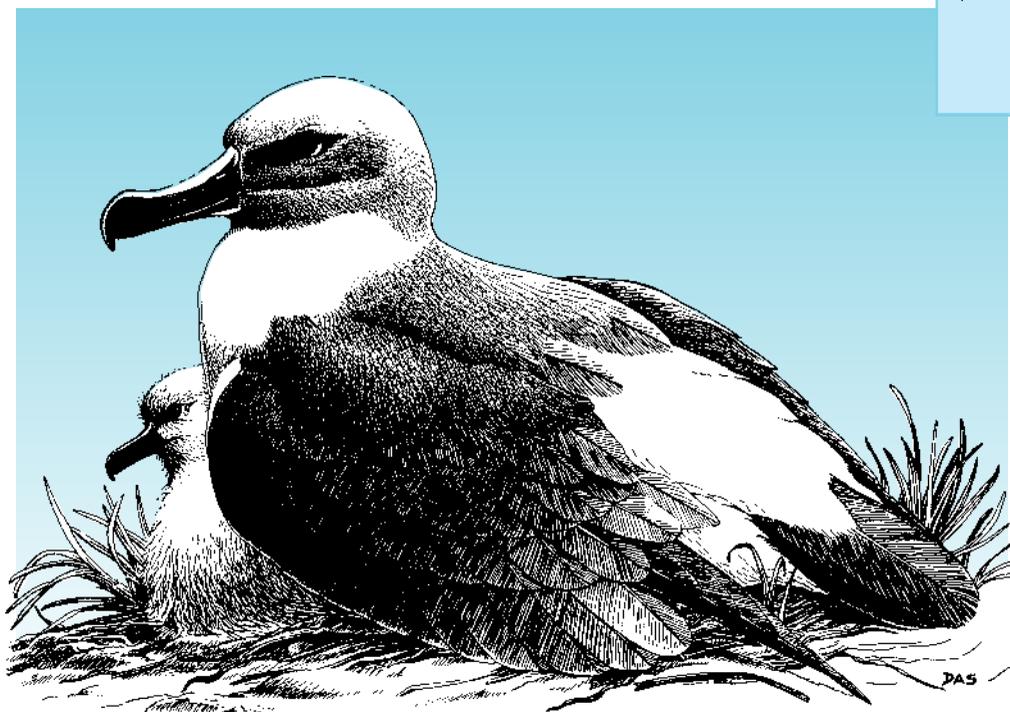


# FRENCH SOUTHERN TERRITORIES

ANTOINE CATARD



Grey-headed Albatross  
*Diomedea chrysostoma*.  
(ILLUSTRATION: DAVE SHOWLER)

## GENERAL INTRODUCTION

The Terres Australes Françaises or French Southern Territories are composed of three sets of islands in the southern Indian Ocean—Crozet, Kerguelen, and Saint Paul and Amsterdam—with a total area of 760,000 ha. These islands are very isolated and lie at least 2,500 km away from the closest continental shores of Australia, southern Africa and Antarctica. The nearest islands to the French Southern Territories are Heard Island, 480 km south-east of the Îles Kerguelen, and Prince Edward and Marion Islands, 1,000 km west of the Îles Crozet. There is no permanent human population on these islands, but three have stations which house expeditions of 30 to 80 people each year.

The biodiversity of each island depends on its location and topography, the extent of direct human impact and, especially, the presence of introduced mammals. The greatest threats to the environment come from predation of birds by cats *Felis catus* and rats *Rattus rattus* and *R. norvegicus*, and from damage to vegetation by rabbits *Oryctolagus cuniculus* and ungulates (cows *Bos taurus*, reindeer *Rangifer tarandus*, sheep *Ovis aries* and mouflon *O. ammon*).

The islands are an overseas territory of France and are administered by the Territoire des Terres Australes et Antarctiques Françaises or TAAF (French Southern and Antarctic Territories), the headquarters of which is in Saint-Pierre on La Réunion, in the western Indian Ocean. The islands are served by boat from La Réunion.

### ■ Îles Crozet (Crozet Islands)

The Crozet archipelago comprises five mountainous islands of volcanic origin, with a total area of 50,000 ha and a maximum altitude of 1,090 m. The climate is subantarctic, with low temperatures throughout the year (average 5°C), strong westerly winds (over 100 km/h) that bring frequent storms and high rainfall (average 2,470 mm per year). In oceanic terms, these islands are located in subantarctic waters, about 350 km north of the Polar Front.

The vegetation of these islands is depauperate and completely lacking in trees and shrubs. It comprises 154 species, three of which

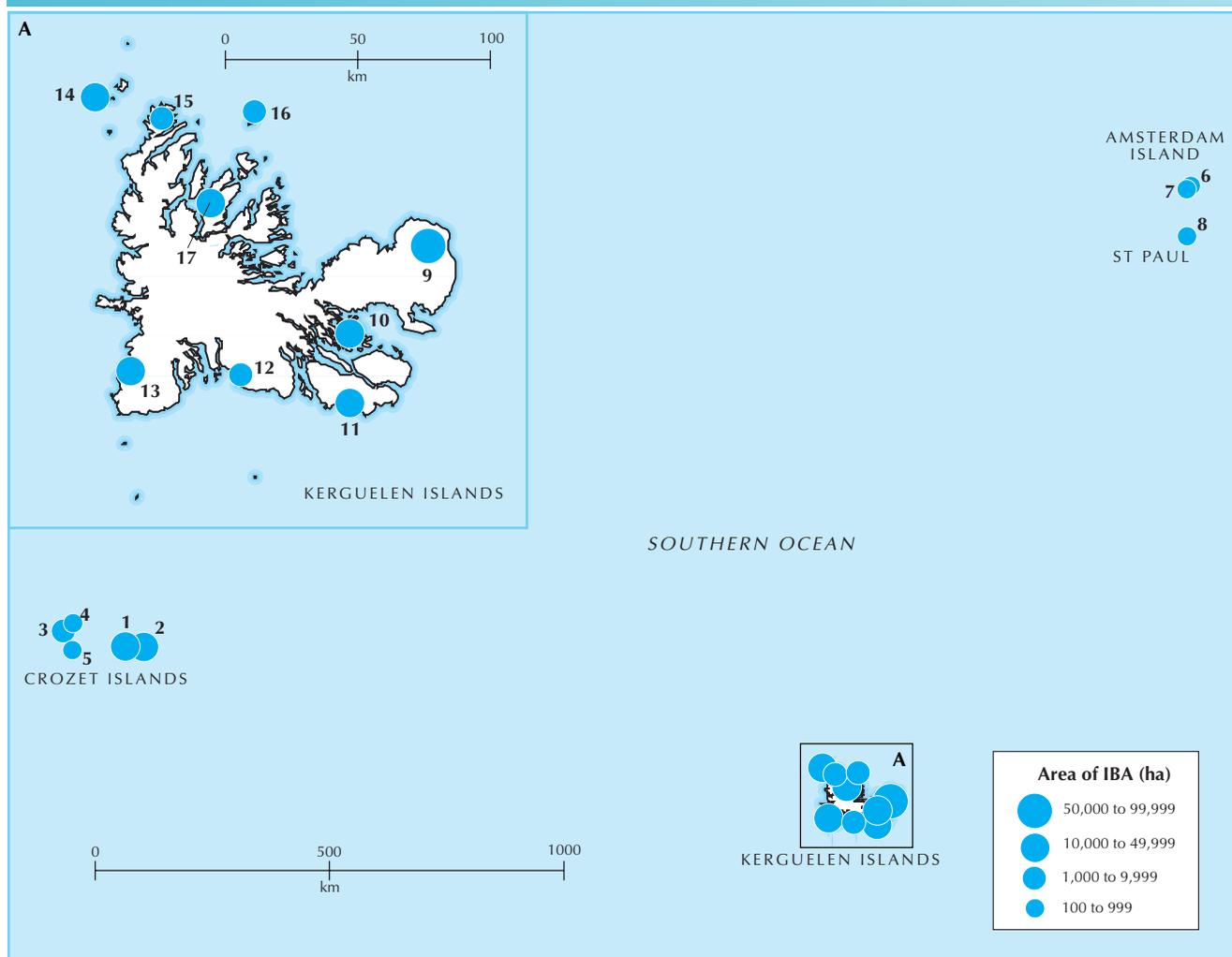
are endemic and 53 are introduced. It is mostly composed of grasses *Agrostis magellanica*, *Poa cooki*, *P. annua*, mosses and lichens, together with several herbaceous species (notably *Acaena magellanica*, *Azorella selago* and *Pringlea antiscorbutica*). Plant cover is significant only in coastal areas at low altitude; above 200 m, vascular plants are rare and bare rock dominates the landscape.

The greatest numbers of birds are found on Île de l'Est, Îles des Apôtres and Îles des Pingouins, where cats and rats are absent. On Île des Cochons and Île de la Possession where, respectively, cats and rats are present, the smaller seabird species, particularly petrels, have either been eliminated or are greatly reduced in numbers. Numbers of albatrosses and penguins nevertheless remain high.

### ■ Îles Kerguelen (Kerguelen Islands)

This large group of islands, 1,500 km east of Crozet, covers 700,000 ha and ranks as the second-largest subantarctic archipelago after the Falkland Islands. Over 300 islands of different sizes surround the main island, Grande Terre. The islands' volcanic origins have given rise to spectacular landscapes. The coastline consists of numerous deep fjords lying between rugged headlands and extends for 2,800 km. An ice sheet covers a large part of Grande Terre. The vegetation is similar to that of Crozet (163 species, 13 of which are endemic and 37 introduced). The climate is also similar, although it can be more severe because of the slightly higher latitude and the more marked relief—the highest peak, Mont Ross, reaches 1,850 m.

Seven species of introduced mammal occur on Kerguelen, the largest number in the French Southern Territories. They are distributed unevenly across the archipelago, depending upon the isolation of the island. Managed populations of sheep and mouflon occur on two islands of the Golfe du Morbihan. Reindeer are present in many areas of Grande Terre. Rabbits, which have had a disastrous impact on vegetation in many areas, inhabit most of Grande Terre and several adjacent islands. Mice *Mus musculus* and rats *Rattus rattus* are also present in many places. Cats were introduced only relatively recently, but have undoubtedly had the most serious impact on bird populations.

**Map 1.** Location and size of Important Bird Areas in the French Southern Territories.

**Table 1.** Summary of Important Bird Areas in the French Southern Territories.

IBA code	Site name	Administrative region	Criteria (see p. 11)				
			A1	A2 s048	A4i	A4ii	A4iii
TF001	Île de la Possession	Îles Crozet	✓	✓	✓	✓	✓
TF002	Île de l'Est	Îles Crozet	✓	✓	✓	✓	✓
TF003	Île aux Cochons	Îles Crozet	✓	✓	✓	✓	✓
TF004	Îles des Apôtres	Îles Crozet	✓			✓	✓
TF005	Île des Pingouins	Îles Crozet	✓		✓	✓	✓
TF006	Plateau des Tourbières	Île Saint Paul and Île Amsterdam	✓			✓	
TF007	Falaises d'Entrecasteaux	Île Saint Paul and Île Amsterdam	✓			✓	✓
TF008	Île Saint Paul	Île Saint Paul and Île Amsterdam	✓		✓	✓	✓
TF009	Péninsule Courbet	Îles Kerguelen	✓	✓	✓	✓	✓
TF010	Islands of the Golfe du Morbihan	Îles Kerguelen	✓	✓		✓	✓
TF011	Southern coast of Péninsule Jeanne d'Arc	Îles Kerguelen				✓	✓
TF012	Baie Larose	Îles Kerguelen	✓			✓	✓
TF013	Péninsule Rallier du Baty	Îles Kerguelen	✓	✓		✓	✓
TF014	Îles Nuageuses and Île Clugny	Îles Kerguelen	✓	✓		✓	✓
TF015	Northern part of Péninsule Loranchet	Îles Kerguelen	✓	✓		✓	✓
TF016	Îles Leygues	Îles Kerguelen	✓				
TF017	Île Foch, Île Ste Lanne Gramont, Île Howe	Îles Kerguelen	✓	✓		✓	✓
Total number of IBAs qualifying:			16	9	6	16	15

### ■ Île Saint Paul and Île Amsterdam (Saint Paul and Amsterdam Islands)

Île Saint Paul and Île Amsterdam lie in the subtropical zone of the Indian Ocean, some 1,250 km north-east of Kerguelen. They are halfway between southern Africa and Australia, both about 3,600 km distant, which makes them amongst the most isolated islands in the world. They are separated from each other by 80 km of sea and, at 800 ha and 5,500 ha respectively, are the smallest of the French

Southern Territories. Île Amsterdam is an 881-m-high volcanic dome. The coastline consists mainly of tall cliffs, particularly on the western side, where they reach 700 m. Île Saint Paul is an old and well-preserved volcano, whose caldera is open to the sea on the north-eastern side.

The climate is oceanic and the seasons temperate. The average annual temperature is 13°C, higher than those of the subantarctic islands. Winds are, however, often equally strong and rainfall is high (annual average 1,100 mm). Vegetation is denser and taller than in

the subantarctic territories, although it has been much modified on Amsterdam Island by fire and overgrazing. Here, up to altitudes of 350 m, it is dominated by the sedge *Scirpus aucklandicus* and several introduced species. These are replaced altitudinally by rushes *Juncus effusus* and other sedges *Scirpus* sp. and beyond, up to 500 m, by ferns and mosses. Plateaus above this altitude are mostly covered with peatbogs. On Île Saint Paul and on the Falaises d'Entrecasteaux on Île Amsterdam, the vegetation has been better preserved and consists of grasses, rushes, sedges and ferns. Before its discovery by humans, Île Amsterdam was ringed by a stand of *Phyllica nitida*, the only tree species in the French Southern Territories, of which now only a relict scrub remains. A total of 130 plant species are found on Île Amsterdam, six of which are endemic and 108 are introduced. On Île Saint Paul, 20 plant species occur, of which three are endemic and nine are introduced.

Given their location, milder climate and smaller size, Saint Paul and Amsterdam have been the most affected, directly and indirectly, by human presence. Rats *Rattus norvegicus* and cats are responsible for the extinction or reduction of populations of numerous bird species on Île Amsterdam. The presence of a herd of cattle *Bos taurus*, abandoned in 1871, has resulted in considerable soil erosion and damage to vegetation. The herd is now managed and lives within a fenced area (1,200 ha). Over half the bird species which originally bred on the islands no longer do so and some, indeed, are extinct. The small (2 ha), sheer-sided island of La Roche Quille, located 150 m off the north-east coast of Saint Paul has, however, remained free of introduced mammals and has therefore retained relict bird populations. Rats and rabbits have, moreover, recently been eradicated successfully from Saint Paul as part of a conservation programme.

## ORNITHOLOGICAL IMPORTANCE

The French Southern Territories are home to huge colonies of seabirds whose total breeding population probably exceeds 40 million pairs. The avifauna on Kerguelen and Crozet is typical of subantarctic regions, but some less typical species breed on the subtropical islands of Saint Paul and Amsterdam. Forty-five breeding species occur, including four species of penguin and 30 petrels and related species, of which eight are albatrosses. There is also one introduced passerine, *Estrilda astrild*, present in small numbers on Amsterdam. There are records of a number of vagrant migrants, mainly waders, while some Antarctic species are common migrants or winter in large numbers, such as *Fulmarus glacialis*.

Six species of global conservation concern breed in the French Southern Territories. These are *Diomedea amsterdamensis* (CR), *D. exulans* (VU), *D. chrysostoma* (NT), *Phoebastria fusca* (NT), *Macronectes halli* (NT) and *Sterna virgata* (VU). The Kerguelen and Crozet islands are a Secondary Area (s048) because of the restricted-range *Anas eatoni* which is confined to them. Two subspecies are recognized, the race *drygalskyi* on Crozet and nominate on Kerguelen. The most abundant species on the islands are *Eudyptes chrysolophus*, *Aptenodytes patagonicus*, *Halobaena caerulea*, *Pachyptila salvini salvini*, *P. belcheri*, *P. desolata*, *Oceanites oceanicus*, *Pelecanoides georgicus* and *P. urinatrix*, the population of each of which exceeds one million pairs. By contrast, *Diomedea amsterdamensis*, which nests only on Amsterdam Island, has a breeding population of only 15–20 pairs a year. Several other taxa are endemic to the islands, including the cormorants *Phalacrocorax verrucosus* and *P. atriceps melanogenis* and the sheathbills *Chionis minor minor* and *C. m. crozetensis*, confined to Kerguelen and Crozet, respectively. *Pachyptila salvini macgillivrayi* nests only on Saint Paul, while *Sterna virgata*, apart from a small population on the Prince Edward Islands, is confined to Kerguelen and Crozet. Subfossil remains on Amsterdam Island indicate that at least four species now extinct once occurred, including a flightless duck. The islands are also of major importance for bird species with more widespread distributions. Thus, 64% of the world population of *Aptenodytes patagonicus* breed on these islands, as do 38% of *Eudyptes chrysolophus*, 90% of *Diomedea chlororhynchus bassi*, 80% of *Pachyptila salvini salvini*, 50% of *Halobaena caerulea*, 50% of *Pterodroma macroptera*, 70% of *P. brevirostris*, 40% of *Procellaria cinerea*, 60% of *Pelecanoides georgicus* and 40% of *P. urinatrix*. In addition, the islands are notable for some particularly diverse species

assemblages. Île de l'Est holds the largest known community of breeding seabirds in the world, with 32 species.

## CONSERVATION INFRASTRUCTURE AND PROTECTED-AREA SYSTEM

Responsibility for environmental management in the islands lies with the administration of the Terres Australes et Antarctiques Françaises in conjunction with the Comité de l'Environnement Polaire (Polar Environmental Committee). Protection for the environment is provided for by French national legislation.

A 1938 decree designated certain areas as French Antarctic National Park. The regulations governing these areas differ considerably from those that apply to national parks in metropolitan France as they were created principally to control the hunting of seals. All bird species in the French Southern Territories are protected under the 1976 National Act for Protection of the Nature. An order dating from 1985 also classified some areas as Zones Réservées à la Recherche Scientifique et Technique—areas restricted for scientific and technical research. Importantly, this limits access to and activities on certain islands and applies for renewable five-year periods.

Two decrees, from 1980 and 1996, regulate fishing in the Zone Economique Exclusive (ZEE) or exclusive economic zone. A 1994 decree made exploitation of whales illegal within the ZEE. A project is under way to gazette as Réserves Naturelles (Nature Reserves) several hitherto unprotected sites of particular importance for birds.

By far the most important threat to many areas of conservation value remains the introduction of exotic animal and plant species, against which the most effective means of protection is restriction of access. In practical terms, however, control of access is difficult given the isolation and often total absence of human activity on the islands.

Another major cause of seabird mortality, especially of albatrosses and *Procellaria aequinoctialis* in the region is, as elsewhere, by-catch in longline fisheries, particularly for Patagonian toothfish *Dissostichus eleginoides*. Measures taken to reduce the number of these deaths are not completely effective, and their use cannot be enforced in international waters or for ships fishing illegally. Fishing quotas for Patagonian Toothfish in ZEE waters are granted annually to authorized companies operating longline fishing-boat fleets. On-board fisheries inspectors ensure that quotas are respected and that the approved measures are taken to limit accidental bird mortality. In the last few years, however, a sharp increase in illegal, unregulated and unreported (IUU) fishing has occurred in the region, especially on the oceanic plateaus of the French Southern Territories, mainly because of the limited surveillance possible in the vast ZEE. It is certain that considerable quantities of fish have been taken illegally and likely that large numbers of seabirds have died as a result. The French Navy is currently making efforts to improve control and inspections in the ZEE but, in the absence of strong international regulations, seabird mortalities will continue.

## INTERNATIONAL MEASURES RELEVANT TO THE CONSERVATION OF SITES

France has ratified the Ramsar Convention, the Convention on Migratory Species, the Convention on Biological Diversity, the World Heritage Convention the Convention to Combat Desertification, the Convention on Climate Change, and participates in UNESCO's Man and Biosphere programme. Of particular relevance to the French Southern Territories is that France has signed the Treaty on the Antarctic (1959), the Convention for the Protection of Seals (1978) and, most importantly, the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR, 1980), which applies to both Crozet and Kerguelen. However, despite the unique biodiversity of the French Southern Territories, there are no internationally recognized sites on these islands such as World Heritage Sites or Biosphere Reserves.

## OVERVIEW OF THE INVENTORY

A total of 17 Important Bird Areas (IBAs) are included in the inventory, between them covering the most important breeding sites

for birds in the French Southern Territories (Map 1, Table 1). The 17 sites cover 2,469 km<sup>2</sup> or a third of the total area of the territories, but proportions vary between islands. Thus, 100% of Crozet are included, 32% of Saint Paul and Amsterdam and 30% of Kerguelen.

Three of the sites are completely unprotected, five are partially protected while nine are fully protected. Fourteen are also included within the programme of proposed Nature Reserves. Most of the main habitat-types are represented, in particular littoral ones because of their importance for nesting seabirds. While several of the smaller islands, especially those free of introduced mammals, are included in their entirety, large parts of the interior of Grande Terre (Kerguelen) are, for example, of little ornithological interest and are omitted.

## COMMENTS ON THE INVENTORY

- Site names used are those given in Delépine (1973) and used on maps of the French Southern Territories, produced by the Institut Géographique National, Paris.
- Taxonomy and threat status follow Collar *et al.* (1994). Several subspecies that breed on the islands, some of them endemic (*Eudyptes chrysocome moseleyi*, *Diomedea chlororhynchos bassi* and *Pachyptila salvini macgillivrayi*), are sometimes considered full species.

- Data are generally thought accurate for ground-nesting species (e.g. albatrosses and penguins), because direct counts are possible. Data for other species, in particular hole-nesting petrels, are (on the other hand) imprecise or lacking. Many of the data are also at least a decade old. It is known that the sizes of many populations have changed considerably, since some, such as certain *Aptenodytes patagonicus* rookeries, have undergone a tenfold increase in the last decade. The data need, therefore, to be treated with caution. It is likely that many populations have been underestimated and hence more species qualify at more sites than shown here.
- Parts of Îles Kerguelen (e.g. Île de l'Ouest) have never been explored ornithologically and are thought to be of considerable importance for birds since they have remained free of introduced species. This inventory is, therefore, unlikely to be exhaustive.

## ACKNOWLEDGEMENTS

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## SITE ACCOUNTS

### Île de la Possession

Admin region Îles Crozet

Coordinates 46°24'S 51°45'E

Area 14,600 ha

Altitude 0–934 m

TF001

A1, A2 (s048), A4i, A4ii, A4iii  
Area restricted to scientific and technical research, Unprotected

### Site description

Île de la Possession is the largest of the five Crozet Islands. Its mountainous landscape is cut by deep glaciated valleys. The valleys and coastal areas are covered in subantarctic vegetation. Black rats occur over most of the island. The island is uninhabited by man except for a research station on the eastern tip of the island, staffed by approximately 20 people.

### Birds

See Box for key species. At least 28 species breed. In addition to those given below, these include 2,000 pairs of *Pygoscelis papua*, 1,150 pairs *Phoebetria palpebrata* and 84 pairs of *Macronectes giganteus*. Numbers of *Anas eatoni* and *Chionis minor* are believed to exceed thresholds, but no quantitative data are available. Ten pairs of *Diomedea chrysostoma* were recorded breeding in 1984. The smaller species breed only at higher altitudes due to the presence of rats lower down.

#### Key species

A1	<i>Diomedea exulans</i>	<i>Macronectes halli</i>
	<i>Diomedea chrysostoma</i>	<i>Sterna virgata</i>
	<i>Phoebetria fusca</i>	
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.	
A4i		Breeding (pairs) Non-breeding
	<i>Phalacrocorax atriceps melanogenis</i>	296 (1984) —
	<i>Sterna virgata</i>	38 (1984) —
A4ii	<i>Aptenodytes patagonicus</i>	85,700 (1995) —
	<i>Eudyptes chrysolophus</i>	800,000 (1984) —
	<i>Eudyptes chrysocome</i>	120,000 (1984) —
	<i>Diomedea exulans</i>	373 (1999) —
	<i>Phoebetria fusca</i>	650 (1984) —
	<i>Phoebetria palpebrata</i>	1,150 (1984) —
	<i>Macronectes halli</i>	558 (1984) —
	<i>Pterodroma brevirostris</i>	2,000–9,000 (1984) —
	<i>Pterodroma mollis</i>	2,000–9,000 (1984) —
	<i>Pachyptila salvini</i>	20,000–90,000 (1984) —
	<i>Pelecanoides georgicus</i>	20,000–90,000 (1984) —
A4iii	More than 10,000 pairs of seabird breed regularly at this site.	

### Other threatened/endemic wildlife

Two species of fur seal breed on the island, *Arctocephalus gazella* and *A. tropicalis*, with respectively, 87 and 190 pups in 1991. Numbers have been increasing recently with the cessation of hunting. In 1997, 570 female *Mirounga leonina* bred. The coastal waters are inhabited by approximately 80 *Orcinus orca* (LR/cd). Two plants and 59 arthropod species endemic to the Îles Crozet occur.

### Conservation issues

Access to several parts of the island important for wildlife is restricted as they have been declared 'Areas restricted to scientific and technical research'. Rats seriously affect the breeding of numerous species of petrel.

### Further reading

Guinet *et al.* (1994, 1999), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Weimerskirch and Jouventin (1987, 1997), Weimerskirch *et al.* (1992, 1999).

### Île de l'Est

Admin region Îles Crozet

Coordinates 46°25'S 52°10'E

Area 13,000 ha

Altitude 0–1,090 m

TF002

A1, A2 (s048), A4i, A4ii, A4iii  
Area restricted to scientific and technical research

### Site description

Île de l'Est is, as its name suggests, the easternmost island of the Crozet archipelago. It is also the most mountainous, reaching 1,090 m, with a coastline of high cliffs. Several steep-sided valleys of glacial origin cut across the island, in three of which rabbits occur, the only introduced animal species. Otherwise, the landscape is mainly mountainous bare rock. There is no human presence or infrastructure on the island, which is only rarely visited by research scientists.

### Birds

See Box for key species. In addition, numbers of *Pterodroma lessonii*, *Anas eatoni* and *Chionis minor* are believed to exceed thresholds, but no quantitative data are available. This island holds the most diverse community of seabirds in the world: 32 species, of which 19 are hole-nesting petrels. Many are believed to number tens of thousands of pairs. Three taxa are particularly abundant, *Pelecanoides georgicus*, *P. urinatrix* and *Pachyptila salvini salvini*. Estimates of the population sizes of each are of several million pairs which, in the case of *P. s.*

*salvini*, represents 80% of its global population. The site is also home to 350 pairs of *Diomedea melanophris*.

Key species			
A1	<i>Diomedea exulans</i> <i>Diomedea chrysostoma</i> <i>Phoebastria fusca</i>	<i>Macronectes halli</i> <i>Sterna virgata</i>	
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.		
A4i		Breeding (pairs)	Non-breeding
	<i>Phalacrocorax atriceps melanogenis</i>	110–120 (1984)	—
	<i>Sterna virgata</i>	110 (1984)	—
A4ii	<i>Aptenodytes patagonicus</i>	100,000 (1984)	—
	<i>Pygoscelis papua</i>	2,000–9,000 (1984)	—
	<i>Eudyptes chrysolophus</i>	200,000–900,000 (1984)	—
	<i>Eudyptes chrysocome</i>	93,000 (1984)	—
	<i>Diomedea exulans</i>	329 (1984)	—
	<i>Diomedea chrysostoma</i>	3,750 (1984)	—
	<i>Phoebastria fusca</i>	1,300 (1984)	—
	<i>Phoebastria palpebrata</i>	900–1,000 (1984)	—
	<i>Macronectes giganteus</i>	323 (1984)	—
	<i>Macronectes halli</i>	190 (1984)	—
	<i>Pterodroma brevirostris</i>	20,000–90,000 (1984)	—
	<i>Pterodroma macroptera</i>	20,000–90,000 (1984)	—
	<i>Pterodroma mollis</i>	20,000–90,000 (1984)	—
	<i>Halobaena caerulea</i>	20,000–90,000 (1984)	—
	<i>Pachyptila salvini</i>	1,000,000 (1984)	—
	<i>Pachyptila turtur</i>	20,000–90,000 (1984)	—
	<i>Procellaria aequinoctialis</i>	20,000–90,000 (1984)	—
	<i>Procellaria cinerea</i>	2,000–9,000 (1984)	—
	<i>Oceanites oceanicus</i>	20,000–90,000 (1984)	—
	<i>Garrodia nereis</i>	200–900 (1984)	—
	<i>Fregetta tropica</i>	2,000–9,000 (1984)	—
	<i>Pelecanoides georgicus</i>	1,000,000 (1984)	—
	<i>Pelecanoides urinatrix</i>	2,000,000–3,000,000 (1984)	—
	<i>Catharacta antarctica</i>	200–900 (1984)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

### Other threatened/endemic wildlife

The island is home to the largest population of the mammal *Mirounga leonina* in the archipelago. *Orcinus orca* (LR/cd) occur in coastal waters. There is no information on fur seals *Arctocephalus* spp. Three endemic plant and 59 endemic arthropod species occur.

### Conservation issues

The whole island is an ‘Area restricted to scientific and technical research’ to which access is limited. It is also a proposed Nature Reserve. Bird populations, unlike the vegetation, seem little affected by the presence of rabbits. There is a real risk of the accidental introduction of rats.

### Further reading

Despin *et al.* (1972), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Weimerskirch and Jouventin (1987, 1997), Weimerskirch *et al.* (1999).

## Île aux Cochons

Admin region Îles Crozet

Coordinates 46°05'S 50°15'E

Area 6,600 ha Altitude 0–826 m

A1, A2 (s048), A4i, A4ii, A4iii

French Antarctic National Park

TF003

### Site description

Île aux Cochons is the westernmost island of the archipelago. It is a weakly eroded dome of volcanic origin, scattered with small, inactive craters. The coastline consists in part of low cliffs. Cats, rabbits and mice occur; there is, however, no human infrastructure and visits by scientific expeditions are rare.

### Birds

See Box for key species. At least 19 species breed. Île aux Cochons is extremely important for its large penguin populations: it holds the world’s largest rookery of *Aptenodytes patagonicus*. The largest colony of *Diomedea exulans* in the Indian Ocean is also found here. Despite the presence of cats, large populations of small petrels still nest on the

island, notably four million pairs of *Pachyptila salvini salvini* and one million pairs of *Pelecanoides georgicus*.

Key species			
A1	<i>Diomedea exulans</i> <i>Phoebastria fusca</i>	<i>Macronectes halli</i>	
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.		
A4i		Breeding (pairs)	Non-breeding
	<i>Phalacrocorax atriceps melanogenis</i>	185 (1984)	—
A4ii	<i>Aptenodytes patagonicus</i>	432,000–556,000 (1995)	—
	<i>Pygoscelis papua</i>	5,000–6,000 (1984)	—
	<i>Eudyptes chrysolophus</i>	272,000 (1984)	—
	<i>Eudyptes chrysocome</i>	51,000 (1984)	—
	<i>Diomedea exulans</i>	1,263 (1984)	—
	<i>Phoebastria fusca</i>	400–500 (1984)	—
	<i>Macronectes halli</i>	550–600 (1984)	—
	<i>Pachyptila salvini</i>	4,000,000 (1984)	—
	<i>Pachyptila turtur</i>	50,000–200,000 (1984)	—
	<i>Pelecanoides georgicus</i>	1,000,000 (1984)	—
	<i>Catharacta antarctica</i>	150–200 (1984)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

### Other threatened/endemic wildlife

Large populations of the mammals *Mirounga leonina*, *Arctocephalus gazella* and *A. tropicalis* breed, and two endemic plant species and 59 endemic arthropod species occur.

### Conservation issues

Île aux Cochons is a French Antarctic National Park to which access is restricted. It is also a proposed Nature Reserve. Of the three introduced species, cats are the greatest threat and have probably eliminated several species from the island.

### Further reading

Derenne *et al.* (1976), Guinet *et al.* (1995), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Voisin (1984).

## Îles des Apôtres

Admin region Îles Crozet

Coordinates 45°58'S 50°27'E

Area 800 ha Altitude 0–292 m

A1, A4ii, A4iii

French Antarctic National Park

TF004

### Site description

This site is located close to the Île aux Cochons, on the western side of the archipelago. It consists of a small group of eroded reefs and sheer islands. The main island is 3 km long. The steep coastal cliffs make access from the sea virtually impossible; they have therefore only very occasionally been visited by man. The site is free of any introduced animal species and is therefore in a largely unaltered state.

### Birds

See Box for key species. At least 25 breeding species occur, notably including six species of albatross comprising *Diomedea exulans* (120 pairs), *D. chrysostoma* (180 pairs), *D. melanophris* (330 pairs), *Phoebastria fusca* (20–30 pairs) and 150 pairs of *Phoebastria palpebrata*. In addition, numbers of *Pterodroma macroptera* and *P. mollis* are believed to exceed thresholds, but no quantitative data are available. Also present are 2,000–9,000 pairs of both *Halobaena caerulea* and *Procellaria aequinoctialis*, and 20 pairs of *Phalacrocorax atriceps melanogenis*.

Key species			
A1	<i>Diomedea exulans</i> <i>Diomedea chrysostoma</i> <i>Phoebastria fusca</i>	<i>Macronectes halli</i> <i>Sterna virgata</i>	
A4ii		Breeding (pairs)	Non-breeding
	<i>Eudyptes chrysolophus</i>	200,000–900,000	—
	<i>Diomedea chlororhynchus</i>	1,230	—
	<i>Macronectes halli</i>	150	—
	<i>Pachyptila salvini</i>	20,000–90,000	—
	<i>Pelecanoides urinatrix</i>	20,000–90,000	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

### Other threatened/endemic wildlife

None known to BirdLife International.

### Conservation issues

The whole of the Îles des Apôtres is a French Antarctic National Park to which access is restricted. It is also a proposed Nature Reserve.

### Further reading

Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996).

#### Île des Pingouins

Admin region Îles Crozet

Coordinates 46°25'S 50°25'E

Area 400 ha Altitude 0–420 m

TF005

A1, A4i, A4ii, A4iii

French Antarctic National Park

### Site description

Île des Pingouins is situated on the western edge of the archipelago, close to the Île des Cochons. It is a small, sheer island, 4 km by 1 km, much eroded by the sea. The coastal cliffs that surround the island vary in height between 50–300 m. The island is virtually inaccessible from the sea and is therefore only occasionally visited by man. It is free of any introduced species, so both vegetation and fauna are pristine.

### Birds

See Box for key species. At least 29 species breed. This site has an exceptionally high density of seabirds, notably including six species of albatross which, in addition to those listed below, comprise 300 pairs of *Diomedea melanophris*, four pairs of *D. cauta salvini*, (the only breeding locality for this subspecies in the Indian Ocean) and 30 pairs of *Phoebastria palpebrata*. Several thousand pairs of *Pachyptila salvini salvini* and *Procellaria aequinoctialis* also occur.

#### Key species

A1	<i>Diomedea chrysostoma</i>	<i>Macronectes halli</i>	
	<i>Phoebastria fusca</i>	<i>Sterna virgata</i>	
A4i		Breeding (pairs)	Non-breeding
	<i>Phalacrocorax atriceps melanogenis</i>	214 (1984)	—
A4ii	<i>Eudyptes chrysolophus</i>	1,000,000 (1984)	—
	<i>Diomedea chrysostoma</i>	2,000 (1984)	—
	<i>Diomedea chlororhynchos</i>	5,800 (1984)	—
	<i>Phoebastria fusca</i>	250 (1984)	—
	<i>Macronectes halli</i>	165 (1984)	—
	<i>Pterodroma brevirostris</i>	2,000–9,000 (1984)	—
	<i>Halobaena caerulea</i>	20,000–90,000 (1984)	—
	<i>Pelecanoides urinatrix</i>	200,000–900,000 (1984)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

### Other threatened/endemic wildlife

None known to BirdLife International.

### Conservation issues

The whole of Île des Pingouins is a French Antarctic National Park to which access is restricted. It is also a proposed Nature Reserve.

### Further reading

Jouventin (1990), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996).

#### Plateau des Tourbières

Admin region Île Saint Paul and Île Amsterdam

Coordinates 37°50'S 77°33'E

Area 800 ha

Altitude 450–742 m

TF006

A1, A4ii

Area restricted to scientific and technical research

### Site description

This plateau covers the highest part of Amsterdam in the centre-west of the island. The plateau is an ancient lava-flow now almost entirely covered with waterlogged peatbog. A number of craters are scattered across the site. Cats, rats and mice are present. The only human habitation on the island, a scientific research station which annually

houses 20 or so scientists, is situated 3 km north of the site. The site itself is visited monthly, mostly for ornithological surveys.

### Birds

See Box for key species. This is the only site at which the Critically endangered *Diomedea amsterdamensis* breeds. This species has a biennial breeding system such that each year an average of 20 pairs breed in a loose colony on the plateau. The total population of the species is approximately 150 individuals. The only other bird species present is *Catharacta antarctica*, of which 39 pairs breed.

#### Key species

A1	<i>Diomedea amsterdamensis</i>		
A4ii		Breeding (pairs)	Non-breeding
	<i>Diomedea amsterdamensis</i>	21 (1999)	—

### Other threatened/endemic wildlife

Ten species of endemic arthropod, one endemic fern and four endemic vascular plant species occur.

### Conservation issues

The site is an 'Area restricted to scientific and technical research', to which access is limited. From a dozen pairs of *Diomedea amsterdamensis* that bred in the 1980s, the population has, now totally protected and closely monitored, increased to 21 pairs. Virtually every individual is ringed and the condition of each regularly checked. The area is now protected against damage by cattle, as the once-feral herd is now confined to the north of the island.

### Further reading

Brothers (1991), Jouventin (1994), Jouventin and Micol (1992), Jouventin and Roux (1985), Jouventin *et al.* (1984, 1988, 1996), Micol and Jouventin (1995), Roux *et al.* (1983), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1997), Worthy and Jouventin (1999).

#### Falaises d'Entrecasteaux

Admin region Île Saint Paul and Île Amsterdam

Coordinates 37°51'S 77°31'E

Area 360 ha

Altitude 0–731 m

TF007

A1, A4ii, A4iii

Area restricted to scientific and technical research

### Site description

The site includes the whole western coastline of Île Amsterdam and consists of vertical cliffs that reach 731 m, together with a small ledge at their base. The vegetation is composed mainly of tussock-grasses and rushes. It covers much of the site, but is thickest towards the bottom of the cliffs. There is a single cabin on the site, used occasionally by research teams.

### Birds

See Box for key species. At least seven species breed. The site is home to one of the largest colonies of *Diomedea chlororhynchos* in the world, approximately 19,000 pairs (declining) or 20% of the world's population. There is also a large rookery of *Eudyptes chrysocome moseleyi* (25,000 pairs). At least two species, *Procellaria cinerea* and *Pterodroma mollis*, which are rare on Amsterdam due to predation by cats and rats, are thought to breed.

#### Key species

A1	<i>Phoebastria fusca</i>		
A4ii		Breeding (pairs)	Non-breeding
	<i>Diomedea chlororhynchos</i>	18,990 (1992)	—
	<i>Phoebastria fusca</i>	240 (1992)	—
A4iii	More than 10,000 pairs of seabird next regularly at this site.		

### Other threatened/endemic wildlife

A large population of the seal *Arctocephalus tropicalis* (5,700 pups in 1982) occurs. Offshore *Orcinus orca* (LR/cd) are seen regularly. Three endemic plant species and 10 endemic arthropod species have been recorded.

### Conservation issues

The site is an 'Area restricted to scientific and technical research',

to which access is limited. Both cats and rats are a serious threat to petrel populations and may have been the cause of the local extinction of several species. Thanks to their inaccessibility, the vegetation of the cliff-ledges has never been grazed by the once-feral cattle.

#### Further reading

Brothers (1991), Guinard *et al.* (1998), Guinet *et al.* (1994), Jouventin (1994), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Weimerskirch and Jouventin (1997), Worthy and Jouventin (1999).

### Île Saint Paul

Admin region Île Saint Paul and Île Amsterdam

Coordinates 38°43'S 77°32'E

Area 800 ha

Altitude 0–264 m

TF008

A1, A4i, A4ii, A4iii

French Antarctic National Park,

Unprotected

#### Site description

The site comprises the main island of Saint Paul and the adjacent islet of La Roche Quille. Saint Paul is triangular in shape and encloses a well-preserved, roughly circular crater open to the sea on its north-eastern side. The crater's walls and the north-eastern coastline consist of tall cliffs, some of which are over 200 m high. La Roche Quille, situated close to the opening of the caldera, is no more than a large, steep-sided rock covered mostly in herbaceous vegetation. It was, until recently, the only part of the site free of rats, mice and rabbits. There is no human presence on the island.

#### Birds

See Box for key species. Some 15 species breed, including a colony of *Eudyptes chrysocome moseleyi* (c.9,000 pairs), *Phoebastria fusca* (21 pairs in 1996) and *Diomedea chlororhynchos* (a few pairs). The race *macgillivrayi* of *Pachyptila salvini* is endemic to La Roche Quille where only some 100–200 pairs bred in 1996. Given its subtropical location, Saint Paul has a distinct avifauna different from that of the French subantarctic islands. Thus, several species breed which are rare in the region or at these latitudes; *Morus serrator* (1–3 pairs), *Pachyptila turtur* (10–20 pairs), *Pterodroma macroptera* (50 pairs), *Puffinus assimilis* (25 pairs), *P. carneipes* (489 pairs), *Oceanites oceanicus* (10–50 pairs) and *Sterna fuscata* (one pair). Most species breed only on La Roche Quille. However, rats and rabbits have recently been eradicated from Saint Paul and hence its potential ornithological significance has grown considerably. For instance, there is evidence that *Pterodroma macroptera* and *Pachyptila salvini macgillivrayi* have begun recolonizing.

#### Key species

A1	<i>Phoebastria fusca</i>		
A4i		Breeding (pairs)	Non-breeding
	<i>Sterna vittata</i>	200 (1996)	—
A4ii	<i>Fregetta grallaria</i>	20–70 (1996)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

#### Other threatened/endemic wildlife

A large population of the fur seal *Arctocephalus tropicalis* (365 pups in 1993) breeds. Four species of insect and three species of vascular plant are endemic to Saint Paul.

#### Conservation issues

La Roche Quille is a French Antarctic National Park. Access to Saint Paul is also restricted but, in practice, not controlled as there is no permanent human presence. The site has been proposed as a Nature Reserve. Between 1995–1999, an ecological rehabilitation programme funded by TAAF and the European Environmental Fund successfully eradicated rats and rabbits from Saint Paul which, it is hoped, will now be recolonized by birds from La Roche Quille, currently at carrying capacity.

#### Further reading

Guinard *et al.* (1998), Guinet *et al.* (1994), Jouventin (1994), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Lequette *et al.* (1995), Micol (1997).

### Péninsule Courbet

Admin region Îles Kerguelen

Coordinates 49°09'S 70°22'E

Area 60,000 ha

Altitude 0–500 m

TF009

A1, A2 (s048), A4i, A4ii, A4iii

Unprotected

#### Site description

Péninsule Courbet consists of a large, mainly flat peninsula of alluvium deposits of glacial origin on the north-eastern tip of Grande Terre. A large number of lakes of different sizes and boggy margins are scattered across the site. Inland areas of the peninsula are, however, drier and largely unvegetated. The western edge of the site is hillier and reaches 500 m. The western limit of the site is defined by a line linking Pointe Scott and Château d'If; the archipelago's only base camp, Port-aux-Français situated nearby, is therefore excluded.

#### Birds

See Box for key species. At least 22 species breed. Three large rookeries of *Aptenodytes patagonicus* are found on the western coast of the site, with a combined total of 172,400 pairs. *Eudyptes chrysolophus* breed along the northern coast in a string of colonies. The inland parts of the site are also important as they hold the largest population of *Anas eatoni* in the French Southern Territories. In addition, numbers of breeding *Phalacrocorax verrucosus*, *Chionis minor*, *Catharacta antarctica*, *Larus dominicanus*, *Sterna virgata* and *S. vittata* exceed thresholds, but quantitative data are lacking.

#### Key species

A1	<i>Diomedea exulans</i>		<i>Sterna virgata</i>
	<i>Macronectes halli</i>		
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.		
A4i		Breeding (pairs)	Non-breeding
	<i>Anas eatoni</i>	5,000 (1989)	—
A4ii	<i>Aptenodytes patagonicus</i>	172,400 (1989)	—
	<i>Pygoscelis papua</i>	8,800 (1989)	—
	<i>Eudyptes chrysolophus</i>	336,000 (1989)	—
	<i>Diomedea exulans</i>	300 (1989)	—
	<i>Macronectes halli</i>	700–800 (1989)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

#### Other threatened/endemic wildlife

The site holds the largest breeding population of the mammal *Mirounga leonina* in the archipelago, with 43,782 females (1997 census data). An important population of *Arctocephalus gazella* also occurs.

#### Conservation issues

The site is completely unprotected and has not been proposed as a Nature Reserve. The vegetation has generally been badly degraded by rabbits, and cats have probably been responsible for severe declines of several species.

#### Further reading

Cherel *et al.* (1996), Guinet *et al.* (1999), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

### Islands of the Golfe du Morbihan

Admin region Îles Kerguelen

Coordinates 49°27'S 70°00'E

Area 28,000 ha

Altitude 0–159 m

TF010

A1, A2 (s048), A4ii, A4iii

Area restricted to scientific and technical research, Unprotected

#### Site description

This site covers a large part of the Golfe du Morbihan, and is located to the east of Grande Terre between, to the north, Péninsule Courbet (TF009) and, to the south, Péninsule Jeanne d'Arc and Presqu'île Ronarch. About 20 islands and numerous islets are scattered across this part of the gulf, the biggest being Île Australia (2,000 ha). The mountain ridges of Grande Terre to the west protect the gulf from some of the wind and rain; hence rainfall is lower here than in most of Kerguelen. Some of the islands are free of introduced species, but others have rats, mice and rabbits. There is no permanent human presence, but research programmes are undertaken on some of the islands.

## Birds

See Box for key species. At least 25 species breed, including 13 species of petrel, a consequence of the milder climate and the fact that some of the islands are predator-free. It is possible that numbers of breeding *Pterodroma brevirostris*, *P. macroptera*, *P. lessoni*, *Pachyptila desolata*, *P. belcheri*, *Procellaria aequinoctialis*, *Oceanites oceanicus*, *Garrodia nereis*, *Pelecanoides georgicus*, *P. urinatrix*, *Phalacrocorax verrucosus*, *Anas eatoni*, *Chionis minor*, *Catharacta antarctica* and *Sterna virgata* exceed thresholds, but quantitative data are lacking. Regionally, the islands are of interest because of their large populations of *Halobaena caerulea* and *Procellaria cinerea*.

### Key species

A1	<i>Macronectes halli</i>	<i>Sterna virgata</i>	
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.		
A4ii		Breeding (pairs)	Non-breeding
	<i>Macronectes halli</i>	150 (1989)	—
	<i>Halobaena caerulea</i>	100,000–200,000 (1989)	—
	<i>Procellaria cinerea</i>	5,000 (1989)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

## Other threatened/endemic wildlife

Several cetaceans occur, notably *Cephalorhynchus commersonii* (DD). Some islands retain their original subantarctic vegetation, including *Pringlea antiscorbutica*, *Lyallia kerguelensis* and *Ranunculus moseleyi*.

## Conservation issues

Many of the islands are ‘Areas restricted to scientific and technical research’, to which access is limited. Programmes to eradicate rats and rabbits are under way on several of the islands.

## Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Weimerskirch *et al.* (1989).

## Southern coast of Péninsule Jeanne d’Arc TF011

Admin region	Îles Kerguelen	A4ii, A4iii
Coordinates	49°41’S 70°00’E	
Area	12,000 ha	Areas restricted to scientific and technical research, Unprotected
Altitude	0–844 m	

## Site description

Péninsule Jeanne d’Arc is the south-eastern extremity of Grande Terre, south of the Golfe du Morbihan (TF010). Cats, rats and rabbits have been introduced. The site is restricted to the southern edge of the peninsula and consists of cliffs that rise steeply from the sea to over 800 m. To the east of the site, a large glaciated valley opens into the Baie de l’Antarctique. Other than at Canyon des Sourcils Noirs, on the eastern edge of the site, which is frequently visited by scientists monitoring the study population of *Diomedea melanophris*, there is little human activity.

## Birds

See Box for key species. At least 21 species breed. The penguin rookeries at the base of the cliffs also includes 3,000 pairs of *Eudyptes chrysochome*. Kerguelen’s only population of *Phoebetria fusca* (six pairs) is found at the Canyon des Sourcils Noirs, along with 1,300 pairs of *Diomedea melanophris*. Small numbers of *Macronectes halli* and *Sterna virgata* also breed. It is possible that numbers of breeding *Phoebetria palpebrata*, *Procellaria aequinoctialis* and *Phalacrocorax verrucosus* exceed thresholds, but quantitative data are lacking.

### Key species

A4ii		Breeding (pairs)	Non-breeding
	<i>Pygoscelis papua</i>	2,500 (1989)	—
	<i>Eudyptes chrysolophus</i>	130,000 (1989)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

## Other threatened/endemic wildlife

None known to BirdLife International.

## Conservation issues

The Canyon des Sourcils Noirs is an ‘Area restricted to scientific and

technical research’ to which access is limited. The rest of the site is, however, unprotected. Predation by cats has reduced the populations of several seabird species to small numbers.

## Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

## Baie Larose

Admin region	Îles Kerguelen
Coordinates	49°35’S 69°25’E
Area	2,000 ha
Altitude	0–235 m

**TF012**

A1, A4ii, A4iii  
Unprotected

## Site description

This site, in central-southern Grande Terre, includes part of the south-western slopes of Mont Ross, the highest peak in the French Southern Territories (1,850m) and the peculiar tilted, pointed peak known as the Doigt de Sainte Anne. The site consists of the lower mountain slopes and beaches of sand and pebbles. There is very little vegetation.

## Birds

See Box for key species. At least 22 species breed, including nine pairs of *Diomedea exulans* (1989) and small numbers of *Phalacrocorax verrucosus* and *Anas eatoni*; 500 pairs of *Pygoscelis papua*, 6,000 pairs of *Eudyptes chrysolophus* and 4,000 pairs of *E. chrysochome* also breed. It is possible that numbers of breeding *Pachyptila desolata*, *P. belcheri*, *Procellaria aequinoctialis*, *P. urinatrix* and *Chionis minor* exceed thresholds, but quantitative data are lacking.

### Key species

A1	<i>Diomedea exulans</i>	<i>Sterna virgata</i>	
	<i>Macronectes halli</i>		
A4ii		Breeding (pairs)	Non-breeding
	<i>Aptenodytes patagonicus</i>	21,500 (1989)	—
	<i>Macronectes halli</i>	100–150 (1989)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.		

## Other threatened/endemic wildlife

The mammals *Mirounga leonina* and *Arctocephalus gazella* breed.

## Conservation issues

The site is not protected.

## Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988), Weimerskirch *et al.* (1989).

## Péninsule Rallier du Baty

Admin region	Îles Kerguelen
Coordinates	49°35’S 68°50’E
Area	27,000 ha
Altitude	0–1,262 m

**TF013**

A1, A2 (s048), A4ii, A4iii  
Area restricted to scientific and technical research

## Site description

This site covers the western half of Péninsule Rallier du Baty in south-western Grande Terre. It is bordered to the north by the Cook Glacier and, to the east and south, by the main mountain ridge of the peninsula and the Arête Jérémie, respectively. Protected by rivers and glaciers, it is the only part of Grande Terre free from rats and cats, while rabbits are restricted to the northern part of the site. The landscape is mostly devoid of vegetation and the relief is very hilly, with glaciers covering mountain peaks. The mountains are interrupted by large, westward-sloping, glaciated valleys. The area is geothermically active, indicated by vents of steam and gas. Human visits to the site are only very occasional.

## Birds

See Box for key species. This site holds very high densities of seabirds and at least 31 species breed. Penguins are particularly common as, in addition to those listed below, 10,000 pairs of *E. chrysochome* breed. The colony of *Diomedea exulans* is the largest in Kerguelen. It is also the only known breeding site in the archipelago for *Macronectes*

*giganteus*, of which a few pairs occur. The site holds very large populations of petrels, particularly *Pachyptila belcheri* as well as a small population of *Phalacrocorax verrucosus*. It is possible that numbers of breeding *Pterodroma lessoni*, *Pachyptila desolata*, *P. belcheri*, *Pelecanoides georgicus*, *P. urinatrix* *Anas eatoni*, *Chionis minor* and *Sterna virgata* exceed thresholds, but quantitative data are lacking.

Key species		
A1	<i>Diomedea exulans</i>	<i>Sterna virgata</i>
	<i>Macronectes halli</i>	
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.	
A4ii	Breeding (pairs)	Non-breeding
	<i>Aptenodytes patagonicus</i>	60,000 (1989) —
	<i>Pygoscelis papua</i>	2,000–3,000 (1989) —
	<i>Eudyptes chrysolophus</i>	500,000–600,000 (1989) —
	<i>Diomedea exulans</i>	750 (1989) —
	<i>Macronectes halli</i>	500–600 (1989) —
A4iii	More than 10,000 pairs of seabird breed regularly at this site.	

### Other threatened/endemic wildlife

The site is one of the few places where the endemic plant *Lyallia kerguelensis* is still known to occur.

### Conservation issues

The site is an 'Area restricted to scientific and technical research' to which access is limited. It is also a proposed Nature Reserve. There is a risk of colonization by introduced mammal species, despite the area's natural protection, as glaciers retreat.

### Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996, 1996), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

## Îles Nuageuses and Île Clugny

**TF014**

Admin region Îles Kerguelen

Coordinates 48°38'S 68°39'E

A1, A2 (s048), A4ii, A4iii

Area 24,000 ha Altitude 0–518 m French Antarctic National Park

### Site description

This site covers several islands of varying size, located a short distance off the north-western coast of Grande Terre. The main islands of Croÿ, Roland and Ternay form the Îles Nuageuses, while the small Île Clugny is located a little to the south. The coastlines of the islands are mostly sheer cliffs. The islands are free of any introduced species and thus covered in typical subantarctic vegetation, dense up to about 200 m. The site is only rarely visited by man.

### Birds

See Box for key species. At least 25 species breed. Inventories of the site are only partial; whereas Île de Croÿ has been studied in great detail, no information is available for Île Clugny, apart from observations made at sea. The following figures are therefore underestimates. This site is of major importance both for penguins, and for albatrosses with, in 1989, five pairs of *Diomedea exulans*, 1,815 pairs of *D. melanophris*, 7,860 pairs of *D. chrysostoma* (98% of the population on Kerguelen and 10% of the world's population) and the only colony of *D. chlororhynchus* in the archipelago (50 pairs), as well as some 20 pairs of *Macronectes halli*. *Phalacrocorax verrucosus*, *Anas eatoni*, and *Sterna virgata* all occur in, it is thought, small numbers. It is possible that numbers of breeding *Phoebetria palpebrata*, *Pterodroma brevirostris*, *Pachyptila desolata*, *Procellaria aequinoctialis*, *Oceanites oceanicus*, *Pelecanoides urinatrix* and *Chionis minor* exceed thresholds for the A4ii criterion, but quantitative data are lacking.

Key species		
A1	<i>Diomedea exulans</i>	<i>Macronectes halli</i>
	<i>Diomedea chrysostoma</i>	<i>Sterna virgata</i>
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.	
A4ii	Breeding (pairs)	Non-breeding
	<i>Pygoscelis papua</i>	7,500 (1989) —
	<i>Eudyptes chrysolophus</i>	500–50,000 (1989) —

A4ii ... continued	Breeding (pairs)	Non-breeding
<i>Eudyptes chrysocome</i>	35,000 (1989)	—
<i>Diomedea chrysostoma</i>	7,860 (1989)	—
A4iii	More than 10,000 pairs of seabird breed regularly at this site.	

### Other threatened/endemic wildlife

The flora is believed to be perfectly preserved. There is a large breeding colony of the fur seal *Arctocephalus gazella* (over 5,000 females). This population has probably never been exploited, which has enabled the recolonization of other sites from where it has been exterminated.

### Conservation issues

The site is a French Antarctic National Park to which access is restricted. It has also been proposed as a Nature Reserve. There is a continuing risk of colonization by introduced mammal species.

### Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Mougins (1985), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

## Northern part of Péninsule Loranchet

**TF015**

Admin region Îles Kerguelen

Coordinates 48°42'S 69°00'E

A1, A2 (s048), A4ii, A4iii

Area 6,000 ha Altitude 0–552 m

Unprotected

### Site description

This site covers the northern part of Péninsule Loranchet, the northernmost part of Grande Terre. The southern border of the site is defined by a line running inland from the head of the Baie de la Dauphine. The coastline is extremely rugged with steep cliffs much dissected by fjords, while inland the relief is equally precipitate. Cats, rats and rabbits occur, but human visits are infrequent.

### Birds

See Box for key species. At least 23 species breed. In addition to the *Eudyptes chrysolophus* rookery on the tip of the peninsula, 5,400 pairs of *Eudyptes chrysocome* also breed. There is a small colony of *Diomedea melanophris* (400 pairs). Several species of petrel occur, but only in small numbers. *Daption capense* and *Phalacrocorax verrucosus* are frequent on the cliffs. It is possible that numbers of breeding *Phoebetria palpebrata*, *Phalacrocorax verrucosus* and *Anas eatoni* exceed thresholds, but quantitative data are lacking.

#### Key species

A1	<i>Sterna virgata</i>	
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.	
A4ii	Breeding (pairs)	Non-breeding
	<i>Eudyptes chrysolophus</i>	250,000 (1989) —
A4iii	More than 10,000 pairs of seabird breed regularly at this site.	

### Other threatened/endemic wildlife

The mammals *Mirounga leonina* and *Arctocephalus gazella* breed.

### Conservation issues

The site is completely unprotected. The presence of introduced mammals has almost certainly reduced the ornithological importance of the site.

### Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Mougins (1985), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

## Îles Leygues

**TF016**

Admin region Îles Kerguelen

Coordinates 48°41'S 69°29'E

A1

Area 2,400 ha Altitude 0–130 m French Antarctic National Park

### Site description

This site covers a small group of islands and islets to the east of the northern tip of Grande Terre. The largest island, Île de Castries, is about

500 ha. The landscape of the islands is mostly flat, rising westwards to meet coastal cliffs. Access from the sea is virtually impossible because of the extensive banks of the seaweed *Macrocystis pyrifera* which surround the islands. It is likely therefore that humans have never set foot on these islands.

### ■ Birds

See Box for key species. The only data available are from observations made offshore and so are inevitably incomplete. Five or six pairs of *Diomedea exulans* breed (1989 data) as do unknown numbers of *Macronectes halli*. It is possible that the site is of importance for several petrel species, while numbers of breeding *Phalacrocorax verrucosus* exceed the threshold, but quantitative data are lacking.

#### Key species

A1 *Diomedea exulans* *Macronectes halli*

### ■ Other threatened/endemic wildlife

The flora is thought to be pristine. A large colony of the fur seal *Arctocephalus gazella* occurs. This population has probably never been exploited, which has enabled the recolonization of other sites from where the species had been exterminated.

### ■ Conservation issues

The site is a French Antarctic National Park to which access is restricted. It has also been proposed as a Nature Reserve. Although the islands are naturally protected and seem never to have been visited by man, the risk of colonization by introduced species remains.

### ■ Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Mougouin (1985), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

## Île Foch, Île Sainte Lanne Gramont and Île Howe

TF017

Admin region Îles Kerguelen A1, A2 (s048), A4ii, A4iii  
 Coordinates 49°00'S 69°15'E Area restricted to scientific and technical research, Unprotected  
 Area 48,000 ha Altitude 0–687 m

### ■ Site description

The islands are located between the Loranchet and Joffre peninsulas of Grande Terre, just off its central north-western shore. The site

comprises three large islands (Île Foch, the largest, Île Sainte Lanne Gramont and Île Howe) as well as several smaller ones (Île MacMurdo, Île Briand, Îles Dayman and Îlots Hallet). The landscape is rugged, consisting of coastal cliffs and rocky ridges inland, cut across by fjords and valleys. The site is free of introduced mammals, with the exception of Île Howe where rabbits occur. Other than Île Howe, the site's vegetation is well preserved and more dense than on Grande Terre.

### ■ Birds

See Box for key species. At least 29 species breed. Populations of petrels are thought to be large due the absence of introduced mammals, but data are incomplete. Île Sainte Lanne Gramont, in particular, is poorly known. Large populations of penguins also occur, with over 3,000 pairs of *Pygoscelis papua* and 18,500 pairs of *Eudyptes chrysocome*. Twenty pairs of *Diomedea exulans* breed on Île Howe (1989 data) as do several tens of pairs of *Pachyptila turtur*. *Pelecanoides georgicus* is also common. It is possible that numbers of breeding *Phoebastria palpebrata*, *Pterodroma brevirostris*, *P. mollis*, *Pachyptila desolata*, *Procellaria aequinoctialis*, *Fregatta tropica* *Pelecanoides urinatrix*, *Phalacrocorax verrucosus*, *Anas eatoni* and *Sterna virgata* exceed thresholds, but quantitative data are lacking.

#### Key species

A1	<i>Diomedea exulans</i> <i>Macronectes halli</i>	<i>Sterna virgata</i>
A2 (s048)	Kerguelen and Crozet islands Secondary Area: <i>Anas eatoni</i> has been recorded at this site.	
A4ii		Breeding (pairs) Non-breeding
	<i>Pygoscelis papua</i>	3,000–4,000 (1989) —
A4iii	More than 10,000 pairs of seabird breed regularly at this site.	

### ■ Other threatened/endemic wildlife

The mammals *Mirounga leonina* and *Arctocephalus gazella* breed.

### ■ Conservation issues

Île Foch is an 'Area restricted to scientific and technical research', to which access is limited. The rest of the site is, however, unprotected. Île Foch and Île Sainte Lanne Gramont are proposed Nature Reserves. There is a permanent risk of colonization by introduced mammal species.

### ■ Further reading

Cherel *et al.* (1996), Jouventin and Micol (1992), Jouventin *et al.* (1984, 1988, 1996), Mougouin (1985), Weimerskirch and Jouventin (1997), Weimerskirch *et al.* (1989).

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