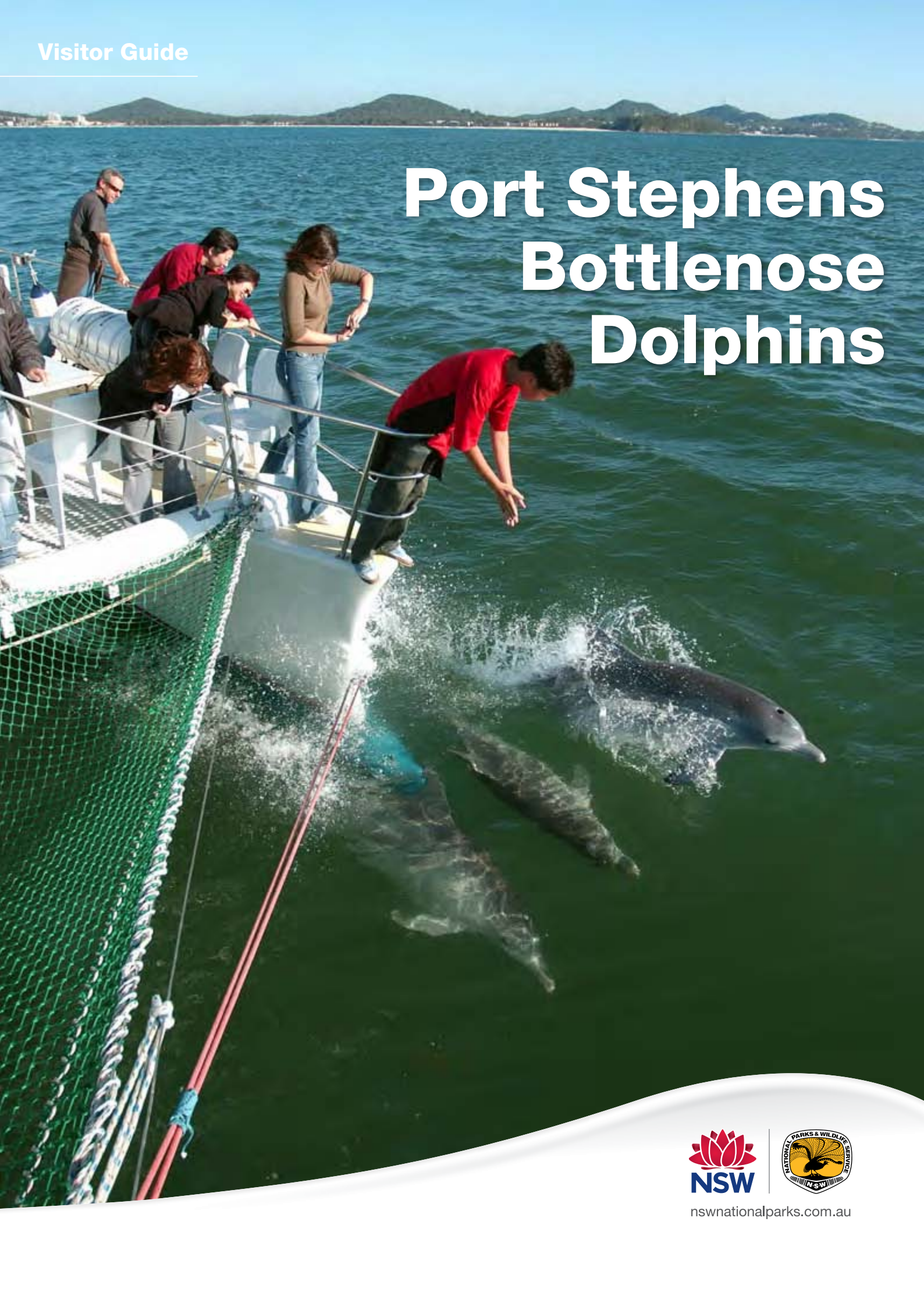


Port Stephens Bottlenose Dolphins



Introducing Port Stephens Bottlenose Dolphins

If you visit Nelson Bay north of Newcastle at any time of the year, you will most likely be treated to a privileged view inside the world of the bottlenose dolphin. Around 90–120 Indo-Pacific bottlenose dolphins live permanently in the waters of Port Stephens within the Port Stephens – Great Lakes Marine Park, making it one of the most popular places in the world for dolphin watching.

The dolphins are a much loved resident of this beautiful area with visitors coming from all over the world eager to catch a glimpse of the dolphins playfully going about their day to day lives!

The rocky coastal headlands and long white beaches of Port Stephens provide an ideal vantage point for watching dolphins from the shore, or you could join one of the popular dolphin watch cruises that are on offer daily.

WHAT IS A BOTTLENOSE DOLPHIN?

Bottlenose dolphins are a small cetacean belonging to the group of 'toothed' whales (Order Cetacea: Suborder Odontoceti). They get their name from their short rounded snout or beak, that resembles a 'bottle'. Oceanic dolphins belong to the Family Delphinidae.

WHAT DO BOTTLENOSE DOLPHINS LOOK LIKE?

Bottlenose dolphins are sleek and streamlined with a prominent, broad, triangular dorsal fin located in the middle of the back. They vary in size, shape and colour and are generally dark on the back and light grey/white underside. This colouration assists in camouflage from their predators (sharks and killer whales). Looking up from below the light underside of a dolphin blends against the sky and from above the dark back merges with deep water below. As dolphins get older they may develop a white spot on their bottlenose.

A huge variation in weight has been recorded, with dolphins ranging in size from 90 kg to 650 kg. However, the average weight is around 200 kg.

Spiritual connections

Port Stephens is part of the traditional country of the Worimi Aboriginal people, who have lived in the area for thousands of years, and have a special connection with the landscape, plants and animals. Worimi people are spiritually connected to Dolphins or Guparr as they are called in the Gathang language. Traditionally elders would speak with dolphins about food resources and looking after each other. Some elders still speak with dolphins today.

Steve Brereton, Worimi Elder



PHOTO: Ray Alley Photography



A bottlenose dolphin and her calf.



A bottlenose dolphin leaping.

DO DOLPHINS DRINK?

Ocean water is too salty for dolphins to drink, so they obtain their water needs from their food (fish and squid). Water is also released within their body as they metabolise (burn up) their fat, and their kidneys are adapted to conserving water. Although they live in a watery environment, dolphins live as desert animals with no direct source of drinking water.

DO DOLPHINS SLEEP?

A dolphin cannot sleep like we do as it must remain awake to surface and breathe. Scientists have conducted studies and have found that dolphins close down one half of their brain at a time and 'sleep' in this way for up to eight hours a day.

When a dolphin is 'sleeping' it will either swim slowly and occasionally surface to breathe, will rest at the surface with blowhole exposed, or will rest on the bottom in shallow water and surface occasionally to breathe.

HOW DOES A DOLPHIN SWIM?

Bottlenose dolphins are sleek and streamlined and **can travel up to 35 km/hr**. Dolphins move their flukes (the lobes of the tail) up and down to go forward, with the pectoral flippers (at the sides) used for steering.

The flukes and the dorsal fin are composed of connective tissue, only the pectoral fins contain bones. These bones are similar to the forelimbs of land mammals including those in your hand!

EYESIGHT

Dolphins have a horse-shoe shaped double-slit pupil which enables very good eyesight above and underwater. They also have good vision in low light.



Sometimes it's a case of 'Who's watching who?'



A dolphin resting on top of the water at twilight.



Dolphins are 'conscious breathers' and must remain awake at all times so they remember to breathe!

WHAT DO DOLPHINS EAT, AND HOW?

Port Stephens bottlenose dolphins eat a wide variety of seafood including fish, squid and octopus depending on availability and season.

An adult dolphin consumes around 4–9% of its body weight daily; for example, a 250 kg dolphin may eat between 10 kg and 22.5 kg (22–50 lb) of fish daily.

The amount of food eaten depends on the size of the dolphin and the type of prey available. Some fish are higher in fat content (such as mackerel and herring) and provide more kilojoules than other food types (e.g. squid); however, dolphins eat at least 8–15 kg of seafood every day!

Dolphins use clicking sounds and rely on echolocation to catch their prey.

Clicking sounds travel up to 200 m through the water, hit an object and bounce back, providing the



Dolphins fishing together in a pod.

dolphin with information regarding the size, shape, speed and direction of travel and distance to that object. Dolphins often work as a group, rounding up and trapping shoals of fish, and then individuals repeatedly dive into the centre scoop up fish and swallow them whole – always head first!

Bottlenose dolphins have 18–28 conical (cone-shaped) teeth on each side of each jaw which they use to grasp their food, but not for chewing. They swallow their food whole.



PHOTO: Ray Alley Photography

A dolphin surfacing to breathe through its blowhole.

CAN DOLPHINS SMELL?

Dolphins have little or no sense of smell because the blowhole (a dolphin's nose) is closed underwater. Unlike humans, dolphins do not have olfactory nerves or a lobe in the brain associated with the sense of smell. They compensate for this loss with a very sensitive tongue which has taste buds that can distinguish different chemicals in their environment.

CAN DOLPHINS HEAR?

Dolphins have a sharp sense of hearing. Scientists believe that sound waves travel through the water, through the dolphin's lower jaw to the inner ear and onto the brain for processing.

THE DOLPHIN BREEDING CYCLE

The bottlenose dolphins in Port Stephens have a long adolescence and the timing of breeding varies according to geographic location. Females do not breed until they are 9–10 years of age and males 10–13 years. Male and female dolphins have genital slits on the underside of their bodies, so mating takes place belly-to-belly. The gestation period averages 12 months – a long time when compared to that of a humpback whale, which has an 11-month gestation to produce a 4.5 m calf. These dolphins have **most of their calves during the summer months** from December to March. The birth usually takes place in shallow water and the calves are assisted to the surface by their mothers to take their first breath.

Dolphins are mammals, which means they are warm-blooded and suckle their young.

HOW DO DOLPHINS BREATHE?

Like all whales, bottlenose dolphins have lungs and breathe air- just like you do! A dolphin must surface to breathe through the blowhole on the top of their head usually diving for periods of 1 to 4 minutes.

It takes a dolphin about one-fifth of a second to complete a full breath (to exhale and inhale) and dolphins can hold their breath for up to 20 minutes!

HOW LONG CAN DOLPHINS LIVE?

The maximum life expectancy of a dolphin is approximately 30 to 40 years.

GETTING TO KNOW THE PORT STEPHENS DOLPHINS

Three different types (or species) of dolphins inhabit the waters in and around Port Stephens. The most common dolphin species within Port Stephens and just outside the Heads is the **Indo-Pacific bottlenose dolphin** (*Tursiops aduncus*). These are the dolphins you are most likely to spot if you are visiting the area and are common in shallow coastal waters of the Indian and Western Pacific oceans.

Outside the Heads and along the open coastal beaches north and south of Nelson Bay, **Common dolphins** (*Delphinus delphis*) and the **Common bottlenose dolphin** (*Tursiops truncatus*) are often encountered.



Riding bow waves.



Dolphins in the eastern section of Port Stephens are often seen off Shoal Bay beach.

HOW DO WE KNOW PORT STEPHENS BOTTLENOSE DOLPHINS ARE SPECIAL?

Scientific research conducted over the past decade by Macquarie University in partnership with the Port Stephens Dolphin Watch Association, NSW National Parks and Wildlife Service and the Marine Park Authority, has found that the bottlenose dolphin population living in Port Stephens is unique and genetically different from populations of Indo-Pacific bottlenose dolphins found elsewhere. They are even genetically distinct from dolphin communities that live on the coast between Newcastle and Forster! Important research has also studied the interactions between dolphins and the dolphin-watching industry to gain a better understanding of potential impacts.

Size

Adult Indo-Pacific bottlenose dolphins generally reach between 2–4 m in length. In Port Stephens adult Indo-Pacific bottlenose dolphins generally reach between 2–3 m in length. Newborn calves are usually less than 1 length.

Population dynamics

Between 90 to 120 individual dolphins live Port Stephens year round, this number can change between seasons and years.

A study carried out by Macquarie University researchers found that Port Stephens' dolphins sometimes travel outside of the 'Heads' but they

seldom interbreed with dolphins that range on the coast between Newcastle and Forster. As a result, the Port Stephens population is genetically distinct and has a smaller gene pool than the larger coastal population. This was very surprising as dolphins can swim over a hundred kilometres a day, but the distance from Port Stephens to the Broughton Island dolphin community is only about 20 km. The genetic distinctiveness of the Port Stephens population is likely caused by the uniqueness of the environment and the preferences of females to remain in the areas in which they were born. When females are familiar with their environment they can locate food more easily and therefore have greater success raising their calves. Females also rely on the females they have grown up with to help them protect their calves from shark attacks and aggressive male dolphins.

Since the dolphins within Port Stephens are genetically distinct and are highly dependent on their environment, they may not be as resilient to changes in their environment and to high levels of human activity compared with larger dolphin populations (such as dolphins in Shark Bay, Western Australia). For this reason, as a community, we need to look after our dolphins.



An example of a female band of dolphins: KB (closest), Boing (centre) and Wendy (furthest away).

PORT STEPHENS DOLPHINS: A UNIQUE COMMUNITY

In Port Stephens, the bottlenose dolphin population is divided into two mixed-gender communities. Dolphins often form long-term social relationships with other dolphins living in the same community. These communities have different home ranges, where one community lives predominantly in the eastern section or basin of the port (from the heads to Soldiers Point) and the other lives in the western basin of the port (from Soldiers Point, west to Karuah and Big Swan Bay). The ranges of these communities sometimes overlap, providing for social interaction between the two communities and genetic mixing.

The largest community of bottlenose dolphins lives in the eastern section of the Port. This community is mainly comprised of adults, subadults and calves and occupies a small core area focusing on the marine (ocean) environment. Habitats in this area consist of sandy substrates and large seagrass beds with strong tidal influence of coastal waters.

A smaller community of generally closely-related bottlenose dolphins inhabits the western section of the Port. These western dolphins focus on riverine (river-like) environments with muddy benthic (bottom) habitats, influenced by often turbid water and freshwater outflow from local rivers.

Not only do the two communities prefer to live in different habitats, they also socialise very differently to each other. Most dolphins in the eastern community have lots of associates and change their preferred associates on a regular basis. Dolphins in the western community, on the other hand, have fewer associates, but their social bonds are much stronger. They are also much more related to each other, compared with dolphins in the eastern community. Such differences in social behaviour between two communities have currently not been observed in any other population or animal. This makes the Port Stephens population highly unique.

Researchers have also found that there are some genetic differences between the eastern and western communities, which suggest that dolphins breed more regularly with dolphins that are from the same community as them.

Within the dolphin communities, males and females generally prefer to associate with the same gender. The male groups are called alliances (usually 2 to 4 dolphins with long-term associations). Genetic studies have shown that males prefer to associate with males that are not related to them. An example of a male alliance in Port Stephens is a group of four males nicknamed 'The Beatles' (Ringo, Paul, John and George). The Beatles are often sighted around Soldiers Point and Wanda Head. In contrast, females associate in larger groups, called bands. Associations among females are not as strong as those seen among males and females prefer to associate with dolphins they are either related to them or with females that are in the same reproductive state – i.e. pregnant or females with similar aged calves).

Interestingly, genetic studies have found that females will occasionally associate with male and female relatives that belong to other communities. It is believed that these infrequent associations between relatives help maintain the social connectivity of the entire Port Stephens population.

Although dolphins can be commonly found in these groups and communities, they can change who they associated with throughout the day within communities. They associated with different dolphins, in different size groups as they just hang out, feed, rest, or even defend themselves

Research has also shown that Port Stephens bottlenose dolphins use most habitat types including: seagrass beds, shallow sand and mud flats, deep channels, rivers and open coastal beaches. Scientists also think that the dolphins use different areas in the port in different seasons.



A dolphin calf peeking out from the water in the Myall River.



Nicky with calf and friend.



Leaping into the air.

Port Stephens' most recognisable bottlenose dolphins

Many of Port Stephens' bottlenose dolphins have distinct marks, cuts, scars or notches in their fins, enabling researchers and dolphin watchers to recognise individuals in the pod. See if you can spot one of these commonly sighted dolphins during your visit.

The Beatles



George



John



Paul



Ringo

If you travel to Soldiers Point, keep an eye out for four local stars. 'The Beatles' are a group of dolphins often sighted here; all four dolphins – John, Paul, Ringo and George – have distinctive fins and are an example of a male alliance.

One of the most well-known and loved dolphins in Port Stephens is a female dolphin called Nicky. Nicky has a distinctive dorsal fin and is regularly sighted on dolphin-watch cruises. She was first seen in December 1998 with a calf. Since then she has had a number of offspring. Nicky is often sighted in the eastern section of the port.

Eddy is another well-known dolphin who is often sighted in the eastern part of Port Stephens. Eddy likes to follow boats and was first recognised in the Shoal Bay area in December 1998.

Flopper is well-known dolphin who has a distinctive floppy fin. He/she (we are not sure which gender) is often seen in the western sections of Port Stephens and was first sighted in February 2005 with his/her mother. Since then, Flopper has had an eventful life (see Flopper's story next page).



Wendy



Flopper



Crinklecut



Cutfin



Kuttoo



Komb



Scream



Smoky



KB, Boing & Wendy



KB



Eddy



Feathers



Nicky



N2W

Flopper's story

Flopper is a well-known Port Stephens dolphin who has a distinctive floppy fin and spends most of his/her time in the western section of the Port. His/her gender is unknown but he/she has had an eventful life for a young dolphin!



February 2005:

Flopper first sighted with Mum.



March 2006:

Flopper (one year later) with a shark bite!



July 2006:

Flopper's shark bite is healing; the scar can be seen just below the dorsal fin.



Summer 2008:

Flopper healing from another shark bite! Mum remains nearby.



Summer 2009:

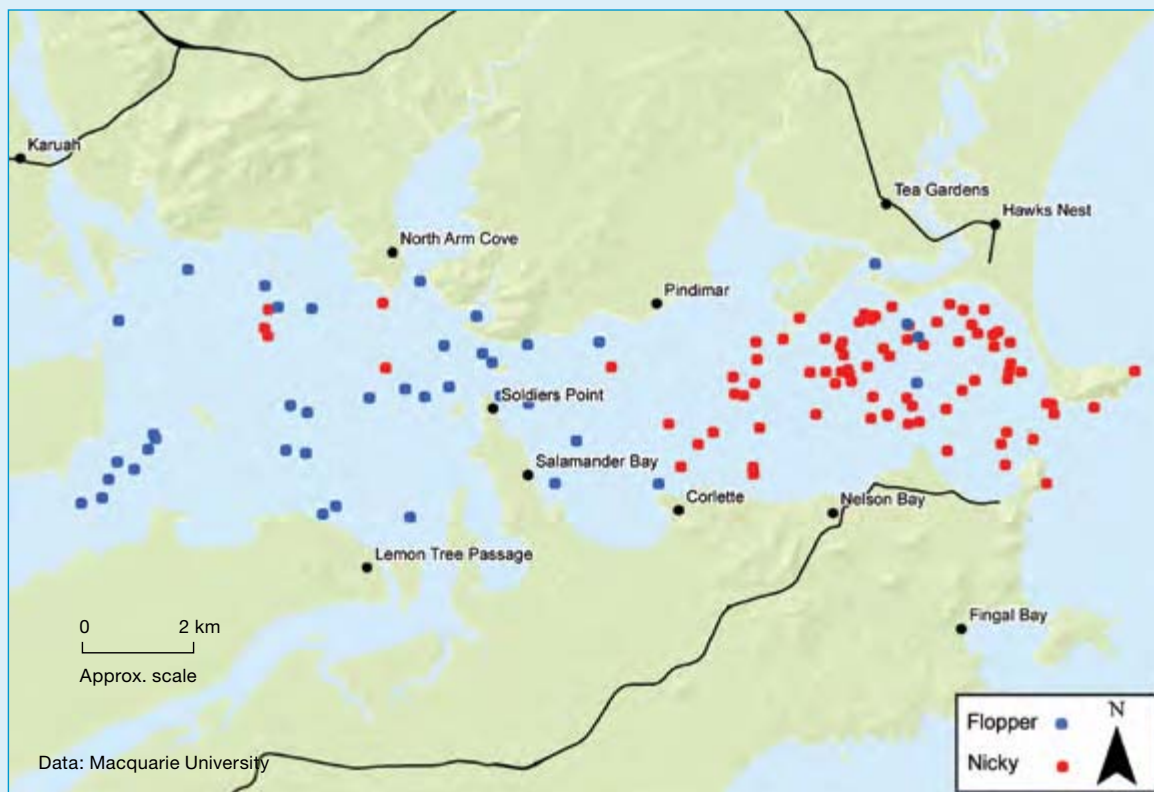
Flopper's dorsal fin is beginning to crack.



Present day:

Flopper is often seen in the western part of Port Stephens — sporting a torn fin.

Flopper and Nicky sightings in Port Stephens



This map illustrates the movements of two dolphins: Flopper (a western dolphin) and Nicky (an eastern dolphin) and their use of different habitats within the Port.

THREATS

The main natural predators of dolphins are:

- Sharks, such as tiger sharks, dusky sharks (or whalers), great white sharks and bull sharks, and
- Killer whales

Dolphins have various strategies to defend themselves, including:

- grouping together in pods,
- swimming faster than their predators, and
- using 'mobbing' techniques to batter the predator, causing it to flee.

They are usually successful at keeping predators at bay, but they may occasionally keep a memento from a close encounter, such as a scar.

Other risks to dolphins include:

- Boat-strike and disturbance,
- Entanglement in fishing equipment and beach shark nets,
- Poor water quality due to pollution,
- Diseases (such as *Morbilivirus* and pneumonia),
- Overfishing of the dolphins' favourite foods.



Specially trained NPWS staff assist with rescue of a common dolphin.

PROTECTION AND CARING FOR DOLPHINS

In NSW, dolphins and other marine mammals are protected under the *National Parks & Wildlife Service Act 1974*.

What you can do to protect and care for dolphins

The NSW National Parks and Wildlife Amendment (Marine Mammals) Regulation 2009 was introduced to protect marine mammals such as whales and dolphins while allowing people to appreciate them in the wild. Please follow these guidelines when interacting with all dolphins.

How close can vessels and aircraft get to dolphins?

- For a vessel, the approach distance is 50 m from the side of an adult dolphin.
- When calves are in the pod, the approach distance for a vessel increases to 150 m.
- For a prohibited vessel (e.g. personal motorised watercraft

such as a jet ski, parasail boat, hovercraft, hydrofoil, wing-in-ground effect craft, remotely operated craft or motorised diving aid, such as an underwater scooters) the approach distance is always 300 m from a dolphin.

- Helicopters or gyrocopters must not get closer (in height or distance) than 500 m to a dolphin.
- Other planes must not get closer (in height or distance) than 300 m to a dolphin.



WHAT YOU CAN DO TO CARE FOR PORT STEPHENS' DOLPHINS

- Keep a safe distance when looking for or watching dolphins.
- Help keep the environment clean. Put any rubbish in the bin so it does not get into our waterways.
- Report sick or stranded dolphins to your local NPWS office or contact ORRCA Whale and Dolphin Rescue Unit on 02 9415 3333.
- **Be a dolphin researcher for a morning** and join in on the Port Stephens Community Dolphin Census. This annual event takes half an hour and is fun for the entire family. To register contact NPWS Hunter Region office on 02 4984 8200.



PHOTO: Ray Alley Photography

FURTHER INFORMATION

Hunter Region Office 02 4984 8200
12b Teramby Road, Locked Bag 99, Nelson Bay NSW 2315

Info Line 1300 361 967
www.nswnationalparks.com.au

For more information on dolphins and whales see the Wild about Whales website: <http://www.wildaboutwhales.com.au/>

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