

## Description and resource inventory

### 3.1 National and conservation status

Inaccessible Island (37°18'S, 12°41'W) is a cool-temperate island of volcanic origin in the central South Atlantic Ocean, midway between the southern tip of Africa and South America (Figure 1). It is one of three main islands in the Tristan da Cunha archipelago. Nightingale Island, with its adjacent islets Middle (or Alex) and Stoltenhoff, lies 20 km to the southeast, and the main island of Tristan lies 40 km to the northeast. Gough Island, 400 km south-southeast of the Tristan group, is the nearest other land, and shares many animals and plants with the Tristan archipelago.

Inaccessible Island, together with Tristan, Gough and Nightingale islands, plus offshore islets and rocks, form the United Kingdom Overseas Territory of Tristan da Cunha. It is administered by an Administrator (appointed by the UK Government on a three-year basis) and elected Island Council. Tristan, together with St Helena and Ascension islands, constitute St Helena and Dependencies. With a permanent population of some 300 people, Tristan is considered too small to become independent. The island has achieved economic self-sufficiency, and its status as a UK Overseas Territory is unlikely to change (Royle 1995).

Inaccessible Island, its islets and waters out to 12 nautical miles, were declared a Nature Reserve in 1997 under the Tristan da Cunha Conservation (Amendment) Ordinance, 1997 (Appendix 2b). All native animals and plants are protected. The importation of alien animals and plants is prohibited, as is any agricultural or horticultural activity. Construction of any infrastructure (huts, aeriels, etc.) requires a permit.

Waters within 200 nautical miles (370 km) of the islands are protected by the Tristan da Cunha Fishery Limits Ordinance of 1983 (as amended 1991, 1992 & 1997; Appendix 3). This area was declared a whale sanctuary in March 2001. Fishing rights within 50 nautical miles of the coastline currently are restricted to a single concession holder, subject to quota controls, a size limit and a closed season for the main target species, the Tristan Rock Lobster *Jasus tristani* (section 3.11.1). Restrictions also have been placed on the catching of fin fish. The presence of a fisheries patrol vessel based at Tristan and the initiation of observer programmes aboard licensed vessels have gone a long way to controlling fishing practices. However, illegal, unreported and unregulated (IUU) fishing activities are known to persist within the 200-nautical-mile zone (Roscoe 1979, Ryan & Cooper 1991; section 3.11.1).

### 3.2 General description and access

Inaccessible Island is rhomboidal in shape, approximately 5.7 km east–west and 4.6 km north–south, with an area of some 14 km<sup>2</sup> (Figure 2). It is intermediate in size between Tristan (96 km<sup>2</sup>) and Nightingale (4 km<sup>2</sup>, including the offshore islets). Inaccessible is characterised by steep cliffs around the entire coastline (Plate 1), and an undulating plateau that rises from some 100 m at the eastern end (Harold's Plain) to over 500 m at the western end. Swale's Fell, the highest point, was esti-

mated to be 511 m (Siddall 1985), but may be almost 600 m. There has been substantial slumping along the plateau edge on the northwestern side of the island (Dunne 1941, Plate 2).

The island's plateau is dissected by several watercourses that terminate in spectacular waterfalls down the coastal cliffs. The largest catchment, draining more than a quarter of the island, reaches the coast at the Waterfall, at the eastern end of the northeast coast (Plate 3). The only area of level land at sea level is between Blenden Hall and West Point (Plate 4). Narrow raised platforms occur beneath the cliffs along the northeast coast north of the Waterfall and Salt Beach (Plate 5). Boulder beaches are found along much of the shoreline. There are several wave-washed offshore rocks within 500 m of the main island and one vegetated stack, Cave Rock (Plate 6).

Access is by sea; there are no wharves or jetties for ships, but mooring buoys for Tristan's fishery patrol vessel, *Wave Dancer*, have been established off the Waterfall and Blenden Hall (Figure 2). Safe anchorages generally occur off the eastern, leeward coast of the island.

Landing on the island is by permit only, issued by the Administrator. Under westerly wind and swell conditions, landing from small inflatable boats or dinghies can often take place at the Waterfall or Salt Beach on the northeast coast. However, there is no easy access to the plateau from these sites. The other main landing beach is at Blenden Hall, near the west point of the island (Plate 7). This beach is less protected, and requires relatively calm seas and winds from the south or east. The two main routes to the plateau, the East and West Roads, ascend the cliff behind Blenden Hall.

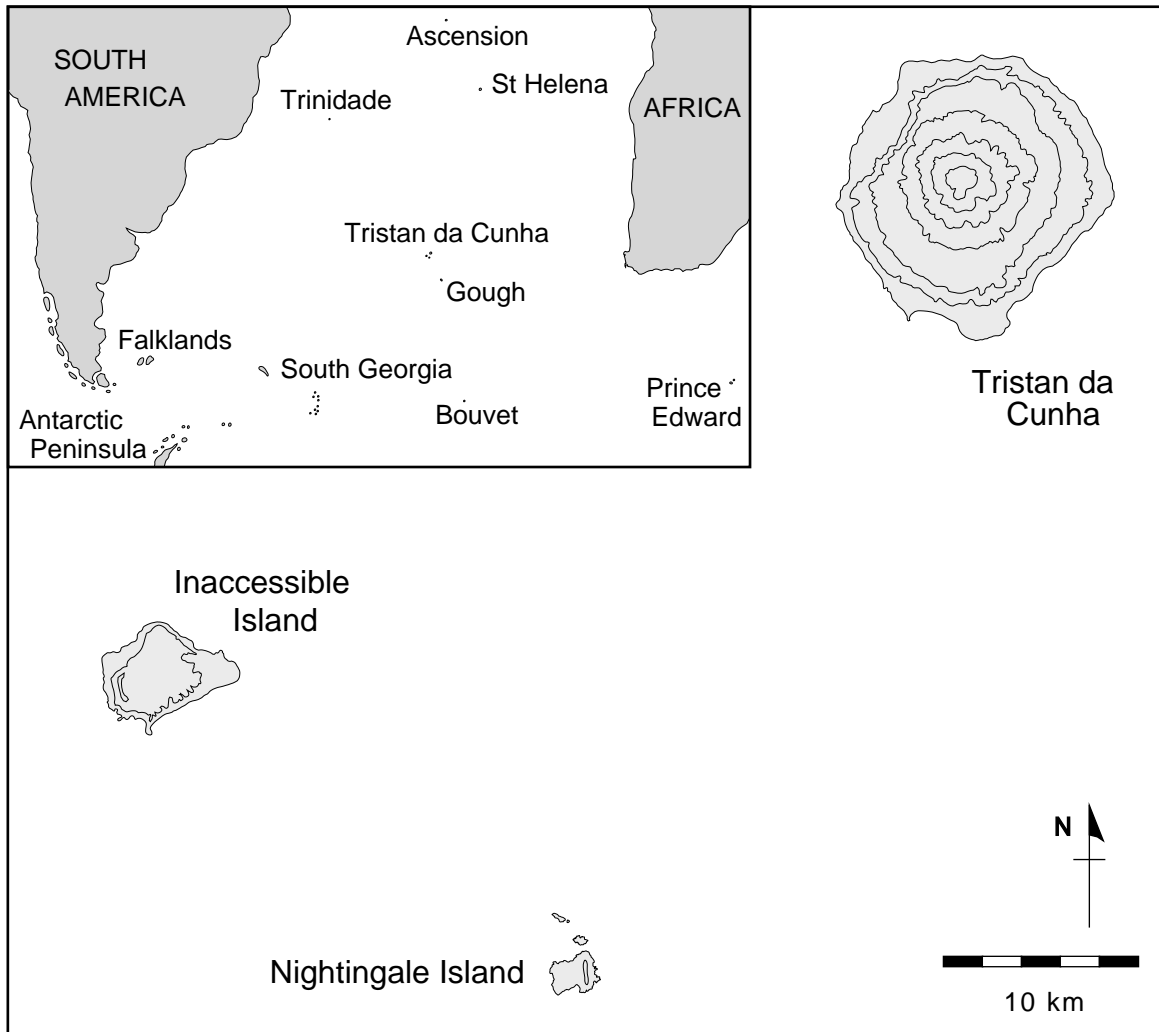
Two rock lobster vessels, currently the *Kelso* and *Edinburgh*, fish around the island for several months throughout the year. Each ship has a small fleet of 4–6 fishing boats that sets traps close inshore. They are not permitted to land, but fishing boats have been wrecked ashore. There is no landing strip for fixed-wing aircraft. Helicopter landings have been made at Blenden Hall and on the plateau edge at the top of the West Road.

Tristan can only be reached by sea. The Royal Mail Ship *St Helena* visits Tristan once a year (January), and a South African research and supply vessel, the *SA Agulhas*, operated by the Department of Environmental Affairs & Tourism as part of the South African National Antarctic Programme, visits Tristan each spring (September–November) en route to Gough Island. The two fishing vessels also offer berths to visitors, and an increasing number of cruise ships now call at Tristan.

### 3.3 History

#### 3.3.1 Discovery and naming

The Tristan islands were first sighted by the Portuguese Admiral Tristão d'Acunha in May 1506. He was on the sailing route from Europe to the East, which crossed the North Atlantic to the Brazilian coast, then used the prevailing westerly winds between 35–40°S to cross the South Atlantic. The Dutch probably were the first to explore the possibility of using the



**Figure 1.** The position of Tristan da Cunha in the South Atlantic Ocean, and Inaccessible Island in the Tristan group. Contour interval approximately 300 m.

islands as a source of fresh water and food, with the *Heemstede* spending eight days at Tristan in 1643. This success stimulated the Dutch East India Company to mount an expedition to explore the islands.

The *'t Nachtglas* sailed from the Cape on 22 November 1665, and sighted Inaccessible Island, which they named *Nachtglas Island*, on 4 January 1666 (Brander 1940). The following three days were spent ashore at the east shore of the island, where seals were killed and 'dry sticks' collected, before moving on to Tristan. Finding no safe anchorage at either of these islands, nor at *Gebrooken Island* (= *Nightingale*), the *'t Nachtglas* returned to the Cape. Subsequent visits by Dutch vessels in 1669 and 1696 did little to change matters, although the first landing at *Nightingale Island* took place in 1696.

In the mid-18th century the British and French took an interest in the islands. *Nightingale Island* was renamed in 1760 by the British Captain *Gamaliel Nightingale*, and *Inaccessible* (*L'île Inaccessible*) in 1767 by Captain *d'Etchevery* from the French corvette *Etoile du Matin*. The name *Inaccessible* apparently alludes to the near-vertical cliffs that restrict access to the island's interior rather than to the difficulty of landing. In fact, *d'Etchevery* landed at all three Tristan islands. These names remain in use, despite *Jonathon Lambert's* proclamation in 1811 that the Tristan islands were to be renamed the *Islands of Refreshment*, with *Inaccessible* called *Printard Island*, and *Nightingale* called *Lovel Island*.

### 3.3.2 The colonisation of Tristan

Despite plans in the late 18th century to colonise Tristan, or use it as a penal colony, it was the advent of commercial sealing that finally resulted in more than fleeting visits by passing vessels (Wace 1969). American sealers from the *Industry* collected 5600 fur seal skins in seven months at Tristan in 1790, and probably visited the other islands, including *Inaccessible*. In addition to killing seals, these early visitors collected fresh water and food (birds, eggs, fish and plants such as the wild celery *Apium australe*), and introduced a number of organisms, including pigs, goats and potatoes. Goats were already on Tristan in 1790 and when *Aubert Dupetit Thouars* visited Tristan in 1793 he found lettuce and turnips in abandoned gardens (Brander 1940).

During the 20 years from 1790, sealing gangs were based at the islands for varying periods. Finally, in December 1810, *Jonathan Lambert* from *Salem, Massachusetts*, and two companions settled on Tristan. Within a year they were growing a wide variety of vegetables in some five hectares under cultivation (Wace & Holdgate 1976). *Lambert* drowned in 1813, but one of his companions, *Thomas Currie*, remained at Tristan until after the islands were annexed by Britain in 1816. *Currie* died shortly thereafter, but when the British garrison withdrew in November 1817, *William Glass*, his wife and two children, and two colleagues were given permission to remain at Tristan.

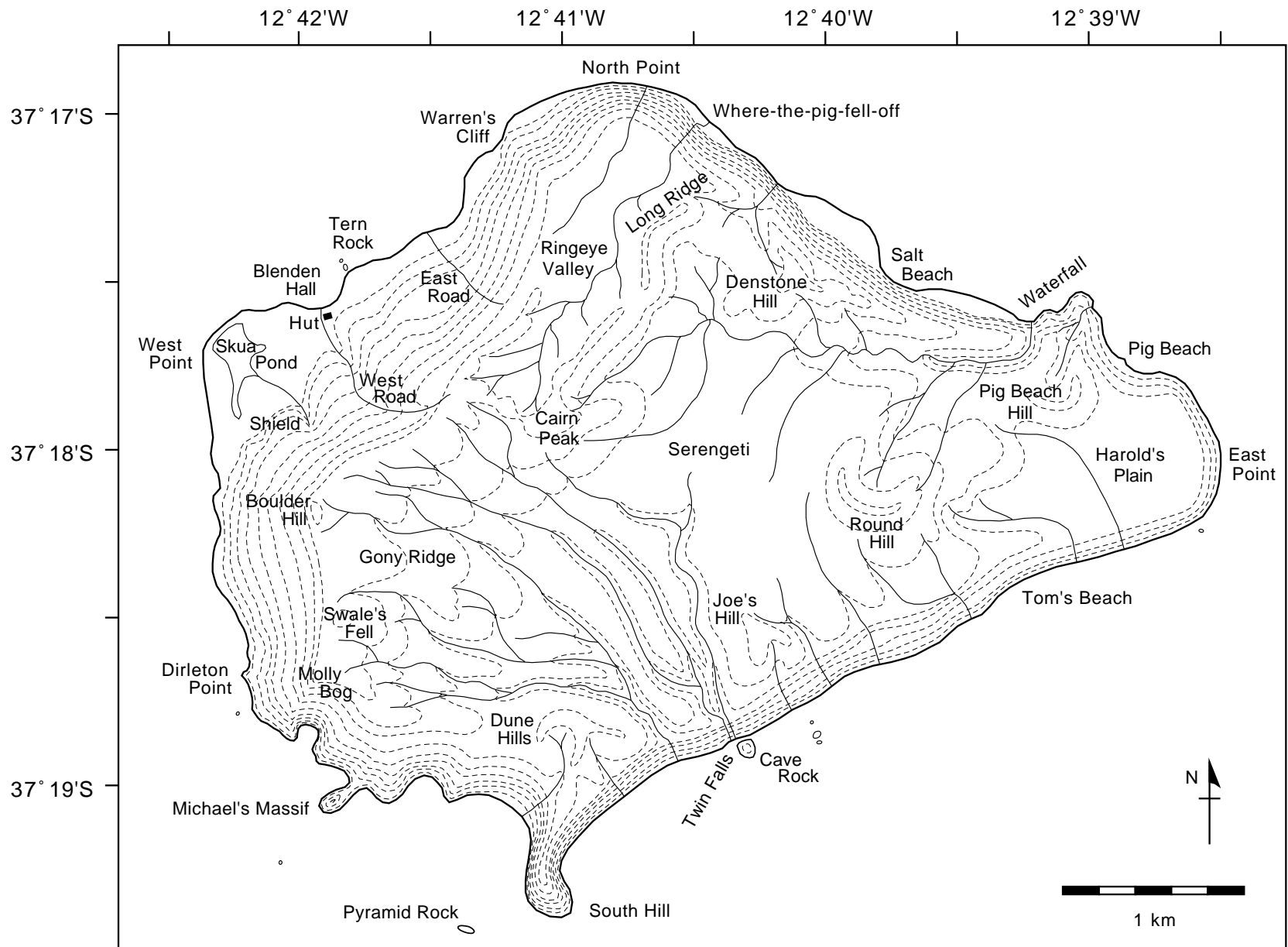


Figure 2. Inaccessible Island (modified from Siddall 1985). Contour interval approximately 50 m.



**Plate 2.** Slumping along the northwest scarp of Inaccessible, from the top of the West Road.

Tristan has been inhabited ever since, apart from a brief period from 1961–1963 when a volcanic eruption next to the settlement caused the residents to flee to Britain. The population has remained at close to 300 people for the last 20 years.

### 3.3.3 Shipwrecks, sealing and farming

Little is recorded about activities at Inaccessible Island during the early days of the colony at Tristan, but the island achieved notoriety with the wreck of the *Blenden Hall* in July 1821. The East Indiaman was carrying families of British officers serving in India. All but two crew members made it ashore safely, but the survivors were marooned on Inaccessible Island for four months before a makeshift boat reached Tristan. Conditions were bleak and food scarce, especially during the winter months when few birds or seals occur at the island (Plate 8). The crew did not all support the stranded women and children's plight, causing a scandal at the time (Greig 1847, Lockhart 1930). Two other vessels were wrecked at Inaccessible Island in the 19th century: the *Shakespeare* in 1883 and the *Helen S. Lea* in 1897 (Crawford 1941), but fortunately no rats or mice found their way ashore.

Sealing by both the new colonists and visiting sealing ships continued at least sporadically at Inaccessible during the early 19th century. This led to some conflict, with the islanders accusing visiting sealers of killing more seals than they could use 'to prevent our taking them' (letter by William Glass in Gane 1932). Sealers also stole and burnt material salvaged from the *Blenden Hall* by the islanders and stored on Inaccessible. Skins of Subantarctic Fur Seals *Arctocephalus tropicalis* were the initial target for sealers, with Southern Elephant Seals *Mirounga leonina* killed for their oil.

From 1830–1870 the community on Tristan thrived, with large numbers of vessels, especially whalers, calling to trade flour and other commodities for fresh produce (Wace & Holdgate 1976, Munch 1979). The Tristan islanders visited Inaccessible Island annually at least during the 1850s and 1860s (Green 1960), primarily for seals, but also to collect driftwood and to hunt goats and pigs, which had been introduced in the 1820s (section 3.8.4).

The best-documented sealing visit to Inaccessible Island was that of the German Stoltenhoff brothers, who spent almost two

years on the island from November 1871 (Richards 1873, Stoltenhoff 1895, Rosenthal 1952). By then seal numbers were greatly reduced, and the enterprise failed. The Stoltenhoffs were eventually relieved from the island by the *Challenger Expedition* in October 1873, but they made many useful observations (section 3.3.5).

From the 1870s, the numbers of ships visiting Tristan dwindled, greatly reducing the market for Tristan produce (Wace & Holdgate 1976). Regular visits by Tristan islanders to Inaccessible Island continued into the 1890s, but by then the goats had been hunted out and seals had virtually disappeared (Bosanquet 1876, Marsten 1897). For example, only one seal was killed in 1893 (Gamble 1897).

Tristan gradually switched from a farming and trading community to one of subsistence crofters. Stocking levels on Tristan increased, leading to overgrazing and occasional severe mortality. Barrow (1910) reported that, of a total of 700 cattle, 400 died in winter 1906. The situation was exacerbated by the introduction of rats *Rattus rattus* from the wreck of the *Henry B. Paul* in 1882. The rats caused havoc with crops on the island. As a result, the Tristan islanders started to consider the grazing potential of the other islands. Sheep were introduced to Inaccessible prior to 1904 (Pearce 1904), and bullocks were taken across to be fattened at Salt Beach (Rogers 1927).

Following the loss of a lifeboat with 15 men in 1885, Tristan's population fell by almost half to only 50 people. There was concern for the well-being of the residents, and vessels were sent from the Cape to assess the situation. Polls were taken among the residents to determine whether they wanted to be removed from the island. In the end, they remained at Tristan, but the viability of other commercial resources was explored. H.M.S. *Odin* collected guano samples from both Inaccessible and Nightingale islands in 1904, and suggested that guano could be a useful source of income for the island (Pearce 1904). Prior to this the islanders had collected guano from Nightingale at the request of a trading vessel, but the vessel was wrecked and so failed to return to collect the load (Watt-Jones & Cobb 1903). Other commercial ventures, such as fish curing and farming, failed because of the lack of a harbour and the long distance to markets.

By the 1920s, Tristan islanders were making three to four visits to Inaccessible Island each year to collect birds, eggs and



**Plate 3.** The Waterfall at the east end of the island, where the coastal cliffs are lowest. This is the largest river on the island, and has carved a series of deep valleys with two large waterfalls before reaching the coastal cliffs. The old settlement and pine trees are visible at the base of the cliff to the right of the Waterfall.



**Plate 4.** The coastal lowland at West Point viewed from the top of the West Road. Blenden Hall Bay and the old hut is on the right, with Skua Pond and Wilkins' Copse in the centre.





**Plate 5.** Salt Beach, flanked by coastal slumps, viewed from the scarp above the Waterfall, looking towards North Point.



**Plate 6.** Cave Rock, near the Twin Falls on the southeast coast, is the only vegetated stack.



**Plate 7.** The landing beach at Blenden Hall on a calm day, looking east to Warren's Cliff.

driftwood, and to harvest sheep and cattle placed on the island (Rogers 1927). This activity culminated in the formation of a 'settlement' at the Waterfall in 1936, spurred on by the island's missionary at that time, Rev. Harold Wilde. A group of 14 young islanders spent six months at Inaccessible, building a hut (Plate 9) and store, and planting crops such as potatoes (Anon. 1937a, Christophersen 1940). Although initial reports were optimistic (Anon. 1937a,b), crop yields were poor and the venture foundered within two years (Mackay 1963). By 1940 the islanders had switched most of their attention to Nightingale Island as a source of birds and eggs (Wace & Holdgate 1976), and visits to Inaccessible became less and less frequent.

Links with the outside world increased in the 1940s. A small naval garrison was stationed at Tristan from 1942, and an expatriate Administrator was appointed in 1949, a year that also saw the start of commercial fishing for rock lobster. Since the 1940s the islanders have made only occasional visits to Inaccessible Island to collect apples, driftwood and other stranded debris, and guano, although some birds and eggs also were taken. The last pigs, sheep and cattle were removed from the island in the 1950s (section 3.8.4). From the 1980s the island has been visited primarily during research visits (Appendix 4) or to service the Denstone hut at Blenden Hall (Plate 10). Since 1996, the presence of a fishery patrol vessel at Tristan has made it easier to reach Inaccessible, and an annual visit is now made to collect apples.

There have been few ship wrecks at Inaccessible Island this century. A fishing boat from the *Hekla* sank off the island in 1987, drowning one of the crew (Anon. 1987a). Another fishing boat wrecked at Blenden Hall in 1997, with the two crew spending the night ashore before being rescued by a helicopter from the *SA Agulhas*. The yacht, *Halcyon*, was wrecked at Blenden Hall in 1993, after breaking loose from its mooring at Sandy Point, Tristan, and being abandoned. The crew had a pet monkey which was subsequently put down as there were no



**Plate 9.** The remains of the hut from the 1936 'settlement' of Inaccessible. The interior of the hut is overgrown by introduced *Brassica rapa*, with the introduced pine trees in the background.



**Plate 8.** A sketch from Greig's account of the wreck of the Blenden Hall, showing crewmen attacking a rather fanciful elephant seal.

veterinary papers for importing it onto Tristan (Anon. 1993). This incident highlights the potential problems posed by yachts. At least three illegal landings from yachts are known to have occurred at Tristan and Nightingale islands during the 1990s.

### 3.3.4 Lobster fishery

Following exploratory fishing in 1948, a commercial fishery for Tristan Rock Lobster commenced in 1949 at Inaccessible Island and the other islands in the Tristan group (Roscoe 1979). Fishing initially used hoop nets set by dinghies that were deployed from the fishing vessel *Pequena* (Anon. 1948, Heydorn 1969). Lobster were either canned in the factory built at Tristan in 1950 or frozen aboard ship. The first factory was destroyed by the 1961 eruption, but a new factory was built in 1966.

All fishing is conducted by a single concession holder; initially the Tristan Development Company, then Tristan Investments, a subsidiary of the South Atlantic Islands Development Corporation, from 1963–1996. From 1969, in addition to setting traps from dinghies and motor boats, long lines of traps were deployed from the fishing vessels, allowing fishing in deeper and rougher waters (Roscoe 1979, Pollock 1994). Catch per unit effort (CPUE) indices started to fall in the 1970s, resulting in a minimum size limit (70 mm carapace length) being imposed in 1982–83. A quota system, implemented by annual Total Allowable Catches (TACs) for each island, was introduced in 1991, although these were only adhered to from 1993. Premier Fishing took over the concession in 1997, and





**Plate 10.** The Denstone Expedition and the newly constructed hut at Blenden Hall in 1982 (courtesy Denstone Expeditions Trust).

after restructuring of Premier it is now run by Ovenstones. Current fishing practices at Inaccessible Island are described in section 3.11.1.

Although the concession holder is no longer allowed to land at Inaccessible and the other uninhabited islands, Tristan Investments used buildings at the Waterfall for storing lobster packing boxes in the 1960s and also frequently landed to resupply their vessels with fresh water (Wace & Holdgate 1976). Use of these facilities ceased in the mid-1970s, when islanders went across and dismantled the storage hut. However, some debris from this period remains, including corrugated-iron roof sheets and plastic water piping. In the past, Rockhopper Penguins *Eudyptes chrysocome*, albatrosses and sharks were caught for use as bait (Wace & Holdgate 1976, Roscoe 1979), as were locally caught fin fish. Clubs were found ashore at Salt Beach, indicating that penguins were collected from colonies at Inaccessible (Richardson 1984). Currently all bait used at Inaccessible Island has to be imported (section 3.11.1). Illegal fishing by foreign ships when licensed ships are absent remains a problem (Anon. 1987b, Cooper et al. 1995).

### 3.3.5 Research activities

Appendix 4 lists the 30 visits to Inaccessible Island from which scientific records have been published. Many of these visits have been brief (most less than one day), and most visits were restricted to the coast (Ryan et al. 1994). As a result the island's natural history remains little studied. There has been no systematic research sponsored by a single agency (e.g. a national research agency; section 3.11.2).

The first observations of note were made by the Stoltenhoff brothers, who related their findings to the *Challenger* Expedition (Richards 1873, Stoltenhoff 1895). Despite spending only one day at Inaccessible (Moseley 1879), the *Challenger* collected a large amount of material, and remains the main source of information for some taxa (e.g. some benthic marine organisms). The brief visit of the *Quest* Expedition in 1922 made further discoveries, but the first intensive investigation was by the Norwegian Scientific Expedition in 1937–1938. The natural scientists on the Expedition spent more than two weeks

based at Blenden Hall in February–March 1938 (Christopher 1947). Much basic knowledge of the island's fauna and flora dates to this survey. It also provided the first investigation of the island's geology (Dunne 1941).

During the next 45 years, research visits were either brief (e.g. Royal Society Expedition, Conservation Survey) or conducted on an *ad hoc* basis by expatriates based at Tristan. This pattern changed in 1982–83, when the Denstone Expedition visited the island. This expedition, led by Michael Swales, a teacher at Denstone College and a member of the 1955–56 Gough Island Scientific Survey, resulted in the first ground-based survey of the island (Siddall 1985). Many of the place-names from the interior of the island date from this survey. The Denstone Expedition also made significant contributions to the knowledge of the island's birds (Fraser et al. 1988, 1992, 1994) and freshwater diatoms and palaeoecology (Preece et al. 1986).

The hut constructed by the Denstone Expedition at Blenden Hall (Plate 10) was taken over by the Tristan Government as a refuge and a base for further scientific research (Anon. 1985). This facilitated visits by a variety of South African-based researchers, resulting in a better understanding of the island's birds (especially land birds) and vegetation (Appendix 4). Automated weather stations were deployed by the South African Weather Bureau on the edge of the plateau at the top of the West Road in 1986 (Anon. 1986) and near the coast at Blenden Hall from 1992 to 1996 (Anon. 1992, 1994).

### 3.4 Bathymetry and geology

The Tristan da Cunha islands form part of a chain of volcanic seamounts which extends westward from the Walvis Ridge towards the mid-Atlantic Ridge. They rise steeply from the surrounding seabed, which is more than 3000 m deep (Baker et al. 1964). Inaccessible and Nightingale share a common base, but are separated by a channel more than 500 m deep. There is no evidence that the islands have ever been linked, even during glacial maxima when sea levels were up to 100 m lower than at present (Gass 1967). Tristan is separated from the other two islands by a channel more than 2000 m deep (Baker et al. 1964). Inaccessible has the largest coastal shelf, with the area