

## CHAPTER 4

### ORNITHOLOGICAL FIELD INVESTIGATIONS IN LA VISITE NATIONAL PARK, HAITI, 26 JANUARY – 1 FEBRUARY 2005

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#### SUMMARY

We surveyed the montane forest bird community at two sites in La Visite National Park, Haiti during 26 January – 1 February 2005. We recorded 50 species of birds among 182 mist net captures, 79 point count detections, and 476 total observations. These included 12 North American migrants and 38 permanent resident species, of which 14 were Hispaniolan endemics. The two sites showed similar overall diversity and abundance of birds. We confirmed the continued presence of Black-capped Petrel (*Pterodroma hasitata*), locating at least 4-5 vocalizing birds during a nocturnal survey of cliffs along the Pic La Visite escarpment; this number suggested a dramatic decline from numbers recorded 20-40 years earlier. We also confirmed Bicknell's Thrush (*Catharus bicknelli*) at both sites, capturing 7 individuals, and we mist-netted the first Swainson's Warbler (*Limnothlypis swainsonii*) recorded for La Visite. Our observations indicated extensive human impacts throughout La Visite National Park, and we believe that broadleaf forest in the park is on the verge of complete disappearance; we recommend immediate conservation measures to ensure that no further loss occurs.

## **INTRODUCTION AND BACKGROUND**

Haiti is widely acknowledged to be one of the world's most densely populated, economically depressed, and ecologically degraded countries (Stattersfield et al. 1998, Sergile and Woods 2001, Keith et al. 2003, Diamond 2005). Its remaining forest cover stands at less than 1.5%, and most of this occurs in only two blocks, the Massif de la Hotte and the Massif de la Selle (Paryski et al. 1989). Both areas, despite being formally protected, face intense and unrelenting pressures from a variety of human sources (Sergile and Woods 2001, Diamond 2005). The smaller of the two protected areas, La Visite National Park, is located 22 km south-southeast of Port-au-Prince and was established by governmental decree in 1983. La Visite consists of 2,000 hectares on the ridge of the Massif de la Selle near its western terminus, with a maximum elevation of 2,282 m on Morne Cabaio. Natural forests within La Visite are currently restricted to high elevations, and these are dominated by pine (*Pinus occidentalis*). Pockets of wet broadleaf montane or cloud forest are confined to ravines, and scattered fragments of drier karst broadleaf forest are embedded within pine stands. These remnant forests are arguably the island's most endangered natural habitat, as human settlements and deforestation have steadily encroached on La Visite's last remote areas (Woods and Ottenwalder 1992, Davalos and Brooks 2001). Chronic socioeconomic hardships and political instability have hindered efforts to implement an effective, sustainable conservation plan for La Visite National Park, as elsewhere in Haiti (Sergile and Woods 2001).

Intensive floral and faunal surveys conducted from 1977 through 1985 by Dr. Charles Woods and associates confirmed the ecological importance of the La Visite

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region, documented its avian and mammalian fauna, and outlined an explicit stewardship plan for this and other national parks (Woods and Ottenwalder 1986, 1992; Woods et al. 1992). However, few resources have been available during the past 15 years to either execute this plan (Sergile and Woods 2001) or to conduct follow-up monitoring of ecological conditions within La Visite (F. Sergile and C. Woods, pers. comm.). A 2-day trip to the park by Liliana Davalos and Thomas Brooks (2001) produced numerous valuable observations, but yielded little quantitative information on bird populations. With growing international realization that extremely little time remains to ensure long-term protection of La Visite, we conducted an avifaunal survey of the park's montane pine and broadleaf forests west of Seguin during the winter of 2005. The Société Audubon Haïti (SAH), which is spearheading avian conservation efforts in Haiti, coordinated this expedition, with approval from the Haitian Ministry of Environment. With an ultimate goal of promoting long-term conservation of La Visite National Park, this expedition had several discrete, shorter-term objectives, which were similar to those underlying our field trip to Macaya Biosphere Reserve during the winter of 2004 (Rimmer et al. 2005):

- 1) Documentation of the avifauna and specific habitat conditions within La Visite National Park, as a means to assess changes since 1985 (the final year of Woods' formal biotic surveys), the immediacy of conservation threats, and needs for a concrete action plan.
- 2) Targeted surveys for species of conservation concern, such as Black-capped Petrel (*Pterodroma hasitata*), La Selle Thrush (*Turdus swalesi*), Western Chat Tanager (*Calyptophilus tertius*), and Bicknell's Thrush (*Catharus bicknelli*).

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- 3) Intensive training of Haitian biologists and local park rangers, as a means to build technical capacity within the Haitian biological community and to generate local interest and conservation commitment.
- 4) Evaluation of specific protection needs for La Visite National Park and initial development of follow-up strategies to achieve them.

Led by scientists and conservation planners from Haiti, the Dominican Republic, and the United States, a team of 11 people arrived by vehicle at Auberge La Visite, Seguin on 25 January 2005. Here we met with members of Fondation Seguin and the La Visite Guide Association, and we were joined by several local guides and park rangers. Auberge La Visite served as the group's logistic base of operations until our departure for Port-au-Prince on 2 February. The core group consisted of the following 11 participants:

Philippe Bayard, Société Audubon Haïti, President of the Board of Directors

Florence Sergile, Société Audubon Haïti, Technical Coordinator

Paul Judex Edouarzin, Société Audubon Haïti and Ducks Unlimited Monitoring Program

Stanley Paulin, Société Audubon Haïti, trainee

Jean-Claude Exantus, La Visite Guide Association

Wilfrid Exantus, La Visite Guide Association

Rosemond Louis Jacques, La Visite Guide Association

Eladio Fernandez, Sociedad Ornitología de Hispaniola, Vice President

Esteban Garrido Gomez, Grupo Jaragua, Inc., Ornithologist

Jorge Luis Brocca, Fundación Moscoso Puello, Ornithologist

Chris Rimmer, Vermont Institute of Natural Science, Ornithologist

## **STUDY AREAS AND FIELD METHODS**

Field research and training were conducted at two sites in La Visite National Park (Fig. 1). From 26-29 January we established a field site in the wet karst limestone broadleaf forest about 3.5 km west of Petite Auberge, at elevations ranging from 1175-1250 m. This site, locally named “Bérac” (Fig. 2A), occupied the steep eastern slopes and bottomland of a broad ravine that was a near-constant funnel for moisture-laden clouds streaming upslope from the south. The site was very wet, with soils that appeared both rich and fairly deep. The forest corresponded to those characterized as “Rak Bwa” and “Bwa Raje” (Woods and Ottenwalder 1986), “Mature Hardwood Forest” or “Cloud Forest” by Woods and Ottenwalder (1992), or “cloud forest/moist hardwood forest” of Judd (1987). Vegetation was characterized by broadleaf trees of mixed age classes that form a closed canopy of 10-12 m, with isolated large emergent *Didymopanax tremulus*, abundant tree ferns, and patchy dense thickets of vines and bamboo. Most evident throughout the forest at Bérac was a high degree of human impacts. The intact forest was clearly a remnant of what had formerly covered the ravine. We estimated its total extent at no more than 20 ha, and most of this was heavily fragmented. Local residents were cutting trees and burning slash during our visit, while cows and goats grazed in many of the openings that penetrated the forest.

Using established foot trails and human-created openings throughout the forest at Bérac, we operated 21 mist nets (12-m x 2.6-m, 36-mm mesh) from 1630 EDST until dusk on 26 January, from dawn to dusk on 27-28 January and from dawn until 1200 EDST on 29 January. Nets were checked hourly and closed at night. We also conducted Bicknell’s Thrush surveys throughout areas of intact and disturbed forest in a 1 km radius

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from our main study site, by broadcasting vocal playbacks of recorded calls to elicit thrush responses. We attempted to capture each thrush encountered, using vocal playback lures and 6- or 12-m mist nets. All captured birds were processed at a central location (Fig 2A). Each individual bird was identified, banded, aged, and sexed. A series of morphometric measurements were taken to the nearest 0.1 mm, and weight was recorded to the nearest 0.1 g. We collected 50-150  $\mu$ l of blood from most individuals by brachial venipuncture, and we stored samples in plastic vials with 1.0 ml Queen's lysis buffer. We also collected blood samples from Bicknell's Thrushes for analysis of mercury levels. These were collected in heparinized capillary tubes and stored in vacutainers. In addition to mistnetting, we recorded all incidental observations of birds encountered during the 4-day visit, and we conducted five unlimited-distance, 10-minute point counts between 0800-0930 EDST on 29 January. Each point was separated by at least 100 m.

We conducted field work at a second site, "La Visite" located 2.5 linear km east-northeast of Bérac, from 30 January – 1 February (Fig. 2B). This site was characterized by two patches of mesic karst broadleaf forest, embedded within a large and relatively intact pine (*Pinus occidentalis*) forest, at elevations from 1995-2060 m. Both patches were moderately disturbed and fragmented, and both were characterized by what appeared to be predominantly secondgrowth vegetation 3-6 m high, with very few scattered emergent trees up to 10 m in height. This forest type corresponds to the successional broadleaf forest, or "Bwa Raje", described by Woods and Ottenwalder (1986). Dominant vegetation was characterized by several species of smallleaved shrubs and trees, forming a very dense understory. This habitat was markedly more xeric than at Bérac, with shallower soils and much exposed karst limestone. Dense thickets of low

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shrubs and thorny *Rubus* covered some regenerating openings in and around the forest patches, which we named Patch A and Patch B. Global Positioning Satellite (GPS) readings every 10 m around the perimeter of each patch revealed them to be 1.21 and 1.99 ha in size, respectively.

They were separated by 100 m at their closest points (Fig. 2b). We camped at a site at 1965 m elevation and 525 m southwest of our La Visite banding site, which was situated between the two forest patches (Fig. 2b). We operated 19.5 mist nets (12-m x 2.6-m, 36-mm mesh) at La Visite from 1700 EDST until dusk on 30 January, from dawn to dusk on 31 January, and from dawn until 1230 on 1 February. Netting and banding protocols followed those at the Bérac site. As at Bérac, we recorded all incidental observations of birds encountered during the 3-day visit, and we conducted four unlimited-distance, 10-minute point counts between 0730-0810 EDST on 1 February.

We ascended to the ridgeline between Pic La Visite and Morne Cabaio twice on 30 January, first arriving at 0130 EDST to do a visual reconnaissance of the area for subsequent nocturnal Black-capped Petrel surveys. We returned that night, arriving at Pic La Visite at 2020 EDST and walking east along the escarpment for approximately 1.5 km. We conducted passive 5-10 minute listening surveys at seven sites, ending at 2150 EDST. We counted the number of vocalizing petrels at each listening point, being careful to determine whether or not birds heard at one point might have been detected at a previous stop.

## **RESULTS AND DISCUSSION**

We recorded 50 species of birds among 182 mist net captures, 79 point count detections, and 476 total observations during our seven days of field work in La Visite

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National Park (Table 1). These included 12 North American migrant species and 38 permanent resident species, of which 14 were Hispaniolan endemics. The Bérac and La Visite sites showed similar overall diversity and abundance of birds. While we captured nearly twice the number of individuals at Bérac (120) as at La Visite (62), this was largely due to the higher number of net-hours at Bérac; capture rates and number of species were similar at both sites (Table 1). Of the 21 species mistnetted at the two sites, 14 were recorded at both, five only at Bérac, and two only at La Visite.

Point count detection rates were higher at La Visite, while overall detections of individual birds were slightly higher at Bérac. The proportion of migrant to resident species captured in mist nets was almost identical at Bérac (26%) and at La Visite (25%), as was the percentage of migrant individuals captured (25% vs. 13%; Table 1). The ratio of migrants to residents was similarly low at both sites on point count detections, and higher but still similar via general observations. Two migrant species were detected only through mist netting, while eight were detected only visually or aurally. Among residents, 13 species at Bérac and 6 species at La Visite were detected only by point counts or general observations. All field methods yielded similar proportions of endemic species and individuals at the two sites.

Six species accounted for 61% of all passive mist net captures at Bérac, while the four most numerically abundant species at La Visite accounted for 65% of captures (Table 1). Green-tailed Ground Warbler (*Microligea palustris*) was the most frequently captured species at Bérac and second in abundance at La Visite, while Greater Antillean Bullfinch (*Loxigilla violacea*) was by far the most abundant species in mist samples at La Visite. Two migrants, Black-throated Blue Warbler (*Dendroica caerulescens*) and



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Ovenbird (*Seiurus aurocapillus*), were among the five most abundant mist-netted species at Bérac, while Ovenbird was the only migrant among the five most frequently captured species at La Visite.

### **Selected Species Accounts**

Black-capped Petrel (*Pterodroma hasitata*) – a specific focus of our trip to La Visite was to investigate the continued presence of this species within the park. Logistic and time constraints precluded our systematically censusing the number of colonies and individual birds along the Pic La Visite-Morne Cabaio ridgeline. We conducted a single night's survey to establish the presence or presumed absence of Black-capped Petrels and to estimate the locations and numbers of birds detected. Our exploration of the Pic La Visite area during the afternoon of 30 January revealed that the ridgeline had experienced severe human impacts. Only scattered pines remained, and we noted extensive evidence of recent cutting and burning. The steeper slopes were terraced for crop production, and we passed through a planted maize field just east of Pic La Visite itself. The north-facing cliffs appeared to be well-vegetated and little-impacted, but clearing and agriculture from below had advanced closely to their bases. Our GPS reading at the summit yielded coordinates of N 18°21.291' W 72°16.841 and an elevation of 2190 m.

Four team members left our base camp at 1945 EDST and began hiking to the summit of Pic La Visite, keeping as close as possible to the vegetated escarpment that forms the western edge of the peak. We were led by an experienced local guide named Jean-Claude Exantus. At 1955, about 50 m in from the rim of the cliffs between our camp and Pic La Visite, two of us heard what we felt certain were several low, wailing calls of a Black-capped Petrel. The vocalizations were difficult to precisely locate through the

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pinetrees and scattered broadleaf scrub that separated us from the cliff top, but they appeared to originate below us and at a considerable distance. Less than a minute later, we all heard the unmistakable swishing wings of a largish bird flying by rapidly overhead and towards the escarpment. Jean-Claude tried to convince us it was a Barn Owl (*Tyto alba*), but the bird's obvious flight speed and the cutting sound of its wings, as described by Wingate (1964), strongly suggested to us otherwise. We were convinced that we had heard a petrel.

On the summit, winds were blowing 8-12 mph from the northeast, and the sky was completely clear. Wingate's (1964) detailed account of his extensive petrel surveys in January and February of 1963 indicated that these weather conditions were not optimal for petrel flights. However, we all clearly heard a minimum of 2, and probably 3, birds moaning from the peak. One or two seemed to be flying in large, slow circles, while a third seemed more stationary to the west. None appeared to be within 75-100 m, but the wind and low volume of the calls again made birds difficult to locate. From the Pic La Visite summit, we spent the next hour walking eastward towards Morne Cabaio, passing through an array of corn patches, scrubby second growth and disturbed pine stands. We stopped at four different locations, each separated by 300- 500 m. At the first and third stops we heard birds to the west that we decided were most likely the same individuals detected from La Visite. The second stop, 500-600 east of Pic La Visite, was located in a heavily wooded section of escarpment rim, and we heard no petrel vocalizations. At our final stop at 2140 EDST, atop cliffs that Jean-Claude reported to be the largest between La Visite and Cabaio, we could still hear petrels faintly back to the west, but another single bird clearly called once below us. This was almost undoubtedly a different

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individual. We waited 10 minutes at this spot without hearing further petrel vocalizations, before hiking back along the ridge about 0.5 km and descending through the pines, reaching camp at 2235. Unfortunately, we neglected to pack a GPS unit during this survey, so we were unable to georeference our listening stations.

During the night of 31 January, we returned to the escarpment west and south of Pic La Visite, intending to listen more systematically than we had during the previous evening's ascent of the peak. We left base camp at 2020 EDST and surveyed five locations along the cliff tops, listening for 3-5 minutes at each. We detected no petrel vocalizations during the first four stops. At our final stop at 2075 m elevation (GPS reading N 18° 20.987' W 72° 16.960'), we heard a single petrel call 3-4 times from the north, towards Pic La Visite. We suspect it was one of the birds detected during the previous night's survey.

We are confident that we heard 4-5 Black-capped Petrels during our nocturnal survey on 30 January, and possibly 6-7. Jean-Claude Exantus reported that local residents used to catch 20-30 birds per night in the "Sen Sel" fires (described by Wingate [1964]), but that the practice has been abandoned because the petrels have essentially disappeared. While we suspect that this number might be exaggerated, it suggests that the species has seriously declined. Our survey, while limited in scope and time, corroborates this. We apparently encountered birds from only a single colony on or near to Pic La Visite, but we did not detect numbers close to the minimum of 50 pairs per colony estimated by Wingate in 1963. Charles Woods and coworkers were unable to accurately estimate numbers in the Pic La Visite-Tete Opaque area during March of 1982, December of 1983, and January of 1985. However, they reported "many fewer than 50 pairs" on the Pic La

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Viste escarpment (Woods and Ottenwalder 1983), and they estimated fewer

colonies within the park, with an overall population of no more than 300 birds, 40% lower than Wingate's (1964) estimate (Woods and Ottenwalder 1986). There can be little question that this species has experienced a sharp decline during the past 40 years.

Hispaniolan Parakeet (*Aratinga chloroptera*) – we recorded this species on only one occasion, when two apparent pairs flew overhead up the ravine at Bérac, calling, on 28 January. It appears to have declined sharply in the park since Woods and Ottenwalder (1986) reported it as “still common” in the early 1980s, in flocks of up to 30 individuals, although much less abundant than in the 1930s. Davalos and Brooks (2001) failed to find Hispaniolan Parakeets during their visit in January of 2000.

Hispaniolan Trogon (*Priotelus roseigaster*) – we observed only 3 individuals of this species in La Visite National Park, all at Bérac. One male called repeatedly near our banding site. It was seen on two occasions with another bird of unknown sex. A third trogon was observed briefly on 29 January. Although reportedly common during the early 1900s in Massif de La Selle (Wetmore and Swales 1931), Woods and Ottenwalder (1986, 1992) considered Hispaniolan Trogons to be uncommon and threatened in the park. Davalos and Brooks (2001) apparently failed to find the species during their brief visit in 2000. The reliance of Hispaniolan Trogons on relatively undisturbed mature broadleaf forests suggests that the species' status in La Visite National Park is extremely tenuous.

Golden Swallow (*Petrochelidon euchrysea*) – this species was relatively common at both study sites. We recorded a maximum of 20 individuals foraging over cleared areas of Bérac's uppermost slopes, and several birds could be heard overhead from our banding

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site almost continually during daylight hours. At La Visite, we counted a maximum of 14 Golden Swallows, many of which foraged in small clearings within the pine forest. We observed 6 birds from the summit of Pic La Visite on 30 January. The status of this species is not well known in Haiti, but it is believed to have declined sharply (Keith et al. 2003) and is considered “Near Threatened” globally (Stattersfield et al. 1998). Woods and Ottenwalder (1986) reported Golden Swallows as “very common” and “not in need of special consideration” in La Visite National Park. Our limited observations suggest that the species continues to be fairly common around forested areas within the national park. The Bérac site, which currently features many large, dead or dying standing trees, may offer numerous nesting opportunities. At current rates of forest loss, however, it is unlikely that suitable nest cavity trees will persist, and this species may be expected to decline. A coordinated program of nest box placement in the park might enhance breeding opportunities for Golden Swallows and provide educational benefits for local residents and visitors.

Bicknell’s Thrush (*Catharus bicknelli*) – we detected a total of 10 Bicknell’s Thrushes in La Visite National Park, and we captured 7 of these. Eight birds were found at the Bérac site, while 8 a single bird occupied each of the two forest patches at our La Visite site. We believe that we thoroughly surveyed both sites and were unlikely to have missed any vocally responsive individuals. The dense understory that characterized the broadleaf forests at both sites, while patchy and moderately disturbed, was structurally similar to montane forests of the Dominican Republic that support the highest known densities of wintering Bicknell’s Thrush (Rimmer et al. 2001).

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The 7 handheld records we obtained represent the first conclusive documentation of Bicknell's Thrush in Massif de la Selle. An individual mist-netted at 1900 m on the ridge of Formon in January of 1983 (Woods and Ottenwalder 1983, 1986), and at that time still considered Gray-cheeked Thrush (*Catharus minimus*), was very likely of this species, but no morphometric data were obtained. Of the 7 birds we captured, 4 were yearlings and 3 were older ( 2 year-old) individuals. Sex determination of each bird awaits laboratory analysis of blood samples. Our preliminary data from the Dominican Republic since 1998 indicate that habitat segregation of sex, and possibly age, classes of Bicknell's Thrush occurs on Hispaniola. Thirtythree of 40 (83%) known-sex individuals from montane forests in Sierra de Bahoruco and 9 of 10 (90%) in cloud forests of the Cordillera Central were male, while 13 of 18 (72%) birds from midelevation, moderately disturbed forests in the Cordillera Septentrional were female (unpubl. data). These findings suggest that males and females occupy different habitats, which may have important consequences for overwinter survivorship and maintenance of good body condition prior to spring migration. Sex- and age-related habitat segregation may have profound implications for long-term conservation of Bicknell's Thrush, if preferred winter habitats are limiting. The 7 individuals we captured in La Visite National Park conform to the general pattern of older birds (mostly males) occupying "optimal" montane forest habitats and younger birds being relegated to more disturbed, presumably suboptimal, sites. Of the 3 older birds, all caught in dense forest at Bérac, two had wing lengths 90 mm and were probably males. The third had a wing length of 85.5 mm and was a probable female. The 4 yearlings were all captured in relatively disturbed and fragmented forest patches at the two sites, suggesting that they might have been restricted

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to less desirable habitat. Analyses of blood samples from these 7 individuals will contribute additional valuable data to the question of whether habitat segregation exists on Hispaniola. Investigation of this phenomenon is of critical importance to understanding the demographic and conservation status of wintering Bicknell's Thrush, and thus to implementing conservation measures.

La Selle Thrush (*Turdus swalesi*) – on the basis of vocalizing birds heard at dusk and dawn, we detected at least 5 individuals of this species at both Bérac and La Visite. We banded 1 bird at Bérac and 2 individuals at La Visite. None were detected at either site during point counts, which took place after the period of dawn calling. In contrast to Wetmore's observations (Wetmore and Swales 1931), Woods and Ottenwalder (1986) found La Selle Thrush to be “very common” and reported that the species appeared to be “doing well in the park”, as it inhabited dense broadleaf forest, as well as more open, disturbed areas of successional forest and cultivated gardens. Davalos and Brooks (2001) found the species “easily observed in small numbers in early morning”. As the forests in La Visite National Park have become increasingly fragmented, La Selle Thrush may have adapted its foraging to take advantage of human-altered habitats. However, as both Woods and Ottenwalder (1986) and Davalos and Brooks (2001) caution, the 9 core broadleaf forest habitat of La Selle Thrush is decreasing, and the species' continued viability in the park must be considered at serious risk.

Black-throated Blue Warbler (*Dendroica caerulescens*) – this species far outnumbered any other migrant in point count detections and overall detections at both sites (Table 1). Contrary to earlier findings from other montane broadleaf forest sites on Hispaniola, where females invariably predominate over males, (e.g., Wetmore and

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Swales 1931, Woods 1975, Latta et al. 2003, Rimmer et al. 2005), we captured equal numbers (6) of both sexes at the two sites combined. However, this small sample precludes any meaningful conclusion about sex ratios in the local Black-throated Blue Warbler population. Although we did not record the sex of all individuals incidentally encountered during the course of our field work, females were more frequently observed than males.

Swainson's Warbler (*Limnothlypis swainsonii*) – we mist-netted 1 Swainson's Warbler at La Visite, providing the first documentation of this species' occurrence in Massif de La Selle. Intensive surveys throughout the park from 1977-1985 by Woods et al., combining censusing and mist-netting, did not detect Swainson's Warblers. The species was only recently discovered on Hispaniola, where 5 individuals were mist-netted in montane forests of Macaya Biosphere Reserve during February of 2004 (Rimmer et al. 2005) and 6 individuals have been mist-netted and banded since 1997 at 1400 m elevation in Sierra de Bahoruco (Rimmer and Almonte 2001, unpubl. data). The confirmation of this species in La Visite National Park suggests that it may be a regular, if uncommon, winter resident of Massif de la Selle. Questions remain whether the recent discovery of Swainson's Warbler on Hispaniola represents a winter range expansion and/or increases in local abundance, or whether previous surveys simply missed detecting this secretive species.

Ovenbird (*Seiurus aurocapillus*) – this was the most abundant migrant species in our mist net samples at both sites (Table 1), although it was rarely encountered outside of netting. This is consistent with the species' status in montane forests of Sierra de Bahoruco, where its capture rates are the highest among migrants, but its detections in



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point counts are relatively low (Latta et al. 2003), due to its retiring behavior. Of the 13 mist-netted individuals for which we were able to reliably determine age, 8 were older (2 year-old) birds and 5 were yearlings (< 1 yearold).

Green-tailed Ground Warbler (*Microligea palustris*) – this species ranked first among total detections and second among mist net captures over both sites combined, and it was the most abundant species by both measures at Bérac (Table 1). Birds were encountered as solitary individuals and in small single- and mixed-species flocks. This habitat generalist (cf. Latta et al. 2003) was also found to be abundant in La Visite National Park by Wetmore and Swales (1931) and Woods and Ottenwalder (1986), suggesting that its overall status in remaining broadleaf forest habitat has changed little. However, the age ratio of mist-netted birds in our sample hints at possible demographic problems. All 29 individuals that we examined were 2 years old, suggesting little or no recruitment of young birds. In contrast, the ratio of yearling to older birds mist-netted in montane forests of Sierra de Bahoruco just 10 days later was 4:12 (33% yearling; unpubl. data). Ongoing fragmentation and loss of montane broadleaf forests in Massif de la Selle may be contributing to very low reproductive success in this species, and a reduction in its population viability. As fragments like Bérac and La Visite continue to decrease in size and 10 ecological integrity, local populations of Green-tailed Ground Warblers can be expected to experience commensurate declines.

Black-crowned Palm-Tanager (*Phaenocophilus palmarum*) – this species was much less common at Bérac than at the La Visite site, where it ranked third in mist-net samples and was tied for fifth in overall detections (Table 1). This corresponded to its status as reported by Woods and Ottenwalder (1986), who found it more common in

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patchy and regenerating “Bwa Raje” forest than in the more extensive and diverse stands of mature “Rak Bwa” forest. Although our sample of handheld birds was small, all 7 individuals were 2 years old, in contrast to a sample obtained 10 days later from Sierra de batoruco, where 5 of 15 (33%) mistnetted birds were yearlings. As for Green-tailed Ground Warblers, this suggests that breeding success of Black-crowned Palm-Tanagers, as reflected by apparently low to nonexistent juvenile recruitment, may be exceedingly poor and inadequate to sustain populations over time. We did not find any Gray-crowned Palm-Tanagers (*Phaenocophilus poliocephalus*), and it appears that this species has yet to be unambiguously documented in Massif de la Selle.

Western Chat-Tanager (*Calyptophilus tertius*) – we encountered this species at both sites, where it ranked seventh in total detections at Bérac and eleventh at La Visite, but was mistnetted only at Bérac (Table 1). Several birds at both sites were heard singing at dawn, and most appeared to occupy discrete territories. Handheld birds were larger in 3 of 5 measurements than mist-netted *C. tertius* from Macaya Biosphere Reserve and Sierra de Bahoruco, and intermediate in the other 2. As noted by Woods and Ottenwalder (1986, 1992) and Keith et al. (2003), systematics of the Chat-Tanager complex are not fully resolved and need further study. Analysis of blood samples from our mist-netted birds in La Visite National Park, and comparison of results with those from *Calyptophilus* sampled throughout Hispaniola, should help elucidate systematic relationships within the genus. Woods and Ottenwalder (1986) found Western Chat-Tanagers to be fairly common in wet, dense forest as low as 1000 m elevation in La Visite, yet they considered it among the most endangered birds in Haiti. Birdlife International designates the *Calyptophilus* complex as globally “Vulnerable” (Stattersfield et al. 1998). Our limited

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observations suggest that the species is still locally common in La Visite National Park, but its status must be considered tenuous overall, as the wet broadleaf forests it requires becomes increasingly small and fragmented.

Hispaniolan Crossbill (*Loxia megaplaga*) – we observed small flocks of crossbills on several occasions at the La Visite site, in areas with large emergent pines. One flock of 8 birds was seen foraging in a pine canopy, while other smaller flocks were sporadically seen and heard flying overhead. Because it is possible that we repeatedly observed the same birds, we conservatively estimate that we encountered a total of 8 crossbills (Table 1). Wetmore and Swales (1931) reported the species to be abundant in the La Visite area, but Woods and Ottenwalder apparently found fewer crossbills in the late 1970s and early 1980s. They considered the species still common in La Visite, although endangered overall in Haiti. Our observations reveal little about the current status of Hispaniolan Crossbills, but the species likely continues to breed in La Visite’s pine forests. A recovery plan for the Hispaniolan Crossbill has been outlined by Woods et al. (1992), with primary goals of preventing further loss of mature pine forest habitat and determining the species’ current population status. Because there are no reliable estimates of its abundance, focused surveys are needed.

### **Comparison with Previous Studies**

Several species recorded by Charles Woods and associates during the late 1970s and 1980s in La Visite National Park were notably absent during our surveys. We did not detect any of the following resident species, all of which were reported by Woods and Ottenwalder (1986) over the course of several field trips to La Visite between September of 1977 and January of 1985, at elevations greater than 1500 m: Hispaniolan Parrot

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(*Amazona ventralis*), Scaly-naped Pigeon (*Patagioenas squamosa*), Vervain

Hummingbird (*Mellisuga minima*), White-winged Warbler (*Xenoligea montana*), and

Antillean Euphonia (*Euphonia musica*). The presumed absence of these species may have been due simply to our failing to detect them or because we did not visit areas in which they currently occur.

The absence of Hispaniolan Parrots in La Visite was unsurprising, given the species' recent widespread declines, and the failure of Davalos and Brooks (2001) to locate it in January of 2000. Although Wetmore and Swales (1931) reported Hispaniolan Parrots as common on the ridge of La Selle, Woods and Ottenwalder (1986) described the species as "almost missing" and "rare and endangered" during their several years of study. Given the typically noisy and conspicuous behavior of parrots, we believe it is unlikely that we failed to detect birds that may have been present. An island-wide decline has been documented since the 1930s, with many local extirpations (Keith et al. 2003, Latta et al. 2004). It appears likely that Hispaniolan Parrots are extirpated in La Visite National Park.

The continued absence of White-winged Warblers in La Visite, and possibly the entire Massif de La Selle, underscores the extensive loss and fragmentation that have reduced the region's montane broadleaf forests, to which this species is restricted. Reported as common by Bond (1928) and Wetmore and Swales (1931), White-winged Warblers were found to be "very rare and possibly extirpated from La Visite" by Woods and Ottenwalder (1983, 1986). Davalos and Brooks (2001) failed to locate the species during 4 days of surveys in January of 2000. In the Macaya Biosphere Reserve, White-winged Warblers are locally common in mid-elevation, mesic karst broadleaf forests, but

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scarce or absent in higher elevation wet broadleaf forest (Wetmore and Swales 1931, Woods and Ottenwalder 1986, Rimmer et al. 2005). Although Woods and Ottenwalder (1986) considered the species to be secretive, our experience indicates that it often occurs in conspicuous, actively-foraging flocks and shows inquisitive behavior (pers. obs.). We believe it is unlikely that we failed to detect any White-winged Warblers that may have been present in the broadleaf forest fragments at our Bérac and La Visite study sites. Although this species' ecology has not been well-studied, it may exhibit area sensitivity or have limited dispersal abilities that restrict it to tracts of forest larger than those remaining in La Visite National Park. Careful identification and targeted surveys of all remnant broadleaf forest in Massif de la Selle are needed to confirm the status of White-winged Warblers, which Woods et al. (1992) considered to be Haiti's most endangered bird species.

The limited timeframe and geographic coverage of our surveys preclude any rigorous comparison between our findings and those of earlier studies. We can not be certain that we conducted field work in any of the sites surveyed by Woods et al. in the 1970s and 1980s. However, it is clear that we visited the same habitat types, specifically both mesic and wet karst limestone forest ("Rak Bwa" and "Bwa Raje" of Woods and Ottenwalder [1986], or "Mature Broadleaved Forest" and "Fragmented Broadleaved Forest" of Woods and Ottenwalder [1992]). Our results therefore provide broad context for evaluating changes in patterns of avian distribution and abundance during the nearly 20 years since Charles Woods' last formal surveys.

We are currently unable to detect evidence of any dramatic declines or increases in avian populations of La Visite, and it appears that the overall status of most common

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resident species has changed little, with the possible exception of Hispaniolan Parrot.

However, we lack access to quantitative data from previous surveys and so can make only qualitative comparisons. We believe that our most noteworthy findings include the continued presence of Black-capped Petrels at historic colony sites, documentation of regular occupancy by Bicknell's Thrush of broadleaf forest fragments, and the continued apparent extirpation of several species such as Hispaniolan Parrots and White-winged Warblers in the park.

### **Habitat Assessment**

Without prior firsthand experience in La Visite National Park, we have little historical context for evaluating habitat changes that have occurred in the past 10-15 years. Florence Sergile, a core member of Woods' field teams in the 1970s and 1980s, accompanied us in February of 2005 and was struck by the increased loss of habitat within the park. Our field observations indicated that the park's broadleaf forests were very limited in extent, heavily fragmented, and severely threatened by subsistence agriculture. We were unable to accurately estimate the size of the habitat patch at Bérac, or to determine the overall extent of this forest type within the national park. However, we witnessed unchecked clearing and burning of Bérac's already fragmented forest during our visit, as local residents expand their agricultural practices. We believe that this dwindling tract of forest will effectively disappear within 2 years if unregulated human activities continue. Our demographic data for resident species like Greentailed Ground Warbler and Black-crowned Palm-Tanager suggest that Bérac may already be a population sink, with insufficient juvenile recruitment to offset adult mortality.

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The two small broadleaf forest patches at our La Visite study site seem unlikely to provide conditions that will maintain long-term viability of local bird populations. Both fragments, while less subject to active agriculture and tree-cutting than the forest at Bérac, were heavily impacted. We do not know how widely distributed this habitat type is within La Visite, but we encountered no other patches greater than 0.1 ha in size during our hike to Pic la Visite. Our local guides indicated that these two fragments were the largest remaining on the ridgeline's south slopes. The drier and more rocky conditions of these patches may enable them to persist longer than the forest at Bérac, but they will not be adequate to indefinitely support bird populations that require broadleaf forests.

We saw no evidence of regenerating broadleaf forests in the park, and we suspect that this habitat type does not recover easily from disturbance. Broadleaf forests support La Visite's highest avian and floristic diversity (Woods et al. 1992), yet they are completely unprotected. The lack of any conservation enforcement within the park has enabled unregulated access by local residents to natural resources, and diminishing supplies have increased pressure on remaining forested areas. Despite the existence of a nearby community-based foundation, Fondation Seguin ([www.fondationseguin.org](http://www.fondationseguin.org)), to promote conservation of La Visite's flora and fauna, no coordinated program of education or enforcement is in place. Park boundaries are poorly defined, and humans continue to live throughout the park, freely accessing its natural resources. A crisis situation has resulted, one that can be resolved only through implementation of immediate and stringent measures to prevent further loss of broadleaf forests, and carefully controlled reforestation efforts. Without this, there can be little doubt that

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resident and migrant populations dependent on broadleaf forests with La Visite National

Park will become extirpated from the park within 3-5 years, if not sooner.

The pine forests on the La Visite escarpment's south slopes are also seriously threatened. Many pines were scarred by fire or recent cutting, and understory development was extremely poor. Although we noted a few mature emergent pines at higher elevations, we observed few trees in young age classes, suggesting that reproduction may be compromised. We believe that the composition and dynamics of La Visite's pine forests will be significantly altered if cutting of mature trees is not ceased. Overstory *Pinus occidentalis* are the primary producers of cones and seeds in the species, and they likely provide essential local breeding and foraging habitat for Hispaniolan Crossbills. They may also perform important ecological functions such as shading and moisture retention. The protection of mature pines throughout La Visite National Park should be a high priority, as should conservation of trees in all age classes.

The north-facing cliffs of the La Visite escarpment likely support the largest and most globally important breeding site for Black-capped Petrel (Wingate 1964, Woods and Ottenwalder 1986, Simons et al. 2002). Recent surveys indicate that the species is known with certainty only from the Massif de la Selle and Massif de la Hotte in Haiti, and Sierra de Bahoruco in the Dominican Republic. Its status in Cuba's Sierra Maestra is unclear, and it appears to be extirpated from former colony sites elsewhere in the West Indies. Our brief surveys in February of 2005 established the continued presence of Black-capped Petrels along the La Visite-Morne Cabaio ridgeline, but suggested further declines in the breeding population. We believe that ongoing habitat loss above and below the nesting cliffs has likely increased the species' susceptibility to introduced mammalian predators



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and direct human exploitation for food. More exhaustive surveys are needed to clarify the status of Black-capped Petrels in La Visite National Park, in order to implement recovery actions as outlined by Woods et al. (1992).

### **Field Training**

We trained our Haitian professional colleagues, as well as local guides from the La Visite Guide Association, in all aspects of our field work, particularly mist-netting and banding. Whenever possible, we relayed information on bird identification and biology, and several participants practiced techniques of bird handling and mist net extraction (Appendix). We engaged in regular discussions of conservation issues related to La Visite National Park, and we solicited input from all participants. A total of 5 Haitians received hands-on field training, while others observed without directly participating. We believe that our training exercises were an invaluable component of the trip. Further, the close cooperation of Haitian and Dominican biologists fostered binational ties that will be important to long-term conservation of the island's shared avifauna.

### **Conservation and Management Recommendations**

The comprehensive stewardship plan outlined by Woods et al. (1992) details concrete actions that are no less urgent and relevant today than they were 13 years ago. We believe that this plan must be carefully revisited, and that strong local coordination must be marshaled to ensure its implementation. A significant investment of human and financial resources will be necessary to achieve this. A committed network of Haitian conservationists, led by the Société Audubon Haïti and the Ministry of Environment, must work in tandem with international cooperators to collectively bring about long-term, sustainable conservation of La Visite National Park.

We fully support the recommendations proposed by Woods et al. (1992), and we add or reiterate only the following:

- 1) Immediate and forceful measures must be taken to protect remnant broadleaf forests within La Visite National Park. Further loss and fragmentation of these forests are not sustainable, and we believe they constitute the single most important habitat type within La Visite National Park. They are certainly its most restricted and endangered. The following specific actions should be given serious consideration:
  - a) Accurate park boundary surveys of the entire park must be conducted, and boundaries must be clearly delineated. If any areas of mesic or wet broadleaf forest are found to lie outside current park boundaries, these areas must be georeferenced and immediately protected. A careful evaluation of current park boundaries versus degree of human occupancy and habitat use must be conducted, and a realistic reappraisal of boundaries must be completed. This may result in some currently protected areas being excluded from the park, because of irreversible habitat changes or exceptionally difficult socioeconomic circumstances. However, other areas outside current park boundaries may be identified that have ecological value and future potential warranting their inclusion within the park.
  - b) The forest patch that we named Bérac should be specially designated as a core ecological reserve that is completely off-limits to human activities involving habitat alteration. This area has outstanding potential for

biological research and monitoring, as well as for environmental education and ecotourism. This tract of forest appears to be isolated from other similar patches, and we believe that it should be physically protected by means of a barrier to exclude livestock and to discourage farming. We advocate that a fence with informational/warning signs be erected around at least 100 hectares of the Bérac , as an immediate stop-gap measure to prevent further habitat loss.

- c) A management plan specific to La Visite's broadleaf forests and surrounding agricultural areas must be developed and implemented. This should include delineation and mapping of all current habitat patches throughout Massif de la Selle through GIS analyses, consolidation and connectivity of existing fragments through actual or potential habitat corridors, natural or human-aided regeneration of disturbed areas, and concerted education of local residents as to the importance of this habitat type.
- d) A small educational facility should be developed in the Bérac area. This could serve as a resource for local residents, as a destination for ecotourism groups that visit La Visite, and as a base of operations for future field research or monitoring operations. It should be linked to educational displays and other information that need to be developed by Fondation Seguin and SAH, and could be promoted at La Petite Auberge. Such a facility might be constructed on the plateau above Bérac, with a trail leading down into the ravine, where a small outbuilding could be

constructed to house a permanent guard and to shelter visitors. This trail could become an established nature trail, with interpretive signs and designated observation sites.

- 2) A long-term avian monitoring and research program should be designed and implemented in La Visite. The scope of such a program should also include other wildlife and plants. We recommend that Bérac be designated as one site within a network of monitoring sites. It offers numerous opportunities, due to its proximity to La Petite Auberge, its logistic accessibility, its diverse avifauna, and its status as an excellent example intact patch of karst broadleaf forest.
- 3) La Petite Auberge should be developed as the Park's headquarters and overall educational center. On or nearby the Auberge, a designated Park building should be constructed, with a permanently-stationed Park Supervisor, and educational displays should be constructed. A large wall map depicting La Visite's boundaries, topography, primary trails, and major habitats types should be prominently featured. Pocket versions of this map should be available to visitors.
- 4) A program of training and certification of local park guides and rangers should be instituted. There are several outstanding candidates for these positions, and their regular involvement in park activities will help ensure their commitment to La Visite's conservation. They must be properly equipped, educated, and paid.
- 5) Innovative programs must be designed, funded, and implemented to provide economically sustainable incentives to local residents within a framework of habitat conservation. This will require a major commitment of human and

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financial resources, both within and outside of Haiti. Without it, La Visite's flora and fauna have no chance of long-term viability.

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**Table 1.** Birds mist-netted and observed in Macaya Biosphere Reserve, Haiti, 8-14 February 2004.

Species	Rak Bwa			Plaine Boeuf		
	# Mist-netted	# in Point Counts	Total # Detected <sup>a</sup>	# Mist-netted	# in Point Counts	Total # Detected <sup>a</sup>
Sharp-shinned Hawk ( <i>Accipiter striatus</i> )			1			
Red-tailed Hawk ( <i>Buteo jamaicensis</i> )			4			1
American Kestrel ( <i>Falco sparverius</i> )			1			
Scaly-naped Pigeon ( <i>Columba squamosa</i> )			1			
Plain Pigeon ( <i>Columba inornata</i> )		3	3			
Zenaida Dove ( <i>Zenaida aurita</i> )		1	1			
Mourning Dove ( <i>Zenaida macroura</i> )			2			
Hispaniolan Lizard-Cuckoo ( <i>Saurotheria longirostris</i> )			3			
Antillean Mango ( <i>Anthracothonax dominicus</i> )			3			
Hispaniolan Emerald ( <i>Chlorostilbon swainsonii</i> )	10 <sup>b</sup>	8	25	3 <sup>b</sup>	2	10
Hispaniolan Trogon ( <i>Priotelus roseigaster</i> )		6	12			
Narrow-billed Tody ( <i>Todus angustirostris</i> )	8 <sup>c</sup>	3	15	3 <sup>c</sup>	3	14
Antillean Piculet ( <i>Nesocittes micromegas</i> )			6			
Hispaniolan Woodpecker ( <i>Melanerpes striatus</i> )		10	12	1		7
Greater Antillean Elaenia ( <i>Elaenia fallax</i> )	1	4	6			1
Golden Swallow ( <i>Petrochelidon euchrysea</i> )		2	11			2
Rufous-throated Solitaire ( <i>Myadestes genibarbis</i> )	21	13	30	4	1	10
Bicknell's Thrush ( <i>Catharus bicknelli</i> )	3 <sup>d</sup>		4	10 <sup>d</sup>		10
Red-legged Thrush ( <i>Turdus plumbeus</i> )	11	4	12	2		5
Cape May Warbler ( <i>Dendroica tigrina</i> )	2		3			
Black-throated Blue Warbler ( <i>Dendroica caerulescens</i> )	14	3	12	9	4	18
Black-and-white Warbler	1					



( <i>Mniotilta varia</i> )						
American Redstart ( <i>Setophaga ruticilla</i> )	4		5			
Worm-eating Warbler ( <i>Helminthos vermivorus</i> )	1					
Swainson's Warbler ( <i>Limnithlypis swainsonii</i> )	3			2		2
Ovenbird ( <i>Seiurus aurocapillus</i> )	5	1	4	1		1
Common Yellowthroat ( <i>Geothlypis trichas</i> )	1	1	2			
White-winged Warbler ( <i>Xenoligea montana</i> )	10	8	25			
Bananaquit ( <i>Coereba flaveola</i> )	20	5	30			
Antillean Euphonia ( <i>Euphonia musica</i> )			6			
Hispaniolan Spindalis ( <i>Spindalis dominicensis</i> )	22	9	30	8	10	25
Gray-crowned Palm-Tanager ( <i>Phaenicophilus poliocephalus</i> )	10	5	15	7		14
Western Chat-Tanager ( <i>Calyptophilus tertius</i> )	3		6	6	5	22
Black-faced Grassquit ( <i>Tiaris bicolor</i> )	4		2			
Yellow-faced Grassquit ( <i>Tiaris olivacea</i> )			2			
Greater Antillean Bullfinch ( <i>Loxigilla violacea</i> )	20	5	4	4		1
Hispaniolan Crossbill ( <i>Loxia megaplaga</i> )						10
<b>Total # of individuals</b>	<b>174</b>	<b>91</b>	<b>298</b>	<b>60</b>	<b>25</b>	<b>153</b>
<b>Total # of species</b>	<b>21</b>	<b>18</b>	<b>33</b>	<b>13</b>	<b>6</b>	<b>17</b>
<b>Total # mist net-hours<sup>e</sup></b>	<b>556.75</b>			<b>515.25</b>		
<b># birds/100 net-hours<sup>f</sup></b>	<b>30.53</b>			<b>9.51</b>		
<b># birds/point count x 100</b>		<b>18.2</b>			<b>4.2</b>	
<b>% migrant species</b> (# species/# individuals)	<b>43</b> (9/32)	<b>17</b> (3/5)	<b>18</b> (6/30)	<b>31</b> (4/13)	<b>17</b> (1/4)	<b>24</b> (4/31)
<b>% resident species</b> (# species/# individuals)	<b>57</b> (12/138)	<b>83</b> (15/86)	<b>82</b> (27/268)	<b>69</b> (9/36)	<b>83</b> (5/21)	<b>76</b> (13/122)
<b>% endemic species</b> (# species/# individuals)	<b>29</b> (6/58)	<b>39</b> (7/49)	<b>30</b> (10/149)	<b>46</b> (6/26)	<b>67</b> (4/20)	<b>41</b> (7/102)

<sup>a</sup> Excludes mist-netted birds and those recorded during point counts, although some of these individuals were likely encountered at other times and are thus included in these totals.

<sup>b</sup> Hispaniolan Emeralds tail-clipped, not banded.

<sup>c</sup> Includes individuals mist-netted with vocal playback lures (2 at Rak Bwa, 2 at Plaine Boeuf).

<sup>d</sup> Includes individuals mist-netted with vocal playback lures (2 at Rak Bwa, 9 at Plaine Boeuf).

Draft - Status Report On The Black-Capped Petrel (*Pterodroma Hasitata*). Prepared for U.S. Fish and Wildlife Service, Atlanta, GA USA, 31 December 2006 by Theodore R. Simons, David Lee, J. Christopher Haney, John Gerwin, Chris Rimmer, Jaime Collazo, Juan Klavins, James E. Goetz, Eladio M. Fernandez, Becky Browning, Brian Patteson, Rebecca A. Hylton

<sup>e</sup> Excludes nets used with vocal playbacks outside standardized netting area.

<sup>f</sup> Excludes 4 Narrow-billed Todies and 11 Bicknell's Thrushes netted with vocal playbacks.

Table 2. Morphometrics of mist-netted *Calyptophilus tertius* in Macaya Biosphere Reserve, Haiti (February 2004) and in Sierra de Bahoruco (January and February, 2001-2003), Dominican Republic.

	Macaya			Sierra de Bahoruco		
	<i>n</i>	Mean $\pm$ SD	Range	<i>n</i>	Mean $\pm$ SD	Range
Wing chord <sup>a</sup>	9	93.7 $\pm$ 4.44	88.5-101.5	21	91.2 $\pm$ 5.88	80.0-102.5
Tail length <sup>b</sup>	9	96.5 $\pm$ 5.99	88.0-108.5	19	99.3 $\pm$ 7.04	88.5-110.0
Tarsus length <sup>c</sup>	8	36.2 $\pm$ 2.17	32.2-39.7	18	35.0 $\pm$ 2.01	32.1-39.8
Bill length <sup>d</sup>	9	15.9 $\pm$ 2.12	12.2-17.8	19	15.2 $\pm$ 0.83	13.6-17.0
Weight <sup>e</sup>	9	56.6 $\pm$ 4.86	51.1-63.2	18	49.2 $\pm$ 4.86	40.2-55.3

<sup>a</sup> Measured from bend of wing (carpal joint) to tip of longest primary (mm).

<sup>b</sup> Measured from base of feathering to tip of longest rectrix (mm).

<sup>c</sup> Measured from “bend” of toes to outside of tibia adjacent to intertarsal joint (mm).

<sup>d</sup> Measured from anterior edge of nares to bill tip (mm).

<sup>e</sup> Measured with digital Ohaus HS-20 scale (g).