

Researchers put pristine Antarctic peninsula at risk

Scientists' activities on King George Island could harm the environment they are trying to study.

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Men and women wanted for hazardous duty. Small wages. Bitter cold. Long months of complete darkness. Compensations include off-road driving, penguin spotting and no-hassle waste disposal.

That could be a job advertisement for station staff at Fildes Peninsula Antarctic research stations. It's not as noble as the apocryphal advertisement for explorer Ernest Shackleton's expedition in the early twentieth century, which promised honour and recognition, but then some of the site's modern occupants deserve neither, according to a report released last month by Germany's Federal Environment Agency¹.

Fildes Peninsula is on King George Island, 120 kilometres off the coastline of the Antarctic Peninsula, and just across the Drake Passage from Tierra del Fuego, Argentina. Because the island lies so far north compared with the rest of the region, it hosts one of the most diverse collections of life in Antarctica.

Six research stations crowd Fildes Peninsula, operated by Chile, China, Russia and Uruguay. The report's authors surveyed the Fildes Peninsula and human activity there from 2003–06 and again in 2008–12, and identified numerous and systematic violations of the [Antarctic environmental protocol](#), which sets out basic principles for all human activities in the region.

Although some 27,000 tourists visited Antarctica last year, the report estimates that scientists have a larger impact on the Fildes Peninsula.

"It caught my attention that it's scientists," says environmental toxicologist Gustavo Chiang of the University of Concepción in Chile, who does fieldwork on Fildes Peninsula. Most researchers are careful not to damage the fragile environment they work in, Chiang says, but he has seen a few dispose of waste improperly or leave students unattended.

Such carelessness undermines the very raw material that scientists are there to study, the report says. Damaging activities cited in the report include the quarrying of rock from ancient beach ridges over an area of more than 5 hectares, which could contain fossils or clues about past climate change, and construction activity that has displaced Antarctic tern nesting grounds.

Research impact

One of the authors of the report, ecologist Christina Braun of Friedrich Schiller University in Jena, Germany, and her colleagues have noted in a previous study how the high density of research stations and uncoordinated activity on the peninsula interferes with data collection and the environment².

German scientists have advocated naming part of the peninsula an Antarctic Specially Managed Area (ASMA), which would mean that any new human activity there would require the prior approval of all parties to the Antarctic Treaty.

Under the Antarctic environmental protocol, individual countries already agree to conduct environmental assessments before they construct anything new in Antarctica, but they do not need to consult other countries before they build. And the protocol's liability annex, which would establish penalties for violations, remains unratified. Chile has plans to expand its airport on the peninsula, for instance, which would require foreign approval if the peninsula became an ASMA.

The next opportunity to tackle the waste problem will be the Antarctic Treaty meeting in Brussels in May, when Germany could convert the report into a working paper for discussion.

Victor Pomelov, the Russian Antarctic Expedition's delegate to the Committee for Environmental Protection, says that the German report "will be useful for the development of joint actions to protect the environment".

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Waste from scientific settlements (here at the Adelie Penguin rookery on Cape Hallett in 1973) has long been a problem in Antarctica.

He explains that Antarctic stations that were built before the signing of the environmental protocol in 1991 have difficulty with old landfills and historical waste disposal. “It is important that the process of waste disposal is carried out systematically,” he says, adding that the Russian government plans to use a new ship to transport waste away from the region.

Pomelov's Chilean counterpart, Verónica Vallejos, says that Chile has banned at least three scientists from returning to its Antarctic installations, including one for driving off-road. There is a high turnover of staff at the bases, she says, and despite pre-trip briefings, “It's very difficult for them to internalize all the Antarctic environmental protection information.”

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References

1. Peter, H.-U. *et al.* *The Current Environmental Situation and Proposals for the Management of the Fildes Peninsula Region* (German Federal Environment Agency, 2013).
2. Braun, C., Mustafa, O., Nordt, A., Pfeiffer, S. & Peter, H.-U. *Polar Research* **31**, 18206 (2012).