

PETITION TO LIST THE
Black-capped Petrel (*Pterodroma hasitata*)
UNDER THE U.S. ENDANGERED SPECIES ACT



Photograph: Patrick Coin/Flickr

**Petition Submitted to the U.S. Secretary of Interior
Acting through the U.S. Fish and Wildlife Service**

Petitioner:

WildEarth Guardians
1536 Wynkoop Street, Suite 301
Denver, Colorado 80202
303.573.4898

Prepared by Dave DeNovellis

September 1, 2011



TABLE OF CONTENTS

INTRODUCTION.....1

PETITIONER2

ENDANGERED SPECIES ACT2

CLASSIFICATION AND NOMENCLATURE3

SPECIES DESCRIPTION4

GEOGRAPHIC DISTRIBUTION4

NATURAL HISTORY6

POPULATION STATUS AND TRENDS7

CONSERVATION STATUS8

THREATS TO THE SPECIES.....9

 (Factor A) The Present or Threatened Destruction, Modification, or Curtailment of its
 Habitat or Range9

 (Factor B) Overutilization for Commercial, Recreational, Scientific, or Educational
 Purposes.....11

 (Factor C) Disease or Predation12

 (Factor D) The Inadequacy of Existing Regulatory Mechanisms13

 (Factor E) Other Natural or Man-made Factors Affecting its Continued Existence.....16

CONCLUSION AND REQUESTED DESIGNATION16

LITERATURE CITED.....18

#

INTRODUCTION

The black-capped petrel (*Pterodroma hasitata*) is the only extant gadfly petrel known to breed in the Caribbean basin (Haney 1987). While species historically had breeding colonies throughout the Caribbean region, current breeding populations are known only on the island of Hispaniola (Haiti and the Dominican Republic) and possibly Dominica and Martinique (Lee and Haney 1999; Birdlife International 2011). Black-capped petrel populations declined throughout the nineteenth and twentieth centuries (IUCN 2010; Birdlife International 2011) and were thought to be extinct in the early 1900s (Bent 1922). Currently, there are only 13 known breeding colonies and an estimated 600-2000 breeding pairs (Schreiber and Lee 2000; IUCN 2010; Birdlife International 2011). The species' primary foraging habitat is marine waters in the Gulf Stream in the western Atlantic Ocean, from Cape Hatteras, North Carolina to Cape Canaveral, Florida (Lee and Haney 1999).

The black-capped petrel faces many threats to its continued existence, including human encroachment, deforestation, agricultural modification, offshore oil exploration and development, overutilization from subsistence hunting, predation by introduced species, pollution, and mercury bioaccumulation. Several of these factors have contributed to the species extirpation from many former breeding sites, and the socio-economic realities of Haiti and the Dominican Republic threaten the continued existence of remaining breeding sites (Lee and Haney 1999; IUCN 2010, NatureServe 2010; Birdlife International 2011). Offshore oil exploration and development off the United States Atlantic coast could destroy the primary foraging habitat for this species (Lee and Haney 1999). Extensive hunting of black-capped petrel occurred in the eighteenth and nineteenth centuries and is considered to be a primary reason for the species extirpation from two of its former breeding colonies (Wingate 1964; Collar et al. 1992). In Haiti, the black-capped petrel is still hunted for food (Wingate 1964, Black-capped Petrel Working Group 2011a). Predation by introduced Indian mongoose (*Herpestes auropunctatus*), Virginia opossum (*Didelphis virginiana*), feral cats and dogs, feral pigs, and rats (*Rattus* sp.) have caused the decline and possible extirpation of the species from multiple locations in the West Indies (Collar et al. 1992; Black-capped Petrel Working Group 2011a). Pollution, bioaccumulation of heavy metals, and oil spills potentially threaten the existence of the petrel as researchers have noted the species has a seven to nine times higher mercury concentration than other similar seabirds (Whaling et al. 1980; Lee and Haney 1999; Black-capped Petrel Working Group 2011a). Finally, this species lays only one egg per breeding season and each breeding pair must successfully mate for three consecutive seasons to foster population growth (Brooke 2004).

Remaining existing breeding colonies are located in Haiti and the Dominican Republic within park boundaries (Collar et al. 1992; Black-capped Petrel Working Group 2011a). However, park regulatory mechanisms are ineffective. Researchers have observed prohibited activities within the parks and the expanding human population is encroaching into these areas (Black-capped Petrel Working Group 2011a). The black-capped petrel's primary foraging area off the U.S. Atlantic coast offers little, if any, regulatory protection to the species (Black-capped Petrel Working Group 2011a).

The black-capped petrel has no status under the U.S. Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) previously identified the black-capped petrel as a species of concern and has taken steps to create and implement a conservation plan for the species (59 Fed. Reg. 58,982, 59,028). However, these measures fail to provide the black-capped petrel the requisite protections that would come from listing as a “threatened” or “endangered” species. The USFWS should list the black-capped petrel under the ESA and designate critical habitat to help recover the species.

PETITIONER

WildEarth Guardians is a nonprofit environmental advocacy organization that works to protect wildlife, wild places and wild waters in the United States. The organization has more than 12,000 members and supporters and maintains offices in New Mexico, Colorado and Arizona. WildEarth Guardians has an active endangered species program that works to protect imperiled species and their habitat throughout the United States.

ENDANGERED SPECIES ACT

Congress enacted the ESA in order to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species...” (16 U.S.C. § 1531(b)). Section 3 of the ESA (16 U.S.C. § 1532), defines key terms in the Act. Those relevant to this petition include:

1. § 1532(6) “The term ‘endangered species’ means any species which is in danger of extinction throughout all or a significant portion of its range ...”
2. § 1532(20) “The term ‘threatened species’ means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”
3. § 1532(5) “(A) The term "critical habitat" for a threatened or endangered species means-
 - (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
 - (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species. ...”

A species must satisfy at least one of five listing criteria in order to qualify for listing as a “threatened” or “endangered” species under the ESA. Section 4 of the ESA (16 U.S.C. § 1533(a)(1)), sets forth the five listing factors:

- A. The present or threatened destruction, modification, or curtailment of its habitat or range;
- B. Overutilization for commercial, recreational, scientific, or educational purposes;
- C. Disease or predation;
- D. The inadequacy of existing regulatory mechanisms; or
- E. Other natural or manmade factors affecting its continued existence.

While the black-capped petrel meets all five listing criteria, the primary factor threatening the species is the “present or threatened destruction, modification, or curtailment of habitat or range.”

CLASSIFICATION AND NOMENCLATURE

Common name. The common name for *Pterodroma hasitata* (Kuhl 1820) is the “black-capped petrel,” “capped petrel” and “West Indian petrel” in North America and on English-speaking islands (Lee and Haney 1999). In the Greater and Lesser Antilles, the bird is known as “diablotin” (little devil). In Cuba, the bird is referred to as “bruja” (witch). We refer to the species as the “black-capped petrel” or “petrel” throughout this petition.

Taxonomy. We provide the petitioned taxon’s scientific classification in Table 1. This species is generally recognized as valid. The Jamaican petrel (*Pterodroma caribbaea*) is/was a related dark form, often considered a subspecies of *P. hasitata* (Lee and Haney 1999).

Table 1. Taxonomy of the Black-capped Petrel.

Kingdom	Animalia
Phylum	Chordata
Class	Aves
Order	Procellariiformes
Family	Procellariidae
Genus	<i>Pterodroma</i>
Species	<i>Pterodroma hasitata</i>

Prior to the mid-1800s, gadfly petrels were placed in the genus *Procellaria*. In 1856, Bonaparte proposed the genus *Pterodroma* (Greek for 'winged runner' or 'fast on the wing') for all the dark species, and *Aestrelata* for some of the ventrally-white forms such as *hasitata* (designated as the type for this genus by Coues 1866). Imber (1985) provided a thorough and recent review of the taxonomy of gadfly petrels. In the original description of the black-capped petrel, Kuhl (1820) chose the specific name *hasitata*. The black-capped petrel is considered by the Black-capped Petrel Working Group (2011a) to be one of three *Pterodroma* in the west central Atlantic. The other species are the Jamaica petrel, possibly extinct, and the Cahow (*P. cahow*) which is limited to an intensively-managed population in Bermuda of fewer than 200 birds. “The systematics of the genus *Pterodroma* are complex and have yet to be fully resolved. Howell & Patteson (2008) suggested the possibility for black-capped petrel to actually comprise multiple species, and recent genetic investigations suggest separate populations or possibly even

subspecies (van Tuinen pers. comm). Further genetic investigation may clarify population structure” (Id.).

SPECIES DESCRIPTION

The black-capped petrel is a medium-sized, long-winged grey and white gadfly petrel (Brooke 2004). Brooke (2004) describes the species:

Brownish-black cap extending to the eye, nape, and towards upper breast where forms a partial collar. Hindneck white. Mantle and upperwing brownish-grey. Rump and unppertail-coverts white forming clear band over base of dark brown tail. Underparts entirely white with narrow black trailing edge, black tip, and broad, black edge between primaries and carpal joint. Band extends weakly towards center of wing from joint. Bill black. Eye dark. Legs pink, feet pink proximally, black distally.

Black-capped petrels encountered off the southeastern U.S. coast display remarkable variation in size and markings (Lee and Haney 1999). This variation is not related to age, sex, or molt sequence (Lee unpubl. data). Based on research on a substantial series of specimens, it is apparent that black-capped petrels are extremely polymorphic or that the birds off the North Carolina coast are possibly recruited from a number of distinct breeding populations (Lee and Haney 1999). Black-capped petrels range from large (590+ grams) birds with classic black caps, wide, distinctive collars, and conspicuous white "rump" patches to smaller individuals (300 grams) with reduced areas of white (Lee and Haney 1999). The smallest and darkest individuals might appear to be Bermuda petrel in both size and morphology.

GEOGRAPHIC DISTRIBUTION

Breeding range. The most recent and best available science indicates that the black-capped petrel has a limited breeding range. While historically breeding colonies existed throughout the Caribbean, current known colonies occur only on Hispaniola (Haiti and the Dominican Republic).

Historically, black-capped petrel breeding sites were believed to exist in Haiti, the Dominican Republic, Cuba, Guadeloupe, Dominica and Martinique (Collar et al. 1992). The nesting colonies are confined to the islands on the northern and eastern edge of the Caribbean plate (Lee and Haney 1999). Currently, the petrel only breeds in Haiti, the Dominican Republic, and possibly Martinique and Dominica (Collar et al. 1992; Lee and Haney 1999). There are two known nesting colonies in Haiti. The nesting colony in Massif de la Hotte is in the Pic Macaya region and the amount of suitable nesting habitat in the area is estimated to be only 5 square-kilometers (Birdlife International 2011). There appears to be nesting colonies in Massif de la Selle, within the La Visite National Park (Collar et al. 1992). A new nesting location was recently discovered on Monre Vincent, Massif de la Selle, consisting of two nests, one of which failed. This “nesting location appears to be highly threatened by agricultural expansion, invasive mammals and direct harvest by local residents” (Black-capped Petrel Working Group 2011b).

In the Dominican Republic, observers have confirmed the existence of one breeding colony (Williams et al. 1996). The colony is in the Sierra de Baoruco and is apparently very small, as the birds are limited to a single, steep 400-meter cliff at 7,200 feet in elevation (Lee 2000). There is speculation that the black-capped petrel may currently, or had previously, nested in the Sierra Maestra in southeastern Cuba (Collar et al. 1992). In 1993, a black-capped petrel was seen foraging in an upwelling near Cuba's southeastern coast (Lee 2000). There was no indication, however, that the bird was flying inland to nest and there is no evidence to suggest that the species nests in Cuba now. There are records that the black-capped petrel nested in Guadeloupe. The species was known to nest on Soufrière Mountain in Bassa Terre during the nineteenth century; however, the last nesting petrel pair was seen in Guadeloupe around 1850 (Lee 2000).

The species was thought to be numerous on Dominica through the early 1800's (Lee 2000). Since the late eighteenth century, researchers believed black-capped petrels bred on Morne Diablotin and Morne au Diable (Collar et al. 1992). However, there is no indication that the birds are still nesting in Dominica and the last confirmed nesting date was 1862 (Lee 2000).

The black-capped petrel is also thought to have previously bred on Martinique (Collar et al. 1992). The species was observed on the island between 1827 and 1844 but no evidence of nesting was found (Collar et al. 1992). Researchers found presumed black-capped petrel bones on Martinique and they believe the remains are from pre-Colombian times.

There is no evidence or research regarding the existence of black-capped petrels on other islands throughout the Greater and Lesser Antilles. The potentially extinct Jamaican petrel (*P. caribbea*), a species similar to the black-capped petrel, historically bred on Jamaica (Lee and Haney 1999). More research must be conducted to discover if the black-capped petrel, or suitable habitat for the species, exists on United States territories such as Puerto Rico and the Virgin Islands. If habitat does exist on these territories, it could be invaluable to recovering this imperiled bird.

Foraging range. The black-capped petrel forages in tropical and subtropical water masses in the western North Atlantic Ocean between 10° and 40°N (Haney 1987). The species is mostly observed foraging along the Gulf Stream in the South Atlantic Bight off the coast of the southeastern U.S. (Lee and Haney 1999).

Current research indicates that the primary foraging range for the black-capped petrel are waters in or adjacent to the Gulf Stream between Cape Canaveral, Florida and Cape Hatteras, North Carolina (Lee and Haney 1999). Concentrations of birds can be found along the Gulf Stream in U.S. waters throughout the year, but particularly in May, August, and late December through early January (Haney 1987). The main foraging area appears to be along the Gulf Stream directly east of the Cape Hatteras National Seashore in North Carolina. Concentrations found during winter, when peak breeding activity is underway, suggest that breeding birds are foraging along the Gulf Stream while moving to and from breeding colonies (Haney 1987).

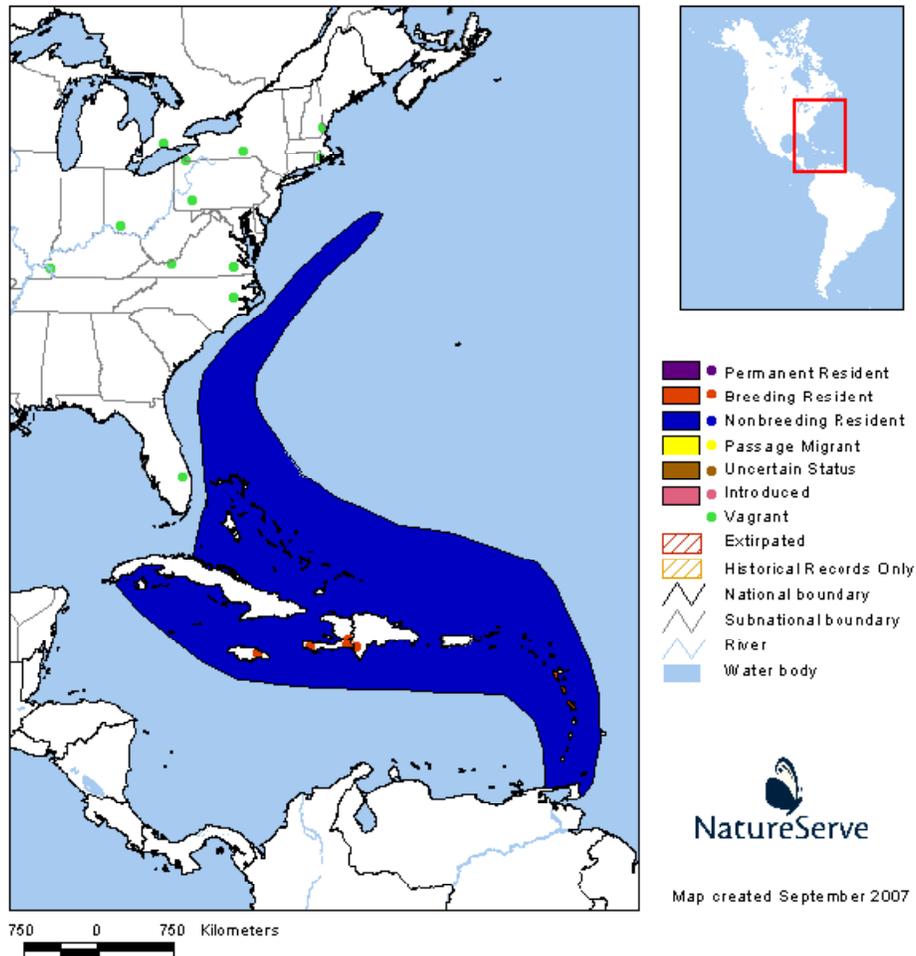


Figure 1. Range of the black-capped petrel. (NatureServe 2010)

Natural History

Black-capped petrels forage in warm oceanic waters off the continental shelf (Collar et al. 1992). The Gulf Stream off the southeastern U.S. is a major foraging area (Collar et al. 1992). The petrel is attracted to localized upwellings, where mixing of surface and deep oceanic waters produces nutrient-rich areas (Lee 2000).

The petrel mostly feeds in small flocks of up to 12 birds, often with other species (Brooke 2004). The bird feeds on squid, fish, chum and sargassum algae (Haney 1987). Black-capped petrels feed by taking food on the water surface or by dipping into the water (Haney 1987). Little else is known about the feeding requirements of the species (Collar et al. 1992).

The black-capped petrel is a winter breeder (Lee 2000). The phenology of the species is not well known but the birds are probably long lived and may not reproduce before their fifth to seventh year (Lee 2000). The breeding season runs from early November to mid-May (Wingate 1964). The clutch size is one egg and eggs are laid in January and February (Wingate 1964). Young birds fledge in spring and the species is away from the breeding grounds from May until September (Wingate 1964).

The petrel nests in earth burrows on steep, forested mountain cliffs (Wingate 1964). The modern Haitian colonies are on 500-meter cliffs, 1500-2000 meters m above sea level (Wingate 1964). In the Dominican Republic, the colonies are 2300 meters above sea level (Williams et al. 1996).

This species is nocturnal and arrives at the nesting colonies about 40 minutes after sunset (Wingate 1964). Breeding and nesting activities peak around midnight and cease in the early morning hours (Wingate 1964). There is little detailed data on black-capped petrel breeding behavior (Lee 2000).

POPULATION STATUS AND TRENDS

The actual population size of the black-capped petrel is unknown, but it is believed to be quite small (Lee and Haney 1999). Based on a 1961 survey of LaSelle in Haiti, Wingate (1964) estimated a minimum of 4,000 birds. Van Halewyn and Norton (1984), apparently using Wingate's observations, stated that the population size ranged between 2,000 and 25,000 pairs. The high estimate is based on the assumption that as many as forty breeding colonies exist, yet only 13 colonies are currently known (Lee 2000). The colony in the Sierra de Baoruco in the Dominican Republic was estimated to be 65 pairs in 1981 (Woods and Ottenwalder 1983). By 1990, Lee and Haney (1999) believed that only five pairs were present at this site. Petrel populations are difficult to locate and monitor because of their secretive, nocturnal nesting on inaccessible cliffs (Lee and Haney 1999).

Haiti. The largest number of remaining breeding colonies appears to be in Haiti (Collar et al. 1992). In 1964, there were an estimated 11 colonies in Massif de la Selle, and each colony may have contained at least 50 breeding pairs (Wingate 1964). However, when these colonies were visited again in 1980 and 1984, researchers estimated there were only 300 birds remaining, a 40 percent reduction in 20 years (Collar et al. 1992). There is also one additional breeding colony in Haiti; the colony in Massif de la Hotte was found in 1984, but the number of black-capped petrels breeding there is unclear (Collar et al. 1992).

Dominican Republic. One breeding colony is known to exist in the Dominican Republic. This colony was discovered immediately adjacent to the Haitian populations in Sierra de Baoruco in 1981, on the highest slopes of Lomo de Toro (Collar et al. 1992; Lee 2000). Researchers estimated that the colony contained 65 breeding pairs at that time (Collar et al. 1992), however, by 1990 observers believed only five pairs were present at the site (Lee and Haney 1999). As noted above, this colony is quite small and is limited to a single, steep 400-foot cliff (Lee 2000). A survey of the Dominican Republic colont in 2002 found evidence of nesting but only one active nest (Simons et al. 2002). It is possible that other colonies may exist in the Dominican Republic and more research is needed (Williams et al. 1996).

Cuba. The status of the black-capped petrel on Cuba is unknown (Lee 2000). In 1977, six black-capped petrels were collected a few kilometers off shore from Sierra Maestra, and in 1993, researchers observed one bird foraging off Cuba's southeastern coast (Lee 2000). However, as noted above, there is no evidence that this petrel nests in Cuba (Lee 2000).

Other former breeding sites. The petrel appears to have suffered a steep decline as it is extirpated from most of its former breeding sites, including Guadeloupe, and possibly Dominica, and Martinique (Collar et al. 1992). Though it is believed the petrel may be in Dominica, researchers found no birds during a 2001 survey (Collier et al. 2003). The black-capped petrel was considered a possible former breeder in Martinique (Collar et al. 1992). It was recorded on the island between 1827 and 1844, but no further information was given. There are bones (presumably of the species) found on the island which probably represent pre-Columbian remains (Collar et al. 1992). The black-capped petrel was thought to be on the verge of extinction as far back as 1922 (Bent 1922). Currently, there is an estimated 600-2,000 breeding pairs remaining (Lee 2000).

Foraging range. Researchers at the Patuxent Wildlife Research Center recently compiled a database of marine bird survey data for species occurring along the South Atlantic Bight (Black-capped Petrel Working Group 2011a). The database contains approximately 5,000 individual sightings of black-capped petrels collected between 1979 and 2006 with over 85 percent of documented sightings made within 100 kilometers of Cape Hatteras, North Carolina. These sightings appear to be associated with the western edge of the Gulf Stream. There is considerable variation in survey effort, which limits the interpretation of spatial and temporal patterns of species abundance (Black-capped Petrel Working Group 2011a).

CONSERVATION STATUS

Multiple organizations consider the black-capped petrel endangered, threatened, or imperiled. These highly respected organizations have declared a need for black-capped petrel conservation due to the species' small, declining population and limited, fragmented habitat. The International Union for Conservation of Nature (IUCN) has considered the black-capped petrel "endangered" since 1994 (IUCN 2010). According to IUCN, the black-capped petrel is at a very high risk of extinction because (1) its geographic area of occupancy is less than 2000 square-kilometers, (2) its populations are severely fragmented, and (3) there is an observed and projected continuing decline in its population, habitat and locations (IUCN 2010).

Another respected conservation organization, NatureServe, ranks the black-capped petrel as globally "critically imperiled," "G1" (NatureServe 2011). NatureServe describes a G1 species as one that is at a very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep population declines, or other factors (NatureServe 2009).

Other conservation organizations also consider the black-capped petrel endangered. The Society of Caribbean Ornithology lists the species as "critically endangered" (Schreiber and Lee 2000). The International Council for Bird Preservation has listed it as one of the threatened birds of the world (Collar et al. 1992). Additionally, the North American Waterbird Conservation Plan developed by the U.S. Geological Survey considers the species to be "highly imperiled" in the western hemisphere (Kushlan et al. 2002). Black-capped petrels are regarded as priority 'H' in the South Eastern Coastal Plain Bird Conservation Regional Priority List (BCR 27). The 'H' priority in this case is for non-breeding high conservation concern species whose primary area of spring or fall migration overlaps the BCR.

The USFWS previously designated the black-capped petrel a Category 2 candidate species (59 Fed. Reg. 58,982, 59,028). A Category 2 species were “taxa for which information [then] in the possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules” (*Id.* at 58,983). While there may have been insufficient information available to the USFWS in 1994 to list the petrel, a status report prepared for the USFWS in 2006 clearly demonstrates the threat of extinction and the need to conserve this species (Simons et al. 2002). The USFWS has already determined the black-capped petrel requires attention and has developed a website “to facilitate the creation and implementation of a conservation action plan for the black-capped petrel” (USFWS 2011).

THREATS TO THE SPECIES

The black-capped petrel meets all five criteria for listing identified in ESA Section 4 (16 U.S.C. §1533(a)(1)). The most severe and continuing threat to the black-capped petrel is human encroachment, deforestation, and agricultural conversion (Factor A). Additional threats include subsistence hunting (Factor B), predation by introduced species (Factor C), inadequate regulatory protections (Factor D), and low recruitment, pollution, and bioaccumulation (Factor E).

(Factor A) The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

The most significant threat to the continued existence of the black-capped petrel is the present and threatened destruction of its habitat. Human encroachment, deforestation, and agricultural modification have contributed to its extirpation from many of its former breeding sites and the socio-economic realities of Haiti and the Dominican Republic threaten the destruction of its remaining breeding sites (Collar et al. 1992; Lee and Haney 1999). In addition, offshore oil development off the U.S. Atlantic coast could destroy the primary foraging area for this species (Lee and Haney 1999).

The black-capped petrel breeds in montane forests (Lee and Haney 1999; Birdlife International 2011). Reintroduction of the species to its former range in Guadeloupe and Martinique seems unlikely due to heavy deforestation on these islands (Table 2; Lee and Haney 1999). Only 14,600 hectares of suitable breeding habitat remains on Guadeloupe and all of the forest habitats on Martinique are heavily affected by human activity (Lee and Haney 1999).

In Haiti, the black-capped petrel’s remaining breeding and nesting sites are highly threatened by human encroachment and activity (Table 2; Collar et al. 1992). Local human populations were noted to be encroaching towards the limited black-capped petrel’s breeding colonies around 1980 and agricultural clearings extend both above and below the colonies (Lee and Haney 1999). This encroachment is likely to continue. Haiti’s population is currently 9.7 million and is expected to grow to 11.2 million by 2025 (United States Census Bureau 2011a). The Haitian unemployment rate is 40.6 percent and the population has a per capita income of only \$1,200 (United States Central Intelligence Agency 2011a). It is very likely that due to these socio-economic factors

local Haitian populations will continue to encroach upon the black-capped petrel's limited breeding areas.

The Dominican Republic is not as economically poor as Haiti, with a per capita income of \$8,600, but poses similar encroachment threats to the black-capped petrel (United States Central Intelligence Agency 2011b). The Dominican Republic population is currently 9.9 million and is expected to increase to 11.7 million by 2025 (United States Census Bureau 2011b). This growth has impacted the single known breeding colony in Sierra de Baoruco, as there is evidence of deforestation and agricultural burning near that site (Williams et al. 1996).

Human activities including fires and slash and burn agriculture pose mortality risks to the species (Lee and Haney 1999). A higher frequency of accidental forest fires were noted by Wingate (1964) as a direct result of increased human population (See Table 2). Bracken (*Pteris longifolia*), common ground cover in the West Indies, is highly combustible and in recent years ground fires burned vast areas of the pine forest, particularly in the Fôret de Pins near La Selle in Haiti (Black-capped Petrel Working Group 2011a). Simons et al. (2002) noted that a fire occurred at the petrel breeding site in the Sierra de Baruaco in the Dominican Republic approximately 20-22 years ago. It created a pine savannah with an open overstory which allowed for maneuverability by flying petrels (Black-capped Petrel Working Group 2011a). The forested cliffs are vegetated differently and generally escape burning. However, Wingate (1964) recorded one instance where a patch of cliff face had recently been burned adjacent to a petrel colony. When nesting colonies have chicks still in their burrows, fires such as this could have disastrous effects on chicks (Simons et al. 2002). Fires may be important in maintaining the open park-like savannah habitat at high elevation, similar to the role of earthquakes, hurricanes, and volcanoes in the pine-less Lesser Antilles (Simons et al. 2002); however, fires and electric lights can cause confusion and disorientation which causes birds to fly into the fire or crash into obstacles in the surrounding area (Wingate 1964).

Electrical and communication towers pose immediate collision threats (Wingate 1964). During nightly courtship flights, black-capped petrels fly in groups at high speed at varying heights, often just a few meters above tree-level (Black-capped Petrel Working Group 2011a). This makes them vulnerable to fatal collisions with communication towers or the guy wires that stabilize them on high mountain ridges at breeding locations (Black-capped Petrel Working Group 2011a). There is a communications tower with stray wires adjacent to the single breeding colony in the Dominican Republic (Table 2; Birdlife International 2011).

At sea, the black-capped petrel's narrow foraging range is threatened by human activity. Artificial lights, towers, and rigs threaten mortality from collisions (Lee and Socci 1989; Lee and Haney 1999). Off-shore energy development could pose an enormous threat to the petrel's foraging range (Lee and Haney 1999). Since the species is attracted to oily surfaces to feed, an oil spill in its feeding range could affect a significant portion of the remaining black-capped petrel population (Haney 1987).

The U.S. Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE) currently claims that it does not plan to issue any oil and gas leases off the South Atlantic coast until 2017 (Department of Interior 2010a). BOEMRE has indicated that it intends to commence

with seismic studies to assess the viability of conventional and renewable energy sources along the Mid- and South Atlantic coasts (Department of Interior 2010b)(Figure 2). These seismic studies could pose significant collision risks and disrupt petrel foraging activity if they are allowed to commence.

In summary, both the black-capped petrel’s breeding sites and foraging range are threatened due to human encroachment and activity. Human encroachment and deforestation due to population growth on Haiti and the Dominican Republic threatens the species’ only known breeding colonies. Energy development in the South Atlantic threatens the species’ primary foraging range.

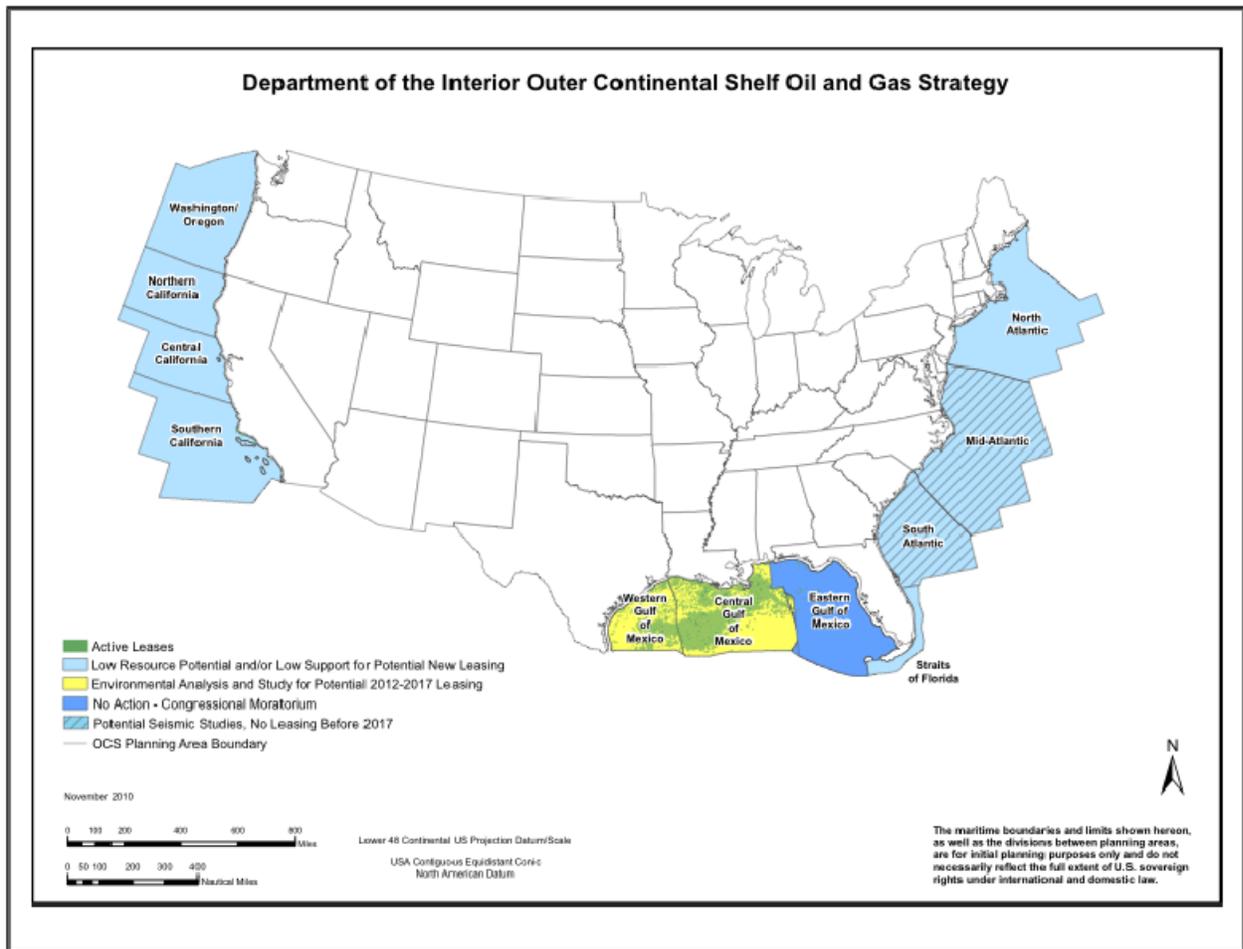


Figure 2. Department of the Interior Outer Continental Shelf Oil and Gas Strategy. (DOI 2010b)

(Factor B) Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Human overutilization has long been a significant threat to the black-capped petrel. Hunting led to the bird’s extirpation from Martinique and Guadeloupe (Collar et al. 1992). Hunting continues today in Haiti, and human population increase in the Dominican Republic could lead to overutilization of the species’ single colony (Lee and Haney 1999).

While there were isolated sightings of the bird on Martinique in the nineteenth century, no nest was ever found (Lee and Haney 1999). Most researchers believe Carib Indians, who used the bird as a food source, almost wholly extirpated the black-capped petrel from Martinique in pre-Columbian times (Collar et al. 1992).

Human overutilization also extirpated the black-capped petrel from Guadeloupe. Extensive hunting is known to have occurred since at least the mid-seventeenth century and resulted in the almost total extermination of the population (Collar et al. 1992). Bent (1922) quotes Labat's 1724 description of black-capped petrel hunting in Guadeloupe:

The party followed the bed of a stream inland as far as was possible, then climbed the steep slopes of the mountain and camped for the night. Next morning the burrows were searched out, the occupied homes being determined through the aid of dogs with well-trained noses. The birds, for the most part, were dragged out by being teased into seizing with their bills the end of a pole thrust into the burrows. Before noon of the second day, the party of six men had captured 213 petrels, which they returned to the coast. 'One has to admit' writes Pere Labat, 'that a Diable right from the spit is a delicacy.'

Schreiber quotes du Tertre from 1654 in his observations of black-capped petrel hunting, saying "its flesh so delicate that no hunter ever returns from the mountain who does not ardently desire to have a dozen of those devils hanging from his neck" (Schreiber and Lee 2000). These accounts suggest that, not only did hunting extirpate the black-capped petrel from Guadeloupe, hunting could also extirpate the species from its remaining breeding range in Haiti and the Dominican Republic.

In Haiti, local people are known to hunt the bird using the practice of "sen sel" (Wingate 1964). Sen sel is a method of capturing the birds at breeding colonies by lighting a fire on a cliff top above a colony (Wingate 1964). Birds flying near the fire become disoriented and crash directly into the fire or into nearby vegetation (Wingate 1964). This practice continues today in Haiti (Lee and Haney 1999). As Haiti's population grows and continues to encroach on the 12 remaining breeding colonies, hunting is likely to have an increasingly negative effect on the species.

In summary, human overutilization extirpated the black-capped petrel from two of its former breeding grounds, although they may be returning to both areas, albeit slowly. These same destructive hunting practices continue on the species remaining breeding areas. Without protection from overutilization, the black-capped petrel could meet the same fate on Haiti and the Dominican Republic as it did on Guadeloupe and Martinique.

(Factor C) Disease or Predation

One of the most serious threats to the black-capped petrel, both historically and currently, is predation from introduced mammals (Table 2). The introduced Indian mongoose (*Herpestes auro-punctatus*) and Virginia opossum (*Didelphis virginiana*) have been blamed for the decimation and extirpation of the petrel on some of its former breeding grounds (Lee and Haney

1999). The opossum is believed to have greatly contributed to the extirpation of black-capped petrels from Dominica in the nineteenth century (Collar et al. 1992).

The mongoose is believed to have extirpated the Jamaican petrel from Jamaica, but its effect on black-capped petrel populations remains unclear (Collar et al. 1992). In Haiti, Wingate (1964) noted the mongoose occurred above 2,000 meters in Massif de la Selle and could have easily been predated upon black-capped petrel eggs and young.

Rats can be another problem at seabird breeding colonies, but it is not known if rat predation limited or limits the black-capped petrel. Wingate (1964) caught Norway rats (*Rattus norvegicus*) and two distinct and sympatric races of black rats (*Rattus rattus*) in standard break-neck traps above and below petrel colonies near Morne Cabaio in Haiti in late February. He believed that Norway rats did not commonly come into contact with the petrel because they were typically caught only near dwellings and farm land. Although black rats were widespread and common even on steep cliffs, Wingate (1964) believed they were unlikely to be a significant predator. Black rats probably occur throughout Dominica, but it is unclear if this rat is a major predator of petrels (Black-capped Petrel Working Group 2011a).

During some of the most recent studies in Haiti, researchers have noted that feral dogs, cats, and mongoose are becoming more abundant in the nesting areas, and have observed dogs digging petrels from burrows (Collar et al. 1992). Lee and Haney observed the presence of feral house cats at the base of the single nesting cliff in Sierra de Baoruco in the Dominican Republic (Lee and Haney 1999). As reported by Simon et al. (2002), Lee and M. K. Clark (pers. obs.) found evidence that pre-Columbians living on the eastern part of Hispaniola had imported the coati (*Naysa naysa*), although their impact on nesting petrels is unknown.

It is clear that predation from introduced mammals has contributed to the decimation of the black-capped petrel population. It is also clear these predators are encroaching upon the petrel's remaining breeding grounds. With an estimated population of only 600-2000 breeding pairs and 13 known breeding colonies, the proximity of these introduced predators is an important threat to the black-capped petrel.

(Factor D) The Inadequacy of Existing Regulatory Mechanisms

Only cursory protection exists for the black-capped petrel's remaining breeding habitat, while there is no stated protection for the species' foraging areas (Table 2). At least 11 of the 13 known breeding colonies in Haiti and the Dominican Republic are located in national parks (Collar et al. 1992). These national park designations have done little to protect the species. Current efforts are not enough to save the species, as noted by the Black-capped Petrel Working Group (2011):

Currently the Black-capped Petrel is not the object of concerted management efforts, though there is an international consensus that these high montane forests are important for conservation. The areas on Hispaniola where the known nesting sites occur are recognized for their ecological services as well as being internationally important biodiversity areas (e.g. Important Bird Areas, Key Biodiversity Areas) and a dedicated group of international treaty bodies and private foundations have supported initiatives to

protect the habitat. Though the existing projects are designed to address land degradation and watershed conservation, they would have significant benefits for these sites if successfully implemented. However, the petrel is not recognized as a conservation target in some current plans and projects. This is largely because of a lack of information about the precise extent and threats to nesting areas, and also because few nests have been found. Drawing additional attention to the petrel and ensuring that conservationists are aware of its nesting areas and conservation status are important actions for the species.

Haiti. In Haiti, nine breeding colonies are located within the La Visite National Park in Massif de la Selle and another is located in the Pic Macaya National Park in Massif de la Hotte (Collar et al. 1992). However, it was noted that as long ago as 1980 that local people had colonized the nesting areas within the national parks (Collar et al. 1992). Researchers observed cutting and burning of the forest on parts of a cliff where petrels nest (Collar et al. 1992). Deforestation had reduced black-capped petrel habitat and birds became confused and disoriented by fires, leading to mortality (Lee and Haney 1999).

In their stewardship plan for the national parks of Haiti, Woods and Harris (1985) recommended the north-facing escarpment at La Visite as a core zone of Parc National La Visite because of its high species endemism, scenic view, and its ability to act as a water catchment. The escarpment was included in the 1,980-hectare Aux Diablotins Important Bird Area (IBA) identified in 2008 by Birdlife International (2011), with the presence of black-capped petrels serving as a trigger for the IBA designation. Recently, the escarpment was included in the 1,669-square-kilometer Massif de la Selle Key Biodiversity Area (CEPF 2010). Formal park management of La Visite is all but non-existent, and the escarpment and surrounding areas have been severely impacted by clearing for agriculture. The remnant broadleaf forest on the escarpment is a <230 hectare strip that is 7 kilometers long and ranges from 40-500 meters wide (Goetz 2009).

Massif de la Hotte has been designated as a priority for conservation action. The massif is largely encompassed by the 2000-hectare Parc National Macaya, which is not gazetted. The area is a Key Biodiversity Area (CEPF 2010) and is also within a UNESCO Biosphere Reserve. The forested areas of Macaya are much larger and in better condition than at Massif de la Selle, but still greatly threatened as management capacity is very limited. The cliffs with wet broadleaf forest generally escape burning, but fires from agricultural clearing remain a great risk. Goetz noted extensive fire damage at Macaya in recent years (Goetz 2009).

Dominican Republic. The single breeding colony of petrels in the Dominican Republic is located within the Sierra de Bahoruco National Park (Collar et al. 1992). As Lee and Haney (1999) observed, the population of that colony has declined since it was found in 1981. Sierra de Bahoruco National Park is one of the three core zones of the Jaragua-Bahoruco-Enriquillo Biosphere Reserve, which includes protected and unprotected properties. A 1,152-square-kilometer area is designated as a Key Biodiversity area (CEPF 2010). Activities in the reserve include research, conservation, recreation and ecotourism (Black-capped Petrel Working Group 2011a).

Williams and colleagues (1996) noted that, although the colony is within the national park, selective logging occurs and charcoal-burning camps were found in the area. In recent years,

there has been extensive improvement of park infrastructure, park-guard training, and other conservation activities (Black-capped Petrel Working Group 2011a). New facilities for park-guards and forest rangers were built in Loma Charco Azul, in Zapoten, which was designated as a refuge in 2009 (American Bird Conservancy 2010), and on the southern slope near the entrance to the park (Black-capped Petrel Working Group 2011a). A watchtower for fire control was erected on Loma del Toro, which is an important aid for spotting fire problems quickly. But at the same time this new tall structure along with the already existing communication towers may be a hazard for flying petrels.

Although park infrastructure has improved significantly, chronic understaffing, communication problems between the different stations, lack of adequate transportation, and insufficient fuel supplies make park administration difficult.

Cuba. (information from the Black-capped Petrel Working Group 2011a) BIOECO, a Cuban NGO, has identified two locations that appear to provide habitat appropriate for breeding black-capped petrels. The two sites are within the borders of Pico Turquino and La Bayamesa National Parks. Both parks have active management plans, focused on protecting biodiversity, and both are subject to low human pressure.

If petrels are breeding in Cuba, two large-scale projects currently underway may aid conservation by raising awareness, targeting specific conservation threats, and enhancing international collaboration. The Global Environmental Facility project “Enhancing prevention, control, and management of Invasive Alien Species in vulnerable ecosystems in Cuba” could reduce the impact of invasive species in Cuba. Further, the “Declaración de Santo Domingo: Corredor Biológico del Caribe” signed by the Dominican Republic, Haiti and Cuba in July 2010 provides a framework for international collaboration and includes an action plan that specifically addresses black-capped petrel conservation issues.

Other former breeding sites. (information from the Black-capped Petrel Working Group 2011a) There are no management actions currently underway for black-capped petrels in Martinique, Guadalupe, and Jamaica since there are no confirmed breeding populations on those islands. Martinique may have some of the best remaining forests in the Caribbean, in tracts of up to 9,000 hectares. High altitude forests are still intact in Basse Terre in western Guadalupe, though they have large populations of rats and mongooses. Habitat for potential nesting areas is available in the Blue Mountain and John Crow Mountains National Park, established in 1993, which are managed by a local NGO, the Jamaica Conservation & Development Trust.

Although there is no current evidence to indicate that Morne Diablotin in Dominique still supports the petrel, the mountain is also within a legally protected area, the Morne Diablotin National Park. The area is state-owned and has been an UNESCO World Heritage Site since 1997. The park enjoys strong management, and there is little threat from agricultural expansion or volcanic activity.

Foraging range. The black-capped petrel’s primary foraging area is the Gulf Stream of the Atlantic Ocean, roughly from Cape Canaveral, Florida to Cape Hatteras, North Carolina (Haney

1987). There are currently no regulatory mechanisms that protect the black-capped petrel's narrow foraging range.

Existing regulatory mechanisms have done little to protect the black-capped petrel or to minimize threats to the species. Listing the black-capped petrel as "threatened" or "endangered" under the ESA will grant the species protections that are necessary for its conservation and recovery.

(Factor E) Other Natural or Man-made Factors Affecting its Continued Existence

Other biological and anthropogenic factors threaten the black-capped petrel's continued existence, including slow recruitment, pollution and bioaccumulation of heavy metals, and climate change. The petrel is a slow breeder and has a clutch size of only one egg (Brooke 2004). One breeding pair must successfully breed for three consecutive years to ensure population growth. This aspect of the species' ecology only intensifies the effects of the other threats to the birds. The loss of a few breeding birds could lead cause a significant decline in the population.

Anthropogenic factors affecting the black-capped petrel include pollution and bioaccumulation. Whaling et al. (1980) reported that black-capped petrels contain seven to nine times more mercury contamination than other similar seabirds, although he was unclear as to the reason. Oil drilling and other activities in the petrel's key foraging area off of North Carolina could release mercury and other heavy metals into marine waters and the food chain, and thus increase toxic loads in petrels (Lee and Haney 1999; Black-capped Petrel Working Group 2011a).

Climate change is expected to have significant impacts in the Caribbean region. In some cases, these impacts are already underway. Notable effects include 1) sea level rise, causing saline intrusion into freshwater aquifers, coastal flooding and erosion; 2) higher temperatures, increasing heat stress, coral bleaching, biodiversity loss, and vector borne disease; 3) changes in rainfall patterns, causing droughts, floods, and reduced fresh water availability; 4) increased intensity of hurricane and other storm activity, causing direct damage of infrastructure and habitat, and declines of human and/or wildlife populations (Black-capped Petrel Working Group 2011a). Impacts specific to black-capped petrels could include changes in habitat suitability, loss of nesting burrows washed out from rain or flooding, increased petrel strandings inland during storm events, and increased risk from vector-borne disease (Black-capped Petrel Working Group 2011a).

CONCLUSION AND REQUESTED DESIGNATION

The black-capped petrel faces many threats to its continued existence, including human encroachment, deforestation, agricultural modification, offshore oil exploration, and development; overutilization for subsistence hunting; predation by introduced predators; and pollution and mercury bioaccumulation. The petrel has suffered declines throughout its historic range, and the foreseeable human population growth and associated impacts in Haiti and the Dominican Republic, where the only documented breeding colonies are located, threaten the continued existence of the species. Energy development in the U.S. South Atlantic may threaten the petrel's primary foraging range. Petitioner requests that the Secretary of Interior, acting

through USFWS, list the black-capped petrel as “threatened” or “endangered” under the ESA and designate critical habitat for this imperiled seabird in U.S. waters and territories in the South Atlantic and Caribbean region.

Table 2. Summary of habitat extent, protection, and threats to the black-capped petrel at known and potential breeding locations. (Black-capped Petrel Working Group 2011a)

<i>Location</i>	<i>Official/de facto Protection</i>	<i>Estimated percent of known breeding population</i>	<i>Extent of forest (ha)</i>	<i>Habitat loss</i>	<i>Invasive mammals</i>	<i>Towers</i>	<i>Direct harvest</i>	<i>Fires</i>
<u>Known breeding locations</u>								
La Visite, Haiti	Park/Open access	90%	<230	5	4?	0	1	3
Macaya, Haiti	Park/Open access	5%	2000	3	4?	0	0	4
Fôret de Pins, Haiti	Park/Open access	>0				0		
Loma del Toro, D.R.	Park/Protected	5%	>2000	0	4?	4?	0	2
<u>Historical or potential locations</u>								
Dominica					4?			
Valle Nuevo, D.R.	Park/Protected		>2000	2	4?	4	0	1
Sierra Maestra, Cuba	Park/Protected		>2000	0	4?	0	0	0
Blue & JC Mts. Jamaica					4?	0		
Guadeloupe					4?			
Martinique					4?			
Península Barahona and offshore isles, D.R.					4?			

Threat estimate codes: 0=no threat; 1=low; 3=moderate; 4=high; 5=extreme, ?=uncertain estimate; empty cells = insufficient data for estimate

LITERATURE CITED

American Bird Conservancy. 2010. New Refuge to Protect Migratory and Resident Birds in the Dominican Republic. Available at:

<http://www.abcbirds.org/newsandreports/releases/091020.html>. Accessed: 22 August 2011.

Bent, A. C. 1922. Life Histories of North American Petrels and Pelicans and their Allies. Bulletin U.S. National Museum 121. 325 pages.

BirdLife International. 2011. Species factsheet: *Pterodroma hasitata*. Available at:

<http://www.birdlife.org>. Accessed: 13 May 2011.

Black-capped Petrel Working Group (BCPWG). 2011a. Conservation Action Plan for the Black-capped Petrel (*Pterodroma hasitata*), July 24, 2011 Version – Review Draft. 20 pages.

Black-capped Petrel Working Group (BCPWG). 2011b. Notes from the Society for the Conservation and Study of Caribbean Birds Regional Meeting, 25 July 2011. Freeport, Grand Bahama.

Brooke, M. 2004. Albatrosses and Petrels across the World, Bird Families of the World. Oxford University Press inc., New York. 497 pages.

Critical Ecosystem Partnership Fund (CEPF). 2010. Ecosystem Profile: Caribbean Islands Conservation Outcomes. Available at:

http://www.cepf.net/where_we_work/regions/CaribbeanIslands/ecosystem_profile/Pages/conservation_outcomes.aspx. Accessed: 22 August 2011.

Collar, N.J., L.P. Gonzaga, N. Krabbe, A. Madrono Neito, L.G. Naranio, T.A. Parker, III, and D.C. Wege. 1992. Threatened birds of the Americas. ICBP/IUCN Red Data Book, 3rd ed., pt. 2. Smith. Inst. Press. Washington, DC. 1,150 pages.

Collier N., A. C. Brown and M. Hester. 2003. Searches for Seabird Breeding Colonies in the Lesser Antilles. El Pitirre 15(3): 110-116.

Department of Interior (DOI). 2010a. Revised OCS Leasing Program. Available at:

<http://www.doi.gov/news/pressreleases/Salazar-Announces-Revised-OCS-Leasing-Program.cfm>. Accessed 17 May 2011.

Department of Interior. 2010b. Revised OCS Oil and Gas Strategy Map. Available at:

<http://www.doi.gov/news/pressreleases/Salazar-Announces-Revised-OCS-Leasing-Program.cfm>. Accessed: 17 May 2011.

Goetz, J. E. 2009. Interim report on Black-capped Petrel field research on Hispaniola, 2008–2009. Unpubl. report to U. S. Fish and Wildlife Service, Cornell Laboratory of Ornithology, Ithaca, NY.

Haney, J. C. 1987. Aspects of the pelagic ecology and behavior of the Black-capped Petrel (*Pterodroma hasitata*). *Wilson Bull.* 99: 153-168.

Imber, M. J. 1985. Origins, phylogeny and taxonomy of the gadfly petrels *Pterodroma* spp. *Ibis* 127: 197-229.

International Union for the Conservation of Nature (IUCN). 2010. *Pterodroma hasitata*. IUCN Red List of Threatened Species (ver. 2010.3). Available at: <http://www.iucnredlist.org>. Accessed: 12 May 2011.

Kuhl, H. 1820. *Beiträge zur Zoologie und vergleichenden Anatomie*. Frankfurt, Germany. 130 pages.

Kushlan, J. A., M. Steinkamp, K. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J. E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. *Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1*. Waterbird Conservation for the Americas, Washington, DC, U.S.A. 78 pages.

Lee, D. S. and M. C. Socci. 1989. Potential effects of oil spills on seabirds and selected other oceanic vertebrates off the North Carolina coast. *Occ. Papers NC Biol. Serv.* 1989-1. 64 pages.

Lee, D. S. 2000. Status and conservation priorities for Black-capped Petrels in the West Indies. Pages 11-18 *in* Schreiber, E.A. and D.S. Lee (eds.), *Status and conservation of West Indian seabirds*. Society of Caribbean Ornithology, Special Publication no. 1, 223 pages.

Lee, D. S. and J. C. Haney. 1999. Diablotin: A Biography of the Endangered Black-capped Petrel *in* Status Report On The Black-Capped Petrel (*Pterodroma Hasitata*). Prepared for U.S. Fish and Wildlife Service, Atlanta, GA USA, 31 December 2006 (T. R. Simons, D. Lee, J. C. Haney, J. Gerwin, C. Rimmer, J. Collazo, J. Klavins, J. E. Goetz, E. M. Fernandez, B. Browning, B. Patteson, R. A. Hylton).

NatureServe. 2009. NatureServe Conservation Status, Version 7.1 (Feb. 2, 2009). Available at: <http://www.natureserve.org/explorer/ranking.htm>. Accessed: 12 May 2011.

Nature Serve. 2010. NatureServe Explorer, Comprehensive Species Report – *Pterodroma Hasitata*. Available at: <http://www.natureserve.org/infonatura/servlet/InfoNatura?searchName=Pterodroma+hasitata>. Accessed: 12 May 2011.

Schreiber, E.A. and D.S. Lee (eds.). 2000. *Status and conservation of West Indian seabirds*. Society of Caribbean Ornithology, Special Publication no. 1. 223 pages.

Simons, T. R., J. Collazo, D. Lee, J. Gerwin. 2002. *Conservation Status of the Black-capped Petrels (Pterodroma hasitata): Colony Surveys at Sierra de Baoruco, Dominican Republic*,

January 2002 *in* Status Report On The Black-Capped Petrel (*Pterodroma Hasitata*). Prepared for U.S. Fish and Wildlife Service, Atlanta, GA USA, 31 December 2006 (T. R. Simons, D. Lee, J. C. Haney, J. Gerwin, C. Rimmer, J. Collazo, J. Klavins, J. E. Goetz, E. M. Fernandez, B. Browning, B. Patteson, R. A. Hylton).

U.S. Census Bureau (USCB). 2011*a*. Haiti. The International Database. Available at: <http://www.census.gov/ipc/www/idb/country.php>. Accessed: 17 May 2011.

U.S. Census Bureau (USCB). 2011*b*. Dominican Republic. The International Database. Available at: <http://www.census.gov/ipc/www/idb/country.php>. Accessed: 17 May 2011.

U.S. Central Intelligence Agency (CIA). 2011*a*. Haiti. The World Factbook. Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/ha.html>. Accessed: 17 May 2011.

U.S. Central Intelligence Agency (CIA). 2011*b*. Dominican Republic. The World Factbook. Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/dr.html>. Accessed: 17 May 2011.

U.S. Fish and Wildlife Service (USFWS). 2011. *Pterodroma Hasitata*. Available at: <http://www.fws.gov/birds/waterbirds/petrel/#investigations>. Accessed: 17 May 2011.

van Halewyn, R. and R. L. Norton. 1984. The status and conservation of seabirds in the Caribbean. Pp. 169-222 *in* Status and Conservation of the World's Seabirds (Croxall, J. P., P. G. H. Evans and R. W. Schreiber, eds.). ICBP Technical Publication No. 2.

Whaling, P., D. S. Lee, J. Bonaventura, and M. Rentzepis. 1980. The body burden approach of looking at natural mercury accumulations in pelagic seabirds. 1980 Annual Meeting American Ornithologist's Union. (abstract)

Williams, R. S. R., G. M. Kirwan and C. G. Bradshaw. 1996. The status of Black-capped Petrels *Pterodroma hasitata*, in the Dominican Republic. *Cotinga* 6: 29-30.

Wingate, D. B. 1964. Discovery of breeding Black-capped Petrels on Hispaniola. *Auk* 81: 147-159.

Woods, C. A. and J. A. Ottenwalder. 1983. The montane avifauna of Haiti. Proceedings Jean Delacour/IFCB Symposium: 607-622.

Woods, C.A. and L. Harris. 1986. Stewardship Plan for the National Parks of Haiti. Report, USAID/Haiti. Port-au-Prince, Haiti. 272 pp.