Results of Black-capped Petrel Radar Surveys in Haiti during February 2013

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Summary

Environmental Protection in the Caribbean completed eight nights (3-11 February 2013) of surveys for Black-capped Petrels in the Massif de la Selle. Over that period, we worked with staff and students from Societe Audubon Haiti, Grupo Jaragua International, University of Haiti, and the Haitian Ministry of the Environment. Over the eight night period, we detected 3,555 petrel targets on radar. The locations with the highest number of petrels were Savanne Zombie and Tet Kay Jak.

Introduction

Populations of the Black-capped Petrel, one of the most endangered Caribbean seabird species, have been in precipitous decline over the previous 50 years. It is estimated that only 1,000-2,000 pairs of petrels remain. Although they historically nested on islands in the Lesser Antilles, they are currently known to nest only on the island of Hispaniola. The dire conservation status of the Black-capped Petrel has prompted its listing by various authorities as Endangered (IUCN 2011), Threatened, by the International Council for the Preservation of Birds (Collar and Andrew 1988), and Critically Endangered by the Society for the Study and Conservation of Caribbean Birds (Schreiber and Lee 2000). Further, the North American Waterbird Conservation Plan considers the species to be Highly Imperiled, making it an official Focal Species of the U.S. Fish and Wildlife Service (USFWS).

In response to the plight of the petrel, top objectives of the recently published Conservation Action Plan for the Black-capped Petrel (Goetz et al. 2012) are to discover additional breeding locations and to effectively manage of critical on-land breeding locations. Among the Plan's proposed actions, this project addressed the development and refinement of search methodologies for nesting sites. The current EPIC project addressed this by using proven marine radar technology to identify petrel flyways and nesting areas, and estimated abundance of petrels at nesting sites.

Methods

Radar surveys began at sunset each night, when petrels became active at the nesting area, and ended five hours later, when petrel activity slowed.

For surveys we set up our radar within 1.5km of the potential nesting site or flight path. Although radar can detect targets at much greater distances, resolution suffers greatly. Setting the range at 1.5 km is standard practice when surveying for seabirds as it allows the surveyor to detect targets at a substantial

range while recording a clear and powerful target on the radar (Cooper et al. 1991). A laptop computer was attached to the radar unit and recorded all radar images, for subsequent review and analysis.

The radar operator monitored all targets that appeared on the radar's monitor, and recorded time, direction of flight (to the nearest degree), flight behavior (e.g. straight, erratic), velocity (to the nearest 8 km/hr), and if known, noted species and number of individuals detected.

Results

Overall, we completed radar surveys at seven locations along the Massif de la Selle, including flyway locations and potential nesting areas (see Figure 1). We detected a total of 3,555 total petrels over the entire survey period. We detected petrels at all seven locations, however, overall detection rates differed among sites (see Table 1). We completed two nights of surveys at Tet Kay Jak and one night of surveying at all other sites.

Herein, we will report on the results from each site surveyed.

Savanne Zombie

Total Birds Detected: 1,570

This survey location was along a deep valley on the eastern end of Massif de la Selle. The valley runs north and south, starting high up on the eastern flanks of Peak La Selle and the western flanks of Loma del Toro (in the Dominican Republic) and emptying out along the south shore of Haiti. This site had the highest number of targets recorded among all sites on Hispaniola. On radar, we were able to see birds both flying into mountain areas as well as down from them. Additionally, we were able to see birds flying up numerous drainages, indicating this flyway feeds birds to numerous nesting locations. In addition to radar targets, we also saw and heard numerous calling petrels from this location.

Fond Verette

Total Birds Detected: 10

This survey location was along the base on the north side of Peak La Selle. We placed the radar in the main riverbed at a large confluence of valleys, one that leads directly up the north side of Peak La Selle and the other than leads up the northeast side of Peak La Selle. The main valley drains northwestwards into Lake Azuei. We detected a low number of petrels at this site. Most petrels that are accessing Peak La Selle from the north are likely doing so up drainages closer to the western edge of the range. The birds that we did detect, all came in small groups of 2-3 birds at a time, a similar grouping behavior we observed at other sites.

Furcy

Total Birds Detected: 357

This site was located 2.5 km north of the La Visite escarpment. The radar was placed on a prominent point that enabled the surveyors to detect petrels flying along the escarpment as well as flying up the drainages from both the northeast and northwest. From this location, we observed hundreds of birds accessing the La Visite escarpment from the north side drainages. This flyway is substantially further away from the sea (50km) than birds accessing this site from the south slopes (16km). However, the drainages on the north side of Massif de la Selle are much more defined than those on the south slopes and therefore potentially provide a more well-defined approach to nesting areas for the petrels. In addition to radar, we heard numerous calling petrels from this location.

Jacmel

Total Birds Detected: 6

This site was located on the western end of Massif de la Selle in a large drainage, approximately 7km northeast of Jacmel. This drainage starts high up on the western slopes of Morne de Enfer and drains out

to the sea in Jacmel. We surveyed this location in attempt to try and define any petrel activity that might be taking place on Morne de Enfer. There are numerous additional drainages that lead to this peak, most notably from the south coast near Marigot (see *Marigot* below). This flight area had a low density of petrel activity, the lowest among all the sites we surveyed in Haiti.

Marigot

Total Birds Detected: 51

This site was located in a large drainage, approximately 5km north of Marigot. The radar was placed at a large confluence in the drainage from where we were able to monitor birds flying up drainages to both Morne de Enfer and La Visite National Park. From our location we detected birds flying up and down drainages to both Morne de Enfer and La Visite National Park.

Tet Kay Jak

Total Birds Detected: 1,054

We surveyed this location on two nights. During the first night a large storm enveloped the ridgeline and forced us to end the survey early. The second night we completed a full survey and the total birds detected number is from that night. This radar station was located at the western end of the La Visite escarpment, at the immediate edge of the escarpment itself. From this location, we could observe birds from the north, south, east, and west. We were able to observe birds flying along the escarpment as well. From this location, we only observed birds approaching the escarpment from the north. Not a single bird was observed approaching from the south slopes. We observed numerous types of flight behavior including; birds circling, birds making large turns, pairs of birds joining and separating while in flight, as well as typical straight-line flight behavior. A large number of birds were heard from this location as well.

***In addition to detecting birds on radar at this site, we found numerous petrels grounded at the base of the communication towers on Tet Kay Jak. The three birds we found alive were all able to fly away. However, numerous dead birds were located as well. It appears the birds were attracted to the bright lights on the towers and then while approaching those lights, struck the guy wires attached to one of the towers.

Belle Anse

Total Birds Detected: 49

This radar station was placed on the lower south slopes of Peak La Selle, in a well-defined drainage 5km northeast of Belle Anse. The radar was placed at a confluence of drainages, the western of which fed the high peaks of Morne Mare Rouge and the eastern of which fed the high southern slopes of Peak La Selle. We observed birds flying both up and down both drainages; however the majority of birds were using this drainage to access Morne Mare Rouge.

Figure 1. Map of radar sites in Haiti during 2013 expedition. Map courtesy of Google.

Table 1. Total Black-capped Petrels detected at each radar station in Haiti during 2013 expedition.

Station	Date	Time	Location	Lat	Lon	Heading	Petrel-like targets
H1	2/3/2013	PM	Savanne Zombie	18 17 02.0	71 48 10.8	10	1,570
H2	2/5/2013	PM	Fond Verette	18 23 29.6	71 51 22.8	332	10
H3	2/6/2013	PM	Furcy	18 22 54.0	71 17 11.0	180	357
H4	2/7/2013	PM	Jacmel	18 17 23.4	72 30 39.4	20	6
H5	2/8/2013	PM	Marigot	18 15 29.9	72 18 37.8	130	51
H6	2/9/2013	PM	Tet Kay Jak	18 20 32.6	72 17 26.1	10	458
H6	2/10/2013	PM	Tet Kay Jak	19 20 32.6	73 17 26.1	10	1054
H7	2/11/2013	PM	Belle Anse	18 14 31.8	72 01 04.4	335	49