

# *dressed* to **KILL**

WRITTEN AND PHOTOGRAPHED BY INGRID N. VISSER

My first close encounter with an orca took place in May 1991. I was a student at the Leigh marine lab when I heard that orca had been sighted in the bay. Grabbing my snorkelling gear, I sprinted down to the beach and dived in. Nearby, the tall fin of an adult male was projecting from the surface, but under the murky water I couldn't see him. I dived deeper, hoping to glimpse him, but moments later, as I headed up for a breath, there was a large female orca between me and the surface, lying on her side and looking down at me. We surfaced for air together, then I dived back down while she circled me before heading off. A few minutes later she was back, this time with a calf. They swam past me, then the calf started circling me rapidly, while I spun round and round trying to hold eye contact. It was a game played under Mum's watchful eye, and lasted until dizziness forced me to stop. Alas, the magic was broken. The female swam up and both creatures moved sedately out of the bay.



Luna, a six-year-old orca in British Columbia, lives apart from other orca and seeks out people for company. Here he is spyhopping next to a Canadian fisheries boat.



**F**OR YEARS, I'd been keen on orca. Now I was really hooked—and have remained so ever since.

The name “orca” comes from the scientific name *Orcinus orca*, which has been translated in various ways, including “dolphin from hell” and “demon dolphin”. The moniker “killer whale” is used primarily in North America. But what exactly is an orca: a whale or a dolphin? “Whale”, “dolphin” and “porpoise” refer loosely to different sized members of the mammalian order Cetacea. Dolphins, orca and pilot whales have generally been classified together in the family *Delphinidae*, one of half a dozen families of toothed whales, but others place pilot whales and orca in their own separate family. On the basis of their size, orca are surely whales.

Over the years I have come across many books depicting orca as predators of humans, such as *Man Is the Prey* (1969), which states:

“The title of the biggest confirmed man-eater on earth must surely go to this thirty-foot-long member of the dolphin family, the black-and-white killer whale. It could, if it ever had the opportunity, eat a dozen men in one session. There is no animal that swims in the sea or accidentally falls into the sea that will not make a meal for a killer whale.”

The author goes on to say that there are “numerous stories of killer whales attacking and bumping even quite large boats and no one will ever know how many shipwreck survivors during the war were upset from life rafts and eaten”.

The United States Navy wrote bluntly in its *Antarctic Sailing Directions*: “Will attack human beings at every opportunity.” In 1977 killer whales were the subject of the movie *Orca*, in which an adult male sought revenge on humans for the killing of its mate. The style, level of gore and fright factor were meant to rival *Jaws*.

Given such a fearsome reputation, it is somewhat surprising that there isn't a single verified record of an attack by wild orca on people anywhere in the world, although captive orca have killed several people (see side bar). A few New Zealander divers have tales of close encounters with orca, during which their fins were nibbled and tugged. Such activity appears to be more an expression of curiosity or a bit of fun (for the orca, not necessarily for the diver) than testing for taste.

In the mid-1960s, for the first time, an orca was taken into captivity. Since then, perceptions of and attitudes towards orca have slowly changed. People have come to realise they are not the man-eaters they have been portrayed as. Orca have become creatures people want to see close up, and great money-spinners in aquarium shows and movies such as *Free Willy*. In some respects they have become a cult, with at least one individual orca even having its own website (<http://reuniteluna.com/about.php>).

While orca have not been hunted as extensively as other whales, many have still been taken. For instance, between 1938 and 1981, Norway took 2400 orca from around its shores. Their oil was used for paint and lubrication and their meat fed to foxes (farmed for their fur) and pets until cheaper foods were found. In various places around the

world, orca have also been used for military target practice and killed to conserve fish stocks. In one infamous event, the US Navy destroyed hundreds of orca off Iceland with machine guns, rockets and depth charges, citing the need to protect fishing nets and fish stocks. A few orca were taken in New Zealand waters, mostly by the Peranos family (see *New Zealand Geographic*, Issue 60) during quiet periods at the Tory Channel whaling station, where, ironically, one of the whaling boats was called *Orca*.

Orca are still targeted in the seas around Indonesia, Japan, Iceland, Norway and, primarily by Russians and Japanese, Antarctica, and even recently their meat, which resembles bull beef, and blubber have been sold in supermarkets in Japan.

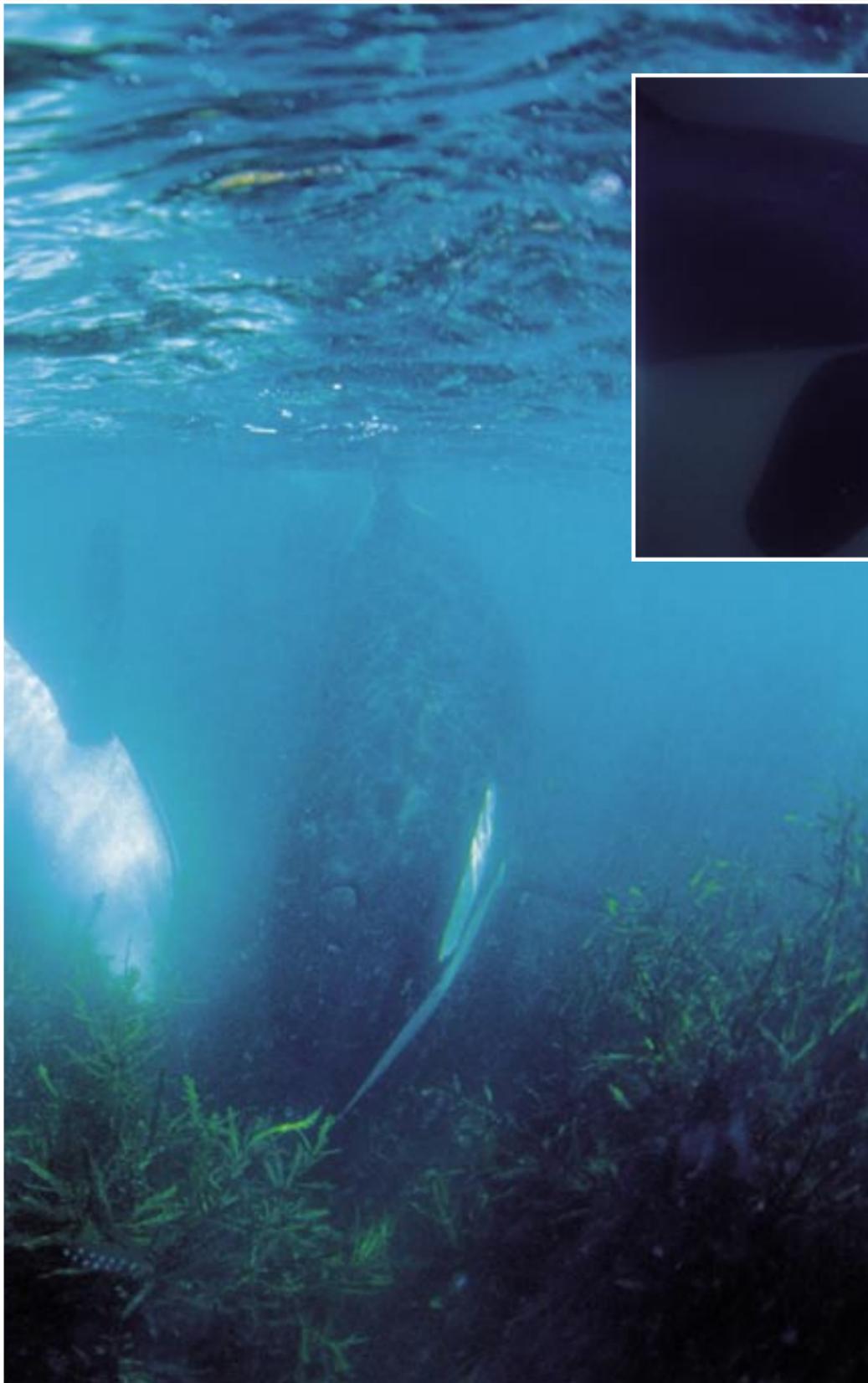
Surprisingly, I have been unable to find any New Zealand myths or legends pertaining to orca, although Maori tell numerous stories about other whale species, including dolphins, sperm whales and southern right whales. On the other hand, some other aboriginal peoples have strong links with orca. In North America, many First Nations peoples revere them and hold them to be spiritual lords of the sea. One story tells of a time before whales, when a brave became lost a long way from his village. To get back home he carved an orca out of a log, and, knowing the way, the animal bore him there. Thus was the orca created.

There was a widespread belief that an orca could drag a boatload of fishermen to the bottom of the sea, where the victims would be transformed into orca. Orca appearing



**Most orca live in small sociable groups, and despite their size—up to 9 metres—are often seen in shallow water pursuing rays, one of their preferred local foods. The pair opposite is only a few hundred metres from Marsden Point, while the trio hunting above are even closer to the rocks of Northland.**

before coastal settlements were believed to be the drowned returning to communicate with their families. One myth tells of an orca called Namu (meaning whirlwind), who carried a princess on his back from the mainland to see her mother, marooned on an island. In yet another, the



Two orca hunt for a ray in the weeds at Oakura, Northland, while a third, younger orca looks on, and learns. The middle orca has its white under-belly facing the camera and is not an albino. Rocky (above), named for his preference for hunting rocky areas, carries a live ray which is draped over his rostrum (snout).

sound of orca calling represents the sound of the earth breathing. Stylised images of orca, with high dorsal fin and multi-toothed mouth, appear on everyday items as well as totem poles. Inuit believed orca could turn themselves into wolves, and vice versa. Both species were revered.

**A**LTHOUGH WE USE the name “orca” more often than “killer whale”, being an efficient hunter is what orca life is all about. But why is a top predator, which often relies on stealth, so conspicuously pigmented—in striking black and white? The answer is to do with being inconspicuous. Primarily, orca are black dorsally and white ventrally. When viewed from above, therefore, they blend with the darkness of the deep ocean. Viewed from below, they blend with the light from the sky.

The prominent white eye patch (which is actually just

vidual differences are probably as distinctive as human faces are to us. They can be photographically catalogued and used as a means of identification. In turn, this allows detailed study of orca lives. For example, how much time does a particular individual spend travelling, hunting or sleeping? Whom does he or she mate with? Who looks after their calf when they’re hunting? Whom do they share their lunch with? Accurate identification of individuals enables us to recognise behavioural differences between orca—personality if you will.

Some like to hunt close inshore where there are rocks, others regularly patrol the water near beaches. Yet others prefer to hang back and cut off prey as it tries to escape. Rocky is an exponent of the first of these techniques, while Stealth, a female, leads a group that ambushes dolphins. Some orca seem to love baby-sitting. Spike, named after

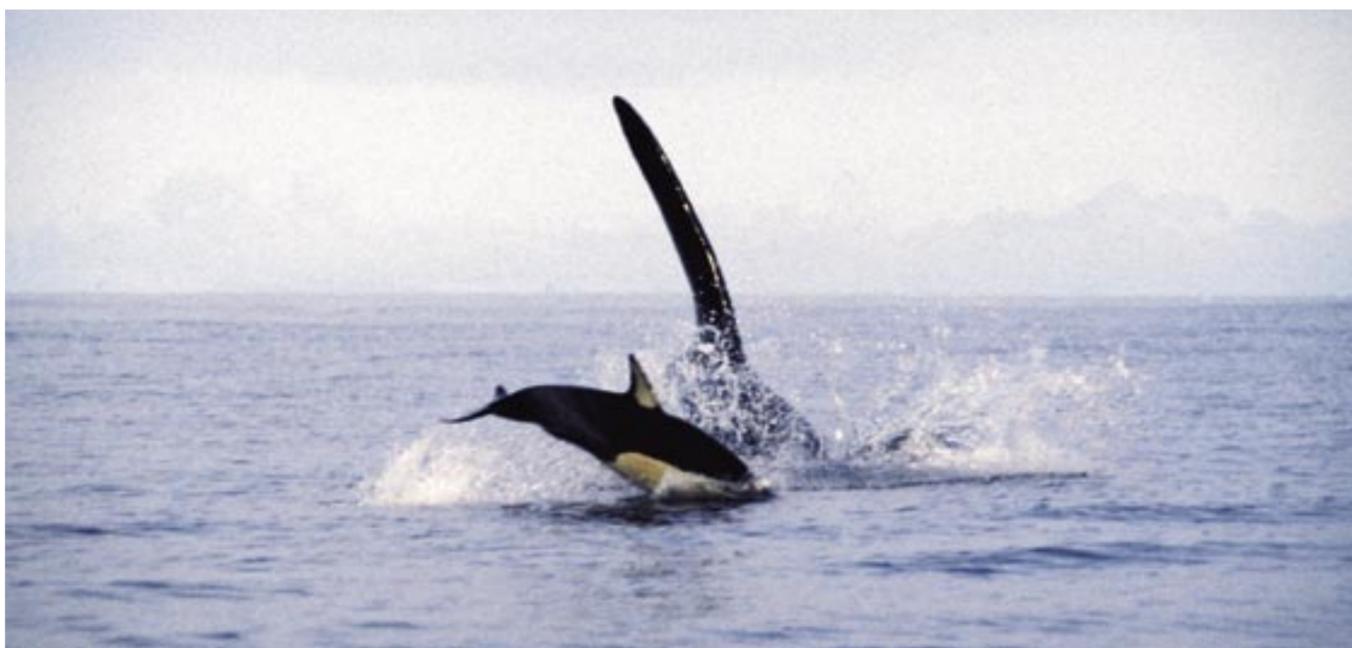
in return for a share of the spoils.

It is possible that this high degree of interaction with humans has arisen from another unique feature of New Zealand orca: their specific hunting culture. Culture can be defined as traditions transmitted and reinforced by members of a group. Although some who work with cetaceans recognised the fact years ago, it is only now becoming accepted scientifically that whales have cultures. Orca culture is often unique to a small geographic location, not unlike human tribal culture. New Zealand orca employ several different hunting methods, but most are aimed at catching the same kind of prey—elasmobranchs, i.e. rays and sharks. New Zealand orca were the first to be recognised as specialising in hunting this type of prey, and they remain the only orca that use these particular methods.

When I began studying New Zealand orca in 1992, a

rays do everything they can to escape, including using their stings or, in the case of electric rays, their jolt of numbing power. They are sometimes successful: a young orca was found in 1998 with stingray barbs lodged in her back, chin and throat, and she died from an allergic reaction to the poison in them. Foraging for rays is a risky occupation, and I have seen as many as seven orca attempting to catch a single large animal. Often young, inexperienced orca will float nearby and watch the action; such lessons help build the distinctive New Zealand orca culture. Once a ray has been immobilised, youngsters are given the opportunity to participate, although this may entail simply sharing the spoils of a kill.

Elasmobranchs are relatively primitive vertebrates and their nervous system can be reduced to insensibility. Forced onto its back, an elasmobranch becomes motionless



**An adult male orca (opposite), coming towards the camera, chases a common dolphin. Although this individual escaped, New Zealand orca are partial to the odd dolphin. Baby orca are not much smaller than dolphins—over 2 m long and approaching 200 kg at birth. They remain with their mother for a year or more.**



above and behind the eye) is thought to help orca co-ordinate complicated group attacks on prey. For a frontal attack, the animals in a group line up abreast by using the near-side eye patch of their neighbour to left and right as a marker. A female’s white flanks and narrowing white genital patch are thought to guide calves to the mammary glands for suckling; male colouring in these areas has a slightly different configuration. White flanks could also be used to coordinate hunting manoeuvres or to spook prey into tight groups. Behind the dorsal fin is an area of light-grey pigmentation called the saddle patch, which glows brighter than any other part of an orca when viewed with infra-red imaging, meaning it is warmer.

The bold black-and-white pigmentation of orca is unique in the cetacean world, and each animal has its own subtle variations on the basic theme. To orca these indi-

his especially tall, pointed dorsal fin, will often take a youngster under his protection and not only play with it but teach it to hunt and share food with it.

Some New Zealand orca show remarkable interest in interacting with people. Not only do they approach and swim close by, they often swim upside down beneath boats, peering up at the people hanging over the side. (Orca eyes are on the side of the head, and directed slightly downwards, the better to spot prey swimming below.) Others revel in the jet from fishing-boat hoses, rolling from side to side to get a full water massage. Occasionally, one will even lay its head on the back of a boat and allow people to pat it. Nowhere else in the world do orca interact with people to this extent, although there are records of them hunting co-operatively with humans; for example, off Eden, in New South Wales, they purportedly helped catch southern right whales

few people told me they could be seen close to shore. No one really knew what they were doing there, but suggestions included mating, giving birth and hunting. As my research developed, it became apparent that most of the close-to-shore activity was hunting. I noticed that the orca hunted in very shallow water, often only a body’s length from the beach, at times spending hours in areas where there was so little water they couldn’t even completely submerge. Prior to these observations, it was thought that orca hunted in the water column—that is, between the surface and the ocean floor but not on the floor itself. However, shallow-bottom foraging for various species of ray proved to be normal for New Zealand orca.

When hunting in estuarine areas, the orca dig in the mud to extract the rays, surfacing on occasion for a breath with dirt coating their faces like a beauty face-pack. The

and defenceless, a state known as tonic immobility. Orca have learnt this, and will often turn a ray (or shark) over, allowing them to come in safely for the kill. One way of doing this is to flick it into the air, so when orca are hunting rays, it isn’t uncommon to see them treated as Frisbees.

To escape, rays will often make for extremely shallow water, even coming in so close that they end up flopping about on the beach. It is this evasive behaviour which draws the orca into the shallows, where they sometimes become stranded. Typically they free themselves, but occasionally human help is needed, and I believe this to be how they have formed a connection with people. Once back in the water, they are perhaps sufficiently curious to continue the interaction. New Zealand has one of the highest rates of orca strandings in the world, so if this notion is correct, it is no coincidence that New Zealand orca



Although the release of Keiko, the star of the movie *Free Willy* was not a total success, the information gained from the attempt may help the rehabilitation of other captive orca released back into the wild. Here Keiko is spyhopping in Iceland, showing the extremely large pectoral fins adult male orca possess.

interact with humans more than most others. The few animals that first sought encounters with people have started a trend: even young orca are now getting in on the act, being those particularly keen on tugging divers' fins.

To date, every recorded orca stranding around New Zealand has occurred on a gently sloping sandy beach or in a harbour known to be a place where orca hunt for rays—hardly a coincidence given their foraging strategies. Yet despite the occasional blunder onto land, these skilful predators make a meal of many a ray. They have been observed taking four species: the short-tailed stingray (*Dasyatis brevicaudata*), the long-tailed stingray (*Dasyatis thetidis*), the eagle ray (*Myliobatis tenuicaudatus*) and the electric ray (*Torpedo fairchildi*). In addition, they dine on six species of shark: basking (*Cetorhinus maximus*), blue (*Prionace glauca*), short-fin mako (*Isurus oxyrinchus*), school (*Galeorhinus galeus*), thresher (*Alopias vulpinus*) and smooth hammerhead (*Sphyrna zygaena*).

The techniques for taking sharks differ from those for taking rays. Given that sharks are themselves intelligent, agile and successful predators, it takes co-ordination and alert manoeuvring to capture them. One technique New Zealand orca seem to have perfected is the “karate chop” attack. First, the group encircles the shark; then one orca rushes in just beneath it and, without actually making direct contact, uses the up-thrust of its powerful tail to force the fish to the surface. The same orca then pivots, lifts its tail high out of the water and strikes down on the shark's back, breaking it in one immobilising hit. Younger orca are then sometimes given the opportunity to come in and practise their karate chops before the signal is given that lunch is served.

Orca take sharks in this way regardless of size. Why do they not just swim up to small ones and snatch them in their jaws? Small sharks, although not as fast as orca, can out-maneuvre them, and a disorienting throw prevents them from doing so.

When swept upwards by the an orca's tail-induced vortex, a shark may be flipped upside down and suffer tonic immobility, in which case it makes an easy target for the final blow. When the orca turns in preparation for this, moving its head away from its victim, the shark, if still functioning, may presume its assailant is moving off and is hence no longer a threat. It is certainly unlikely to expect an aerial strike from a predator in the water beside it.

All the same, a large shark is capable of inflicting serious wounds on an orca. In a head-on attack, an orca's eyes, being near its mouth, are especially vulnerable, so it makes sense for an orca to keep its face out of harm's way. Catching smaller sharks is good preparation for catching larger ones; likewise participating in a catch after the shark has been hit at least once. It is unlikely that when young orca join in at this point they are playing; the group starts to eat less than 10 minutes later, whereas other forms of pre-dinner activity involving the food to be eaten can last up to an hour and are more obviously playful.

New Zealand orcas' taste for elasmobranchs is very

unusual. Despite an extensive whale-watching effort and a dedicated orca research project off California, only six reports of orca taking elasmobranchs there have been published in 40 years. In New Zealand waters, by contrast, over a period of just 15 years, I have recorded hundreds of such instances. Follow a hunting New Zealand orca and you could see an average of six rays taken in a single day. Off California, only four species of elasmobranch are eaten by orca; in New Zealand, we are at 10 species and still counting.

Off Kaikoura, a group of two male and two female orca specialises in hunting a different kind of prey: dolphins. In line abreast, the four of them swim slowly after a small pod, then one of them—the female known as Stealth—disappears. Presently, the remaining trio accelerates to top speed—up to 45 kph—as do their now desperate quarry. Suddenly, one of the fleeing dolphins is hurled out of the water, hit from below by Stealth, who then grabs it in mid-air. Without more ado, all four orca devour the hapless creature. This group, living in an area where dolphins are abundant, has developed its own distinctive culture.

Orca culture, certainly in relation to hunting, is apparent elsewhere in the world. In British Columbia's Puget Sound, where orca have been closely observed for 30 years, there seem to be several types of animal. “Residents” stay in the area, have rounded fins, live in groups of 20–40, feed mainly on salmon and are very vocal. “Transients” move through the area, have pointed fins, feed on other marine mammals and are very quiet. Not so well characterised, “offshores” visit the area in large groups from far out to sea and vocalise a lot. New Zealand orca don't match any of these categories.

In Antarctica, several varieties of orca have been identified. Type A has the well-known black-and-white colouration already described. Types B and C are both grey and white, the difference between them being that type B has very large, and type C very small, eye patches. In May 1997, I spotted a group of eight type B orca near the Bay of Islands, and in 2001 and 2003 I saw a number of type Cs elsewhere off the Northland coast. These varieties may yet be elevated to species rank.

Many people have seen the dramatic footage of Patagonian orca lunging up onto the beach to take sea-lion pups. This is a high-risk foraging technique and requires many years of training. At Punta Norte, on the Argentinean side of Patagonia, I once watched a female orca known as Ishtar bring her calf right up to the beach to teach it what to do. I was astounded to see just how small this calf was; he was only a few days old, yet it was as if he was stuck to Ishtar's side with Velcro as she zipped in and out among the steep waves in repeated attempts to snatch a wayward pup. He was peeking right over his mum's shoulder as she zeroed in on lunch.

It is commonly assumed that because Patagonian orca intentionally beach themselves when hunting in this way they are capable of always getting back into the water. However, like New Zealand orca over-zealous in their

pursuit of rays, a number have become stuck, and some have died. New Zealand orca themselves seem to have no interest in sea lions (or seals).

**A** SIGNIFICANT DANGER for New Zealand orca is being hit by boats. The orca boat-strike rate in New Zealand waters is the highest in the world. Some animals survive the experience, albeit with graphic wounds.

Prop is named after the deep gouges in her back inflicted by a propeller. Although these have healed over, three large V-shaped scars remain and big chunks of flesh are missing. Viewed from the side, the cuts appear to penetrate almost to the spinal column. Prop is only four metres long, two-thirds the size of other orca her age. The most likely explanation is that she suffered her accident when she was little and has put much of her energy since into healing the damage rather than into growing.

Then there is Anzac, so called because I first photographed this young female on Anzac Day. Her wounds from a boat strike—a cut in the tail stock and half a tail fluke missing—were still fresh. Although she has survived, she swims with considerable difficulty, and to dive she must use her body weight to gain forward momentum, lifting her tail out of the water rather than using it to generate thrust.

Probably the most famous of all is Ben, who has survived multiple threats to his life. First, in 1997, he was stranded on Mangawhai Beach. He was rescued, and a year later I saw him in the Bay of Islands just after he had been hit by a boat. A propellor had split his dorsal fin from the tip right down to his back. I couldn't believe my eyes. The sternward half of the fin wobbled as he swam, and when he surfaced it leaned over to the left. With all this movement the cut was constantly being forced open



As rescuers move Ben, a teenage orca stranded at Mangawhai, out to sea, he begins to help by using his tail. Despite being stuck on the beach overnight, Ben's release was a success and nine years later he is still out there and going strong.

and growing deeper as a result, working into his back.

A month later, amazingly, he was still alive but the wound was now infected and swollen. The surrounding tissue was granulated and contorted into large knobs where water had been forced into it, rotten flesh trailed from the edges and pus oozed out of the base. The rear half of the damaged fin was now buckling and flexing and starting to fold backwards, thus keeping the base of the wound open and tearing into his body.

Even though grievously injured, Ben couldn't just give up and stop swimming. It wouldn't have taken much for a shark to finish him off, so, first and foremost, he had to keep up with his group for the protection it gave him. Furthermore, although his fellow orca might have been providing him with some food, it's likely he had to hunt too.

After giving him up for dead, I saw him again some months later. The loose part of the fin was now dragging uselessly in the water beside him, but the edges of the wound had healed up. There was clean, healthy skin over nearly all of the damaged area, and although it was still slightly open at the base, there was only a little pus. Ben is still on the go, and, while he generally avoids boats, he continues to be spotted around the coast. Usually when I see him he is accompanied by younger members of the group, whom he baby-sits.

Ben's survival has had far-reaching consequences. Many biologists used to believe that stranded whales could not be saved. Some thought that, without the weight-lessening effect of buoyancy, the pressure on their lungs and other internal organs would be crushing and kill them, even if their death might take place at sea after they'd been refloated. On the other hand, whale-huggers, who love whales for their own sake, strongly believed that stranded animals could be returned to the water and survive.

Being both a scientist and a self-confessed whale-hugger, I thought that the internal organs would be fine. While orca haven't been recorded as diving much deeper than 250 m, many whales dive to considerably greater depths, where they are subjected to pressures much higher than they would experience on land. Over the years I have been involved in many autopsies of cetaceans that have died after becoming stranded, and have never seen crushed organs.

At strandings in New Zealand, whale rescue groups such as Project Jonah, working in association with DOC, tie cotton tape round the tails of animals returned to the water as a form of identification. The tape takes about three weeks to rot away, so should an individual come ashore again during that time, either alive or dead, it is clear that an attempt has recently been made to save it. If a rescue is conducted efficiently, it is generally the case that most of the animals will not restrand themselves, and very few carcasses wash ashore. Photos are also taken of each animal before it's returned to the water. Until recently, however, there was no hard evidence that whales which were refloated did in fact survive. Ben was the first orca anywhere in the world who was known before he became



Miracle, the orca closest to the shark, had the shark (a mako) in her mouth when I first got into the water. She let the shark go, and it came and hid under me. Miracle chased it out from under me, and then proceeded, with the other orca, to eat it. This is the first record of orca, anywhere, eating a mako shark. For unknown reasons, local orca rarely breach, but elsewhere in the world it is common behaviour.



ANDREW PENNIKET

My research boat is a 5.8 m rigid hull inflatable Naiad, powered by 4-stroke Yamaha engines—a four-wheel drive for the ocean. Although I won't necessarily go out to look for orca in rough weather, coming home I never know what sea conditions will be like. I am typically alone so carry emergency equipment like flares, location beacons, radio, cellphone etc, and I always wear a lifejacket.

stranded, was rescued and then resighted (albeit injured from a boat strike).

I wrote a paper about Ben, using him as an example of how the efforts of researchers and rescue teams could pay off. At a conference a few years later, a researcher told me that he had read about Ben shortly before hearing of a stranded orca that was going to be shot because people didn't think it could be rescued. Citing Ben's story, he persuaded those involved to think again. The lucky orca was saved and has since been resighted.

Another New Zealand orca to be stranded and rescued is Miracle, a young female. Her story is one of even greater hope. She came ashore in 1993 on a remote beach near the very top of the North Island, and rescuers worked hard all night to save her. Other orca were reported off the beach, and when she was finally pushed free, she joined them and they all headed away. A few people had taken snap-shots of her, and using these for identification I have been able to follow her life since. In 2001 she bore a calf, whom I called Magic. This was evidence that cetaceans that have been stranded can still reproduce.

Miracle and Magic, and Ben the baby-sitter, are eloquent proof that rescuing stranded whales is worthwhile.

As for orca reproduction, this is a slow business. It isn't known for certain at what age they reach sexual maturity, but it is possibly as late as 12 or more for females, which are thought then to calve only every three to eight years. Pregnancy lasts for 12 months or more. Although female orca are believed to live for perhaps 80 years, they are not reproductively active for all that time; elderly, post-menopausal females seem to watch over and school the younger members of a group. (Female orca are among only a few

non-human mammals known to undergo menopause.)

**P**HOTOGRAPHS that allow us to identify orca have the potential to help us learn a great deal about their lives. But the key is to keep watching the animals over the long term—to see how they grow, develop personalities and take on the culture of their population, and to fit the information garnered into the bigger picture.

In New Zealand, it must be said, that picture doesn't actually appear to be all that big. My studies indicate that there are fewer than 200 orca living permanently around the coastline. Three groups appear to exist—one that inhabits the waters of the North Island, a second those of the South Island, and a third that roams the entire area. Given this small population estimate, DOC has changed the status of orca from "common" to "nationally critical"—its highest threat ranking. This is because, although orca are found in other parts of the world, those around New Zealand are unique, with their own distinct dialects, hunting methods and other cultural characteristics. There is still much about them of which we remain ignorant, such as how stable their groups are, but we have certainly come to realise that they are special and deserving of our respect and protection.

If you see any orca, please phone 0800 SEE ORCA. ■

**FURTHER INFORMATION**

[www.orcaresearch.org](http://www.orcaresearch.org) • [www.akwic.org](http://www.akwic.org) • [www.adoptanorca.org](http://www.adoptanorca.org) • [www.orca-puntanorte.com](http://www.orca-puntanorte.com) • [www.whaleresearch.com](http://www.whaleresearch.com) • [www.reuniteluna.com](http://www.reuniteluna.com) • [www.russianorca.narod.ru](http://www.russianorca.narod.ru)



Adult male orca have tall conical dorsal fins, while those on females and young males are short and curved. This sub-adult male orca (right) seemed fascinated with the dexterity of my fingers, whilst I clicked them. Orca have the same number and configuration of bones embedded in their rigid flippers, as we have in our hands. Special permits are required from DOC before one is allowed to swim with orca or approach them in boats.



BRAD TATE

## Dying to entertain us – orca in captivity

An orca was first taken into captivity in the mid-1960s, since when demand for these dramatic animals has grown. Perversely, the desire to see an orca close up has led to the deaths of many in the attempt to capture a few for display. Orca taken from the wild are often netted, and may become entangled and drown.

Many are captured in Russian waters, primarily for the Japanese market, although Japan also captures its own. In Taiji, southern Honshu, the locals have been catching and eating orca

gent, social animals are often kept alone, or with smaller dolphins (sometimes of the kind they prey upon in the wild). The tanks lack features and, in reality, are nothing more than water-filled concrete prison cells with bright-blue walls.

Little wonder captive orca go stir-crazy and exhibit such disturbed behaviour as chewing the sides of their tank or swimming in exactly the same pattern for hour after hour. Some bite or otherwise harm their trainers (in effect, their jailers). One adult male, called Tillikum, has killed two people—a trainer in Canada in 1991, and a member of the public in Florida who, in 1999, sneaked into his tank and was found dead the next morning draped across his back. No-one knows if the man was drowned by Tillikum or was just a poor swimmer. Such events continue to occur. As recently as 2004 a trainer at Sea World was bitten, and in 2005 another trainer was taken to hospital with injuries after “interaction with an over-excited orca”.

Occasionally more than one orca is kept in a tank, but as they often come from different locations, they probably have great difficulty communicating and can be very aggressive towards one other. At Marineland, in Ontario, Kandu rammed her pool-mate, fracturing her jaw. A bone fragment then severed an artery, and the injured animal bled to death. Even motherly love is not immune to the frustrations of being held prisoner. Taima, another Florida captive, bore two calves but had to be separated from both as she tried to kill them.

It could be argued that our knowledge of orca has increased thanks to the study of captive specimens, but at what cost to the animals? How can we learn about a creature that in the wild typically travels over 100 km a day, regularly dives to 100 m, lives in stable social groups and hunts for its food when we keep it in a lock-up?

One captive animal shot to fame in 1993 in a movie about, ironically, an orca

condemned to a sad life in captivity. In the film, *Free Willy*, the fictional orca is released back into the wild by a young boy to live with his family. The real orca, called Keiko, was in Mexico, stuck in a tank of overly warm and inadequately filtered water. His plight was taken to heart around the world by children and adults alike, and money was raised to shift him to Oregon, in the USA, where a larger tank was built for him. After gaining weight (as much as 900 kg), learning some survival skills (he even watched videos of wild orca) and recovering from various diseases, he was shipped to Iceland, where he had been captured nearly 20 years earlier.

In a bay called Klettsvik, Keiko was put in a floating enclosure, roughly the size of a rugby field. Here he could experience tidal flows, waves and other dynamic conditions while still under the watchful eye of his carers. After a period of acclimatisation to these novel circumstances, he was released into the bay itself, the mouth of which was netted to prevent him going out to meet all the boats that passed by.

After he had been trained to follow a certain boat (and only that boat), and to return to it when called with a kind of underwater whistle, Keiko was taken on “ocean walks”. During these he was able to learn about his new habitat, but still with his human friends alongside for back-up. He seemed to thrive on these outings, undertaking about 40 in the summer of 2000. His swimming speed, the duration of his dives and the distances he could swim all increased.

It wasn't long before Keiko encountered wild orca. On the first occasion he took off with them. The next time he was very passive, and the wild orca were curious about him. On another occasion he decided he preferred the bay to the open ocean and headed back there. During yet another encounter he didn't take much notice of his wild brethren, although they followed him for a while.

Summers in Iceland are brief and time ran out in 2000 to introduce Keiko to more orca, so he was kept in the bay for the winter. During this time he practised catching live fish, dispensed by his handlers. For the first three months he would return them, as he did his toys, but then he learnt just what they were all about and even started catching seagulls that tried to take them.

Although a second season was spent trying to rehabilitate Keiko to life in the open ocean, and he was released for longer and longer periods, he eventually turned up in Norway and began begging for food. It was decided that he should be kept there, but, sadly, he wasn't allowed to interact with the public, and a few months later he died.

Despite the fact that Keiko's release back into the wild wasn't a total success, much was learned from the attempt that may help the return of other captive orca to their ocean home.

### Captive orca statistics

- 45 orca are currently being held captive worldwide, both wild-caught and captive-bred.
- Five countries hold captive orca; Argentina, Canada, France, Japan and the USA.
- Since 1961, at least 440 orca have been captured and of those 135 taken into captivity.
- 115, or 85 per cent, are now dead. Additionally, a male orca escaped from a sea pen after two-and-a-half years in captivity, fate unknown.
- The average survival time in captivity for the 115 dead was under 6 years. One survived for only a day. Wild orca live for 50–80 years.
- From the 66 known orca pregnancies in captivity since 1968, only 25 calves have survived.

Country	Captive	Mortality
USA	32	30
Canada	25	24
Iceland	55	41
Japan	19	16
Argentina	3	2
Russia	1	1
TOTALS	135	114

A boy watches a captive orca in Vancouver.



for years. Now they supplement their income by selling the prime animals into captivity. Japan holds nine captive orca, second only to the USA, which has 25. This doesn't seem like many animals, but when one considers all the orca that have perished to put these few before the public, and that every population of orca so far studied is tiny (typically fewer than 200 animals), it is nothing less than shameful.

Some facilities breed orca. Advocates state that in order for a female to become pregnant she must be “happy” and well adjusted to life in captivity. However, women become pregnant in situations that are far from ideal, such as in concentration camps. Are orca any different?

It isn't as if captive orca have nothing more to do than eat and sleep: they must work for their food. If they don't perform the degrading tricks demanded of them, they aren't fed. Worse still, these intelli-

