

 <p>Agreement on the Conservation of Albatrosses and Petrels</p>	<p style="text-align: center;">Joint Twelfth Meeting of the Seabird Bycatch Working Group and Eighth Meeting of the Population and Conservation Status Working Group</p> <p style="text-align: right;"><i>Lima, Peru, 8 August 2024</i></p> <p style="text-align: center;">Five Action Areas for the Conservation of the Waved Albatross</p> <p style="text-align: center;">Kate Huyvaert¹, Giovanny Suárez Espín², & Sea McKeon³</p> <p style="text-align: center;">1 Washington State University, USA 2 Albatross Ambassadors, American Bird Conservancy, Ecuador 3 American Bird Conservancy, USA</p>
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SUMMARY

The Waved Albatross (*Phoebastria irrorata*) is classified as Critically Endangered due to persistent loss from artisanal and industrial fishing paired with a single, isolated breeding location on Española, Galápagos, Ecuador. The Waved Albatross Plan of Action (WAPOA) was developed to provide information and tangible actions to improve the conservation status of the species. Through ongoing discussions and assessments of the Plan's implementation (see **Joint SBWG12/PaCSWG8 Inf 03**) several needs have emerged including revising the priorities, identifying lead organisations, defining key steps to achieve expected outcomes, and securing funding. Motivated by the Indianapolis Zoo *Saving Species Challenge*, we collated what is known about the species, identified gaps in knowledge, and developed a funding proposal with the target of making progress to improve the species' conservation status – 'moving the needle' – within a 5-year timeframe. Here, we describe five principal action areas that emerged from our assessment of what is known about the species, progress to date on conservation actions in the WAPOA, and an abbreviated horizon scan of future potential threats. These areas include: 1) conservation knowledge and engaging stakeholders, 2) habitat suitability and insurance populations, 3) measuring overlap of albatross and fisheries, 4) tracking population trajectory as a metric of progress, and 5) recognising the potential role of MPAs in albatross protection. We share this here to spark renewed discussion and engagement in the active conservation of this ACAP species.

RESUMEN

El Albatros ondulado (*Phoebastria irrorata*) está listado como En Peligro Crítico debido a la pérdida persistente debido a la pesca artesanal e industrial junto con un único sitio reproductivo aislado en Isla Española, Galápagos, Ecuador. El Plan de Acción del Albatros

Ondulado se desarrolló para proporcionar información y acciones tangibles para mejorar el estado de conservación de la especie. A través de discusiones y evaluaciones sobre la implementación del Plan (ver Reunión Conjunta **SBWG12/PaCSWG8 Inf 03**) han surgido varias necesidades, incluida la revisión de las prioridades, la identificación de organizaciones líderes, la definición de pasos clave para alcanzar los resultados esperados, y la obtención de financiamiento. Motivados por el *Saving Species Challenge* del Zoológico de Indianápolis, recopilamos lo que se sabe sobre la especie, identificamos áreas de carencia de conocimiento y desarrollamos una propuesta de financiación con el objetivo de avanzar para mejorar el estado de conservación de la especie - 'mover la aguja' - en un plazo de 5 años. Aquí, describimos cinco áreas de acción principales que surgieron de nuestra evaluación de lo que se conoce sobre la especie, el progreso hasta la fecha en las acciones de conservación del Plan de Acción y un análisis abreviado del horizonte de futuras amenazas potenciales. Estas áreas incluyen: 1) conocimiento de la conservación y participación de las partes interesadas, 2) idoneidad del hábitat y seguro de poblaciones, 3) medición de la superposición de albatros y pesquerías, 4) seguimiento de la trayectoria de la población como métrica de progreso, y 5) reconocimiento del papel potencial de las AMPs en la protección de albatros. Compartimos esto aquí para generar un debate y un compromiso renovados en la conservación activa de esta especie ACAP.

1. MOTIVATION

The Waved Albatross (*Phoebastria irrorata*) is considered the most 'tropical' of the albatrosses with principal, large breeding colonies on Española Island in the Galápagos and much smaller numbers of breeding birds occasionally observed on Isla de La Plata, 40 km off the coast of Ecuador. The Waved Albatross is categorized as Critically Endangered, meeting IUCN Red List criteria B2ab(v) given the species' area of occupancy is < 10 km² and meets two of the three conditions for the area of occupancy category (Birdlife International 2018). The species meets the first condition (B2-a) because of this extremely small breeding range, occupying essentially only one location, Española. Data showing continued declines in mature individuals, due to substantial mortality as bycatch in artisanal fisheries (Awkerman et al. 2006) support the second condition (B2-b(v)) and, together, lead to the initial listing as Critically Endangered in 2008.

The Waved Albatross Plan of Action (WAPOA; AC4 Doc 50 rev.4) was developed by Ecuador and Peru, in collaboration with ACAP, to provide information to managers, scientists, and other stakeholders on actions needed to improve the conservation status of the species. Since its adoption in 2008, the Advisory Committee and its Working Groups have revisited the WAPOA several times, noting the needs to: a) revise the priorities, b) identify lead organisations for each action, c) define steps needed to achieve expected outcomes of the WAPOA, and d) enhance engagement with key stakeholders (see **Joint SBWG12/PaCSWG8 Inf 03** for a review of the timeline of the WAPOA and its implementation). These needs are also linked to the very real challenges of implementing conservation action for the species: inconsistent funding and high turnover of staff charged with carrying out the actions of the WAPOA.

'Horizon scanning' is an evidence-based approach that integrates expert perspectives and knowledge to identify threats and future opportunities (Sutherland and Woodroof 2009); in an environmental context, horizon scanning can play an important role in identifying top priorities for research, policy, and conservation action. Motivated by the Indianapolis Zoo *Saving Species Challenge*, we conducted a similar horizon scan of the future for the waved albatross,

developed a plan “...to improve the status of an animal species classified as critically endangered...” (<https://zoo-guide.com/the-indianapolis-zoo-saving-species-challenge/>), and presented a proposal for consideration for funding in December 2023. Winners of the \$1M US prize were expected to report on forward progress made to improve the species’ conservation status – ‘moving the needle’ – within a 5-year timeframe.

Here, we describe five principal action areas that emerged from our assessment of what is known about the species, progress to date on conservation actions in the WAPOA, and an abbreviated horizon scan of future potential threats. These areas include: 1) conservation knowledge and engaging stakeholders, 2) habitat suitability and insurance populations, 3) measuring overlap of albatross and fisheries, 4) tracking population trajectory as a metric of progress, and 5) recognising the potential role of MPAs in albatross protection. We also present the key actions needed within each of the areas that we considered would most effectively ‘move the needle’ for the Waved Albatross. We share this here to spark renewed discussion and engagement in the active conservation of this ACAP species.

2. CONSERVATION KNOWLEDGE AND ENGAGING STAKEHOLDERS

Stakeholders in the conservation of Waved Albatross are numerous and diverse, ranging from individual fishers to national parks, multinational organizations, crafters of international law, and on-the-ground biologists and managers. “Buy-in” of partners in collaborative conservation requires effort and expense to show commitment to the shared vision (<https://mspguide.org/the-msp-guide/>). Further, social marketing of conservation efforts draws in humans whose voices are often left unheard: for the waved albatross, the fishers and their families have immediate concerns beyond the pursuit of ‘conservation’ such that outreach efforts and anticipated behaviour change (Marchini & Macdonald 2020, Rakotomamonjy et al. 2015) cannot be left to goodwill alone.

2.1. Stakeholder Workshop

As outlined in **Joint SBWG12/PaCSWG8 Inf 03**, a workshop was held in 2018 for the comprehensive review of the WAPOA. That workshop identified several key avenues for work, particularly with respect to fisheries interactions, bycatch, and working with fishing communities to mitigate bycatch. However, some stakeholder groups were underrepresented; groups whose perspectives are left out or who are not informed may oppose a project simply because their voices were not included (Vogler et al. 2017). To move the needle on Waved Albatross conservation, we proposed a workshop to bring together a more expansive and representative set of stakeholders from throughout the species’ distribution to a) demonstrate accomplishments made to date, b) express responsibility for the species as an icon of the Humboldt Current region, and c) make a commitment to the collaborative protection and restoration of the species by identifying and pursuing priority conservation actions. A workshop of this sort will require a multi-day gathering with sufficient funding and effort committed to accomplish these goals.

3. HABITAT SUITABILITY AND INSURANCE POPULATIONS

Species with isolated, small populations, like the Waved Albatross, are at greater risk of extinction due to stochastic events than those with larger populations occupying multiple sites (Davison et al. 2019). A population viability analysis predicted a 50% decline in the Waved Albatross population within the next 50 years (<https://ccal.ucsc.edu/seabirdmpva/>). Key to

recovery of the species is the expansion of breeding habitat on Española as well as to sites beyond Española as ‘insurance populations.’

3.1. Assessment of Vegetation

One key factor in the space available for nesting Waved Albatross is the encroachment of vegetation. Española hosted a giant tortoise, *Geochelone niger hoodensis*, until its population was much reduced by human consumption. Feral goats replaced tortoises as a primary herbivore but were eradicated from Española by 1978. In the absence of these herbivores, woody shrubs are thought to have closed many interior spaces. Ongoing reintroduction of the tortoise may positively benefit albatross through the creation of access “runways” to the coast and open breeding areas in the central, interior portions of the island (Tapia Aguilera & Gibbs 2023). Insights from this and very recent work to clear the vegetation to make runways on Española (<https://www.galapagos.org/newsroom/expedition-to-help-nesting-waved-albatross-a-success/>) will allow fuller evaluation of the needs for biological and mechanical control of vegetation to enhance extant and potential breeding locations.

3.2. Social Attraction

Social attraction is a well-recognised tool used by seabird conservationists around the world to attract and recruit individual birds to a novel breeding area through auditory and visual decoys (VanderWerf et al. 2023). These are most successful for birds with limited philopatry but have been used successfully with other *Phoebastria* albatrosses (e.g., Young & VanderWerf 2016). We proposed the use of visual (decoys) and auditory (playbacks) social attraction systems to encourage the use of under-utilized breeding habitat, and work to perfect Waved Albatross attraction methods for potential use in novel breeding habitat areas including the ‘Central Colony’ of Española, Genovesa, and La Plata.

3.3. Translocation to Genovesa

In the context of the IUCN *Guidelines for Reintroductions and Other Conservation Translocations* (Zlatanova 2016) moving Waved Albatross chicks or eggs to Isla de La Plata or Genovesa would be classified as population reinforcement which is “the intentional movement and release of an organism into an existing population of conspecifics” with the aim to “enhance population viability [...] by increasing population size, increasing genetic diversity, or by increasing the representation of specific demographic groups or stages.”

Small groups of Waved Albatross have been documented displaying breeding behaviour and laying eggs on Genovesa from 2006 onward. No chicks have been recorded from the island to our knowledge. The three other albatrosses in the genus *Phoebastria* have been the subjects of successful translocation projects. Short-tailed Albatross, a critically endangered species, was moved to non-eruptive island groups. Laysan Albatross and Black-footed Albatross have been translocated to establish populations safe from climate change-induced flooding. Translocation efforts require large investment of time and resources but have outstanding success in the return of individuals to new areas when protocols are followed. Individual birds have been lost due to illness or handling errors (VanderWerf et al. 2019). We proposed to reinforce the population of Waved Albatross via translocation to Genovesa, within the jurisdiction of the Galápagos National Park Directorate and the protections afforded the species within the Park and the Galápagos Marine Reserve (GMR).

4. FISHERIES INTERACTIONS

As part of the proposal to afford the species Priority Population status for the principal breeding colonies on Española (PaCSWG3 Doc 04), the evaluation of observer sufficiency in fisheries that impact the waved albatross was recommended. Photos, videos, and survey data from fishers and scientists continue to demonstrate accidental and intentional capture of Waved Albatross within demersal and pelagic longline and handline fisheries (e.g., Figure 1).

Figure 1: A Waved Albatross killed on an artisanal longline. This bird was an adult female banded on Española in the Galápagos Islands. Photo: Giovanni Suárez Espín.



With limited observer coverage and intermittent, non-standardized port surveys the answer is clear: evidence-based evaluations of the true extent of the impact of fisheries on Waved Albatross is lacking.

4.1. Measure Overlap of Albatross and Fisheries

Integrating the analysis of albatross tracking data with fisheries effort can shed light on the overlap of albatrosses with fisheries across a variety of systems (e.g., Frankish et al. 2021) and is critically important for identifying key life history stages (Clay et al. 2019) or the risk posed by fisheries with a paucity of observation data. Application of these sorts of analyses would be especially informative for the Waved Albatross, particularly during portions of the life cycle when birds cannot be seen on land (e.g., non-breeding months, juvenile stage) and across the entirety of the species' at-sea range.

4.2. Standardized Fishery Surveys

In response to calls for additional data (e.g., SBWG10 Doc 05), we also proposed to expand fisher surveys to establish baseline measures of fisher knowledge of albatross biology and to benchmark the potential for improvement across ports and fisheries within the range of the Waved Albatross. These sorts of surveys set the stage for more effective bycatch mitigation by engaging fishers in the process early on and are a key element to our proposal to expand the Albatross Ambassadors program for bycatch reduction in artisanal fisheries throughout Ecuador and Peru.

4.3. Tools to Address Bycatch

Examples of effective tools for the reduction of Waved Albatross bycatch already exist from several fisheries. These include the NISURI fast-set devices (<https://abcbirds.org/news/new-fishing-technique-safer-for-rare-birds-and-fishermen/>) and line weighting in the Ecuadorian demersal longline hake fishery, streamer curtains and floating rings in Ecuadorian hand-line fisheries, and experimental hook weighting in mahi mahi fisheries. We proposed continued design, implementation, monitoring, and evaluation of these and other bycatch reduction tools and suggested that free access to this growing 'toolbox' of bycatch reduction tools (e.g.,

interactive, online information) would most effectively move the needle for the Waved Albatross.

5. TRACKING POPULATION TRAJECTORY

Crucial to understanding the efficacy of any change to animal populations are measures of the response of the population to conservation actions. Continued population monitoring allows for documentation of decline or recovery, outcomes of conservation actions or impediments, and the occurrence of novel or unanticipated threats.

5.1. Capture-Mark-Recapture Surveys

For species like the Waved Albatross that spend most of their annual cycle unavailable for detection and study because they are at sea, critical information can be gleaned from banded birds when they are at their breeding sites. These capture-mark-recapture (CMR) studies use information about individuals who are seen or not in the breeding colony to estimate annual survival, reproduction, and rates at which animals ‘skip’ breeding. We have been banding (capture and mark) and resighting (recapture) birds at the major colony at Punta Cevallos, Española, since 1999 (see Awkerman et al. 2006, Anderson et al. 2008, Street 2013) and similar efforts have been conducted at a smaller scale at Punta Suárez since 2009. Continuing these efforts through two visits a year to the colony for banding and resight surveys allows us to measure changes to the population dynamics in the face of active conservation actions. This work also allows us to keep a pulse on the species’ exposure to external threats because we can observe rates of plastic ingestion, signs of disease, or incidents of hooks left in live birds when we observe them during our surveys.

5.2. Whole-island population size estimate

Simple population counts are useful in providing gross estimates but lack refinement due to the complex life history shared by albatrosses and other long-lived marine animals. Nevertheless, a relative uptick in a population size estimate may indicate recovery or improvement of the population status and thus have immense value. Surveys by Uncrewed Aerial Systems (UAS, often called drones) allow for access to areas of the island that are challenging to reach in terms of either effort, resources, or both. We proposed to collect data on Waved Albatross abundance and habitat use using UAS surveys to produce a whole-island estimate of population size and a picture of the distribution of albatross relative to vegetation. This sort of survey will inform our understanding of island change and provide a much-needed, contemporary whole-island estimate of Waved Albatross population size.

6. MARINE PROTECTED AREAS

The protection of marine birds through Marine Protected Areas (MPAs) in the Humboldt Current region has as its origins the protection of guano birds by the ancient Inca Empire (Rodrigues and Micael 2021). These regional efforts continue through definition of new and expansion of existing MPAs. The creation (1984) and subsequent expansions (2019, 2021) of the Galápagos Marine Reserve (GMR) provided an unprecedented level of protection for the at-sea movements of Waved Albatross around the archipelago and extending up the Cocos Ridge towards Costa Rica. Artisanal fishing without nets is permitted in the GMR but fishing by industrial fleets is prohibited.

Coastal MPAs exist along the coastlines of both Ecuador and Peru, limiting access to artisanal fisheries to within 8 miles (Ecuador) and 5 miles (Peru) of the coast. Marine reserves and protected areas beyond these boundaries are variable in terms of fisher access and degree of protection, some allow full access to industrial fishing. Given the potential for MPAs to protect all elements of the ecosystem including marine birds, a theme that emerged from our proposal was to augment protection of the Waved Albatross beyond the borders of the GMR by a) recognising the key roles of marine birds in the health of marine ecosystems and b) explicitly including the Waved Albatross and other marine birds in the designation of and protections provided by MPAs.

7. CONCLUSION

We urge the consideration of this document as an opportunity for Parties to ACAP, the Advisory Committee, its Working Groups, and other stakeholders to re-engage with the conservation measures needed to move the needle toward stability and eventual recovery of the critically endangered Waved Albatross. These suggestions, though carefully wrought, are incomplete without the full participation of all stakeholders, particularly underrepresented voices and those within the core range of the species. The proposed measures and areas of emphasis include both population-level actions and bycatch mitigation through fisheries, in step with the areas of emphasis of the ACAP Populations and Conservation Status and Seabird Bycatch Working Groups, a parallel that we hope reinvigorates and encourages engagement and effort. Without this 'all hands on deck' approach, we fear the species could be lost.

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