

South West Marine Research Program progress 2006 & outlook 2007



ILUKA



WAPRES



communication to:
Dr Lars Bejder
L.Bejder@murdoch.edu.au
Andrew Horan
andrew@dolphindiscovery.com.au

The South West Marine Research Program (SWMRP) is an organization that is committed to the viability of the Bunbury dolphin population and its habitat. The SWMRP was initially formed as a partnership between the Dolphin Discovery Centre (DDC) and Murdoch University. It now includes major users of the Port of Bunbury, industry partners and the City of Bunbury.

A central focus of this vision is the program of research. To establish leadership for this program Dr Lars Bejder was awarded a Research Leader's Fellowship by Murdoch University for 2006.

This bulletin highlights the events of 2006 and looks forward to 2007.



Image courtesy of DDC ©

Partnership Vision

To be a self-sustaining community organisation recognised internationally as a leader in the provision of ecologically sensitive and sustainable dolphin and marine interactive experiences through its conservation, research and education programs



Image courtesy of DDC ©

Dolphins of Koombana Bay

Wild dolphins that live in Koombana Bay and the Leschenault Estuary are local wildlife icons for Bunbury and a tourist resource for the region. As top-level predators, they require large stocks of fish and depend upon the coastal ecosystem to sustain them. The dolphins interact with humans and are impacted in a variety of ways e.g. through tourism interaction, port activities and movement of leisure craft.

The aim of the research program is to gather knowledge to secure the future of the dolphins and their continued interactions with the people of Bunbury.

Significance of the dolphin research

The research program is a unique opportunity to contribute significantly to the understanding of dolphin ecology and the impacts of human disturbance.

A collaboration of community, Government, research and industry partners supporting research into sustainable dolphin interaction and conservation in Bunbury WA.



Current knowledge of dolphin abundance and movement at Bunbury

Data collected by the DDC has identified a large population of dolphins in the Bunbury region. The data indicate a seasonal pattern of movement throughout the year with numbers of dolphins fluctuating between the summer and winter seasons. Identification of the dolphin is based on photographs of their dorsal fins. Work undertaken at the Dolphin Discovery Centre has recognised 130 different dolphins in the area during summer and 40 individuals in winter. This fluctuation may be related to seasonal variation in the abundance of fish. Alternatively, active sexual behaviour and the presence of neonate calves during the warmer months suggest the area may be an important breeding site.



image courtesy of Lars Bejder ©

Genetic sampling of Koombana Bay dolphin population

Preliminary fieldwork obtaining genetic samples commenced in the first week of October. The purpose of this sampling is to investigate whether the Bunbury dolphins are genetically isolated from dolphins along the southwest coast from Albany to north of metropolitan Perth. Such DNA based information will improve the capacity to conserve and manage the dolphin population for a sustainable future.

This work was an international collaboration with Dr. Michael Krützen from the University of Zurich flying in to participate with Dr. Lars Bejder (Research Leader), Phil Coulthard (DDC Operations Manager), Elisa Richardson (DDC Volunteer) and Simon Allen (marine mammal researcher) in the collection.

Genetic samples from dolphins were collected from a research vessel by darting the animals using a well-established method. The dart takes a rice-grain size tissue biopsy from the animal (just below the dorsal fin), and then the dart falls free and floats. The dart is collected with a scoop net and the genetic sample containing the dolphin DNA will be safely stored for later analysis.

Dolphin tissue sampling from animals in Koombana Bay and the Back Beach area was extremely successful. Biopsy specimens were collected from 22 dolphins during the 11th to the 15th October. The reactions of dolphins were very mild as shown by the dolphins returning to the research vessel with a few minutes. The tissue samples have been sent to Zurich for DNA analysis.

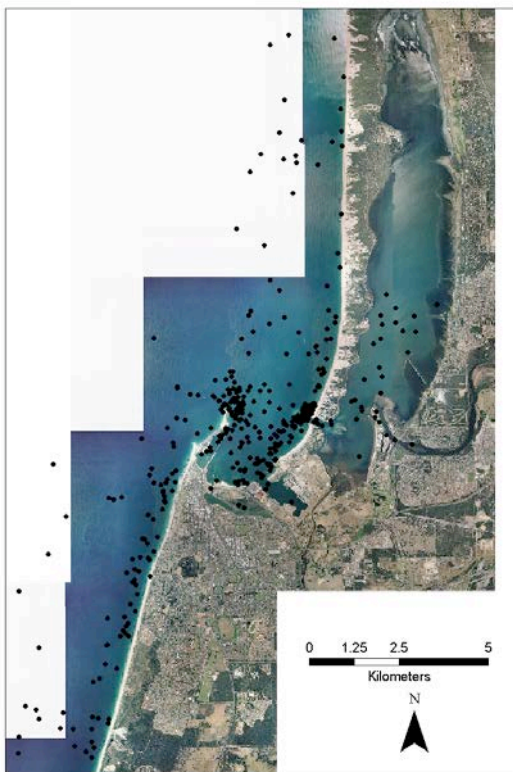
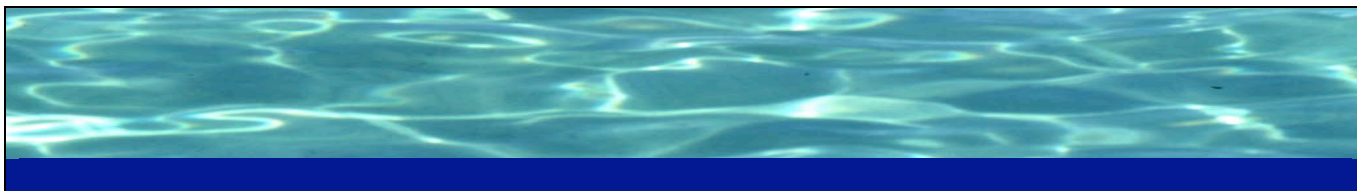


Image courtesy of DDC ©

Dots show location of groups of dolphins from January, 2005 to December, 2005

A collaboration of community, Government, research and industry partners supporting research into sustainable dolphin interaction and conservation in Bunbury WA.



Acoustic evaluation of the dolphin's habitat

During February 2007 a team of Danish scientists is visiting Bunbury to work with Dr Bejder in an acoustic evaluation of the dolphin's habitat.

Visiting scientists include Associate Professor Peter Madsen from Aarhus University in Denmark and Associate Professor Magnus Wahlberg from the University of Southern Denmark, and four Danish post-graduate students.

Two projects will be undertaken. The first looks at marine animals and the impact of man-made noises. Marine animals rely on sounds for communication, food finding and navigation, and the capability to detect sounds from prey, predators or members of their own species depends on the noise levels in their habitat.

This project will measure natural and human generated noise contributions to a shallow water habitat to evaluate the impact on the use of sound by marine organisms. Noise from sources, such as boats will be measured in a way that is meaningful for assessing the impact on biological hearing systems. This will provide a scientific basis for recommended codes of conduct for different activities at sea, e.g. dolphin watching, to minimise the impact on dolphins.



image courtesy of Lars Bejder ©



image courtesy of Troy Mayne ©

The second project examines sound production and communication by dolphins and fish. Dolphins maintain a complex social structure through acoustic communication with whistles. This study will measure the intensity of dolphin communication whistles and look at how propagation in shallow water affects the structure of the sounds and their capability to carry information to other members of the species over long ranges. Next, sounds from fish that produce mating calls at night will be measured to explore how fish may use similar techniques. The underwater habitat seems to host an acoustic arms race between sound producing predators and listening prey. The questions of whether fish detect sounds from dolphins using echolocation that prey upon them, and the potential impact of increasing levels of man-made noise, will also be investigated.

A collaboration of community, Government, research and industry partners supporting research into sustainable dolphin interaction and conservation in Bunbury WA.



A home for the research – “Building 260”

The Dolphin Discovery Centre was successful in obtaining \$260,000 from the State Government in 2006 for a new building to house the research scientists and tourism volunteers. Plans for “Building 260” have been submitted for planning approval and construction is expected to commence early in 2007. The SWMRP will then be secured with a physical location within the Dolphin Discovery Centre on Koombana Bay and be able to accommodate the expanded research capacity

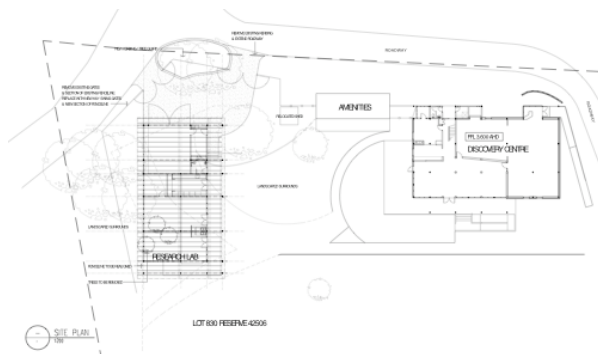


Image courtesy of DDC ©

Plan showing location of Building 260 at the Dolphin Discovery Centre

Future research projects for the program

The SWMRP will embark on a research program in 2007 that will provide many answers to issues that impact on the viability and sustainability of dolphins and their marine habitat.

To facilitate the commencement of this research program the SWMRP will be seeking solid partnership support and funding through the Australian Research Council (ARC) Linkage Grant Scheme. Submissions for the next round are due in April 2007.

The overall aim of the research project is to assess the long-term viability of the bottlenose dolphin population in Bunbury, by building an understanding of their biology, gene flow with other geographic areas and interactions with the environment, food resources and human activities (eco-tourism, port activities and development).



Image courtesy of DDC ©

Benefits to the Region and Individual Partners

The SWMRP is aware that successful partnerships must be mutually beneficial. The research program will develop outcomes that provide benefits to partners in two main ways.

Firstly, the research will provide practical and useful information relative to the activities of the partners.

Secondly, the research will quickly develop a high public and professional profile that will create a variety of opportunities to locally, nationally and internationally publicise the project, the partners and the region.



Image courtesy of Lars Bejder ©

Document prepared by Carolyn Jones for SWMRP.
cjones@murdoch.edu.au

A collaboration of community, Government, research and industry partners supporting research into sustainable dolphin interaction and conservation in Bunbury WA.