Lord Howe under the microscope

New friends and discoveries abounded on the first Australian Geographic Society Lord Howe Island scientific expedition. Find out how you can join us again this year.

STORY AND IMAGES BY **LUKE HANSON**

CSIRO entomologist Bryan 'The Fly Guy' Lessard catches insects on the last rope on the climb up Mt Lidgbird to Goat House Cave.

Guests enjoy a sunset drink at the Pinetrees Lodge boatshed after a long day of walking and snorkelling. Pinetrees guests have been relaxing at this spot for more than a century.

◄ **Bryan Lessard** inspects his new species of soldier fly. He will also get to name it: his previous discovery was named *Plinthina beyonceae* after the pop star Beyoncé.

▲ **Citizen scientists** tread warily over a rocky route to the Herring Pools on the remote north coast of Lord Howe Island. Timing is critical because waves wash through this ledge at high tide.

Some of the expedition's citizen scientists take a break to watch red-tailed tropicbirds ride the thermals around Mt Lidgbird.

THE INAUGURAL Australian Geographic Society Expedition to Lord Howe set out last year to explore the island's insect diversity. Run in partnership with Pinetrees Lodge and the Lord Howe Island Board (LHIB), it was a five-day experience hosted by Society chair Jo Runciman and led by entomologists Andreas Zwick and Bryan 'The Fly Guy' Lessard, both from CSIRO's Australian National Insect Collection (ANIC) in Canberra. They were joined by 20 AUSTRALIAN GEOGRAPHIC readers turned citizen scientists, all keen to help identify, describe and classify insects.

Andreas runs the ANIC's molecular laboratory and much of his research involves mapping and sequencing insect genomes to better understand evolutionary processes. Every insect that passes his molecular scrutiny stands to contribute something to humanity: perhaps a cure for cancer or the source of a pest-resistant crop. Regardless of the eventual outcomes of *this* field trip, it gave both scientists the opportunity to get out of the lab and hang with an enthusiastic bunch of helpers in a setting that's as close to paradise as you'll find anywhere on earth.

Our volunteers were a mixed bunch from all over Australia. There was a sculptor, army captain, pharmacist, writer, statistician, publisher, retired zoologist, ecologist and several high-school science teachers. Two were champions in the competitive orienteering sport of rogaining, which came in particularly handy in remote parts of the island.

Our first day involved a 5km reconnaissance walk from Soldiers Creek to Mutton Bird Point through distinct forest types. The scientists were keen to find good locations for day and night-time trapping. We were met en route by ex-ranger and ecologist Dean Hiscox, who explained Lord Howe's volcanic origins and six-million-year geological history. Dean led the famed 2001 climb of Balls Pyramid, 24km south-east of the island (see AG 88), which rediscovered the Lord Howe Island phasmid (*Dryococelus australis*), so his presence on the team was invaluable. After lunch, we took the opportunity to explore exposed rock pools and coral reefs at Middle Beach and were thrilled to see sooty tern chicks just hours after hatching.

In the evening, we helped Andreas and his volunteer assistant from CSIRO, Glenn Cocking, set up moth-trapping stations in Stevens Reserve and later collected moth species under bright UV lights. We caught more than 50 different species, some multi-coloured, some translucent and others looking as if they'd been draped in gold leaf. ►

After a 200m near-vertical climb from Old Settlement Beach, guests catch insects in yet another forest type on the ridge near Kims Lookout.

ON DAY TWO the group split, with some guests working in the lab with Andreas to classify, sort and preserve newly collected specimens to be sent to Canberra. Others, brandishing insect nets, climbed the 777m Mt Lidgbird to Goat House Cave. Along the way, 'Fly Guy' Bryan established a series of tent-like Malaise traps to capture passing insects and, after a short detour due to a wrong turn, he announced he'd located a previously undescribed soldier fly species he'd been hoping to find. He couldn't keep the grin off his face for the rest of the day!

In the afternoon, we ventured through an ancient Jurassic Park-like forest of banyan trees and kentia palms to Little Island – beneath Mt Lidgbird's dramatic cliffs – and explored coastal boulders and the intertidal zone.

The next day, Wednesday, brought clear skies and a light sea breeze, so we boarded a local glass-bottom boat and headed to North Bay for a seabird survey with Darcie Bellanto, an LHIB ranger. The sooty tern colony on North Bay's beach has been growing in recent years, and, without adequate funds or field staff to conduct a full survey, there was only a rough estimate of the number of breeding pairs. The board designed a survey for our citizen scientists and we counted an average of 90 nests in each 45m survey plot: a lot of birds!

Later we snorkelled on the wreck of the MV *Favourite* and walked around the rocks from the Old Gulch to the Herring Pools – a series of coral-lined rock pools nestled among red basalt dykes. Some of us began swimming, jumping, slipping and having fun the way kids usually do splashing around in rock pools. Others stood, seemingly mesmerised, with binoculars trained on the thousands of sooty terns, red-tailed tropicbirds and brown noddies on the Malabar cliffs high above. The final activity on this exhausting day was a cruise with Lord Howe's turtle whisperer, Pete Busteed, to find green and hawksbill turtles in the North Passage. Pete found eight large turtles, but with all the excitement and twists and turns of the boat, it could have been the same turtle eight times, although we were assured that probably six of them were previously unknown.

▲ **Setting up** a Malaise trap in the kentia palm forest below Smoking Tree Ridge. Expeditioners returned three days later to gather trapped insects that had been preserved in ethanol.

▲ **Inspecting our** moth collection after five days of sampling. This collection is available for viewing at CSIRO's Australian National Insect Collection in Canberra.

They were some of the biggest I've ever seen in the Lord Howe Lagoon, and triggered many comments from our group along the lines of "wow" and "best day ever!"

On Thursday, some people were needed for lab work back at Pinetrees Lodge while a smaller group – assisted by fit young hotel staff – carried generators, fuel, lights, traps, camping equipment and provisions over to Rocky Run for Andreas and Glenn to continue their moth survey in the melaleuca forest.

AFTER DAYS of insect sampling, our final contribution to Lord Howe conservation was in the lagoon with Dean Hiscox. During the past decade, Dean has been surveying Lord Howe's population of McCulloch's clownfish as an indicator of reef health. Most of our guests donned wetsuits, masks, snorkels and flippers and counted these clownfish across several reefs. It's not as easy as it might seem because they all look the same and swim around a lot. Our results reflected the tricky conditions, with counts on some bommies ranging from eight to 45. Luckily, the final figure for each reef was consistent with previous surveys: good news indeed because it indicates the reef here continues to be one of the most pristine in the world. Being 600km from the Australian mainland, and outside of the vast coral bleaching zone in the Coral Sea, certainly helps.

Our last day was all about consolidation. Some guests went with Bryan to collect his Malaise traps, others stayed with Andreas and his microscope, while still others sneaked away for some walking, kayaking and golf. Late in the day, we met on the Pinetrees verandah and were stunned to see the size and beauty of the moth collection we had accumulated from five days of sampling: Andreas estimated we had about 150 species. Bryan confirmed he'd found two new species of soldier fly – the second one was located in Pinetrees' organic garden. Imagine his smile!

Thanks to Hank Bower and Penny Holloway at the Lord Howe Island Board for designing and approving the research proposal, and for understanding the importance of citizen science. AG