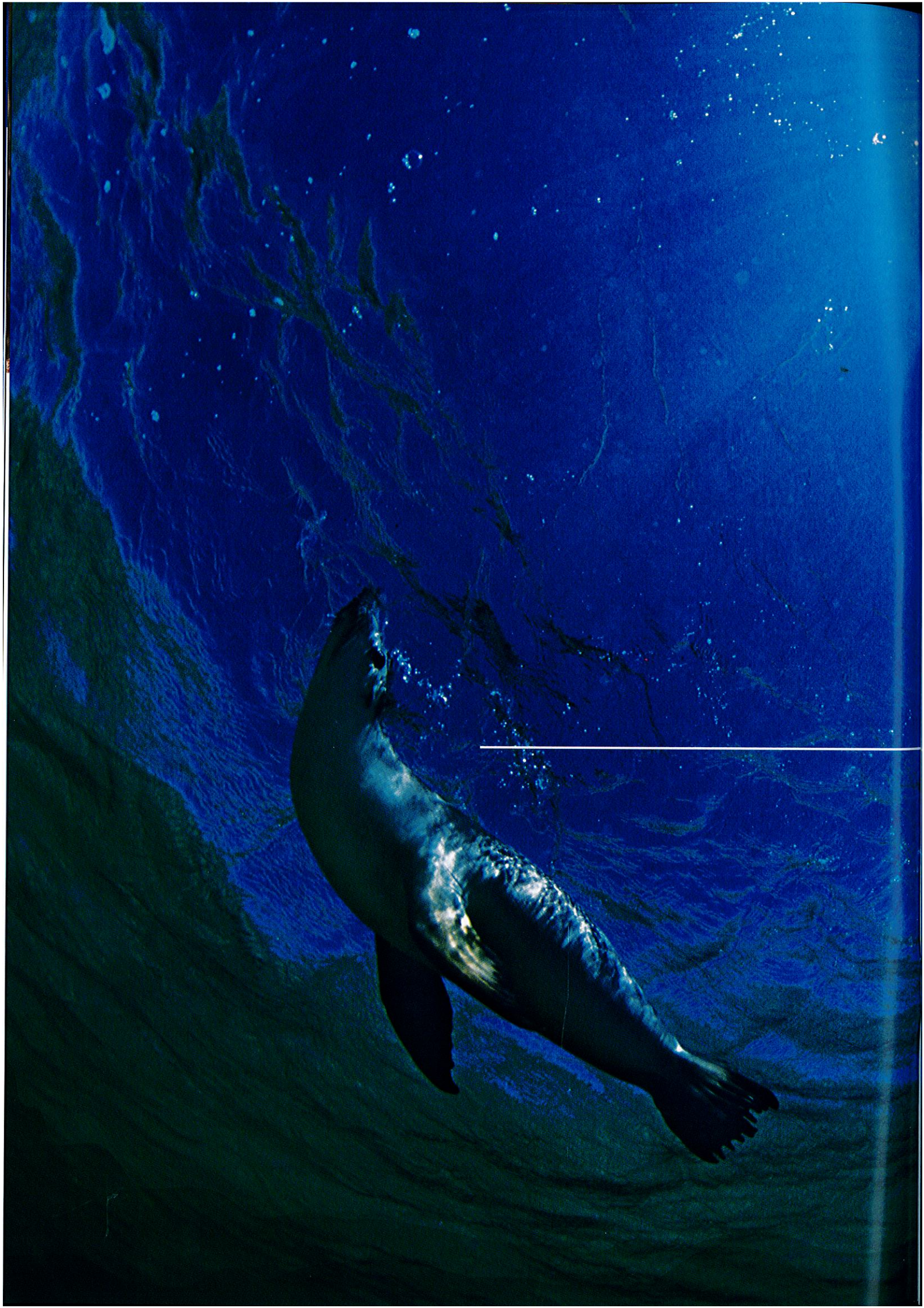
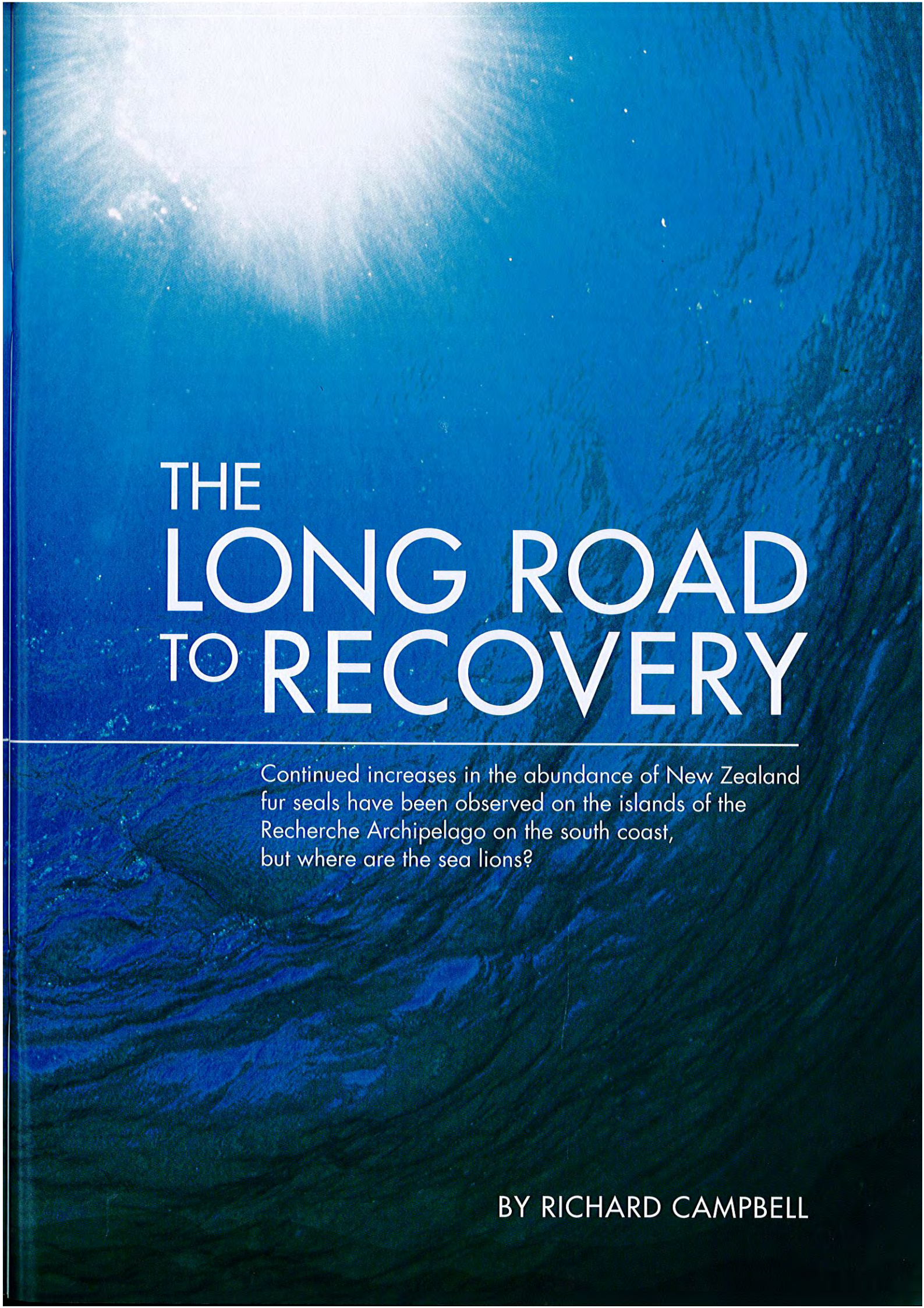




THE LONG ROAD TO RECOVERY

Continued increases in the abundance of New Zealand fur seals have been observed on the islands of the Recherche Archipelago on the south coast, but where are the sea lions?

BY RICHARD CAMPBELL

As we walked into the small, dank cave on Middle Island in the Recherche Archipelago, the roar of the Southern Ocean swell as it landed on the granite shoreline faded and we crowded into the space of one of 'Black Jack' Anderson's hideouts. Black Jack was an infamous African-American sealer and pirate who ruled the south coast of Western Australia in the early 1800s until his demise at the end of a fellow crewman's sword. How many seals had come to the same grisly end we can't be sure, but a recent survey of New Zealand fur seals has shown that the species has made a long and nearly complete recovery from those days of the sealing era. There are two resident pinniped (seal) species in WA waters—the New Zealand fur seal (*Arctocephalus forsteri*) and the Australian sea lion (*Neophoca cinerea*)—and their respective stories of recovery are still playing out across the windswept landscape of the south coast of WA.

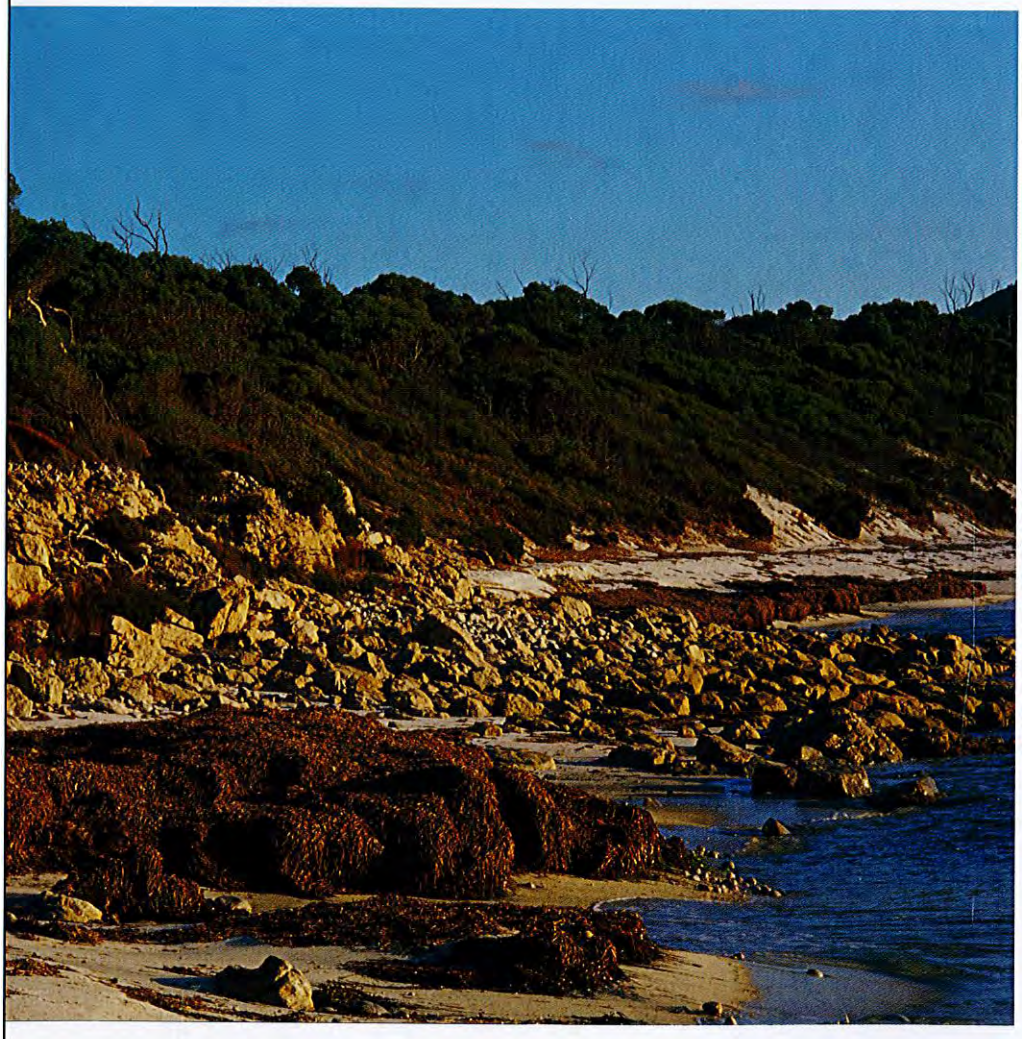
Following in the footsteps

As part of the Western Australian Marine Monitoring Program (WAMMP), a team of Department of Environment and Conservation (DEC) marine scientists, accompanied by a terrestrial survey team, made a complete census and survey of the islands of the Recherche Archipelago and many of the islands from Esperance to Augusta. The trip followed in the wake of the historical voyages of great explorers and naturalists such as Baudin and Péron in the early 1800s, who named many of the features of this part of the state, as well as more recent surveys such as that done by the Australian Geographical Society. The society's survey report, *The Archipelago of the Recherche*, was an invaluable guide and a fascinating insight into the changes that have occurred over time even in this relatively remote landscape. The contemporary marine survey group was also retracing the more recent steps of Nick Gales and his team (see 'A tale of two seals', *LANDSCOPE*, Summer 1999–2000) in conducting the roughly 10-yearly count of New Zealand fur seal pups at the 18 breeding colonies identified across the south coast. At the same time, during this 2010-11 count, the terrestrial survey team examined the fauna and flora of the spectacular islands of the Recherche, many of which were being surveyed for the first time.

Pupping among the rocks

The marine survey team plotted a course from Esperance out to the eastern group of the island chain to cover all the breeding colonies that had been visited in the previous fur seal surveys of 1989 and 1999. Surveying populations of seals requires all pups born in a single pupping season to be counted. To this end, members of the research team landed on as many of the rocky shores as possible and proceeded to stick their heads in and under as many rocks, and into as many nooks and crannies, as they could find to count the young pups. The breeding and pupping season for New Zealand fur seals lasts for about six weeks—from mid-December to the end of January every year—with the pups remaining on land while their mothers leave the colony to forage at sea for a day or two at a time.

The most recent survey in 1999 had shown that the population was undergoing a fairly rapid expansion—growing at an impressive rate of 10 per



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Australian sea lion.
Photo – Alex Steffe/Lochman Transparencies

Left Recherche Archipelago.
Photo – Jiri Lochman

Above New Zealand fur seal.
Photo – Jiri Lochman

cent each year, meaning it doubles in size every seven years. The researchers wondered whether they would still see that pattern of increase this time. If so, there might be nearly 30,000 fur seals across the south coast and they would be counting some 7,000 pups. As with most expeditions, expectations did not match reality. While the numbers of seals had increased, it was nowhere near at the same rate as had previously occurred. On this WAMMP survey, more than 3,500 pups were counted and it was estimated that there were now about 17,500 New Zealand fur seals in WA. This suggests that the population has been increasing by only about one per cent each year over the past decade.

However, the group noticed some interesting patterns in the changes in abundance of pup numbers across the range. Clusters of colonies showed a large reduction in pup numbers—two groups between Bremer Bay and Esperance showed up to a 50 per cent decline for example—while others had remained stable or even nearly doubled in size compared to the last count more than a decade ago.

Expanding territories

Interestingly, two new breeding colonies of New Zealand fur seals were found, not in the heart of their range in the Recherche Archipelago, but further west on Chatham Island and nearby Stanley Island, both near Walpole. While the breeding activity had been noticed at Chatham Island previously, this was the first time an accurate count had been conducted at the end of the breeding season. DEC marine park coordinator Shannon Armstrong and DEC rangers from Walpole—the first to survey the island—were amazed to see such a healthy and large population with about 150 pups. Chatham Island now ranks as the seventh largest breeding colony of fur seals in WA, and serves as a reminder that it can take a long time for populations to recover from the effects of historical hunting.

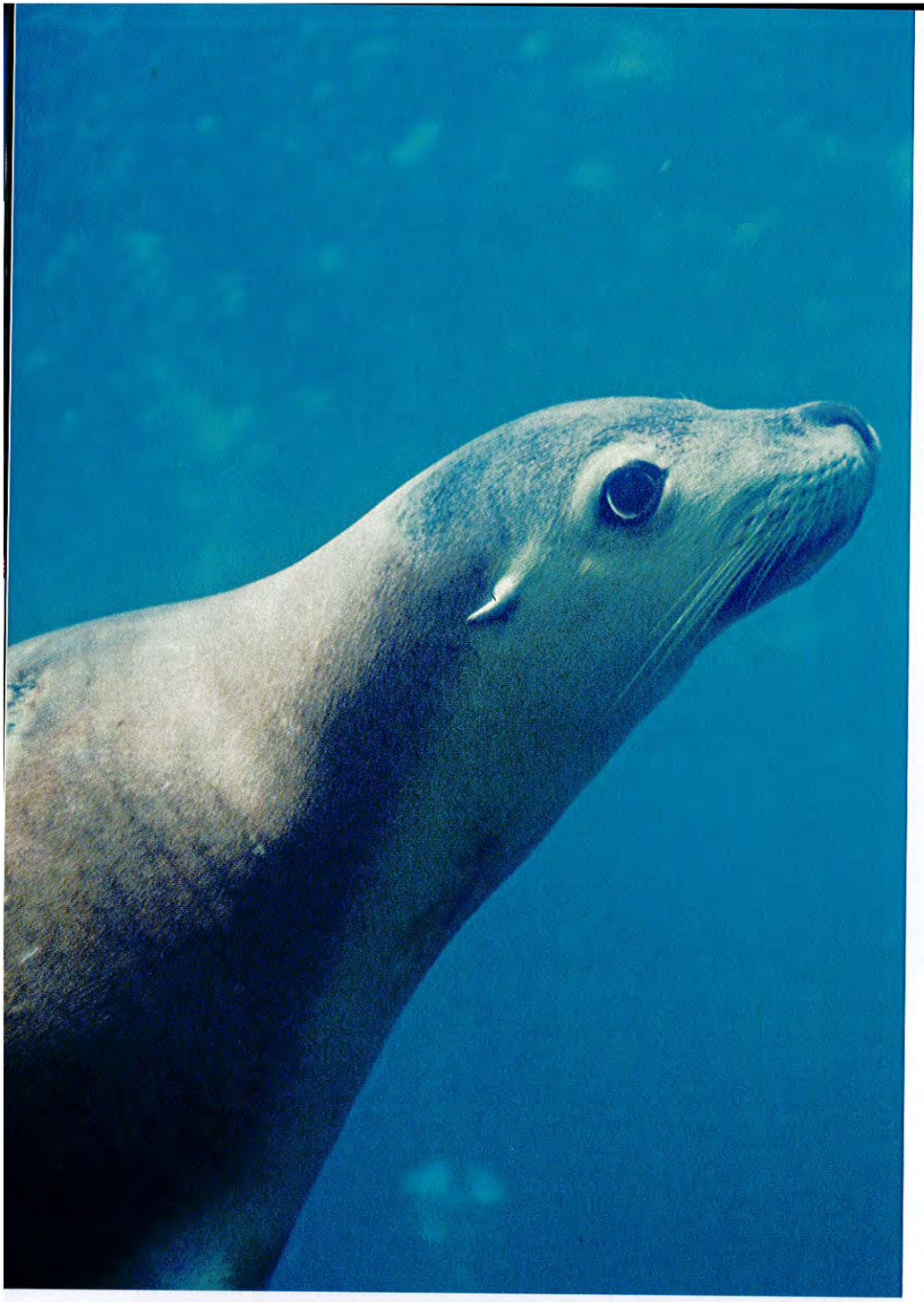
It was difficult to know what was driving the patterns in the changing abundance of New Zealand fur seals across the range. One possible explanation is that the species may be reaching a plateau in numbers due to the amount of food available in the area. This explains why new breeding colonies weren't seen in the centre of the seals' range, but were found further west. The establishment over the past five to six years of a small breeding site near Cape Naturaliste and a new haul-out site for the species at Cathedral Rocks on Rottnest Island supports this theory. No record of this species coming so far north could be found in historical accounts and these sites suggest that the species is expanding from its previous range looking for food.

While the population may still be increasing, the fur seal is still at relatively low densities within the breeding colonies here in WA, about 10 times lower than in South Australia and New Zealand. From this it is possible to assume that the availability of suitable breeding and pupping habitat on the islands is not a limiting factor, and the low mortality rates of newborn pups from this and previous surveys (one to 1.5 per cent) supports this as well.

Looking for sea lions

The story of the New Zealand fur seal still contrasts markedly with that of the Australian sea lion. The sea lion was added to the threatened species list, ranked as vulnerable, in 2005 under the federal *Environment Protection and Biodiversity Conservation Act 1999* due to concerns over its lack of recovery from the commercial sealing era. This species displays a completely different pattern of reproductive biology to the New Zealand fur seal. Unusually, Australian sea lions only breed every 17.5 months and the breeding season is at a different time for nearly every breeding colony across the species' range. This system is not replicated in any other species of seal throughout the world and is thought to be a response to living in a marine system with unpredictable, low levels of productivity. One of the consequences of this is that female sea lions always return to their own birth site to breed and do not move out into other colonies. This means that small colonies are very slow to recover from any population decline.

Furthermore, once a colony has become extinct it is unlikely to be recolonised, as observed in the Bass Strait and as most likely happened at Carnac and Rottnest islands near Perth, where no breeding occurs today. During the recent survey, the team was fortunate enough to make stops at some of the sea lion colonies known to be breeding at that time. Using the same technique as when counting the newborn pups, the researchers were able to confirm that sea lion numbers were still very low throughout the south coast, a concerning trend which needs further monitoring.



Top left Australian sea lion.
Photo – Jiri Lochman

Left DEC wildlife officer Jon Pridham and senior operations officer (marine) John Edwards marking and counting New Zealand fur seal pups on Salisbury Island, the largest fur seal colony in WA.
Photo – Richard Campbell/DEC

Above left Researchers conducting a pup count on Cooper Island in the Recherche Archipelago. A group of fur seal pups can be seen in the background.
Photo – Sarah Comer/DEC

Above Australian sea lion pup.

Below left A female Australian sea lion with its pup.
Photos – Jiri Lochman

Pleasing discoveries

On a positive note, the team did manage to find a new breeding colony for the sea lion at Draper Island in the Recherche Archipelago, albeit a small colony with only a handful of pups. This is the first time in a decade that a new breeding colony has been found. The results from this survey showed that it is still possible for new discoveries to be made throughout the south coast of WA. The terrestrial survey team has also been describing new species of plants and animals as part of its research during the past five years. See the next edition of *LANDSCOPE* to find out about discoveries made as part of the terrestrial survey of the Recherche Archipelago.

The one unknown that had to be considered in this survey was the effect of an exceptional La Niña event, where warm water from the Leeuwin Current travelled further south than is usually the case. Instead of seasonally normal water temperatures of below 20 degrees Celsius, we were basking in water temperatures three to four degrees warmer than expected. What isn't known is how this change in conditions may have affected the breeding performance of the New Zealand fur seal for the 2010 season and its influence down the track as the effects of this anomaly filter through to the prey species of fur seals and the many trophic levels of this ecosystem. As such, it isn't known if this was a good year or a bad year in fur seal performance. Subsequent assessments will need to start looking at the year-to-year fluctuations in pup numbers at a subset of breeding colonies to determine whether the recovery of this species is indeed nearing its completion, or whether the species will continue to expand its range and grow in numbers.

Richard Campbell is a research scientist jointly employed by the Marine Science Program at the Department of Environment and Conservation (DEC) and Edith Cowan University at the Centre for Marine Ecosystem Research. He can be contacted on (08) 9219 9751 or by email (richard.campbell@dec.wa.gov.au).

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