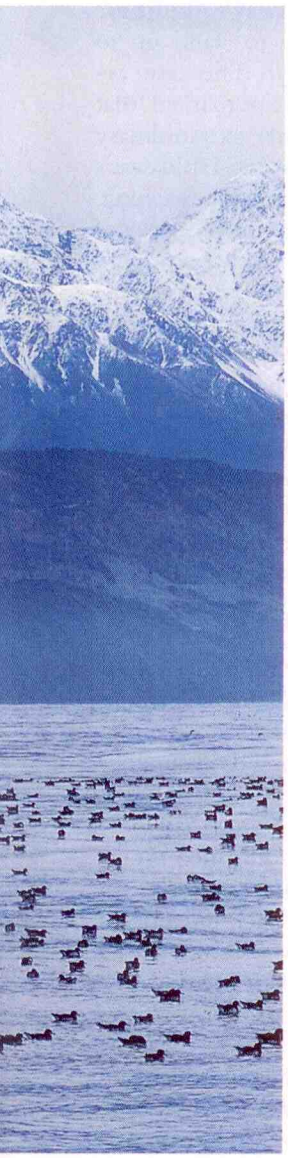
# Date with Extinction

*For a thousand years before people settled in New Zealand, a small alien predator may have been undermining the islands' seabird populations.*

By Laura Sessions

*Hutton's shearwater, a species of petrel, is still abundant near the shores of New Zealand's South Island. Here the birds rest on the sea within sight of their nesting area, about 5,000 feet up in the Seaward Kaikoura Range.*

Our yellow Zodiac bobbed across the choppy sea and made its way slowly through the clouds of seabirds that wheeled and soared around us. Albatross, cape pigeons, diving petrels, mollymawks, mottled petrels, and sooty shearwaters all took their turns skimming our bow wave for fish. In the distance my boat mates and I could see the final stop on our sub-Antarctic tour: the Snares Islands, about 130 miles south of New Zealand's South Island. The chorus of screeching birds drowned out our rumbling boat motor, and even from several miles away we could smell the acrid white guano that coats much of the Snares's rocky coasts. During the summer breeding season the Snares, whose entire area totals not much more than one and a quarter square miles, are home to more than 6 million seabirds—as many as nest along the coasts of Great Britain and Ireland combined.



Today in the New Zealand archipelago, such dense seabird colonies persist only on small offshore islands, but at one time much of the coastline of the North and South Islands (by far New Zealand's two largest islands, commonly called the mainland) would have been equally pungent and raucous. New Zealand once supported one of the most diverse seabird faunas in the world; the country was particularly rich in species of petrels. Nowadays those populations have crashed, and many species have been extirpated on the mainland. One can only imagine what it must have been like for ancient Polynesian seafarers reaching the shores of uninhabited New Zealand. The archipelago, no doubt a welcome sight after months of arduous ocean sailing in a double-hulled canoe, would also have presented a far different scene from that of most of New Zealand today.

But did these colonizers encounter a truly pristine environment? It would be easy to "round up the usual suspects" and blame the loss of so many species from the mainland on the encroachments of civilization. But in reality, the early Polynesian settlers were not responsible for the destruction of many of the seabird populations. Even before people settled this southern land, other visitors may have already irrevocably altered the New Zealand environment.

A Hutton's shearwater skims the ocean surface, a habit that gives shearwaters their name.

Those earlier arrivals on the New Zealand mainland were Pacific rats *(Rattus exulans),* or *kiore,* as they are called in the Maori language. It has been known for almost a decade that these small stowaways helped drive some of the native bird species from the mainland, or, in some cases, to outright extinction. According to the standard account of the invasion, the rats arrived in New Zealand between 800 and 1,000 years ago, in the canoes of the first Polynesian settlers. But in 1996, Richard Holdaway, an independent extinction biologist, presented evidence that the rodents first made landfall perhaps a thousand years earlier. That date has called into question the entire sequence of prehistoric events that shaped New Zealand—and, not surprisingly, has fueled much debate in New Zealand about the strength and validity of Holdaway's evidence.

But even more, Holdaway has hypothesized that a rat-generated crash in island bird populations could have led to "a cascade of damage" and even to a change in the nearshore oceanic food web: seabird colonies generate a prodigious quantity of guano, which can form a kind of organic bridge between sea and shore, enriching soil and promoting plant growth. If the seabird populations crashed, Holdaway argues, so did this bridge. The islands would have lost a major source of nutrients. If Holdaway is right, the rats had accidentally landed on a choke point of the ecosystem, causing a ripple effect that went far beyond the destruction of seabirds.

Thanks to their remoteness—New Zealand lies 1,200 miles east of its nearest neighbor, Australia—the North and South Islands faced the onslaught of invaders considerably later than did many other islands around the globe. But just as they have on Hawaii and Guam, alien species that were suddenly introduced onto the islands have had devastating effects. New Zealand birds were particularly at risk, because they had evolved for millennia in the absence of mammalian predators (indeed, the only land mammals of prehistoric New Zealand were three species of ground-feeding bats). Many of the native birds were flightless and seminocturnal, mak-