

Collar, N.J., Gonzaga, L.P., Krabbe, N., Madroño Nieto, A., Naranjo, L.G., Parker, T.A. & Wege, D.C. (1992) *Threatened birds of the Americas: the ICBP/IUCN Red Data Book*. Cambridge, UK: International Council for Bird Preservation.

BLACK-CAPPED PETREL *Pterodroma hasitata*

I⁷

Human exploitation for food, predation by introduced mammals and in one case an earthquake have been blamed for the decline and local extinction of this seabird, which survives in small colonies in cliffs and montane forest on Haiti, Dominican Republic, Cuba and probably Dominica (in that order of known importance). Records at sea both in the Caribbean and off the North American Atlantic seaboard indicate a greater numerical strength than that reflected at the known or suspected sites.

DISTRIBUTION The Black-capped Petrel occurs in tropical and subtropical water masses in the western North Atlantic Ocean between 10° and 40°N (Haney 1987). It is currently known to breed in some of the Hispaniolan forested mountain ranges (Massif de la Selle and Massif de la Hotte in Haiti and Sierra de Baoruco in the Dominican Republic) and in Cuba (Sierra Maestra) and formerly in Dominica (possibly still; see Population), Guadeloupe and Martinique (see Remarks 1). Black-capped Petrels at sea appear to be closely associated with the western edge of the Gulf Stream in the North American South Atlantic Bight (Cape Cañaveral, Florida, to North Carolina) (Lee 1977, 1984, Lee and Booth 1979, Clapp *et al.* 1982, Haney 1983, 1987). Records in the Caribbean Sea south of the Greater Antilles to near the coasts of Venezuela suggest that the species is also found there at least during the winter and spring months (Mörzer Bruyns 1967a). Unless otherwise stated coordinates in the following account are taken from DMATC (1972, 1973), OG (1955b, 1963a), except for coordinates at sea which are provided by the original source of each record.

Cuba Although not yet proven, it is believed that the species nests in the south-eastern coastal slopes of Sierra Maestra, on “La Bruja” (= Loma la Bruja, 19°59’N 76°48’W) mountain, near Ocuja, where a presumed colony was discovered in December 1977 (Bond 1978, Garrido 1985). Furthermore, Garrido (1985) indicated the possibility of another colony in Sancti Spiritus, near Playa Yaguanabo, Trinidad (Yaguanabo is at 21°54’N 80°12’N).

Haiti

Massif de la Hotte A nesting colony was discovered in 1984 on the south-facing cliffs of Pic Macaya (18°23’N 74°02’W), and a possible second colony was believed to exist on the north-west face of Pic Formon (c.18°22’N 74°02’W, read from the map in Woods and Ottenwalder 1986) (Woods 1987).

Massif de la Selle In confirmation of a prediction in Wetmore (1939), Wingate (1964a) reported 11 nesting colonies in 1963, nine of them within the present boundaries of La Visite National Park (eight on the La Selle escarpment between Morne La Visite, 18°24’N 72°51’W, and Morne Kadeneau, 18°21’N 72°12’W, a ridge including Morne Cabaio and Tête Opaque, and one on the south-west boundary of the park) (see Wingate’s 1964a map) and two more on the northern side of Morne La Selle (18°22’N 71°59’W) and at Dubois (c.18°24’N 71°56’W, read from the map in Wingate 1964a).

Dominican Republic There are records of three birds near the north coast of the country in April 1900 (Wetmore and Swales 1931), and four birds were taken at Moca (19°24’N 70°31’W) in May 1928 (Hobley 1932, Wetmore 1932a). In July 1977 a small group of these petrels was observed off the north-east point of Isla Beata and in October 1978 three birds were observed flying north-east near Alto Velo Island (Wiley and Ottenwalder 1990). In July 1977 fishermen reported petrels nesting in the Cabo Falso cliffs (17°47’N 71°41’W) on the Península de Barahona, although this was not proved (Wiley and Ottenwalder 1990). A moribund bird was found at Laguna del Rincón (18°17’N 71°14’W), Barahona, in

Threatened birds of the Americas

June 1979 (see Ottenwalder and Vargas M. 1979). A relatively small breeding colony (the only known in the country to date) was discovered in February 1981 near the border with Haiti, at Loma de Toro (this being above Zapotén, 18°19'N 71°41'W), Sierra de Baoruco (Bond 1982, Woods and Ottenwalder 1983, D. B. Wingate *in litt.* 1981, A. Stockton de Dod *in litt.* 1986).

Guadeloupe The nesting of the species in former times is well documented: it was known to have nested on Soufrière mountain, Basse Terre, during the nineteenth century (Lawrence 1891; see Remarks 2 and Remarks 2 under the Jamaica Petrel *Pterodroma caribbaea*). Nesting occurred up until 1847 (see Threats) on the north-east slopes of the Nez Cassé (= Soufrière) (Noble 1916). However, there is a record of a bird collected a few years before 1891 “even as low” as Camp Jacob (Lawrence 1891).

Dominica The species was known to breed on the island on Morne Diablotin and Morne au Diable (15°37'N 61°26'W) since late in the eighteenth century (Verrill 1892, Feilden 1894, Godman 1907-1910). Verrill (1905) referred to the species as “rare near the coast” but did not mention inland localities, and also referred to “large petrels” (which he tentatively attributed to this species) “not infrequently seen” at night, near the end of the pier at Roseau. At this same locality a bird was picked up alive in May 1932 (Hobley 1932, Wetmore 1932b) and so was an immature in August 1988 (P. G. H. Evans *in litt.* 1992). In June 1984 seven birds were observed on the sea 5.6 km off the south-east coast of the island and in November 1984 two were seen and heard flying at Petit Coulibri in the direction of Morne Vert in southern Dominica (P. G. H. Evans *in litt.* 1992).

Martinique The Black-capped Petrel was considered a possible former breeder (Bond 1956b, Grenway 1967). It was recorded on the island between 1827 and 1844 (see Lawrence 1878d), but no further information was given. There are bones (presumably of the species) found on the island which probably represent pre-Columbian remains (Wetmore 1952; also Olson and Hilgartner 1982).

Range at sea Black-capped Petrels are associated with the waters of the Caribbean and notably along south-eastern United States Atlantic coasts in the Gulf Stream near the shelf edge, principally off Virginia, Maryland, North and South Carolina, Georgia and Florida (Mörzer Bruyns 1967b, Lee 1977, 1984, Lee and Booth 1979, Haney 1983, 1987, Harrison 1983; see also the map in Haney 1987 and Population). There are occasional records east of the Gulf Stream in the western Sargasso Sea (a bird observed in January 1965 at 25°02'N 71°58'W) (Nieboer 1966) but this appears to be unusual inasmuch as none was observed during two weeks of daily observations in August 1984 (see Haney 1987). There are no pelagic observations from the Gulf of Mexico (Clapp *et al.* 1982, Haney 1987). It is possible that Black-capped Petrels occur regularly farther north than present records suggest, especially where the Gulf Stream meanders and warm core rings occur near the shelf edge (Haney 1987). There are a few records of birds in the waters of the Bahamas: one was observed off Savannah Sound, Eleuthera, at 31°48'N 75°58'W, in January 1913 (Nichols 1913), and five birds were seen off the east coast of Great Abaco, at 26°02'N 76°03'W, on 19 August 1988 (Bourne 1989), while there is a bone (presumably of this species) from Crooked Island, which is the first indication for the Bahamas (Olson and Hilgartner 1982, Buden 1987a). Black-capped Petrels have been observed mainly in winter and spring in Caribbean waters near some of the Greater and Lesser Antilles (Cuba, Hispaniola, Puerto Rico, Virgin Islands, Guadeloupe, Dominica and Martinique), this probably representing birds near nesting colonies (Verrill 1905, Godman 1907-1910, Wetmore and Swales 1931, Bond 1956b, Mörzer Bruyns 1967a, Garrido 1985, Norton 1983, 1984, Haney 1987, Cheshire 1990, Wiley and Ottenwalder 1990), but the species has also been recorded in summer (e.g. Bourne and Dixon 1973). Records in the southern Caribbean Sea off the coast of Venezuela between 12°36'N 71°41'W and 12°00'N 73°12'W on 1 May 1962 (c.40 birds observed singly) suggest that the bird can also be commonly found in this region. There is a record from Brazil (Mathews 1934, Hellmayr and Conover 1948), although they give no further details.

North American stragglers Stray Black-capped Petrels have been regularly reported both inland and along the Atlantic coasts of North America (Ontario, Maine, Vermont, New Hampshire, New York, Connecticut, Ohio, Kentucky, Virginia, Florida) since at least 1846, as a result of oceanic storms and hurricanes (the hurricane of 27 August 1893 and Hurricane Hugo of September 1989 are responsible for several specimens collected well inland in different localities of the United States and Canada) (Allen

1904, Bent 1922, Murphy 1936, Sutton 1940, Holman 1952, Bond 1968, Woolfenden 1974, Clapp *et al.* 1982; AOU 1983, D. B. Wingate *in litt.* 1991; also AMNH, CM and ROM label data).

United Kingdom stragglers There is a single specimen record from Norfolk in 1852 (Cramp and Simmons 1977) and a recent sight record from the Rockall Bank (Dannenberg 1982, Bourne 1983).

POPULATION The Black-capped Petrel appears to have suffered a steep decline, having been almost entirely extirpated from its former breeding colonies in Guadeloupe, Dominica and Martinique, where it was reported very common up to the nineteenth century (see, e.g., Bent 1922), after which the location of the diminishing breeding colonies was lost to science and the species was considered to be “perhaps on the verge of extinction” (Bent 1922). Nesting colonies remained unknown during the first half of the twentieth century until discovered in the Massif de la Selle, Haiti in 1963; further breeding areas were subsequently found in Sierra Maestra, Cuba (1977), in the Massif de la Hotte, Haiti (1984), and Sierra de Baoruco, Dominican Republic (1981) (see Distribution). During the twentieth century there were numerous records at sea (Bond 1956b; see below), and the recent pelagic surveys off the Atlantic coast of the USA have shown that the species is far from rare and must still be fairly numerous as a breeding bird in the Caribbean (Halewyn and Norton 1984, Lee 1984, Haney 1987).

Cuba The status of the species on the island is unknown.

Haiti Wingate (1964a), relying on the volume of the chorus heard (see Remarks 3), estimated that each of the 11 colonies contained at least 50 pairs and probably many more. Their inaccessible location, in contrast to historical accounts, suggests an obvious decline, but the population trend was unclear and local people were not aware of any change in petrel abundance during their lifetime (Wingate 1964a). In February 1980, the colonies in the Massif de la Selle were visited again and, although peasants had recently invaded some areas above the breeding cliffs (see Threats), still no evidence of decline in the population on the western end of the ridge (Tête Opaque, Cabaio and La Visite) was noted (D. B. Wingate *in litt.* 1981). In the winter of 1984, some of the colonies within the La Visite National Park were surveyed again and this time it was believed that there were fewer colonies within the same area (one colony still existed on Morne La Visite and two in the Tête Opaque area) (Woods 1987). Following Wingate's (1964a) estimate of 50 birds per colony, Woods (1987) suggested a possible total of 300 birds in the park (a 40% reduction in 20 years: see Remarks 4). Another previously unreported nesting colony was discovered in the Massif de la Hotte in 1984 (see Distribution, Remarks 5).

Dominican Republic The possibility of the species nesting on the island was indicated by Wetmore (1932a) and supported by Bond (1956b), but only proven in February 1981, when the number of nests on Loma del Toro was estimated at 40-50 pairs (see Bond 1982, Woods and Ottenwalder 1983). Further fieldwork might result in additional colonies being found in the poorly explored mountain ranges (e.g. Sierra de Neiba, Cordillera Central and Cordillera Septentrional) (Woods and Ottenwalder 1983, van Halewyn and Norton 1984), although searches conducted in Pico Duarte (see Woods and Ottenwalder 1983) failed to detect any, so Wingate's (1964a) estimate of 4,000 possible birds in the whole of Hispaniola (by extrapolating his findings in Haiti and the apparent suitable habitat in the Dominican Republic) remains to be confirmed.

Guadeloupe The species appears to have nested in great numbers according to the information provided by Bent (1922), and although it was believed to be extinct after 1847 (see also Threats) Verrill (1905) still referred to it as “not uncommon in Martinique and Guadeloupe channel” (see Population under Jamaica Petrel).

Dominica According to the evidence provided by Bent (1922) and Lawrence (1878a) the species must have been “abundant” during the second half of the nineteenth century, and there is evidence of it nesting in the mountains of the island at least since the late eighteenth century (Godman 1907-1910). The last nineteenth-century breeding record appears to have been in 1882 on Morne au Diable (Feilden 1894); searches conducted late in the same century on the slopes of both Morne au Diable and Morne Diablotin

were unsuccessful (Ober 1880, Feilden 1894, Godman 1907-1910, Murphy 1936; see Remarks 6). No further nesting has been recorded on the island but there were early twentieth-century reports (Verrill 1905, Hobbey 1932). A local guide assured Porter (1930c) that the “Diablotin” was still present in “very small numbers” in the mountains, and described it and its habitats with great accuracy. Two years later a bird was found in Roseau (see Distribution), and this led to the protection of the species in the country (see Measures Taken). Searches by Wingate (1964a) in October and November 1961 on Morne Diablotin were unsuccessful, but he recognized that it was only possible to check a small proportion of potential breeding sites given the steep terrain and impenetrable nature of the rainforest. In 1977 there were unverified records of the species on Morne Diablotin (Halewyn and Norton 1984), while at present it is believed that a small population “almost certainly exists”, although breeding has yet to be proven (Evans 1989), the recent evidence being: the observation of birds relatively near the southern coast in June 1984; the observation of two birds flying at Petit Coulibri in the direction of Morne Vert; and an immature picked up exhausted on the beach in Roseau in August 1988 (P. G. H. Evans *in litt.* 1992). Although a small colony may exist on the slopes of one of the coastal mountains in south-eastern Dominica, breeding has yet to be proven (P. G. H. Evans *in litt.* 1992). Recent searches for the species on Morne Diablotin and in the coastal mountains in the south-eastern parts of the island (a fairly inaccessible area where a small colony can easily be overlooked) have been conducted, as have transects on the sea off the west coast between February and May, without result (P. G. H. Evans *in litt.* 1992).

Martinique Nothing is known of former numbers; its use for food by Carib Indians might suggest abundance, while its supposed extinction in the pre-Columbian era suggests the opposite (both facts in van Halewyn and Norton 1984). Verrill (1905) reported it as “not uncommon in the Martinique and Guadeloupe channels”.

Population at sea (*Virginia and Maryland*) Single birds and small groups have been seen off the coast (Harrison 1983); (*North Carolina*) Lee and Rowlett (1979) reported having observed 70-100 birds since the first sighting for the state in 1972, and LeGrand (1984) observed 10 birds on 3 March 1984 and four on 11 May 1984. Furthermore, Lee (1984) reported seeing the species on many occasions at sea off the coasts of North Carolina, with more than 1,000 birds observed in nine years (1975-1984). (*South Carolina and Georgia*) Mörzer Bruyns (1967b) reported at least 12 birds in the Gulf Stream in September 1966; one bird was observed off South Carolina in August 1967 (Bourne and Dixon 1973) and Haney (1983) observed a total of six off the coast of Georgia on the outer continental shelf (40-200 m depth) in February 1983, while during cruises to outer continental shelf and Gulf Stream waters conducted in May through October 1983 the species was observed monthly with the highest numbers in May (100+), June (80+), and October (40+) (Clapp *et al.* 1982, Haney 1983). Further records in South Carolina's offshore waters (out to a distance of 162 km) between October 1983 and May 1985 yielded a total of 158 birds with a maximum of 50 counted on 13 June 1984 (Haney 1986), and 65 birds were counted on 13 April 1984 off Georgia (see LeGrand 1984) and 16 birds singly and in groups were observed on 24 May 1989 far off the South Carolina coast at 33°05'N 76°02'W (Cheshire 1990); (*Florida*) there are records off the coast including as many as 13 and 38 birds observed in one day (see Clapp *et al.* 1982), a recent record being of one observed at 29°08'N 78°04'W on 25 May 1988 (Cheshire 1990).

ECOLOGY Black-capped Petrels use warm oceanic waters, generally off the continental shelf, such as the waters of the Gulf Stream off the south-eastern United States, which apparently constitute a major foraging area during the non-breeding season, although birds are observed there throughout the year; it is not clear if birds present in these waters during the breeding season are non-breeders (perhaps sub-adults), although it is conceivable that breeding birds could range approximate 1,200 km from Haiti between incubation shifts (Clapp *et al.* 1982, Lee 1984, Haney 1987). Lee (1984) found that 85-95% of his sightings occurred in deep-water areas (900-1,800 m) with very few over water less than 180 m deep, and Haney (1987) indicated that Gulf Stream meanders and deflections affected petrel distribution at meso-scales (100-1,000 km) between Florida and North Carolina; locally (10-100 km), petrel distribution was influenced by the presence of upwelling associated with eddies and the mesas, ridges and hills on the Blake Plateau. Primary marine habitat off North Carolina lies seaward of the continental shelf break (200 m isobath) (an area including but not limited to the Gulf Stream), petrels occurring almost

exclusively within the cross-shelf interval of Gulf Stream frontal meandering in the South Atlantic Bight; thus the species appears to be linked to the current boundary and where current-generated turbulence at seamounts on the Blake Plateau creates upwelling (Haney 1987). Petrel affinities for the Gulf Stream current boundary result in changes in the species's distribution with respect to depth and distance offshore: off Florida, it occurred over shallower depths and closer to land than further north off Georgia and South Carolina; broader cross-shelf distributions at higher latitudes also corresponded to this increase in the cross-shelf range of frontal meandering (see figures 2 and 3 in Haney 1987).

Little is known about the feeding requirements of the species: the stomach of one specimen taken contained remains of cephalopod beaks and lenses, larger in size than those found for the Cahow (Wingate 1964a). It probably feeds (like other gadfly petrels) on squid and fish in areas of turbulence and upwellings created by sea ridges and the continental shelf break (Haney 1987; also Warham 1990).

Black-capped Petrels nest in burrows excavated in the soil of steep forested cliffs in the mountains (e.g. Noble 1916, Bent 1922, Murphy 1936, Wingate 1964a). In Haiti, colonies were located on forested cliffs 500 m or more in height and above 1,300 m altitude, most being located between 1,500 and 2,000 m above sea level, either where a sufficient soil cover existed for excavating their 1-3 m deep burrows, or where rock crevices on the face of cliffs could be used (Wingate 1964a, Woods 1987). The breeding season runs from early November to mid-May (Wingate 1964a; see also Bent 1922), although birds in Haiti arrive at colonies late in September (Woods 1987); peak breeding occurs in late December, January and February; eggs (one) are laid during January and February, the young fledge in the spring and vocalizations are no longer heard after April; from May until late September the birds are away from their breeding grounds (Wingate 1964a, Woods 1987). A similar regime (September–March) was described in the nineteenth century from Guadeloupe (see Godman 1907-1910). A bird taken on 30 June 1938 in Port-au-Prince was considered a juvenile “not long out of the nest” (Wetmore 1939).

THREATS Human predation and introduced mammals (in one case also an earthquake) are believed to be the major causes of decline, although a combination of these is presumably responsible for the extinction and decline of some of the known or formerly known colonies.

Cuba None is known.

Haiti The mongoose is thought to have reached La Selle Ridge about 1941, although the effect of this introduced predator on nesting colonies is not known (Wingate 1964a, Woods 1987); while mongooses have been blamed for the presumed extinction of the Jamaica Petrel (see relevant account), they cannot be for the virtual extinction of the population on Dominica, since they have never been introduced there (Wingate 1964a). Human predation does not appear to have been a major problem in Haiti, where the colonies are inaccessible to humans, but Wingate (1964a) described the only way known to local people for securing birds for food (see Remarks 7). Rats *Rattus norvegicus* and *R. rattus* have been trapped in the area, the former being caught only near dwellings and the latter, although present even on the steep cliffs, not believed to be a significant predator (Wingate 1964a). Further threats (perhaps the most important) derive from the difficult economic situation in the country which has resulted in peasant colonization of the forested slopes of mountain ridges, resulting in further deforestation, burning, etc.: a visit to the breeding areas in the Massif de la Selle in February 1980 confirmed that peasants had recently invaded the pine- and cloud-forest areas above the breeding cliffs and were even cutting and burning forest on parts of the cliff itself; although no decline of the petrel population was noted, there is no doubt that the long-term effect of this invasion is going to be disastrous for the species (D. B. Wingate *in litt.* 1981). Woods (1987) noted that dogs, cats and mongooses are becoming more abundant in the nesting areas and that suitable habitat is being cleared in both the Massif de la Selle and Massif de la Hotte; dogs having been observed digging petrels from burrows (Woods 1987).

Dominican Republic The nests in the colony in the Sierra de Baoruco were almost certainly accessible to man (see Bond 1982). There has been recent concern over the possible effects that the installation of a communication antenna could have on the population.

Dominica Intensive and continuous exploitation for food has been well documented since the seventeenth

Threatened birds of the Americas

century: this is perhaps the major cause for the almost total extinction of the species in Dominica (where the mongoose is absent), although the introduction of the common opossum *Didelphis marsupialis*, which may have arrived in Dominica in the 1830s (Feilden 1894) has also been blamed (Feilden 1894, Nicoll 1904, Godman 1907-1910, Hobbly 1932).

Guadeloupe Petrel hunting is known to have occurred since at least the mid-seventeenth century (see also Threats under Jamaica Petrel), which must have resulted in the almost total extermination of the population; however, local informants who had taken part in hunting parties in the mountains of the island asserted that extinction resulted from a powerful earthquake in 1847 (Bent 1922; see Remarks 8).

Martinique The species is thought to have become extinct in the pre-Columbian era, and is known to have been collected for food by Carib Indians (see van Halewyn and Norton 1984).

MEASURES TAKEN On paper the presence of colonies in four protected areas in three countries is encouraging, but in practice this is only a partial gain.

Cuba The Sierra Maestra National Park embraces the chief presumed nesting area on the island, and according to Garrido (1985) the presumed breeding site is inaccessible.

Haiti At least nine of the 11 colonies found by Wingate (1964a) were within the current boundaries of the La Visite National Park, and the only known colony in the Massif de la Hotte (see Distribution) is within the Pic Macaya National Park (Wood 1987); but see Threats.

Dominican Republic The only currently known nesting site is protected within the Sierra de Baoruco National Park (DVS 1990).

Dominica The species has been protected since 1932 (Hobbly 1932), but searches to find it during the second half of the twentieth century have been unsuccessful (see Population).

MEASURES PROPOSED This is an uncomfortably problematic bird to work on, requiring substantial effort for little certain reward. In most cases what is first needed is simply the location of colonies, which could be highly exacting in itself; but the subsequent study and management of these colonies would probably also need to be on a scale virtually unknown for a nocturnal seabird nesting in tropical forest. The problem is compounded rather than ameliorated by the fact that as many as five nations may host breeding populations (particularly if the suspicion that a major undiscovered site exists): each of the countries involved can claim to have higher individual priorities.

Cuba Further investigation is required; colonies may well exist elsewhere in the many mountain ranges of the island.

Haiti No fires should be allowed on the peaks of the mountains during the winter months, and no peasants should be allowed to capture petrels (Woods 1987). Wingate (1964a) recommended the gathering of additional information on the status and life history of the Black-capped Petrel, which might be feasible with the services of a professional rock-climber; Woods (1987) suggested that all dogs and cats in the national parks be killed, no gardens or trails be allowed anywhere near the steep cliffs within the boundaries of the parks, and no fires be allowed in a buffer zone that extends down to an elevation of at least 1,400 m below the cliffs within each park; this buffer zone should extend all the way to the base of the mountains and the flat areas below. Woods (1987) did not recommend the control of rats in La Visite National Park until a way can be found to guarantee the security of the populations of the endemic hutia *Plagiodontia aedium* that occur in close proximity to the colonies of the petrels all along the La Visite ridge; but goats and sheep also occur widely and should be removed from both national parks since they are capable of destroying valuable forest cover and disturbing nesting petrels.

Dominican Republic More searches are required in order to locate possible unknown colonies; these should be conducted in the Sierra de Neiba, Cordillera Central and Cordillera Septentrional (Ottenwalder and Vargas M. 1979, Woods and Ottenwalder 1983). DVS (1990) recommended managing the nesting area in the Sierra de Baoruco so as to minimize possible threats (e.g. fires).

Dominica Further searches for the species might result in additional colonies being found in the inland or southern coastal mountains (see van Halewyn and Norton 1984, P. G. H. Evans *in litt.* 1992).

REMARKS (1) The species is generally listed as breeding (or formerly breeding) in the mountains of Jamaica as a melanistic morph or subspecies *caribbaea*. However, following Imber (1991), here this form is given full specific status (see Jamaica Petrel *Pterodroma caribbaea* account for further discussion of taxonomic problems).

(2) J. B. Labat's account of hunting petrels ("Diablotin") on Soufrière in 1696 has aroused debate, as his plate and text both referred to a bird of uniformly dark plumage. This was tentatively attributed to (a morph of) the Black-capped Petrel by Bent (1922) and Murphy (1936), although they both suggested it might refer to the Jamaica Petrel (Bent 1922; see Distribution under Jamaica Petrel). It remains a mystery whether the "black" petrels reported by Labat were (a) the Jamaica Petrels nesting sympatrically with the Black-capped Petrel, (b) a dark morph of the latter (see below) or (c) simply a mistake in description. However, before Labat's visit there was an account written in 1654 which clearly referred to the "devil" having a "white and black plumage" (see Bent 1922). Furthermore, Lawrence (1891) provided clear evidence of Black-capped Petrels being hunted in the mid-nineteenth century "amongst the rocks and mountains surrounding the Soufrière", these being described as "not pure black", and there is a record from Camp Jacob (see Distribution) of a petrel "black above and white below"; he also noted Labat's description of the black "Diablotin", and questioned whether this description was erroneous or whether there were two birds bearing the name "Diablotin". A further taxonomic complication is introduced by information given by Lafresnaye (1844) and Noble (1916), namely that two different sorts of closely related white-breasted (specimens in MCZ: Noble 1916, R. A. Paynter *in litt.* 1992) petrels formerly bred in Guadeloupe, the respective birds coming to nest at different seasons, and choosing quite different altitudes on the island for the sites of their colonies; although such a distinction ("*Aestrelata diabolica*" and "*A. haesitata*" [*sic*] has not been recognized: Murphy 1936, Hellmayr and Conover 1946), it is possible that Lafresnaye's (1844) reference to different-sized white-breasted petrels with different nesting altitude preferences and breeding season may be the result of confusion between Black-capped Petrels and Audubon's Shearwaters *Puffinus lherminieri* (which are also known to breed on the island, e.g. Mayr and Cottrell 1979).

(3) This estimate was possible as a result of the experience gained in work on the closely related Cahow *Pterodroma cahow* of Bermuda (see relevant account).

(4) This estimated number would hold true if the number of pairs per colony had remained the same in the 20-year period since their discovery, but it is likely that the number of pairs per colony had diminished in parallel with an overall decline in the number of colonies (Woods 1987). The average number of vocalizations was recorded for use in future assessments and comparisons of population trends (see table 2 in Woods 1987).

(5) As with colonies reported from the Massif de la Selle, Woods (1987) could not estimate the number of pairs but an average number of vocalizations was again recorded (see Woods 1987).

(6) The statement by Hobbly (1932) that F. A. Ober captured a bird in 1871 is clearly in error as Ober (1880) himself stated that he failed to find the species.

(7) The "sen sel" consisted in lighting moderate fires on the cliff top above a colony on winter foggy and moonless nights where disoriented birds crash into and around the fires; D. B. Wingate himself had the opportunity to catch four birds in one night after several attempts, and in the same area reported 15 petrels being caught and eaten in a nearby logging camp (Wingate 1964a).

(8) This extraordinary event may indeed have caused the extinction of the population on the island after severe and persistent over-exploitation by man: the whole side of Nez Cassé, on which the petrels were known to breed, collapsed and fell into the valley (see Bent 1922).