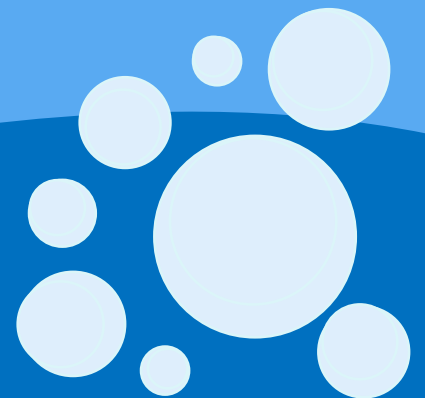


# BYRON BAY DOLPHINS

## (Wajung)



**Dolphin Research Australia**  
*Knowledge, Awareness, Action – Conserving Our Seas*

Dolphin Research Australia Inc. is a marine research, education and conservation charitable organization dedicated to ensuring the protection of Our Oceans for generations to come.

For more of Dolphin Research Australia's education resources, check out our website  
[www.dolphinresearchaustralia.org](http://www.dolphinresearchaustralia.org)

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**Dolphin Research Australia**

*Knowledge, Awareness, Action – Conserving Our Seas*

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## 1.0 DOLPHIN RESEARCH AUSTRALIA INC.

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In all oceans, dolphins are exposed to a cocktail of threatening processes and activities from human sources. Dolphins that reside along the coastal zone are particularly vulnerable and face an uncertain future as the pressure to survive increases due to the inundation of human activities that threaten their very existence. These threats include pollution, habitat loss and degradation, prey depletion, fishing interactions, boating and climate change, to name just a few. In recent years, more dolphins and whales have been reported injured, ill or deceased as a result of human interference and disease while more are being found with higher levels of pollutant loads. The future of dolphins, whales and our oceans is uncertain and they need our help now more than ever.

Dolphin Research Australia Inc. is a charitable organization that is working to increase the understanding of the ecology, status and health of dolphins and whales, as well as promoting awareness, change and action to help protect and conserve them and their habitats. Our projects are diverse, from developing early primary education programs and adult education programs to research that investigates the habitat use, abundance trends and social systems of dolphins and other marine species. Each of these projects aims to increase the awareness and engage the public in marine conservation efforts and increase the knowledge about dolphins and their marine environment.

## 2.0 BYRON BAY – BALLINA DOLPHIN RESEARCH PROJECT

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Since 2003, Dr Liz Hawkins and her team of volunteers have been investigating the ecology of the dolphins in the Byron Bay-Ballina region. The long-term project is one of only a handful in the country that aims to provide valuable insight into the wild lives of bottlenose dolphins (*Tursiops aduncus*) and other dolphin species, including the common dolphin (*Delphinus delphis*) that frequent the area.

The research to date has provided some baseline information on the local population of bottlenose dolphins and identified resident communities, the core and critical habitats of these communities and their communication systems. In addition, the research has focused on human-dolphin encounters in the Bay and provided valuable insight into the ongoing sustainability of these interactions.



### The objectives of this study are:

- Investigate the fine-scale population structure, abundance and trends.
- Identify resident communities within the region and examine the stability of social and communication systems.
- Determine basic life-history characteristics, fecundity and birthing success.
- Identify areas of critical importance to resident, visiting and transient dolphins and monitor temporal and spatial use.
- Investigate the sympatric associations between coastal species and environmental parameters influencing habitat and resource partitioning.
- Assess & monitor the effects of short & long-term human activities and environmental health on coastal dolphins.

This information provides important information on the ecology of the species, their health and informs conservation planning and management to ensure the protection of the animals and their habitats for the future.

## 3.0 THE BAY AND BEYOND

Looking out from the beautiful surf beaches and headlands of the Byron Bay – Ballina region, it isn't uncommon to see the surface of the water broken by the grey smooth backs and fins of the bottlenose dolphin. Surfing amongst the waves next to the surfers and kayakers, the dolphins and the spectacular seascape attract many visitors to the area.

Byron Bay (Cavanbah) is a subtropical region, rich in biodiversity – from the catchment to the ocean. This sub-tropical marine environment is particularly special as the warm waters of the Coral Sea and the cooler waters of the Tasman Sea meet, and so bringing together an incredibly diverse range of marine species. These species can be found right along the coastline of rocky headlands and reefs that are popular dive sites.

The Cape Byron Marine Park was created in 2002 to protect this special marine environment and the wildlife within it. Julian Rocks (Nguthungulli), sits in the centre of the Bay and within the Marine Park, is metamorphic rock that has been formed beneath the sea and pushed up between the plates of the Earth. It is one of Australia's most dived sights due to the incredible diversity of marine species found there from the seasonal visitors - grey nurse sharks to manta rays, to the





resident blue groper, green turtles, loggerhead turtles and wobbegong sharks.

The main river system in the Byron Shire that feeds into the Marine Park is the Brunswick River (Durrumbil). The river provides important seagrass and mangrove habitats and is used on a regular basis by dolphins as a foraging ground.

The first inhabitants of the Byron Bay area were the Arakwal people of the Bundjalung Nation, and they have lived on the coast and hinterland for at least 22,000 years. Byron Bay was traditionally a meeting place for the Bundjalung tribes in the area and the Arakwal people are the custodians of Byron Bay. They continue to stay very connected within the community and have very close connections with all aspects of the Bay, marine life included, especially the bottlenose dolphin (Wajung). There is a long history of the Arakwal people sharing a special connection to Wajung that are an important totem<sup>1</sup>.



Following the arrival of European settlers, the landscape around Byron Bay began to change as logging, cattle and sugar farm industries became prevalent. Between 1954 and 1962, whaling was also a big industry. Watching the whales coming off the boats and being transported down the jetty was one of the first tourist attractions in the bay. The whaling station closed following the collapse of the industry due to the rapid decline in whale numbers.

Byron Bay is now known as one of the best places in the world to watch and encounter dolphins and whales in their natural environment.

Just south of Byron, is the riverside and seaside town of Ballina. The landscape around it is dominated by the Richmond River, which connects and flows through the lush rainforest of the hinterland and the farmland, to the sea. The river provides an important habitat to its resident dolphins and other marine and freshwater wildlife. Unfortunately, the waterways in the Richmond River catchment are in poor condition with the upper estuary (an important habitat for the resident dolphin population of the river) being in the poorest health. The Richmond catchment has the lowest health score of all North Coast rivers, which is due to a number of factors that the local authorities are working to improve upon.

<sup>1</sup> to read more about cultural connections head to [www.arakwal.com.au](http://www.arakwal.com.au)

## 4.0 GETTING TO KNOW BYRON BAY DOLPHINS

Over 30 species of whales and dolphins can be found in New South Wales. Here are the three most commonly encountered dolphin species in the Byron Bay – Ballina region.

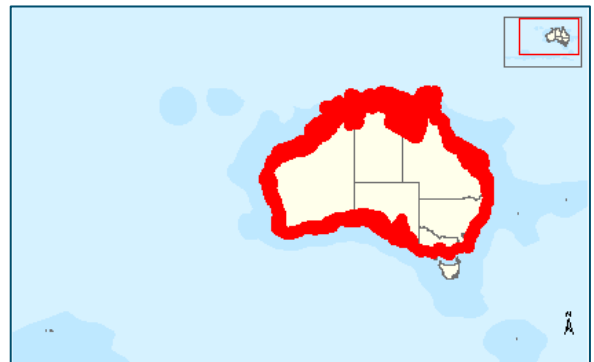
### Indo-Pacific Bottlenose Dolphins (*Tursiops aduncus*)



Found all around the Australian mainland, Indo-Pacific Bottlenose Dolphins grow to about 2.5m in length, weighing between 150kg and 250kg when fully grown. They are a dark gray colour on the upper dorsal side and light gray to white on their underbelly, though size and shape varies with region.

Bottlenose Dolphins are very social animals and often have a dominance hierarchy that can be sexually segregated. Females live in large groups and maintain a large network of associates within their home range. Mature males can form a strongly bonded alliance with at least four other males. They live in groups called pods, which usually range in size from 1 – 20, but have been found in groups of 100 or more. Bottlenose dolphins display many different types of behaviours including leaping, surfing, bow riding, and tail-slapping.

Dolphins produce a range of sounds described as whistles and clicks. The clicks are used for echolocation, which assists in navigating and feeding, while the whistles are thought to be used to locate other animals, identify and to maintain contact.



## Short-Beaked Common Dolphins

(*Delphinus delphis*)



Common dolphins, being one of the most widely distributed, are found all around Australia, New Zealand and in coastal and continental shelf waters of tropical temperate regions around the world. Much smaller than the bottlenose, they grow to 1.7-2.4m in length and 70-110kg. They are a gray, black to brownish colour on their upper side, an hourglass patch down their side with a yellowish colouring extending from their eye down to their dorsal fin. Their pectoral fins, tail fluke and rostrum are also dark gray in colour and their underbelly is white to off white.



Common dolphins are a very inquisitive and acrobatic species, often seen porpoising, leaping, tail slapping and head lunging, as well as approaching boats to bowride.

The size of the pods they are found in can range anywhere between 10 and 2,000 individuals and they are commonly found in open ocean waters of around 180m in depth. Common bottlenose dolphins are generalist feeders and their diet consists mostly of fish and squid.

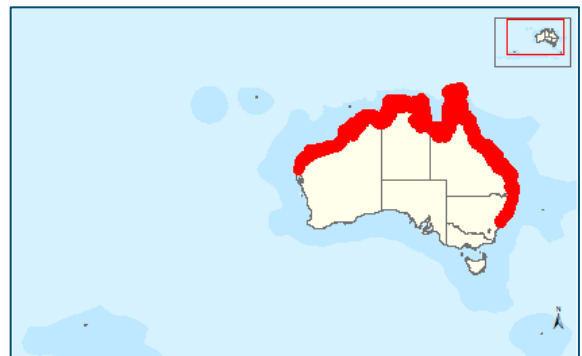
In the Byron Bay - Ballina area they are found seasonally, with most sightings made during winter and spring, though sightings have been made during summer. On many occasions, they have been seen feeding with bottlenose dolphins.



## Australian Humpback Dolphins (*Sousa sahulensis*)



The Australian humpback dolphin is a Vulnerable species. They are found in coastal waters around tropical waters of Australia, from the NSW-QLD border to Shark Bay, WA. They can grow up to 2.7m in length, weigh up to 200kg. This species is typically a light gray colour on their upper side, and white on their underbelly. They have a longer rostrum (beak) and smaller dorsal fin than the Indo-Pacific bottlenose dolphin.

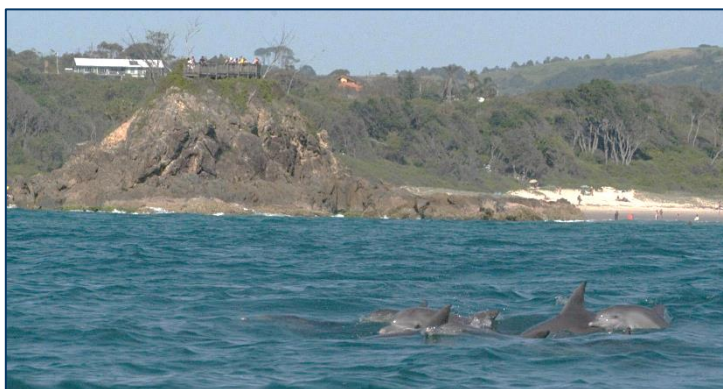


Humpback dolphins are typically found in much small group of around 2-4 individuals with aggregations of around 30 individuals infrequently encountered. They are also commonly sighted with the Indo-Pacific bottlenose dolphin. They are opportunistic feeders, and will eat a variety of different types of prey.

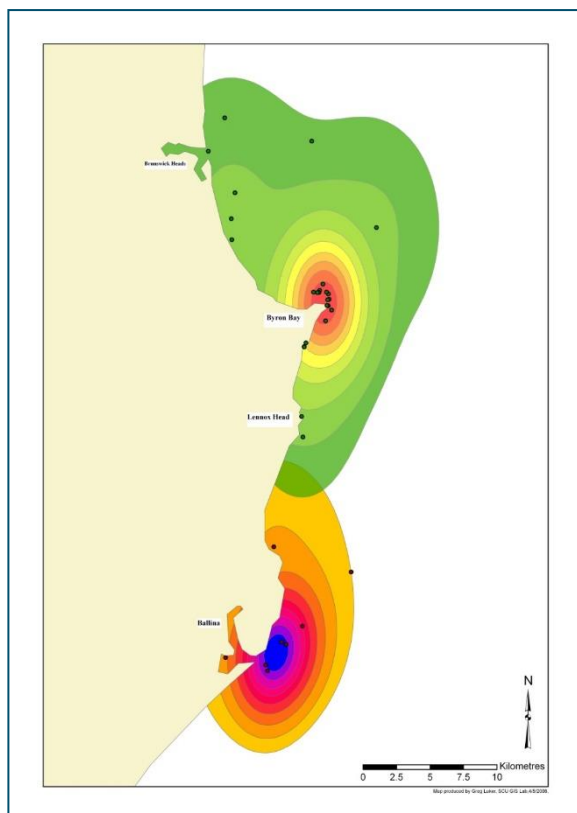
While the closest known resident population of humpback dolphins are found within Moreton Bay, we do have frequent sightings of this species in the Byron Bay region during Autumn.

## 5.0 WHAT WE HAVE LEARNED

Our research began in 2003 and has focused on the most frequently encountered species; the Indo-Pacific bottlenose dolphins. These dolphins are commonly found in Cape Byron Marine Park and we estimate the approximate size of the population to be 865 dolphins 95% (C.I.  $\pm$  861-869) (between Brunswick Heads and Ballina to 3 Nautical Miles seaward). This population consists of resident, semi-resident and transient individual dolphins (Hawkins, 2008).



Unlike their larger cousins, the humpback whale, most dolphin species are non-migratory and occupy specific home ranges. Within their home ranges, they will have their favorite hunting and resting grounds. In the Byron-Ballina region, bottlenose dolphins use different areas and habitat along the coast are used for different purposes. For example, the rocky reefs around Lennox Head are important feeding areas, as is the Richmond River estuary.



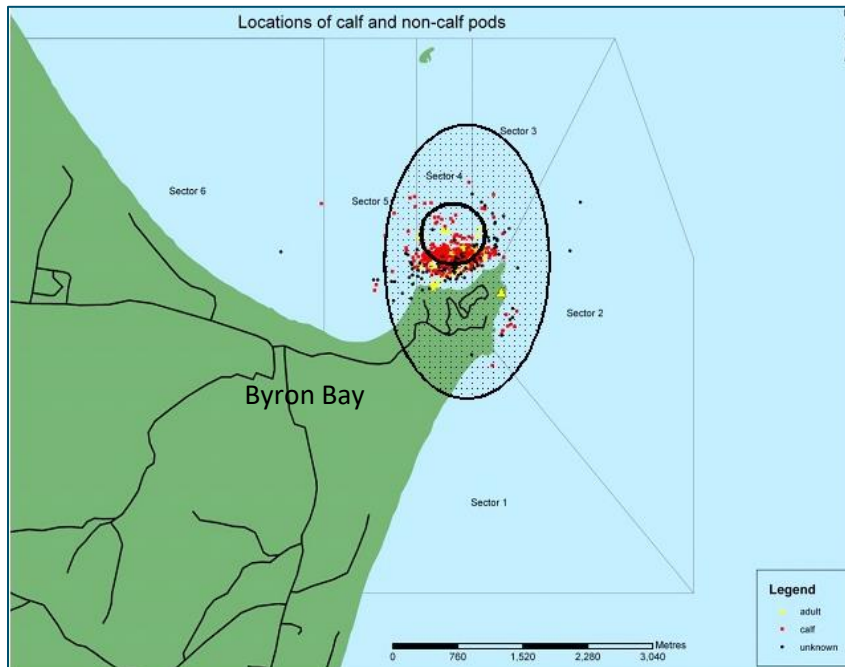
Map showing the home ranges of the Byron Bay (top) and Ballina (bottom) resident communities

Bottlenose dolphins can form very strong bonds, most often with other individuals of the same sex. In many areas, and we believe it is similar in our region, bottlenose dolphin societies are sexually segregated. Where males from strong bonds form alliances made of 3-4 individuals. Whereas females maintain large networks of associates and strong bonds being formed between mothers that have offspring of similar ages (Mann et al., 2000).

Although bottlenose dolphins can breed and give birth all year round, we do see a peak in the number of newborn calves during late Summer to early Autumn. Female bottlenose dolphins of Byron Bay will give birth every 2-4 years. Offspring will be reliant on their mothers for at least 4 years and likely up to 8-10 years of age when they reach sexual maturity.

We have identified that there are at least two dolphin resident communities in the region. These are known as the 'Cape Byron' and 'Ballina' resident communities which are made up of females and their dependent offspring (Hawkins and Gartside, 2008). The map in the left shows the home ranges of these two communities.

The Cape Byron resident community can often be seen in the Bay, most commonly around Wategos Beach. We have identified the area around Cape Byron as critical habitat for these dolphins as it is so important for their ongoing survival (see map below). The coastal area around Cape Byron is where these dolphins feed, reproduce, teach and care for their young and most importantly, rest (Hawkins, 2011).



Map showing the critical (small circle) and important (larger circle) habitat zones for the Byron resident dolphin community. Coloured points on the map show the locations of dolphin pods observed during land-based surveys between 2009-2011.

Just further south, the Ballina community of resident dolphins are estuarine specialists. They rely on the Richmond River to hunt their prey and rest along the adjacent coastline close to the River mouth. We estimate that there are around 34 individuals in this resident community (Fury and Harrison, 2008).

Dolphins in our region also produce many different types of acoustic emissions. They produce a variety of whistles which they use to identify individuals, advertise their location and even their emotional state. Our research has also identified that they produce different whistles when they are engaged in different types of behaviour. For example the types of whistles they produce when feeding can be

different from those when they are socializing (Hawkins and Gartside, 2010).

Our research has just begun to shed light on the lives and needs of dolphins in our region. There are many questions that remain unanswered including whether the how many resident dolphins are there, are their populations are stable, increasing or declining and the survival rates of offspring? Our ongoing research will continue to focus on the life histories of individuals, the health and trends of the populations and conservation priorities.





## 6.0 TRACKING DOLPHINS THROUGH TIME

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### How do we identify dolphins?

Each dolphin is identified by their unique pattern of nicks and notches on the trailing edge of their dorsal fin. These notches are often caused during social interactions with each other and last a lifetime and lucky for us, act as a fingerprint.

We now have over 1080 individually dolphins in our photo-identification catalogue. Here we introduce you to a few of the resident dolphins of Byron Bay and Ballina.

## 7.0 MEET SOME OF OUR RESIDENTS

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### Resident Indo-Pacific Bottlenose Dolphins of Byron Bay

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#### ID # 489

**Name:** Aunty Dallas

**Sex:** Unknown

**Age:** Adult

**First recorded by researchers:** 5th August 2004

Aunty Dallas can be recognized by the two distinct notches on the trailing edge of the dorsal fin. One notch is larger than the other. Aunty Dallas is seen regularly resting, feeding and socializing around Cape Byron and Watego's Beach.



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#### ID # 312

**Name:** Chop Suey

**Sex:** Unknown

**Age:** Adult

**First recorded by researchers:** 14<sup>th</sup> December 2004

Chop Suey is regularly seen in Byron Bay and is easily recognized by the large notches on the leading and trailing edges of the dorsal fin. Most of these notches are likely to have been caused by other dolphins.





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**ID # 547**

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**Name:** Sonic

**Sex:** Unknown

**Age:** Adult

**First recorded by researchers:** 24<sup>th</sup> January 2011

Sonic has a number of unique notches at the tip of the dorsal fin that can be used to identify this dolphin. Sonic is seen regularly resting, feeding and socialising around Cape Byron and Watego's Beach.

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**ID # 124**

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**Name:** Scallop

**Age:** Adult

**Sex:** Female

**First recorded by researchers:** 16th October 2013

Scallop can be distinguished by three larger notches on the trailing edge of her dorsal fin. She is a resident of the Cape Byron area and is often seen resting and feeding off Watego's Beach.

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**ID#285**

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**Name:** Feather

**Age:** Adult

**Sex:** Female

**First recorded by researchers:** 25<sup>th</sup> February 2005

Feather has many notches on her dorsal fin that look like a feather, hence her name. She is a resident of the Cape Byron area and is often seen resting and feeding off Watego's Beach.

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**ID # 282**

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**Name:** Cousin**Age:** Adult**Sex:** Unknown**First recorded by researchers:** 10<sup>th</sup> August 2004

Cousin has one distinct large notch at the top of the dorsal fin. Cousin is regularly seen with Scallop, Feather and Sonic resting and feeding off Cape Byron and Watego's Beach.

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**ID # 262**

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**Name:** Pass**Age:** Adult**Sex:** Female**First recorded by researchers:** 12<sup>th</sup> April 2004

Pass can be identified by the slight point in the top of her dorsal fin. We can be certain that Pass is a female from sightings where she has had a young calf with her. She can often be spotted around the Bay.

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**ID # 556**

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**Name:** Bonza**Age:** Adult**Sex:** Unknown**First recorded by researchers:** 6<sup>th</sup> July 2011

Bonza can be very easily identified by his unusual dorsal fin. It is best described as a pyramid shaped triangle and is easy to spot compared with other dolphins.

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## ID # 131

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**Name:** Ianthe

**Age:** Adult

**Sex:** Female

**First recorded by researchers:** 1st November 2003

Ianthe can be identified by the outward notch on the very top of her dorsal fin, followed by the two inward notches on the trailing edge. She also has a shark bite scar on her caudal peduncle (the part of her body between her tail fluke and her dorsal fin). Ianthe has been seen with a calf over the years, so we know that she is a female.



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## ID # 187

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**Name:** Chip

**Age:** Adult

**Sex:** Female

**First recorded by researchers:** 14<sup>th</sup> May 2011

Chip has been seen with calves in 2012 and 2016, so we know that she is a female. Chip has a large notch in the very top of her dorsal fin, followed by two notches in the middle of the trailing edge that form a 'W' shape.



## Ballina – Richmond River Resident Indo-Pacific Bottlenose Dolphins

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### ID # 186

**Name:** Batgirl

**Age:** Adult

**Sex:** Female

**First recorded by researchers:** 15<sup>th</sup> September 2003

Batgirl is often seen around the entry to the Richmond River in Ballina. On her first sighting she was seen hanging around a young Right Whale and since then has been sighted with a calf, which is how we know she is female.



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### ID # 398

**Name:** Mari

**Age:** Adult

**Sex:** Female

**First recorded by researchers:** 18<sup>th</sup> November 2004

Sightings of Mari have been mostly around the opening to the Richmond River. She was not seen for 10 years until she popped up in 2016 with a calf around the same spot.



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### ID # 529

**Name:** Spot

**Age:** Adult

**Sex:** Unknown

**First recorded by researchers:** 15<sup>th</sup> August 2009

Spot was first seen in Ballina but has since mostly been spotted around the Richmond River. Spot's dorsal fin has notches the whole way down the trailing edge, with a large one right in the middle.



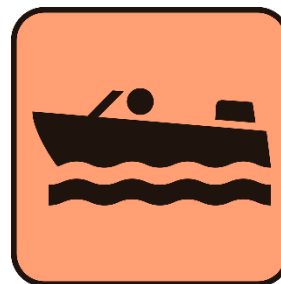


## 8.0 CARING FOR OUR DOLPHINS

### 8.1 THREATS FACING BYRON-BALLINA DOLPHINS



Dolphins face many threats from human activities, and it is important that we are aware and prioritize efforts to reduce our impact. The overlap of numerous threats in highly developed areas such as Australia's East Coast, mean that our resident dolphins are particularly vulnerable.



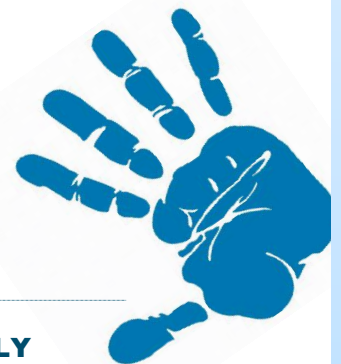
#### Threats include:

- **Boats and marine vessels**
  - Fast-moving boats and ships can strike dolphins and cause injury or death.
- **Litter and pollution**
  - When it rains or storms, rubbish, chemicals and pesticides can be washed into the oceans from our cities and farmlands.
  - Plastic can end up in the stomachs of dolphins and the chemicals have negative effects on their health.
- **Fishing interactions**
  - Fish stocks can be overfished which means there is less food for dolphins and other sea creatures.
  - Dolphins can also become entangled in fishing nets and fishing line that can cause injuries and even death.
- **Illegal feeding**
  - Feeding wild dolphins can cause changes in their natural behaviour so that they become dependent on humans to feed them instead of foraging for themselves. Because calves learn from their mothers, this means that young dolphins may never learn how to feed or forage on their own.
  - Feeding dolphins can also introduce foreign diseases and illness.
- **Underwater noise**
  - The loud sounds of boat and ship engines can drown out dolphin sounds and make it harder for them to communicate with each other.



- **Degradation and loss of habitat**

- Construction and development along the coastline and estuaries can damage or completely destroy the areas that dolphins use to feed and breed. This can displace or reduce the size of wild populations.
- Climate change will also cause disturbance through changes in prey distribution and abundance.



## **8.2 WHAT YOU CAN DO – BE DOLPHIN FRIENDLY**

**There are many ways you can help! Every little action goes a long way!**

- **Reduce, reuse and recycle.** Dispose of your rubbish responsibly so that it will not end up in our oceans.
- **Pick up rubbish & litter**
- **Be an informed consumer** and use biodegradable and **Earth friendly products**
- **Don't use single-use plastics**
- Choose to **eat sustainably sourced seafood**, choose options that will not deplete wild dolphins' food source.
- **Limit your use of energy** by turning off lights or car pooling for example.
- **Don't feed or touch wild dolphins**, let them forage for food naturally.
- **Respect dolphins' space** and follow dolphin watching regulations (don't approach closer than 50m on any vessel including surfboards, kayaks and paddle boards and no closer than 30m when swimming).
- **Be a responsible fisher** - Never cast your line around dolphins, stow used or broken fishing line and dispose of it responsibly.
- **Talk to your friends and family about environmental issues that matter to you** – share the knowledge and awareness.
- **Support conservation and research organisations like Dolphin Research Australia!**

### 8.3 RESPONSIBLE DOLPHIN ENCOUNTERS

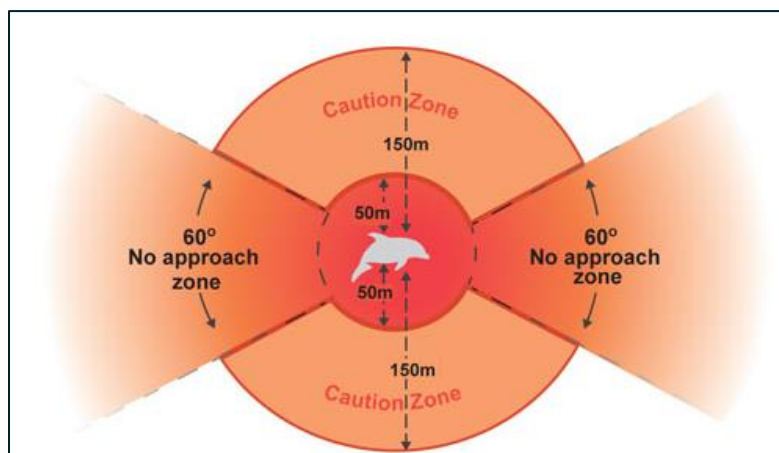


Many human activities occur within our coastal regions of Australia and these can cause increased stress and pressure on our marine species. These regions are also home to resident dolphin communities. You can help to keep the dolphins in your region healthy and safe, whilst making the most out of your special encounter, by following 'dolphin etiquette'.

#### How to make the most out of your dolphin encounter:

- Follow NSW Dolphin Watching Regulations (see diagram below).
- Don't approach the dolphins closer than the 30m when swimming, 50m from a vessel or 150m from a vessel if there are calves present.
- Approach from behind and parallel to the direction of dolphins travel direction. If there is no obvious travel direction, stay at a distance and wait.
- Approach at slow speed and with consistent direction. Don't make any sudden movements or gear changes. Don't use reverse gears.
- Increase speed slowly as you move away.
- Don't attempt to attract or touch wild dolphins.
- Keep your distance and keep it brief when dolphins are resting or if calves are present.

#### Approach Distances for Dolphins



## 9.0 WE'D LOVE TO HEAR FROM YOU!

### GET IN TOUCH AND REPORT YOUR SIGHTINGS

You can help to get to know and monitor dolphins in your area and assist researchers by reporting your dolphin sightings. Every sighting helps!

When you see dolphins, take note of how many you see, what species they are, their location and what they are doing. Take photographs when you can too.

We can learn a lot about the dolphins from sighting information and a photograph, all of which will help to understand:

- Population status
- Movement patterns
- Life histories
- Habitat use
- Health & vulnerability of individuals & populations



### What's in a Fin?

Photos of dolphin dorsal fins are especially useful. Every dolphin can be identified by the unique pattern of nicks and notches on the back or trailing edge of their dorsal fin.

### What makes a good dorsal fin photo?

- The image of the dorsal fin is parallel to the camera so that there is a relatively 'flat' image of the fin from the side.
- The photo is of high resolution and the dorsal fin is in focus.



Image Quality  
**Poor**

**Medium**

**Good**



## Four quick tips to becoming a great dolphin detective;

1. Pay attention to the behaviour and breathing patterns of the dolphins to help you predict the next time they will surface. This will help you be more prepared when they do pop up to get a good shot.
2. Be patient - it can take a lot of patience to get photographs of dorsal fins that are helpful for dolphin research.
3. Use a fast shutter speed - Generally fast shutter speeds are best for capturing dolphins. If you are using the automatic setting on your camera, the sports function will be best (especially if the dolphins are close), and if using the manual setting, try and have it on a fast shutter speed (at least 1/1000<sup>th</sup> second).
4. Pre-focus your camera- by having your camera pre-focused it will give you a few extra moments to get a good shot of the dolphins.



**Report your dolphin sightings at [www.dolphinresearchaustralia.org](http://www.dolphinresearchaustralia.org) OR  
Email: [info@dolphinresearchaustralia.org](mailto:info@dolphinresearchaustralia.org)**

## 10.0 HOW YOU CAN HELP!

### Support Dolphin Research Australia!

Dolphin Research Australia relies on the support of volunteers and donations from the public to continue our marine research, education and conservation programs.

Our dolphin, whales and Oceans need help now more than ever to ensure their wellbeing, protection and conservation into the future.

### You can help by supporting Dolphin Research Australia!

**Make a Tax Deductible Donation**

**Adopt-A-Dolphin for yourself or as a gift for only \$60**

**Become a partner or sponsor**

**[www.dolphinresearchaustralia.org](http://www.dolphinresearchaustralia.org)**

## 11.0 KEY REFERENCES

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## OTHER USEFUL RESOURCES

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Head to our website [www.dolphinresearchaustralia.org](http://www.dolphinresearchaustralia.org) and check out our Learn About Dolphins & Whale and Being Dolphin Friendly pages where you can download

- Information about the Biology & Ecology of Dolphins & Whales
- Guide to Behaviour Observations
- Guide to Dolphin Watching
- Best Practices Recreational Fishing
- Colouring in pages & activities