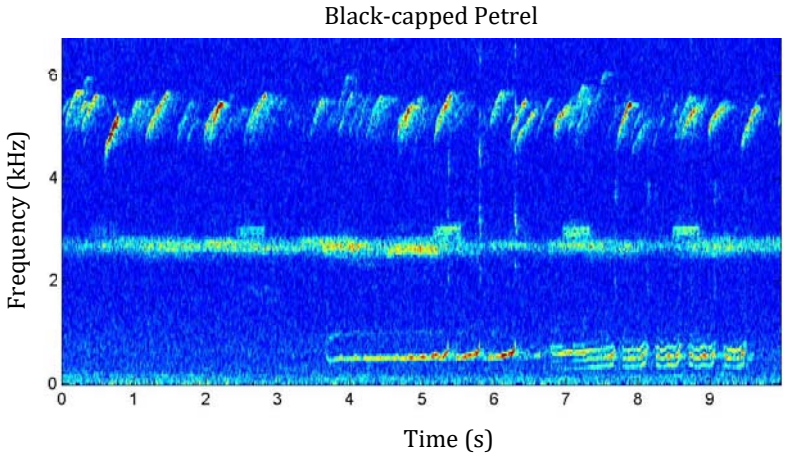
Conservation Metrics



Spectrogram of Black-capped petrel calls recorded in Valle Nuevo, Dominican Republic. Fresa 4 12-03-2016 21:19:06

Acoustic Surveys for Black-capped Petrel Valle Nuevo, Hispaniola – *2016/17* -Final Report- 27 November 2017

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Introduction

This report summarizes data collected to detect undiscovered Black-capped Petrel breeding aggregations on Hispaniola as part of an ongoing survey effort begun in 2015. Specifically, this exploratory acoustic survey was carried out to listen for petrel vocalizations in locations where radar surveys had previously detected radar targets with flight characteristics like those of petrels attending breeding colonies (relatively high-speeds, strait-line trajectories to and from the sea followed by circling flight, activity after sunset). The goal of this acoustic survey was to find independent evidence that these radar targets were petrels, and to quantify patterns of acoustic activity that could help direct ground searches for undiscovered breeding aggregations. This survey builds on older data collected between Dec 2015 and May 2016, adding new survey points and data from the early part of the 2016-2017 breeding season.

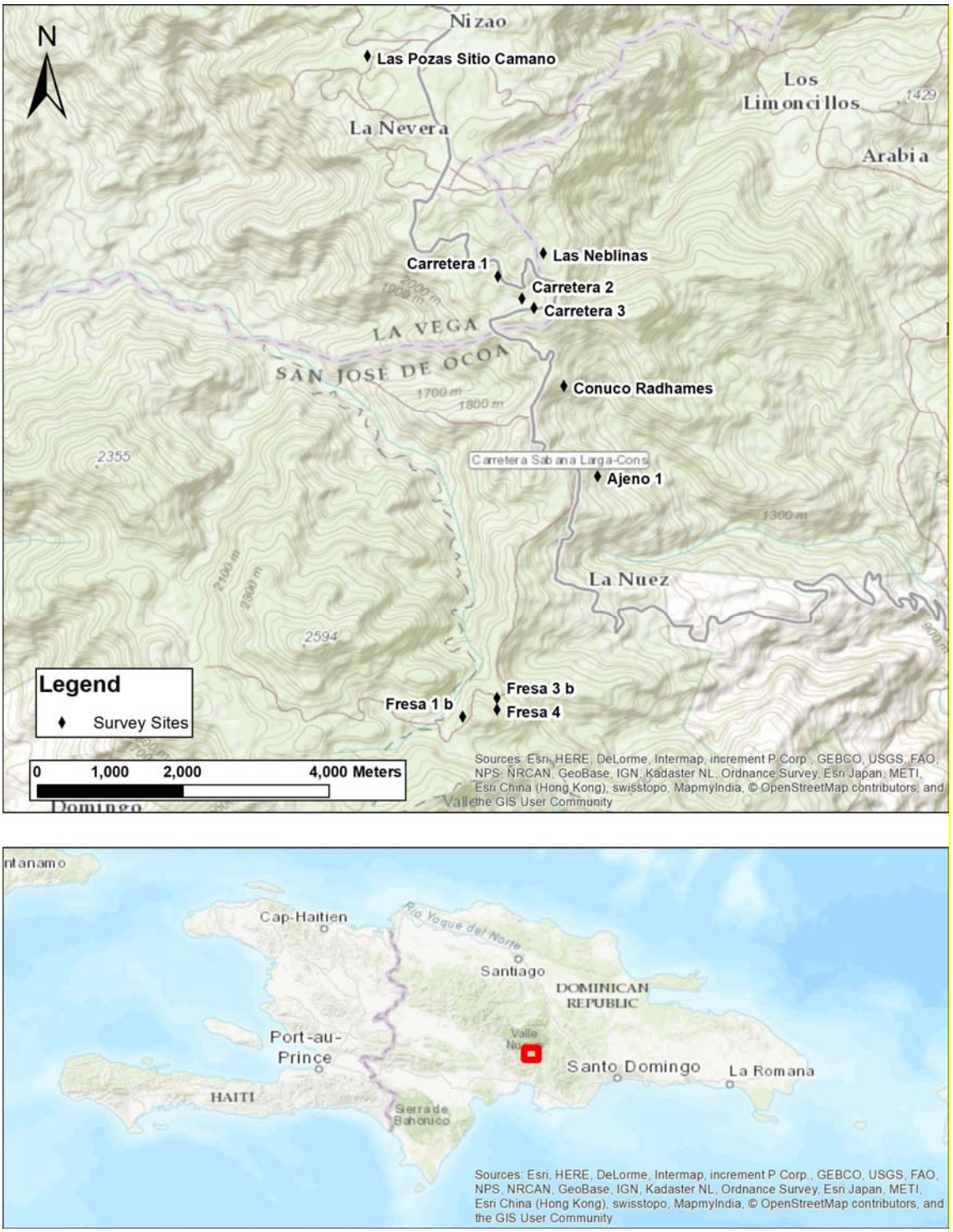

Figure 1: Valle Nuevo study region (red box) in the Cordillera Central of the Dominican Republic

Results and Discussion

Survey Effort

Data from 10 acoustic sensors were sent to CMI for analysis from exploratory survey sites in Valle Nuevo deployed between 8 November 2016 and 17 May 2017 (Error! Reference source not found. and Figure 1). A total of 2,683.33 hours was recorded on 1,111 combined survey nights (Table 2). Measurements of microphone quality during analysis indicated that microphones were minimally affected by moisture (Figure 2), with three sensors losing a small amount of recording hours (Figure 2 and Table 2).

Table 1: Deployment table

SPID	Recording Unit	Latitude	Longitude	First Recording	Last Recording
Ajeno 1	15354	18.668551	-70.583695	11/9/2016 14:09	5/13/2017 23:37
Carretera 1	15374	18.693275	-70.5960036	11/8/2016 15:00	5/4/2017 23:48
Carretera 2	CM25	18.690527	-70.5930008	11/8/2016 15:31	5/4/2017 23:48
Carretera 3	15392	18.689347	-70.5915203	11/8/2016 17:00	5/14/2017 3:35
Conuco Radhames	CM26	18.679774	-70.5878378	11/9/2016 16:17	5/17/2017 0:00
Fresa 1 b	3693	18.638855	-70.6003472	11/9/2016 12:21	4/28/2017 20:57
Fresa 3 b	CM27	18.641168	-70.5961132	11/9/2016 10:54	5/11/2017 3:15
Fresa 4	11207	18.639741	-70.5961283	11/9/2016 11:31	3/21/2017 19:47
Las Neblinas	CM23	18.696142	-70.5904081	11/8/2016 16:14	5/11/2017 1:25
Las Pozas Sitio Camano	CM24	18.720487	-70.612104	11/8/2016 13:48	5/12/2017 5:00

Table 2 : Effort table with total data collected, and effort lost due to poor microphone quality

SPID	Total Nights	Total Hours	Corrected Nights	Corrected Hours	Nights Lost	Percent Nights Lost	Hours Lost	Percent Hours Lost
Ajeno 1	128	311.15	128	310.35	0	0	0.80	0.00
Carretera 1	113	273.48	113	273.21	0	0	0.27	0.00
Carretera 2	113	275.73	113	273.15	0	0	2.58	0.01
Carretera 3	122	293.26	122	293.21	0	0	0.05	0.00
Conuco Radhames	126	302.69	126	302.07	0	0	0.62	0.00
Fresa 1 b	78	184.7	78	184.7	0	0	0.00	0.00
Fresa 3 b	123	295.36	123	285.23	0	0	10.13	0.03
Fresa 4	69	171.83	69	171.83	0	0	0.00	0.00
Las Neblinas	118	282.95	118	273.51	0	0	9.44	0.03
Las Pozas Sitio Camano	121	292.18	121	290.92	0	0	1.26	0.00
Total	**1111**	**2683.33**	**1111**	**2658.18**	**0**	**0**	**25.15**	**0.01**

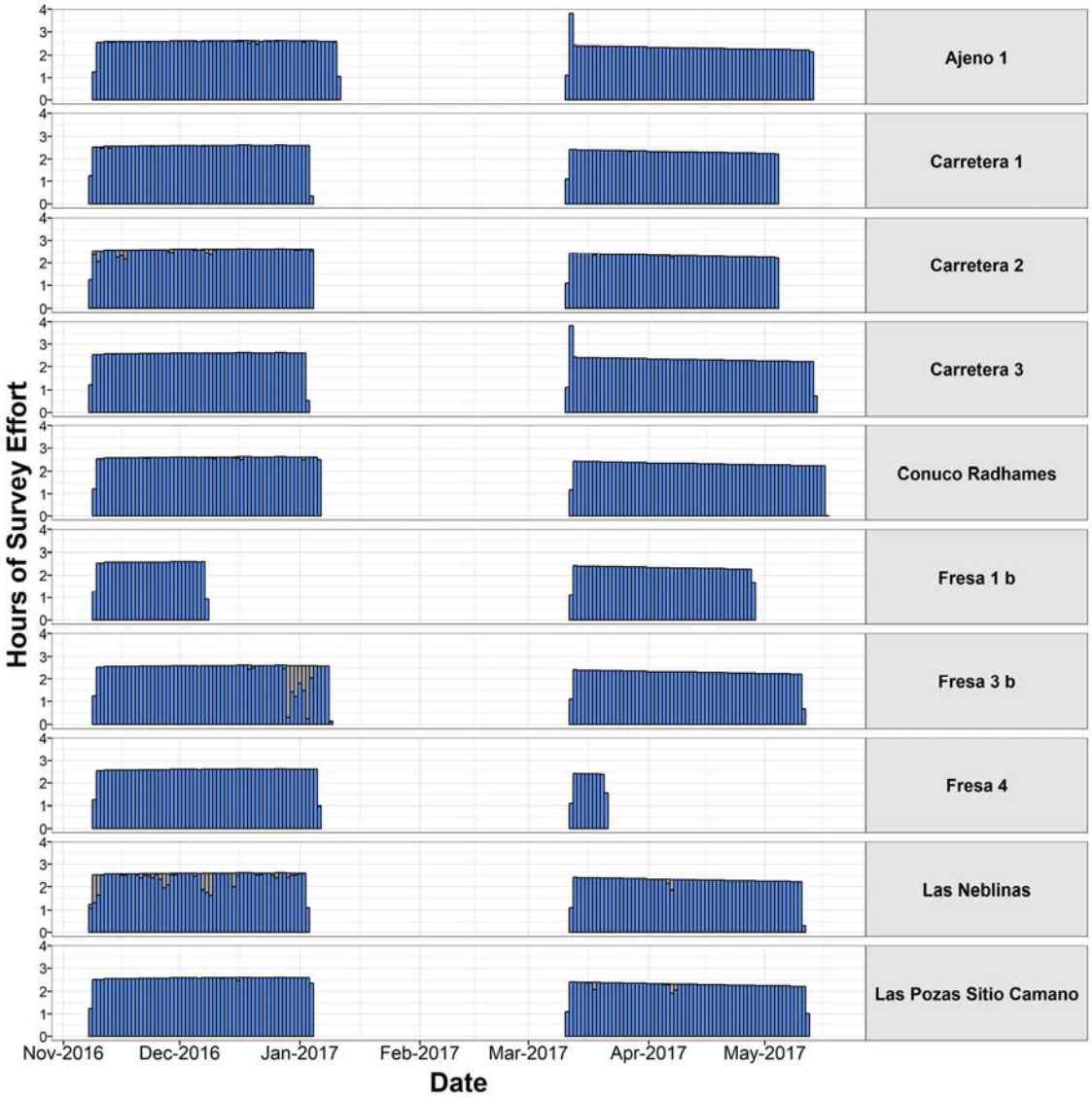

Figure 2 : Hours of recording effort at each site. Grey portions of bars represent data removed from analysis because it did not meet recording quality standards.

Acoustic Activity

Black-capped Petrel calls were detected at three of the nine exploratory survey sites in Valle Nuevo (Figure 4, Figure 5

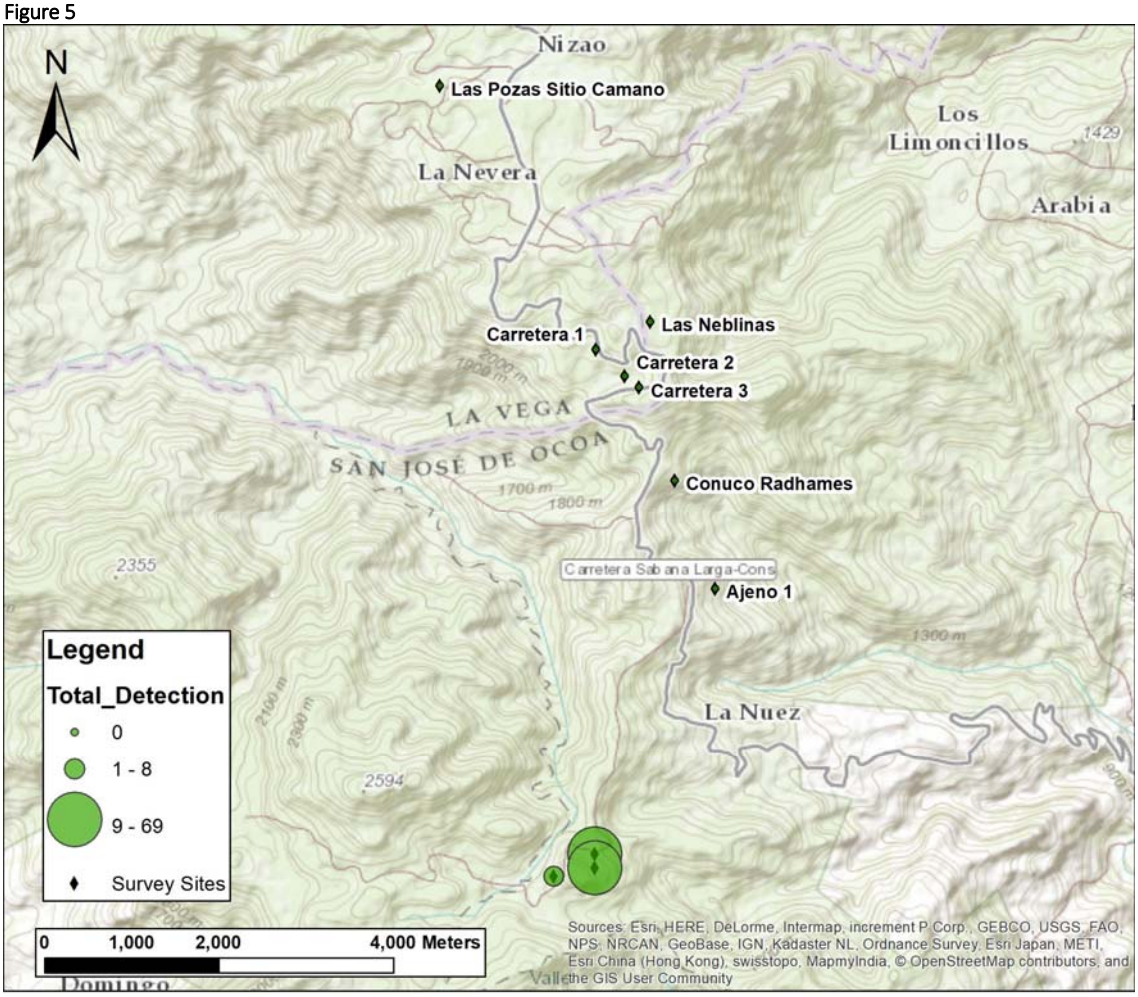

Figure 4). Survey sites at Fresa 3b and Fresa 4 both had 69 calls detected and the recorder at Fresa 1b detected 8 calls (Table 3). Activity at Fresa 3b and Fresa 4 was detected November to January (Figure 5), but at low rates suggesting that these locations may be near breeding sites or they are along flight paths that continue further inland. Nightly activity rates are different between Fresa 3 and Fresa 4 indicating that they were not recording the same individual calls even though we detected 69

calls at each of the sites. There were no calls detected during the second survey period March-May. Activity was largely detected from 2 to 5 hours after local sunset (Figure 6).

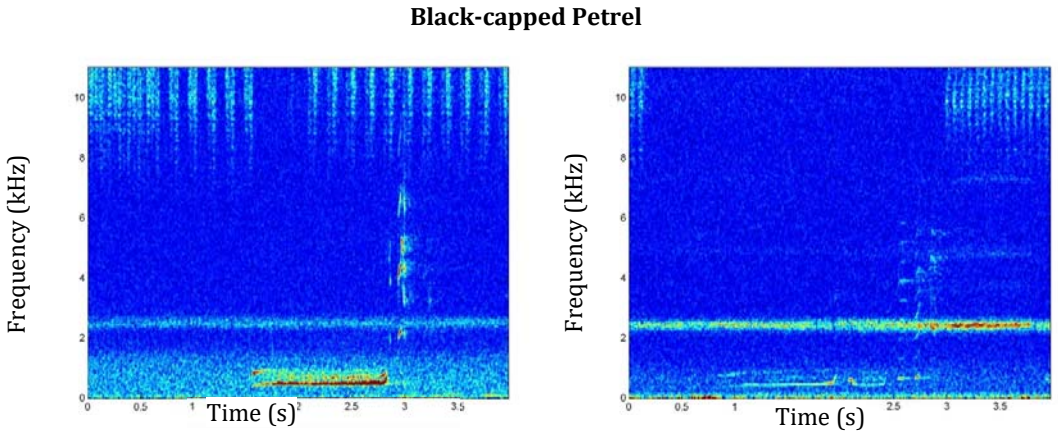

Figure 3: Spectrogram of Black-capped petrel calls recorded on Hispaniola. (a) Fresa 3b, 11-22-2016 04:00:51; (b) Fresa 4, 11-22-2016 03:05:29

Table 3: Black-capped Petrel acoustic activity detected at exploratory sites in Valle Nuevo, Dom. Rep.

SPID	Total Detection	Rate Per Min	N	sd	se
Ajeno 1	0	0.0000	128	0.0000	0.0000
Carretera 1	0	0.0000	113	0.0000	0.0000
Carretera 2	0	0.0000	113	0.0000	0.0000
Carretera 3	0	0.0000	122	0.0000	0.0000
Conuco Radhames	0	0.0000	126	0.0000	0.0000
Fresa 1 b	8	0.0007	78	0.0035	0.0004
Fresa 3 b	69	0.0036	123	0.0139	0.0013
Fresa 4	69	0.0064	69	0.0238	0.0029
Las Neblinas	0	0.0000	118	0.0000	0.0000
Las Pozas Sitio Camano	0	0.0000	121	0.0000	0.0000

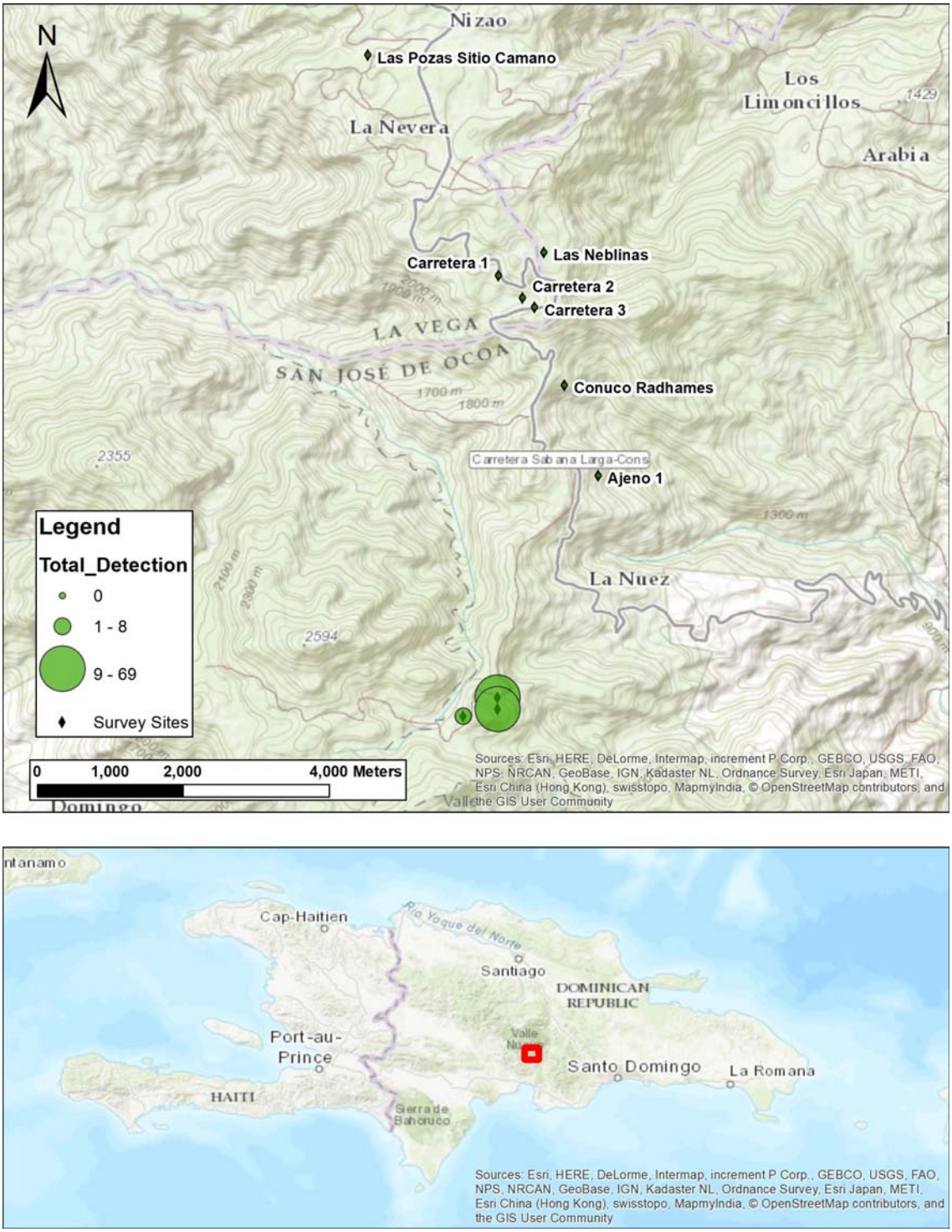

Figure 4: Black-capped Petrel calls were detected at 3 exploratory survey sites in Valle Nuevo. No calls were detected at the other survey sites.

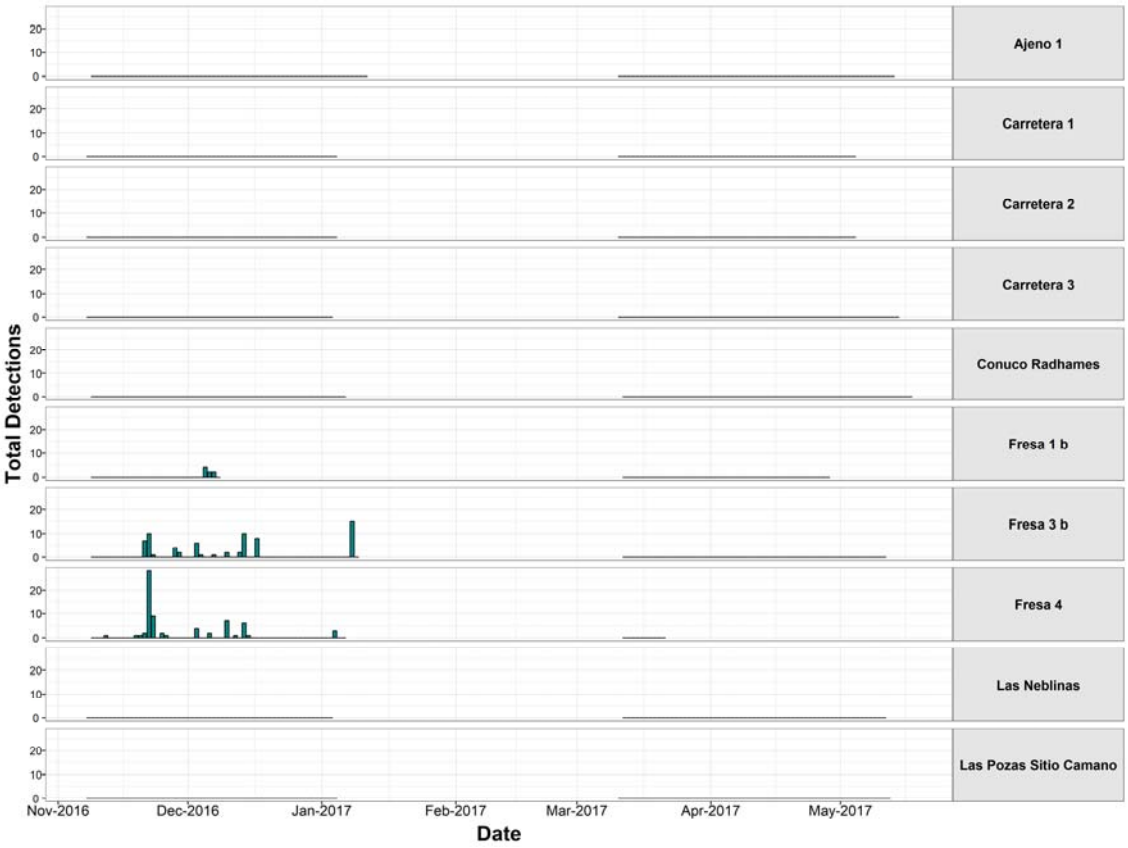

Figure 5: Total Black-capped Petrel calls detected by night and site in Valle Nuevo, Dom. Rep.

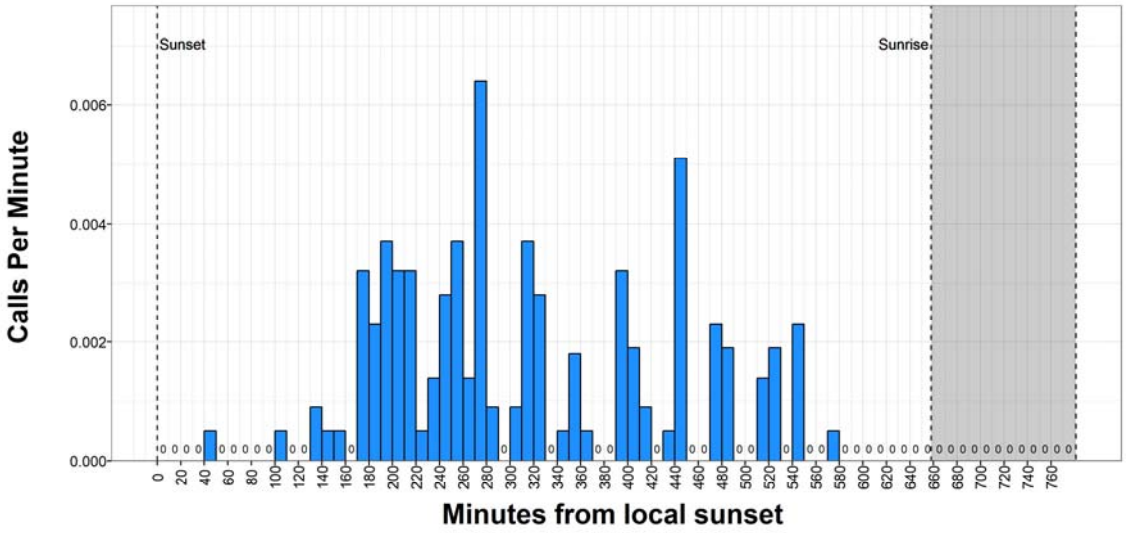

Figure 6: Black-capped Petrel acoustic activity on Hispaniola as a function of minutes from sunset. Data are presented as call rate averages for ten minute bins starting at sunset.