable accurate identification of the location of the project area.

Latitude

Longitude

Degrees Minutes Seconds




Degrees Minutes Seconds

28	10	00
28	10	00
29	26	00
29	26	00

153	35	00
154	00	00
153	22	00
154	00	00

Locality


Byron Bay, Shoalwater Bay, South Pacific

- 3 **Attach an A4 sized map to show the boundaries of the area in which the activity will be conducted.** 
- 4 Provide an attachment describing the action addressing the following points. 
 - A. The equipment and methods used to comply with the EPBC Act Regulations.
 - B. What steps will be taken to minimise impacts on cetaceans.
 - C. The objectives and purposes of the activity.
- 5 Attach a description of any research relevant to the affected species or community that will be carried out in the course of or in conjunction with the proposed activity, including: 
 - A. A copy of the research proposal.
 - B. The names of the researchers and institutions involved in or supporting the research.

C. Relationship of the researchers to the permit applicant, including any funding being provided by the permit applicant

6 Will the activity involve invasive techniques?

No ⇒ **Go to next question**

Yes ⇒ Attach evidence that the proposed methods have been approved by an independent Animal Ethics Committee. 

7 Are you applying on the basis that the activity will contribute significantly to conservation of cetaceans? (**Please note**, a fee of \$25 is required for this type of permit — see Question 21)

No ⇒ **Go to 9**

Yes ⇒ **Go to next question**

8 Why do you believe that the activity will contribute significantly to the conservation of cetaceans?

See attached

Now go to 13

9 Are you applying on the basis that the effect on cetaceans will be incidental to, and not the purpose of, the activity?

You must also answer questions 10, 11 & 12 to apply for this type of permit.

No ⇒ You are not able to apply for a permit using this form, please contact the Cetacean Policy and Research Section at epbcwild@deh.gov.au, or call (02) 6274 1111.

Yes ⇒ Why do you believe that the impact of the action will be incidental to and not the purpose of the activity?

10 Why do you believe that the proposed activity will not adversely affect the conservation status of a species of cetacean or population of that species?

11 Describe how the proposed activity will be consistent with any *recovery plans* or *wildlife conservation plans* in force for the species of cetaceans that may be effected by the activity.

*Commonwealth recovery and wildlife conservation plans that are in force are available from the Department of the Environment and Heritage web site:
www.deh.gov.au/biodiversity/threatened/recovery/index.html*

State and territory recovery plans will be available from state and territory environmental agencies.

- 12 *The applicant is required to take all reasonable steps to minimise interference with cetaceans.*

How will this be carried out?

- 13 Provide an attachment describing any alternatives to the proposed action including:
- (a) any options for how the proposed action may be taken; and
 - (b) any alternatives to the proposed action, including not taking the action; and
 - (c) the relative effect on whales or dolphins of the above options and alternatives on the relevant impacts of the action.

- 14 When answering questions 15 and 16, EACH answer must demonstrate the following:

- A. the sources of your information; and
- B. how recent the information is; and
- C. how the reliability of the information was tested; and
- D. what uncertainties (if any) are in the information.

- 15 Provide an attachment describing what measures will be implemented to avoid or manage any relevant impacts of the action including evidence in the form of reports or technical advice on the feasibility and effectiveness of the proposed measures Include the items listed at question 14.

- 16 Will there be, is there currently, or has there been any other environmental assessment of relevant impacts of the action (other than the assessments mentioned in questions 14 and 15)?

No ⇒ **Go to next question**

Yes ⇒ Provide with this application:

- A. Copies of assessment documentation.
- B. A description of any public consultation occurring, or to occur, during that assessment process.
- C. Copies of documents recording the outcomes of the consultations.
- D. Include the items listed at question 14.

- 17 Do you think there is a need for an environmental impact statement or public environment report?

No ⇒ **Go to next question**

Yes ⇒ Outline your reasons below

Now go to 21

- 18 Why do you think there is no need for an environmental impact statement or public environment report?

The proposed research projects are likely to result in very low or negligible impact on the animals being studied, and are designed with their wellbeing and conservation in mind. For this reason no EIS or PER is required.

19 Is the person proposing to take the action a corporation?

No => **Go to next question**

Yes => Attach details of the corporation's environmental planning policies and practices.



20 Attach details of any proceedings against the proposed permit holder under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.



21 Fees

The following fees apply:

- If you answered **yes** at question 7, for an action which will contribute significantly to the conservation of cetaceans - \$25
- An incidental action relating to cetaceans - nil

22 Are you paying by credit card?

No => **Attach a cheque, go to next question**

Yes => Complete the following details

Card: Visa Bankcard MasterCard

Card number

Four empty boxes for card number digits

Expiry date (month/year)

Empty box for expiry date

Card holder's name as shown on card

Empty box for cardholder name

Amount

Empty box for amount

Cardholder's signature

Large empty box for signature

23 Attachments

Indicate below which documents are attached.

- Attach a map. **See question 3**
 - The equipment and methods used to comply with the EPBC Act Regulations. **See question 4**
 - What steps will be taken to minimise impacts on cetaceans. **See question 4**
 - The objectives and purposes of the activity. **See question 4**
 - Copy of research proposal. **See question 5**
 - Names of researchers and institutions. **See question 5**
 - Relationship of researcher to permit applicant. **See question 5**
 - Ethics committee approval. **See question 6**
 - Options for taking the action. **See question 13**
 - Alternatives to the proposed action. **See question 13**
 - Effect on whales or dolphins of the options. **See question 13**
 - What measures will be implemented to avoid or manage any relevant impacts. **See question 15**
 - Copies of assessment documentation. **See question 16**
 - Description of public consultation. **See question 16**
 - Outcomes of the consultations. **See question 16**
 - The corporation's environmental planning policies and practices. **See question 19**
 - Details of any proceedings against the permit holder under a Commonwealth, State or Territory law. **See question 20**
 - Cheque for payment of fee. **See question 22**
- List all additional documents below**

Titles of all attached documents (include the document title, the specific section(s) and the page number(s) on which the information appears)

Large empty box for listing additional documents

3. Locality attachment

The projects will take place off the east coast of Australia (EEZ), particularly offshore from Byron Bay, Iluka and the Richmond River (NSW) and other northern NSW areas, plus Moreton Bay, Hervey Bay, the Great Barrier Reef and Shoalwater Bay (QLD), and Norfolk Island as well as the Central Pacific (notably Samoa and Niue).

The general latitude and longitude coordinates for each of these areas are as follows:

Location	Latitude	Longitude
Byron Bay	28° 38' 16.07" S	153° 38' 11.05" E
Iluka (Clarence River)	29° 25' 33.64" S	153° 21' 53.91" E
Ballina (Richmond River)	28° 52' 28.81" S	153° 35' 35.94" E
Moreton Bay	27° 18' 15.47" S	153° 11' 11.95" E
Hervey Bay	24° 57' 48.96" S	153° 09' 27.88" E
Great Barrier Reef / Shoalwater Bay	20° – 24° 30' S	147° - 154° E
Norfolk Island	29° 02' 33.84" S	167° 49' 45.86" E
Samoa	13° 57' 39.96" S	171° 39' 24.08" W
Niue	19° 12' 49.20" S	169° 50' 36.46" W

4. A. Equipment and methods

These research projects require access to cetaceans for photo-identification and the collection of genetic samples from individual whales and dolphins. Genetic samples will be collected predominantly using sloughed skin sampling, but in some cases will also include biopsy sampling. For photo-identification of individual cetaceans, researchers will have to move closer than 100 metres from the whale or dolphin, usually to within 40 metres. For projects involving biopsy sampling the research vessel will need to move closer than 30m in order to collect samples from individuals using either a crossbow or a PAXARM system. Faecal samples will also be collected opportunistically, similar to sloughed skin sampling.

A project to work collaboratively with Dr Nick Gales, the principal research scientist at the Australian Antarctic Division, to deploy satellite tags on humpback whales is also proposed. Dr Gales has been developing and deploying satellite tags for a number of years and has designed them to minimise the impacts on the whale. The data obtained from such tags provides important information about whale movements that cannot be obtained using other methods, and is now a validated technique in cetacean research (e.g. Mate *et al.* 1998, 1999, 2000, Watkins *et al.* 1999, Heide-Jorgensen 2001, 2006, Zerbini *et al.* 2006). The use of DTAGS/Burgess tags, which are attached to the whale using suction cups, is a less intrusive method that will be used to obtain data on underwater behaviour of whales (Johnson & Tyack 2003).

B. Minimisation of impacts

Research will comply with EPBC regulations and has been designed to minimise contact time with cetaceans, including breaking contact once photo-identification and focal follow data have been obtained and/or genetic and faecal samples have been collected, or at any sign of disturbance to the behaviour of the animals. No animals will be captured or housed during this project and previous extensive research has shown that the protocols for observing and photographing cetaceans used in these current studies do not adversely affect the animals. Previous studies have also shown that biopsy sampling causes no significant impacts on humpback whales (e.g. Clapham & Mattila 1993, Brown *et al.* 1994), and sloughed skin and faecal sampling are non-intrusive methods of sample collection. The satellite tags to be employed in collaboration with Dr Gales have been specifically designed to minimise impacts on whales, including design features that allow the tag to be deployed above the muscle layer of a whale rather than the more intrusive tags, employed by some researchers in the northern hemisphere, that penetrate this layer (Mate *et al.* 1998). The contingency plans are to break contact at the first signs of adverse behaviour, thereby avoiding stress to the animals.

C. Objectives & purpose of the activity

Research projects currently underway and/or proposed for the SCUWRC include: the ongoing annual surveys of humpback whale migration past the Cape Byron headland region (NSW NPWS Licence S10403), southern migration of humpback whales off Ballina northern NSW (NSW NPWS Licence S10403 - Daniel Burns PhD candidate), DNA analysis of humpback whale population genetics (DEH permit #2004-53932 - Megan Anderson PhD candidate), a longitudinal study of habitat use, behaviour, calving rates, interannual resights and population and genetic structure of humpback whales at Hervey Bay (#MP2006/020 QEPA permit - Trish Franklin and Wally Franklin, PhD candidates); ageing of humpback whales from telomere length (Assoc. Prof. Peter Harrison, Prof. Peter Baverstock); analysis of dolphin population structure and habitat use in the Cape Byron Marine Park and northern NSW estuaries (NSW NPWS Licence S10404 - Liz Hawkins PhD candidate and Christine Fury PhD candidate), inshore dolphin populations of the Great Barrier Reef (GBRMPA permits G06/18595.1, G05/13642.1, & QEPA permit WITK04056306 - Daniele Cagnazzi PhD candidate), effects of longline fishing on cetacean behaviour in Samoa (Simon Walsh, MSc candidate), a survey of the distribution and habitat use of humpback whales in waters of the Great Barrier Reef Marine Park; satellite & D-tag/Burgess tagging of humpback whales (Assoc. Prof. Peter Harrison, in collaboration with Dr Phil Clapham, John Calambokidis & Dr Nick Gales); interchange rates of humpback whales between east Australia and Oceania (South Pacific Whale Research Consortium); and distribution and abundance of cetaceans around Niue (Olive Andrews). Further details of these projects are given in the attachment for Question 5.

These projects are aimed at increasing scientific knowledge of the biology and ecology of cetaceans in order to aid in their conservation and management. The projects are consistent with the research objectives of the current recovery plans for each species (where applicable) and are designed to minimise impacts on cetaceans.

5. Research

A. Research proposals

Ballina Whale Research Project (Daniel Burns – PhD Candidate)

This project is aimed at studying migratory characteristics and movements of individual humpback whales on their southern migration back to Antarctica as they migrate past Ballina, northern NSW. The project combines land-based counts and tracking of whales using Cyclopes software, with vessel-based photo-identification, sloughed skin sampling, behavioural observations and focal follows of specific individuals. Collaborative matching of fluke photographs with data from other research projects at the SCUWRC and the SPWRC will provide information on movements, timing, speed, abundance and group characteristics of whales migrating along the east coast of Australia.

Cape Byron Whale Research Project (David Paton & Daniel Burns – PhD Candidates)

The CBWRP is an annual survey of humpback whales as they migrate north past Cape Byron, northern New South Wales. This study provides information on the migration patterns, distribution, abundance, and behaviour of humpback whales on the east coast of Australia. The project includes land-based counts and tracking of whales using Cyclopes software, as well as vessel-based photo-ID, sloughed skin sampling, acoustic recordings and opportunistic faecal sampling. The project has a strong collaborative approach and is coordinated through Southern Cross University and undertaken in collaboration with Newcastle University and NSW National Parks and Wildlife Service / Marine Parks Authority.

Defining breeding grounds of humpback whales in the Great Barrier Reef Marine Park (Assoc. Prof. Peter Harrison, Dr Phil Clapham, John Calambokidis)

The aims of this project are to determine the distribution and abundance of humpback whales in the Great Barrier Reef Marine Park, and to define important breeding habitats, pod characteristics, behaviours and movements of individuals. These aims will be achieved by conducting broad and fine scale aerial surveys, co-ordinated with vessel-based surveys involving photo-identification and genetic sampling, behavioural studies to document breeding behaviours and competitive interactions, focal follows of specific individuals, and tagging of a small number of whales with satellite and/or D-tags/Burgess tags. This information will significantly increase our knowledge about the distribution, abundance and behaviour of humpback whales on their breeding grounds in the Great Barrier Reef.

Hervey Bay Research Project (Trish Franklin & Wally Franklin – PhD Candidates)

This project is investigating the social and ecological significance of Hervey Bay for Group E humpback whales. Humpbacks enter and leave Hervey Bay from the north during the southern migration en-route to Antarctic feeding grounds from the breeding and over wintering areas within the Great Barrier Reef. The project involves long-term vessel based photo-id, using ventral fluke and lateral body markings for individual identification, combined with behavioural observations and focal follows of individuals and groups of humpbacks. The data are being used to study behaviour, distribution and abundance of humpbacks within Hervey Bay. As well, sloughed skin samples are collected and genetic data are being integrated with photo-id data to investigate genetic

relationships amongst humpbacks in Hervey Bay and in particular paternity. Faecal samples are also collected opportunistically. Collaboration with other members of the SCUWRG and the SPWRCG will provide information on migratory movements and exchange between Hervey Bay and other regions along the East coast of Australia and nearby Pacific breeding grounds.

Niue Tafua Project (Olive Andrews – NGO representative)

A collaborative project in cetacean research between SCUWRC, Whales Alive, Oma Tafua, SPWRC and the Niuean Government. In 2007 a pilot project will be run with the aim of identifying a cetacean species list for the territorial seas of Niue. Species and habitat information gained from the survey will inform the management and conservation goals of the Niue Whale Sanctuary in line with regional initiatives such as the SPREP Whale and Dolphin Action Plan and CMS MoU for the Conservation of Cetaceans and their Habitats in the Pacific Islands Region.

The survey area can be defined as 5 nautical miles to seaward of the Niue coast. The pilot study will employ a methodology of conducting land based observations from 2 x 30m platforms on the west coast of the island. Weather permitting, when cetaceans are sighted a boat will be launched to confirm species and gather photographic identification data, acoustic recordings and sloughed skin in the case of humpback whales for genetic analysis.

Cetacean / Longline interaction project, Samoa (Simon Walsh – Master's candidate)

This project is focused on investigating cetacean interactions with longline fisheries. Although depredation events in longline fishing have been documented since at least the 1950's, it is often unclear which species are involved in depredation activities and whether these activities are increasing.

The main aims of this project are:

- to establish the species involved in depredation events in Samoan waters;
- to identify and quantify the impacts of these depredation events;
- to identify the spatial and temporal variation in these interactions;

These aims will be achieved using acoustic recordings to determine if cetaceans are present before, during and after longline setting commences; photo-identification to establish the species involved and if the same individual animals keep returning, as well as:

- port interview questionnaires for fishermen,
- catch log data sheets for completion by fishermen after each trip,
- proposed 3 - 4 monthly dedicated research cruises and
- development of Observer sighting / interaction forms.

This first step aims to establish the species responsible for depredation (cetacean and otherwise), identify patterns of temporal and spatial variability; and quantify impacts to both cetaceans and the fishery.

The next stage will be to prioritise and trial potential mitigation methods for the interactions – with a view to minimising impacts for both cetaceans and longline fishers.

The habitat use and population dynamics of the bottlenose dolphin *Tursiops aduncus* in the Richmond and Clarence estuaries (Christine Fury – PhD candidate)

This study will determine the Population size, occupancy and residency patterns for the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) in the Richmond River (RR) and Clarence River (CR) in Northern New South Wales. Boat and land-based surveys will be undertaken in the Richmond and Clarence estuaries on a monthly basis. To determine the habitat use I will record behavioural information collected at 3-minute correlated to GPS points. This data will be recorded in a GPS program and maps of the dolphin sightings and behaviour will be constructed for analysis and correlated with relevant factors.

Using this photo-identification technique for individual dolphin identification I will estimate the population size using mark-recapture methods and calculate this in the computer program MARK from both land and boat surveys. Production of a photo-identification catalogue of dolphins in the estuaries and determine each dolphin's residency pattern.

Byron Bay Dolphin Research Project (Liz Hawkins – PhD Candidate)

This project aims to assess the population dynamics, social structure, behavioural ecology and acoustics of dolphins within the Byron Bay region, northern New South Wales. Recordings from both land stations and vessels will be made. During vessel surveys, both surface and underwater behaviour of dolphins will be recorded using both a digital SLR camera and a digital video camera deployed from the vessel. Acoustic recordings will be made using a single hydrophone and a two-channel hydrophone array deployed from the vessels. Focal follows of pods will be made for a maximum of one hour in order to obtain photographs and footage for identification of individuals, their behaviour and social interactions. This project will significantly expand the current knowledge of the ecology and social systematics of wild dolphin populations.

Capricornia Cetaceans Project (Daniele Cagnazzi – PhD Candidate)

This project involves vessel-based research with the primary objective to investigate population parameters, size, social dynamics, habitat preference, movement, range, seasonal occurrence and abundance and pattern of diurnal behaviour of Snubfin dolphin and Indo-Pacific Humpback dolphin along the Fraser/Curtis Coast. Information on other cetacean species, mainly members of the Delphinidae family, sighted during the surveys will also be collected. Data collection will include photo-identification, behavioural observations, acoustic recordings and biopsy sampling. Biopsy sampling will include obtaining samples from 30 dolphins from each of 2 Snubfin dolphin populations and 30 samples from each of five Indo-Pacific humpback dolphin populations.

The primary aims of the project are: 1) To estimate the distribution and abundance of the inshore dolphins (primarily Snubfin and Indo-Pacific Humpback dolphin) in the Southern Great Barrier Reef Region. 2) To investigate the population structure of inshore dolphin

species in Central Queensland 3) To identify key habitats for dolphins feeding and resting and socialising. 3) To collect data of any other species recorded in the study area.

B. Researchers: Southern Cross University Whale Research Centre

A/Prof Peter Harrison, Prof. Peter Baverstock, Prof. Serwan Baban, David Lloyd, Megan Anderson, Daniel Burns, Liz Hawkins, Simon Walsh, Christine Fury, Wally Franklin, Trish Franklin, Daniele Cagnazzi, Martin Elphinstone, Nan Hauser, Olive Andrews, John Calambokidis.

C. Relationship of the researchers to the permit applicant, including any funding being provided by the permit applicant.

Associate Professor Peter Harrison is the Director of the SCU Whale Research Centre, and all other named persons in the list above are staff or postgraduate research students in the Centre, except Olive Andrews, who is the NGO representative for the Centre, and John Calambokidis, who is a collaborative researcher. Most of the postgraduate students are co/supervised by Assoc. Prof. Peter Harrison. The research students are funded through the SCU Whale Research Centre and from external sources.

13. Alternatives to the projects

These projects are designed to aid in the conservation and management of cetaceans, and thus if they are not undertaken it would result in significant loss of data to further conservation outcomes for cetaceans. Each project is designed to minimise impacts on the animals involved, whilst maximising the collection of scientific knowledge about them, thereby contributing to their conservation.

The techniques of photo-identification and sloughed skin sampling are very low-impact methods for obtaining data about cetaceans, and thus no alternatives that would be less intrusive are feasible. Biopsy sampling has been shown to have short-term minor impacts on some individuals, but there is no evidence it has long-term impacts, and this method is used globally. For example, previous extensive research has shown that many whales that are biopsied do not react and continue with their normal behaviour (Weinrich et al. 1991, Clapham & Mattila 1993, Brown *et al.* 1994, Gauthier & Sears 1999). Biopsy sampling has the advantage over sloughed skin sampling in that samples can be obtained from specific individuals, from which sloughed skin may not necessarily be able to be obtained. The use of biopsies also allows samples to be tied to photography with greater accuracy, provides higher quality DNA and can be used for other studies, such as determining pollutants and hormones in the blubber. Recent developments in the technique, such as the PAXARMS system (Krutzen et al. 2002) mean there is less risk involved in biopsying individuals compared to previous methods.

The opportunistic collection of faecal samples employed by a number of projects in the SCUWRC will allow for diet analysis of whales (Jarman *et al.* 2002). The only alternative to this method at present is through direct analysis of stomach contents during lethal sampling.

The use of DTAGs to obtain dive profiles and study underwater behaviour of whales is currently the only available method to obtain this data with the same level of detail and with regularity.

The technique of satellite tagging is the only method available to collect specific data about individual whales, such as precise and accurate tracking of a whale's migration. These data are important for the conservation of humpback whales by providing information on movements and population structure that is currently lacking. The other alternative is to rely on individual identification data (both photo-ID and genetic ID) to obtain some of this information, but these techniques require years to acquire the same data and are unable to investigate many aspects of humpback whale ecology that the tagging provides.

15. Avoiding & managing impacts

Most of the research projects outlined above are based on non-invasive photo-identification and sloughed skin data acquisition and behavioural observations of whales and dolphins, and previous extensive research by the researchers and elsewhere have demonstrated that the protocols used for the research do not adversely affect whales and dolphins. Faecal sampling is a non-invasive technique, similar to sloughed skin sampling, whereby whales need not be approached closely to obtain samples. The use of biopsy sampling has been shown to have limited short-term impacts on cetaceans, but no long-term impacts (Weinrich et al. 1991, Clapham & Mattila 1993, Brown *et al.* 1994, Gauthier & Sears 1999). Recent developments in the technique, such as the PAXARMS system (Krutzen et al. 2002), have led to less risk being involved in biopsying individuals compared to earlier methods (eg. Bearzi 2000).

The information obtained from satellite tags provides important insights into whale movements that cannot be obtained using other methods, and is now a recognised technique in cetacean research (Mate et al 1998, 1999, 2000, Watkins et al 1999, Heide-Jorgensen 2001, 2006, Zerbini et al 2006). Mate *et al.* (1998) suggested that “whales exhibited no observable overt reaction to tagging beyond that elicited by a close boat approach without tagging”.

The use of DTAGS are less invasive than satellite tags in that the tag is attached using suction cups rather than penetrating the body of the whale (Johnson & Tyack 2003).