

The Kermadec Whale Project

Karen Baird July 2010



Background:

The Kermadec marine region is highly diverse encompassing one of the deepest trenches in the world and an extensive volcanic arc system consisting of volcanically active seamounts and a group of emergent islands.

The region's cetacean fauna is relatively unknown. Early whaling log books and journals give some indication of the extent of use by the great whales. Sperm whales were specifically targeted at the French Rock (L'Esperance) Whaling Grounds, in other words in the Kermadec Region from 1785 to 1913 and early part of the twentieth century by American, French and Soviet whalers. Right whales were also targeted further to the south-east particularly in the last 3 months of each year in an area that was thought to be frequented by a mix of whale species¹.

Over recent years observations by DOC staff and volunteers on Raoul Island and en route are providing increasing evidence that the region is an important migration pathway for southward migrating humpback whales.² Two shore-based surveys were undertaken in November 2008 and October 2009 on Raoul Island. These gave an estimate of 61 whales and 112³. Differences may be a result of the different timing of the surveys in the two consecutive years. Observations of other cetaceans are ad hoc and scattered.

Only 8 species of whales have been actually seen in the region, these are⁴:

- Sperm whale
- Orca or killer whale
- Common dolphin
- Bottlenose dolphin
- Long-finned pilot whale
- Southern right whale
- Humpback whale
- Blue whale

¹ Southern Right Whales: A reassessment of their former distribution and migration routes in NZ waters including the Kermadec Islands. Rhys Richards *Journal of The Royal Society of New Zealand*, Volume 32, Number 3, September 2002, pp 355–377

² Pers obs; Movements of satellite-monitored humpback whales from New Caledonia, Claire Garrigue et al *Journal of Mammalogy*, 91(1):109–115, 2010

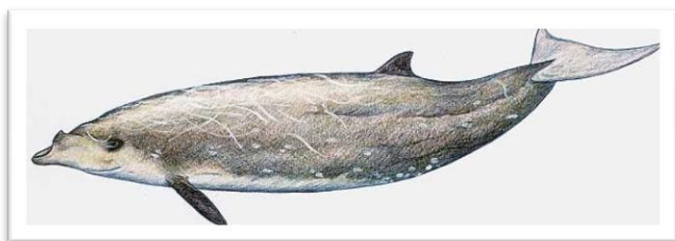
³ Raoul Island Whale Surveys, 2008 and 2009, Sian Potier, DOC, Warkworth Office

⁴ Cetaceans of the Kermadec Region, 2009, Anton Van Helden, Ta Papa Tongarewa. Report for Pew Environment Group.

There are potentially a wide range of other species present (28) based on their known ranges and/or observations in other parts of New Zealand or neighbouring Pacific Island Countries.

These are:

1. Pygmy sperm whale
2. Dwarf sperm whale
3. Cuvier's beaked whale
4. Dense beaked whale or Blainville's beaked whale
5. Indo-Pacific beaked whale
6. Shepherd's beaked whale
7. Southern bottlenose whale
8. Gray's beaked whale
9. Andrew's beaked whale
10. Strap-toothed whale
11. Indo-Pacific bottlenose dolphin
12. Long-finned pilot whale
13. Striped dolphin
14. Fraser's dolphin
- 15.
16. Risso's dolphin
17. Melon-headed whale
18. Spotted dolphin
19. Spinner dolphin
20. False-killer whale
21. Short-finned pilot whale
22. Pygmy killer whale
23. Pygmy blue whale
24. Sei whale
25. Bryde's whale
26. Fin whale
27. Omura's whale
28. Antarctic minke whale
29. Dwarf minke whale



Dense beaked whale

Of particular interest are the group of whales known as Beaked Whales, family Ziphiidae. Only dolphins have more species in the group than beaked whales and New Zealand has more beaked whales than anywhere in the world. These deep diving creatures are likely to live around the Kermadec Trench and sea mount areas. Most of what we know about these secretive animals comes from records of stranded animals. Cuvier's beaked whale *Ziphius cavirostris* is the most widespread of all the beaked whales and is known from Northern New Zealand, New Caledonia and the Cook Islands and along with the more tropical dense beaked whale *Mesoplodon densirostris* (also called Blainville's beaked whale). These are the two most likely beaked whales to occur in the Kermadec region. Direct observations have been made of Shepherd's beaked whales *Tasmacetus shepherdi* from the Three Kings region to the north of NZ. Shepherd's beaked whale, Southern Bottlenose whale *Hyperoodon planifrons*, along with various species of mesoplodont whales such as Gray's beaked whale *M. Grayi*, Andrew's beaked whale *M. Bowdoini* and Strap-toothed whale, *M. layardii*, have been recorded from strandings from the far north of New Zealand. It is possible that they may also range as widely as to be found in the trench and seamount areas of the Kermadec region. The Indo-Pacific beaked whale *Indopacetus pacificus* may occur in the area as it is known from the tropical Pacific, albeit from just two skulls.

Our departure date is the 7th August. At this time most of the great whales will be up in tropical latitudes calving, so we are unlikely to see many humpback, or sperm whales in the Kermadec

Region itself. Therefore it will be an ideal time to look for other species which are less well known and often more difficult to spot.

Whale Survey

Our yacht the “Falcon” is heading to Niue to take part in a humpback whale survey to assist Olive Andrews (University of Auckland , South Pacific Whale Research Consortium, Oma Tafua) humpback whale project. The Kermadec Region including the islands themselves, are on a direct path to Niue so provide a great opportunity to undertake a survey of other cetaceans en route. Our expedition to the Kermadec Region will be one of the first to specifically look for cetaceans, in non hunting mode. To assist us with finding whales which are often difficult to see at sea, we will be using hydrophones and recorders to record sounds underwater. In addition there has been few surveys of seabirds beyond the Kermadec Islands, which is still within the NZ EEZ.

Purpose

The main purpose of this survey is to observe, photograph and record the locations of as many species of cetacean as possible within the Kermadec Region (and beyond) to provide a better understanding of the cetacean biodiversity of the region.

As this year is also the International Year of Biodiversity, this is an appropriate time to be initiating a survey to perhaps the least known region in New Zealand and for one of the least well understood groups of animals – the beaked whales.

Objectives

1. Sight and record the identity, number, location and behaviour of all whales and dolphins seen at sea on the voyage between Whangarei and Niue.
2. Record using hydrophones all whales and dolphins seen at sea.
3. Stop and record at intermittent intervals to determine boat.
4. Record other biodiversity at sea including seabirds, turtles and fish.

Methods

- Observers on deck to keep a lookout for whales. Ideally more than one person on deck at a time should be looking for whales.
- When a whale or dolphin is spotted a call is made to bring other observers onto the deck.
- One person needs to have a camera and be ready to photograph, another needs to make notes on observations (see data sheets). (these should be ready and handy in the cockpit)
- Where possible and the cetaceans are not moving away too fast it would be ideal to try to hove-to so that underwater recordings can be made. This will assist with verifying identification where this is difficult.
- If animals are close-by then an attempt to scoop water for skin samples will also be made.
- To attempt to locate and identify cetaceans not being observed above water, the boat should hove-to every 6 hours to record for the presence of whales. In addition when passing significant seabed features such as seamounts, obvious eddies or over the trench additional recordings should be made.

- In addition a full record of seabird observations will be made.

Equipment

- A hydrophone and M-audio recorder in a pelican case.
- Laptop and Raven interactive analysis software.
- An extra hard drive to back up data daily.
- Data sheets for whale and turtle sightings.
- Skin sampling kit with pre prepared tubes of ethanol, gloves and tweezers.
- Cameras
- Binoculars

Data Analysis

We will be collaborating with Olive Andrews, who is running a humpback whale survey in Niue this spring. Also Australian collaborators Michael Noad and his team from the Cetacean Ecology and Acoustics Laboratory in Queensland, who will assist with analysis of the any whale sounds recorded. I will be examining recordings using software to visualise the sounds en route to isolate any recordings made. Analysis to whale species will require expert help from Michael Noad and his colleagues who have a database of beaked whale calls (and other species) to compare with anything we may record.

Crew

Skipper: John Gayford

Crew: Gerry Kelly, Karl McLeod, Chris Wild, Karen Baird



Humpback whale calf breaching at the Kermadecs

(K. Baird)

Media and promotional opportunities for the Kermadec Whale Expedition

1. *Whale Expedition blog*. We plan to have a Kermadec Website set up prior to departure and I will have a blog on this site which I can upload to every day or two, in a diary-style entry. I will also be able to send pictures through. We plan to have a map which plots our current location so that those interested can follow our progress. There will also be a page with an outline of the expedition, profiling the Kermadec whale fauna and also other features of interest, prior to departure. The objective is to highlight the Kermadec Regions biodiversity through this whale survey (also counting seabirds ,turtles and big fish), and like the Science Symposium, using the platform of the International Year of Biodiversity. We will be exploring one of the least known regions of New Zealand and focusing attention on this 'last frontier' for biodiversity, looking for the least known group of mammals in the world.

We also have a permit to land for a day at Raoul Island and catch up with the team there. This will also be an interesting item for the blog. The book chronicling the story of the early settlers family the Bells "*Crusoe's of Sunday Island*" highlights the mystery of these islands. I will include some excerpts from this story as it does fire people's imaginations about what it would be like to live on an uninhabited tropical island! The team there are the last team I trained for their role on the island and they are nearing the completion of their time there. (12 months). I will be suggesting we take them around the island on the boat so they can survey the difficult to access cliff areas for target weeds. We will also survey for turtles while going around the island as they are often seen in the shallows/surf.

I also plan to use some material from the old whalers' logs from the region – some excerpts of what they were doing/seeing over 170 years ago in the region to intersperse with my own observations. "*The Whaling Journal of Captain W.B. Rhodes*"

I will also have a face book page on the F&B web site.

2. *Live radio interviews* with Graeme Hill from 'Radio Live'. Graeme is keen to do an interview prior to our departure and intermittently during the voyage via sat phone. There is no doubt that the 'adventure' component of the story will mix well with the mystery of this region. I can promote the blog as well on the radio. We can develop a set of agreed talking points prior to this.
3. *The NZ Herald* Eloise Gibson is the Environmental Reporter there and I have approached her about a possible article about the expedition when we return.
4. Other – I am still thinking about other opportunities for media , will discuss with the rest of the Kermadec Ocean Sanctuary Team.