

A photograph of three dolphins leaping from the water. The dolphins are captured in mid-air, with water droplets trailing behind them, creating a sense of motion. The water is a deep blue, and the dolphins have a sleek, greyish-brown color. The composition is dynamic, with the dolphins arranged diagonally across the frame.

DOLPHINS **OF AOTEAROA**

Living with New Zealand Dolphins

RAEWYN PEART

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BIGGEST DOLPHIN ON EARTH

She is known in New Zealand as the 'orca lady' or 'Dr Orca'. Ingrid Visser has based her career on the largest dolphin on earth, *Orcinus orca*, otherwise known as the killer whale. Orca are by far the biggest member of the dolphin family, with adults reaching up to nine metres long. Their most remarkable feature is a very large dorsal fin, proportionally larger than in any other cetacean. In male orca the dorsal fin can reach up to 1.8 metres high.¹

Ingrid was born in Lower Hutt in 1966 and grew up on a farm near Palmerston North. Her parents were Dutch and her father was a keen diver. Encouraged by him, Ingrid spent many hours in the swimming pool at her home, playing with a mask and snorkel. By the time she was around six or seven, she had already decided that she wanted to work with whales and dolphins.² When Ingrid was fifteen, the family moved to Tutukākā, a small settlement surrounding a spectacular enclosed harbour to the north-east of Whangarei. A year later, the family embarked on an adventure – sailing around the world in a small yacht – which was to last four and a half years. Returning to New Zealand in her early twenties, Ingrid started university studies.³

It was in 1991, while working on her Master's thesis at Auckland University and studying oysters at the Leigh Marine Laboratory, that Ingrid had her first close-up encounter with orca. Hearing that orca had been sighted on the beach, she grabbed her snorkelling gear, raced to the beach and dived into the water. But she couldn't see any dolphins in the murky water. Then, just as she was about to return to the beach, she saw a very large dolphin heading towards her. It was a male orca. He quickly disappeared. Ingrid continued diving up and down, searching for him fruitlessly until, heading back to the surface for another breath, she saw a large orca floating on the surface and peering down at her. It was a female. The enormous animal swam around Ingrid and then took off in the direction of the male. What happened next was extraordinary. As Ingrid recounts in her book, *Swimming with orca*:

I came back up for a breath and there she was again, directly between me and the surface – but this time accompanied by a calf. I couldn't believe my eyes as both turned towards me and surfaced as I did ... I was mesmerised by the pair as they swam past me, again in a curve. Once more I turned with them, trying to keep both within my field of view, as I felt that if I broke eye contact the magic moment would be lost and they would turn and leave. Then the calf swam fast in the direction I was surfacing and suddenly it was a game for us both, with the female watching to make sure I didn't make a silly move. The calf was circling around and around me, just below the surface, while I was in the centre, spinning

Ingrid Visser with orca off
Rangitoto Island, Hauraki Gulf
PHOTO JUAN COPELLO



as fast as I could to get my arms and fins to rotate me. I was laughing excitedly and it was difficult to believe that this was all actually happening.⁴

Ingrid was entranced. In 1992, after completing her Master's thesis on commercial oyster production, she was determined to focus her doctoral studies on her real passion which was orca.

At this time, surprisingly little was known about orca in New Zealand. In his 1972 book *Whales, dolphins and seals*, English scientist David Gaskin reported sighting 21 orca swimming towards White Island during a whale survey around the New Zealand coast in 1963. He also indicated that orca had been sighted all year round in New Zealand waters, most frequently in the Bay of Plenty, off the Kaikōura Peninsula, in the Marlborough Sounds and around the entrance to Milford Sound. But little else was known about the New Zealand population.⁵

Ingrid had no money, and studying marine mammals required at the very least a boat, a vehicle and trailer to tow it, and a camera to record the animals. So she set about raising funds. She wrote to Bill Rossiter at the US-based Cetacean Society International and he agreed to fund a camera body.

She then splashed out and bought a personalised vehicle licence plate that read 'ORCA', though she still had no vehicle on which to put it. Ingrid then embarked on a concerted funding-raising effort. She wrote to 500 companies, asking for sponsorship. Although most said no, some agreed to help. During a diving trip, she had a chance encounter with the head of US Divers in New Zealand, and this led to an offer of diving gear. Kodak provided film. Golden Bay Cement funded the purchase of a four-wheel-drive vehicle, and the Lottery Grants Commission provided funding for a boat.⁵ Now she could get under way.

Swedish scientist Carl Linnaeus is credited with first scientifically describing *Orcinus orca* in 1758. *Orcinus* is Latin for 'of the kingdom of the dead'. This reflects the fact that orca are at the top of the food chain: an 'apex predator'. They feed on other marine mammals such as dolphins, sea lions and seals, as well as fish. They have no natural predators. Early whalers called the dolphin a 'killer' whale because it killed and ate species of its own kind – other dolphins and whales. There are no known cases of orca attacking or killing humans in the wild.⁷

Orca are dolphins, not whales. Cetaceans are split into two main families, those that have teeth (*Odontocetes*) and those that have baleen, long strips of keratin used to sieve out small marine organisms (*Mysticetes*). The toothed cetaceans are further sub-divided into six families. One of these is *Delphinidae*, which are the true dolphins, and this is the family to which orca belong. Other 'toothed' families include the sperm whale (*Physeteridae*) and beaked whales (*Ziphiidae*). Orca were not commonly targeted by the whalers, being a 'fast, small species of whale where the products of the chase seemed hardly worth the work, the wear, and the risk'.⁸ They were sometimes a pest, feasting on the dead whales tethered to the sides of whaling ships.

Orca have a similar life span to humans. Females have a life expectancy of around 50 years but can live up to 80 or 90. Males are shorter-lived, with a life expectancy of 31 years and a maximum life span of around 60 to 70 years. The longer life of females may be due to their ability to offload a significant proportion of the pollutants accumulated in their bodies to their calves through gestation and lactation.⁹ Orca are very slow to reproduce, with females producing a calf only every four to five years and then only during a relatively short productive period between the ages of 14 and 40. The typical female has five calves during her lifetime. Unlike most marine mammals, but as with human menopause, female orca spend the latter part of their life infertile.¹⁰

Probably the earliest photograph of orca in New Zealand is from 1915, when three orca were driven ashore and killed by local whalers in Tauranga Harbour. The animals were subsequently boiled down for oil, but they provided only small amounts which were of poor quality.¹¹ When the Tory Channel's Perano whalers could find few humpback whales to hunt during the 1962 season, they targeted orca instead, and managed to capture and kill three animals. They were apparently unaware of the 1915 capture event and wanted to see how much oil the large dolphins would produce when rendered down. The results were a disappointment, and orca were not hunted again.¹² Russian whalers continued to hunt the dolphins and reported catching seven orca in New Zealand waters between 1961 and 1979.¹³

There was also an attempt to catch orca for export to an aquarium overseas during this time. Mount Maunganui dolphin keeper Edward Heke recalls receiving a request for an orca from an Australian marineland. He had regularly seen these dolphins in Tauranga Harbour, so thought that one could possibly be captured. Mount Maunganui Marineland sought clearance from the Marine Department for the export and, initially, got the go-ahead,¹⁴ so Edward asked some fishermen to make a big drop net. He had concluded that orca were very gentle animals and 'if you circle them with a net they don't try to get over it, they just mill around. So that was what we tried to do. We had everything jacked up, a launch and everything. Then the Marine Department had a change of heart and said we couldn't do it.'¹⁵

Some of the early research on captive orca was undertaken in Canada in 1967 by New Zealand scientist Paul Spong. He had been recruited by the Vancouver Aquarium to work with a young captive orca named Skana. Paul was born in the small Bay of Plenty settlement of Whakatāne in 1939. He studied law at the University of Canterbury, then in 1963 headed to Los Angeles to undertake post-graduate studies in psychology at the University of California's Brain Research Institute. His focus was initially on human brain-wave patterns and then on the linkage between brain mechanisms and behaviour.¹⁶

In 1964, the Vancouver Aquarium had first captured an orca to use as a model for a sculpture. The badly injured animal, which had been harpooned and shot, lived for less than three months. Three years later, a group of 15 orca were captured with a net off Seattle. One of these ended up in the Pacific Northwest Boat Show and was bought by the aquarium for US\$25,000 – a large sum of money at the time.¹⁷ The aquarium then looked for a scientist to conduct research on their new resident. Paul was given the project, primarily because of his experience with human neurology, which was seen as applicable to the large-brained cetacean. He was starting from scratch, as very little was known about orca biology or behaviour.

Paul first tested Skana's eyesight and found that she could distinguish between two lines which were only one millimetre apart. The testing procedure was laborious. He would lower into the water a card which had either one line or two lines drawn on it. If the orca recognised two lines, she was trained to touch a lever with her nose. If she got it right, she was rewarded with a herring. Paul started with two lines, 10 centimetres apart, and then gradually drew them closer together. The aim was to identify the point at which Skana could no longer distinguish two lines.¹⁸

The experiment went as expected for two months, but then something strange happened. Skana was now getting some of the answers wrong, though she'd had no difficulty distinguishing the same lines in the past. Paul was worried. Had the earlier results been faulty and his experiment come to nought? Or was there another explanation? Had Skana become bored with the experiment and decided to give wrong answers on purpose? Was the dolphin, rather than the scientist, manipulating the experiment?

Paul started to view his interactions with the dolphin in a new light. His initial approach had been to test the orca as an 'object'. Perhaps this was more of a two-way relationship, and Skana had some things to teach him. Then there was an interesting development:



Early one morning, as he sat on the training platform dangling his bare feet in the water, Skana approached slowly, opened her jaws, and abruptly raked her teeth across the tops and soles of his feet. Spong jerked his feet from the water and could feel his heart racing. He gingerly put his feet back into the water. Again, Skana bared her teeth, as if taunting him, then brushed her teeth across his feet, as he instinctively jerked them from the pool. Skana repeated the routine eleven times, and eleven times Spong pulled his feet from the water. On the twelfth time, after Skana brushed her teeth across his feet, the scientist controlled the urge to flinch. Skana stopped the game, circled into the middle of the pool, raised her head, and gave out a high, modulating call.¹⁹

After reflecting on the incident, Paul concluded that Skana was consciously de-conditioning his fear of her. Once he had demonstrated that he could leave his feet in the water and feel her teeth without flinching, she ended the lesson.

In 1968, the Vancouver Aquarium acquired a second captive orca, called Hyak. The animal quickly sank into depression. Paul, however, was able to raise his spirits though music. He started arriving at the pool early in the morning and played his flute for the two orca. They seemed to like this. He then invited musicians to come into the aquarium at night to perform. The animals seemed to particularly enjoy classical music, especially if it included the violin or flute. Paul became convinced that he was dealing with very intelligent creatures and that it was wrong to keep them

Miracle with her first calf
Magic, Tutukākā coast
PHOTO INGRID VISSER

in captivity. In his view, the concrete tanks created a sensory-deprived environment, and this was particularly cruel for a species which was acoustically so sensitive. It was like putting a human in an isolation tank. When Paul expressed his views publicly, his research project at the aquarium was suspended. He was subsequently released from the university after he admitted taking the hallucinogenic drug mescaline whilst working with the orca.²⁰

Paul went on to establish OrcaLab, a wild orca research station on Hanson Island, located within the inland passage some 320 kilometres north-west of Vancouver. For the next few decades he studied the vocalisations of groups of orca that summered near his base. He carried on campaigning to free captive orca, as well as to stop the capture of additional animals for the aquarium trade.

One of Paul's more unconventional activities was to organise a live waterborne concert for the pods of orca that frequented the waters surrounding his research station. In 1970, he managed to persuade the Vancouver rock and roll band Fireweed to board a 48-foot unrigged sailing vessel and to play their music whilst cruising the waterway. The reaction of the orca proved interesting. The first pod they encountered became completely silent on hearing the music. This, in Paul's experience, was very unusual. Another pod surrounded the vessel and travelled along with it for several kilometres whilst the band continued playing. Paul concluded that the orca were interested in live music, though he had not found a similar response to recorded music. Perhaps the quality of live sound was better, or perhaps the orca responded to the presence of the musicians, just as humans tend to prefer live performances.²¹

Paul's research led him to conclude that the orca is 'an incredibly powerful and capable creature, exquisitely self-controlled and aware of the world around it, a being possessed of a zest for life and a healthy sense of humour, and moreover, a remarkable fondness for and interest in humans'.²² It also led to his being instrumental in founding the 'Save the Whales' campaign launched by Greenpeace during the 1970s. The organisation had initially been very much focused on opposing nuclear weapons and testing. But Paul was so outraged by the ongoing whaling industry that, in 1973, he suggested that Greenpeace take a boat to sea to confront the whalers. Impressed with the manoeuvrability of small outboard-powered inflatables, which Jacques Cousteau had used to film whales, Paul and his colleagues hatched a plan of non-violent action to disrupt whaling efforts. They would drive an inflatable between the harpoons on the whaling vessel and the targeted whales, thereby acting as human shields. For probably the first time, humans would be putting 'their lives on the line for whales'.²³

Because almost no scientific research had been undertaken on orca in New Zealand, when Ingrid Visser began her PhD work in 1992, she had to pretty much start from scratch. Hers was to be the first research of its type in the entire Australasian and South Pacific region.

After six months on the water, Ingrid found that orca were seen more often in southern waters during the summer and in the northern waters during winter. What she didn't know was whether she was seeing the same orca moving from place to place, or different populations.²⁴ Ingrid set about establishing a photo-identification catalogue so that individuals could be recognised and their



behaviours and life histories tracked. Her first match was with a photograph that Bay of Islands skipper Steve Whitehouse had taken of an orca in the Waitematā Harbour in 1987. Ingrid matched his image with that of an animal she photographed off Kaikōura – a highly recognisable individual, with a bent dorsal fin with a notch along the front edge.²⁵ Fishermen and whale watching staff had named him Corkscrew. The photographic match was very significant, as it proved that orca moved between the North and South Islands. And a second match three weeks later confirmed that orca did indeed return to the same place over time. Having received a call about an orca sighted off Auckland, she managed to get a photograph of it, and it matched one taken by Whitehouse in 1987 in a similar location. She called this animal Nicky, because there was a large nick out of the trailing edge of her dorsal fin.²⁶

As the orca photo-identification catalogue grew in size, it became evident that many orca in New Zealand have some deformity. For example, Ingrid found that 23 per cent of the dorsal fins of adult males had either collapsed to some extent, or were bent. This was a much higher proportion than seen in the considerably larger orca population off British Columbia, where only 6.5 per cent of the dorsal fins were so affected.²⁷

In tracking orca around the country and logging their identities and locations, Ingrid started to see a pattern emerging. Some animals were only ever sighted around the North Island; others were found solely off the South Island; and a third group appeared to move between the two land masses. There was also a fourth pod seen off the Three Kings Islands, seawards of the northern tip of the New Zealand mainland.²⁸ Although there was some mixing between the different groups, they appeared largely to retain their own members. The pods travelled considerable distances, averaging 100 to 150 kilometres per day.²⁹

When Ingrid further analysed the information from her sightings, she calculated the number of

A pod of orca curious about Ingrid Visser's research boat in the Hauraki Gulf
PHOTO ANDY LIGHT

orca found around the New Zealand coast to be only in the low hundreds, and possibly as low as 150 individuals.³⁰ She also established that the creatures were resident in New Zealand all year round, rather than being part of a larger offshore population passing through New Zealand waters. It was now clear, for the first time, that the country has its own distinct orca population.

Based on her findings, Ingrid lobbied the Department of Conservation to change the classification of the New Zealand population of orca, which was eventually recognised as 'nationally critical'. It is still not known whether the population is increasing, decreasing or relatively stable. This is because some animals disappear for many years and are then re-sighted. So unless an animal is found dead, it cannot be assumed not to be alive, even if it hasn't been seen for some time.

A different type of orca, which is based in Antarctica, is also found in New Zealand waters from time to time. These animals have different coloration patterns on their skin and often show evidence of 'cookie-cutter' shark bites. Ingrid believes that these orca may, in turn, attack the New Zealand animals, which she has seen completely covered in bite marks. It looks, she says, 'like someone has taken a cheese grater and gone all over their body'.³¹ Such marks have not been seen on any orca elsewhere, so it may be only in New Zealand that these inter-tribal orca hostilities occur.

Many individual orca form long-lasting bonds with each other. Ingrid has seen the same animals together for over twelve years.³² Often the bonds are between adult males and females, but long-term associations have also been observed between adult females. Other orca have more fluid associations, being frequently seen with different companions.

Unlike many other scientists, Ingrid took the decision early on that she would interact with the animals in the water, rather than remaining an outside observer. This, she believes, enables her to find out much more about their behaviours and social structure. In 2011 she observed,

I've got a long-term research project going now where I've known individuals that have been born into the group and I've swum with them since babies. They will allow me to follow them while they're hunting. They will bring food over to me and eat it in front of me so I can observe the species that they're eating and the way they hunt. This sort of thing has never been observed before.³³

There have been other magical moments. In *Swimming with orca* she described a particularly special encounter off the Tutukākā coast in March 1999, when she was out on the water with friends Jen Schorr and Brad Tate:

There were orca all around us, rubbing up against us and one another. We were seeing games of what appeared like tag – one orca racing after the tail of another, until it caught up and nipped the other's tail, and then the tables being turned and the latter chasing the former. We saw orca rubbing their tails all along the underbelly of another and orca just lying at the surface taking in the whole thing. To be immersed in the midst of an orca group socialising like this was an awesome experience.³⁴

Only a small number of acoustic studies have been undertaken on the New Zealand orca population. But we know that the animals emit a range of sounds, including clicks, squeals, shrieks and whistles. Each population appears to have unique calls and, within the population, different pods have their own dialect. It is not clear why this should be so, but it may be a way of enabling each pod to recognise their blood relatives and avoid interbreeding. A comparison with sounds made by orca in British Columbia revealed that the New Zealand orca have a distinctive 'Kiwi twang'.³⁵



In the North Island, Ingrid found that the orca most commonly hunted rays, including the eagle, long-tailed and short-tailed varieties that are often found in the muddy reaches of shallow inlets. Ingrid saw the orca use various techniques to catch the rays, including digging up the mud with their rostrum or 'snout', doing head stands to dive to the bottom, rolling on their sides, releasing underwater bubbles and flipping the rays upside down. She also observed orca 'throwing stingrays around like Frisbees', flinging them from animal to animal.³⁶ Ingrid often observed orca sharing food with others in their pod by holding the captured ray whilst another pod member removed its wings.³⁷ Those that frequently shared food appeared to be more socially popular.³⁸ So food sharing may provide a way of cementing pod social relationships.

Ingrid has also seen New Zealand orca catching sharks. In one event, the orca surfaced, raised its tail stock and flukes out of the water, and used them to whack the shark senseless before grabbing the stunned animal in its mouth.³⁹ Orca in the South Island also prey on other dolphins and whales. Species which have been attacked include common dolphins, bottlenose dolphins, dusky dolphins, false killer whales, pilot whales, humpback whales and sperm whales.⁴⁰

From time to time orca 'steal' fish from long lines set by fishermen. They use their front teeth to grasp the tails of the hooked sharks and other fish, and gently pull them until they 'pop' off the line. Fishermen typically lose between five and ten per cent of their catch to orca, and most are

Ingrid Visser photographing a large pod of 20 orca in Kawau Bay, Hauraki Gulf
PHOTO STEVE HATHAWAY

OVERLEAF Orca carrying stingray, Bay of Plenty
PHOTO KIM WESTERSKOV



not impressed. Ingrid interviewed several long-line fishermen about their orca experiences, and one reported 'shooting an adult male in the dorsal fin and leaving holes "like buck-shot hits" right through the fin'. Another admitted shooting at orca frequently.⁴¹

Malcolm MacMillan, who lived in Doubtless Bay, struggled to fish when orca were around. As he recalled:

The orca love bluenose, they would pull the bluenose off the longline by the tail and bite the head off and leave the rest. One day we had 900 hooks, a fish on every hook, the killer whales came along and pulled them all off, tossed them in the air and had a great game. We didn't think it was a great game. It was a big hole in our profit.⁴²

Orca are defined as 'whales' in the Marine Mammals Protection Regulations 1992, and therefore it is illegal to swim with them. The regulations state that 'no person in the water shall be less than 100 metres from a whale, unless authorised by the Director-General'.⁴³ But orca continue to be interested in humans. Divers have reported orca nudging them or tugging on their fins. In one case, an orca 'mouthed' a diver. In another case witnessed by Ingrid, an orca lifted a six-metre-long whale watching vessel, with eight passengers on board, partially out of the water.⁴⁴

Early on in her research, Ingrid called on the public to assist with orca sightings. She set up The Orca Project (now called the Orca Research Trust) and asked people to ring 0800 SEE ORCA if they spotted the animals. This orca hot line still operates, and her life continues to revolve around the large dolphins. She happily admits to being obsessed with them. What happens once she is alerted to the presence of orca was described by journalist Janet McAllister:

She'll throw off her orca duvet, throw on orca underwear, jeans and an orca T-shirt over her orca tattoo, troop past orca mobiles, inflated plastic orca and orca posters on her way from the loft to the kitchen, where she might drink from an orca mug before hooking her boat on to the back of her truck and zooming off to find orca by moonlight.⁴⁵

The increased publicity surrounding Ingrid's work has significantly raised the profile of orca in the public consciousness. But this increased interest in the dolphins has not necessarily benefited the animals themselves. In 2000, Ingrid reported that six orca had been injured by boats. One died as a result and another was permanently disabled. Although orca don't typically bow-ride like common dolphins, Ingrid has seen them open their mouths around spinning propellers. It appears they enjoy the sensation of the bubbles in their mouths.⁴⁶

Some boaties fail to pay these giant dolphins sufficient respect. Ingrid has frequently seen small boats approaching a pod of orca at full speed, sometimes at 20 knots, because the occupants don't want to miss out on interacting with the animals. Typically the orca dive and swim away to avoid the fast-approaching vessel. The boat then often stops at the point where the orca were seen before their dive, and races off at full speed in pursuit when they pop up 50 metres away. The chase can go on for four or five dives before the pursuers give up. But, as Ingrid explains, 'They might be racing over the top of a little baby calf that's just about to come up to the surface. This is how animals get hit.' She has also seen boats doing donuts around orca in an attempt to frighten the animals into jumping into the air.⁴⁷ For this reason, she distributes pamphlets to boaties to explain how they should behave around orca pods.



An orca named Ben, injured by a boat propellor in the Bay of Islands. Ben had been stranded a year earlier [see page 230].

PHOTO INGRID VISSER

But boats are not the only threat to these large dolphins. Orca can also become entangled in fishing nets. By 2000, six carcasses had been recovered with distinctive net or rope marks on their bodies.⁴⁸ In addition, because orca are an apex predator, they are susceptible to the accumulation of large amounts of toxins in their system. The rays and dolphins on which they feed have themselves accumulated poisons from prey lower down in the food chain. Moreover, orca are by far the longest lived of all dolphins, so they accumulate toxins over a lengthy lifetime.

To determine the toxin load in New Zealand orca, Ingrid sent blubber samples away for laboratory testing. On receiving the results she observed, 'They are alarmingly high. They're not up there at the level of the British Columbia orca, which are literally off the scale. But you can safely say that they have more pollutants than any other animal that's been examined in the Southern Hemisphere.'⁴⁹ Some of the concerning substances are PCBs, which are commonly used in machinery, and the pesticide DDT. But there is also an emerging concern about flame retardants, which are used in many consumer goods.

Ingrid's scientific work is now very much focused on strandings and their connection to the orca's propensity to hunt rays. Capturing rays in shallow waters brings with it the risk of stranding if an orca goes inshore too far, or gets caught by an outgoing tide. If they are caught in the shallows, they will try to swivel around on their bellies, but they cannot always do this successfully. That the practice of hunting rays appears unique to New Zealand orca helps to explain why there is such a high rate of orca stranding in the country – the highest in the world. In New Zealand, there is an orca stranding almost every year, compared to around one event every 14 years in Australia.

Many of the animals which strand in New Zealand are successfully refloated. In a particularly poignant event, a young orca which was stranded and rescued in 1993 had her first calf in 2001.⁵⁰ Ingrid has found that most animals can be saved if they are spotted early enough and the rescue



Ingrid Visser with Ben, who stranded at Mangawhai while chasing stingrays.

PHOTO TERRY HARDY

effort can be mobilised in time. If the stranding is far from her home base in Tutukākā, Ingrid will hire a helicopter to reach the animal as quickly as possible. She doesn't have funding to cover this extra expense. The bill goes onto her Visa card and she pays it off when she can. After one such stranding, it took her two years to pay off the Visa bill. 'But it's worth it,' she says, 'because you can get there and make a difference.'⁵¹

The first thing Ingrid focuses on when arriving at a stranding is to upright the animal so that it doesn't drown. If left on its side, the animal will have difficulty lifting its head above water. The animal will also become disoriented if it is left lying on its side. Generally the orca's breathing and heart rate will stabilise at this point. Rescuers will then dig holes in the sand so that the pectoral fins can sit normally, otherwise the orca can end up with the equivalent of a dislocated shoulder. Once the animal is righted, the rescuers usually put sacks filled with sand along both sides of the body to keep the orca stable.

The next challenge is to stop the orca from overheating, and this can be achieved by pouring cold water over its body and placing wet towels and sheets directly onto its skin. Rescuers generally have to wait for the tide to come in before trying to refloat the animal. Sometimes a channel needs to be dug so that it can be manoeuvred into deep water. In other cases, the animal is moved to another location where refloating is more likely to succeed. Once the orca is back in deeper water where it can float, the rescuers gently rock it to restore its balance.

In May 2010, Ruakaka residents Bob Slight and Ashley Osborne were sitting on a bench looking out to sea when they saw a huge dorsal fin in the water. The orca was chasing stingrays in shallow waters. It then surfed in on a wave and grounded on the beach. Once stranded, the animal started sending out whining distress signals. A group of onlookers headed into the surf and tried to right the animal.

A call was made to Ingrid who rushed to the scene. She recalled, 'When I got down here I knew straight away who he [the orca] was. I've known this guy since he was a kid. His mum and brother were swimming out there waiting for him. I know all of these whales ... they are like my whanau.' Because the tide was on its way out, the group immediately tried to refloat the orca, which Ingrid called Putita, pushing in a coordinated way each time a wave came into the shore. Putita also tried to help by attempting to wriggle forward, but he was stuck fast. The rescuers then managed to get a rescue mat under him and this made it easier to slide him slowly out into the waves. When he got into deeper water, 'Mum sped over to him and then they were all rolling and jumping about before heading off again.' There were tears of relief all around.⁵²

Ingrid is still the only scientist in New Zealand studying orca. Over the many years of following them around the country, and observing their behaviour, she has become very close to them and knows each animal individually. Her work with orca is all consuming, and she doesn't have time for a steady relationship or children. As she observes, 'These guys are friends to me, they are like my family ...'⁵³

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