

# MINKE WHALE PROJECT



## MWP RESEARCH NEWSLETTER # 11 (JANUARY 2011)

### Update on activities

It's been quite a while since our last Research Newsletter (in 2008), but all the members of the research team have been extremely busy and productive throughout this period, undertaking our most intensive field season ever in 2008 and somewhat reduced minke seasons in 2009 and 2010 following the demise of *Undersea Explorer*; authoring papers and book chapters, writing reports, running workshops, teaching, presenting at conferences and completing several PhD theses. Significant outputs include a Final Report to the Great Barrier Reef Marine Park Authority on six years of monitoring minke whale encounters over 2003-2008, and three PhD theses recently completed by Arnold Mangott (on dwarf minke whale behaviour), Susan Sobtzyk (on minke whale population biology using photo-identification) and Matt Curnock (on sustainable management and monitoring of the swim-with-whales activity). Summaries of these three PhD studies are provided below.

#### Highlights from minke seasons 2008-10

The past three minke seasons (over June-July) were very successful for our ongoing research and monitoring, and were outstanding in terms of the minke whale sightings and interactions experienced by the dive operators and their passengers. Over these three seasons more than 640 minke whale encounters were reported and >40,000 underwater images were collected for the long-term photo-ID study, a large proportion of which were donated by crew and passengers on the dive boats. Old friends that were resighted from previous years included "Bento" (named for her bent dorsal fin, seen in each of the last four years in the same area), "Wave Scar", "Ella" and "Wonky" (all seen in 2006, '08 and '09). Ella and Bento (pictured), both approx. 6m females, displayed particularly 'friendly' behaviour and made many very close approaches (<1m) to swimmers over numerous encounters with different vessels. 2011 will be the 16<sup>th</sup> year of field studies by the Minke Whale Project and we can't wait to see what exciting discoveries await!



"Bento" (with bent dorsal fin), has been seen in the same area in four consecutive years (2007-10) and has had several close interactions with swimmers. Photo by Matt Curnock

### Recent changes in the industry

Over the last two years there have also been a number of changes in the tourism industry, with two of the swimming-with-minke whales permitted live-aboard operators closing down. *Undersea Explorer*, the primary vessel on which our field studies were conducted from 1996-2008, ceased trading in early 2009 and the company *Explorer Ventures* discontinued operations in Australia at the end of 2008. Both operators were highly supportive of our research and are greatly missed. A new operator, [Eye to Eye Marine Encounters](#) (headed by long-time friend and collaborator John Rumney, former Manager of *Undersea Explorer*), began in 2008 and has since been very actively involved in minke whale research and monitoring with us once again. We are also very thankful for the increasing support and contributions to our research from [Mike Ball Dive Expeditions](#) over the last three seasons, which have helped us to keep up our long-term standardised data collection. We are extremely grateful to these and other live-aboard dive tourism operators with swim-with-minke whale permits that have continued to support our research for much of the last decade, including [Taka Dive](#) (now operated by *Deep Sea Divers Den*), [Floreaf Reef Charter](#) and the swim-with-minke whales permitted day boats [Aristocat](#), [Poseidon](#), and [Silver Sonic](#).

Operators assist our long-term research and monitoring of dwarf minke whales in the Great Barrier Reef (GBR) by providing in-kind places on their vessels for researchers to collect data during the minke season, by helping to collect data (including underwater photos and video for our photo-ID catalogue, [Whale Sighting Sheets](#), Vessel Effort Logs and passenger questionnaires), and by facilitating passenger donations for the [Minke Whale Project Fund](#) (a not-for-profit fund managed by James Cook University that supports research into dwarf minke whales in the Great Barrier Reef).

### Funding update

We are currently applying for funding to commence work on several new MWP research objectives and also to continue our long-term monitoring of the GBR dwarf minke whale population and the impacts of human interactions on the whales. New research objectives that we consider to be of high priority include: (i) migration and movement studies using satellite tags, (ii) minke behaviour including changes associated with human interactions, (iii) studies of the whales' activity budgets in the GBR (e.g. via remote sensing), (iv) genetic studies of key biological and population parameters and (v) a trial of systematic aerial surveys of the whales' distribution and abundance in the wider GBR. It is also vital to continue our long-term photo-identification study (this, and a proposed expansion of the current Minke Whale Sightings Network form the basis of our most recent application to the [Australian Marine Mammal Centre](#) in January 2011). The photo-ID study allows us to estimate the number of interacting whales each season and determine the proportion of whales involved in multiple encounters and assess cumulative interaction times. Our research over the past 16 years has resulted in many significant discoveries about interacting whales, however much remains unknown about the broader population, especially during the 9-10 months they are not in GBR waters. These knowledge gaps need to be addressed to help assess potential long-term cumulative impacts from our interactions, as well as risks and threats to these whales when they leave the GBR.

## Minkes in the media spotlight



Alastair being interviewed following an 11hr in-water interaction with >40 whales.

Our friendly and photogenic minkes have appeared in a range of recent media, including print articles (e.g. [Asian Diver](#) and [Ecos](#) magazines) and a television segment. In August 2010, Channel 7 Sunday Night presented a 15 minute story ('*A Whale of a Time*') shot on an *Eye to Eye* minke whale research expedition on *M.V. Silent World* (the ex *Nimrod Explorer*) in mid-July. The film crew (which included past PhD student Dr Dean Miller who took some stunning underwater footage) over the six-day trip, including one that lasted from sunrise until after 11pm as whales continued to circle the boat. Delighted swimmers and photographers were treated to numerous close approaches and MWP research team leader Dr Alastair Birtles set a new personal record for remaining in the water from 07:27 until after sunset at 18:07 and recording photo-ID and behavioural data from c.220 passes by an estimated total of over 40 different whales. The full analysis of this and other 2010 encounters has yet to be completed.

The Australian Geographic Society also took part in an expedition with *Eye to Eye* in June 2010, aboard *Mike Ball Dive Expeditions* vessel *Spoil Sport*. Details of the expedition were reported in [AGS website blogs](#) and in the December 2010 edition of Australian Geographic Magazine. Another AGS dwarf minke whale expedition is being planned for June 2011.

## Completion of the Dwarf Minke Whale Tourism Monitoring Program

In 2010 the MWP submitted its Final Report to the Great Barrier Reef Marine Park Authority on the completion of a six-year [Monitoring Program](#) of the GBR swimming-with-whales activity. We would like to congratulate the Authority for their precautionary and collaborative approach to management of the activity over the period 2003 to 2009, and express our thanks for their funding for research and monitoring over this period. Over the latter half of 2010 the Authority has been reviewing the management of the activity, and we hope they will continue the transparent, collaborative and evidence-based approach to sustainable management that we have helped to develop over the last 15 years. Regular stakeholder workshops held during the Monitoring Program were highly effective for dealing with emerging management issues, and resulted in an updated [Code of Practice](#) in 2008 that has been praised as a World's Best Practice approach to sustainable management of a whale watching tourism industry. Findings from the three PhD studies completed in 2009-10 however have highlighted that the sustainability of the swimming-with-whales activity cannot be evaluated without assessing the long-term, cumulative effects of human interactions on the whales' behaviour. We therefore encourage the Authority to continue their support for monitoring of the tourism industry's interactions with the whales.



John Rumney presents a certificate of appreciation to the Great Barrier Reef Marine Park Authority on behalf of the Minke Whale Project. L-R: Matt Curnock, John Rumney, Dr Mark Read, Anne Caillaud and Dr Alastair Birtles.

## Update on Social & Economic Values of Key GBR Marine Species project

This research project, led by Dr Alastair Birtles, A/Prof Natalie Stoeckl and A/Prof Peter Valentine, was funded by the Marine and Tropical Science Research Facility (MTSRF) from 2006-2010 and investigated the social and economic values of iconic marine wildlife species on the GBR. Marine animals of interest



to the study included marine turtles, sharks and rays, whales and dolphins and large fishes such as potato cod and Maori wrasse. Surveys of passengers on dive boats over 2006-09 investigated the importance of seeing these animals and used tourists' expenditure in the region to calculate proportions that could be attributed to different animals. The study determined that just the Cairns and Port-Douglas live-aboard dive vessels involved in minke whale swims contributed between \$16m and \$27m (depending on the multiplier used) annually to the regional economy (Stoeckl et al., 2010a), and that up to \$16m in direct annual tourist expenditure in the region (including day-boats and live-aboard vessels in the Cairns & Port Douglas fleet) was attributable to dwarf minke whales (\$2.7m of which was attributable to the live-aboard vessels; Stoeckl et al., 2010b; see details of publications on last page).

Establishing the social and economic values of these marine wildlife species to tourism can assist efforts towards their conservation in the GBR and elsewhere. In early 2010 an extension of this project investigated risks and threats to marine wildlife of high value to tourism. Interviews were conducted with experienced industry personnel in Cairns and the Whitsundays, and a workshop was held in Cairns to evaluate current and potential threats to highly valued reef species, including any impacts of tourism and evaluation of management tools to help minimise such impacts. Final reports on the outcomes of this study and on the social and economic values of key marine wildlife species were submitted to the MTSRF in June 2010. For more information, please see the [Reef and Rainforest Research Centre website](#).

## Donations to the MWP Fund

We would like to express our gratitude to all the 'Friends of the Minke Whale Project' who have made donations to the MWP Fund (non-profit, set up by James Cook University in 2007) to assist research into the GBR dwarf minke whales. Since the completion of our research funding from the GBRMPA in mid-2009, these donations have helped to cover the costs of our fieldwork in 2009 and 2010 and have also provided assistance for our PhD students. Donation forms can be found on our [website](#). Generous donors are eligible to receive a 'Friends of the MWP' membership package, which includes a high-quality photo print taken by international award-winning photographer [Jürgen Freund](#) and a range of MWP interpretive materials. We are also particularly grateful to MWP sponsors [Maui Jim sunglasses](#) (especially Jo Fewster) and [Probe wetsuits](#) (David Forbes), who have supplied valuable field equipment for the team over the last few minke seasons. We have established a 'Friends of the Minke Whale Project' group on [Facebook](#), onto which minke season updates, photos, research news and links to media articles are regularly posted – all are welcome to join!

## PhD updates

Three PhD studies were recently completed as part of the Minke Whale Project:

**Arnold Mangott** completed his PhD study on dwarf minke whale behaviour and submitted his thesis in late 2009. Arnold described over 30 distinctive dwarf minke whale behaviours and found that the frequency of social and investigative behaviours was significantly influenced by (a) the number of whales present in an encounter and (b) the presence of whales that had been encountered previously. Resighted whales were shown to approach swimmers significantly closer, suggesting they become desensitised to interactions with humans. While the occurrence of potential disturbance behaviours was rare, the longer term risks associated with this behaviour change are yet to be determined. Arnold also developed a risk assessment matrix of a range of observed whale behaviours. He found that while there was a low overall risk to the safety of both whales and humans during in-water interactions, there were real concerns of risk in the rare cases when whales made extremely close approaches to swimmers and objects (e.g. snorkelling ropes) or made physical contact. In the 16 years of field studies by the MWP, there have been no reports of whales or swimmers being injured, however vessel crew and swimmers must appreciate the size and power of these wild animals (weighing several tonnes) and follow the [Code of Practice](#) at all times.

**Susan Sobotzick's** thesis was submitted in December 2010. Susan used underwater video and photos (many thousands of which were donated by crew and passengers on the dive boats) to identify individual whales. Of the 130-172 whales identified each season over three years (2006-08), approximately one-third were resighted from previous encounters. Susan's results showed that the interacting whales represent an open population, subject to regular immigrations and emigrations over a season. Susan's research also provided the first indication of the size of the interacting dwarf minke whale population, consisting of several hundred different whales each year.

**Matt Curnock's** thesis was also submitted in December 2010. Among many findings and outcomes from his study, Matt calculated minke whale encounter rates for more than 40 Reef dive sites. Potential changes in these encounter rates in future may indicate an impact on the minke whale population. Matt also engaged stakeholders (including tourism operators, managers and representatives from wildlife conservation NGOs) in a process to develop sustainability objectives, and evaluated a range of potential sustainability indicators that will assist future monitoring of the swim-with-whales activity.

Thank you to all tourism operators, vessel crew, passengers, management agency staff and other stakeholders who supported and participated in Arnold's Susan's and Matt's research.



Matt, Susan and Arnold on *Undersea Explorer* in 2008.



### New MWP postgrad student in 2011: Chrystie Watson

A postgraduate diploma student, Ms Chrystie Watson, who has been involved in the MWP since 2009, is developing a PhD proposal on improving photo-ID techniques (via keys and more automated pattern recognition techniques) to address a range of biological questions including sources and frequency of scarring from natural and anthropogenic sources, potential regional variations in the whales' colour patterns, etc. We look forward to her contributions to our knowledge of dwarf minke whales in the coming years!

## MWP Volunteers



The MWP Team at a pre-season BBQ in 2008, including many of our 18 wonderful volunteers from that year.

Over the past several years the Minke Whale Project has benefitted from hundreds of hours of assistance provided by volunteers. These volunteers (most of whom have been JCU students) have been involved in many aspects of the research, including photo-ID and Whale Sighting Sheet data entry, administration assistance and of course field data collection on participating tourism vessels. This assistance has been invaluable to our ongoing research, including towards the three PhD studies. Prior to each minke whale season, volunteers undergo a knowledge review and training course to prepare them for collecting quality data in the field. Volunteers are also prepared with the knowledge and resources to answer a wide range of questions about the biology of the whales when interacting with guests aboard tourism vessels, which can help to improve the guests' minke whale experiences. The MWP Team will continue to welcome new volunteers in 2011 to assist with our research. We

also encourage prospective post-graduate students interested in studying whales or other marine mammals to contact us and get involved.

## International linkages explored

MWP Research Team Leader, Dr Alastair Birtles, was very fortunate to take his first period of sabbatical leave for 11 years (now termed a Special Study Program) post-minke season 2009 from August to February 2010. His time away was predictably focussed on sustainable management of marine wildlife tourism, whale watching and especially on developing his understanding of the biology and behaviour of the type species of *Balaenoptera acutorostrata* – the common or northern hemisphere minke - our dwarf minke's closest relative. He gave lectures and seminars and pursued minkes and their researchers in Oslo (thanks to [WSPA](#) and Peter Hall) and 400km inside the Arctic Circle in northern Norway ([Norwegian Polar Institute](#), Tromsø), on both the west and east coasts of Scotland with the [Hebridean Whale and Dolphin Trust](#) and [Sea Life Surveys](#) off the Isle of Mull and the [Cetacean Research & Rescue Unit](#) (CRRU; thanks to Dr Kevin Robinson) in the Moray Firth and then in Canada in the Gulf of St Lawrence (Ursula Tschertter; [Ocean Research & Education Society](#)) and off Nova Scotia in Canada where he visited Hal Whitehead's [Cetacean Research Group](#) at Dalhousie University. While in UK he spent time researching and collaborating with colleagues at the [Wildlife Conservation Research Unit](#) at Oxford University (thanks to Prof David Macdonald), Marine Sciences at Newcastle University (thanks to Prof Nick Polunin), Ocean Sciences at University of North Wales, Bangor (thanks to Drs Mike Tetley and John Turner), [Sea Watch Foundation](#) (Dr Peter Evans), Anglesey, the BBC Natural History Unit in Bristol and the [Whale & Dolphin Conservation Society](#) in Chippenham

(thanks to Mark Simmonds and the team). His return trip included a month in Mexico with field work on whale sharks, sea lions and various whales including humpbacks both in the Sea of Cortez and at Puerto Vallarta on the mainland coast. While based at the University in La Paz (UABCS; many thanks to Profs Jorge Urban and Fermin Reygadas), he gave several seminars and spent some time studying the 'friendly' gray whale behaviour of mothers and calves in their birthing lagoons on the western side of the Baja Peninsula. The final stop was the Hawaiian Islands where on Oahu and Maui he studied their management of the numerous humpback tourism operations in their waters (thanks to Greg Kaufman, [Pacific Whale Foundation](#) and Dave Mattila, [Humpback Whales National Marine Sanctuary](#)) and Hawaiian management of marine protected areas. After many wonderful experiences and with lots of new ideas to follow up, Alastair is looking forward to several new research collaborations over the coming minke seasons. One tangible outcome is the collaboration with northern hemisphere minke whale researcher Ursula Tschertter, who joined the MWP research team for several weeks of field research in the 2010 season.

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## Some recent MWP publications and outputs

### Peer-reviewed papers & a book chapter:

Birtles, A. & Mangott, A. (in press) Highly interactive behaviour of inquisitive dwarf minke whales. In Simmonds & Brakes (Eds). *Whales and Dolphins: cognition, culture, conservation and human perceptions*. Earthscan publications.

Mangott, A., Birtles R. A. & Marsh, H. (2011) Attraction of dwarf minke whales (*Balaenoptera acutorostrata* subsp.) to vessels and swimmers in the Great Barrier Reef World Heritage Area – the management challenges of an inquisitive whale. *Journal of Ecotourism*, 10 (1): 64-76. Online: <http://www.tandf.co.uk/journals/1472-4049>

Stoeckl, N., Birtles, A., Farr, M., Mangott, A., Curnock, M. & Valentine, P. (2010a). Live-aboard dive boats in the Great Barrier Reef: their regional economic impact and the relative values of their target marine species. *Tourism Economics*, 16 (4): 995-1018. Online: <http://www.ingentaconnect.com/content/ip/tec>

### Reports:

Birtles, A., Valentine, P., Curnock, M., Mangott, A., Soltzick, S., & Marsh, H. (2010). Dwarf Minke Whale Tourism Monitoring Program (2003-2008): Final Report to the Great Barrier Reef Marine Park Authority, 21 June 2010, 117pp.

Birtles, A., Valentine, P., Soltzick, S., Curnock, M., Stoeckl, N. & Farr, M. (2010). Key Marine Wildlife Species for Tourism in the GBR: Values, Impacts, Threats and Sustainable Management, Final Report to the Reef and Rainforest Research Centre on the Scoping Assessment for MTSRF Task 4.8.6 (b) and part of (a). 14<sup>th</sup> June 2010, 109pp.

Stoeckl, N., Birtles, A., Valentine, P., Farr, M., Curnock, M., Mangott, A. & Soltzick, S. (2010b). Understanding the social and economic values of key marine species in the Great Barrier Reef. Final Report to the Reef and Rainforest Research Centre on MTSRF Task 4.8.6(a). 14<sup>th</sup> June 2010, 75pp.

### Student theses:

Bossy, S. (2011). *Monitoring minke whales from tourist vessels: effort, precision and bias*. MAppSci. Thesis, James Cook University.

Curnock, M. (submitted 2010). *Mechanisms for assessing the sustainability of swimming-with-whales tourism in the Great Barrier Reef*. PhD thesis, James Cook University.

Manabe, W. (2011). *Effects of environmental factors on the occurrence of dwarf minke whales (Balaenoptera acutorostrata subspecies) in the northern Great Barrier Reef*. MAppSci. Thesis, James Cook University.

Mangott, A. (2010). *Behaviour of dwarf minke whales associated with a swim-with industry in the northern Great Barrier Reef*. PhD thesis, James Cook University.

Soltzick, S. (submitted 2010). *An investigation into the biology of dwarf minke whales and implications for the sustainable management of the swim-with-whales industry in the Great Barrier Reef*. PhD thesis, James Cook University.

Watson, C. (2011). *Expanding Photographic Identification Efforts in Dwarf Minke Whale Research*. Graduate Diploma Thesis, James Cook University.

### Conference presentations:

Birtles, R. A., Valentine, P.S., Curnock, M., Mangott, A. & Soltzick, S. (2008). Managing the swimming-with-dwarf minke whales tourism industry in the Great Barrier Reef Marine Park: developing collaboration between managers, industry and researchers. *Australian Protected Areas Congress (APAC)*, 24-28 November 2008. Sunshine Coast, QLD.

Curnock, M., Birtles, R. A. & Valentine, P. (2009). Key steps towards adaptive management of a whalewatching industry: developing sustainability objectives and indicators for the swimming-with-dwarf minke whales activity in the Great Barrier Reef. Poster presentation, *Society for Marine Mammalogy 18th Biennial Conference*, Quebec City, Canada, 12-16 Oct 2009.

Mangott, A. H., Birtles, A., Marsh, H. D., & Valentine, P. S. (2009). Who is looking at whom? Exceptional exploratory behaviour of dwarf minke whales associated with a swim-with industry. Poster presentation, *Society for Marine Mammalogy 18th Biennial Conference*, Quebec City, Canada, 12-16 Oct 2009.

Soltzick, S., Birtles, R.A. & Marsh, H. (2009). First insights into population demographics of dwarf minke whales involved in swim-with activities, using a photo-identification network. Poster presentation, *Society for Marine Mammalogy 18th Biennial Conference*, Quebec City, Canada, 12-16 Oct 2009.

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## What to expect in 2011 & how to help our research

In 2011 the MWP research team will continue to collect important data in collaboration with the permitted swim-with-minke tourism operators, and we encourage the crews and passengers to continue reporting their observations and donating copies of their minke images to support this research. Please continue sending [Whale Sighting Sheets](#) to us (address and contact details are provided on the forms) and we will continue to forward copies of these data sheets to the GBRMPA (allowing swimming-with-whales operators to meet this permit condition). **We would like to encourage all GBR tourism operators (not just those with swimming-with-whales endorsement) to complete and send us a Whale Sighting Sheet, and any photos which might help to identify a whale, whenever a minke whale is encountered.** This will help us expand our current Whale Sightings Network so that we can better understand the distribution and abundance of minke whales in the GBR and the potential threats they face. We are also hoping to begin work on our expanded research objectives identified above (the extent of this will depend on funding) and we will keep our operators and Reef managers informed of such developments.

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## The Minke Whale Project research team

Members of the JCU MWP research team include: Dr Alastair Birtles (Team Leader & Senior Lecturer in Environmental Management & Ecotourism and Honorary Research Fellow at MTQ), A/Prof Peter Valentine (School of Earth & Environmental Sciences), Prof Helene Marsh (Professor of Environmental Sciences), A/Prof Natalie Stoeckl (Economics, School of Business), PhD candidates Susan Soltzick, Arnold Mangott and Matt Curnock, postgraduate students Chrystie Watson, Wakana Manabe and Stephanie Bossy and many wonderful volunteers. We acknowledge the long-standing contribution to the MWP of our colleague and friend, the late Dr Peter Arnold (of MTQ; 1949-2006).

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