




CENSUS OF THE AMERICAN FLAMINGO *PHOENICOPTERUS RUBER*
(PHOENICOPTERIFORMES: PHOENICOPTERIDAE) IN HAITICenso del flamenco americano *Phoenicopterus ruber*
(Phoenicopteriformes: Phoenicopteridae) en HaitíJoel Timyan^{1*}, Anne-Isabelle Bonifassi^{1a} and Jean-Marry Exantus²¹Haiti National Trust (HNT), #20 rue Faubert, Suite 3, Pétion-Ville, Haïti. ^ahnt.aibonifassi@gmail.com,
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ABSTRACT

An aerial census of the American Flamingo (*Phoenicopterus ruber*) was conducted during February 20–27, 2024, in Haiti. Nineteen wetland sites were surveyed by fixed-wing aircraft over 4 days. Flamingos were detected at 5 sites and totaled an estimated 1333 individuals. The highest number of individuals was observed at the Estère mangroves and wetlands (1000), followed by Lac Azuéi (229), Lagon Grand Vide (76), Ile-à-Vache (25) and Pointe Mangle (3). It was not possible to census all the areas in Haiti where flamingos are known or expected to occur. Coastal areas that were omitted from this census included the western Tiburon Peninsula, the Cayemites, the Northwest, the Southeast and Tortuga Island. The census is likely an underestimate of the actual population in Haiti during the period of the study. Historical and recent data were compiled to map the distribution of the species in Haiti. It is recommended that Haiti increase the area of protected wetlands to ensure adequate feeding and resting habitats, but also to expand their spatial and temporal coverage and ensure conditions for breeding residents.

Keywords: Caribbean, Hispaniola, Haiti, American Flamingo, *Phoenicopterus ruber*, bird census.

RESUMEN

Un censo aéreo del flamenco americano (*Phoenicopterus ruber*) se llevó a cabo durante el 20 al 27 de febrero de 2024 en Haití. Diecinueve sitios de humedales fueron inspeccionados por avión de ala fija durante 4 días. Los flamencos fueron avistados en 5 sitios, totalizando aproximadamente 1333 individuos. La mayor cantidad de individuos se observó en los manglares y humedales de Estère (1000), seguidos por Lac Azuéi (229), Lagon Grand Vide (76), Ile-à-Vache (25) y Pointe Mangle (3). No fue posible censar todas las áreas en Haití donde se sabe o se espera que habiten flamencos. Las áreas costeras que fueron omitidas de este censo



incluyeron la península occidental de Tiburón, las Cayemites, el Noroeste, el Sureste y la Isla Tortuga. Es probable que el censo subestime la población real en Haití durante el período del estudio. Se recopilieron datos históricos y recientes para mapear la distribución de la especie en Haití. Se recomienda que Haití aumente el área de humedales protegidos para asegurar hábitats adecuados de alimentación y descanso, pero también para expandir su cobertura espacial y temporal y garantizar condiciones para los residentes reproductivos.

Palabras clave: Caribe, La Española, Haití, flamenco americano, *Phoenicopterus ruber*, censo de aves.

INTRODUCTION

The American Flamingo (*Phoenicopterus ruber*), also known as the Caribbean Flamingo, is among the most iconic and recognizable waterbirds in Haiti. While the population of the American Flamingo appears to be stable and globally expanding within its natural range from North America to South America and the Caribbean (Sanz d'Angelo, 2019; Torres-Cristini et al., 2020; BirdLife International, 2021; Frias-Soler et al., 2022), certain regions within the Caribbean may be experiencing declines due to habitat loss, hunting and declines in habitat quality (Keith et al., 2003; Paulino et al., 2010). In Haiti, the flamingo appears to be mostly a nonbreeding visitor, primarily from Great Inagua, Bahamas and possibly Cuba, with its current status as a breeding resident somewhat doubtful (Keith et al., 2003). In this study, we report the results of an aerial survey of American Flamingo conducted February 20–27, 2024. This was part of an effort by the American Flamingo Conservation Group to census this species within its range in the Caribbean area during the same period. Haiti National Trust (HNT) led the survey in Haiti.

OBJECTIVES

- The aim of the study was to detect the presence/absence of the American Flamingo in coastal wetland and inland bodies of water in Haiti during the February 2024 period census of the species in the Caribbean and to compare results with previous studies over the last few decades.

MATERIALS AND METHODS

Study Area

The study area, Haiti, is in the Caribbean, between 18° and 20° North latitudes and 71.5° and 74.5° West longitudes. It occupies the western third of the island of Hispaniola, with a land area of 27 750 km². It is bordered to the north by the Atlantic Ocean, to the east by the Dominican Republic, to the south by the Caribbean Sea and to the west by the Windward Strait, which separates it from the island of Cuba.

We selected 25 sites to survey where the American Flamingo is known to occur or documented to be present, based on past studies. Four sites in the Estère mangroves were combined to form one polygon that we called “Mangroves de l’Estère”. We were limited in the number of sites we could survey due to logistical constraints and resource limitations.

Data Collection

At each site, we counted birds using aerial survey methods described in Cézilly et al. (1994) and Redfern et al. (2002). The surveys were flown with a 2023 Cessna 182T (230 HP), flying at altitudes ranging from 250–300 m and speeds averaging 170 km/hr. Our surveys were conducted on 4 days between February 20–27, 2024 and during the hours of 11h20–13h30. A pair of KITE 8×23 binoculars were used to observe standing individuals. We also counted flocks by doing a quick count and noting in the field notebook the number of individuals in each group and summing these for the site. Visits were kept to a minimum to avoid disturbance from aircraft noise. Aerial photos were taken with 2 cameras and by 2 photographers: Canon EOS R6 + Sigma EF 70–200 mm f2.8 lens and a Sony ZVE10 + Tamron 17–70 mm f.2.8 lens. The photos were used to confirm our visual counts and archived with HNT.

A literature search and a review of available checklists were conducted to identify all the locations where flamingos have been observed in Haiti to date. The sites were georeferenced, and an ArcGIS polygon shapefile was created to map the flamingo observation areas with an attribute table that included Location, Area (km²), Perimeter (km), Centroid_X, Centroid_Y, Spatial Reference, Event Date, Event Time, Total Count, Field Notes, Compiler, Year Compiled and Citation.

RESULTS

It was not feasible to survey all the locations as planned due to logistical constraints and inclement weather. We were able to survey 19 of the 25 sites over the course of 4 days beginning February 20 and ending February 27. The nineteen sites were estimated to cover 314.2 km² and ranged from 0.1–116.4 km². Figure 1 shows a total of 38 sites, subdivided in our survey sites and other sites where the American flamingo has been documented in Haiti. The survey area of Site 14 (*Mangroves de l'Estère*) includes 3 separate locations (sites 13, 15, 16) referenced in Ottenwalder et al. (1990).

An estimated total of 1333 flamingos were counted at 5 sites, with the number of individuals varying between 3–1000 flamingos. The latter count was recorded on February 22 at the Estère mangroves and wetlands, representing three-quarters of the total number of flamingos counted during the census. The fewest number was recorded earlier on the same day at Pointe Mangle, La Gonâve. The number of groups observed at each site ranged from 1–12 and group sizes ranged from 3–130. The results of the census are summarized in Table I. It was not possible to survey five of the planned sites in northern and southeastern Haiti nor the coastal wetlands of the western Tiburon Peninsula and Northwest Haiti.

In addition to the census sites, an historical review (1928 to present) of flamingo observations in Haiti is summarized in Table II. The table shows the maximum number of individuals recorded for 38 sites. It is noted that as a result of this study, the greatest numbers of flamingo were recorded at 9 locations – 3 locations from this census, 3 locations from the field notes of D. G. Crouse, Jr. (Crouse, 1998; 2001; 2005), 2 from the checklists of J. Goetz (Goetz, 2019a; 2019b) and 1 from the checklist of M. McGovern (McGovern, 2018). Figure 2 shows a flock of adult and immature flamingos at Lagon-aux-Boeufs as part of the observations by M. McGovern. Most of the months of the year are represented with May being the most frequent. This may be significant since it falls within the April – August breeding season (Torres-Cristiani et al., 2020).

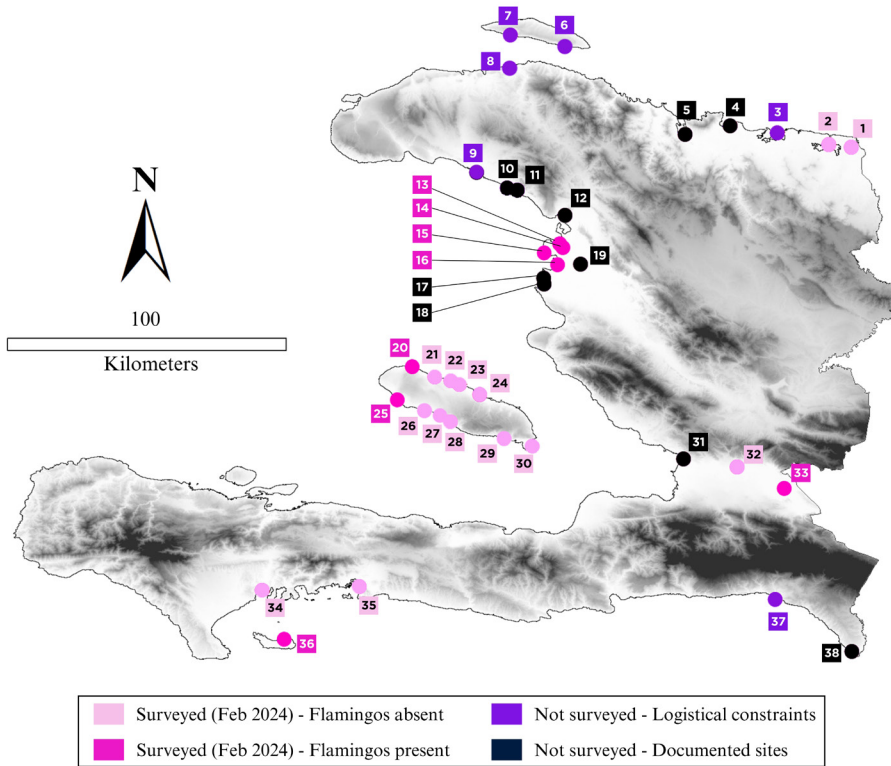


Figure 1. Map showing American Flamingo sites in Haiti. 1- Lagon-aux-Bœufs, 2- Baie de Fort Liberté, 3- Baie de Caracol, 4- Cap Haïtien, 5- Baie de l'Acul, 6- Basse Terre, 7- Trou Vasseux, 8- Saline Michel, 9- Petit Port-à-Piment, 10- Pointe Coridon, 11- Ti l'Étang, 12- Baie de Gonaïves Nord, 13- Baie de la Tortue, 14- Mangroves de l'Estère, 15- Pointe de la Grande Pierre, 16- Lagon Grande Saline Nord, 17- Grande Saline, 18- Lagon Grande Saline Sud, 19- Desdunes, 20- Pointe Mangle, 21- Gros Mangle, 22- Richard, 23- La Cayenne, 24- Grand Lagon, 25- Lagon Grand Vide, 26- Source-à-Philippe, 27- Chic Kata, 28- Bois Verna, 29- Trou Jacques/Picmi, 30- Grand Lagon Sud, 31- Baie de Port-au-Prince Nord, 32- Trou Caïman, 33- Lac Azuéi, 34- Baie des Flamands, 35- Baie d'Aquin, 36- Ile-à-Vache, 37- Lagon des Huîtres, 38- Anse-à-Pitres.

Table I. Summary of the American flamingo observed during this survey.

Name of site (Time, Day)	Centroid Lat./Long.	Number of flamingos	Percentage (%)	Number of groups	Group size range
Lac Azuéi (13h20, Feb. 20)	18.5692 -71.9915	229	17.2	5	12–110
Mangroves de l'Estère (12h30, Feb. 22)	19.3521 -72.7113	1000 (est.)	75.0	12	80–130
Pointe Mangle (12h00, Feb. 22)	18.9658 -73.1922	3	0.2	1	3
Lagon Grand Vide (11h30, Feb. 22)	18.8871 -73.2655	76	5.7	4	12–25
Ile-à-Vache (12h25, Feb. 27)	18.0861 -73.6098	25	1.9	2	9–16

Table II. Locations and dates where *Phoenicopterus ruber* have been observed in Haiti. Several locations are indicated as "Present" where historical data are lacking individual counts.

Map No.	Location	Date	Maximum No. Observed	Source
1	Lagon-aux-Bœufs	Oct 2018	24	McGovern, 2018
2	Baie de Fort Liberté	Jan 1948	150	Allen, 1956
3	Baie de Caracol	Jun 2015	15	Kramer et al., 2016
4	Cap Haïtien	NA	Present	Ottenwalder et al., 1990
5	Baie de l'Acul	NA	Present	Ottenwalder et al., 1990
7	Trou Vasseux, Ile de la Tortue	May 1983	50	Ottenwalder et al., 1990
9	Petite Port-à-Piment	Sep 1998	12	Crouse, 1998
10	Pointe Coridon	May 1983	2	Ottenwalder et al., 1990
11	Ti L'Etang	May 1983	2	Ottenwalder et al., 1990
12	Baie de Gonaïves Nord	Oct 2001	20	Crouse, 2001
13	Baie de la Tortue	May 1983	65	Ottenwalder et al., 1990
14	Mangroves de l'Estère	Feb 2024	1000	This study & Crouse, 2020
15	Pte de la Grande Pierre	May 1982	240	Ottenwalder et al., 1990
16	Lagon Gde Saline Nord	May 1982	165	Ottenwalder et al., 1990
17	Grand Saline	Jul 1927	150	Danforth, 1929
18	Lagon Gde Saline Sud	May 1982	215	Ottenwalder et al., 1990
19	Desdunes	Apr 1927	27	Wetmore & Swales, 1931
20	Pointe Mangle, La Gonâve	Feb 2024	3	This study
21	Gros Mangle, La Gonâve	May 1982	3	Ottenwalder et al., 1990
22	Richard, La Gonâve	June 1983	35	Ottenwalder et al., 1990
23	La Cayenne, La Gonave	May 1982	5	Ottenwalder et al., 1990
24	Grand Lagon, La Gonâve	May 1982	13	Ottenwalder et al., 1990
25	Lagon Grand Vide, La Gonâve	Feb 1928	100	Bond, 1928
27	Chic Kata, La Gonâve	Aug 1927	36	Wetmore & Swales, 1931
31	Baie de Port-au-Prince Nord	Aug 1984	15	Ottenwalder et al., 1990
32	Trou Caïman	Mar 2005	500	Crouse, 2005
33	Lac Azuéli	Jan 1976	350	Ottenwalder et al., 1990
34	Baie des Flamands	NA	Present	Ottenwalder et al., 1990
35	Baie d'Aquin	NA	Present	Ottenwalder et al., 1990
36	Ile-à-Vache	Feb 2024	25	This study
37	Lagon des Huitres	Nov 2019	20	Goetz, 2019b
38	Anse-à-Pitres	Oct 2019	4	Goetz, 2019a



Figure 2. Flock of American Flamingo at Lagon-aux-Boeufs, Haiti. Photo: Michael McGovern.

DISCUSSION

Population Trends and Distribution. Our comparison with previous studies reveals the presence of flamingos in areas similar to our own study area (Keith et al., 2003; Ottenwalder et al., 1990; Wiley & Wiley, 1979). We observed flamingos in a quarter of the 19 sites we surveyed, including a new recorded site (Pointe Mangle), and a site where the bird was no longer thought to be present on Ile-à-Vache (Ottenwalder et al., 1990; Brooks & Davalos, 2001). Other studies have shown the occurrence of flamingos at sites where we did not detect a presence during the census, including Lagon-aux-Boeufs, Baie de Fort Liberte, Trou Caïman, Baie d'Aquin and Baie des Flamands (Crouse, 2005; McGovern, 2018; Ottenwalder et al., 1990; Wiley & Wiley, 1979). Ottenwalder et al. (1990) reported dozens of individuals at Trou Vasseux, Ile de la Tortue, but we were not able to survey this area.

Our census of 1333 individuals appear to be an average for Haiti. Ottenwalder et al. (1990) estimated that populations can vary from 300–1500, peaking to about 3000 during the wintering non-breeding season. The census results are encouraging, since the same estimate at the Estère mangroves was also observed over 24 years ago (Crouse, 2000). These wetlands of the Artibonite River delta remain the most important flamingo site in Haiti. It is possible that gang-related activity in Gonaïves, causing the displacement of residents to other regions of the country, was in favor of the number of birds we observed at this site.

The second most important site in Haiti is Lac Azuéï and nearby Trou Caïman. The latter site was studied by D. G. Crouse, Jr., whose near monthly observations during the 1999–2005 period are noteworthy. Flamingos were observed on 55 of 56 days he visited the lake and during every month of the year. Counts ranged from a single bird to an estimated 500–600. The only day he reported no birds was in January 2004, several days after a flamingo hunting incident (Crouse, 2004). The counts show a slight seasonal trend in higher monthly averages during the non-breeding months of May–December. Numbers regularly exceeded 200–300 individuals with a notable presence of immatures. These trends suggest that our February census may not have captured the maximum numbers possible. Substantial fluctuations occur from year to year

as noted by Keith et al. (2003) and Ottenwalder et al. (1990). The birds observed at Lac Azuëi also frequent Trou Caïman – a reason that may explain their absence at Trou Caïman on the day that we surveyed.

The flamingo sites shown in Figure 1 are likely incomplete insofar that numerous coastal wetlands that provide suitable habitat for flamingos have yet been studied. These include the northern coast of the Tiburon Peninsula (e.g., Baradères-Cayemites Managed Resources Protected Area) and the coastal salt flats between Jean Rabel and Port-de-Paix.

A sample comparison of our census with other countries conducted during February 2024 are the reports of 101 flamingos in Florida, USA; 1100 in the Dominican Republic and 5303 in the Turks & Caicos (Audubon Florida, 2024; Fernández, pers. comm., 20 May 2024). We agree with Audubon Florida (2024) that these counts should be considered a minimum due to the difficulty of censusing a readily mobile and widely distributed species. These census counts also need to be understood in the context of the ongoing and dynamic re-distribution of the American flamingo population. It appears to be expanding its range north, but also into other regions of South America (Torres-Cristiani et al. 2020).

Conservation. Our results confirm that, despite Haiti's alarming environmental situation over recent decades, favorable habitats remain available for the American flamingo. Three of the sites that were surveyed are recognized as Important Birds Areas (Sergile, 2008) and several of the sites are protected areas. The latter include Lac Azuëi National Park, Trois Baies Protected Area, Cacique Henri Municipal Park, Lagon-des-Huitres National Park and the Port Salut- Aquin Managed Resources Protected Area that includes Ile-à-Vache. Two additional areas are in the process of being officially declared as protected areas – the Quatre Baies Protected Area that includes the Estère mangroves and La Tortue Protected Area (Oriol, pers. comm., 20 March 2024).

The findings and recommendations of Paulino et al. (2010) should be carefully reviewed and prioritized in Haiti for their feasibility, considering the challenging socio-economic, political and security issues at hand. Long term lease arrangements, including land cadasters and a communications strategy led by the Comité Interministeriel d'Aménagement Territoire (CIAT), need to be launched, targeting the most important flamingo habitats. This approach has shown success by HNT in other areas of Haiti and should be considered for coastal and inland wetlands important to the flamingo. Once the land ownership and tenure issues are resolved, then investments in land management can proceed, including awareness campaigns, economic assistance to local communities, research and monitoring efforts and protection measures.

CONCLUSIONS

The February 2024 flamingo census and our review of past observations in Haiti resulted in total numbers that appear average for the country. We confirmed that the American Flamingo can re-visit sites that were previously abandoned (Ile-à-Vache), occur at sites that were not previously recorded (Pointe Mangle) and frequent certain areas throughout the year (Estère mangroves, Trou Caïman/Lac Azuëi). While we have concerns that ongoing hunting pressures and the lack of effective protective measures are a serious problem, the existing and

proposed protected areas offer hope that future and improved conservation management can indeed secure sufficient habitat and perhaps provide the conditions required for breeding.

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