

SKIP NOVAK

SKIP RETURNS FROM AN IMPRESSIVELY AMBITIOUS SCIENTIFIC SAILING EXPEDITION IN ANTARCTIC WATERS

We accepted a science-based charter to the South Sandwich Islands in January which was, if truth be known, a huge gamble. This semi-active volcanic arc of seven main islands and their outliers begins in the north with the impressive volcanic cone of Zavodovski, 300 miles south-east of the southern tip of South Georgia.

The chain lies right in the teeth of travelling depressions that form in the Drake Passage below the toe of South America and is notorious for gale force winds, ice risk and generally miserable conditions. It's no tourist destination for sure.

The southernmost island, named South Thule, is 200 miles south of Zavodovski and sits just above 60°S, on the edge of the winter sea ice band around the Antarctic continent. It's not quite in the Antarctic Treaty territory so the UK owns this stretch of hostile real estate which, together with South Georgia, is officially called the UK Overseas Territory of South Georgia and the South Sandwich Islands.

Partly discovered and charted by Captain James Cook in 1775 and partly by the Russian explorer Captain Thaddeus von Bellingshausen in 1819, the islands have hosted only a handful of visitors since. Attempts at sealing and shore-based whaling in the 19th and into the 20th Century were unsuccessful due mainly to a lack of natural harbours and not least of all the ferocious weather conditions.

In recent years a few science expeditions have landed by ship with helicopter support or via expedition yachts to make baseline surveys of the wildlife — Zavodovski boasts the largest wildlife aggregation of any species anywhere in the world with over 1.3 million pairs of chinstrap penguins. Volcanism is also an obvious focus, with the island chain lying on a shallow submarine ledge with a deep water trench immediately to the east.

Zavodovski and Saunders, an island in the middle of the chain, erupted violently in 2016. This was picked up by satellite imagery, but until we arrived in January this year, no one had been back to see the effects on the penguin colonies.

The two volcanologists from University College London collected rock samples and

measured CO₂ and SO₂ gases with drones flying into the plume that was always streaming downwind from the top of the crater. Getting to the rim was out of the question though, as high winds and cloud persisted for the three days we were on site. A two-person team from the University of Maine Climate Change Institute took ice cores on the glacier and water and snow samples while a team from Oxford censused the entire island of chinstrap and Adelie penguins with drones in addition to collecting samples for DNA analysis and satellite tagging 20 chinstraps to record foraging range.

Dr Tom Hart, who had made three previous trips to the islands and was the science coordinator for this trip, was the pioneer of a system developed over the last decade in placing hunting camera traps in penguin colonies to monitor activity year-round. One of the two cameras on Saunders survived the eruption in 2016 and the time code nailed the date down to

between 4 and 9 April as the hourly images went black!

In an eight-day window we repeated these surveys on Thule Island in the South Thule group, Bellingshausen Island (where we swam ashore and got towed back out through the surf) and on Candlemas Island further north where we had to abort one landing, but managed it the next day, again swimming in and being towed out in breaking surf.

Our last objective was to survey Zavodovski, the most difficult landing, but the sea was so chaotic around this tiny island of only 3km in diameter it was impossible to safely launch the Bombard C5 inflatable off the deck. Instead, the team was able to survey the entire chinstrap colony on all sides of the island with drone flights — a remarkable achievement, not least in making hand recoveries in a big swell and a 25-knot wind.

Thereafter, we set sail and high-tailed it upwind to the southern tip of South Georgia in a favourable weather window.

The scientists reckon we achieved 90% of our objectives on what was a most cost-effective formula in using a small sailing yacht in one of the most difficult areas of study in the world. That translates to an A+ report card for *Pelagic Australis* in the Southern Ocean School of Hard Knocks. ■

'The islands are notorious for gale force winds'

