DOLPHIN WATCH

2009 - 2010

GOVERNMENT OF WESTERN AUSTRALIA

SWAN RIVER TRUST

River Guardians

Murdoch UNIVERSITY

Curtin University

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Foreword

Dolphin Watch began in 2009 as a collaborative project between the Swan River Trust and Murdoch and Curtin universities. Dr Hugh Finn from Murdoch University presented his research to River Guardians at the first Dolphin Watch meeting in 2009.

Since then the project has grown into a community monitoring program with more than 150 trained Dolphin Watchers keeping an eye on the Riverpark for these iconic creatures. Dolphin Watch provides River Guardians with a free training course covering dolphin biology and monitoring techniques and is run by a professional and experienced team including Dr Finn and Dr Chandra Salgado-Kent from Curtin University.

Donna Faragher, the former Minister for Environment; Youth, awarded the Dolphin Watch program $50,000 in 2009 to continue training the community. Chief Scientist Professor Lyn Beazley has also provided her support for the program and has been involved with volunteers. The Swan River Trust was also allocated funding by the Minister to ensure that any future dolphin deaths are fully investigated.

On behalf of Dolphin Watch I would like to extend my sincere thanks to all Dolphin Watch volunteers for your efforts in helping protect the Swan Canning Riverpark dolphins. Your contribution as citizen scientists provides important data to further our research.

Marnie Giroud
River Guardians Program Manager

(from left) Dr Hugh Finn, Shirley Oliver, Marnie Giroud, John Goldsmith, James Cientar, Trita Agar, Markus Nordstrom, Dr Chandra Salgado, Peter Agar, Vaughan Smith and Amanda Moon (front)

Dolphin Watch Scientists and Staff

Dr Hugh Finn **Murdoch University**

Post doctoral research fellow, Wildlife conservation, conservation biology

Dr Hugh Finn is a post-doctoral fellow at Murdoch University whose research focuses on black-cockatoos and bottlenose dolphins. He became involved with dolphins in the Swan River through his PhD research in Cockburn Sound and the Swan River from 2000 to 2003.

Hugh provides presentations and training for Dolphin Watchers and information and advice to the River Guardians team. His current research is examining the ecology of black-cockatoos in the Jarrah Forest and the Swan Coastal Plain. (Courtesy Murdoch University)

Chandra Salgado
Curtin University

Research Fellow Marine Biologist
BSc Biology (NMT, USA), MSc Marine Biology (FIT, USA), PhD Marine Ecology (CDU, Australia).

Chandra Salgado is a Research Fellow with the Centre for Marine Science and Technology. Her main research interests are anthropogenic impacts on marine animals (including noise), vocalisation, distribution, migration patterns of marine mammals, and statistical analysis of biological data.

Recent assignments include analysis of blue and humpback whale vocalisation and experimental design and analysis of studies on ecology and behaviour of marine mammals. Chandra provides presentations and training for Dolphin Watchers and collates and analyses the data provided by the volunteers.

Marnie Giroud
Swan River Trust

River Guardians Program Manager

Marnie Giroud has worked with the Swan River Trust for more than two and a half years in the role of River Guardians Program Manager which incorporates the Dolphin Watch project. Her passion for wildlife and conservation of the Swan Canning Riverpark is evident through her presentations and attendance at events for members and training for Dolphin Watchers.

Rachel Hutton
Swan River Trust

Community Engagement Officer

Rachel Hutton has worked with the Swan River Trust for more than four years in the role of Community Engagement Officer which incorporates the River Guardians program and Dolphin Watch project. Rachel creates River Guardians publications, contributes to community engagement planning and initiatives and coordinates events and presentations for the Trust and River Guardians.

Dolphin Watch project

The Swan River Trust, Murdoch and Curtin universities collaborated in 2009 to create a new social science research and education project recording the activities of bottlenose dolphins in the Swan Canning Riverpark.

Dr Hugh Finn, Dr Carly Palmer and Dr Nahiid Stephens from Murdoch University, and Dr Chandra Salgado from Curtin University are leading the research into Perth's Swan River dolphin community and investigating how environmental changes in the river and human activities can affect the dolphin community.

The research project builds on previous research conducted in 2002 and 2003. It works with the Trust's River Guardians program to monitor the movement and behaviour of the dolphins.

Former Minister for Environment and Dolphin Watchers Madeleine and Jim Kirkham

Community involvement is a great boost to the research project and allows information to be gathered on how dolphins use the Canning and upper reaches of the Swan River – areas that experience problems such as low oxygen and algal blooms.

Recognising dolphins as indicators of river health, the project aims to provide information on dolphin ecology and interactions with human activities in the Swan and Canning rivers, upstream of Perth waters. It will provide a comprehensive understanding of the Swan River dolphin community.

Dolphins playing in the rivers are an iconic and much loved sight but the mammals' habitat and community could be at risk. The Swan River dolphin community is small, dependent on a handful of females and living in an urban environment which places a lot of stress on the mammals. Dolphins living in an estuarine environment can experience pressure from rapid salinity changes, loss of habitat, decreasing prey, entanglement, boat strikes and noise.

The Trust continues to urge the Perth public to look after the Riverpark to minimise stress on the dolphins. The public can play an essential role in monitoring this iconic species. Becoming a member of the River Guardians program is a way the community can get directly involved in looking after these mammals. River Guardians members can train to become Dolphin Watch volunteers. Dolphin Watchers observe dolphins and send information to the Trust for collation which is then analysed by research scientists.

Caring for our dolphins

Keep your distance – never approach a wild dolphin and make sure you keep at least 30 metres away if you're in the water or 100 metres if you're in a boat.

Slow down for dolphins - dolphins often form resting groups in the middle reaches of the estuary, so keep an eye out for dolphins, and slow down if you spot any.

Never feed dolphins – it is illegal and leaves them vulnerable to entanglement, boat strikes, and disease.

Take your rubbish home - dolphins, particularly calves, can get tangled in fishing line. Make sure you dispose of unwanted monofilament line carefully.

Dolphin deaths

In 2009, six dolphins died in the Swan Canning Riverpark. A collaborative investigation into the deaths followed involving Murdoch University, Curtin University, the Swan River Trust, the Department of Environment and Conservation, the Department of Health, Fisheries and the Chief Scientist of Western Australia, Professor Lyn Beazley.

Murdoch and Curtin universities prepared a report on the deaths for the Swan River Trust. The report explored the reasons behind the death of six dolphins in the Riverpark between June and October 2009 and was the technical basis behind Chief Scientist Lyn Beazley's report on *Dolphin deaths in the Swan Canning Riverpark and comments on the Bunbury inner waters, South-west of Western Australia* to the Minister in April 2010.

In the report, Professor Beazley said two dolphins were believed to have died from ulcerative skin lesions, caused by a virus commonly referred to as Tattoo Skin Disease. This was consistent with another dolphin that had died in 2007.

A third dolphin died from a fungal infection of the brain and a fourth dolphin suffered from bronchopneumonia, although this dolphin also had severe fishing line entanglement which is likely to have weakened the animal and made it more susceptible to infection.

Two dolphins were too decomposed to determine the cause of death.

Professor Beazley said in her report that the inflow of fresh water associated with rainfall events in winter and spring may have contributed to progression of the ulcerative skin lesions in two of the dolphins.

The report concludes that contaminants were not a direct cause of mortalities in the dolphins.

The Technical Report on the Bottlenose Dolphin (Tursiops aduncus) Unusual Mortality Event within the Swan Canning Riverpark, June-October 2009 and the Chief Scientist's report *Dolphin deaths in the Swan Canning Riverpark and comments on the Bunbury inner waters, South-west of Western Australia* are available online.

Dolphin Research

Dolphins key to understanding river ecology

Recognising dolphins' potential as indicators of river health, these mammals are now the focus of a new research project known as the Coastal and Estuarine Dolphin Project (CDEP) http://www.cffr.murdoch.edu.au/mucru and http://cmst.curtin.edu.au
CDEP aims to provide key information on dolphin health and ecology in the Swan Canning Riverpark.

The Coastal and Estuarine Dolphin Project (CEDP) aims to ensure the long-term conservation of bottlenose dolphins in Perth's metropolitan waters. CEDP will combine the research expertise of Murdoch and Curtin universities with support from industry, government and community partners.

The initial focus for CDEP is a four-year study addressing the health, ecology, and conservation of dolphins inhabiting the Swan Canning Riverpark. This study will implement an integrated research program focusing on three areas:

(a) **health** – sources of mortality, prevalence of disease including tattoo skin disease;
(b) **ecology** – abundance, residency and ranging patterns, ecosystem linkages, acoustics; and
(c) **education** – support for Dolphin Watch

Our scientific understanding of local dolphin ecology comes from the work of Dr Chandra Salgado, Kim Moiler, Hong Nam Lo, and Dr Hugh Finn.

Earlier studies of Perth dolphins have uncovered some fascinating facts about our estuarine neighbours.

There is a community of about 25 'resident' dolphins in the Swan River that use the river frequently. This group includes several adult females with dependent calves, one or two 'alliances' of tightly-bonded adult males, and a large group of sociable youngsters. Many, if not all, resident dolphins probably grew up in the Swan River and local knowledge is important for their survival.

Dolphins are identified by the distinctive shape of their dorsal fins and valuable information about their range, habitat, behaviour and feeding was collected through this research.

The peak outcome of the study will be a comprehensive understanding of dolphin status in the Swan River, and the initiation of work on the effects of human activities on the mammals

Dolphins in the Riverpark

Photo by Rachel Hutton

Classification: Animalia - Chordata - Mammalia - Cetacea - Odontoceti - Delphinidae

Scientific name: *Tursiops aduncus*

Common name: Indian Ocean Bottlenose Dolphin

Life span (estimated): females – 40 years males – 30 years

Size: 2.4m is the average size and males are larger

Status: common in their range and protected fauna under the Wildlife Conservation Act 1950

Diet: fish, crustaceans and cephalopods (squid).

Reproduction: bottlenose dolphins have a 12 month gestation; females reach sexual maturity at age 10 -12 and give birth to one calf every four years (on average); calves stay with the mother for 3-5 years. Peak mating and calving season occurs in spring and summer.

Social structure: females form networks, males bond in groups of 2-3 (alliances)

Home range: the 'river' dolphins range between the Swan Canning Riverpark and nearby coastal areas on a daily or near-daily basis; Dolphin Watchers record movements and behaviours of dolphins in the Riverpark.

Identifying dolphins in the Riverpark

Two resident dolphins including Kwilena (dolphin with the white patch) as named by Dolphin Watcher Anne Holder

Some dolphins are hard to identify and are known as 'clean fins' as they do not have many markings. The photographic table below shows the right and left dorsal fin markings and fin shapes used to identify animals.

This year we are encouraging Dolphin Watchers to take photographs of the dolphins and send in their photographs. The photos will assist researchers to develop a more comprehensive and up-to-date identification chart on dolphins in the Riverpark.

The chart below was compiled by researchers from Murdoch University and lists the current dolphins identified in the Riverpark. The chart shows left and right sides of the dorsal fin of each animal. Marks on the body and fins assist researchers in positively identifying each animal.

Dolphin Identification Chart

NAME	LEFT SIDE	RIGHT SIDE
High Nitch		
Socket		
Bottomslice		
Keyhole		
Wingding		
Hi		
Real Notch		

Cleft		
Blackwall		
Tab		
Two rakes		
Tupac		
Pappy		
Kwilena		

Rake		
Reiki		

Research findings 2009-2010

Dr Chandra Salgado summarised the research findings from the first year of Dolphin Watch in a presentation to Dolphin Watchers at the inaugural Dolphin Watch day event held on Wednesday 12 May 2010.

Dolphin Watch studies a species recognised to be of high conservation value within the Swan Canning Riverpark—the Indo-Pacific Bottlenose Dolphin (*Tursiops aduncus)*. The project aims to answer the following questions:

1. When and where do dolphins occur within the Canning River and the upper reaches of the Swan River?

2. How many dolphins are using these areas?

3. Are key dolphin activities such as feeding observed in these areas?

4. Do dolphins utilise these areas during important life stages (e.g. mother-calf pairs)?

5. When and where are dolphins observed in the middle and lower reaches of the Riverpark?

6. Can we identify individual dolphins using community-based photo-identification?

7. Can community monitoring help to identify health and welfare concerns for dolphins, such as incidences of entanglement?

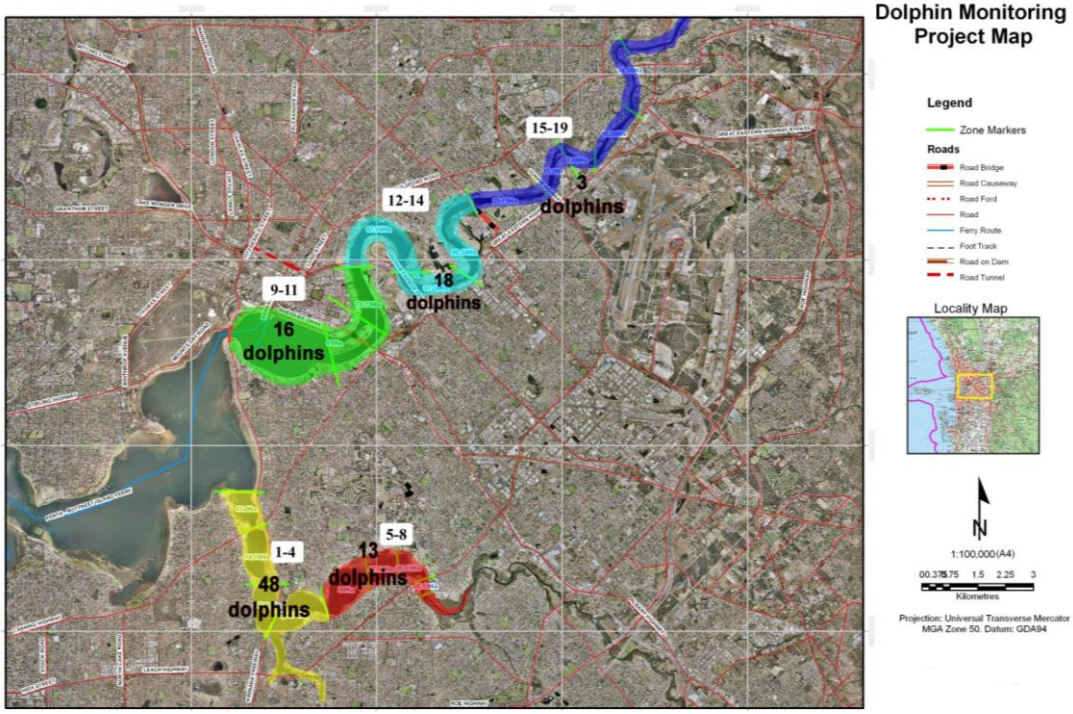
Study area

The initial Dolphin Watch study area focused on the Canning River and the upper reaches of the Swan River, as little was known about how dolphins used these areas.

The success of Dolphin Watch led to an expansion of the study to include the entire Swan Canning Riverpark from the upper reaches of the Swan and Canning rivers down to the entrance to the Port of Fremantle. The expansion of community monitoring efforts

will provide important scientific information on dolphin abundance and distribution and also add many concerned ‘eyes on the river’ looking out for dolphins.

Swan Canning Riverpark dolphin survey area



Coloured areas show monitoring zones and numbers of dolphins sighted in the areas

Data collection

Data was collected between June 2009 and June 2010 by more than 20 volunteers, with a total of 62 sightings logged. Volunteer observations assisted Professor Lyn Beazley, West Australian Chief Scientist’s investigations into the 2009 dolphin deaths by helping to confirm that dolphins used the upper reaches during the period from autumn-spring 2009.

The Swan River Trust manages and collates sightings from volunteers on the form below with photo-identification data and researchers from Curtin and Murdoch universities analyse the information.

Dolphin Watch

DOLPHIN MONITORING IN THE SWAN CANNING RIVERPARK

Volunteer name _____

Member number _____

Please send completed monitoring form to
River Guardians Dolphin Watch
PO Box 6740, EAST PERTH WA 6892

River Guardians
SWAN RIVER TRUST

BACKGROUND INFORMATION

DATE *Format: 01 January 2009*		**NUMBER OF DOLPHINS** *Circle the number of dolphins sighted or estimate the number observed in the space provided*	1 2 3 4 5 6 7 8 9 10 >10 ☐ Unknown Estimated number _____
TIME *24-hour format* *e.g. 1pm = 13:00*		**MOTHER-CALF PAIRS PRESENT** *Please indicate whether mother-calf pairs are present by ticking the appropriate box. Only record a mother-calf pair being present if the calf is in baby position (BP) **	☐ Yes ☐ No
MONITORED AREA *See attached maps*		**NUMBER OF MOTHER-CALF PAIRS PRESENT** *Record the number of mother-calf pairs present in the space provided*	
TIDAL MOVEMENT# *Tick box indicating which tidal movement you observe*	☐ Rising ☐ Falling ☐ Slack ☐ Unknown	**DIRECTION OF TRAVEL#** *Tick which direction of travel you observe*	☐ Upriver ☐ Downriver ☐ Staying in the area ☐ Unknown

See reverse for definitions

BEHAVIOUR

Tick all behaviour/s you observe

Swimming fast		Travelling straight, consistently in one direction	
Milling and diving in one place		Body contact between dolphins	
Chasing fish		Social interaction (body contact, splashes etc)	
Dolphin with fish in mouth		Leaping out of the water	




Photos courtesy of John Goldsmith


Photos courtesy of Sue Harper

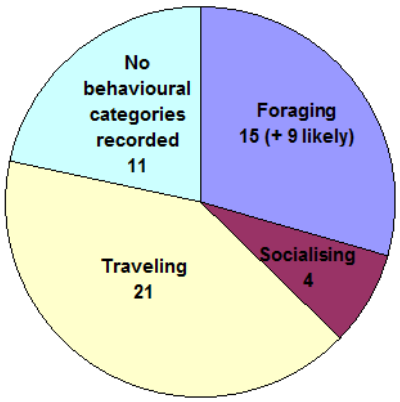
Dolphin areas utilised

Dolphins were sighted throughout the study area for the duration of the study period. The upper most sighting was at the upper limit of the study area near Caversham in the Swan River.

Key activities observed

- 21 sightings showed behaviour consistent with travelling
- 4 sightings showed behaviour consistent with socialising
- 15 sightings showed behaviour consistent with foraging, and 9 showed evidence of likely foraging

Figure 1 Pie graph showing behaviours of dolphins in the Riverpark

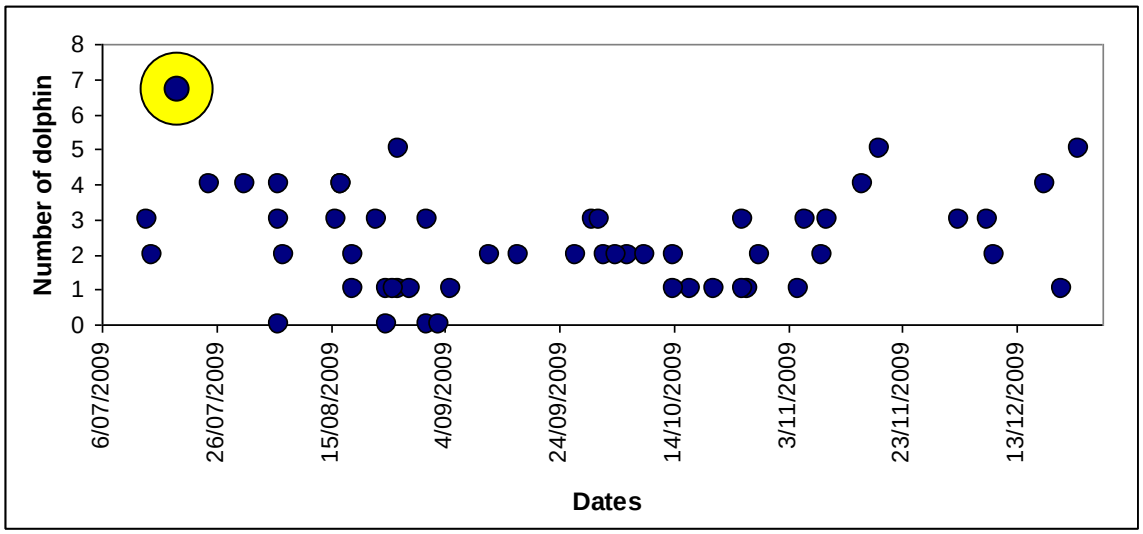


Dolphin activities in the Riverpark
Mother-calf pairs were recorded in the Canning River during 3 observations.
At least 7 dolphins of the estimated 20-25 of the Swan River community are using the upper reaches of the Riverpark based on the numbers of dolphins during particular sightings.

Diagram - Dr Salgado, Curtin University

Photo by Michael Rendell

Chart showing the numbers of dolphins using the upper reaches of the Riverpark



Yellow spot indicates the seven animals that use the upper reaches of the Swan River

Dolphin Watch volunteers are critical to helping to identify the health and welfare issues for dolphins.

One of the two dolphins entangled last year was spotted, photographed, and reported by a Dolphin Watch volunteer and by River Guardians staff. More eyes on the river means faster response to dolphins in distress by DEC and the Swan River Trust.

By training more River Guardians to become Dolphin Watchers there will be greater awareness and care by the community to care for our rivers.

General conclusions

Dolphins used the upper reaches of the Swan Canning Riverpark – Caversham throughout June to December in 2009. At least seven of the estimated 20-25 dolphins used this area. Dolphins are likely foraging, socialising and traveling in these areas and mothers and calves utilise these areas. Greater information is now available on the rate of entangled dolphins.

Future work

The former Minister for Environment has shown support for Dolphin Watch by launching the project and providing $50,000 for further training for Dolphin Watch volunteers. Further training will increase the number of trained volunteers actively monitoring dolphins and estimating the frequency of river use. The use of photo-identification will help estimate the current number of dolphins using the Riverpark.

With the expanded study area now including the entire Riverpark, more information will be collected from the lower, middle, and upper reaches. This will also help to expand the monitoring effort to identify health and welfare problems (e.g. entanglements, dolphins with health conditions).

Dolphin Watch Day

Professor Lyn Beazley, Dr Hugh Finn, Dr Chandra Salgado, Dr Carly Holyoake and Dr Nahiid Stephens, Aboriginal elder and Honorary River Guardian Noel Nannup and Dolphin Watchers at the inaugural Dolphin Watch Day event where the findings of the first year of the project were announced.

Former Minister for Environment; Youth Donna Faragher with Madeleine Kirkham – Dolphin Watcher for 2010 (left) and with Anne Holder winner of the name a dolphin competition (right)

Dolphin Watchers Profiles

Some of our most active volunteers share their experiences as Dolphin Watchers.

Elaine Christy

From the minute I stepped off the gangplank of the SS *Fairstar* in Fremantle, June 1967, with my youngest daughter in my arms I felt a huge burst of energy, like a water jet coming up through my body and out the top of my head. In that moment I knew we had made a wise decision to migrate to Western Australia. This feeling of joy and optimism has never left me. I guess that you could say that I fell in love with my new country at that very point.

I have always been interested in my immediate environment wherever I live or work so I have involved myself in various environmental projects such as setting up a bush area at

Jandakot Primary school; helping to develop a bush area in Kwinana, Tramway reserve in Parmelia; Rotary Wildflower reserve involving Medina Nyoongar cultural group; Baldivis Noongar group, Friend of Cockburn Wetland group; regularly doing bird counts around the suite of lakes (Bibra, North, Little Rush lakes); various projects with Kwinana Rockingham Mandurah branch of the Naturalist Club; volunteer for turtle monitoring at Exmouth and Port Hedland; volunteer member of the Fremantle Port Outer Harbour Liaison group; co-ordinator for the Rockingham Bays Seagrass Monitoring group (RBSMG) and part of the team who replant seagrass in Cockburn Sound through Murdoch University.

I also lived in Wyalkatchem and saw the causal factors leading up to the salinity problem in the wheatbelt. I undertook to do a course called Coasts Corridors and Catchments in order to learn how to help combat water issues of both the ocean wetlands and river and have been part of the Ribbons of Blue whilst teaching.

The various environmental projects that I have undertaken to do are essential to my well being. It's mandatory to care for the environment when it gives you back so much pleasure.

I had been aware of the dolphins in Cockburn sound through Dr Hugh Finn and part of my involvement with RBSMG and the seagrass re-planting project conducted at Murdoch University. I was delighted to find that there was a project concerning the river dolphins and so became a volunteer.

It's a hugely satisfying feeling to be part of a team that is dedicated to improving conditions of our environment. Many years ago I realised that there were so few scientists in Western Australia to manage all the various aspects of this huge state.

Volunteers can make a huge difference by taking part in worthwhile projects. Chris and I moved to Fremantle so that we could be close to the river. We were initially disappointed to find that we couldn't monitor our section of the river but we were thrilled when that changed. We can now involve more people in the River Guardian project.

The opportunity to encounter river dolphins so closely is not only helping us to gain understanding of their life style and their movements but also aiding in gaining information of the river system and how to improve its quality.

I cannot decide on the best dolphin encounter I have seen because each one has been a joy to witness. We saw seven dolphins at Canning Bridge, four one side, three on the other. They then all came to the 'Raffles Hotel' side circled the shoal of fish and co-operatively fished. The pelicans and cormorants were there too.

On another occasion I went with friends of Cockburn Wetlands group to the Armadale Foreshore. There were four dolphins on the opposite side of the river. Two dolphins came across to our side and began to stir up the river bed; behind them two pelicans were also feeding and then down swooped an osprey and took a fish up to his nest on the top of the pylon close by.

Shirley Oliver

Sadly, the last sighting we had of dolphins in the Shelley-Riverton Bridges area was in October 2009. It seems that the three we used to see were the ones that died around that time last year. No other dolphins visited this area before or since, so maybe the other dolphins have never thought to venture this far. Hopefully, one day, an adventurous and curious dolphin or two might re-discover this part of the river, as the residents along here really enjoyed watching them.

I joined Dolphin Watch because for nearly all of my life I have been concerned about the negative impact humans have on the natural world, which now has become a very serious problem world-wide. I grew up on the Goulburn River in Victoria, and the forest was my playground. I saw the loss of the wildflowers, the invasion of introduced weeds, the disappearance of birds and small animals, and I heard adults saying “Well, you just can’t stop progress”. I was made very aware in no uncertain terms that people who cared about the natural world were regarded by others (who considered themselves as progressive and forward thinking) as being sentimental, unreal, and in fact, downright stupid.

Contributing in a small way to the dolphin study project has given me a sense of doing something useful toward protecting our natural world, which to my mind, is seriously undervalued by so many governments worldwide. I often think of the American Indian wisdom which runs: not until the last fish is caught, the last tree chopped down and the last river poisoned will we realise we can’t eat money. Our beautiful dolphins are now dependant on our care. We have invaded and damaged their rightful environment, and they are entitled to our utmost care and respect.

The highlight of the many visits the three dolphins made to Riverton Bridge was watching the baby dolphin, probably a “teenager”, teasing its mother by swimming up to her and bumping her on her side, or jumping over her back with a splash. It was just like a mischievous young child. Across months, I was able to see it learning to herd fish in the shallows, going from clumsy to swift and accurate. Such a joy to watch!

Peter and Trita Agar

We live just five minutes walk from the Canning River in Shelley, and have lived very close to the Swan Canning rivers virtually all of our lives.

With that bred into us we both take a great interest in the wellbeing of the river and have always had a love of the wildlife that the river system supports. We are both particularly pleased to see the variety of birdlife. The recent increase in black swan numbers has excited us as has the number of pelicans and, in fact, the vast variety of birds that come and go throughout the year.

Because of the beauty of the river and the attraction of the birdlife, we love to walk beside the river on a daily basis, generally for an hour or so. We add further to our enjoyment of our river through active sailing with Shelley Sailing Club in the summer season. We often see dolphins whilst we are sailing. We also enjoy many riverside picnics.

Any day is made a beautiful day when a dolphin is spotted. This level of excitement is magnified greatly when the spotting is multiple.

For these reasons, when we heard of the Dolphin Watch project, we were only too happy to become a part of it. As far as we are concerned, it is our civic duty to be a part of our community and to assist where we can. We don't, however, regard this project as "volunteering", as it is enjoyable, a pleasure and part of what we do anyway. The upside is that it has made us more observant of our environment and we do see much more.

Our most memorable sighting of dolphins is when our three grandchildren were visiting from Sydney and we were all walking along beside the river in Shelley. Three dolphins were fishing so close to the shore that they were almost beaching themselves in the reeds as they chased the fish. Our grandchildren were thrilled to be able to see the dolphins splashing and tossing fish in the air at such close range.

Every sighting of dolphins is memorable. The fact that they are mammal, they breathe air and that they relate to humans in such en enveloping way, we tend to give them pedestal like status and much admiration. As I have said, any day you see a dolphin is a good day!

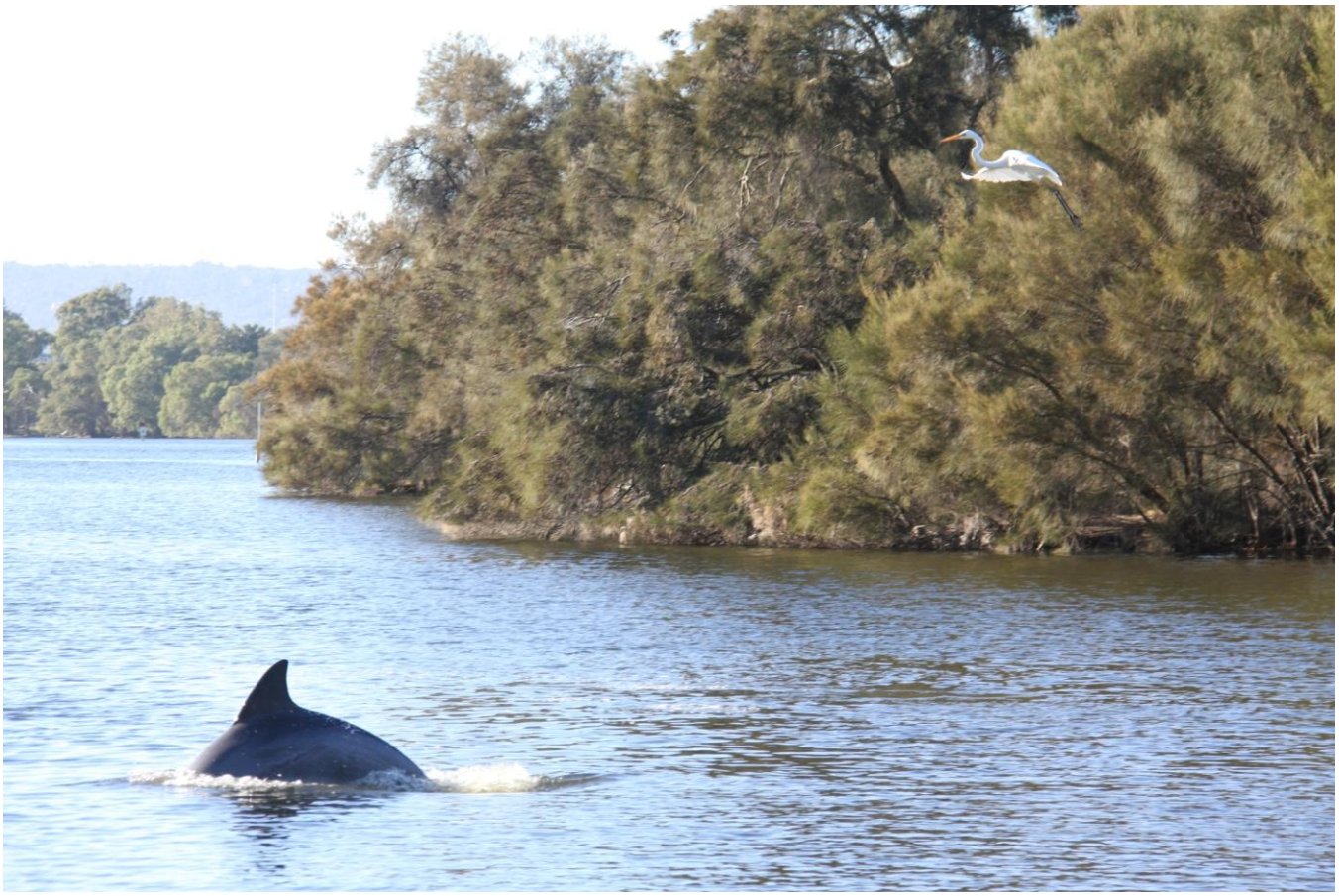


Photo courtesy of John Goldsmith