



Two juvenile false killer whales off north-eastern New Zealand. Jochen Zaeschmar

False Killers

JOCHEN ZAESCHMAR

The false killer whale appears to form long-term relationships with another dolphin species.

It all started with a fish back in 2000. My first encounter with a large group of false killer whales and bottlenose dolphins climaxed when a false killer whale presented me with a large kingfish.

The other remarkable thing that struck me was the relationship between the whales and the dolphins. It appeared obvious that both species were very comfortable in each other's presence, with the two intermingling in such a way that it was hard to detect any segregation. The encounter sparked a keen interest, not only in these whales but also in their relationship with the dolphins.

A literature search quickly revealed that not much was known about this species anywhere, with information regarding New Zealand's waters even less forthcoming. What I did learn was that false killer whales are a little-known member of the dolphin family.

They get their somewhat unfortunate name from a semi-fossilised skull that was discovered in England in 1840. Based on similarities with the skull of the true killer whale, it was thought to be an extinct relative. A live stranding in Germany in 1862 revealed that the species was still in existence, but the name stuck.

False killer whales are more closely related to Risso's dolphins than killer whales, and they resemble pilot whales. They can be found in tropical and warm temperate seas worldwide and are believed to have one of the widest distributions of any cetacean species. They are extremely social and usually travel in groups of up to 100, consuming a diet of mostly fish and squid.

Mass strandings are a problem for them, and most of our knowledge is derived from such events, with very little known about them in their natural habitat. Even less information is avail-

able about possible relationships with other dolphins. It seemed that my study topic had just found me.

I soon learned that there was a very good reason for this lack of information: they are an extremely difficult species to find. They have a preference for deep oceanic waters, where they spread themselves pretty thinly. To complicate things further, groups may separate as far as 20 km while travelling or foraging.

The logistical challenges involved in trying to encounter false killer whales means that there are few places in the world where they are studied closely, with Hawai'i being one of the exceptions. The good news is that once you do find false killer whales they are very obliging study subjects that do not avoid boats, allowing for close observations without showing signs of disturbance.

With this in mind I spread the word about my new obsession in the hope of gathering more information about false killer whales. I contacted other scientists, whale watch operators, fishermen and anyone with a keen eye for marine wildlife. Data slowly started to accumulate as my own encounters increased and more people began to inform me of sightings or shared their data with me.

A general picture of occurrence and association patterns gradually started to emerge. All sightings in New Zealand's waters were during summer and autumn, and they were always in the company of bottlenose dolphins.

Thirteen years on, the study has now been published in the scientific journal *Marine Mammal Science*. The main reason this took so long is the time required to gather enough data to be able to say something meaningful. The final study is the result of a great collaborative effort and much support and encouragement from supervisors, friends and colleagues. So what did we find?

Although false killer whales are sighted rarely in New Zealand's coastal waters and only seem to occur between December and May, we kept seeing the same individuals over and over again. Furthermore, they were almost constantly in the company of bottlenose dolphins, many of which were also the same individuals regardless of year or location.

To find out about their movements and relationships with each other as well as with the dolphins, we identified individuals from photographs of unique markings on their dorsal fins. This part of the study, known as photo-identification, commenced in 2005. It requires excellent quality images. Thousands of fin photo-

graphs were matched to our slowly growing catalogue. To avoid errors, we only focused on fins that were unique enough to rule out confusion with other individuals.

We ended up with 61 distinctive individuals, around 85% of which have been resighted multiple times since 2005 along a 650-km stretch of coastline. All of them are linked in one social network, suggesting that they form part of the same population.

Furthermore, as time progressed we were finding fewer and fewer new individuals, which means that a small resident popu-



Inter-specific associations: false killer whales and a bottlenose dolphin (top) travelling together.

Mazdak Radjainia

lation may exist in New Zealand waters. The term “resident” lacks a clear definition, which is why whale researchers will often avoid it, referring to degrees of “site fidelity” instead. However, to the rest of the world, “resident” generally means that a species calls an area “home”, and in that sense false killer whales certainly show signs of residency in New Zealand's waters for at least 6 months of the year.

The strong seasonal aspect of the sightings posed some obvious questions. Why are they here? Where do they go? And do they still



False killer whales live in close social groups.

Mazdak Radjainia

associate with dolphins when they are not here?

We have found a plausible explanation for the first question. While it remains unknown whether false killer whales migrate, it has been suggested that they follow ocean currents in search of food. Indeed, the appearance of false killer whales between December and May coincides with the shoreward flooding of the East Auckland Current off north-eastern New Zealand (the same current as the East Australian Current), bringing with it warm water and known false killer whale prey species such as mahi-mahi and tuna. Therefore, food may be a factor.

I won't even attempt to speculate on the other two questions, except to say that they will be the focus of future research.

The discovery of a possible long-term relationship between false killer whales and oceanic bottlenose dolphins was without doubt the most intriguing finding. The two species were sighted together in more than 90% of encounters, with individuals of both species associating over years and hundreds of kilometres.

It was initially assumed that local populations of bottlenose dolphins were associating briefly with false killer whales as the whales entered coastal waters temporarily. However, the study revealed that the bottlenose dolphins seen with these whales form part of an offshore population.

This finding was based on the bite marks observed on many dolphins, which would have been inflicted by the cookie cutter shark. This small shark bites ice-cream scoop-sized chunks out of its victims, leaving scars that remain visible for many years. Cookie cutter sharks are found in deep oceanic waters, which

means that their prey must also frequent those areas at least some of the time.

As New Zealand's coastal bottlenose dolphins rarely exhibit such scars, we were confident that we were dealing with a different deep-water population, with many of its members spending a lot of their time in the company of false killer whales.

Associations between different whale and dolphin species, including false killer whales, have been reported before but so far their extent has not been investigated in any detail. We are not aware of any other study showing long-term associations between two groups of whale or dolphin species.

Having individuals of two species spend much (or possibly all) of their time together, including in different places, begs the obvious question: why? The short answer is that we don't know, but a number of plausible explanations exist.

As joint feeding was regularly observed, an increased likelihood of encountering scarcely distributed prey in the open ocean may play a role. Additionally, there may be a "safety in numbers" factor: the larger group size achieved by the two species joining would result in a higher likelihood of detecting a predator while decreasing the chance for each individual to get eaten. While bottlenose dolphins are known to get attacked by large sharks and killer whales, no predator of false killer whales had been identified until a lethal attack by killer whales occurred in the Bay of Islands in 2010, showing that predation is a real threat for false killer whales and bottlenose dolphins alike.

However, it is difficult to ascertain if the association is based



False killer whales showing their uniquely marked dorsal fins. Sarah Dwyer

on cooperation or simply on one species taking advantage of the other's superior prey or predator detection abilities.

Additionally, a particular factor may simply be a useful added benefit rather than the actual cause. As the two species appear to be constantly together, trying to determine possible drivers of their relationship quickly turns into a chicken-and-egg scenario. Are they together because they can find more food or is the joint feeding simply the result of them being together anyway? You can see the dilemma.

The two species share more similarities: the wavelengths of their vocalisations closely resemble each other, they have been involved in joint strandings, and they can even produce fertile hybrids – at least in captivity. Social factors may therefore form an important part of these associations.

It gets more intriguing. In contrast to our observations, false killer whales have been reported to harass and even kill other cetaceans, including bottlenose dolphins in other regions. It is therefore possible that the diet of some populations includes whales and dolphins while others prefer fish or squid.

Conversely, during a false killer whale attack on sperm whales in the Galapagos Islands, false killer whales were also in the company of bottlenose dolphins. This suggests that false killer whales that attack some whales or dolphins may still have peaceful relationships with others.

While it's tempting to jump to conclusions and look for a special link between the two species, we must concede that we simply do not have the answers at this stage. However, these find-

ings are certainly interesting, and we are excited to carry out more extensive behavioural research in the future. We know that false killer whales associate with other dolphin species in other regions, including Australia, and I hope that this study will spark interest in the investigation of their nature and extent elsewhere so that a few more pieces can be added to the puzzle.

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Last, but certainly not least, I hope that our research findings will provide the necessary information to review the current conservation status of false killer whales in New Zealand. They are currently listed as not threatened, although the Department of Conservation concedes that confidence in the classification is low due to insufficient data. The general lack of information from other parts of the world means that it's hard to find meaningful comparisons. However, Hawaiian research has shown that resident false killer whales there form part of a small and genetically unique population that is declining due to fishery interactions.

A similar scenario in New Zealand can therefore not be ruled out, and I hope that this research will improve our understanding of this fascinating species and its conservation requirements.

Jochen Zaeschmar is an MSc Student at Massey University's Coastal-Marine Research Group.