Department of Land and Natural Resources

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Paikō Lagoon State Wildlife Sanctuary

Waterbird Report, 2023

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I. Overview

Paikō Lagoon State Wildlife Sanctuary (hereafter ‘Paikō Lagoon’) is a 37-acre coastal wetland located on the south shore of O‘ahu, Hawai‘i. This wetland was established as a sanctuary in 1974. Historically, Paikō Lagoon was part of a large network of coastal estuary wetlands in East Honolulu, which created an interface between the Ko‘olau Range and Maunalua Bay. Today Paikō Lagoon is the only extant wetland within the Maunalua Bay coastal environment. Various migratory shorebirds and waterbirds use this wetland including the endangered Hawaiian stilt (*Himantopus mexicanus knudseni*). Paikō Lagoon is managed to increase endangered waterbird abundances and provide habitat for migratory birds.

II. Habitat Management

Habitat management at Paikō Lagoon was minimal for 2023. Milo (*Thespesia populnea*) and kiawe (*Prosopis pallida*) trees were thinned in areas to improve visibility and create more favorable habitat for waterbirds that prefer open areas to forage, nest, loaf, and roost.

III. Waterbird Monitoring

a. Waterbird Surveys

1. Methods

Surveys.—A census technique was employed to count all waterbirds present using the direct count method. Waterbird surveys were conducted using consistent observation points to maintain consistency amongst different observers. When conducting waterbird surveys observers survey the man-made Pond area to the east of the gate entrance (Figure 1). Next, the lagoon was surveyed by observing birds in between the sandbar and peninsula (usually mudflat). The sandbar and lagoon area are counted next by walking as far west as possible on the piece of land that juts toward the lagoon from the inside most projection.

On each visit, overall wetland condition (i.e., water level, vegetation cover, human impact, and shoreline condition) and weather (i.e., rainfall, wind speed, and cloud cover) were recorded for each basin or pond. Chicks and fledglings were recorded separately for each of the endangered wetland birds and all banding information observed was recorded.

Habitat Use. —Microhabitat was assessed for all the endangered birds encountered. Microhabitat was identified as: *open mudflat*, *vegetation*, *0–3” water*, *3–6” water* and *>6” water*. Specific nesting activities measured include: pairing, territory, and survival rates of chicks to fledgling stage. *Open mudflat* is defined as exposed or bare soil with no emergent vegetation; *vegetation* is emergent vegetation with small pockets of mudflat or water present; *0–3” water* is water no deeper than the tarsal-tibiotarsal joint (i.e., joint visible) for stilts and walking in water for coots and gallinules; *3–6” water* is deeper than the tarsal-tibiotarsal joint (i.e., joint not visible) for stilts and swimming for coots and gallinules; and *>6” water* is such that no part of the leg is visible in stilts, for coots and gallinules depth of water must be estimated by reading the nearest water gauge.

Fledging success.—Hawaiian Stilt fledging success was measured using this formula: (# of observed fledglings/# of observed chicks) x 100 = % fledging success.

2. Results

Surveys.—A total of 27 waterbird surveys were conducted in Paikō Lagoon in 2023. Mean abundances (range) in 2023 for Hawaiian stilt were 4.4 (0–16) individuals (Figure 2). Stilts were observed more commonly in the lagoon section of the sanctuary (average 3.2 stilts per survey) when compared with the pond area (average 1.3 stilts per survey).

Habitat Use.—The Hawaiian Stilt was found in open mudflat and 0–3" water in 93% of the observations.

Nesting success.—One stilt pair attempted two nests. The first nest contained three eggs and all hatched. All chicks failed before 5/3/2023 which is the start of the second nest attempt. The second nest had four eggs total and likely hatched; no fledglings were observed.

Fledging success.—None to report.

3. Long-term Stilt Population Analysis

Survey.—A total of 205 waterbird surveys were conducted during 2017–2023 (*n*=11, *n*=32, *n*=35, *n*=37, *n*=38, *n*=25, *n*=27, respectively). The average stilt abundance for those years was 3.7 individuals (Figure 3).

IV. Conclusions and Goals for 2024

The average stilt abundance in Paikō Lagoon has increased since 2017 mostly due to the successful nest in 2018 which produced 4 fledglings (3 of the chicks were banded and were observed frequently). Subsequent nest attempts in 2019–2023 failed to produce any fledglings. Reasons for chick failure were unknown, therefore, management had no knowledge to drive potential mitigation. In the future, chicks could be tracked more closely to determine cause of mortality.

In terms of the long-term population trend at Paikō Lagoon, stilts are stable. Population growth requires productivity and from 2019–2023 no successful fledglings have been observed.

V. Appendix

a. List of Figures and Tables

Figure 1. Map of Pond and Lagoon at Paikō Lagoon State Wildlife Sanctuary on Oʻahu, Hawaiʻi, USA. The solid yellow dot marks the start of the survey and follows along the yellow dotted line and ends at the yellow x.

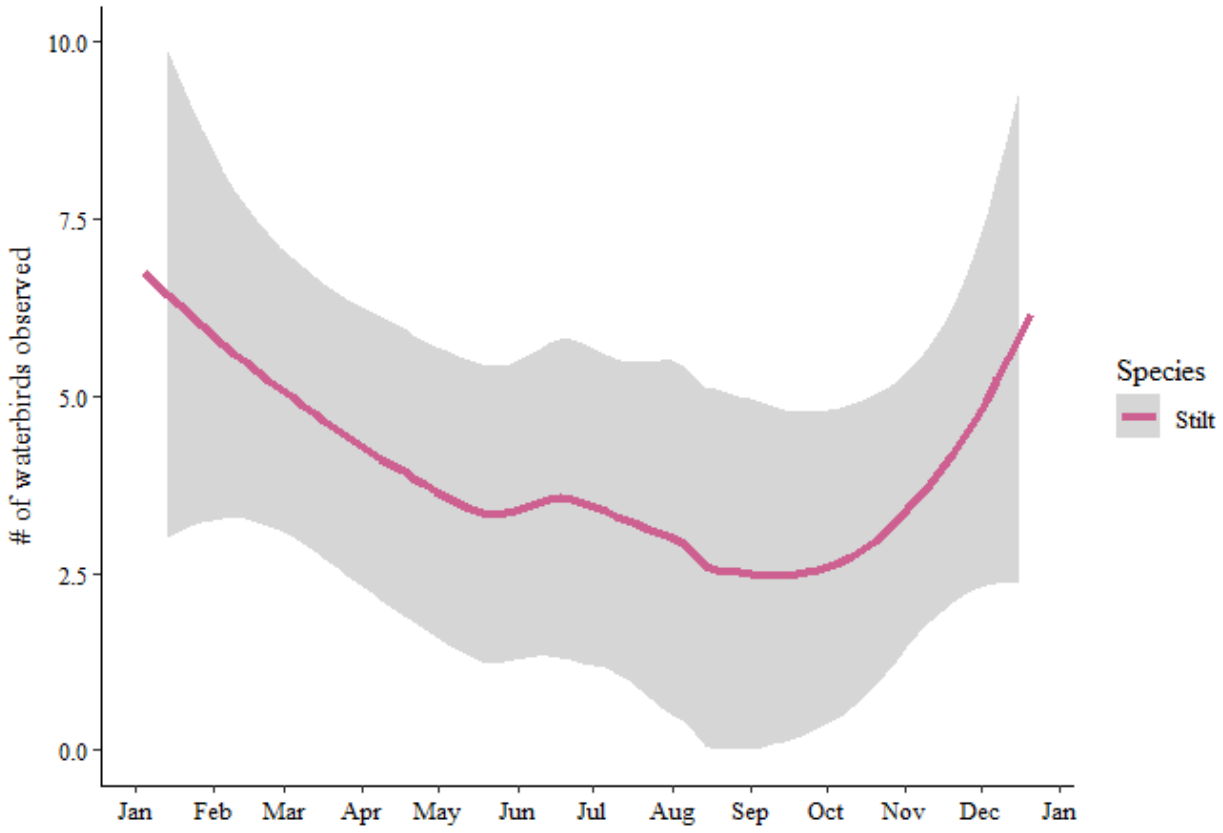

Figure 2. The number of stilts observed per survey in 2023 at Paikō Lagoon State Wildlife Sanctuary, Oʻahu, Hawaiʻi, USA.

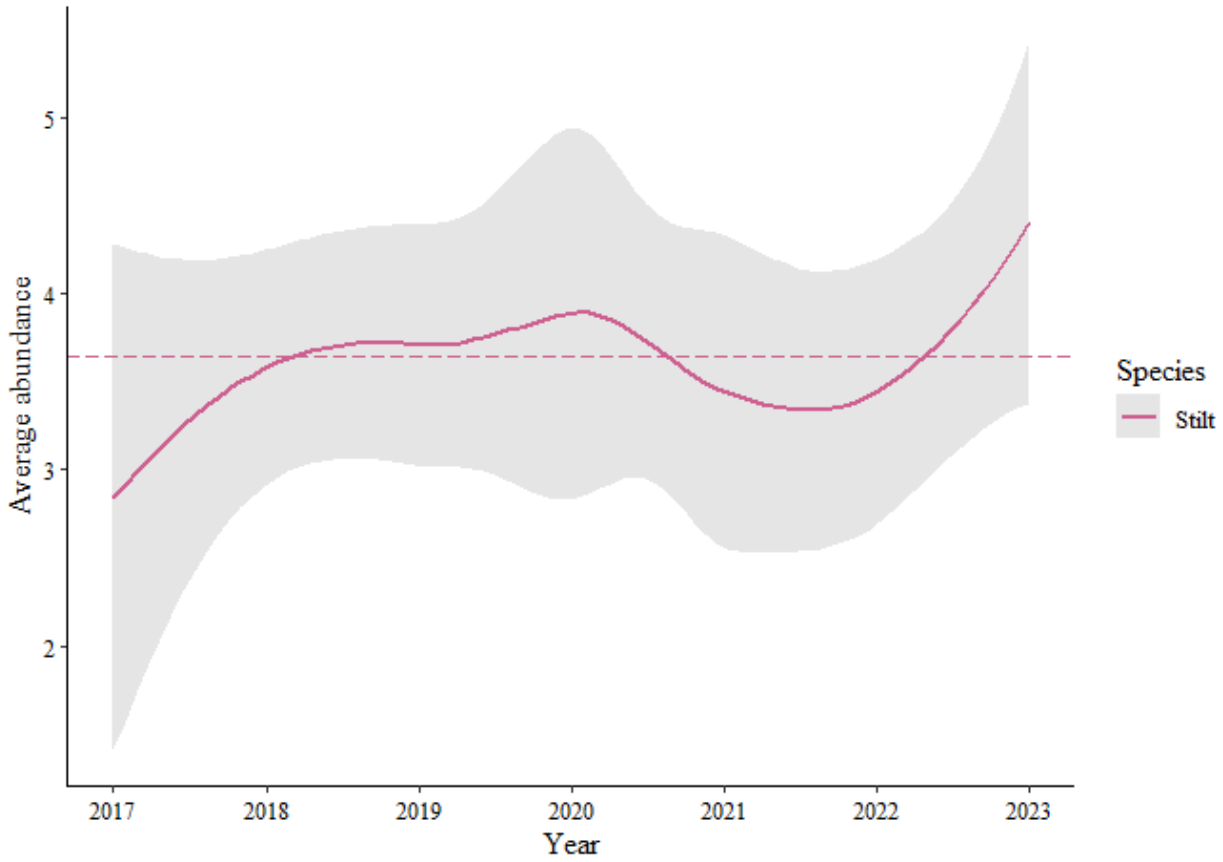

Figure 3. Average abundances for stilts from 2017 through 2023 at Paikō Lagoon State Wildlife Sanctuary, Oʻahu, Hawaiʻi, USA. Gray shaded areas are 95% confidence intervals, horizontal dash represents the average abundance over the span 2017–2023 (3.65 stilts).