



Scientific serendipity

A tropical cyclone might not seem like ideal conditions for good fortune, but when an unusual specimen was found near Exmouth, a bit of serendipity and the enthusiasm of a group of people has led to a very exciting discovery.

by Rhianna King

Parks and Wildlife senior wildlife officer Doug Coughran is one of those people who lives and breathes his passion. For 36 years, he has dedicated his professional career, and much of his personal time, to whales. He leads the department's whale disentanglement team and has refined tools and techniques that are now used in other parts of the world. He has travelled to other states and countries, sharing his knowledge on whale behaviour and keeps up-to-date with as much new research as he can get his hands on. Some, including his wife, might call him obsessive – a notion that Doug does not deny.

So there wasn't really anything out of the ordinary when, one weekend in February this year, Doug was at home flicking through the pages of a book

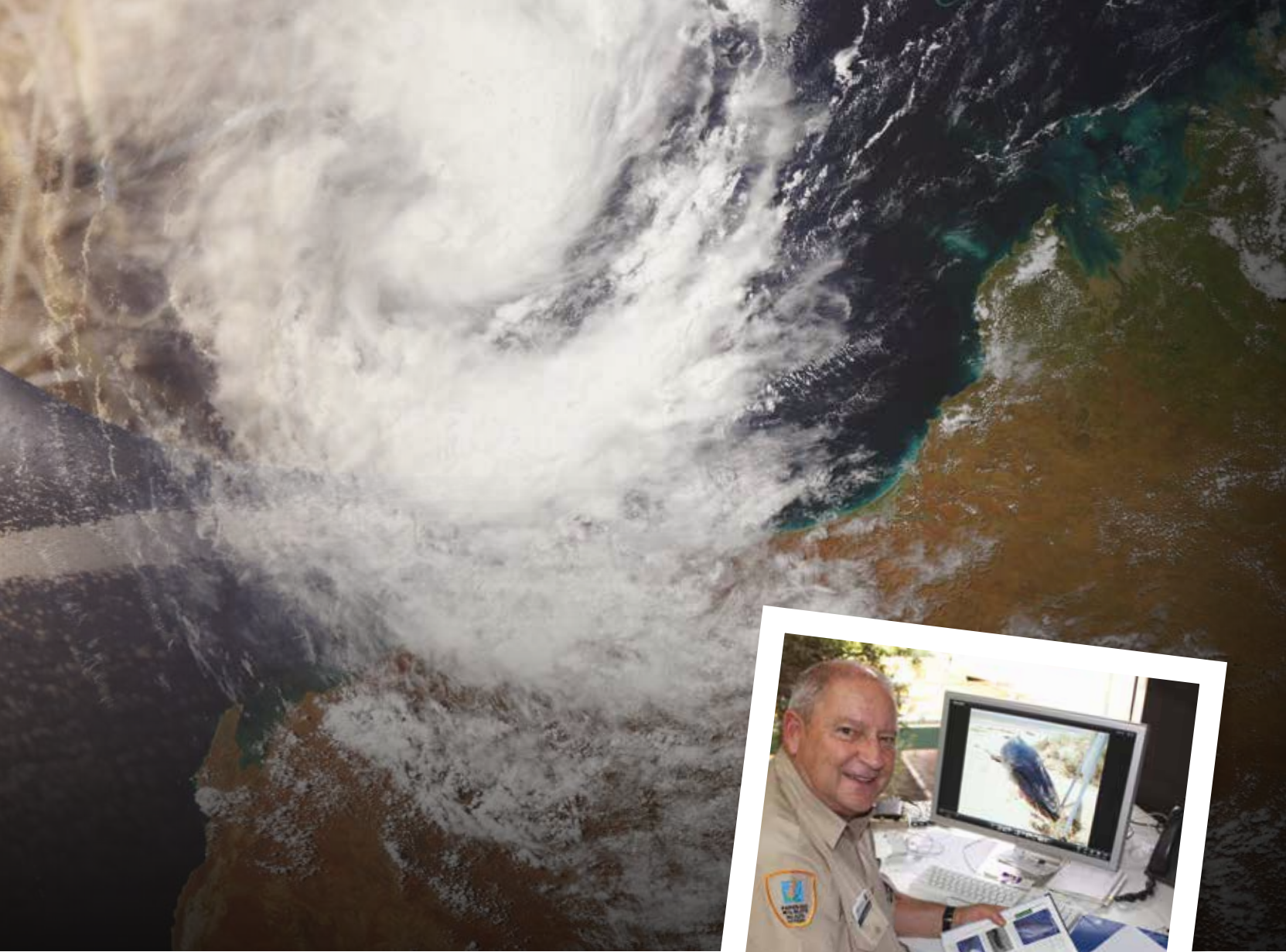
about whales that he'd picked up on his latest trip to the US and added to the collection of natural history library books that he started as a kid. That was until he reached a description of Omura's whale (*Balaenoptera omurai*) – a species that Doug had never heard of. The book included a description of its unique hooked fin but contained virtually no other information about the species, which only piqued Doug's interest further.

A NEWCOMER TO SCIENCE

Omura's whale was only described in 2003 after whale expert Dr Tadasu Yamada was called to a remote island off Japan in 1998 to help identify a whale that had collided with a fishing boat. The whale had experts perplexed since it carried characteristics of a number of species.

An analysis of its skeleton revealed it was new to science. It was named Omura's whale after Japanese cetologist Hideo Omura, who helped make the discovery.

Then, in a twist of fate a few years later, Dr Yamada was at the Adelaide Museum being shown through the museum's collection and was amazed to discover that a skull collected on York Peninsula in South Australia in 2000, incorrectly thought to have belonged to a Bryde's whale, was that of an Omura's whale, making it the first specimen of Omura's whale to be confirmed in Australia. With each new specimen comes the opportunity to learn more about the species. But there were still many unknowns: Where does it live? What are its breeding habits? What is its life expectancy?



AN UNLIKELY SETTING FOR SOME GOOD FORTUNE

Fast forward more than 10 years and Exmouth was hit by tropical cyclone Olwyn. In the lead up to the cyclone crossing the coast, meteorologists predicted it had the potential to cause widespread damage and destruction. Parks and Wildlife staff prepared for the worst and closed local parks while Exmouth residents stocked up on supplies and secured their homes and businesses. The approaching cyclone also attracted media attention with camera crews and journalists, including journalist Geof Parry from Channel 7, travelling to the area to report on the event.

Fortunately for the Exmouth residents, the cyclone, which crossed the



coast at 2am on the morning of 13 March, was nowhere near as destructive as was anticipated and turned out to be a bit of a non-event. Or so it was thought.

A LEAD AND A HUNCH

There to cover the cyclone, Geof and his crew went in search of storm damage. Not finding any of significance, they

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Above The distinctive hook-shaped fin of the whale that washed up in Exmouth piqued Doug's suspicions it might be an Omura's whale.

Photo – Lyn Irvine

Background Tropical cyclone Olwyn on 12 March 2015 as it neared the coast of Western Australia.

Photo – NASA's MODIS Rapid Response Team

Inset Doug comparing the photo sent to him with one shown in his book.

Photo – Rhianna King/Parks and Wildlife



Above The photo that Channel 7's Geof Parry sent into Parks and Wildlife for identification.
Photo – Geof Parry/Channel 7

Above right A local team carried out a number of observations and took samples.
Photo – Lyn Irvine

“... but when the image loaded on his computer and the whale’s hooked fin came into view, he suspected this might be one out of the ordinary. Could this be the same rare species he had read about just weeks before?”

instead followed a lead about a whale that had washed up on a beach. As part of his fact-checking process, Geof sent a photo of the whale to Parks and Wildlife’s media liaison officer Mitzi Vance in Perth who tracked Doug down on a day off to get the species identified. Doug routinely receives requests for identification from all round the world, but when the image loaded on his computer and the whale’s hooked fin came into view, he suspected this might be one out of the ordinary. Could this be the same rare species he had read about just weeks before? Back at home, Doug rechecked his book, which did nothing to allay his suspicions, and he spent a sleepless night waiting until he could contact his Parks and Wildlife colleagues at the Exmouth District office to enlist their help.

In the morning, Doug phoned Parks and Wildlife’s Exmouth District marine program coordinator Peter Barnes and shared his suspicions. Without hesitation, and understanding that time was of the essence to ensure the sample was as fresh as possible, Peter set out with marine

parks coordinator Heather Barnes, whale shark conservation coordinator Dani Rob, local vet Dr Megan Gall, and Institute for Marine and Antarctic Studies research scientist from the University of Tasmania Lyn Irvine.

An initial assessment of the 5.68m whale suggested that it had most probably died within the past 24 hours. This insight was significant because it indicated the whale had been swimming in the area and had presumably been alive at the time it stranded or had died very close to shore, meaning it had not just been washed ashore by the cyclone. The team took a sample of the whale’s skin and blubber, conducted an internal autopsy, took a number of photos and made physical observations. They assessed it to be a juvenile to young adult (depending on which species it turned out to be) and determined that it did not appear to have any obvious injury or illness.

Peter brought the special DNA cargo down to Perth where Parks and Wildlife research scientist Dr Kym Ottewell got to work to DNA profile the animal

and compare the results to records on GenBank – an international database. Being able to carry out DNA profiling ‘in-house’ using Parks and Wildlife’s state-of-the-art equipment and world-class expertise resulted in quick results and avoided having to send the samples to specialists overseas or outside the department, which could have taken months. Kym ran the tests twice and the results were conclusive. This was an Omura’s whale.

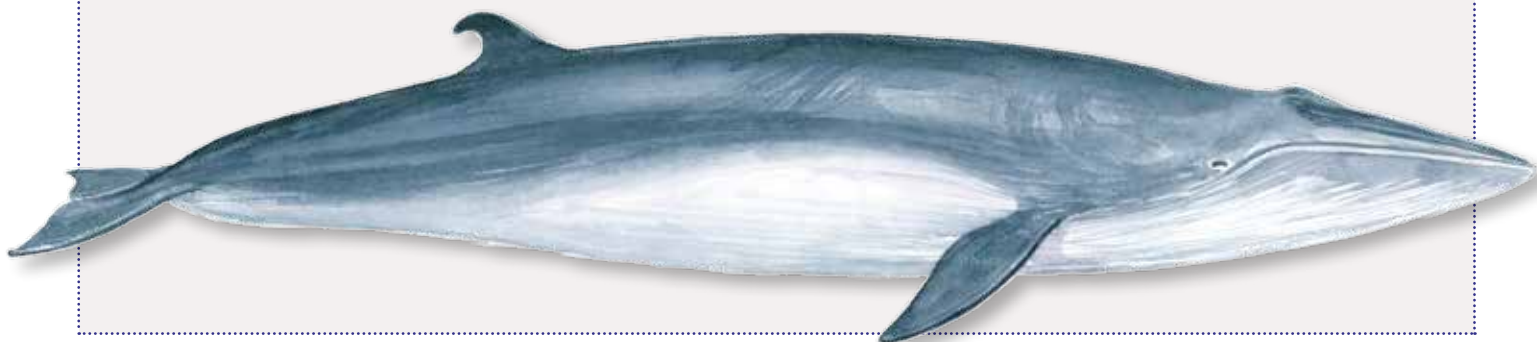
EXCITING RESULTS

This find extends the known distribution of Omura’s whale and is only the second record in Australia. That it was a juvenile suggests there are probably others in our waters, and has made Doug suspicious that the whale in the Adelaide Museum may not be the only case of mistaken identity between Bryde’s and Omura’s whales.

But this whale tale is not over. The specimen has been buried so it can decompose and its skeleton can be recovered for future studies, which will

Omura's whale (Balaenoptera omurai)

Very little is known about the distribution, breeding habits and diet of the Omura's whale. From the three samples collected, Omura's whales are known to have a single median ridge along the top of the rostrum. It is similar in appearance to the fin whale and Bryde's whale but has a strongly hooked dorsal fin. There is sufficient evidence from molecular genetics to confirm that it is a valid species, different from Bryde's whale. It is an early offshoot of the rorqual whales (those whales with throat pleats of the family Balaenopteridae) and is currently thought to be more closely related to the blue whale. They are believed to grow to 11.5m and have several distinct morphometric features, especially in their skull characteristics. The Exmouth specimen will contribute greatly to much-needed information to better understand this newly discovered species of whale.



offer more information about this rare species. The finding has been written up as a scientific paper and submitted to the peer-reviewed *Aquatic Mammals* journal so the international community can learn from the discovery. No doubt it will also remain a highlight in the careers of those involved in finding, sampling and identifying it.

This case highlights the role that everyone can play in science; had Geof Parry not sent in the photo, this whale may have been buried without anyone ever knowing how special it was. Whale researchers and the community at large are encouraged to be on the lookout for this elusive species, which can be identified by its very hooked dorsal fin. Nowadays, when many people carry a camera phone with them wherever they go, everyone has the power to contribute meaningful information to science. Who



knows, a photo shot and shared, might provide clues about another rare species or even help identify another animal new to science.

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Top Omura's whale.

Illustration – Gooitzen van der Meer/Parks and Wildlife

Above left Channel 7's Geof Parry reporting on the discovery.

Photo – Channel 7

Above Kym Ottewell carrying out DNA sampling on a portion of blubber taken from the whale.

Photo – Rhianna King/Parks and Wildlife