

# IMPACT REPORT

2024



## Center for Avian Conservation in the Pacific Islands

## Background Summary

The accidental introduction of the brown treesnake, *Boiga irregularis*, to the island of Guam after World War II was devastating for native bird populations. The birds had no natural defenses against this foreign predator and soon were in critical need of conservation efforts to save them. Island species are particularly susceptible to threats of introduced species because they have evolved in an isolated and specialized environment. Only two species of Guam's forest birds, the Guam kingfisher and the Guam rail, survive today and only because of the care of zoos.

The efforts by the Saint Louis Zoo to save Pacific Island avian species began in 1994 when the Zoo partnered with other organizations on a project called the Mariana Avifauna Conservation program (MAC). One of our main partners, Pacific Bird Conservation (PBC), leads the MAC program.

In 2004, The Saint Louis Zoo was invited to collaborate with PBC, the U.S. Fish & Wildlife Service (USFWS) and the regional Department of Aquatic and Wildlife Resources to develop rearing protocols in human care and assurance populations. This creates a two-pronged approach to conservation of these species with birds in the wild and birds in human care. Assurance populations are created on nearby islands previously uninhabited by these species through yearly bird translocations (Image 1). This helps maintain resilience of endemic Mariana bird species against the spread of the brown treesnake in the island chain and protect them from the unfortunate fate of the Guam species. Other challenges these birds face include habitat loss and degradation, non-native wildlife, and sensitivity to more frequent and devastating typhoons due to climate change. Since the program started, AZA zoos have managed programs for six Mariana bird species, four of which have been bred at the Saint Louis Zoo.



Image 1: The island of Guguan.





Images 2 and 3. Location of Mariana Islands in the Pacific Ocean and detail of the CNMI

## Focal Regions and Species

Translocation fieldwork for the MAC project in the Commonwealth of the Northern Mariana Islands (CNMI) typically focuses on two target species each year (Images 2 and 3). The birds are collected by mist netting and taken by boat to be released on the island selected for the yearly translocation. Designated islands are not inhabited by large human developments and are deemed by the Division of Fish and Wildlife (DFW) to be suitable for the species based on a habitat assessment. Two translocations of the same species are often planned in subsequent years to boost numbers as recommended by DFW in collaboration with PBC, and other partners including the Saint Louis Zoo. This Center aims to continue expanding our existing translocation and breeding work with at-risk species, but also to develop a strong education and awareness component of bird conservation within the local communities in the CNMI.

## Field Season 2024

The 2024 field season was a landmark for conservation efforts—it marked the first time the Saipan reed warbler, *Acrocephalus hiwae* known in the CHamoru language as “Gaga Karisu,” became the focal species of our work (Image 4). Given its critically endangered status and federal protection, the USFWS and the local DFW implemented a modified plan for MAC in 2024 to gather data and prepare for a possible future translocation. This season was particularly significant as it was the first time ever that this species would be placed under temporary human care.

Our primary goals were to capture up to 20 Saipan reed warblers and house them in our bird care room before eventually releasing them back to their original capture sites. During their time in our care, we conducted comprehensive observational studies, recorded weight and morphometric data, performed medical examinations and collected samples (Image 6). The insights gained from this endeavor are expected to be groundbreaking and critical for the conservation of this species, especially since no effort of this scale has been attempted before.



Image 4. A male Saipan reed warbler, *Acrocephalus hiwae*, just after singing his territorial song and watching field crew closely.



Image 5. Veterinarian Dr. Kami Fox of Fort Wayne Children's Zoo provides a health examination.

The data gathered during this period will play a vital role in planning the future translocation of the Saipan reed warbler, contributing significantly to the survival of this critically endangered bird.

Given that the Saipan reed warbler is monogamous and highly territorial, critical field observations were carried out by several smaller teams of MAC participants across the entire island of Saipan. These coordinated efforts enabled us to gather comprehensive data on the species' behavior, confirm habitat use, and document their presence in various areas of the island. By gaining a broader understanding of their ecological needs and challenges, we will be better equipped to refine and enhance our capture efforts in future translocation years.

## 2025 Center Impact

Primary Center objectives that we were able to demonstrate measurable impact toward in 2024 were:

1. 1) Use management in human care techniques to support wild populations
  - a. Participate in SSP recommended breeding for the Guam kingfisher
  - b. Support research in management in human care setting to aid in recovery planning of the Guam kingfisher.
2. Support conservation objectives
  - a. Translocation
  - b. Education

In 2024, the Saint Louis Zoo continued its critical efforts to collect fertile Guam kingfisher eggs from our breeding pairs, contributing to the goal of releasing these birds into the wild on the Palmyra Atoll. This monumental project is a collaboration among multiple organizations, including the AZA Species Survival Plan (SSP) for Guam kingfishers and its participating institutions, the IUCN Conservation Translocation Specialist Group, and the Zoological Society of London (Images 8 and 9).

Fertile eggs from five AZA facilities were transferred to Sedgwick County Zoo this year, where 10 birds were





Image 6: Adult Guam kingfisher.



Image 7: Guam kingfisher chick in a weighing cup.

successfully reared in a uniquely designed biosecurity space built specifically for this initiative. These birds underwent health screenings in July, which will guide the selection of nine individuals for release on Palmyra in August of 2025. The birds selected for release were given names in the CHamoru language, honoring the cultural heritage and the land from which they originate. This gesture reflects our deep respect for the CHamoru people and their connection to the Guam kingfisher, reinforcing the importance of preserving both the species and its cultural significance. This will mark a historic moment—the first time since the species was declared extinct in the wild in 1988 that the Guam kingfisher will once again fly free.

The Saint Louis Zoo's involvement in this sustainability journey has had a profound impact on the future of the Guam kingfisher and our continued participation in the SSP and this release project reaffirms our commitment to the conservation of this incredible species.

## Morphology Project

We also participated in a morphology research project designed by Matthew Mitchell of the Zoological Society of London. Since Guam kingfishers are currently the focus of conservation translocation planning to re-establish wild populations from populations in human care, this study is comparing historic wild specimens to current living specimens. This comparison will help to inform whether or not significant morphologic changes have happened over the last several decades while the species has only survived in human care. These differences, if found to be present, might implicate a difference in fitness in AZA and conservation-facility animals as they are released back into the wild on the Palmyra atoll. By sharing measurements of the kingfishers here at the Saint Louis Zoo, we are playing a crucial role in shaping the future survival of the species and their eventual release into the wild.

**2.a.** Our primary goals for this MAC season were to capture up to 20 Saipan reed warblers and house them in our bird care room before eventually releasing them back to their original capture sites (Image 10).

Given that the Saipan reed warbler is monogamous and highly territorial, critical field observations were carried out by several smaller teams of MAC participants across the entire island of Saipan. These coordinated efforts enabled us to gather hundreds of hours of comprehensive data on the species' behavior, confirm habitat use, and document their presence in various areas of the island. By gaining a broader understanding of their ecological needs and challenges, we will be better equipped to refine and enhance our capture efforts in future translocation years.

We refined our mist netting techniques by experimenting with various setups, including single and



Image 8: Bird Department keeper Emily Wagner preparing to move a fertile Guam kingfisher egg to a portable brooder for transfer to the Sedgwick County Zoo.



Image 9: Portable brooder used to transport eggs from participating AZA institutions to Sedgwick County Zoo for hatching and rearing.

double nets, different gauges of netting, and varying applications (Image 11). Due to the territorial nature of the Saipan reed warbler, males were more easily captured, while capturing their mates required greater patience and finesse. By honing these capture skills, we can confidently ensure the successful capture of bonded pairs and achieve a balanced sex ratio of males to females in future potential translocation efforts.

During their time in our care, we conducted comprehensive observational studies, recorded weight and morphometric data, performed medical examinations, and collected samples. The insights gained from this endeavor are expected to be groundbreaking and critical for the conservation of this species, especially since no effort of this scale has been attempted before. The data gathered during this period will play a vital role in planning the future potential translocation of the Saipan reed warbler, contributing significantly to the survival of this critically endangered bird.

At the end of the holding period, birds were released at their original capture site.





Image 10: Saint Louis Zoo Bird keeper Mallory Balsat holds a critically endangered Saipan reed warbler, just extracted from a double-high mist net.

**2.b.** The Mariana Island Conservation Conference was on the island of Saipan this year and three representatives of the Saint Louis Zoo presented talks. Conference participants spanned from local leaders such as the mayor of the Northern Islands and his team, scientists and researchers all across Guam and the CNMI, and governmental agencies like USFWS, United States Geological Survey, and DFW.

Amanda Bender, Curator Destination Discovery, presented a talk titled “Ga’ga Karisu Conservation on the Novel Saipan Reed Warbler: Work in Progress during the Conference.”

Tiffany Evans, Saint Louis Zoo Educator, gave a talk titled “Engaging Community Conservation in the Marianas Through Collaborative Outreach and Education” (Image 12).

John Bender, Whitney R. Harris and Saint Louis Zoo



Image 11: Dr. Lisa Kelley, Executive Director of the WildCare Institute, has just extracted a rufous fantail, *Rhipidura rufifrons*, from the mist net (in view behind her).

Fellow, presented a talk “Applying Knowledge of Bird Diets” describing his PhD work and using diet research to inform avian translocations and enhance success rates.

## Education and Outreach During MAC 2024 Field Season

A multi-faceted education program helps to expose students and teachers to the work of the MAC project, science-related careers and facilitate conversations about the conservation efforts surrounding their island birds. Led by Saint Louis Zoo Educator Tiffany Evans this year, the MAC education team is able to support education at the grade school, middle school, and high school levels to create a base of buy-in for conservation efforts because they can help make decisions that can positively impact sustainability of their endemic species within their native range of the CNMI.

In 2024, one focused, college-level internship provided a local aspiring student with the opportunity to be fully immersed in the field for two weeks during the





Image 12: Tiffany Evans, Saint Louis Zoo Educator, presents at the Mariana Island Conservation Conference.

field season (Image 13). This internship integrated the student directly into the active field teams and bird care operations, allowing them to gain hands-on experience in a dynamic, real-world environment. By being an integral part of the team, yearly MAC interns not only develop practical skills in bird monitoring and care but also gain valuable exposure to a range of science-related careers. They work alongside experienced professionals, building connections and learning from experts in the field. This experience offers interns a deeper understanding of conservation work and the collaborative efforts required to protect endangered species, setting a strong foundation for their future careers in wildlife conservation and research and we are proud to support internship opportunities each year.

The team also organized several field trips and shadowing opportunities for high school and university students and teachers at various team field sites. These experiences allowed students and educators to engage directly with our field team members, providing a unique, hands-on introduction to the practical aspects of conservation work. They learned about mist netting techniques, the importance of meticulous record-keeping and observations, and the care and transport of animals at field sites. The groups also visited the bird care room, where they were introduced to husbandry

practices and the specialized diet offerings for Saipan reed warblers in human care (Image 14). By witnessing these activities firsthand, students gained valuable insights into the daily operations of a conservation project and the intricate care required to support endangered species. These experiences were designed to inspire the next generation of conservationists, offering them a closer look at the careers and skills involved in wildlife preservation.

The education team was also able to highlight the work of the MAC project by hosting a table at the Career Fair in conjunction with the Mariana Island Conservation Conference. Students were able to visit various organizations' tables and learn about careers in science, governmental agencies, universities, and research (Image 15).



Image 13: Intern Alexi Rebueng carefully extracts a Saipan reed warbler from a mist net.

## Challenges Faced:

Overall, the 2024 field season was a resounding success. Despite a few minor hurdles—like a vehicle getting stuck, stone surfaces proving too hard for driving stakes,





Image 14: Diet preparation, by interns, for Saipan reed warblers in bird room.

and the challenges of capturing female Saipan reed warblers—this learning season was incredibly rewarding. We are pleased to report that there were no fatalities among the reed warblers collected and temporarily held in our care, a testament to the dedication and skill of our team. The field and bird room crews excelled in their efforts, gaining invaluable samples and data, as well as insights into the natural history and behavior of the Saipan reed warbler. Their hard work and perseverance have significantly advanced our understanding of this critically endangered species, setting a strong foundation for future conservation efforts (Image 16).



Image 15: Tiffany Evans, Saint Louis Zoo Educator, and Danny Lough of the Wilds talk about the MAC project at the MICC Conference.

## Plans for the Future

The MAC project has demonstrated over a decade of impactful bird translocations in the CNMI. Over the next several years, the CNMI DFWS will be shifting this project's efforts to new species including those never before translocated or kept in human care, like the Saipan reed warbler and Rota white eye, *Zosterops rotensis*.

In 2025, the project objective is to collect and hold the critically endangered Rota white eye on the island of Rota (Image 17). Its population numbers are slowly rising but uncertainly as their range is reduced to the highest mountainous habitat on Rota. The MAC team will aim to collect up to 30 birds and carefully test husbandry protocols while holding them temporarily before re-release. They are closely related to the Saipan golden white-eye and the bridled white eye, which have both been successfully translocated several times by the MAC project.



Image 16: Christian Burmeister, Saint Louis Zoo Veterinary Technician and Veterinarian Dr. Kami Fox of Fort Wayne Children's Zoo examine a Saipan reed warbler and collect a feather sample for sex determination.



In 2025, Saint Louis Zoo Education and CARE team members plan to travel to Rota to expand their outreach and strengthen relationships with community organizations, schools and libraries throughout the Mariana Islands. This initiative is part of a collaborative effort by a multi-institution team of education staff, aiming to extend MAC project programming to Tinian and Rota, ensuring consistency across the CNMI. Through engagement with the local community and increasing awareness of conservation efforts, particularly concerning the critically endangered Rota white-eye.



Image 17: A Rota white-eye, *Zosterops rotensis*.