Protecting the Endangered Birds of Gough Island

Southern Rockhopper penguins are common visitors to Gough Island. Houston could walk freely among the penguins, who showed little fear of humans.

British teams are working to preserve populations of native birds on an isolated island.

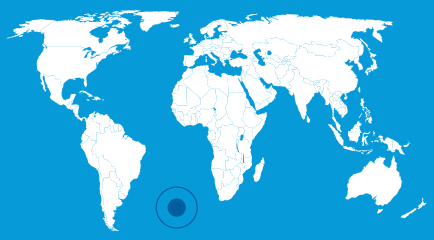
Precise GNSS provides key data to help protect nests from invasive rodents.

Solution

- Trimble® CenterPoint® RTX Positioning Service
- Trimble R10 GNSS Receiver
- Trimble TSC3 Controller
- Trimble Access™ Software

overview

Located 2,700 km west of Cape Town, South Africa, Gough Island is a prime nesting ground for indigenous Atlantic seabirds. The island's only human habitation is a small meteorological station operated by the South African government. While the tiny island has no native mammals, 19th-century whaling ships carried mice to the island. The rodents learned to eat the eggs and chicks of Gough Island's ground-nesting seabirds; at the current rate of loss the birds face extinction. To protect the birds, the Royal Society for the Protection of Birds (RSPB) initiated a program to eradicate the invasive mice. The work requires accurate positioning in a difficult and remote environment.



Location
Gough Island,
South Atlantic Ocean

John Houston chats with an albatross. Living on the isolated island, the birds have not developed fear of humans.

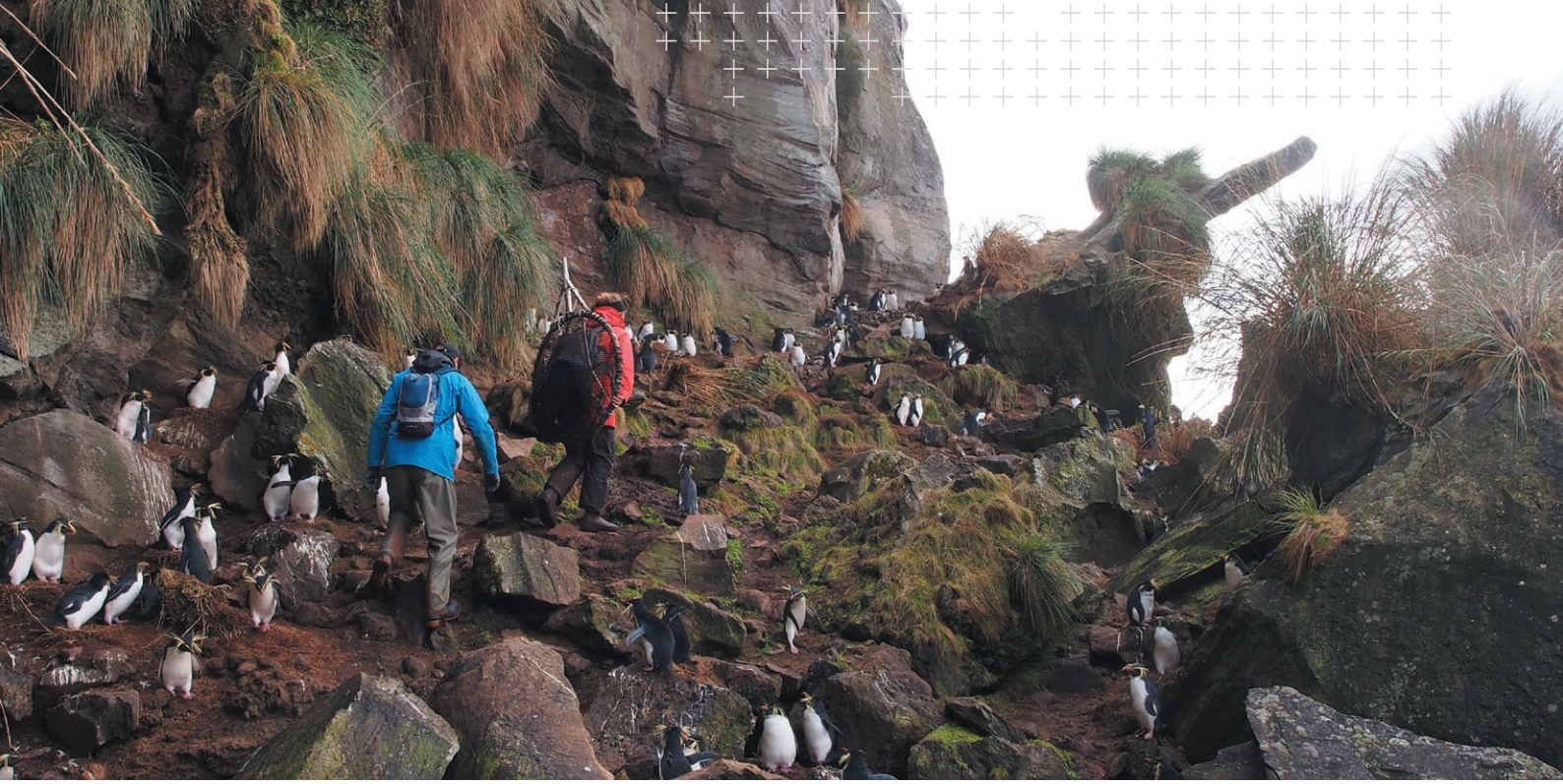
PROJECT OUTCOMES

The RSPB plans include using bait that will attract and kill the rodents. The approach has been used successfully on similar projects around the world to preserve threatened bird populations on remote islands. The RSPB called on the Irish firm Taylor & Boyd Consulting Structural and Civil Engineers to support the eradication project. The company assigned engineer John Houston to visit the island to collect information for use in planning and design of the temporary facilities needed for the work.

Houston would support the RSPB efforts by gathering topographic and geotechnical information, including mapping with GNSS. The work required collecting survey data accurate to a few centimeters. But Gough Island lacks the positioning infrastructure to support precise measurement.

Faced with a demanding schedule and tight requirements for positioning, Houston turned to Trimble CenterPoint RTX and a Trimble R10 GNSS receiver to achieve the needed accuracy and productivity. Using the R10 with a Trimble TSC3 controller running Trimble Access field software, Houston collected hundreds of 3D points around the project site. He captured the location of existing structures and features, test pits for soil evaluation and ground points for use in topographic modeling.

Using the display on the TSC3 he could follow his progress and make sure he covered the necessary ground. In spite of working more than a thousand kilometers from the nearest GNSS reference station, Houston achieved centimeter accuracy on all survey points; typically 3 to 5cm in both the horizontal and vertical components.



A self-described "rookie surveyor," Houston quickly learned to operate the GNSS equipment. With CenterPoint RTX operating transparently, he could focus on the engineering aspects of his work. At the end of each day, Houston reviewed data on the controller, planned the next day's work and set up the system batteries for recharging. In addition to the engineering data, Houston captured several points on the existing helipad and building foundations that will serve as reference points for the upcoming work on the island.

Houston departed Gough Island with survey data sufficient for the design work ahead. Taylor & Boyd developed 2D contour maps and 3D terrain models of the site, which they shared with RSPB. The data, which is the first topographical survey ever carried out on the base since it was established in 1963, will also aid the South African government in maintenance and operations its island facilities.

The TSC3 displayed all the points captured with GNSS. The data were later transferred to CAD software for mapping and design.

John Houston carries the GNSS receiver along a survey line on Gough Island. Cold weather and difficult terrain made days difficult.

"The CenterPoint RTX was invaluable for the success of the project. If this technology works on Gough Island, then it will work anywhere."

Taylor & Boyd Consulting Structural and Civil Engineers

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