

Summer 2017



Point Blue Quarterly

Conservation science for a healthy planet.

The Last Ocean

Our Scientific Journey
in Antarctica



Bittersweet Victory



"The last word in ignorance is the man who says of an animal or plant, "What good is it?" If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering."

– ALDO LEOPOLD

These words have stuck in my head ever since I first read them. To my mind, they form the bedrock of conservation science.

And it was in this context, before I ever went there, that Antarctica represented perfection to me—both wondrous to behold and extremely interesting to study. Wondrous for the crystalline

expanses, rugged terrain, teeming wildlife, the highly improbable penguins. Interesting because, unaltered, it held the promise of higher ecological "truth."

Often called the "last ocean," Antarctica's Ross Sea has beckoned scientists for hundreds of years with the possibility of studying nature as it existed

before humans interfered. My time there dates back to "only" 1996, thanks to an invitation from former Point Blue scientist David Ainley, who launched Point Blue's scientific journey in Antarctica in 1972.

At first our goal was to leverage Antarctica's unspoiled status to address fundamental ecological questions:



Chief Science Officer Grant Ballard leads Point Blue's study of Adélie Penguins and other marine life in the Ross Sea.

Photo: Point Blue/Annie Schmidt.

accelerated. Today approximately 3,000 metric tons of Antarctic toothfish are removed from the Ross Sea each year. Dubbed "white gold" by the commercial fishing industry, toothfish commands a high price from restaurants that dubiously market it as "Chilean Sea Bass."

Our research underscored the need to understand and keep in check the impact fishing and other human activity has on Adélie Penguin populations and the greater Antarctic ecosystem. Point Blue acted by collaborating with more than 50 researchers from six countries to identify the most critical marine regions to protect. Along with our partners, we spent the next seven years helping to establish the scientific case for creating a Marine Protected Area. Finally, on October 27, 2016, the Commission for the Conservation of Antarctic Marine Living Resources announced the establishment of the Ross Sea MPA—the world's largest!

But the triumph of the MPA designation was bittersweet. Commercial fishing will still be allowed within a designated zone, and a "sunset" clause calls for limitations to be reviewed again in 35 years. Much work remains to be done to understand how removal of the slow-growing toothfish affects the Ross Sea ecosystem.

The good news is that the Ross Sea and Antarctica will remain relatively protected from human-based impacts during this critical time of rapid global change. And all of us at Point Blue see that as a milestone for conservation. It sends the message to the rest of the world that our oceans are worth protecting! 🌍

Grant Ballard, PhD
Chief Science Officer

Why do animal populations live where they do? Why are some populations large and others small? Why are some populations growing while others disappear? In most of the world, the answers to these questions usually begin with *Because humans....* Not so in Antarctica.

Or so it seemed. In collaboration with colleagues from New Zealand, David had observed rapid expansion of penguin populations on Ross Island in the 1980s and wondered what might be causing it. Sea ice, which is the primary habitat of Adélie Penguins, had been expanding in the region, in stark contrast with trends elsewhere. Perhaps the penguin

populations were growing in accord? And if so, would they be at risk once climate change started diminishing sea ice in this last stronghold?

When we probed further, we realized that we could not remove the *Because humans...* possibility, even in Antarctica. For example, during the 1970s and 80s, many hundreds of minke whales were hunted each year in the penguins' wintering area. Minke whales eat the same things that the penguins eat, so fewer whales means more food is available for the penguins.

While whaling has slowed, fishing for another penguin competitor has



Cold Teeth

An Antarctic Internship

Cape Crozier, Antarctica: home of several hundred thousand Adélie Penguins and—for a few short months—a handful of researchers. As an aspiring ecologist with a love for remote natural spaces, I was thrilled to join the Point Blue penguin team as an intern for the 2016 field season. A helicopter dropped us off at camp, nestled between a mountain ridgeline and a snowfield extending to the sea, where we set up our sleeping tents and stored food and science equipment in a small hut. Even on my first day, I already felt at home.

I dove into working and living penguin ecology with my head and my heart.

Where else in the world could I learn and practice my penguin bill-measuring technique, spend hours poring over Adélie research literature penned by my colleagues, and live simply and fully immersed in field research? To say it was an incredible experience would be an understatement!

Each day's activities depended on the constantly changing weather, the logistical needs associated with life at a remote field camp, and our progress in our research tasks. From systematically searching the colony for banded birds and marking their nests for continued monitoring, to attaching geo-locating

devices that record winter foraging strategies, the only constant was that there would be penguins involved.

In the evening, we transferred the data we had recorded in our field notebooks into our digital database.

I was awed to see twenty years' worth of observations and learn how our data contributed to broad-scale understanding of penguin demographics and Antarctic ecology! It deepened my appreciation for long-term monitoring projects.

My Point Blue internship experience reinforced my commitment to conservation science and has inspired me to continue my education so that I can better contribute to future research and science communication efforts. I want to inspire and empower people by making scientific information more accessible through collaborations between researchers and educators.

When I close my eyes to reflect, I can still clearly visualize the swirls of densely populated subcolonies stretching between Crozier's rocky peaks and rough coastline. I hear the chorus of hundreds of thousands of Adélie Penguins and their chicks. I feel the ice-chilled breeze numbing my face—and also my teeth, because I'm smiling. 🌍

Emily Burke

Point Blue Antarctic Intern, Nov. 2016-Feb. 2017



Above: Emily Burke interned with Point Blue's Antarctica team for the 2016-2017 season. **Photo:** Point Blue/Annie Schmidt.

Left: Emily holds an Adélie chick as the team monitors the penguin population. **Photo:** Point Blue/Annie Schmidt.

Tough Hope

The first time I tried to capture an Adélie Penguin, I lost. A well-placed flipper slap left my hand stinging and the penguin running free instead of into my arms.

I was no neophyte to handling tough birds, but penguins are in a class all their own. Unlike the relatively delicate wings of a bird built to soar, Adélie's wings are rigid paddles that provide locomotion and also act as formidable weapons. A visit to the penguin colony inevitably brings with it a collection of new bruises, the result of a righteous penguin taking offence at our presence too close to their pebble palace.

But sit down for a few minutes, away from a claimed territory, and you are likely to be investigated by a curious penguin. Transformed into a gentle inquisitor, their eyes widen, flippers lay back, and they poke and prod, looking for clues. What is this strange looking penguin? What are these unusual feathers covering its body?

As with a child, we feel protective of their innocence, but Adélie Penguins are so much tougher than we will ever be. A bad storm can bring blinding snow

and wind gusts over 100 mph. Hunkered down, faced into the howling wind, sheltering their future against a warm belly, the penguins' unfazed endurance is mind boggling.

The conditions they experience are among the harshest Earth can offer. There's the notoriously bad weather, and then there are the leopard seals waiting in ambush, the thieving neighbors, the grinding ice blocking access to the ocean and food, and, increasingly, there's melting. Rapid melting of snow and ice on land leads to heartbreaking scenes of shivering penguins, their feet awash in water where none had been before, desperately trying to shift their drowned eggs to higher ground.

But their toughness gives me hope. The impact of humans has reached even this remote place, bringing greater risk for these ice-dependent tuxedo comics. A lot of uncertainty remains, but if anything can ride the coming storm, it's the Adélies. It's up to us to make sure the storm isn't too long or too harsh. 🌍

Annie Schmidt, PhD
Postdoctoral Researcher

Below: Annie Schmidt weighing Adélie Penguin chick. **Photo:** Point Blue.

At bottom: Marching Adélies.
Photo: Point Blue/Annie Schmidt.



Point Blue Conservation Science
3820 Cypress Drive, Suite 11
Petaluma, CA 94954
t. 707.781.2555 f. 707.765.1685
e. pointblue@pointblue.org
pointblue.org

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Point Blue Conservation Science advances conservation of birds, other wildlife, and ecosystems through science, partnerships, and outreach. Our 160 scientists work to reduce the impacts of climate change, habitat loss, and other environmental threats while promoting nature-based, climate-smart solutions for wildlife and people.

facts:

Antarctica by the Numbers

45 years

Length of time our scientists have been conducting research in Antarctica.

7,928 miles

Average migration of Adélie Penguins studied by Point Blue scientists.

10 million

Equivalent number of passenger vehicles' emissions sequestered by the Ross Sea each year.

Twice the size of Texas

Area protected when the Ross Sea was designated a Marine Protected Area.