



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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Memorandum

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To: Assistant Regional Director, ES, Southeast Region

From: Field Supervisor, Caribbean Field Office, Boquerón, Puerto Rico

Date: September 6, 2006

Subject: Biological Opinion for Issuance of an Incidental Take Permit Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, for the WindMar RE project, Guayanilla, Puerto Rico (TE104073-0)

This document is the Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed issuance of an Incidental Take Permit (ITP) by the Service pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973 (Act), as amended (16 United States Code 1531 et seq.). The ITP would be issued to WindMar Renewable Energy, Inc. (Applicant) associated with the WindMar RE project, a commercial wind-energy project that would be located in Guayanilla, Puerto Rico. The Service evaluated the effects of this action on the endangered Puerto Rican nightjar (*Caprimulgus noctitherus*) (nightjar), brown pelican (*Pelecanus occidentalis occidentalis*), yellow-shouldered blackbird (*Agelaius xanthomus*), *Stahlia monosperma* (cóbana negra), hawksbill sea turtle (*Eretmochelys imbricata*) and the threatened roseate tern (*Sterna dougallii dougallii*) and green sea turtle (*Chelonia mydas*) under section 7 of the Act.

This biological opinion is based on information provided in the Applicant's February 2005 habitat conservation plan (HCP), the Service's environmental assessment (EA) as well as on field surveys, reports, and other sources of information. A complete administrative record of this consultation is on file at the Caribbean Field Office (CFO), Boquerón, Puerto Rico.

Consultation History

October 9, 2001: CFO was contacted by John Guarnaccia, the Applicant's consultant, requesting a meeting to present project to office personnel and providing project description.

October 15, 2001: CFO met with the Applicant's representatives to discuss proposed project. Additional information on the project was provided to CFO personnel during an interagency meeting at the Corps of Engineers office in San Juan in November 2001.

December 05, 2002: CFO personnel conducted a site visit to WindMar RE property with project proponent and personnel from other environmental agencies invited by the Applicant.

December 06, 2002-December 13, 2002: CFO provided technical assistance to project consultants regarding HCP process and HCP development.

January 28, 2003: CFO met with the Applicant and consultants and provided guidance on HCP/ITP processes, provided biological information on species possibly present in the area, and discussed the need for surveys and studies. Both federally-listed species and migratory birds were discussed during the meeting.

March 25, 2003: Applicant's consultant requested the CFO provide a list of plants and animals known from the project site and requested technical assistance on nesting seasons and methodology for the studies.

April 23, 2003: CFO provided a list of species known from the area and recommended methodologies for conducting the proposed studies.

May 12, 2003 to December 11, 2003: CFO and Applicant's consultants interchanged information regarding the HCP and the studies/surveys needed for the preparation of the draft HCP. Extensive technical assistance was provided to WindMar RE during this period of time.

January 16, 2004: Applicant submitted draft HCP to CFO for review and comments.

February 05, 2004: CFO met with project consultant to discuss draft HCP and discuss document review process.

February 19, 2004: CFO submitted written comments on the draft HCP to the Applicant. Additional comments regarding pelicans and other bird species were provided on a separate letter dated on March 4, 2004.

March 4-9 2004: CFO provided technical assistance to the Applicant's consultant about the development of a draft EA and additional information regarding how to address plants in the HCP.

March 10, 2004: CFO gave an orientation on the HCP/ ITP process to the Department of Natural and Environmental Office personnel (Fish and Wildlife Division and Energy Administration) in San Juan, Puerto Rico. This orientation/meeting was requested by the Energy Administration since they are the proponent agency at the local permit level.

March 15, - April 13, 2004: Additional assistance from the CFO and Regional Office (RO) was provided to Applicant's consultants on plants, pelicans, and other bird species.

April 21, 2004: CFO received a copy of a Freedom of Information Act (FOIA) request (FWS-R4-04-021) from the Applicant or from Victor Gonzalez to Regional Director (RD) requesting any documents sent from CFO personnel to Law Enforcement (LE) agent regarding the Applicant's president or property.

April 22, 2004: CFO received a copy of a FOIA request from the Applicant or from Victor Gonzalez to Washington Office (WO) (Law Enforcement Division) requesting copies of all complaints and investigations for Puerto Rico regarding ESA during the last 5 years.

April 22, 2004 – June 15, 2004: CFO was heavily involved in gathering information and responding to FOIA requests.

May 3, 2004: CFO and LE personnel visited project site to observe land clearing activities within the property and provided information to the Applicant about HCP/ITP process, roles and responsibilities, procedures, guidance, biological information on nightjars, and possible impacts of road opening activities on nightjars.

June 15, 2004: RD responded to FOIA request (FWS-R4-04-021) and provided all responsive releasable information.

October 20, 2004: RD provided additional documents related to FOIA request (FWS-R4-04-021).

November 9, 2004: Applicant submitted revised draft HCP dated October 2004 to CFO for review and comments.

December 20, 2004: CFO submitted written comments to the Applicant on revised draft HCP.

January 11, 2005: CFO met with the Applicant to discuss/ clarify comments on revised draft HCP.

January 14, 2005: Applicant provided additional information to CFO responding to issues discussed during January 11, 2005 meeting.

February 17, 2005: Applicant submitted to the CFO an application package for an ITP for WindMar project in Guayanilla. Package included: Application, HCP, draft EA, and application fee.

April 26, 2005: CFO certified the application complete, drafted the EA and the Notice of Availability (NOA) for the Federal Register. Complete package and certification was submitted to RO.

June 6, 2005: RO submitted to the CFO comments from the RO-NEPA coordinator about draft EA.

June 9, 2005: CFO responded to comments on the draft EA and submitted response to RO.

September 22, 2005: DOI Office of the Regional Solicitor (SOL) provided comments to the RO about February 2005 HCP and the draft EA. Comments were submitted to CFO on September 27, 2005 for response.

September 27, 2005: CFO, Regional Archaeologist and Applicant met with personnel from the State Historic Preservation Officer (SHPO) office in San Juan. The Service presented the project and we all discussed the consultation process under Section 106 of the NHPA.

September 28, 2005: CFO, Regional Archaeologist, SHPO and Applicant visited the WindMar site to observe the cultural resources of the area. Project consultant acknowledged in writing appreciation for the visit and the meeting with SHPO, and provided information responding to SOL comments.

September 29, 2005: Applicant's consultant submitted revised text and figures of the HCP in electronic format. Service forwarded information to RO.

January 6, 2006: Service published the NOA of the draft EA and the HCP in Federal Register (71FR 951-953). A 60-day comment period was opened.

March 7, 2006: Public comment period closed.

March 21, 2006: CFO submitted copy of all comment letters to the Applicant and requested information to respond to primary issues raised by the public. A summary of the issues were provided.

March 27, 2006: Applicant provided information responding to public comments.

March 30, 2006: Applicant provided additional information responding to issue #21 of Service letter dated March 21, 2006.

April 6, 2006: CFO visited the site with the Applicant to assess the construction of a new road adjacent to the project site. Information gathered during the visit was provided to RO.

Application No: TE-104073-0
Applicant: WindMar Renewable Energy, Inc.
Action Agency: U. S. Department of the Interior - Fish and Wildlife Service
Project Title: WindMar RE Project
County: Guayanilla, Puerto Rico

Table 1. Species for which the Service has made a “no effect” or “not likely to be adversely affected” determination. No designated critical habitat is present within the Action Area.

SPECIES *	PRESENT IN ACTION AREA, BUT “NO EFFECT”	PRESENT IN ACTION AREA, BUT “NOT LIKELY TO BE ADVERSELY AFFECTED”
<i>Stahlia monosperma</i> (cóbana negra)	Yes	
Hawksbill sea turtle (<i>Eretmochelys imbricata</i>)		Yes
Green sea turtle (<i>Chelonia mydas</i>)		Yes
Yellow-shouldered blackbird (<i>Agelaius xanthomus</i>)	Not present	

*The above species with “no effect” or “not likely to be adversely affected” by this action will not be discussed further in this biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed action consists of the construction and operation of a commercial wind-energy project (WindMar RE Project hereafter referred to as “project”) on 290 hectare (ha) (725 acres) located at a forested coastal property in Guayanilla, Puerto Rico (Figure 1) (hereafter referred to as the “project site”). The project site harbors three forested hilly areas known as Punta Verraco, Cerro Toro, and Punta Ventana and consists of the construction and operation of twenty-five 1.65 megawatt (MW)

wind turbines on these areas (Figure 2). It would generate 110,000,000 kilowatt hour (kWh) annually, the amount of electricity consumed by 23,000 Puerto Rican households, or 0.5 percent (%) of the Puerto Rico Electric Power Authority’s (PREPA’s) present annual production. Forested hills support suitable nesting, feeding, and sheltering habitat for the nightjar. The project site is located within a flight path for brown pelicans using the Guayanilla Bay and surrounding waters for foraging. Nesting habitat for the roseate tern has been documented at an island south of Punta Verraco.

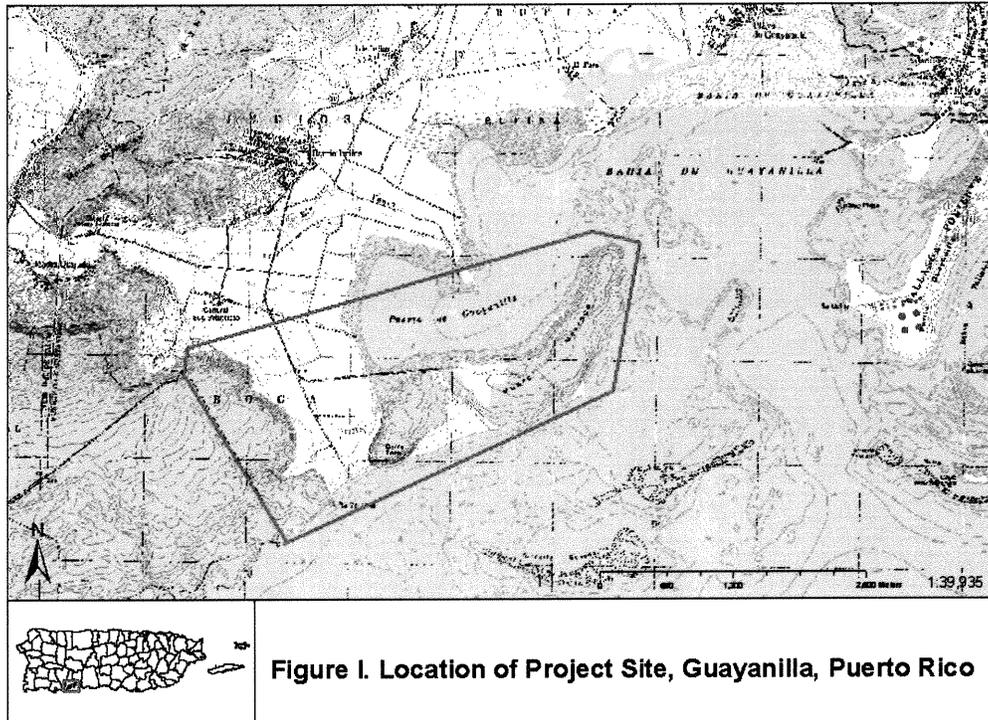


Figure I. Location of Project Site, Guayanilla, Puerto Rico

The Service has defined the action area (AA) as follows:

- **Nightjar:** The 290 ha (725 acres) project site and the contiguous dry forest habitat of the Guánica Commonwealth Forest up to 1 km (.621 miles) to the west of the boundary between the Guánica Forest and the project site in Punta Ventana area.
- **Brown pelican:** The flyway of the project site, the feeding habitat within the Guayanilla Bay and the nesting colonies located in Montalva Bay, Guánica.
- **Roseate tern:** The flyway of the project site, the nesting cay off the coast of Punta Verraco and the nesting colonies located in cays in La Parguera, Lajas.

Maps of the AA are provided in the “ENVIRONMENTAL BASELINE” section. Biological and ecological factors used to determine the AA for each species are discussed in the “EFFECTS OF THE ACTION” section of this consultation.

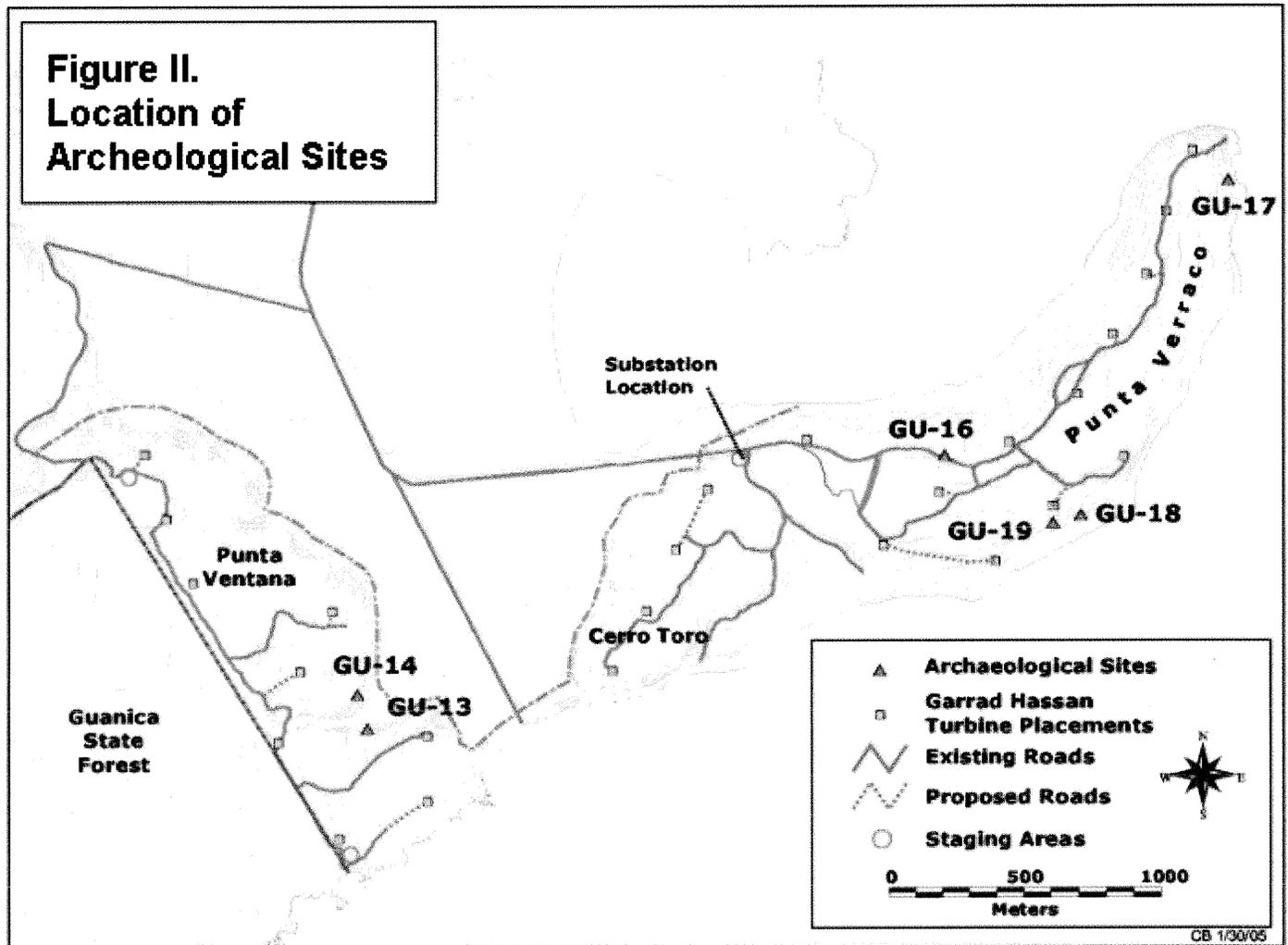


Figure 2. Location of archeological sites illustrating the project layout (Figure extracted from Applicant's HCP).

Proposed HCP Conservation Measures

The Applicant has proposed the following measures to minimize the adverse effects of construction and operation of the proposed project on the nightjar, the brown pelican and the roseate tern. These avoidance and minimization measures have been summarized directly from the HCP submitted to the Service:

1. Clear vegetation outside of the nightjar nesting season. To avoid impacts to nightjars from construction activities the Applicant will clear the vegetation outside of the nightjar nesting season. However, in emergency situations, if vegetation needs to be cleared during the nesting season, the Applicant will use experienced and qualified biologists to search for nightjar nests before any clearing activity is conducted. In the event a nest is found, the Applicant will avoid it by relocating the road or construction area, or by delaying the activity until the nightjar fledges its young.

2. Use existing roads. For the installation of the twenty-five 1.65 MW turbines, the Applicant is required to construct and maintain about 10.1 km (6.18 miles) of roads. However, the Applicant has sited the project to take advantage of 8.7 km (5.4 miles) of existing roads. Using existing roads decreases the project's road construction impacts to nightjar habitat by 37%.
3. Use fewer, larger turbines. The Applicant has analyzed a number of turbine options, ranging from 600 KW to 3.0 MW machines. While the smaller machines are proven performers, they call for more turbines (e.g., sixty-six 900 KW turbines would be required) and a greater area of roads and turbine construction areas. The use of smaller turbines would affect more nightjar habitat. They would also pose a greater challenge to brown pelicans and roseate terns, as the cross-sectional area of the project site inhabited by rotor blades would increase.
4. Clear vegetation in a way that allows it to recover. The Applicant will clear new roads and the turbine construction areas in a way that would allow dry forest vegetation to recover, using small to midsize bulldozers to scrape the vegetation at the surface and leaving the rootstalks intact. The coppice pattern of growth of many dry forest trees on the site reveal that the vegetation can recover. Based on information provided by the Applicant, large sections of this dry forest have been cut back to ground level more than once during the 200 years when this area was utilized by the sugar industry. Allowing vegetation to re-grow on road edges, turning areas, staging areas, turbine construction areas, and rotor construction areas would recover 87% of the total construction impact to the dry forest habitat.
5. Paint rotor blades to make them more visible to birds. Research appears to demonstrate that when the distal end of one rotor blade is painted with a visible pattern, birds are more likely to avoid the rotor. The Applicant will implement the most effective technique promoting bird avoidance and paint one or both blades per turbine.
6. Establish a predator control program. The Applicant will institute a permanent program to trap mongoose, rats, and feral animals on the site to decrease predation pressure on the nightjars, the dry forest lizard (*Anolis cooki*), and other native animals. Trap lines will be maintained and checked regularly by staff researchers.
7. Establish roads as fire brakes. The Applicant will maintain access roads to the wind turbines as fire brakes to decrease the threat of fire to the nightjar and its habitat.
8. Implement Avian Power Line Interaction Committee (APLIC) guidelines. The Applicant will bury all electrical transmission lines on the site out to PR-335, where they will run aboveground along existing transmission line poles to the Puerto Rico Electric Power Authority (PREPA) substation. APLIC mostly applies to situations where there are lots of larger raptors or other birds that could be electrocuted or collide with lines. For example, ducks, eagles, grebes, and similar birds are quite susceptible if lines go over a marsh or river. Although this is not the case at the Project site, the Applicant will fit aerial transmission lines with flight diverters in any situation where there may be an electrocution or collision risk for large birds. The Applicant will insulate lines at the poles and make sure that phase to phase and phase to ground contact

cannot be made by birds, such as turkey vultures (*Cathartes aura*). The Applicant will also space lines, to avoid phase to phase contact.

The Applicant has proposed the following measures to mitigate the adverse effects of construction and operation of the proposed project on the nightjar, the brown pelican and the roseate tern. These mitigation measures have been summarized directly from the HCP submitted to the Service.

1. Establish a conservation easement on 245 ha (612.5 acres) of the project site. The Applicant will grant a conservation easement that protects 85% of the project site. The easement is being drafted based on a law approved on December 27, 2001, by the Legislature of the Commonwealth of Puerto Rico (Law Number 183, Puerto Rico Conservation Law). The easement will be offered to a qualifying non-profit organization.
2. Restore at least 2.6 ha (6.5 acres) of the 3.1 ha (7.8 acres) of the previous Texaco quarry at the base of Punta Verraco with dry forest vegetation. This activity will restore 21% of the dry forest lost due to construction impacts. When combined with the dry forest recovered by allowing the road margins and turbine construction areas to grow back, the total restoration of dry forest habitat will amount to 13.2 ha (33 acres) or 108% of the habitat impacted by the project. This restoration will fill in a key habitat gap at the base of the Verraco peninsula, allowing nightjars to establish territories in an area that may be presently too fragmented for viable territories. This restoration may allow for two or more additional nightjar territories, once dry forest with a good structure has been established.
3. Restore a 10-hectare (25 acres) mangrove area by improving drainage. The Applicant will restore this mangrove area impacted by the construction of the causeway to Punta Verraco and subsequent silting in of its culverts. The restoration activity consists of the construction of a series of bridges, or the addition of a number of large culverts, along the causeway to reestablish tidal flushing of the ecosystem. The Applicant will also collect black mangrove (*Avicennia nitida*) seedlings and plant them in the mud, speeding restoration and likely improving foraging resources for the endangered brown pelican and threatened roseate tern.
4. Support brown pelican research. The Applicant will provide a \$100,000 grant to develop a pelican research program.
5. Establish an environmental education program. The Applicant will educate visitors about renewable energy and the plants and wildlife of southwest Puerto Rico. The Applicant will control site access, schedule visiting hours, and lead visitors on regularly scheduled tours. The Applicant will produce a brochure to be handed out in schools, community centers, and hotels. The Applicant will also finance environmental education projects in surrounding communities. One priority project will be to educate residents and tourists about the marine environment and the measures required to improve its health. This project will focus on the plight of the brown pelican. In addition, the Applicant will provide facilities at the Ventana beach area for local visitors. This will include, among other facilities, an informational kiosk with environmental education.

The Applicant has also outlined a plan to document the effectiveness of the conservation measures through monitoring. The principal monitoring measures include regular censuses during breeding season of the nightjar and a mortality study of the brown pelican and other bird species at the project site. Annual reports will be provided for the first five years after project construction, then once every five years. Should unforeseen or changed circumstances arise, the plan includes adaptive management procedures. The specific monitoring and adaptive management features provided in the Applicant's HCP are incorporated by reference.

STATUS OF THE SPECIES

PUERTO RICAN NIGHTJAR

Species description

The Puerto Rican nightjar (commonly known as “guabairo”) is a resident bird, endemic to Puerto Rico that belongs to the family Caprimulgidae. It is a small (22 centimeters (cm) or 8.5 inches (in)) cryptically plumaged goatsucker with a fluffy plumage mottled gray, brown and black. It is characterized by a black throat edged with a pale band. Males have a white throat band and portions of outer tail feathers. Females have a buff-colored throat band and tips of outer tail feathers. The Puerto Rican nightjar is distinguished from chuck-will's-widow (*Caprimulgus carolinensis*) by its distinctly smaller size, less reddish-brown plumage and by the greater amount of white in the tail of the male (Raffaele et al. 1998). It is distinguished from Antillean nighthawk (*Chordeiles gundlachii*) by the lack of a white bar in the wing. It is characterized by an emphatic, whistle whip, whip, whip, whip... normally two to fifteen in a sequence (Raffaele 1989, Raffaele et al. 1998, Kepler and Kepler 1973).

Life history

The Puerto Rican nightjar is a nocturnal insectivorous bird which captures insects in flight (Kepler and Kepler 1973, Service 1984, Vilella 1989 in litt., Raffaele et al. 1989, Vilella 1995). The species becomes active after dark, sallying from a perch or branch approximately 2.5 m (8 ft) above the forest floor to pursue nocturnal flying insects beneath the forest canopy (Vilella 1995). This last author observed that nightjars visit favorite perches at night, and after sallying (suddenly rush out) after insects return to the same branch.

Kepler and Kepler (1973) described the vocal behavior and breeding biology of the species. Calling is most frequent after dusk and before dawn. The species calls all through the year, but calling peaks from February to May. Noble (1988) suggested the nightjar singing peaks in June and early July in Guánica. More recently, Vilella (1995) agreed with Kepler and Kepler (1973) establishing that singing occurs during all months of the year, although the number of singing males and the intensity of singing varied seasonally peaking during April and May, and minimizing during September and October. Vilella (1995) found a reduction of vocalization during late July to early August, coinciding with the end of the breeding season and the beginning of the rainy season in the Guánica Forest.

Kepler and Kepler (1973) first described the species breeding biology. The nesting season extended from mid-April to early July, with a probable peak from May to June. The species is a ground-nester associated with forested habitats. Nightjars do not construct a nest. Females merely lay their eggs directly on supporting leaf litter under scrub vegetation, where the canopy ranges from 4-6 m (13-20

ft), and never in open areas or clearings. The authors described a clutch of two eggs and an incubation period of 19 days. Vilella (1995) gave a more detailed description of the reproductive ecology and behavior of the species from data collected from 1985 to 1987 in the Guánica Commonwealth Forest. Nightjars exhibit chorusing behavior with respect to singing: one bird's vocalization elicits responses from nearby individuals. His study included data from 23 nests and observations during all stages of the nesting cycle, from recently initiated nests to adults brooding immature fledglings. Nightjar breeding pairs initiated nesting (first egg laid) between 24 February and 1 July, with the peak of activity occurring between April and June. Three days before laying eggs, females roosted during the day on the forest floor within 10m (34 ft) of where the eggs were subsequently deposited. This observation coincides with Kepler and Kepler (1973) and Noble et al.(1986a). Although both parents incubate eggs, Vilella (1995) found that male nightjars incubated more (68%) than females (32%). With the exception of one nest, no female nightjar was found incubating during the day. Males sit tightly on the eggs during the day and hold their bodies pressed to the ground, which enhances their inconspicuousness. After incubation throughout the day, nightjar males were relieved (after a 90 seconds relieving display) at the nests by the female nightjar. Eggs hatched after an 18-20 day incubation period between March and July. Chicks hatched on successive days and the male nightjar was primarily responsible for care of the young. During twilight hours, both members of the pair alternatively fed the young by regurgitation. The author reported a total of 87% of the nests studied were successful in producing at least one fledgling. By the time the chicks were 14 days, they had the adult plumage pattern and were capable of considerable movement and short flights.

Vilella (1995) found that nightjar males exhibited strong site fidelity and adult nightjars were always observed within the forest interior, sometimes near its edge. The maximum distances covered of two males (fitted with radio-transmitters) were 270 m (886 ft) and 360 m (1,181 ft) respectively (during the life of the transmitters). The areas calculated as being used by these two male nightjars were 4.8 ha (12 acres) and 5.6 ha (14 acres) respectively. These areas were similar to the density estimates obtained from call counts in Guánica Forest by Vilella and Zwank (1993a).

Distribution and abundance

Little information is available on the historical distribution of the Puerto Rican nightjar. Believed by scientists to be extinct for over 70 years, the Puerto Rican nightjar was re-discovered in 1961 following the recording of an unknown bird call (Raffaele et al. 1998). Before its rediscovery, the species was only known from three sites in the moist limestone forest (Morovis, Bayamón and Río Piedras) (Kepler and Kepler 1973). Both Kepler and Kepler (1973) and Vilella and Zwank (1993a) concluded that nightjars were extirpated from northern Puerto Rico probably as a result of the large scale deforestation, which occurred during the last decades of the 19th century and early decades of the 20th century. However, at present time Río Abajo and Guajataca forests have a combined area of over 3,200 ha (over 8,000 ac) of forested habitat (Silander et al. 1986 in litt.) and both forests are managed for conservation by the Puerto Rico Department of Natural and Environmental Resources. These regions of moist limestone forest are mature secondary forests (about 70-80 yr old) which have regenerated following periods of intensive deforestation (Ewel and Whitmore 1973, Silander et al. 1986 in litt, Vilella and Zwank 1993a).

The first detailed study on the Puerto Rican nightjar was conducted by Kepler and Kepler (1973) between 1969 and 1971. They found the species to be restricted to three separate areas in the southwestern limestone and serpentine areas: Guánica Commonwealth Forest in the municipalities of Guánica, Guayanilla and Yauco; Guayanilla Hills between Guayanilla and Peñuelas; and the Susúa

Commonwealth Forest in the municipalities of Sabana Grande and Yauco. Kepler and Kepler (1973) estimated that the total population ranged from 450-500 breeding pairs in these three non-contiguous areas totaling about 3,200 ha (8,000 acres) of suitable habitat. Each population is located within 10 km (6 miles) of another.

Based on call counts over presumably suitable habitat, Kepler and Kepler (1973) estimated a breeding population between 330-470 breeding pairs (average of 400) in Guánica Commonwealth Forest, and 30 pairs in Susúa Commonwealth Forest. Although they did not survey the limestone region of Guayanilla, they estimated that about 50 pairs occurred in the 500 ha (1,250 acres) of presumably suitable habitat in the Guayanilla Hills. They believed that the population could approach an upper limit of 100 breeding pairs in that area. Kepler and Kepler (1973) stated that the nightjar suitable habitat within the three occupied areas (3,200 ha or 8,000 acres) represented about 3% of its probable former range, the limestone region, and only 0.7% of the total land. Based on that information, the Keplers estimated the probable former nightjar range to be about 106,667 ha (266,668 acres).

Noble et al. (1986b) conducted call counts of nightjars in June and July 1984 and in January 1985 in Guánica and Susúa Commonwealth forests (Table 1). They assumed (based on Kepler and Kepler 1973) that they could hear all nightjars singing 300 m (990 ft) on either side of the survey route. The width was then multiplied times route length to determine the total surveyed area. In the Guánica Commonwealth Forest, call counts estimates yielded one singing nightjar per 8.0 ha (20 acres) above 75 m (246 ft) and one nightjar per 18.8 ha (47 acres) between 25m (82 ft) and 75m (246 ft). Based on these counts, they estimated that 324 nightjar pairs occurred in the Guánica Commonwealth Forest and adjoining available habitat. In the Susúa Commonwealth Forest, Noble et al. (1986) estimated population densities of one nightjar per 24.5 ha (61 acres) north to the forest road, and one nightjar per 8.1 ha (20.3 acres) south to the forest road. They estimated that 68 nightjar pairs occupied Susúa Commonwealth Forest and adjoining private lands. They stated that these estimates represent the minimum number of nightjars within the area covered by the study.

Vilella and Zwank (1987) conducted call counts of nightjars in the Guayanilla Hills in 1985 and 1986 (Table 2). They heard a total of 32 nightjars in 498 ha (1,245 acres). Densities ranged from 0.04 to 0.12 nightjars/ha (2.5 acres), with an average of 0.06 nightjars/ha (2.5 acres). From aerial photographs and ground surveys they estimated that about 4,100 ha (10,250 acres) of suitable nightjar habitat exists in the Guayanilla hills. More than eight times the amount of habitat estimated by Kepler and Kepler (1973). Based on the density estimated for the area surveyed, Vilella and Zwank (1987) calculated that there were at least 263 nightjars in the Guayanilla hills. They also estimated 324 nightjars in Guánica Commonwealth Forest and 68 nightjars in Susúa Commonwealth Forest for a total population of 655 nightjars in the three populations. The population estimates for Guánica and Susúa in Vilella and Zwank (1987) correspond to the population estimates presented by Noble et al. (1986b).

Table 2. Nightjar population estimates for Guánica and Susúa Forest and adjacent private land, and Guayanilla Hills from 1984 to 1985 (Noble et al. 1986b and Vilella and Zwank 1987).

Location	Number of hectares (acres)			Number of nightjars		Total Number Nightjars	# nightjars/ ha (ac)
	Public land	Adjacent land (private)	Total Area	Public land	Adjacent land (private)		
Guánica Forest	2,049 (5,123)	610 (1,525)	2,659 (6,648)	250	74	324	0.122 (0.049)
Susúa Forest	1,047 (2,618)	77 (193)	1,124 (2,811)	58	10	68	0.060 (0.024)
Guayanilla Hills		4,100* (10,250)	4,100 (10,250)		263	263	0.064 (0.026)
Total	3,096 (7741)	12,528 (11,968)	15,624 (19,709)	308	347	655	0.042 (0.033)

* Estimated suitable habitat based on aerial photograph and ground surveys.

Vilella and Zwank (1993a) surveyed areas of Puerto Rico with high potential for occurrence of the Puerto Rican nightjar to determine geographic distribution and abundance of the species in Puerto Rico from 1985-1987. Because of their proximity to historical records, they surveyed about 985 ha (2,462.5 acres) of moist limestone forest they surveyed on Ciales, Río Abajo and Guajataca regions. However, no nightjars were recorded. They also surveyed the Maricao and Susúa Commonwealth forests in the lower cordillera region, and Guánica Commonwealth Forest and Guayanilla hills in the southern dry limestone forest region. They also visited four additional areas: Barina hills in Yauco, Cerro Montalva in Guánica, La Parguera hills in Lajas, and Sierra Bermeja hills between Lajas and Cabo Rojo.

We selected the Vilella and Zwank (1993a) report for our analysis on status since it included more survey years than Vilella (1989 in litt.). Estimated abundance and determined distribution of nightjars in Guánica, Susúa and Maricao Commonwealth forests, and Guayanilla hills were established through 369 surveys conducted in 1985-1987, 1989-1990, and 1992. Surveys were conducted along existing trails on at least three occasions during crepuscular hours. Vilella and Zwank played recording of singing nightjars along all survey routes to determine presence/absence of the species in the areas. Playback recordings were used to determine presence of forest nightjars because this species shows a strong site tenacity and inclination of males to sing repeatedly during dusk and early night hours. The authors estimated abundance based upon the number of nightjars heard per route during winter, when calling rates were higher. They assumed that singing nightjars were only males. Although Kepler and Kepler (1973) and Noble et al. (1986b) assumed each singing nightjar represented a breeding pair, Vilella and Zwank (1993a) determined that, as all singing birds may not be mated, interpretation of a single bird as a breeding pair may overestimate reproductive potential for the species. They found that unmated male nightjars (*Caprimulgus* spp.) may actually sing more vigorously, as they are attempting to attract mates. Thus, they reported only the number of singing male nightjars heard per route. Kepler and Kepler (1973), Noble et al. (1986b) and Vilella and Zwank (1993a) assumed that they could hear all nightjars singing 300 m (990 ft) on either side of the survey route. The width was then

multiplied times route length to determine the total surveyed areas. Some survey routes within the base of limestone hills were considered as one sided.

Vilella and Zwank (1993a) recorded Puerto Rican nightjar in the following surveyed areas:

1. Maricao- Susúa region - Maricao and Susúa Commonwealth forests ;
2. Guánica region - Guánica Commonwealth Forest, Barina hills in Yauco and Punta Verraco in Guayanilla;
3. Guayanilla- Peñuelas region - commonly known as Guayanilla hills;
4. Cerro Montalva in Guánica;
5. La Parguera hills in Lajas; and
6. Sierra Bermeja mountains located between Lajas and Cabo Rojo.

Within the Susúa- Maricao region, they detected a total of 177 nightjars on 2,745 ha (6,860 acres) of lower cordillera forest. Nightjars were most abundant in and around the Susúa Commonwealth Forest. Only 11 nightjars were heard on 832 ha (2,080 acres) of lower cordillera forest surveyed in the Maricao Commonwealth Forest and adjacent lands. Of these 11 nests, only two were located within the Maricao Forest boundaries. They estimated a mean density of 0.03 ± 0.03 nightjars/ha (/2.5 acres) for this region. Vilella and Zwank (1993a) determined that nightjar densities decreased with elevation in surveyed areas of Susúa and Maricao forests.

In the Guánica region, Vilella and Zwank (1993a) recorded 347 nightjars on 4,394 ha (10,985 ac) of coastal dry limestone forest. They reported densities of nightjars between 0.06-0.10 nightjars/ha (/2.5 acres) to 1 nightjar/10 ha (/25 acres). In the Guayanilla-Peñuelas region, Vilella and Zwank heard 188 nightjars in about 2,700 ha (6,750 acres) of privately-owned land in the Guayanilla hills. They found high (0.12 ± 0.01 nightjars/ha or /2.5 acres), moderately high (0.07 ± 0.01 nightjars/ha or /2.5 acres), and low (0.05 ± 0.01 nightjars/ha or /2.5 acres) densities throughout the region. The authors recognized that the amount of land surveyed in the Guayanilla-Peñuelas region represented 66 percent of the available habitat for the species in that region. Based on that information, they are suggesting that the Guayanilla-Peñuelas region supports 4,091 ha (10,228 acres) of suitable nightjar habitat. They reported one nightjar in each locality in Cerro Montalva and La Parguera hills, and seven nightjars in Sierra Bermeja hill. The amount of suitable habitat within these three last areas was not estimated.

In summary, Vilella and Zwank (1993a) reported a total of 712 singing males nightjars in a total area of 9,839 ha (24,598 acres) in Maricao-Susúa, Guánica and Guayanilla-Peñuelas regions and adjoining areas (Table 3). The authors specified that reported numbers refer only to adult males, as these were the ones detected by their method and utilized as an index of abundance. They suggested that about 1,400 to 2,000 individuals distributed over 10,000 ha (25,000 acres) of coastal dry and cordillera forest in southwestern Puerto Rico may exist.

Table 3. Number of nightjars heard by Vilella and Zwank (1993a) in three regions of southwestern Puerto Rico.

Regions	Area ha (ac)		Total ha (ac)	# nightjars		Total
	Public	Private		Public	Private	
Maricao-Susúa	1,947.8 (4,869.5)	796.6 (1,991.5)	2,744.5 (6,861.3)	127	50	177
Guánica	3,308.0 (8,270.0)	1,085.8 (2,714.5)	4,393.8 (10,984.5)	270	77	347
Guayanilla-Peñuelas	-	2700.5 (6,751.3)	2700.5 (6,751.3)	-	188	188
Total	5,255.8 (13,139.5)	4,582.9 (11,457.3)	9,838.8 (24,597)	397	315	712

More recently, CMA Architects and Engineers LLP (2003 in litt.) reported 11 individuals in an area closed to the proposed PR-9 in Ponce, and eight individuals in an area north of the PR-2 in Las Cucharas, Ponce. The Puerto Rico Ornithological Society (2004 in litt.) reported 21 singing nightjars in Sierra Bermeja hills and two in Punta de Melones area in Cabo Rojo from 2003 surveys, and 12 singing males in Sierra Bermeja and two in Punta Melones from 2004 surveys. Oikos Environmental Services (2005 in litt.) reported 11 nightjar calls in Peñones de Melones area. No population estimates for these two areas are available in the literature.

Habitat description

The species is presently found in the subtropical dry and subtropical moist forest life zones of Puerto Rico (Ewel and Whitmore 1973). The subtropical dry forest is considered to be the driest life zone in Puerto Rico and the U.S. Virgin Islands, receiving a mean annual rainfall ranging from 60 to 100 centimeters (24 to 40 inches)(Ewel and Whitmore 1973). The vegetation in this zone typically forms a nearly continuous single-layered canopy, with little ground cover, and it is deciduous on most soils. Forest vegetation is dominated by species of trees and shrubs with succulent or coriaceous (leathery) leaves, and species with spines and thorns. Tree heights usually do not exceed 15 meters (49 feet) and crowns are typically broad, spreading and flattened (Ewel and Whitmore 1973).

In the subtropical dry forest life zone of Puerto Rico, the Puerto Rican nightjar have been reported from Peñones de Melones in Cabo Rojo (westernmost limit of the life zone in the island); Sierra Bermeja between Lajas and Cabo Rojo; Parguera hills in Lajas; Cerro Montalva in Guánica; Barina in Yauco; Punta Verraco area in Guayanilla, Guánica Commonwealth Forest in the municipalities of Guánica, Guayanilla and Yauco; Guayanilla-Peñuelas hills, and Ponce. Vilella (1989 in litt.) described the nesting habitat of the Puerto Rican nightjar in the Guánica Commonwealth Forest. He reported that nightjar nests were located in all three habitat types in the forested uplands of the Guánica Commonwealth Forest (deciduous forest, evergreen forest, and mahogany plantation) at elevations ranging from 55 m (181.5 ft) at the edge of the evergreen and limestone scrub association, to 220 m (726 ft) in deciduous forest of the higher elevations of the forest. Nests were located from 2 m (6.6 ft) to 125 m (412.5 ft) into the forest from the nearest road or trail. Nests were in areas with gentle slopes and good drainage. He also found that nightjar nests were not evenly distributed throughout, but were concentrated in certain areas of the Guánica Forest. Of the three habitat types of which nests were located, mahogany plantation was significantly favored by the species over evergreen and deciduous

forest. Detailed description of forest types within subtropical dry forest is available in Silander et al. (1986 in litt.) and Lugo et al. (1978). Data analysis conducted by Vilella (1989 in litt.) suggested that sites that have abundant leaf litter, protective cover directly above the nest, an open understory and midstory, and a relatively high number of tree species in the midstory constitute optimal nightjar nesting habitat. At present time, the Guánica Commonwealth Forest which contains 4,585 ha (11,330 acres) and is considered the best example of dry limestone forest on the island and it was declared a United Nations (UNESCO) Biosphere Reserve in 1981 (Silander et al. 1986 in litt.). It is managed by the Puerto Rico Department of Natural and Environmental Resources (DNER).

The Puerto Rican nightjar also occurs in the subtropical moist forest (Susúa Commonwealth Forest) and subtropical wet forest (Maricao Commonwealth Forest) life zones in southwestern Puerto Rico. The subtropical moist forest is considered the most extensive life zone of Puerto Rico and U.S. Virgin Islands. This life zone is delineated by a mean annual rainfall ranging from 100 to 220 centimeters (39 to 86 inches) (Ewel and Whitmore 1973). Most of this zone has been deforested at one time or another, primarily because of its favorable climatic condition for a variety of crops. With the exception of regions of serpentine- or limestone-derived soils, most of the land in this life zone remains in some form of non-forest use. Remnants of vegetation associations within this life zone are characterized by trees up to 20 m (66ft) tall, with rounded crowns. Many of the woody species are deciduous during the dry season and epiphytes are common (Ewel and Whitmore 1973). In the Susúa Commonwealth Forest, Vilella and Zwank (1993a) detected singing nightjars in the lower cordillera forest. The Susúa Forest lies between the humid Central Cordillera and the dry coastal plains typical of the south coast. The forest represents not only the influence of a climatic transition zone (dry to moist), but also a combination of volcanic and serpentine soils (Department of Natural Resources 1976 in litt.). Elevation in the forest ranges from 80 to 473 m (262 to 1,551 ft) above sea level. Silander et al. (1986 in litt.) described two vegetation associations in Susúa: dry slope forest (92.8 percent of the forest) and gallery forest along stream banks (7.2 % of the forest). The Susúa Commonwealth Forest contains 1,313 ha (3,245 acres) and it has been managed for conservation by the DNER since 1935.

The Maricao Commonwealth Forest lies within the subtropical moist (southern end of the forest) and subtropical wet forest life zones (Ewel and Whitmore 1973). The forest is located in the Cordillera Central mountain chain at elevations ranging from 15 m to 875 m (49 to 2,870 ft) above sea level. Over 85 percent of the soils of the Maricao Forest are derived from serpentine which is excessively permeable, well drained, and droughty. Physical properties peculiar to these soils allow them to absorb usually large amounts of water, yet cause moisture loss more rapidly than other clays in Puerto Rico, producing a unique dry condition, in spite of high rainfall. The forest occupies 4,149 ha (10,543 acres), was established in 1919, and is managed by the DNER (Department of Natural Resources 1976 in litt.). Vilella and Zwank (1993a) reported singing nightjars on lower cordillera forest in and adjacent the Maricao Forest. Within the Forest boundaries, they heard only two individuals in eucalyptus (*Eucalyptus robusta*) plantation. Delannoy (2005) reported the first nesting record of the Puerto Rican nightjar in the Maricao Forest. He found a nightjar nest in leaf litter at the edge of a trail parallel to a eucalyptus plantation, at an elevation of 620 m (2,034 ft). Maricao Forest is at the upper limit of the nightjar's distribution in Puerto Rico, and habitats within this forest seem marginal. This nightjar's nesting site represents the highest elevation ever recorded for the species (Delannoy 2005).

Status of the species and threats

The nightjar was declared endangered in June 4, 1973 (Service 1973). No critical habitat was designated for the species. The species is threatened by habitat modification, by destruction of the

habitat for urban, industrial, and tourism development and by predation by exotic species such as the small Indian mongoose (*Herpestes javanensis*) and cats (*Felis catus*) (Kepler and Kepler 1973, Service 1984, Vilella 1989 in litt., Vilella and Zwank 1993b). A recovery plan for the species was signed in 1984. At that time, the information on the species status was limited and the natural history of the species was not well known (Service 1984). The plan established that until better information was available, the species tentatively should be considered as recovered upon attainment of a population of 600 pairs in Guánica forest, 400 breeding pairs in the Guayanilla-Tallaboa area, and 200 breeding pairs in Susúa Commonwealth Forest, and assurance of long-term protection of the essential habitat needed to sustain these populations. No quantitative information about essential habitat was provided. However, Vilella (1989 in litt.) suggested that the acquisition of about 500 ha (1,250 acres) of dry forest in the Guayanilla hills area would ensure the protection of the best nightjar habitat found within this area (routes 8, 9 12 and 13 of his study). He also recommended protection of private lands adjoining the Susúa and Guánica Commonwealth Forests. Also, he recommended agro forestry practices that promote the establishment of mahogany plantations and use of native deciduous tree species (e.g. *Bucida buceras*) for reforestation.

In 1991, the Service evaluated a Corps of Engineers permit for discharge of fill material on 1 ha (2.5 acres) of salt flat to construct an access road for a 20 ha (50 acres) resort development in La Jungla area of Montalva Ward in Guánica. The Service documented the presence of the Puerto Rican nightjar within the forested habitat of the project site and evaluated possible adverse effects of the project on the species. The Service wrote a biological opinion and determined that the action would jeopardize the continued existence of the endangered nightjar (Service 1991). The project was not constructed, and the area was acquired by the Commonwealth of Puerto Rico and incorporated into the Guánica Commonwealth Forest. The area is currently under conservation status. No additional opinions have been written for the species in the CFO.

BROWN PELICAN

Species description

The adult brown pelican is a large dark gray-brown water bird with white about the head and neck. Immature birds are gray-brown above and on the neck, with white underparts. Although the Caribbean subspecies (*Pelecanus occidentalis occidentalis*) resembles the eastern subspecies (*Pelecanus occidentalis carolinensis*), the Caribbean brown pelican has darker non-breeding plumage above the surface. The Caribbean pelican usually also has a darker undersurface plumage during breeding than does the eastern brown pelican (Service 1986).

Life history

Collazo (1985) studied feeding and nesting ecology of the Caribbean brown pelican from 1980 to 1983 in Puerto Rico (PR) and the U.S. Virgin Islands (USVI). He reported that the diet of pelicans is rather uniform throughout the study area. The evaluation of food regurgitation and stomach content from pelicans suggested that pelicans feed primarily on blue fry (*Jenkinsia lamprotaenia*), sharkmouth fry (*Anchoa lyolepis*), sprat (*Harengula* sp.), whalebone anchovy (*Cetengraulis edentulous*), and *Tilapia mossambica*. The author found that with the possible exception of *Tilapia*, adult and nestlings feed on the same fish species and size classes. Pelicans feed opportunistically along the coastal waters of PR and the USVI, regardless of calmness or depth. Preferred feeding areas occur around root systems of

fringe and overwash mangroves, water protected by coral reef barriers, bays, estuaries, and lagoons (Collazo 1985, Service 1986).

Collazo (1985) reported that breeding activity may occur throughout the year, but nesting peaks may be observed during September-November, depending on initiation of reproductive activities. He documented nine well established nesting sites in PR and USVI. Regional nesting population fluctuated from over 475 nesting pairs during fall in 1980 to approximately 350-400 in 1982. Estimates for 1984 were slightly over 200 nesting pairs at the peak nesting period (Service 1986). Mean number of young produced per nesting attempt ranged from 2.06 at Montalva Bay in southwestern Puerto Rico to 1.16 at Congo Bay in USVI. Nesting success rates in 1980-81 were higher than the success in the following two nesting seasons (Collazo 1985, Service 1986).

Distribution and abundance

The brown pelican (*Pelecanus occidentalis*) is found along the coast in Alabama, Florida, Louisiana, Mississippi, Georgia, South Carolina, North Carolina, California, Texas, Mexico, the West Indies and many Caribbean islands, and Guyana and Venezuela in South America. The species status is considered endangered throughout its range, except along the U.S. Atlantic coast and in Florida and Alabama (50 CFR 17.11 and 17.12 as of December 31, 1999). In 1985, the Service determined the brown pelican to be recovered in Alabama, Florida, Georgia, South Carolina, North Carolina, and points northward along the Atlantic coast and published removal of the species in these southeastern US (Service 1985).

The following discussion on distribution, abundance and habitat needs are exclusively for the Caribbean brown pelican which is the subspecies occurring in PR and USVI and will be referenced throughout this document as Caribbean pelicans.

In Puerto Rico, Caribbean pelicans were documented breeding or have attempted to nest in Añasco and Montalva Bays on the western and southwestern coasts of Puerto Rico, in Cayo Conejo off the southeastern coast of Vieques Island, Guánica Bay, Aguadilla, Guanajibo, and Mayagüez. In the USVI region, Caribbean pelicans were reported breeding or attempting to nest in Dutch Cap Cay off the northwestern coast of St. Thomas, Congo Cay north of St. John, Mary Point and Whistling Key in St. John, Buck Island northwest of St. Croix, and on Green Cay National Wildlife Refuge in St. Croix (Collazo 1985, Service 1986). Collazo et al. (1998) surveyed the coastal zone of Puerto Rico and adjacent islands, and cays in the vicinity of St. Thomas and St. John in the USVI. However, population counts were only conducted in Puerto Rico and adjacent islands (i.e., Vieques and Culebra). A comparison of pelican winter censuses conducted in 1980-82 and censuses conducted in 1992-95 reflects a decrease of 74% from the 1980-82 counts. During the winter of 1980-82, an average of 2,289 individuals was observed, and during the winter of 1992-95, an average of 593 Caribbean pelicans was documented. Saliva (2006 in press) estimated between 265 and 290 nesting pairs in Puerto Rico and adjacent islands as of 2004. Population estimates for the USVI are not available.

Collazo et al. (1998) monitored nesting success in Dutchcap and Congo cays in USVI, and Montalva Bay in southwestern Puerto Rico. They found that the number of young that successfully hatched per nest ranged from 1.04 to 1.29 (mean of 1.14) in 1992-93. During 1980-82 production ranged from 1.48 to 2.13 (mean of 1.65). They found that the differences in nest success between periods were statistically significant. Average reduction in nest success per colony was 24% (Congo), 37% (Dutchcap), and 39% (Montalva). They discarded contamination as a factor contributing to the

decrease in reproductive success. They found that migrational shifts could have contributed to the decrease in population numbers, but might not be the only factor. However, based on the limited data available other factors were not identifiable. Although continued use and minimal losses of traditional roosting and nesting sites between study periods (e.g., Añasco, Aguadilla and San Juan) was documented, such findings suggested that availability of these habitats was not limiting Caribbean pelicans.

Habitat description

Collazo (1985) and Service (1986) reported Caribbean pelicans feeding opportunistically along the coastal waters of Puerto Rico and the USVI, regardless of calmness or depth. Preferred feeding areas occur around root systems of fringe and overwash mangroves, water protected by coral reef barriers, bays, estuaries, and lagoons. In Puerto Rico, nesting colonies are built primarily on red mangrove islet (*Rhizophora mangle*); in Australian beefwood (*Casuarina equisetifolia*); and on or near the ground on *Capparis flexuosa*, *Pithecellobium unguicatum*, and *Coccoloba uvifera*. Nesting colonies in USVI were built predominantly on *Capparis* spp., *Pisonia subcordata*, *Ficus citrifolia*, *Pithecellobium unguicatum*, *Bursera simaruba* and *Croton rigidus* (Collazo et al. 1998).

Status of the species and threats

The brown pelican was listed as an individual species and is considered endangered throughout its range, except for Alabama, Florida, Georgia, South Carolina, North Carolina, and points northward along the Atlantic coast (Service 1985). The Atlantic Coast, Alabama, and Florida populations now number more than 100,000 birds. American Bird Conservancy (2006 in litt.) considered the species as a whole to have recovered.

In the Service's Southeast Region, the brown pelican is listed as endangered only in Louisiana, Mississippi, and in the Caribbean. No critical habitat was designated for the species. At the time of listing, the pelican's decline was primarily attributed to a collapse of thin-shelled eggs or another impairment of reproductive success caused by ingestion of pesticide residues in the food fished. In the U.S. Caribbean, additional threats have been identified, such as low food abundance; die-offs; poaching of eggs, young, and adults; human disturbance of nesting colonies; entanglement in fishing gear; and loss or degradation of coastal forests (Service 1986). The species' recovery plan established two delisting criteria: 1) a 5-year running mean population level of 2,300 individuals counted during January censuses throughout the coastal waters of the region, and 2) maintenance of a 5-year running average peak breeding population level of 350 pairs. The criteria was based on data collected from 1980 through 1984, documenting an average of 350 pairs nesting and 2,300 individuals wintering in the US Caribbean.

Collazo et al. (1998) documented a 74% reduction in population levels in Puerto Rico from 1992-95. However, the decline was not attributed to contamination (residue of mercury, DDE and PCB) and limited habitat loss. Migration was identified as a contributing factor but not as the sole explanation of the decline. Collazo et al. (1998) suggested that long-term data are needed to determine the range of acceptable demographic parameter fluctuations for the Caribbean brown pelican.

Dyer et al. (2002) examined 40 brown pelicans stranded, dying, or dead between 1988 and 1996 from different localities in Puerto Rico and found 56 metazoan parasites, including 24 trematodes, five cestodes, 16 nematodes, two acanthocephalans, and nine arthropods. Necrosis produced by nematodes

(*Contracaecum multipapillatum* and *C. mexicanum*) and trematodes (*Ribeiroia ondatrae*) may have contributed to the emaciation and death of the brown pelicans examined in the study.

Collazo et al. (2000) estimated 1,500 breeding pairs of the Caribbean brown pelican in the Greater West Indian area. In Puerto Rico, they estimated about 40 pairs in Montalva Bay, 25 pairs in Crash Boat in Aguadilla, and 100 pairs in Conejo Cay in Vieques. In the USVI, they estimated between 300-350 pairs.

In 2000, the Service evaluated possible effects of the U.S. Navy inert naval exercises and training at the former Vieques Inner Range in eastern Vieques, Puerto Rico (Service 2000). The Service evaluated the effects of the disturbance caused by low-flying aircraft and ship-to-shore bombing on the brown pelicans nesting in Cayo Conejo offshore island. The Service determined that the activities would not jeopardize the continued existence of the species. The Service anticipated that 5% of the total number of breeding pairs of brown pelicans tending nests at the time of commencement of Navy practices might be taken in the form of harassment of adults. The Service also anticipated that the practices might result in mortality of 5% of the chicks. Monitoring efforts conducted by the Navy did not show mortality caused by activities. The naval exercises ceased in 2003 and the land was transferred to the Service to be managed as the Vieques Island National Wildlife Refuge.

ROSEATE TERN

Species description

The roseate tern is a primarily white, slender-winged, long-tailed, typical capped tern (family Laridae, subfamily Sterninae). Its overall length is about 40 cm (16 in), including tail streamers 15 to 25 cm (6 to 10 in) in length. It has a black crown, pale grey upper surface and immaculate white underparts. Both the upper and under surfaces are paler than in the very similar common tern. The three or four outer primaries (wing feathers) are frosted with silver-grey and edged with black. The long tail streamers are pure white, whereas those of common terns are grayish and have a black outer margin. Early in the breeding season there is an evanescent pink or peach bloom on the underparts, visible in some lights. Male and female roseate terns are essentially identical in size and color. In non-breeding plumage, both common and roseate terns have a dark carpal bar over the bend of the wing, although it is slightly lighter in roseate terns (Service 1993, Raffaele et al. 1998).

Life history

The roseate tern is a spring migrant in the Caribbean. Presence in Puerto Rico and the USVI has been reported from April to October (Service 1993). Roseate tern nesting colonies in southwestern Puerto Rico (e.g., La Paguera) have been visited since the early 1990s to document nesting activities (Saliva, pers. comm. 2006). In La Parguera colonies, roseate terns feed on a variety of fish species such as dwarf herring (*Jenkinsia lamprotaenia*), thread herring (*Opisthonema oglinum*), halfbeak (*Hyporhamphus unifasciatus*), young mackerel, and small squid (Service 1993). In general, roseate terns in the Caribbean begin egg laying in May, and have downy chicks in June which fledge in July, although breeding colonies shift locations. Roseate terns usually lay one or two eggs, and chicks fledge after 22 to 29 days of age (Service 1993; Saliva, pers. comm. 2006).

In the last decade, several studies have been conducted on breeding biology of the roseate tern throughout the Caribbean. Shealer (1990 in litt.) studied aspects of the breeding biology of the roseate

tern in the Culebra Archipelago, in Puerto Rico. He estimated hatching success at 62.1%, but a nest success of only 14%. The species has been documented nesting in 17 cays or islands throughout the Caribbean (PR, USVI and British Virgin Islands (BVI) (Shealer 1991 in litt., Shealer 1993 in litt., and Shealer 1994 in litt.). Shealer (1994 in litt.) reported a turnover rate of nesting site of 70%. Only three of the ten nesting islands used by roseate terns in 1993 were used again in 1994. The turnover rate in the Caribbean does not correspond to the nesting pattern in the northeastern United States, where roseate terns use the same breeding colonies year after year. However, Shealer proposed that the cays of La Parguera, Culebra, and the USVI may be considered discrete nesting areas and that individual terns may exhibit philopatry (site fidelity). An individual tern is only considered to have emigrated if it moves between one of the three areas. Shealer et al. (2005) postulated a site fidelity/emigration model for adult roseate terns breeding at La Parguera and Culebra (PR), and the USVI. Of the 91 color-banded individuals observed in these three sites, 98% of the roseate terns in Parguera were re-encountered in the subsequent year. For Culebra and the USVI, they calculated a percentage of re-encounter of 30% and 87%, respectively. Among the three locations, philopatry at southwestern cays was the highest. For the La Parguera cays they estimated an emigration rate of 2.0%.

Douglas (2000) studied ecology and behavior of roseate terns breeding in La Parguera. He documented that roseate terns appeared in the nearshore waters off La Parguera during the first two weeks of May. The first eggs were laid by 16 May on Turrumote II. The first eggs hatched about 6 June, and peak of egg hatching was 11-12 June. The last eggs hatched at Turrumote II on 17 June. The first chicks fledged from this colony about 4 July. By 20 July, only 19 juvenile roseate terns remained at Turrumote II, and all were making short flights from the colony, accompanied by adults. He documented that roseate terns nested synchronously (at the same time) in small groups that clustered together, but nesting was somewhat asynchronous (not at the same time) between groups. He observed that roseate terns selected those colony sites closest to the most abundant prey resources.

Distribution and abundance

The roseate tern (*Sterna dougallii*) is a migratory species widely distributed around the globe, but relatively rare in the U.S. (American Bird Conservancy 2006). Two migratory populations breed in the western hemisphere: one along the east coast of North America from Nova Scotia to Long Island, New York, and the other from southern Florida throughout the Caribbean region. Service (1993) identified 45 known breeding locations of roseate terns in the wider Caribbean region, including Florida, Puerto Rico and the USVI. Total population numbers in the region are not known, but between 3,000 and 6,000 breeding pairs have been estimated for this region (Service 1993). In the U.S. Caribbean (Puerto Rico and USVI) nesting colonies have been documented in La Parguera cays in Lajas; Arrecife Unidas off Punta Verraco in Guayanilla; Cayos de Barceloneta between Manatí and Barceloneta in northern Puerto Rico; Punta Este in Vieques National Wildlife Refuge; Culebra Archipelago; St. Thomas; and St. John (Saliva, 2006 unpub. data).

In the last decade, several censuses have been conducted on breeding colonies of the roseate tern throughout the Caribbean (Table 4). Shealer (1991 in litt.) estimated a total of 102 nests (or breeding pairs) in two cays in the Culebra Archipelago: Cayo Ratón (63 nests) and Cayo Molino (39 nests discovered on 16 June, but abandoned by 2 July). Shealer (1993 in litt.) estimated 2,168 breeding pairs in Puerto Rico, USVI and British Virgin Islands (BVI). Shealer (1994 in litt.) conducted a status survey of the roseate tern in PR and the USVI. He located nine breeding colonies in PR and the USVI, and found a total of 3,171 nests. He established that the number of breeding pairs in PR and the USVI was relatively stable between 1993 (1297 nests) and 1994 (1475 nests). He did not include in the

analysis the nests located in BVI since the BVI colonies were not censused until the end of June 1993, after chicks had hatched. Douglas (2000) estimated between 400 to 500 pairs in nesting colonies at Media Luna and Turrumote cays in La Parguera. Saliva (2006 in press) estimated between 935-1,000 nesting pairs in Puerto Rico and adjacent islands as of 2004. He established that the population trend for the species between 2000 and 2004 was stable. In 2005, Saliva reported only 357 breeding pairs in La Parguera. In 2006, Saliva reported 1,214 individuals breeding in Turrumote II in La Parguera (Service, 2006 unpub. data).

Table 4. Number of roseate tern nests (equal number of breeding pairs) in the Caribbean, 1990-94 (information extracted from Shealer 1991 in litt., Shealer 1993 in litt., and Shealer 1994 in litt.). Areas left in blank represent nesting colonies not visited during the studies.

Location	1990	1991	1992	1993	1994
Culebra Archipelago					
Cayo Molinos	39			233	0
Cayo Ratón	63			16	55
USVI					
Kalkun				50	357
Shark Island				269	0
Pelican Cay				278	0
LeDuck					529
Saba					144
Flat					23
BVI					
Green Cay				696	1060
Round Rock				150	0
Peter Island				25	0
Cockroach					636
La Parguera					
Media Luna		416	236	6*	
Turrumote I		0	154	38*	217
Turrumote II		89	0	211	0
San Cristóbal		0	0	240	0
Guayanilla					150
Total	102	505	390	2,168	3,171

*Re-nesting attempts not included in yearly population size estimate.

Habitat description

Roseate terns breed primarily on small offshore islands, rocks, cays, and islets. Rarely do they breed on large islands. They have been reported nesting near vegetation or jagged rock, on open sandy beaches, close to the waterline on narrow ledges of emerging rocks, or among coral rubble (Service 1993). Douglas (2000 in litt.) studied nesting ecology of roseate terns in two offshore cays in La Parguera insular shelf, which is a karst derived formation. The breeding habitat of roseate terns was on storm-piled bars of coral cobbles, gravel, and sand, positioned at the margin between middle shelf and outer shelf (less than 6 meter [19.8 ft] deep) (Douglas 2000). Nests were located in vegetation (*Sesuvium* sp., *Ipomea* sp., *Sporobolus* sp., and an unidentified shrub, possibly *Nicotina tabaccum*), on

open sand, or on coral cobbles. Nests were often associated with some type cover, and sometimes groups of nests were arranged linearly along plant vines or pieces of driftwood.

Status of the species and threats

In 1987, the Service determined the population of the roseate tern (*Sterna dougallii*) that nests in northeastern North America to be endangered and the Caribbean population, including birds that nest in the USVI, Puerto Rico and Florida to be threatened (Service 1987). No critical habitat was designated for the species. The main reasons for listing the species included nesting habitat destruction and degradation, competition from expanding number of large gulls, and predation. Service (1993) suggested that eggging, human disturbance, rat predation, and netting of adults in Guyana, South America, may be considered the main factors affecting the roseate tern in the Caribbean. A recovery plan for the Caribbean population was signed in 1993. The plan established delisting as the recovery objective. No measurable criteria were established, but the Service found that existing and new populations and their habitats must be protected (i.e., post and increase law enforcement and vigilance of breeding colonies and wintering areas) and managed (i.e., reduce or eliminate mortality factors through appropriate predator controls and enhancement of breeding grounds) to reduce mortality of eggs, young, and adult roseate terns. Shealer (1994 in litt.) reported several incidents of human disturbance and destruction of roseate tern colonies in La Parguera cays, particularly at Cayo Turumote. These incidents were related to visitors coming in boats to the cays (smashing eggs, walking on and shaking eggs) during the nesting season. Douglas (2000 in litt.) documented that predation by ruddy turnstones (*Arenaria interpres*) was a principal cause of egg loss in two roseate tern nesting colonies in La Parguera. He suggested that American oystercatchers (*Haematopus palliatus*) and laughing gulls (*Larus atricilla*) also predate eggs. Nocturnal predation of chicks by yellow-crowned night herons (*Nyctanassa violacea*) was suggested.

In the last decade, several censuses have been conducted on breeding colonies of the roseate tern throughout the Caribbean. Data summarized in Table 4 and population estimates provided by Douglas (2000 in litt.) show that the number of breeding pairs in La Parguera cays remained stable (around 500 pairs per year). No population decline in La Parguera cays has been documented in the literature.

Based on our files and record, no previous formal section 7 consultation has been conducted for the species in the U.S. Caribbean.

Analysis of the species likely to be affected

The construction and operation of twenty-five 1.65 MW wind turbines on Punta Verraco, Cerro Toro, and Punta Ventana would directly and indirectly affect the endangered Puerto Rican nightjar and brown pelican and the threatened roseate tern. The project could impact up to 12.2 ha (30.5 acres) of suitable Puerto Rican nightjar habitat by the widening of 8.7 km (5.4 miles) of existing roads, construction of 1.4 km (0.87 mile) of new roads, and construction areas to erect the wind turbines. These effects would result in permanent elimination of 1.7 ha (4.25 acres), and temporary loss of 10.5 ha (26.3 acres) of nightjar habitat. The total 12.2 ha (30.5 acres) represents 4.2% of the entire property, and 4.9% of the property's dry forest or nightjar suitable habitat. The project would not result in direct and indirect effects to nesting, roosting and feeding grounds of brown pelicans and roseate terns. However, the wind turbines would pose a collision threat to the brown pelican and roseate tern flying throughout the project airspace. We do not anticipate that the wind turbines would

pose a collision threat to the Puerto Rican nightjar since literature reviewed for the development of this opinion establishes that the species feeds and moves below the forest canopy.

The Puerto Rican nightjar is endemic to Puerto Rico and is currently listed as endangered. At the time of listing, it was only known from 450-500 breeding pairs in three separate localities: Guánica Commonwealth Forest, Guayanilla hills, and Susúa Commonwealth Forest. At present time, the species is known to occur in more than ten areas in Puerto Rico: Peñones de Melones in Cabo Rojo, Sierra Bermeja between Lajas and Cabo Rojo; La Parguera hills in Lajas; Cerro Montalva in Guánica; Barina in Yauco; Punta Verraco, Cerro Toro and Punta Ventana area in Guayanilla, Guánica Commonwealth Forest in the municipalities of Guánica, Guayanilla and Yauco; Guayanilla-Peñuelas hills, Ponce; Maricao Commonwealth Forest; and Susúa Commonwealth Forest. The last population counts of Puerto Rican nightjars reported a total of 712 singing males nightjars in a total area of 9,839 ha (24,598 acres) in Maricao-Susúa, Guánica and Guayanilla-Peñuelas regions and adjoining areas (Vilella and Zwank 1993a). Vilella and Zwank suggested that about 1,400 to 2,000 individuals distributed over 10,000 ha (25,000 acres) of coastal dry and cordillera forest in southwestern Puerto Rico may exist. At this time, the Service considers the species status as stable (as per the Recovery Data Call updated on September 12, 2005).

The brown pelican is distributed throughout North America, South America and the Caribbean. It is known to occur along the coast in Alabama, Florida, Louisiana, South Carolina, North Carolina California, Texas, Washington, Puerto Rico, Virgin Islands, and central and South America. The species is currently designated as endangered in the entire U.S., except along the Atlantic coast and in Florida and Alabama. Pelicans along the Atlantic coast and in Alabama and Florida were determined recovered in 1985. These three populations now number more than 100,000 birds (American Bird Conservancy 2006 in litt.). In the US, the species is still listed in California, Louisiana, Mississippi, Oregon, Puerto Rico, Texas, USVI, and Washington. Although recent population estimates for the brown pelican throughout the Caribbean are not available, winter surveys of brown pelicans conducted in Puerto Rico from 1992 to 1995 documented an average of 593 pelicans in coastal waters around the island and adjacent islands (i.e., Vieques and Culebra). At this time, the Service considers the species status as stable (as per the Recovery Data Call updated on October 4, 2005). American Bird Conservancy (2006 in litt.) considers the species as a whole to have recovered.

The roseate tern is a migratory species widely distributed around the globe, but relatively rare in the U.S. (American Bird Conservancy 2006 in litt.). At the time of listing a world population of about 44,000 pairs was estimated, with the largest numbers in the Indian Oceans (Service 1987). The species was listed as threatened. American Bird Conservancy (2006 in litt.) mentioned that the U.S. population peaked at about 10,000 birds in 2000, thanks to management efforts such as the provision of artificial nesting sites. The Service reported species status as declining (as per 2005 Recovery Data Calls). In the U.S., the roseate tern breeds in northeastern United States (Atlantic coast south to North Carolina commonly known as the northern population) and in Florida, Puerto Rico and the USVI (commonly known as the Western hemisphere population). Service (1993) identified 45 breeding locations of roseate terns in the wider Caribbean region and estimated between 3,000 and 6,000 breeding pairs for the region. In Puerto Rico and USVI, nesting colonies have been documented in La Parguera cays in Lajas; Guayanilla area; Manatí – Vega Baja area; La Cordillera Cays in Fajardo; Vieques; Culebra; St. Croix; St. Thomas; and St. John. In La Parguera cays between 200-300 pairs have been estimated breeding between 1989 and 1991. Data collected in the last decade show that the number of breeding pairs in southwestern Puerto Rico, particularly in La Parguera cays, has been maintained stable (around 500 pairs per year) (Shealer 1993 in litt., Shealer 1994 in litt., and Douglas

2000 in litt.). In Puerto Rico and adjacent islands, Saliva (2006 in press) estimated between 935-1,000 nesting pairs as of 2004, and reported a stable population trend between 2000 and 2004.

The Service evaluated the effects of the proposed action on the yellow-shouldered blackbird, the plant *cóbana negra*, hawksbill sea turtle, roseate tern and green sea turtle under section 7 of the Act. Surveys conducted by the Applicant did not detect the presence of the yellow-shouldered blackbird within the project area (Kerlinger 2003c in litt.). A population of *cóbana negra* was found by the Applicant in a transitional area between a salt flat and the base of Punta Ventana hill. This area is outside of the project construction area and it is located within the proposed conservation easement area. Sea turtles have been recorded nesting infrequently in Ventana beach, but the distance of the closest turbines from the beach and the type of aviation warning lighting proposed (red strobes with the longest permissible off cycle) for the tops of the 80-m (260-ft) high nacelles (engine housing) are not expected to disturb nesting females or disorient hatchlings. As previously noted in Table 1, the proposed action should have “no effect” on *cóbana negra* and “is not likely to adversely affect” green sea turtle and hawksbill sea turtle. Since the yellow-shouldered blackbird was not reported at the project site, we did not include it in this analysis. No designated critical habitat is present in the action area.

ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and ecosystem, within the action area (AA). We have determined that the AA for the Puerto Rican nightjar consists of about 627 ha (1,568 acres) of continuous dry forest habitat in Guayanilla, Puerto Rico. This AA includes the 290 ha (725 acres) project site and the contiguous dry forest habitat of the Guánica Commonwealth Forest located 1 km (0.621 miles) toward the west from the eastern boundary of the project site in Punta Ventana area (Figure 3). We did not include the Media Quijada community because it is an existing residential community that does not support suitable habitat for the species. We also did not include the Barina Hills residential community in the AA because it is separated from the AA by agricultural lands and a highway. The AA for the brown pelican has been defined as the flyway of the project site, feeding habitat within the Guayanilla Bay, and two nesting colonies located in Montalva Bay in Guánica area, Cayo Frio and Cayo Don Luis, which are the closest nesting colonies to the project site (Figure 4). Cayo Frio and Cayo Don Luis are located west and about 20 km (12.4 miles) and 18 km (11.2 miles), respectively, from the project site. The AA for the roseate tern consists of the flyway of the project site, the cay located off Punta Verraco (Cayo Guayanilla), and nesting colonies in La Parguera Cays located more than 20 km (12.4 miles) to the west of the project site (Figure 5).

Figure 3. Action Area for the Puerto Rican nightjar in Guayanilla, Puerto Rico.

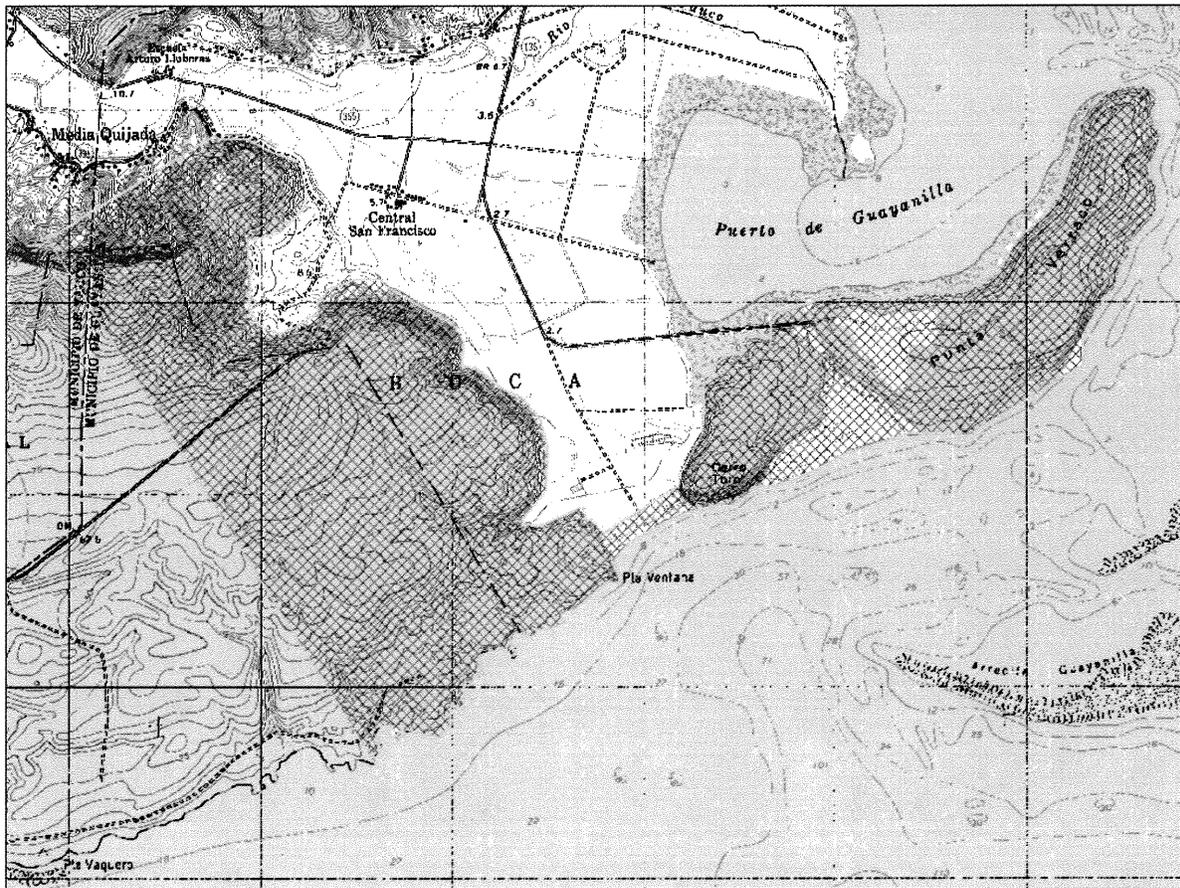




Figure 4. Nesting colonies of brown pelican in Montalva Bay, Guánica. Cay “A” represents Cayo Frio, and Cay “B” represents Cayo Don Luis.

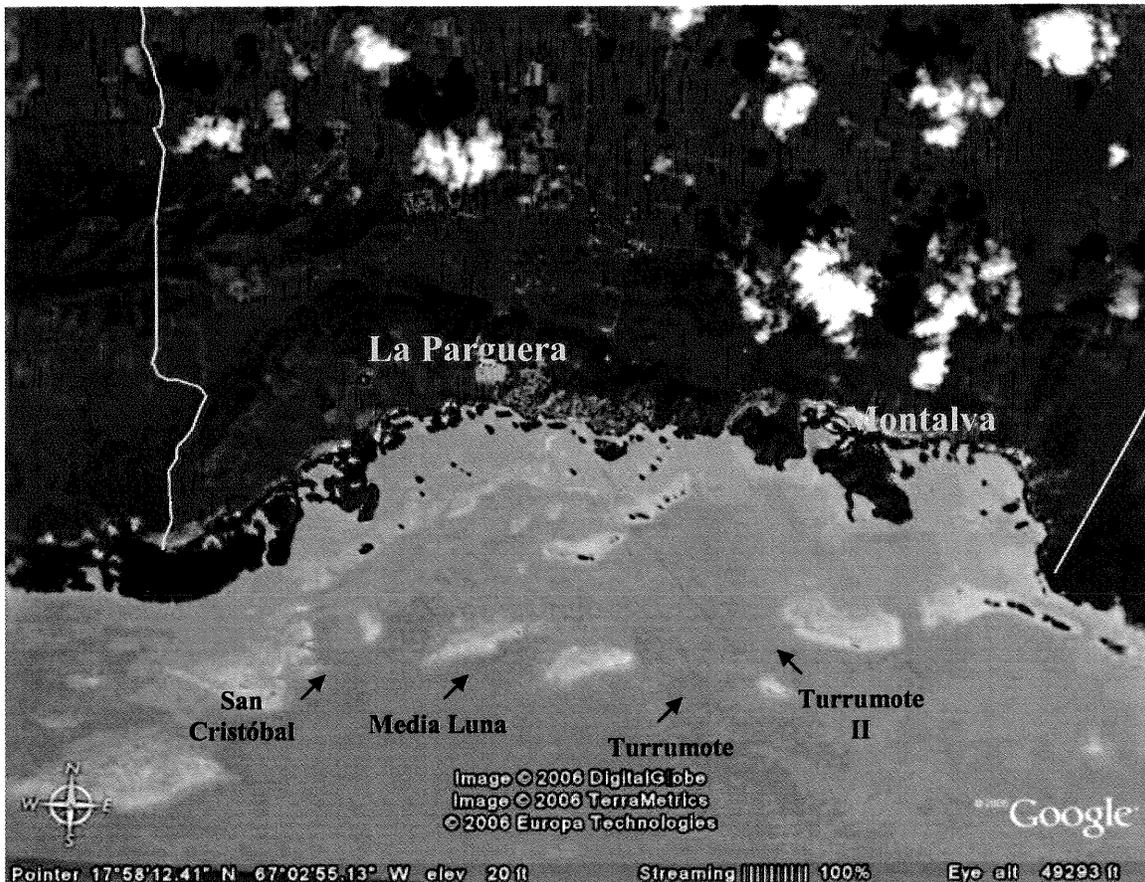


Figure 5. Roseate tern nesting colonies in La Parguera, Lajas

Status of the species within their respective action areas

PUERTO RICAN NIGHTJAR

Within the action area, about 290 ha (725 acres), the project site, are privately-owned by the Applicant, zoned by the Commonwealth for residential development, and under the current proposal to develop a commercial wind farm. The remaining area (about 461 ha or 1,856 acres) is part of the Guánica Commonwealth Forest (declared as a forest since 1919), which is currently managed for conservation by the DNER.

Nightjar habitat within the project site was previously affected by previous land clearing activities for agricultural purposes and quarrying activities (old Texaco quarry of about 3.1 ha or 7.8 acres), and the construction of numerous trails or small roads throughout the site (about 6.2 km or 3.9 miles). In the Guánica Forest, numerous roads, trails and recreational facilities have been constructed since the 1930's to the present time.

The Applicant conducted call count surveys of the Puerto Rican nightjar in the project site during the 2003 and 2004 breeding seasons (Kerlinger 2003a in litt. and 2004 in litt.) (Table 5). Kerlinger (2003a in litt.) reported 33 singing males nightjars on 250 ha (625 acres) of dry forest, yielding an overall relative abundance of 0.132 nightjars/ha (0.0528 nightjars/acre). Kerlinger (2004 in litt.) reported 42

singing male nightjars, for a relative abundance of 0.168 nightjars/ha (0.0672 nightjars/acre). These values are nearly twice and more than twice, respectively, than what was reported for the site more than ten years earlier (Vilella and Zwank 1993a; see table below). Additional surveys are needed, however, to establish an increasing population trend within the project site.

Table 5. Number of nightjars heard during call counts conducted in project site (information extracted from HCP).

Sector	Vilella and Zwank 1993a	WindMar 2003	WindMar 2004
Punta Verraco ¹	9	19	23
Cerro Toro ¹	3	5	6
Punta Ventana ²	7	9	13
Total	19	33	42
Overall Abundance (nightjars/ha)	0.076	0.132	0.168
Increase above Vilella and Zwank		74%	121%

¹ Vilella and Zwank lumped Punta Verraco and Cerro Toro together and recorded a maximum of 12 birds on an estimated 160 ha (0.075 nightjars/ha). On the basis of area, the Applicant has estimated the number of birds in each sector.
² The Punta Ventana value is based on Vilella and Zwank's census of the adjacent section of the Guánica State Forest, where they found 0.069 nightjars/ha.

We have determined an action area of approximately 627 ha (1,568 acres) for the Puerto Rican nightjar. If the mean density of 0.115 nightjars/ha estimated by Kerlinger (2003a in litt.) for the Punta Ventana area (about 79 ha or 198 acres) is extrapolated to the action area, approximately 72 singing males may be present within the AA. Based on all information gathered and analyzed on the species abundance and distribution, and the fact that more than half of the AA is under current conservation status, we believe that at present time, the status of the species within southwestern Puerto Rico is stable.

BROWN PELICAN

Kerlinger (2003b in litt.) conducted pelican censuses at Guayanilla Bay, and a study on flight patterns of pelicans through the project site. Based on the study's results, which are included in the HCP, brown pelicans use the wind to move as effortlessly as possible near the project site. The pelican's predominant flight pattern is along the immediate coast, where there are updrafts. To enter Guayanilla Bay, where they roost and feed, pelicans use three principal routes: 1) around the tip of the peninsula (2.2 birds/hr), 2) gliding "downhill" out of the updraft elevator at Cerro Toro (1.4 birds/hr), and 3) at any point across the main part of the peninsula (0.2 birds/hr, but at 0.06 birds/hr at rotor height). Departing Guayanilla Bay for the Caribbean, where they also feed, most pelicans go around the peninsula tip (3.9 birds/hr), but some birds cross the main part of the peninsula (0.1 birds/hr, 0.08 birds/hr at rotor height) while others use the Cerro Toro crossing (0.1 birds/hr). Based on observations at Cerro Toro and Punta Verraco, observers have estimated that it is likely that between twelve and twenty pelicans regularly fly and feed around the project site. Although surveys of Guayanilla Bay and adjacent areas, have recorded as many as 100 individuals, during the study period, Kerlinger recorded less than half this number in the bay.

Nesting colonies of the brown pelicans in Montalva Bay were monitored by Jimenez (2001 in litt.). These colonies, Cayo Frio and Cayo Don Luis, are located 18 to 20 km (11.2 to 12.4 miles) west of the

project site, and represent the closest nesting colonies of brown pelicans to the project in southwestern Puerto Rico. Both mangrove cays were monitored from October 2000 to August 2001. In 2000, only two nests were reported in Cayo Don Luis and zero nests in Cayo Frio. In 2001, Jimenez (2001 in litt.) reported two nesting events in Cayo Don Luis and one event in Cayo Frio. She reported a total of 114 nests in 2001: 85 in Cayo Don Luis and 29 in Cayo Frio. She also found that 70% of the nests were active (at least one egg deposited) in the two colonies combined. However, only 5% of the eggs hatched and 8 chicks fledged (Table 6). Jimenez concluded that these nesting colonies have a hatchling mortality problem and reported multiple natural and human-induced factors contributing to the problem, including: abandonment of nests by adult pelicans, predation by rats and hermit crabs, possible poaching, and disturbance by visitors and boaters. Other causes, such as parasites, diseases and limited feeding resources, should be studied.

Elphick and Ellis (2004 in litt.) created a population model for the pelicans found in Puerto Rico and the USVI. They used limited information on the species and a model to predict population dynamics under a variety of scenarios, including the level of effects anticipated from the proposed action. The model predicts that the population, under current conditions, will decrease rapidly and approach extinction within a few decades. The model suggests, however, that the level of take anticipated by the Applicant within the requested 40 year period for the ITP will have no significant effect on the pelican population in PR and USVI. Although the Caribbean subspecies is declining, the species is considered stable within the areas in which it is still listed. The species is considered recovered in a large area of its global distribution.

Table 6. Comparison of data reported by Collazo et al, (1998) and Jimenez (2001 in litt.) on pelican nesting colonies in Montalva Bay, Guánica. Information was extracted from Table 3 in Jimenez (2001 in litt.).

Reproductive Parameters	Year					
	1980	1981	1981*	1982	3/2001	6/2001
# of nests	31	51	24	69	85	29
# of active nests	31	39	20	54	69	11
% of active nests	100	76	83	78	81.2	37.9
Total # of eggs	84	98	47	133	139	21
Clutch size (average number of eggs/nests)	2.7	2.5	2.0	2.5	2.0	1.9
# eggs hatched	79	74	31	69	69	4
Hatching Success	94	75	66	52	49.6	19.0
Hatched eggs/nest	2.6	1.9	1.6	1.3	1.0	0.4
# successful nests	30	22	9	31	6	1
# chicks/ successful nest	2.1	1.6	1.1	1.5	1.0	2.0
# chicks / active nest	2.1	0.9	0.5	0.9	0.1	0.2
# chicks fledged	64	36	10	47	6	2
% eggs/chicks fledged	76	37	21	35	4.3	9.5
% eggs hatched/ chicks fledged	81	49	32	68	8.7	50
% successful nests	97	56	45	57	8.7	9.1
Chicks / nesting attempt	2.1	0.7	0.4	0.7	0.1	0.1

* Two nesting events were reported in 1981.

ROSEATE TERN

About 600 m (1,980 ft) south of the tip Punta Verraco, there is a submerged reef known as Arrecife Unitas. A sector of the reef gets sporadically exposed and forms a small coral islet that the Service has named Cayo Guayanilla (Figure 6). The Service recorded three pairs of roseate terns nesting in Cayo Guayanilla in the mid-1990 (Saliva, pers. comm. 2006). Shealer (1994 in litt.) reported 150 nesting pairs in Cayo Guayanilla. The cay is submerged at present time (Service, personal observation 2006).

The Applicant did not record the roseate tern during its flight-use study (Kerlinger 2003d in litt.) or in recent years. Its congeners, the royal (*Sterna maxima*) and sandwich (*Sterna sandvicensis*) terns, were recorded frequently during the flight-use study, but in every case they were observed low over the water at a distance from the peninsula. No terns were observed transiting the peninsula during the flight-use study.

We have included within the AA the roseate tern nesting colonies of La Parguera cays since they are the closest (25 km or 16 miles from the project site) colonies in southwestern Puerto Rico. Shealer (1993 in litt.) and Douglas (2000 in litt.) have reported between 400 and 500 nests (equal to breeding pairs) per year. Saliva (Service, 2006 unpub. data) estimated 357 breeding pairs in La Parguera in 2005.



Figure 6. Roseate tern nesting area in Cayo Guayanilla, Guayanilla, Puerto Rico. Photo taken by J. Saliva, USFWS.

Factors affecting species environment within their respective action area

We have not identified State or Federal projects or actions affecting the species within either of their respective action areas. In Puerto Rico, all development projects require permits from the local government before any construction can begin. We searched the electronic data base of the Puerto Rico Planning Board (“Puerto Rico Interactivo”) to identify project proposals or previous project permits within the action area. Based on published information in the database, no project proposal has been submitted or project authorized within the action area. The Puerto Rican nightjar habitat contiguous to the project site is owned by the Commonwealth of Puerto Rico, and it is protected and managed for conservation by DNER. The brown pelican nesting colonies in Montalva and the nesting colonies of the roseate tern in La Parguera are also protected by DNER. La Parguera is a designated natural reserve. Boat use for recreation currently occurs, however, in the area and may disturb both species when nesting. Limited governmental resources for enforcing protection of these cays are available to local agencies.

EFFECTS OF THE ACTION

Factors to be considered

The action, as currently proposed, would occur within occupied nightjar habitat and within the fly path of the brown pelican and roseate tern. Disturbance and modification of nightjar habitat would occur during the construction phase of the project in Punta Verraco, Punta Ventana, and Cerro Toro. Habitat disturbance and modification would also occur at the 20th year and 40th year of the project for maintaining and replacing turbines. The Applicant proposes to conduct habitat disturbance and modification outside of the nesting season to minimize possible effects to the species. The construction of all project components would result in disturbance of 12.2 ha (30.5 acres) or 4.2% of the project site. From this amount of habitat, about 1.7 ha (4.3 acres) would be permanently eliminated. The remaining habitat would be temporarily affected during construction. Once the construction is finalized and operation starts, habitat along roads and adjacent to construction sites would regrow. It is anticipated that the vegetation along roads and at the construction sites would be disturbed at the 20th and 40th year of operation for maintaining and replacing turbines. The maximum amount of disturbance would consist of 10.5 ha (26.3 acres) or 3.7% of the project site. The maximum amount of habitat disturbed consists of 0.1% of the suitable habitat for the Puerto Rican nightjar in Puerto Rico.

During the construction phase of the project, no effects on pelicans and roseate terns are expected. Pelicans and roseate terns do not nest or roost within the project site. Pelican nesting colonies are located 18-20 km (11-12 miles) from the project site. Pelicans are resident to Puerto Rico and possible effects are anticipated during the operation of the project (40 years). It is expected that about 0.1 pelicans per hour fly over the project area at rotor height. Anticipated mortality of pelicans represents 1.3% of the pelicans estimated to occur in Puerto Rico.

The roseate tern is a spring migrant in the Caribbean. No roseate terns are expected to fly over the project site; however, the roseate tern has been observed nesting, at least three times in the last decade, at an islet located 600 m (1,980 ft) south of Punta Verraco area. The closest nesting colonies for

roseate terns are located about 25 km (16 miles) from the project site. Anticipated mortality of roseate terns during the 40 year operation of the project represents 0.03% of the estimated breeding pairs in the Caribbean region.

Analyses for effects of the action

Beneficial effects

As a result of the implementation of the Applicant's proposed mitigation plan, we anticipate future beneficial effects on the three covered species. The most significant beneficial effect of the project consists of the conservation easement to protect 245 ha of the property in perpetuity. The majority of the area (210 ha) constitute nightjar habitat and the remaining lands support habitat for pelicans and roseate terns (mangroves, salt flats and beaches). This mitigation measure is extremely important since the current zoning designation of the project site would allow for the construction of hundreds of homes, resulting in detrimental effects to the nightjar habitat. The conservation easement would preclude additional effects to the remaining habitat. Other management measures, such as the proposed predator control project, are expected to significantly reduce predation by exotic species. The establishment of the research program for pelicans would significantly benefit the species, since results from the studies could assist the Service in developing effective conservation and management measures for the Puerto Rican population of the species. Funding of pelican research is essential. Both the recovery plan for the species and researchers contracted by the Applicant have identified a need for research to better understand population dynamics of brown pelicans in the Caribbean. The mangrove restoration proposed by the Applicant would improve the health of Guayanilla Bay and the amount of available fish nursery habitat, which would benefit the brown pelican, roseate tern, and other seabird populations. The proposed education program is expected to benefit all three species since it would result in public understanding of species conservation needs.

Direct Effects

The construction of the proposed commercial wind farm would result in the permanent elimination of 1.7 ha (4.3 acres) and temporary loss of 10.5 ha (26.3 acres) for a total of 12.2 ha (30.6 acres) of nightjar habitat within the project site. Table 7 provides detailed information about habitat disturbance related to each component of the project.

Based on the methods utilized by Kerlinger (2003a, 2004 in litt.) to locate the distribution of the singing males within the property, the total area to be cleared during the construction phase of the project may result in the take of 12 nightjar singing areas (referred as "territories" by the Applicant). Kerlinger (2003a, 2004 in litt.) mapped all data points from singing males collected with GPS and discerned what he calls "nightjar territories" at Punta Verraco, Cerro Toro, and Punta Ventana areas. He reported 33 "nightjar territories" in 2003 and 42-46 "territories" in 2004. He overlaid the project plan over the distribution map of "nightjar territories" reported in 2004 and determined that 12 of the "nightjar territories" will be intersected by the project affecting the habitat above 6.9 percent.

The Service evaluated the results of the call counts conducted by Kerlinger (2003a, 2004) and the information provided in the Applicant's HCP. The proposed project would affect a total of 12.2 ha (30.5 acres) of nightjar habitat. If we use Vilella (1995) estimates, a singing male occupies a maximum area of 5.6 ha (14 acres). Thus, eliminating 12.2 ha (30.5 acres) of habitat would affect two singing male areas or "territories", assuming that the singing males correspond to breeding pairs.

Using the Applicant's approach to evaluating the effects by considering the distribution of the singing males within the project site and 12 of the areas or "territories", 6.9 percent or more of the species' area would be affected. Land clearing activities were conducted within the project site in 2004, before call count surveys were conducted. The Applicant suggested that male nightjars may tolerate vegetation impacts of at least 6.9 percent because singing male nightjars were listened in 2004 in areas where 6.9% or less of the vegetation was affected in 2003. Although we do not agree that the areas where singing males were heard during call counts correspond to "nightjar territories", we believe that the Applicant's approach is useful in evaluating the effects of the project.

Vegetation removal activities conducted during the nightjar nesting season may have possible direct effects on eggs, chicks or fledglings. Consequently, the Applicant will clear the vegetation outside of the nightjar nesting season to avoid impacts to nightjar individuals from construction activities. In emergency situations, however, where vegetation needs to be cleared during the nesting season, measures would be taken to minimize possible effects. The Applicant will use experienced and qualified biologists to search for nightjar nests before any clearing activity is conducted. In the event a nest is found, the Applicant will avoid it by relocating the road or construction area, or by delaying the activity until the nightjar fledges its young.

In addition to the removal of 12.2 ha (30.5 acres) of nightjar habitat, construction of the proposed project may result in disturbance to breeding nightjars. During the construction process, trucks, cranes and workers would create noise, movement, vibrations of the surface, and other disturbances in close proximity to potentially breeding nightjars. This disturbance is likely to last for 4-5 months. No direct effects are anticipated outside of the project site. Proposed re-vegetation of abandoned quarry, road edges, and turbine erection areas would compensate, later in time, for adverse effects related to vegetation removal for the construction of the proposed project. Based on the project description, proposed conservation measures, and the biology of the species, no direct effects to nightjars are expected from the operation of the proposed facility.

Based on observations from Kerlinger (2003b), pelican use of the airspace in the proposed turbine field on Punta Verraco is relatively low (0.2 observations/hr, or 0.3 birds/hr of which 0.1 birds/hr fly at rotor height) (Figure 7). Mortality rates for raptors, which appear to be particularly susceptible to turbine collisions, range widely, from 0.000 to 0.053 mortalities/turbine/year at sites with over 100 turbines (Erickson et al. 2002). With 12 turbines on Punta Verraco, a high mortality rate of 0.053 birds/turbine/year would translate into one mortality every 1.6 years. The mortality rate for pelicans at the project site is anticipated to be much lower, however, because pelican use of the turbine field airspace on Punta Verraco is half or less than what has been documented for raptors in the studies referenced by Erickson et al. (2001); and pelicans are more likely to avoid turbines than raptors because they do not forage over land (Kerlinger 2003b in litt.).

During the bird surveys conducted for the project, no terns (roseate terns and other terns species, such as the royal tern and sandwich tern) were observed flying over land, and the birds observed were hundreds of meters from where the turbines would be located (Kerlinger 2003b in litt.). The Applicant is requesting authority for the incidental take of one roseate tern in 20 years for a total of two roseate terns in 40 years. We believe that the effects of the project on the roseate tern will be minimal.

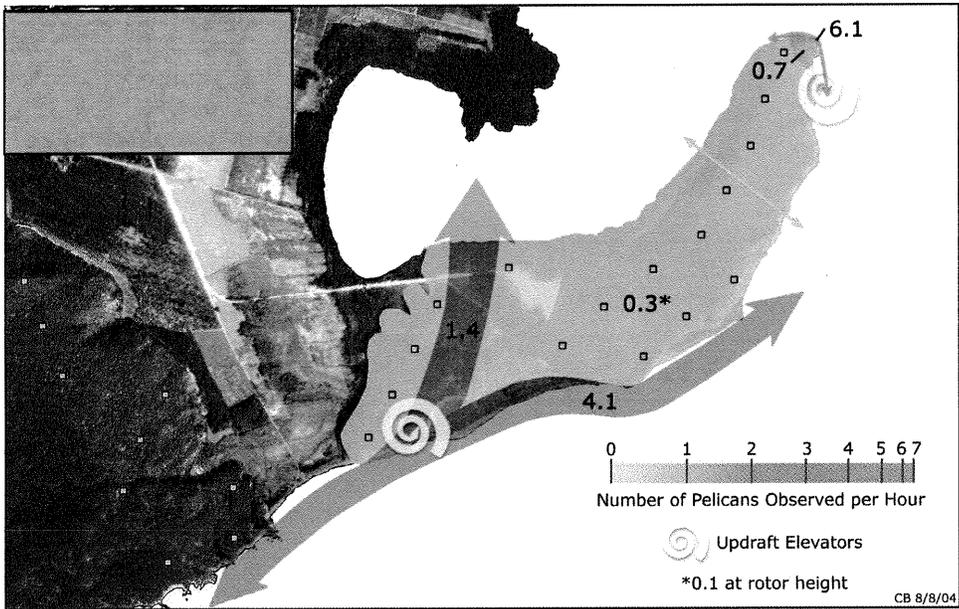


Figure 7. Pelican flight patterns extracted from the Applicant’s HCP.

Indirect Effects

We anticipate that nightjars within the project site as well as nightjars located in continuous dry forest habitat up to 1 kilometer within the easternmost end of the Guánica Forest in Ventana area would be indirectly affected by the proposed action. The anticipated indirect project effects on the Puerto Rican nightjar consist of habitat modification and fragmentation related to the creation of open areas in the forested habitat or “edge effect”. These effects include modification of habitat characteristics (closed canopy and open understory), temporary displacement of individuals, re-arrangements of home ranges or nesting territories, reduced nesting activities during construction and possible predation by exotic species (i.e., mongoose and cats). We have made this determination based on the data provided by Vilella (1995). Because brown pelicans and roseate terns do not nest, feed or roost within the project site, no indirect effects are anticipated on the species. Breeding colonies of these two species are located more than 15 kilometers away from the project site. These last two species are widely distributed throughout the Caribbean and their overall status is considered stable or increasing.

Species response to a proposed action

The proposed action would render 12.2 ha (30.5 acres) of nightjar habitat in the AA unavailable to the species during the construction of the project. Of this total amount of habitat, about 1.7 ha (4.3 acres) would be permanently eliminated and 10.5 ha (26.3 acres) would be affected temporarily. Followed by the proposed habitat restoration activities and re-growth of native vegetation (see Table 7 for detailed information), a net gain of 1.0 ha (2.5 acres) of suitable nightjar habitat is expected. Additionally, about 85% of the privately-owned remaining habitat within the project site would be protected in perpetuity by a conservation easement. No effects are anticipated on brown pelicans and

Table 7. Affected nightjar habitat during construction activities versus habitat restored and protected by the mitigation proposed in the HCP.

Activity	Detail	Punta Verraco 125 ha	Cerro Toro 46 ha	Punta Ventana 79 ha	Other Areas 40 ha	Total	% of Impact 12.2 ha	% of Dry Forest 250 ha	% of Property 290 ha
<i>Construction Impacts</i>									
Roads required to service wind farm (ha)	10,067 m x 10 m	(4.8)	(1.2)	(4.1)	-	(10.1)		-4.0%	-3.5%
Staging areas/substation (ha)	8,656 m x 4 m	-	(0.5)	(1.0)	-	(1.5)		-0.6%	-0.5%
Existing roads (ha)		2.0	0.5	1.8	-	4.3		1.7%	1.5%
<i>New Road Impact, Construction Phase</i>		(2.8)	(1.2)	(3.2)	-	(7.2)	59.1%	-2.9%	-2.5%
Turbines to be erected		12	4	9	-	25			
Construction areas to erect turbines (ha)	2,000 m ² /turbine	(2.4)	(0.8)	(1.8)	-	(5.0)		-2.0%	-1.7%
<i>Other Impacts, Construction Phase</i>		(2.4)	(0.8)	(1.8)	-	(5.0)	40.9%	-2.0%	-1.7%
Total Impact, Roads + Construction (ha)		(5.2)	(2.0)	(5.0)	-	(12.2)	100.0%	-4.9%	-4.2%
<i>Dry Forest Restoration</i>									
Texaco quarry (ha)		2.6	-	-	-	2.6	21.2%	1.0%	0.9%
Road margins to grow in (ha)	10,067 m x 5 m	2.4	0.6	2.0	-	5.0	41.1%	2.0%	1.7%
Staging/substation areas to grow in (ha)		-	0.4	0.8	-	1.2	10.0%	0.5%	0.4%
Construction areas to grow in (ha)	1,760 m ² /turbine	2.1	0.7	1.6	-	4.4	36.0%	1.8%	1.5%
<i>Total Dry Forest Restoration</i>		7.1	1.7	4.4	-	13.2	108.3%	5.3%	4.6%
Net Gain in Dry Forest Habitat		1.9	(0.2)	(0.6)	-	1.0	8.3%	0.4%	0.3%
<i>Other Mitigation Projects</i>									
Conservation Easement (ha)		98.0	42.0	67.0	38.0	245.0	2002%		84.5%
Mangrove Restoration (ha)		-	-	-	10.0	10.0			
<i>Total Other Mitigation Projects</i>		98.0	42.0	67.0	48.0	255.0			
Net Gain in Protection		99.9	41.8	66.4	48.0	256.0	2092%	102.4%	88.3%

roseate terns during the construction of the project. Once the project starts operation, however, collision with turbines may occur. Anticipated mortality resulting from collision of pelicans and roseate terns with turbines is considered small in scale. Adverse impacts to the recovery and long term survival of the three covered species as a result of the project are not significant. The Applicant's proposed mitigation plan should minimize possible indirect effects from habitat disturbance, restore and enhance nightjar habitat within the project area, and result in the conservation of 85% of the site in perpetuity. Possible adverse effects to the brown pelican and roseate tern resulting from wind turbine operation would be minimized by painting rotor blades, implementing APLIC guidelines, restoring mangrove habitats, and establishing research and education programs.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the AAs considered in this Biological Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

To assess cumulative effects on the proposed action to Puerto Rican nightjars, brown pelicans, and roseate terns, we must identify actions that are occurring or will occur independent of the proposed action within the species' respective action areas. Such action area consists of the geographical area where all direct and indirect effects are anticipated. We have defined the action area for the Puerto Rican nightjar as the project site (Punta Verraco, Cerro Toro, and Punta Ventana), and the contiguous dry forest habitat of the Guánica Commonwealth Forest located west to Punta Ventana in the Municipality of Guayanilla. We did not include the Media Quijada community in the action area because it is residential and no longer supports suitable habitat for the species. We also did not include the Barina Hills community in the action area because it is residential and separated from the action area by agricultural lands and a highway. The action area for the brown pelican has been defined as the flyway of the project site, Guayanilla Bay, and the Montalva Cays in the La Parguera-Guánica area, which is the closest nesting community. For the roseate tern's action area, we included the flyway of the project site, the cay located off Punta Verraco, and La Parguera Cays where the species nests during the summer.

We do not anticipate that the current land use within the Guánica Commonwealth Forest will change since it is preserved in perpetuity for conservation. The land use of the La Parguera cays also is not anticipated to change because they are publicly owned and managed for conservation by the Puerto Rico DNER. No increased effects are anticipated from either the proposed action or other Federal and Non-Federal actions.

CONCLUSION

After reviewing the current statuses of the Puerto Rican nightjar, the brown pelican and roseate tern, the environmental baseline for the Action Area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the Puerto Rican nightjar, the brown pelican or the roseate tern.

Total area containing suitable habitat for the endangered Puerto Rican nightjar in Puerto Rico has been estimated about 10,000 ha (25,000 acres) by Vilella and Zwank (1993a). More than 50% of this total

area is currently under conservation status. The proposed project would result in permanent elimination of 1.7ha (4.25 acres), and temporary loss of 10.5 ha (26.3 acres) for a total of 12.2 ha (30.5 acres) of nightjar habitat. This total amount represents 4.2% of the project site, and 4.9% of the nightjar suitable habitat within the site. The loss of 12.2 ha (30.5 acres) of nightjar habitat represents 0.1% of the total area of suitable habitat estimated for the species in Puerto Rico. Based on the distribution of singing males within the project site, all components of the proposed action would adversely affect 12 singing male areas. These areas (referred by the Applicant as territories) represent 1.7% of the overall amount of nightjar singing males heard by Vilella and Zwank (1993a) in southwestern Puerto Rico. The Applicant's proposed mitigation plan will compensate the effects to the nightjar by, among other measures, establishing a conservation easement on 245 ha (612.5 acres) of the project site and restoring at least 2.6 ha (6.5 acres) of a previous quarry with dry forest vegetation or suitable nightjar habitat. The Applicant's proposed method to clear the vegetation would allow vegetation to recover throughout approximately 87% of the area impacted by the construction. The Applicant would also only clear vegetation outside of the nesting season, except in emergency situations, in order to further minimize possible adverse effects to the species.

Affecting one pelican every 5 years, for a total of 8 pelicans in 40 years of project operation, would not significantly affect the population trend of the brown pelican throughout its distribution. At present, the species' populations along the Atlantic coast and in Alabama and Florida number more than 100,000, and the species is considered on its way to recovery. Although population levels of the Caribbean subspecies located in Puerto Rico have showed a 74% reduction in ten years, the rest of the listed populations in the U.S. are considered to be stable by the Service. The total level of anticipated take of brown pelican over 40 years represents 1.3% of the pelicans estimated by Collazo et al. (1998) to occur in Puerto Rico. Although no population estimates are available for the global population of pelicans in the Caribbean, the level of anticipated take is considerably low. Based on models conducted by the Applicant's consultant the anticipated level of take has minimal effect on the population model of the species within a 40 year period. Furthermore, the anticipated level of take would not be perceived at the species level.

The anticipated take of one roseate tern every 20 years for a total of two in 40 years is considered to be negligible. The species is considered threatened in the U.S. Caribbean. Except for 2005, a stable number of breeding pairs, 400-500 breeding pairs per year, have been observed in La Parguera cays, the closest nesting colony to the project site. Although nesting has been documented in Cayo Guayanilla, a small islet about 600 m (1,980 ft) south of Punta Verraco, the island has been submerged since the mid-1990 and only 3-4 nesting events have been observed in the last 14 years.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent that as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7 (b)(4) and section 7(o)(2), taking that is

incidental and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The proposed WindMar HCP and its associated documents clearly identify expected impacts to affected species likely to result from the proposed taking and the measures that are necessary and proper to minimize those impacts. All conservation measures described in the proposed HCP, together with the terms and conditions described in any associated Implementing Agreement and any section 10(a)(1)(B) permit or permits issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures and term and conditions within this Incidental Take Statement under 50 CFR §402.14(I). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(b) and section 7(o)(2) of the Act to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(b) permit and section 7 (o)(2) may lapse. The amount or extent of incidental take expected under the proposed WindMar HCP, associated reporting requirements, and provisions for disposition of dead or injured animals are as described in the HCP and its accompanying section 10(a)(1)(B) permit.

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The Service expects that incidental take of the Puerto Rican nightjars will be difficult to detect because the species is cryptic, nocturnal and difficult to detect outside of the nesting season. However, the level of incidental take of this species can be expected by loss of a maximum of 12.2 ha (30.5 acres) as a result of this proposed action. Based on a distribution map of singing male nightjars developed by the Applicant, this level of take may affect 12 singing male areas or “territories” within the project site since the area of each of the 12 “territories” would be affected 6.9% or more. We expect the take of nightjars in form of harm.

The Service also expects that one brown pelican every 5 years (for a total of 8 pelicans in 40 years) and one roseate tern every 20 years (for a total of 2 roseate terns in 40 years) would be taken as a result of the proposed action. This incidental take is expected in form of injury or death by collision with wind turbines (Table 8).

Table 8. The incidental take expected to occur from the proposed project, based on the best available commercial and scientific information.

Species	Individuals	Habitat (Habitat is used to monitor a level of species take.)	Take Type	Other
Puerto Rican nightjar		12.2 ha (30.5 acres) of habitat corresponding to harm 12 singing male “territories”	Harm	The level of take will be monitored through amount of habitat affected during construction phase of the project.
Brown pelican	1 every 5 years for a total of 8 in 40 years	None	Injury or Kill	Mortality will be documented in monitoring reports.
Roseate tern	1 every 20 years for a total of 2 in 40 years	None	Injury or Kill	Mortality will be documented in monitoring reports.

EFFECT OF TAKE

In the accompanying BO, the Service determined that this level of expected take is not likely to result in jeopardy to the Puerto Rican nightjar, brown pelican and roseate tern.

REASONABLE AND PRUDENT MEASURES and TERMS AND CONDITIONS

The Service believes that the proposed conservation measures identified in the Applicant’s HCP are the only reasonable actions to minimize the adverse impacts to the Puerto Rican nightjar, brown pelican and roseate tern and mitigate for the incidental take of these three species under section 10(a)(1)(B) of the Act with the addition of the following terms and conditions. These measures are described in the HCP and summarized in the “DESCRIPTION OF PROPOSED ACTIONS” section above and are, hereby, incorporated by reference. Since there are not reasonable and prudent measures, there are no terms and conditions.

Upon locating a dead, injured, or sick individual of an endangered or threatened species, initial notification must be made to the Fish and Wildlife Service Law Enforcement Office at (location). Additional notification must be made to the Fish and Wildlife Service Ecological Services Field Office at: Carr 301, KM 5.1, BO Corozo, Boqueron, Puerto Rico 00622 or telephone at 787-851-7297. Care should be taken in handling sick or injured individuals and in the preservation of specimens in the best state possible for later analysis of cause of death or injury.

CONSERVATION RECOMMENDATIONS

Section 7 (a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse

effects of a proposed action listed species or CH, to help carry out recovery plans, or to develop information.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. As written in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Service involvement or control over the actions has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the Service's action that may affect listed species or designated CH in a manner or to an extent not considered in this BO; (3) the Service's action is subsequently modified in a manner that causes an effect to the listed species or designated CH not considered in this opinion; or (4) a new species is listed or CH designated that may be affected by the actions. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease until reinitiation of consultation is completed.

For this BO, the incidental take would be exceeded when the habitat modification exceeds 12.2 ha (30.5 ac) of Puerto Rican nightjar habitat; one pelican every 5 years and one roseate every 20 years which is what has been exempted from the prohibitions of section 9 of the Act by this opinion. Take of any nightjars outside the 12.2 ha (30.5 ac) is not anticipated. For further coordination, please contact Marelisa Rivera at (787) 851-7297.

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