FinBook

An identification catalogue for dolphins observed in the Swan Canning Riverpark



SIXTH EDITION - 2016







Department of Parks and Wildlife







Foreword

It is a great pleasure, as Patron of *Dolphin Watch*, to again write the foreword to the sixth edition of this splendid book, which is based on the very best science. Using the book as a guide, we now know so much more about the animals that are held dear by Western Australians and visitors to our State alike. The book makes it possible to identify individual dolphins and to build up a more comprehensive picture of their behaviours and needs. Their 'secret lives' are now being revealed, an essential prerequisite to ensuring their future in our everchanging waterways.

We now have two new categories in the book, *Visitors of the year* and *Wanted* dolphins, to help researchers track down infrequent visitors to the rivers and dolphins that are of particular interest to the scientists. One of our wonderful scientists, Murdoch University's Delphine Chabanne, has even written this year's dolphin story describing her discoveries about one of our dolphins, Soul.

Who would have imagined that in the seven years of *Dolphin Watch*, the project would have grown to more than 1000 trained volunteers, with 882 currently registered, who produced more than 20,200 reports and provided 2888 hours of volunteer effort this year alone? This is a phenomenal result and is enhanced by our smartphone app, where users can easily upload reports with photos and videos. Close to 300 reports were submitted through the app this year and we are now streamlining data collection electronically to complement the more traditional online monitoring form. It is a great addition to the project, as is *Junior Dolphin Watch* which is now providing an exciting and educational schools-based program. To date 1209 students from 25 schools have engaged with *Junior Dolphin Watch*, with some schools including the program in ongoing study.

Our success has already inspired school students in Mandurah to work with Murdoch University academics to produce a fin guide and begin establishing a dolphin watching program for the Peel-Harvey estuaries. Moreover, the students are also emulating the work of the *River Guardians* volunteers by adopting fishing line bins, educating the community of the hazards of fishing refuse to wildlife, including dolphins.



There is no doubt that the knowledge gained by reference to our book about the Swan Canning Riverpark and the resultant cultureshift are crucial to ensuring the survival and wellbeing of dolphins in the south-west of our State. Good policy decision-making and sound management practices will be underpinned by the data generated. We should all be proud of this terrific book and I congratulate all concerned in producing the latest edition, which I am sure will continue to be used extensively and to good effect.

Professor Lyn Beazley AO FTSE

Front cover: Dolphins in the Swan Canning Riverpark. Photo: Sarah Matheson

Other photos by Delphine Chabanne, Sue Harper, Holly Smith, Kate Sprogis, Simon Allen, Matt Kleczkowski, Wayne Theobold, Alistair Ritchie, Rachel Hutton and Miranda Jackson.

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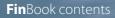




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How to use **Fin**Book



How to use **Fin**Book

This is the sixth edition of FinBook, our annual guide to the Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) inhabiting the Swan Canning Riverpark.

We hope experienced *Dolphin Watchers* enjoy the opportunity for an update on our Riverpark dolphins and that newcomers to *Dolphin Watch* can begin their own journey of discovery with these fascinating and unique creatures.

We use the markings on the dorsal fins of dolphins to identify individual animals. These markings come from interactions with other dolphins and sometimes from shark attacks or entanglements. Young dolphins often have fins that lack markings – we refer to them as 'clean fins'.

FinBook is a catalogue of dolphin fin-prints. The identification tables show the right and left sides of the dorsal fin for each of the dolphins observed regularly in the Riverpark.

FinBook sections

FinBook is divided into three sections according to the dolphins' age, sex and the most recent observations of individual dolphins in the Riverpark. Each section is subdivided according to the level of associations between dolphins as well as their distribution in the Riverpark.

Adult females

Group 1: Females with dependent calves seen in the entire Riverpark **Group 2:** Females with dependent calves, seen in the Fremantle

Harbour and adjacent lower reaches of the estuary **Group 3:** Females without dependent calves

Juveniles

Group 4: Juveniles

Adult males

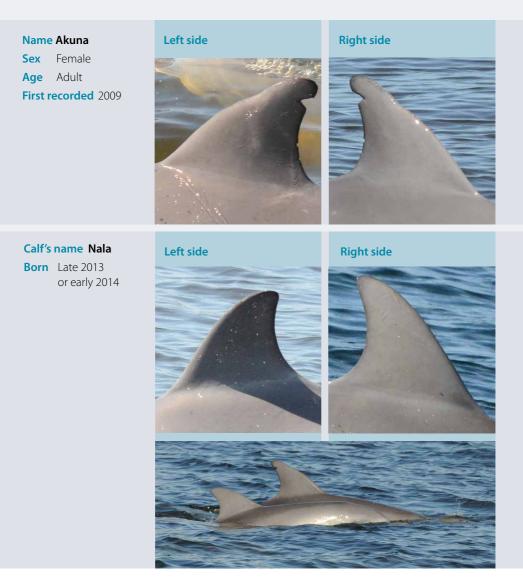
Group 5: Males often or always seen together – first group Group 6: Males often or always seen together – second group Group 7: Males with weaker associations

Visitors of the year

Wanted – Help us find them

Each dolphin has a profile that provides:

- the dolphin's name
- images of the left and right side of the dolphin's dorsal fin
- the dolphin's age-class (adult/juvenile/calf)
- the dolphin's known or suspected sex
- for adult females, name of previous calves
- for juveniles, name of mother.



Name DanieleSexFemaleAgeAdultFirst recorded2009NoteDaniele lost her first calf in January 2013.	Left side	Right side
Calf's name Echo (named by Penrhos College Year One students	Left side No photo available of left	Right side
in 2016) Born Mid-2015 Note Echo was badly entangled in fishing line in November 2015.	side	



Group 1: Females with a dependent calf seen in the entire Riverpark

Name Panuni Sex Female Age Adult First recorded 2011





Right side



Calf's name Cruze (named by Jennifer Cogan) Born Early 2015

Left side

Right side



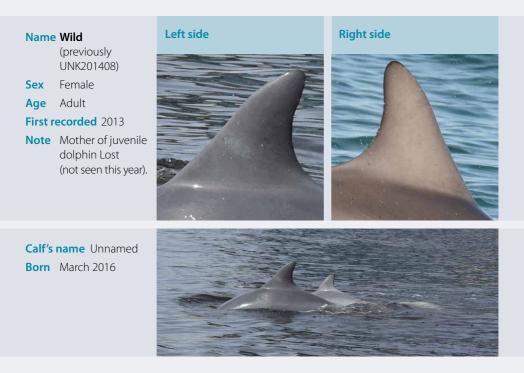




Group 2: Females with dependent calves seen in Fremantle Harbour and the adjacent lower reaches of the estuary



Group 2: Females with dependent calves seen in Fremantle Harbour and the adjacent lower reaches of the estuary



Group 3: Females without dependent calves

Name ClawSexFemaleAgeAdultFirst recorded2009





Right side

Right side



NameDunnedooSexFemaleAgeAdultFirst recorded 2009

Left side





Group 3: Females without dependent calves



Juveniles

Group 4: Juveniles

Name Garden

SexMaleAgeJuvenileNoteEden's previous
calf.

Left side



Right side

Right side



Name Heaven

Sex	Unknown
Age	Juvenile
Note	Eden's previous calf.

Left side



Juveniles

Group 4: Juveniles

Name Night

Sex Male Age Juvenile Note Moon's previous calf.

Left side



Right side

Right side



Name Soul

- Sex Unknown
- Age Juvenile
- **Note** Pirulli's previous calf.

Pirulli and her dependent calf died in May 2016.

Left side





Juveniles

Group 4: Juveniles

Name Zari Left sice Sex Male Age Juvenile Note Tworakes' previous calf. Tworakes has not been seen since late 2013 after being bitten by a shark.



Right side



Adult males

Group 5: Males often or always seen together – first group



Group 5: Males often or always seen together – first group

NameBottomsliceSexMaleAgeAdultFirst recorded 2001







Right side



NameHiiSexMaleAgeAdultFirst recorded2001

Left side





Group 6: Males often or always seen together – second group

NameExtremeSexMaleAgeAdultFirst recorded2009

Left side

Left side



Right side

Right side



Name Kwillena lookalike

Sex Male

Age Adult

First recorded 2011

Note Kwillena lookalike was first seen with shark bite marks in winter 2014.





Group 6: Males often or always seen together – second group

Name Print Sex Male Age Adult First recorded 2009



Adult males

Group 7: Males with weaker associations

Name Blackwall

Sex Male

Age Adult

First recorded 2001

Note Hunk missing out of peduncle (probably old shark attack wound).



Group 7: Males with weaker associations

Name Pebbles Sex Male Age Adult First recorded 2009



Right side



Visitors of the year

Name	Scarlette
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- Sex Female Age Adult First recorded 2011
- Note Scarlette is a mother, although she lost a calf in 2015. She is generally observed in the adjacent waters (Owen Anchorage) but



has visited the Riverpark on many occasions, particularly after the death of her last calf.

Visitors of the year

Name Mystery

Sex Unknown

Age Sub-adult

First recorded 2016

Note Mystery really is a mystery. This sub-adult was first observed by a Dolphin Watcher in early 2016 – none of the dolphins from our Riverpark or adjacent waters look like this animal.

Left side





Name Hugs

- Sex Unknown
- Age Juvenile

First recorded 2001

Note Hugs knows the Riverpark. The dolphin first visited with its mother Cuddles in 2013. Hugs became independent from Cuddles in early 2015, and like

Left side





many other juveniles, Hugs is now exploring. Let's see if Hugs loves our Riverpark enough to stay around until next year.

Wanted – help us find them

Name Lost

Sex Unknown Age Juvenile

First recorded 2013

Note Lost is Wild's previous calf. Although Wild has been seen in the Riverpark this year, Lost has not been seen since early 2015. By then, Lost would have



Right side



been a juvenile. Many juveniles don't spend much time with their mother, but explore new areas. Perhaps Lost is just somewhere in the adjacent waters of our Riverpark.

Name Highnitch's calf Left side **Right side** Sex Unknown Born Early 2015 No photo available of left side Note Highnitch's calf was last seen in December 2015 by the research crew. In June 2016. the same crew saw Highnitch with many other dolphins including Daniele and her calf Echo, but without her own calf.

Highnitch had already lost her previous calf, Highhope, in 2013.

Foraging and feeding

Dolphins that are actively searching for prey like finfish, squid and octopus are said to be foraging. Foraging is the most common activity for dolphins in the Riverpark. When dolphins are catching, processing and eating prey, they are said to be feeding.

Generally, dolphins consume prey underwater. However, as dolphins cannot chew, they sometimes throw larger prey around the surface or drag it along the bottom to break it up into smaller pieces. If you see dolphins chasing or eating fish, be sure to record this information. Information about what fish species dolphins are eating is very helpful.

Foraging behaviours

Foraging dolphins are usually spread at least 10m apart and may be much farther. Occasionally dolphins may be closer together. In deeper water, foraging dolphins often mill around in an area for several minutes. So, you might see them surface for a few breaths, dive again for a few minutes, then surface again for a few breaths. We refer to this behaviour as 'mill forage'.



Sometimes, when dolphins are in a hurry to get back underwater, you will see them surface for one quick breath, either by leaping out of the water or by humping their body at the surface. We refer to this as a 'rapid surface'. Dolphins often travel along the edges of the rivers while searching for fish and display a forage/travel combination. For example, they often travel through marinas and moorings or along the edge of Point Walter. Sometimes, they stop and engage in mill forage for a little while, before moving on.

Foraging behaviours in shallow water are a little different. Indications of foraging in shallow water include:

- **fast swimming** (sometimes with streams of water coming off the dorsal fins, which is called 'rooster-tailing')
- **bottom-grubbing** (dolphins poking around in the mud, sand, seagrass or seaweed with their beaks).

Other foraging behaviours include:

- belly-up fish chase (i.e. dolphins swimming around on their backs while chasing fish – their eyesight and echolocation work best in a slightly downwards direction, so it can be easier to keep track of fish that way)
- herding fish against a structure (e.g. a wall or breakwater).



Dolphin behaviour guide

Resting



Resting dolphins may be submerged for several minutes and may surface pointing in another direction. Dolphins that are engaged predominantly in a resting state and are not actively foraging/feeding, travelling or socialising are said to be resting.

Resting is not often observed in the Riverpark. This may be because of the shallow waters in the two rivers – dolphins seem to prefer waters more than 8m deep to rest in. The Riverpark dolphins are also frequently disturbed by vessel traffic and other human activities. Resting groups are commonly observed in the deeper parts of Owen Anchorage (south-west of Fremantle) and Cockburn Sound.

In contrast to foraging dolphins, resting dolphins are often clumped closely together. The classic resting pattern involves groups of usually four or more that are tightly-spaced (i.e. less than 2m between dolphins), moving slowly (usually in a meandering pattern but sometimes in a straight line), and taking multiple breaths (four to eight or more) at each surfacing, then diving within a few seconds of each other.

Resting dolphins may be submerged for several minutes and may surface pointed in another direction.

Resting dolphins often 'snag' at the surface for a few seconds. Snagging is when dolphins hang motionless at the surface with their tail beneath the water and the front part of their body exposed to the air. They look a little like sausages when they do this, hence the term.

Sometimes you will see dolphins scan their head from side to side while snagging. This most likely means they are using their echolocation to take a scan of the area. They may do this while foraging too.

Socialising

Socialising



Like humans, dolphins are very social animals. Dolphins that are engaged in social interaction with other dolphins are said to be socialising.

The most obvious sign of socialising is body-tobody contact between dolphins. The bellies of dolphins often turn pink when they are socialising – this is because the tissue becomes perfused (blood flowing close to the skin) with blood.

Sometimes, you may see leaps and/or fast swims while dolphins are socialising. These behaviours can also occur while dolphins are foraging, so it's a good idea to watch for a while before jumping to conclusions about what dolphins are doing.

Sometimes, calves in a group might be socialising while their mothers are in another group foraging.

Dolphins are very creative in terms of how they interact physically. Dolphins may:

- rub their bellies together
- rub their belly against the side of another dolphin
- stroke each other with their tail flukes
 or pectoral fins
- 'goose' (nudge another dolphin's underside with its beak)
- swim with pectoral fins overlapping.

Not all social interactions are friendly. Some interactions, particularly among males, are antagonistic. The rake marks you see on many dolphins are often the result of unfriendly interactions. The rake marks come from dolphins raking their teeth across the skin of other dolphins.

Specific behaviours

Milling and diving in one place



Dolphins surfacing independently of each other in one general area. This behaviour pattern implies that dolphins are searching for fish. When dolphins are resting or socialising, they tend to dive and surface at (or nearly) the same time. 'Milling' means dolphins are hanging around an area for several minutes during which time they may dive and surface several times and often change direction. They are usually (but not always) spread at least 10m from other dolphins.



To record dolphins chasing fish, you must observe the fish being pursued. If you are able to confirm which fish species the dolphins are chasing, please note this.

Swimming fast



Dolphins swimming at faster than normal cruising speeds. Dolphins may swim fast when foraging, chasing fish, socialising or chasing each other. In shallow water, you may see a spray of water come off the dolphins.

Dolphin with fish in its mouth



Dolphins with fish (including cephalopods like squid and octopus) in their beak. Sometimes dolphins throw the fish around the surface as well. If you are able to confirm which species the dolphins are chasing, please note this.

Snagging



Dolphins hanging motionless at the surface with their tails beneath the water and the front half of their body at the surface. They look like sausages when they are doing this, hence the term 'snagging'. Dolphins may turn their head from side to side to scan the water. Snagging most often occurs during resting bouts but may occur during pauses in other activities.

Travelling straight, consistently in one direction



Dolphins that move in one direction. This occurs most often when dolphins are travelling and implies a directed effort to make progress in a particular direction. Dolphins often travel straight for periods and then, if they locate a fish, stop and mill around an area to forage for a little while.

Specific behaviours

Body contact between dolphins



Direct body-to-body contact between dolphins. This generally occurs when dolphins are socialising.

Social interaction (body contact, splashes etc.)



Obvious social interaction between dolphins usually involves body-to-body contact. You will often see splashes, bellies flushed pink with excitement, fast swims or leaps by dolphins interacting with each other. Socialising often occurs in tightly-spaced groups of three or more dolphins, but may occur between two dolphins (for example between a mother and calf).

Leaping out of the water



The entire body of a dolphin is out of the water. May occur when dolphins are foraging (i.e. a quick breath so they can get back underwater rapidly) or when they are socialising.

Milling and diving alone more than 20m from other dolphins



Dolphins that are widely spaced from each other and are diving and surfacing in an area. This behaviour pattern occurs exclusively during foraging and feeding. It implies that dolphins are searching for fish in the area. Dolphins are spread out to minimise competition for fish (i.e. to get out of each other's way).

Baby position



Calves travelling just behind and to one side of their mother. When a calf surfaces in baby position (BP), its head surfaces near the mother's midsection. Travelling in BP allows calves access to the mammary slits located in the mother's tail region and also provides a small hydrodynamic benefit. Young calves spend a lot of time in BP; as they grow older, they spend less and less time there. If calves are stressed, they usually return to BP (if they were away from their mother). Infants or newborns swim by the side of the mother's head. Be sure to confirm that the dolphin in BP is actually a calf and not just another dolphin travelling close by. The best way to confirm BP is to see if the calf is smaller than the mother and if the calf maintains BP for several breaths



Dolphin Watch

Dolphin Watch is a collaborative, citizen science research and education project. The project was developed by the Department of Parks and Wildlife with Murdoch and Curtin universities in 2009, to help learn more about the resident Indo-Pacific bottlenose dolphin community that calls the Riverpark home.

Researchers from Curtin and Murdoch universities work with Parks and Wildlife's *River Guardians* team to train volunteers in techniques for monitoring the movement and behaviour of dolphins in the Riverpark. Volunteer reports help researchers find out more about the local community of dolphins. There are now 890 active trained *Dolphin Watch* volunteers.

Volunteers play an essential role in monitoring dolphins as citizen scientists. By becoming a member of the *River Guardians* program and attending training, people become more informed about river conservation issues and can participate in activities to help the rivers and the wildlife that inhabits them. With hundreds of trained *Dolphin Watchers* observing dolphins, researchers are gaining a greater understanding of what dolphins do in the Riverpark and the project's data feeds into the local Coastal and Estuarine Dolphin Project and global Coastal Walkabout data sets.

More volunteers monitoring the Swan and Canning rivers also helps Parks and Wildlife to keep an eye on the Riverpark.

Volunteer information, photographs and video helps build a picture of the community of dolphins in the Riverpark. *Dolphin Watch* shares information and expertise so that industry, government and the community can develop effective river management activities and policy to help protect dolphins and their habitats.

The *Dolphin Watch* project will continue to expand research capabilities and encourage volunteers to participate through online monitoring, smartphone applications and other initiatives.





Dolphin research

Coastal and Estuarine Dolphin Project

Research for the Coastal and Estuarine Dolphin Project (CEDP) is driven by the belief that the best future for Perth's dolphins lies with ecosystems that are healthy and resilient and with communities that are actively engaged in caring for their local dolphin populations and the environments they inhabit.

CEDP (**mucru.org** and **cmst.curtin.edu.au**) addresses the health, ecology and conservation of dolphins in the Perth region. Curtin University and Murdoch University founded CEDP as a response to the deaths of six dolphins within the Swan River in 2009. CEDP works in partnership with State and local government, industry and the community of Western Australia.

Current CEDP Research

Since 2011, CEDP researchers have been assessing dolphin abundance and distribution within a study area extending from Rockingham to Scarborough along the coast and inland to the cities of Perth and Canning. The resident dolphin population in the Riverpark is very small, so it is vital that we understand its status and connections to other populations. Other CEDP research is investigating the effect of anthropogenic (man-made) noise on dolphins.

Researchers work with Parks and Wildlife to train *Dolphin Watch* volunteers and analyse volunteer data, which has revealed valuable insights into the Riverpark dolphins.

The overall objectives of CEDP are to:

- conduct rigorous and innovative research into the ecology of dolphins in the Perth region
- provide scientific information and advice to industry and government to support the conservation of dolphins and their habitat
- share information and expertise with the public to improve community-based conservation and monitoring for dolphins.

Dolphins in the Riverpark

Dolphins are a unique part of the Riverpark. What do we know about the ecology of the dolphins inhabiting the Swan and Canning rivers?

A resident community

The Riverpark is home to a resident community of about 22 dolphins, excluding calves. These dolphins account for nearly all the *Dolphin Watch* sightings in the Riverpark, although dolphins from nearby coastal areas are occasional visitors.

The dolphins are classified as 'resident' because they use the Swan Canning Riverpark year-round. Based on our knowledge of bottlenose dolphins elsewhere, these animals are also likely to be life-long residents of the Riverpark.

The resident dolphins in the Riverpark are said to comprise a community of dolphins because they range over similar areas (the Riverpark and adjacent coastal waters) and frequently interact and associate with one another. These ranging and association patterns distinguish them from other dolphins that may reside in Cockburn Sound or Owen Anchorage.



Be DolphinWise

It's easy to help care for dolphins in the Riverpark by following these simple rules:



Enjoy dolphins from a distance – never approach a wild dolphin and ensure you stay at least 30m away if you're in the water or 100m if you're in a boat.



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



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



Take your rubbish home with you or dispose of it in a rubbish bin – when fishing on the rivers please fish responsibly. Dolphins, particularly calves, can become entangled in fishing line. Make sure you dispose of unwanted fishing line in a rubbish bin, use a biodegradable fishing line and help sustain fish stocks by taking only what you need.



If you see dolphins in distress, call Parks and Wildlife's WILDCARE Helpline on **(08) 9474 9055.** The Helpline provides 24-hour State-wide referral for anyone who finds sick, injured or orphaned native wildlife.

Be RiverWise

The Swan and Canning rivers are an important habitat for bottlenose dolphins. The Riverpark serves as a nursery to raise their calves and as a meeting place to socialise and feed. Good quality habitat in the river system will continue to support the growth, survival and reproduction of these dolphins.

There are abundant fish resources in the Riverpark with a large number of fish species and a multitude of invertebrates, including crabs, prawns and molluscs.

If we want to continue to see dolphins in the Riverpark we must protect its ecological health so that these food resources remain available and abundant.

Nutrients such as phosphorus and nitrogen can threaten Riverpark health by promoting algal blooms, deoxygenation and fish kills.

We need to halve the amount of nutrients entering the Swan Canning river system to protect water quality and ecological health.

Everyone has a role to play in reducing nutrients and protecting dolphin habitat. You can do this by:

- only applying fertiliser when it's needed in spring or early autumn – follow application rate instructions, don't over-apply and never overwater
- growing local native plants they need less water and fertiliser, and attract native birds, lizards and insects
- composting your leaves and grass clippings so they don't wash into drains and add nutrients to the rivers
- keeping garden weeds away from drains they may end up in rivers and displace foreshore vegetation
- keeping harmful chemicals away from drains.

Check out **www.riverguardians.com** for more helpful tips and information.

There are abundant fish resources in the Swan Canning river system with more than 130 fish species and a multitude of invertebrates, including crabs, prawns and molluscs.



Soul's story

My name is Soul.

Why? I don't know. You could ask the research crew, but most likely because it's a cool name.

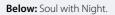
The crew first saw me with my lovely mum Pirulli back in 2011. Since then, everyone has followed me, especially *Dolphin Watchers*. You can even find me far up in the Swan River.

I had such a great time with my mum exploring, foraging and feeding. My mum taught me so many things. Unfortunately, as you all know, my mum passed away recently, as well as my younger sibling. I don't know if I have other siblings. I could have, as my mum wasn't that young.

Now I live on my own, as I have grown up. Still, I'm rarely alone. You will often see me with Cruze and Panuni. We play together and it's fun.

I'm sure you all want to know whether I'm a girl or a boy. So far, I have managed to keep it secret, but the research crew will soon find out. I recently felt a little dart in my skin. It didn't hurt, but now I can't hide anything, as scientists can find out everything about me from the skin sample they took. I'm actually quite excited, because now they will be able to work out who my family is.

For now, I keep enjoying my life in the Riverpark, watching you guys taking photos of me and talking about what I'm doing.







Glossary

 $\ensuremath{\textbf{Calf}}$ – a dolphin still dependent upon its mother, usually less than five years old

Dorsal fin – the fin on a dolphin's back (its dorsal surface)

Juvenile – a young, immature dolphin, usually about four to 10 years old

Leading edge (of dorsal fin) – the front edge of the fin (versus trailing edge)

Peduncle - an anatomical term for the tail stock of a dolphin

Sub-adult – a dolphin that is not quite adult-size but larger than a juvenile



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Notes		







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Information current as at November 2016. This publication is available in alternative formats on request.