



Figure 1. Volunteer participation makes the annual colony censuses possible. ©Christiaan Phleger.

2024 Shearwater Nesting at Freeman Seabird Preserve:

'Ua'u kani Respond to La Niña Conditions

By K. David Hyrenbach, Professor of Oceanography

Hawai'i Pacific University, khyrenbach@hpu.edu

We report on the ongoing monitoring and restoration efforts of the Freeman Seabird Preserve (FSP) by Hawai'i Audubon Society and Hawai'i Pacific University (HPU) since 2009, share findings from the 2024 breeding season, and briefly discuss the plans for future monitoring, habitat restoration, and predator control at the site.

2024 Update

With participation of 20 volunteers, we counted the number of Wedge-tailed Shearwaters (*Ardenna pacifica*) nesting at FSP during the incubation (July 14) and early chick-rearing (September 14) periods

(Fig. 1). In July, we documented 482 active nests, which is the highest count to date and surpasses the previous record of 427 nests observed in 2023 (Hyrenbach & Piauwasdy 2024).

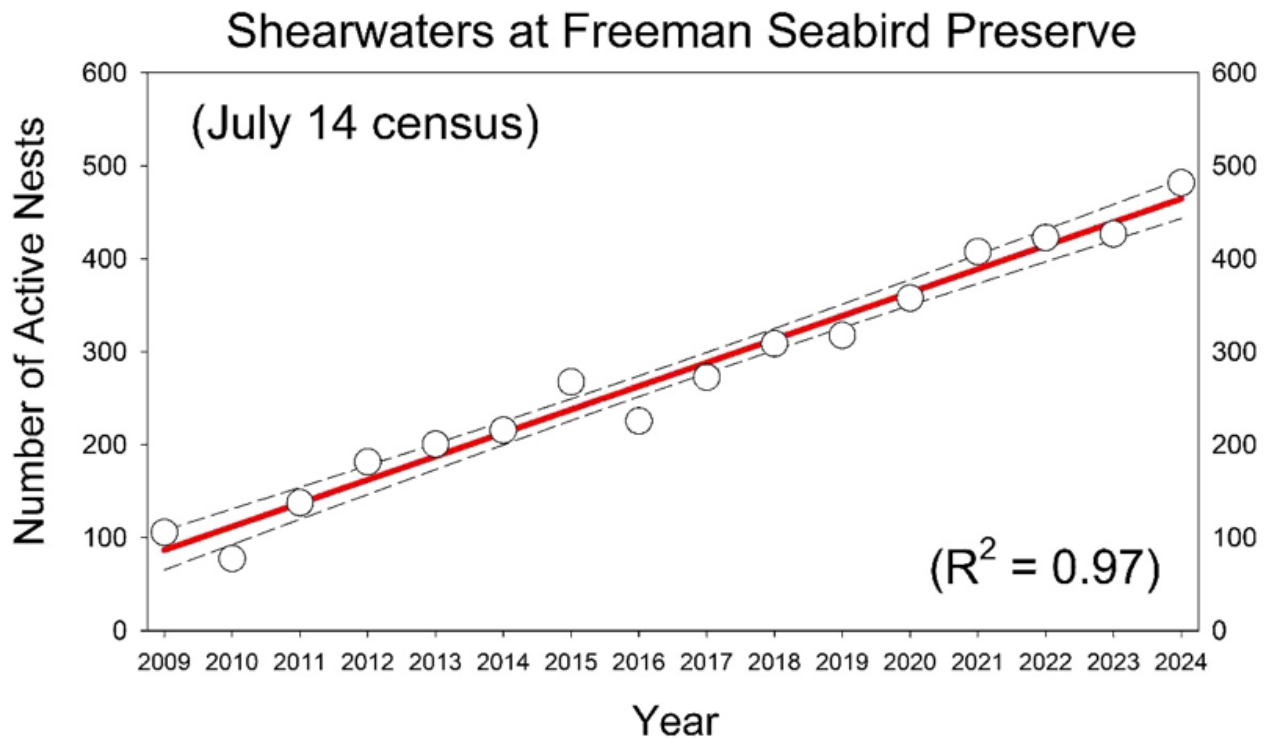


Figure 2. Trend in the number of Wedge-tailed Shearwater active nests, derived from the annual colony-wide census during the peak incubation period (July 14), showing the best-fit linear regression (solid line) and the 95% confidence interval envelope (dashed lines).

Overall, the annual population surveys show a statistically significant increase ($F = 503.828$; $df = 1, 14$; $p < 0.001$) with an average of 25.18 (± 4.5 S.D.) additional nests per year, which captures 97% of the variability in the 16-year time series (2009-2024; Fig. 2). This trend suggests that the colony continues to grow, in part due to the collaborative restoration efforts. In particular, after the small increase in the number of breeding shearwaters (0.9%) we documented in 2023, this year's census was 12.9% higher than last year's count.

The July 14 count of 482 active nests (occupied by an incubating adult or an egg) was followed by a count of 322 chicks on September 14. This represents a loss of 33.2% of the nests during the two-month period following peak egg laying and the first half of chick rearing. This loss rate is higher to those documented during the same time period of the 2023 El Niño year (27.9%) and the three preceding La Niña years: 2022 (22.7%), 2021 (25.0%) and 2020 (26.8%) (Hyrenbach & Piauwasdy 2023, 2024). Weekly checks of 54 monitoring nests suggests that 60% (6 of 10) of the nest failures occurred early in the season (August 6 – September 11), when 3 eggs (1 broken, 1 unhatched, 1 disappeared) and 3 chicks (1 dead in the nest, 2 disappeared) were lost.

Additionally, 40% (4 of 10) of the monitoring nest failures occurred after the September 14 census, when chicks disappeared. While it is impossible to ascertain the causes of death, the loss of fairly mature chicks late in the season is likely the result of predation by cats or mongooses.

Despite the lower nest success rate, the weekly monitoring of the colony revealed that 2024 was characterized by earlier timing of breeding (phenology), and faster chick growth. In 2024, chick hatching dates spanned from August 2 to 17, with a mean of August 6 (± 4.6 S.D. days), and the peak chick weights ranged from 491 to 655 grams, with a mean of 563.1 grams (± 39.3 S.D.). Chick masses started declining the last week of October, and fledging started the first week of November (Fig. 3).

Altogether, these observations suggest that the foraging conditions during the 2024 chick rearing period (August – November) were more favorable than those during the previous year. In 2023, the average chick hatching date (August 13) was delayed by one week and the average peak chick weight (501.7 grams) was 10% lower.

After 34 months of the cold-phase of the El Niño-

Southern Oscillation (ENSO) oceanographic pattern (from May-June 2020 to February-March 2023), the tropical Pacific Ocean switched to the warm phase (El Niño) from June-July 2023 to February-March 2024, and back to the cold phase (La Niña) starting in June-July 2024 (Fig. 4). Accordingly, the Multivariate El Niño Index during the Wedge-tailed Shearwater breeding season (early June – late November) was indicative of a weak warm (positive) phase (+0.70 +/- 0.25 S.D.) in 2023 and a weak cold (negative) phase (-0.68 +/- 0.13 S.D.) in 2024. Our monitoring documented the response of breeding shearwaters to ENSO variability. Yet, despite this year-to-year variability, the number of breeding shearwaters at FSP continues to grow, underscoring the success of the habitat restoration efforts at the site.

The current cold-water conditions are expected to transition into neutral conditions during April-May 2025 (60% chance) and are likely to remain through the fall of 2025 (See NOAA’s Climate Prediction

Center ENSO Diagnostic Discussion, www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/). Thus, we anticipate that 2025 will be an “average” year for ‘Ua’u kani breeding at FSP.

Ongoing Efforts

Habitat restoration efforts continued during 2024. From January through March, while the shearwaters were at sea, Hawai’i Audubon Society members and other volunteers removed alien plant species and improved natural nesting sites.

With participation from the community, additional restoration and management efforts in 2025 will involve monitoring the colony and enhancing the breeding habitat at FSP.

Habitat Restoration: From January through March, volunteers will remove alien weeds, plant native species, and improve the existing rock nesting sites on the terrace.

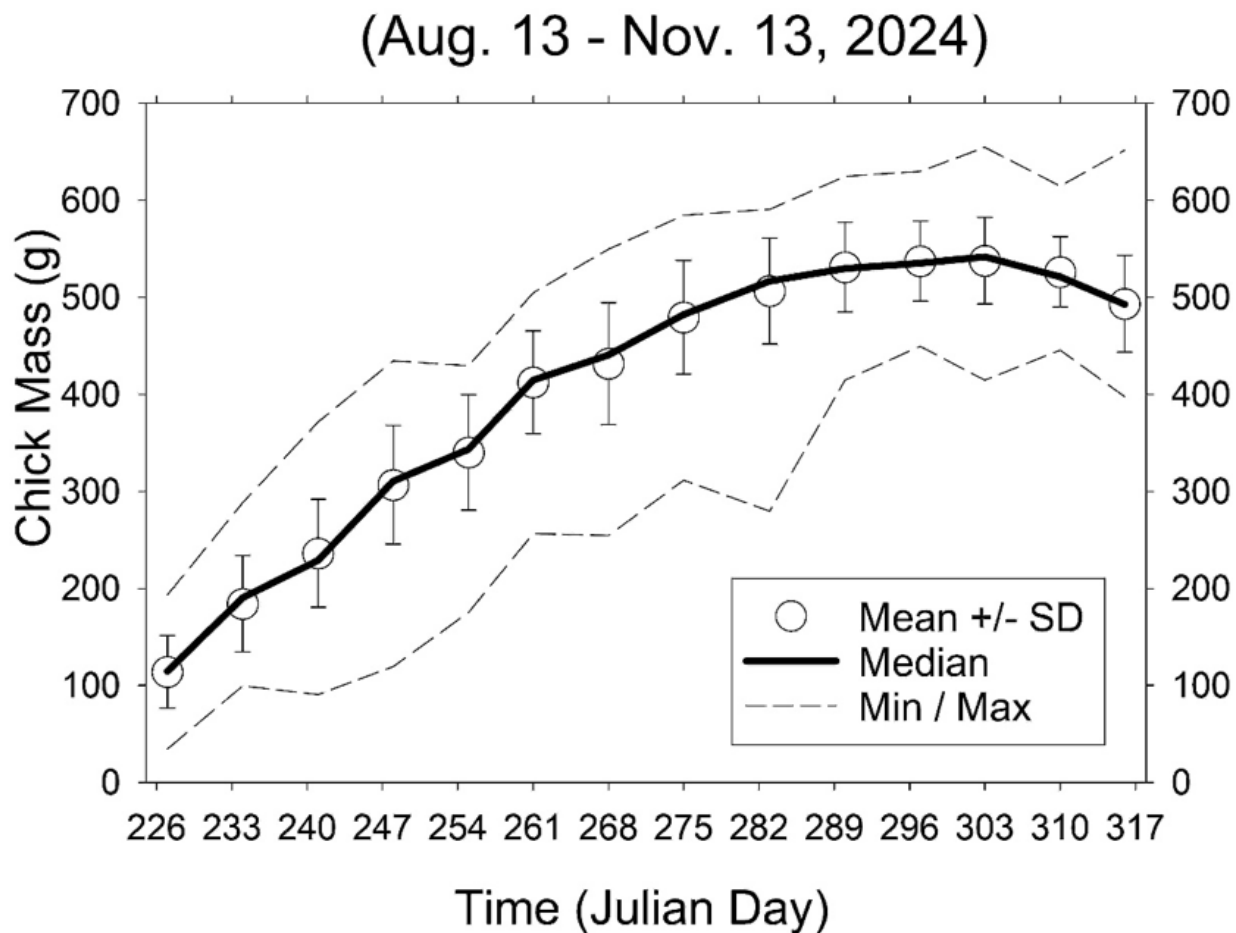


Figure 3. Time series of chick masses during the 2024 breeding season, showing the mean +/- S.D., the median, and the range (maximum - minimum) of weekly measurements. Sample size = 48 chicks.

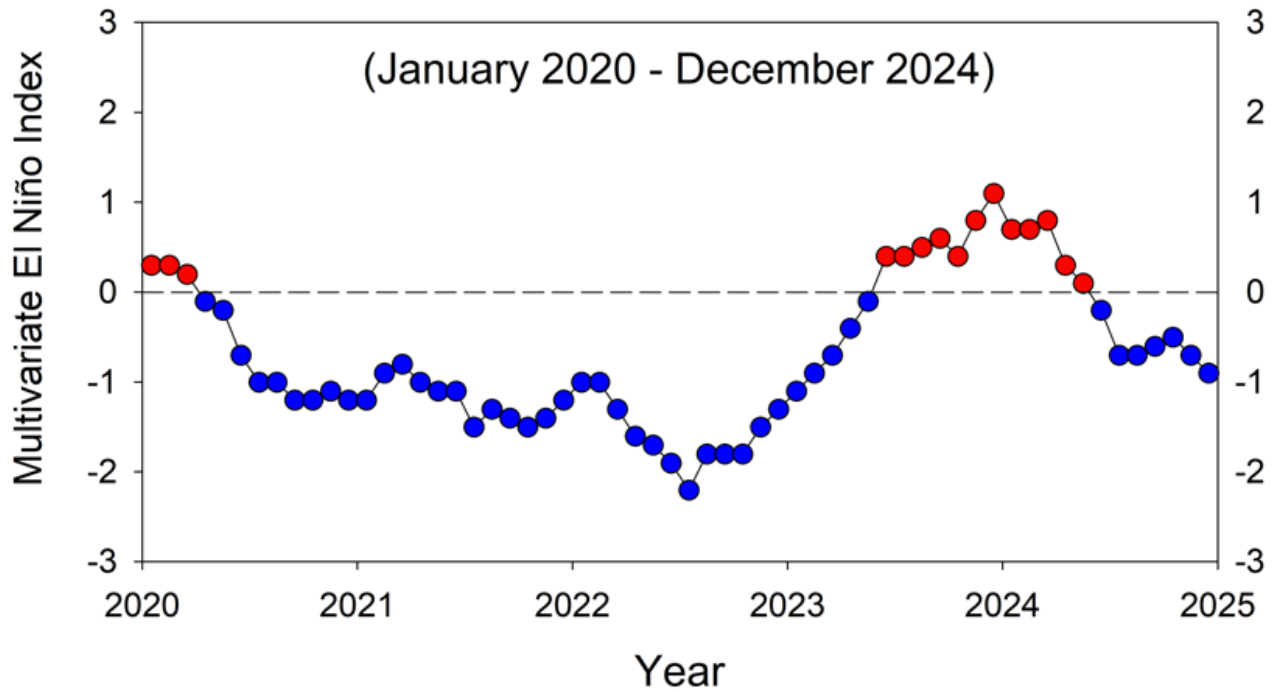


Figure 4. Monthly time series of the Multivariate El Niño Index, highlighting warm-phase (red) and cold-phase (blue) periods during the last five years.

Research: Population censusing and nest monitoring for phenology, chick growth, and reproductive success will continue in 2025, to augment our 16-year time series.

Predator Control: Ongoing surveillance for predators is planned during the 2025 nesting season, to minimize and document predation by rats, cats, and mongooses on breeding shearwaters.

Acknowledgements: Funding from Disney Conservation Fund, Atherton Family Foundation, Hawai'i Audubon Society and individual donors. In-kind support from HPU and Oikonos. We thank the many volunteers and students who contributed to the restoration, monitoring and research efforts.

Literature Cited

Hyrenbach, K.D., and Piauwasdy, A. 2023. 2022 Shearwater Nesting at Freeman Seabird Preserve: 'Ua'u kani Enjoy Persistent La Niña Conditions. 'Elepaio 83(2): 13-14.

Hyrenbach, K.D., and Piauwasdy, A. 2024. 2023 Shearwater Nesting at Freeman Seabird Preserve: 'Ua'u kani Cope with El Niño Conditions. 'Elepaio 84(2): 12-14.

*** END ***

High Tech Punchbowl Plovers

By Oscar W. Johnson, PhD

With volunteers from Hawai'i Audubon Society, Brigham Young University-Hawaii, and other agencies, I led a 2022-23 study in which we captured kōlea wintering in the Punchbowl Cemetery and attached tiny GPS backpack tags to them.



Oscar W. Johnson holds a Pacific Golden-Plover, or kōlea, during his study to test the bird's ability to migrate carrying GPS devices on their backs. ©Susan Scott



A kōlea is fitted with a GPS backpack tag at Punchbowl Cemetery in preparation for the birds' journey to and from their breeding grounds in Alaska. ©Susan Scott

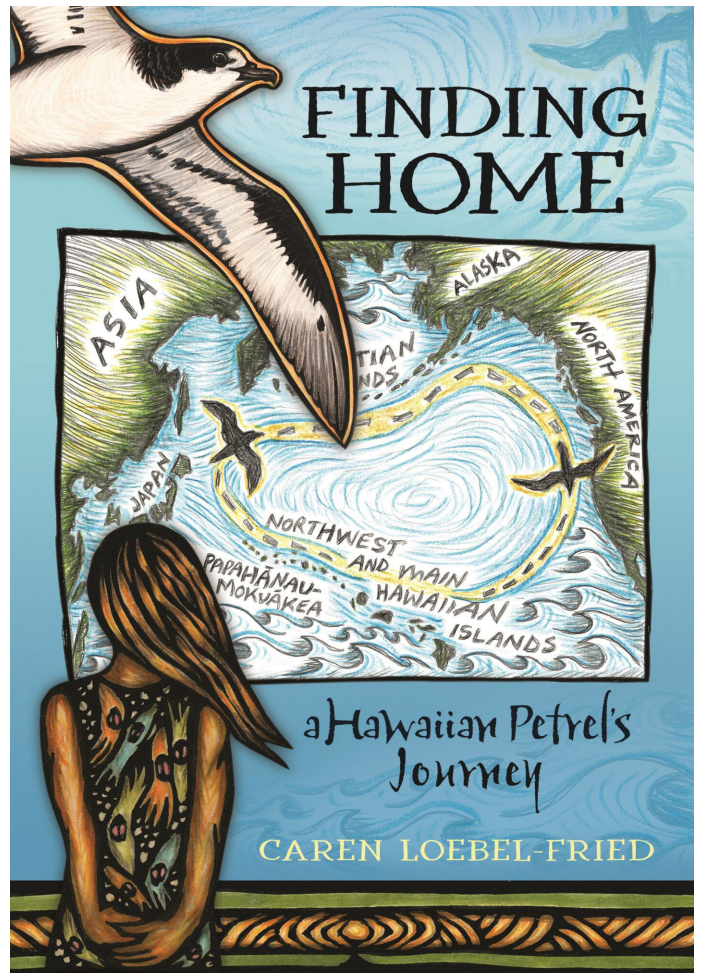
The tags were programmed to send latitude and longitude data to satellites that relayed locations of the birds to the team. The project's primary goal was to test the ability of plovers to carry GPS devices without harm to the birds over their 3,000-mile nonstop migrations to and from Alaska.

The investigation was a success as the tagged kōlea migrated successfully with almost total survival.

Aside from that major finding, more was learned about connectivity between an important wintering ground on O'ahu and nesting grounds in SW Alaska. GPS signals from the tags revealed nesting sites on the Alaska Peninsula and beyond to 66°N. In fall, the birds further demonstrated their remarkable homing ability to specific territories in the cemetery.

The findings have been published in *Wader Study*, an international scientific journal devoted entirely to shorebird research. If you would like a .pdf copy of the complete article which includes photos and information on recapture of the birds to remove backpacks, please contact me at owjohnson2105@aol.com or Susan Scott, honu@susanscott.net.

*** END ***



Cover image and art of *Finding Home, a Hawaiian Petrel's Journey*. ©Caren Loebel Fried.

Book Review: *Finding Home, a Hawaiian Petrel's Journey* By Caren Loebel-Fried

Book review by Keith Swindle

I can think of few birds that are as ecologically important yet remain virtually unknown as the Hawaiian Petrel ('ua'u kani) and the Newell's Shearwater ('a'o). So, I am delighted to review *Finding Home, a Hawaiian Petrel's Journey* by Caren Loebel-Fried. *Finding Home* is another of Loebel-Fried's beautifully illustrated and scientifically accurate children's books. Through the eyes of a Hawaiian girl, *Finding Home* follows the incredible lives of several 'ua'u as they navigate the challenges of survival. Though aimed at young readers, the book's engaging storytelling deftly educates readers of all ages interested in Hawai'i's wildlife and ecology.



Loebel-Fried's rich illustrations connect the reader to the story and the world of 'ua'u. ©Caren Loebel-Fried

Through lyrical prose and her signature vibrant, hand-colored block prints, Loebel-Fried brings to life the perilous journeys of petrels—from hatching in mountain burrows to epic ocean migrations returning to nest in Hawai'i. The book describes heroic conservation efforts at real-life places at the remaining breeding locations of this once-ubiquitous species while highlighting the threats of habitat destruction, invasive predators, and climate change.

The book is deeply rooted in science, using information drawn from ornithologists and conservationists at the forefront of efforts to save this and other endangered seabirds. It effectively balances fact with emotion, helping young readers connect with the struggles of this endangered seabird. *Finding Home* tells both “the story” and, in a second portion, “the story behind the story,” a

welcome bonus feature rarely found in children's books. The only omission I wish the book mentioned was the story that made it possible: the decade of efforts by federal authorities in the U.S. Fish and Wildlife Service and the Department of Justice that led to the many conservation efforts detailed in the book, including its main storyline. This was no fault of Loebel-Fried but rather the failure of the government to herald their successes to creators like Loebel-Fried.

Overall, *Finding Home* is an engaging, educational, and visually stunning book that fosters awareness and appreciation for Hawai'i's native wildlife. Perfect for children who read or can be read to, educators, and families. It's a must-read for those passionate about protecting Hawai'i's endangered species and the lands and oceans they rely on and help sustain.



Award winning author and illustrator, Caren Loebel-Fried, holds four of her eight books about Hawaiian culture, wildlife, and conservation. ©Neil Fried

Finding Home, a Hawaiian Petrel's Journey is available now in our online bookstore: www.hiaudubon.org/shop

Hawai'i Audubon Society Donations and Membership

Mahalo for helping us inspire people to love and protect birds.

Founded in 1939, Hawai'i Audubon Society is an independent nonprofit 501(c)(3) organization.

Make a donation in any amount at <https://hiaudubon.org/donate/>

Your membership expires one year after you join or renew.

Renew your membership by choosing your level on our website: <https://hiaudubon.org/membership>

If you have any questions or need assistance, please email membership@hiaudubon.org

Please make checks payable to the Hawai'i Audubon Society.



'Io on a wire. ©Amy Durham

Choose your Hawai'i Audubon Society membership level:

- \$15 Student Membership
- \$25 Regular Membership
- \$40 Family Membership
- \$100 Supporting Membership
- \$1,000 Lifetime Membership

Mail me the 'Elepaio Journal Email me the 'Elepaio Journal

Email address: _____

Announcements

Calling all volunteers: seeking a chance to get involved in your community, do good for birds, and meet like-minded people? If so, we have several opportunities available.

- Freeman Seabird Preserve habitat restoration January - March
 - Kōlea Count:
count kōlea & contribute to community science
 - Hui Manu-o-Kū:
community science, bird rescue, tree monitoring

Scan this code to find out more, visit the websites listed below, or contact: volunteer@hiaudubon.org



Upcoming Events

April 4: Earth Day Extravaganza at Ka Makani Community Center

April 11: Intersections Sustainability Fair at 'Iolani School

April 12: 18th Annual Mauka to Makai at the Waikiki Aquarium

April 19: Party for the Planet at the Honolulu Zoo

April 26: Earth Day Plant Sale at the Foster Botanical Garden

May 3: 10th Annual Manu o Kū Festival at 'Iolani Palace

For more details and updates visit: hiaudubon.org/events or email events@hiaudubon.org

Stay up-to-date by visiting us online.

Our website: www.hiaudubon.org

Kōlea Count: www.koleacount.org

Hui Manu-o-Kū: www.whiteterns.org

Freeman Seabird Preserve: freemanseabirdpreserve.org

Social Media:

facebook.com/HawaiiAudubonSociety/

facebook.com/groups/hawaii.audubon.big.island.hui

instagram.com/hawaiiaudubonsociety/

instagram.com/hawaii_audubon_big_island/



'Elepaio ISSN 0013-6069

Managing Editor: Laura Doucette

Scientific Editor: Eric VanderWerf, PhD

The 'Elepaio is printed on recycled paper and published six times per year.

Hawai'i Audubon Society

850 Richards St., Suite 505, Honolulu, HI 96813

office@hiaudubon.org <https://hiaudubon.org>





HAWAII AUDUBON SOCIETY
850 RICHARDS ST, SUITE 505
HONOLULU, HI 96813-4709

<https://hiaudubon.org>
office@hiaudubon.org

ADDRESS SERVICE REQUESTED

'ELEPAIO • 85:2 • MARCH / APRIL 2025

MEMBERSHIP EXPIRATION DATE:

GO PAPERLESS, GO GREEN

Do you receive the 'Elepaio paper version? Want to lower your carbon footprint and help reduce costs?

Switch to email.

Send us a message at:

membership@hiaudubon.org

to make the change.

Keep Cats Safe Indoors

Table of Contents

2024 Shearwater Nesting at Freeman Seabird Preserve: 'Ua'u kani Respond to La Niña Conditions	13
High Tech Punchbowl Plovers	16
Book Review: <i>Finding Home, a Hawaiian Petrel's Journey</i>	17
Announcements and Events	19



An O'ahu 'Elepaio perches with a worm in its bill. ©Tom Fake