

 <p data-bbox="229 546 469 584">Agreement on the Conservation of Albatrosses and Petrels</p>	<p data-bbox="614 239 1382 277">Eleventh Meeting of the Advisory Committee</p> <p data-bbox="780 297 1382 333"><i>Florianópolis, Brazil, 13 – 17 May 2019</i></p> <p data-bbox="552 416 1334 555">Progress reports on Projects and Secondments supported by the Advisory Committee</p> <p data-bbox="853 586 1034 622">Secretariat</p>
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1. PROGRESS AND OUTCOMES OF CONSERVATION PROJECTS SUPPORTED IN THE 2018 FUNDING ROUND

The Small Grants Programme re-commenced following AC10 in September 2017. Applications opened on 15 December 2017, with deadline for proposal submission on 23 February 2018. Ten project applications requesting a total of AUD 182,393 were received by the Secretariat in the 2018 funding round. Six projects were granted a combined total of AUD 111,005. A summary of activities undertaken and outcomes achieved up to 1 March 2019, when progress reports were due, is presented below.

ACAP 2018-02 Prevalence and magnitude of plastic exposure (macro and microplastics and select chemical compounds) in albatrosses and petrels off the shores of Argentina and Brazil

Project Leader: Marcela Uhart, University of California and Patricia Pereira Serafini, CEMAVE / ICMBio / MMA, Brazil

Co-investigators / collaborators: Tatiana Neves, Projeto Albatroz; Luciana Gallo, Instituto de Biología de Organismos Marinos (IBIOMAR), CCT CENPAT, Argentina; & Leandro Tamini, Albatross Task Force, Aves Argentinas/AOP and BirdLife International

FUNDS GRANTED: AUD 20,000

Summary of activities/outcomes: in progress

Developed detailed and simplified protocols for sample collection and gastrointestinal macroplastics recovery and classification. Objective 3 - Establish diagnostic capacity for select chemical compounds derived from plastic degradation (phthalates) in Argentina and Brazil, and Objective 4 - Perform chemical analysis to identify and quantify phthalates in select tissues from dead birds is currently underway. For full project report see **AC11 Inf 03**.

ACAP 2018-03 Global review of nature and extent of trawl net captures

Project Leader: Graham Parker, Parker Conservation, New Zealand

Co-investigators / collaborators: Kalinka Rexer-Huber, Parker Conservation, NZ and Igor Debski, New Zealand Department of Conservation

FUNDS GRANTED: AUD 12,000

Summary of activities/outcomes: in progress

Interview questions have been developed, consulted and finalised in English, and translated into Spanish. Liaison with BirdLife to assess potential areas of overlap with their project to estimate global trawl bycatch numbers. Contact sharing to minimise duplication of effort where possible. Information provided to New Zealand delegation to meeting of the South Pacific regional fisheries management organisations (SPRFMO), with aim of identifying other potential regional contacts for project. ACAP Seabird Bycatch Working Group members have been contacted to provide contacts of people active in the field of trawl bycatch mitigation and or data collection through fishery observer programmes. Response to date has been minimal. We expect more respondents in the near future.

No significant project outcomes have been achieved yet, beyond project planning and development.

ACAP 2018-04 Comprehensive Review of the Bi-national Plan of Action for the Critically Endangered Waved Albatross (*Phoebastria irrorata*). || *Revisión integral del Plan de acción binacional para el albatros de Galápagos (Phoebastria irrorata), especie en Peligro Crítico*

Project Leader: Hannah Nevins, American Bird Conservancy; Caroline Icaza, Ecuador, and Elisa Goya, Peru

Co-investigators / collaborators: Kate Huyvaert, Colorado State University

FUNDS GRANTED: AUD 10,800

Summary of activities/outcomes: completed

A joint proposal was made by the ACAP Parties of Ecuador and Peru for a Comprehensive Review of the Bi-national Plan of Action for the Critically Endangered Waved Albatross. The ACAP small grant program supported travel and meeting costs to review the plan and update actions with key stakeholders. A meeting was held at the Government Building in Guayaquil September 19-20, 2018, supported in part by the ACAP small grants program and through a grant to ABC by the David and Lucile Packard Foundation. Additional support by Colorado State University (CSU), Galapagos National Park, Humane Society International (HSI), and other institutions provided support of travel for key participants.

Participants included 26 people from four countries including Peru, Ecuador, USA, and Australia. During the two-day meeting, participants discussed conservation actions in break-out groups and reconvened to review the set of actions as a whole. As a starting point, we used the actions outlined in the first Plan of Action (CA4 Doc 50 rev.4). The tables of actions were prepared and reviewed. In addition to these updates, the group drafted several key strategies and new avenues for work. These strategies were recurrent within the workshop:

Strategy 1: Address fishery bycatch in coastal Ecuador and Peru

Key to this strategy is to engage more deeply with relevant government agencies in Ecuador and Peru to identify all fisheries for which there is a potential take of this species, including both artisanal and industrial. Further, we suggest that the respective government agencies will work towards a formal compilation of all available observer data and effort in these fleets. It was suggested that someone in the Ecuadorean government with strong technical expertise in bycatch observer programs and fisheries could lead this effort. In this data “gap analysis”, we realize that the differences in terminology among countries may not be entirely equivalent. Also, it was identified that fishing fleets in areas outside of the bi-national Economic Exclusive Zones (EEZs), should be considered in this update of risk and next steps (see also Strategy 3, below).

Strategy 2: Address key research questions at colony sites to inform conservation actions

The group identified four studies: 1) determine optimal thermal and environmental conditions for nesting of the species as it related to modification of the vegetation at nesting site; 2) Determine the energetic differences in foraging among colonies to inform the relative value of alternate nesting sites; 3) Determine the potential population-level impact of future conservation interventions (e.g., egg rescue, translocation, social attraction) using Population Viability Analysis (PVA) or other appropriate tool; and 4) additional tracking studies of other age classes and non-breeding birds to determine relative risk to fisheries. Other studies suggested included colony-specific diet studies.

Strategy 3: Determine impacts of fisheries in other areas (IATTC, Galapagos, Colombian waters)

Using tracking data, foraging areas of Waved Albatrosses in waters other than EEZs of Ecuador and Peru have been identified and include international waters within the Regional Fishery Management Organization (RFMO) of Inter-American-Tropical-Tuna-Commission (IATTC), and EEZs of Colombia and Costa Rica. It was also noted during the meeting that little is known about the impact of fisheries operating within the waters of the Galapagos Marine Reserve, although these waters are within the Ecuador EEZ and are covered by a marine protected area. These fisheries have not been recently surveyed for potential or observed impacts to Waved Albatross.

Strategy 4: Outreach to socialize bycatch mitigation in fishing communities with high risk to Waved Albatross (and other marine birds and sea turtles)

There have been several years of outreach in both Peru (ProDelphinus) and Ecuador (Equilibrio Azul, ABC) to demonstrate that development of and socialization of the use of mitigation measures, increasing awareness of the global conservation status of species at risk, and efforts to minimize take of these migratory and threatened species have been successful (Alfaro-Shigueto et al. 2016). Efforts to increase sink rate and remove dangerous hooks from seabirds have also met with some success. It was noted that the benefits of line weighting could extend to benefits for other taxa, including marine turtles, and that outreach efforts should include both taxonomic groups.

Opportunities were identified with partners in the Ecuadorian Armada and Ministry of the Environment (MAE), Peruvian specialists, and in collaboration with NGOs, potentially work in all five regions in Ecuador and some areas of Peru (in consultation with ProDelphinus).

Several issues should be addressed further by ACAP, the PaCSWG, and the SBWG:

- Consider recommending inclusion of additional representatives from Party countries on working groups who would be tasked with compiling new information and tracking updates to conservation actions on an annual or biennial period.
- Specifically, it was suggested that the Secretariat and SBWG engage in recruiting additional government representatives to the SBWG with strong technical expertise in bycatch observer programs, mitigation techniques and fisheries. This level of understanding is needed to lead efforts to strengthen understanding of this species across fishery types, artisanal to industrial.
- It was suggested that PaCSWG engage in recruiting additional government representatives to the working group with strong technical expertise in evaluating the knowledge gaps and relative population-level impacts.
- Finally, the group recommends that ACAP working groups help to facilitate regularly scheduled updates and pursue support for analysis of critical information for the priority population and other sites where the species occurs.

ACAP 2018-05 Hookpod for seabirds and sea turtles: Looking towards a multi-taxa approach for reducing bycatch in pelagic longlines

Project Leader: Dimas Gianuca, Projeto Albatroz, Brazil

Co-investigators / collaborators: Tatiana Neves, Projeto Albatroz; Augusto Silva-Costa & Gabriel C. Sampaio, Projeto Albatroz/Albatross Task Force

FUNDS GRANTED: AUD 36,205

Summary of activities/outcomes: in progress

After some delays in the production of the components, assemblage and shipment of the new hookpods that release hooks at 20 m depth, at-sea trials are due to start by early-April, and carry through the peak of longline fishing effort and seabird density in southern Brazil (May-October) until December.

Meanwhile, from July to December 2018 the team in Brazil conducted 46 visits to Rio Grande (Rio Grande do Sul state) and 59 to Itajaí (Santa Catarina state) ports, to contact fishermen and establish a collaborative network to allow the development of this project, including hookpod demonstrations, and at-sea trips to collect data on fishing practices and seabird bycatch in standard (control) vessels. Currently, there are five vessels keen to use hookpods and take observers on board, plus at least seven 'control vessels' (with standard gear) receptive to take observers.

From July to December 2018, four fishing trips were monitored by ATF instructors and Projeto Albatroz on-board observers, to collect data on fishing practices and seabird bycatch in 'control' vessels, totalling 56 longline sets and 67,151 hooks. In total, 10 birds were bycaught, including eight black-browed albatross (*Thalassarche melanophris*), three white-chinned petrel (*Procellaria aequinoctialis*) and one wandering albatross (*Diomedea exulans*), resulting in an overall nominal bycatch rate of 0.14 birds per thousand hooks. Variables including environmental conditions, utilization of seabird bycatch mitigation measures and seabird density around vessels were collected for every fishing set for further modelling.

In two of the aforementioned trips, ATF instructors took with them 50 new brand hookpod-mini (spare from previous trials in Brazil), to demonstrate to fishermen how it works and make them familiarized with properly handling the hookpods during setting and hauling operations.

ACAP 2018-07 Primera diagnosis de conservación de la pardela balear Puffinus mauretanicus en Ibiza || First conservation diagnosis of the Balearic Shearwater Puffinus mauretanicus in Ibiza

Project Leader: Meritxell Genovart, CSIC, Spain

Co-investigators / collaborators: José Manuel Arcos, SEO/BirdLife; Maite Louzao, AZTI Fundazioa; & David García, IRBI

FUNDS GRANTED: AUD 20,000

Summary of activities/outcomes: in progress

As established in the project's workplan, due to the reproductive phenology of the Balearic Shearwater (March-June), the monitoring of the species has not yet begun, and no analysis has been carried out as yet either. The first phase of the project has been to:

- plan the 2019 field work
- organize the databases collected so far (2011-2018), for further analysis.

1. Review the monitoring program.

In the preliminary meetings, we discussed the protocols carried until now, and we considered that they are adequate to meet the objectives of the project. It is proposed to develop a discriminant function to determine the sex of adults in the population of Ibiza, given that there may exist differences with the Mallorcan population, for which the discriminant already exists (Genovart et al., 2003).

2. Monitoring during the 2019 breeding season.

Due to the phenology of the species, no field work has been carried out yet, except for a preliminary visit to the islet of Conills-Malgrat (Mallorca). The first phase of visits will start at the end of March.

3. Preliminary analysis of the spatial distribution of individuals with GPS tracking (2012-2015).

We analysed information from previous tracking and identified the main feeding areas during the breeding season for the population of western Ibiza, both recurrent zones (areas of the Iberian continental shelf closest to the colonies) and areas used more sporadically (extending along the Iberian coast to the Gulf of León to the north, and to the African coasts of Algeria and Morocco to the south).

4. Demographic analysis in Ibiza (2011-2019) and evaluation of its state of conservation

We have prepared the data available (2011-2018) and have re-codified it in the appropriate format to carry out survival analysis and analysis of breeding performance. We should only need to add the data collected in 2019 in order to carry out these analyses.

5. Explore possible differences in demographic parameters among different colonies.

We are collecting data from other breeding colonies.

ACAP 2018-10 Assessing the overlap between threatened pelagic seabirds and trawl fisheries operating in northern Patagonian Shelf

Project Leader: Juan Pablo Seco Pon and Sofía Copello, IIMyC, CONICET-UNMDP, Argentina

Co-investigators / collaborators: Jesica Paz & Rocío Mariano-Jelicich, IIMyC, CONICET-UNMDP, Argentina

FUNDS GRANTED: AUD 12,000

Summary of activities/outcomes: in progress

Durante el transcurso del proyecto se realizaron dos campañas embarcadas, una en Abril y la otra en Agosto de 2018, con el objetivo de instrumentar individuos del Petrel Barba Blanca, *Procellaria aequinoctialis*. Dado que hasta el momento no hemos podido capturar ejemplares de Petrel de Barba Blanca, extenderemos nuestros esfuerzos para capturar individuos (y presas representativas del descarte) durante el 2019.

During the course of the project two at-sea surveys were performed, one in April and one in August 2018 with the aim of tagging individuals of White-chinned Petrel, *Procellaria aequinoctialis*. However, up to the time of drafting this report we were not able to capture any individuals. We will extend our sampling efforts (both birds and prey facilitated from fisheries discards) during 2019.

2. PROGRESS AND OUTCOMES OF SECONDMENTS SUPPORTED IN THE 2018 FUNDING ROUND

The Secondments Scheme re-commenced following AC10 in September 2017. Applications opened on 1 December 2017, with deadline for proposal submission on 2 March 2018. Four applications for secondment support were received by the Secretariat in the 2018 round, requesting a total of AUD 41,076. All four applicants were successful and AUD 41,076 was granted. A summary of activities undertaken and outcomes achieved to date is presented below.

S 2018-01 Habitat selection of the Black-browed Albatross (*Thalassarche melanophris*) in the South-West Atlantic: importance of marine fronts and fishing activity

Seconded: Jesica Andrea Paz, Instituto de Investigaciones Marinas y Costeras (IIMyC, Universidad Nacional de Mar del Plata, - CONICET), ARGENTINA.

Host Institution: Chilean Antarctic Institute (INACH), Punta Arenas, CHILE

FUNDS GRANTED: AUD 9,050

Summary of activities/outcomes: completed

En el ecosistema marino, la biodiversidad presenta una alarmante disminución causada principalmente por la actividad pesquera, la polución, el cambio climático y el turismo. El decrecimiento en las poblaciones de predadores tope marinos, como las aves marinas, producen impactos negativos en el resto del ecosistema. Una de las amenazas principales en el mar para estas especies es la actividad pesquera que produce un aumento de la mortalidad a causa de la captura incidental. El estudio de los recursos utilizados por dichos predadores (e.g. hábitat) en relación a su disponibilidad (i.e. selección) es fundamental para su conservación y manejo. Los modelos de selección de hábitat brindan una representación numérica de las preferencias de hábitat de una especie y son utilizados para predecir su distribución a escala de paisaje y elaborar herramientas de conservación espacialmente explícitas. Estos estudios se ven beneficiados por el desarrollo de tecnologías de sensoramiento remoto, tanto por intermedio de imágenes satelitales, como también por aparatos de sensoramiento remoto miniaturizados que son colocados en los animales y permiten obtener la localización espacial y temporal, y analizar sus movimientos.

La Plataforma del Atlántico Sudoccidental es la más extensa del hemisferio sur (22°S a 55°S), abarcando la Plataforma Continental Argentina (PCA), Uruguay y Sudeste de Brasil. La misma presenta una gran diversidad de frentes (regiones estrechas con altos gradientes de salinidad y temperatura). Allí, la productividad primaria es elevada, con lo cual, son hábitats importantes para diversas especies de vertebrados marinos. Estas áreas tienen relevancia global para varias especies de albatros y petreles que reproducen tanto en la región, como en sitios distantes. El Albatros de Ceja Negra (ACN, *Thalassarche melanophris*) se encuentra entre las especies de aves marinas más abundantes de la plataforma y a su vez, presenta las mayores tasas de mortalidad incidental producida por los barcos de pesca (principal actividad económica en la PCA). Estudios de seguimiento remoto previos para esta especie en la región muestran una distribución hacia el sur de la PCA en el periodo reproductivo, mientras que durante el periodo no reproductivo su distribución abarca aguas de toda la plataforma sudoccidental. Se ha evidenciado que las áreas de alimentación se superponen con zonas de alto esfuerzo pesquero de buques arrastreros y que el área de veda de arrastre afecta su

comportamiento, haciendo que los individuos permanezcan más tiempo alimentándose en los límites exteriores donde el esfuerzo pesquero es mayor. Asimismo, la dieta de ACN comprende especies que son objetivo de las pesquerías y/o que son descartadas por los barcos. Aunque existen estudios que evalúan la selección de variables ambientales y antrópicas (esfuerzo pesquero) por parte de la especie durante el periodo reproductivo, hasta el momento no se han realizado estos análisis durante el periodo no reproductivo.

El objetivo general del proyecto es contribuir a mejorar y mantener el estado de conservación de albatros y petreles en la PCA mediante el desarrollo de mapas y bases de datos georeferenciadas en un entorno de Sistemas de Información Geográfica que permitan la identificación de áreas de alto riesgo en aguas argentinas. Los objetivos específicos son: 1) determinar la selección de hábitat del ACN en el Atlántico Sudoccidental en relación a áreas frontales y al esfuerzo de pesca durante el periodo no reproductivo, 2) capacitarse en el uso de herramientas de modelado estadístico espacial y 3) favorecer los trabajos en colaboración con científicos de otras Partes del ACAP. Para ello, se realizaron modelados de distribución y selección de hábitat de la especie mencionada utilizando el paquete BIOMOD, del software libre R y el ArcGis, y trabajando con una base de datos de seguimiento satelital de ejemplares instrumentados durante sus periodos no reproductivos entre 2011 y 2016.

Los resultados obtenidos fueron los siguientes:

- 1) Capacitación en la preparación de bases de datos: a) Elección de los grupos de datos a utilizar (por clase de edad, sexo y estación del año), b) Descarga y procesamiento de imágenes satelitales de variables geográficas y oceanográficas, c) Selección de datos de pesca de las diferentes flotas argentinas para el periodo de estudio y filtro de posiciones erróneas, d) Procesamiento de datos de posicionamiento obtenidos a partir de transmisores satelitales colocados en los individuos, incluyendo filtros para estimar selección de posiciones de alimentación para cada individuo y eliminación de posiciones erróneas y e) Selección de variables ambientales y pesqueras, dentro de cada grupo de trabajo establecidos en el punto a).
- 2) Capacitación y perfeccionamiento en el uso de herramientas de modelado estadístico espacial, específicamente en el uso de paquetes estadísticos del software libre R (R Core Team), específicamente en “EMbC”, “biomod2” y “GGally”. Además se utilizó el software “Zonation” para la selección de áreas marinas a conservar considerando los costos de distintas actividades antrópicas.
- 3) A partir de lo anterior, el resultado final de la selección de hábitat fueron mapas georeferenciados con probabilidades de ocurrencia para los diferentes agrupamientos (sexos, clases de edad, estación) dentro de la misma especie. Por otro lado, lo que refiere al efecto antropogénico de las pesquerías sobre las áreas de forrajeo de los individuos, se desarrollaron análisis de modelos lineales generalizados mixtos (GLMM), que permitieron determinar aquellas pesquerías que se encontraban más relacionadas espacio-temporalmente con el ACN. Estos resultados en conjunto sirvieron como fuentes de información para los análisis de determinación de áreas marinas protegidas en la Plataforma Continental Argentina.
- 4) Se inició la preparación de dos manuscritos derivados de dicha capacitación: el primero relacionado a selección de hábitat natural por parte de la especie en estudio, y un segundo artículo relacionado a asociaciones espaciales entre las áreas utilizadas por los individuos y diferentes flotas pesqueras argentinas. Por otra parte, los resultados preliminares

de este proyecto fueron presentados en el XIII Encuentro de Biólogos organizado por la Universidad Nacional de Mar del Plata, Argentina.

5) Se realizó una activa transferencia de las capacidades adquiridas a miembros del grupo de investigación al cual pertenezco (Grupo Vertebrados, Universidad Nacional de Mar del Plata), particularmente en lo referente a las herramientas estadísticas aprendidas como además en un trabajo en colaboración con otros laboratorios del IIMyC y del Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP). Además, las capacidades adquiridas podrán ser aplicadas a futuros estudios con aves pelágicas y otros predadores tope.

6) Se encuentran en elaboración reportes técnicos a ser presentados ante la Subsecretaría de Pesca y Acuicultura y la Secretaría de Ambiente y Desarrollo Sustentable, Argentina. Además, los resultados obtenidos serán presentados al Grupo de Asesoramiento Técnico (creado por el Consejo Federal de Pesca, Acta 6/2013) del PAN-Aves (Plan Nacional para reducir la interacción de aves con pesquerías en la República Argentina).

7) El desarrollo de la pasantía permitió la articulación con profesionales de otros países, como Chile y Brasil con los cuales se mantiene un contacto para futuras colaboraciones.

See also **SBWG9 Inf 10** and **PaCSWG5 Inf 05**.

Unofficial translation courtesy of Master of Translation students from Monash University and University of New South Wales, Australia:

In the marine ecosystem, there is an alarming decline in biodiversity caused mainly by fishing activities, pollution, climate change and tourism. The decline of top marine predators, such as seabirds, has a negative impact on the rest of the ecosystem. One of the major threats to these species is fishing activities, with by-catch causing an increase in mortality. The study of the resources used by these predators (e.g. habitat) in relation to the availability of the resources (i.e. selection) is crucial for their conservation and management. Habitat selection models provide a numerical representation of a species' habitat preferences, and are used to predict landscape-scale distribution and to develop spatially explicit conservation tools. Studies of this type benefit from the development of remote sensing technology, such as satellite imagery and miniature remote sensing devices that can be attached to animals in order to track their temporal and spatial location, and analyze their movements.

Covering the Argentine Continental Shelf (ACS), Uruguay and South-Eastern Brazil, the Southwestern Continental Shelf is the largest in the Southern Hemisphere (22°S a 55°S). It contains a large diversity of fronts (narrow regions with high salinity and temperature gradients). Since primary production in this area is high, habitats are critical to a range of marine vertebrate species. These areas are of global relevance for several albatross and petrel species that breed in this and other distant regions. The Black-browed Albatross (BBA, *Thalassarche melanophris*) is among the most abundant species in the Southwestern Continental Shelf; however, it is also the species with the highest by-catch mortality rate (with fisheries being the main economic activity in the ACS). Previous remote-tracking studies of black-browed albatrosses in the region show that this species tends to congregate in the southern part of the ACS during the breeding season but distribute all around the Southwestern Atlantic region during the non-breeding season. It has been found that feeding areas overlap with high fishing effort zones, and that closed trawling areas modify their behaviour, forcing individuals to spend more time feeding at the outer limits where the fishing effort is higher. Moreover, the BBA's diet includes species that are targeted by the fisheries and/or discarded

by fishing boats. Although the species' selection of environmental and anthropic variables (fishing effort) during the breeding season has been studied, this has not been analysed for the non-breeding season.

The overall aim of this project is to help maintain and improve the conservation of albatrosses and petrels in the ACS by developing geo-referenced maps and databases within a Geographic Information System (GIS) environment that enables the identification of high-risk areas in Argentinean waters. The specific aims are to (1) determine the BBA's habitat selection in the Southwestern Atlantic region as regards fronts and fishing effort during the breeding season, (2) learn how to use tools for spatial statistical modeling, and (3) encourage scientific collaboration with other ACAP members. In order to fulfill these aims, habitat selection and distribution models were developed for the species under study using the BIOMOD package on R and ArcGis, and a database of satellite-tracked specimens during their non-breeding season between 2011 and 2016.

The results are as follows:

- 1) Training in database preparation: (a) selection of groups of data to be studied (by age, sex and season of the year), (b) downloading and processing satellite images of geographic and oceanographic variables, (c) selection of fishing data from different Argentinean fleets during the period under study and filtering wrong locations, (d) processing location data obtained from satellite transmitters attached to the specimens, including filters to estimate selection of feeding sites for each specimen and discarding wrong locations, and (e) selection of fishing and environmental variables for each of the groups mentioned in (a).
- 2) Training in the use of tools for spatial statistical modelling, particularly R statistical packages such as EMbC, biomod2 and GGally. The software Zonation was used to select marine conservation areas by considering the cost of different anthropic activities.
- 3) As a result of 1) and 2), it was possible to build geo-referenced habitat selection maps with occurrence probabilities for each group (by sex, age range and season of the year) in a given species. Moreover, regarding the anthropogenic effect of fisheries on the specimens' feeding areas, generalized linear mixed models (GLMM) were performed in order to determine which fisheries were more spatially and temporally associated with the BBA. All together, these results served as an information source for the establishment of marine protected areas in the ACS.
- 4) Two papers were drafted as a result of the abovementioned training: one on the BBA's natural habitat selection and one on the spatial relations between the areas used by the species and those used by different Argentinean fishing fleets. Also, the preliminary results of this study were presented at the 13th Meeting of Biólogos, organized by the Universidad Nacional de Mar del Plata, Argentina.
- 5) The skills acquired, particularly those pertaining to the use of statistical tools, were actively transferred to the members of my research team (Grupo Vertebrados, Universidad Nacional de Mar del Plata) and in the collaborative work with other laboratories at the Institute of Marine and Coastal Research (IIMyC) and the National Institute for Fisheries Research and Development (INIDEP). Moreover, these skills will be used in future studies of pelagic birds and other top predators.
- 6) Technical reports to be submitted to the Argentinean Undersecretary for Fisheries and Aquaculture are being drafted, and the results of this project will be presented to the Technical

Advisory Group (created by the Federal Council for Fisheries, Minutes 6/2013) and the National Plan to reduce seabird-fisheries interaction in the Republic of Argentina (PAN-Aves).

7) This internship allowed me to work with scientists from other countries, such as Chile and Brazil, and create networks for future collaborations.

See also **SBWG9 Inf 10** and **PaCSWG5 Inf 05**.

S 2018-02 Evaluacion de riesgo de captura incidental de aves marinas en pesquerias del Pacifico Sur: Soluciones para el corredor migratorio Chile - Nueva Zelanda. || Risk assessment of incidental capture of seabirds in South Pacific fisheries: Solutions for the Chile - New Zealand migratory corridor.

Secondee: Luis Adasme, Instituto de Fomento Pesquero (IFOP), CHILE

Host Institution: Department of Conservation, & Ministry for Primary Industries, NEW ZEALAND

FUNDS GRANTED: AUD 8,200

Summary of activities/outcomes: completed

La zona sur de Chile, área de alta presencia de aves marinas como albatros de ceja negra, petreles gigantes y otros eventuales como albatros errantes, albatros de las antípodas y reales, los que interactúan con las operaciones de pesca industriales, causando en muchos casos la muerte de los individuos, muchos son parte del corredor migratorio que existe en el pacífico sur.

Por esta razón, surge la necesidad como países de conocer y avanzar en el entendimiento y aplicación de metodologías que permitan evaluar el riesgo al que están expuestas estas especies, así como identificar áreas, flotas y especies con mayor probabilidad de causar captura secundaria de aves marinas, pudiendo generar en el mediano plazo posibles efectos negativos sobre la poblaciones y colonias existentes en Chile y Nueva Zelanda.

Por otro lado, compartir e integrar información bio-pesquera del pacífico sur en un marco de mayor colaboración y desarrollo, permitirá obtener una visión amplia de la problemática en el corredor migratorio de los albatros. Para este fin se dispondrá durante la pasantía de los datos base de captura secundaria y operaciones de pesca realizadas en Chile y registradas por los observadores científicos en las flotas industriales que se monitorean en las pesquerías de la zona sur austral.

La formación de capacidades en el área del análisis de riesgo entre pesquerías y mortalidades de ave marinas son de preocupación creciente para Chile y es considerada de alta prioridad.

Objetivos

1. Formarse en la Metodología de Análisis de Riesgo.
2. Exploración y análisis de la información en pesquerías Chilenas.
3. Aplicación de la metodología de Evaluación de Riego con la información integrada de N. Zelanda y Chile.
4. Diseñar protocolo de trabajo a futuro.

See **SBWG9 Inf 08** for results of this work.

S 2018-03 Conservation of albatrosses in Brazil: Definition of priority areas for conservation regarding the fisheries bycatch

Secondee: Caio Azevedo Marques, Projeto Albatroz and State University of Santa Cruz (UESC), BRAZIL

Host Institution: British Antarctic Survey, UNITED KINGDOM

FUNDS GRANTED: AUD 16,900

Summary of activities/outcomes: not yet commenced

Seabirds are amongst the most threatened birds in the world, and the major cause of many population declines is incidental mortality in fishing operations. One area where risk appears to be particularly high is the subtropical convergence off Uruguay and southeast Brazil. An estimate of 0.229 birds caught per 1,000 hooks has been reported for the Brazilian pelagic longline fleet, which sets millions of hooks in most years. Pelagic longlining is recognized as the main threat to albatrosses and petrels in Brazilian EEZ and adjacent international waters. Therefore, assessing the susceptibility of species to fisheries is essential for effective management and conservation.

The aim of this proposal is to identify priority areas for albatrosses and petrels in Brazil, taking into account conservation needs and economics of the fishery. This will be achieved by: (a) mapping the distribution of albatrosses and petrels in the Brazilian EEZ and adjacent international waters; (b) mapping the probability of their capture in longline fisheries; and, (c) undertaking area-prioritization accounting for conservation needs (IUCN threat status, population trends), spatio-temporal variation in bycatch risk, and value of the fish catch. This project would contribute directly to the NPOA-Seabirds Brazil, fulfilling, directly or indirectly, at least three of NPOA-Seabirds Brazil specific objectives: (a) research for the definition of priority areas for the conservation of albatrosses and petrels, and development of mitigating technologies; (b) develop and implement public policies for the conservation of albatrosses and petrels; and (c) participatory governance and representativeness. In addition, it follows Recommendation 13.1.16(i) of SBWG8 “Encouraged the collection of data... to identify regions and fleets where bycatch is more likely to result in population-level impacts, and to improve targeting of bycatch mitigation and monitoring of compliance” and Recommendation 11.1.4(ii) of PaCSWG4 “Recognised the importance of mapping areas of greatest overlap and potential bycatch risk... in order to identify higher risk regions where enhanced seabird bycatch mitigation and improved bycatch monitoring are required” (both supported by AC9), and tasks in the AC work programmes relating to risk assessments.

The project should provide a much needed understanding of spatio-temporal variation in bycatch risk for albatrosses and petrels in general, and also for species or populations of highest conservation concern. The results can be used as a tool by public agencies in the elaboration and adaptation of policies and legislation, for example the design of a network of areas where greater monitoring of bycatch or compliance with recommended mitigation measures is required. This will improve the definition and execution of actions of fisheries and environmental management bodies. This is extremely important for the development and implementation of the NPOA-Seabirds Brazil and for the improvement of public policies in the Brazilian EEZ and adjacent international waters.

Unfortunately the applicant was unable to start this secondment as planned following an injury from which he has taken a long time to recover. He is hoping to take the secondment up within the next few months, with a new schedule to be developed in due course.

S 2018-04 Conectado conocimientos, personas y países: Avanzando en la difusión, comprensión de las amenazas y las medidas de mitigación para la conservación de fardela blanca (*Ardenna creatopus*) durante todo su ciclo. || Connecting knowledge, people and countries: Advancing in outreach, understanding of threats and mitigation measures for the conservation of Pink-footed Shearwater (*Ardenna creatopus*) throughout its cycle.

Secondee: Verónica López, Oikonos Ecosystem Knowledge, CHILE

Host Institution: Oikonos Ecosystem Knowledge - Santa Cruz, California, USA

FUNDS GRANTED: AUD 6,926

Summary of activities/outcomes: completed

Se considera que actualmente la captura incidental en redes de cerco podría ser la principal amenaza para fardela blanca (*Ardenna creatopus*) en Chile debido a las altas tasas de mortalidad descritas por Instituto de Fomento Pesquero (IFOP) (1,043 fardela blancas muertas en 1.165 lances observados durante el 2015-2016) y Albatross Task Force (ATF) (3.58 aves por lance, 7.63 aves por viaje de pesca en 2013). Estos datos corresponden a registros de observadores científicos a bordo en alrededor del 1 - 2% de los lances totales realizados por temporada.

Durante esta pasantía se trabajaron áreas relacionadas a la captura incidental de aves marinas con el objetivo de implementarlas en Chile:

1. **Programa de caminata por las playas:** Esta metodología puede entregar información asociada a temporalidad del año donde se puede presentar mayor interacción con las pesquerías y las especies que están siendo afectadas. En este caso sabemos que fardela blanca es probablemente una de las más afectadas en Chile, y el lograr demostrar esto con datos reales es de suma importancia. También puede ser una herramienta que permite evaluar la magnitud del problema y ser un indicador en caso de implementarse medidas de mitigación, dónde posterior a dicha implementación, debería observarse una disminución en el número de aves muertas en las playas, permitiendo ser una herramienta de control de la efectividad de las medidas implementadas.
2. **Estudio de necropsias:** A través de las necropsias, es posible conocer en detalle las características de las especies afectadas por la captura incidental, y a su vez el efecto de esta amenaza en las poblaciones de aves marinas. Con esta metodología es posible determinar si los individuos son juveniles o adultos, hembras o machos, conocer la dieta y comprender otras posibles amenazas (e.g. ingesta de plástico, metales pesados).

Además, durante la pasantía se trabajó en conocer y dimensionar la amenaza de la captura incidental en la fardela blanca en los países donde migra. Para esto se coordinó y se llevó a cabo una reunión hemisférica que permitió exponer los conocimientos actuales asociados a pesca incidental de fardela blanca en diferentes países y los tipos de estudios o medidas de mitigación que se están implementando actualmente.

Metodología

La presente pasantía, tuvo objetivos asociados a aumentar el conocimiento de la pasante en temas relacionados a investigar y/o disminuir la mortalidad de fardela blanca asociado a las pesquerías, esto en base a dos estrategias diferentes:

1. Capacitaciones:

Se realizaron capacitaciones relacionadas a mejorar los conocimientos para la creación de la Red de Nacional de Respuesta Frente a Varamientos de Chile (REVACH) y los protocolos y técnicas de necropsias.

- a. Capacitación en el laboratorio de Marine Wildlife Care and Research Center en California sobre los protocolos y técnicas para realizar necropsias y estudios de plásticos en aves marinas muertas por pesquerías en Alaska y Hawaii. Jessie Beck, investigadora a cargo del laboratorio, realizó las capacitaciones y el entrenamiento para conocer las técnicas utilizadas, protocolos entre otras.

Durante la pasantía, se realizó, por solicitud del Instituto de Fomento Pesquero de Chile, el primer protocolo de manipulación de aves heridas en los barcos para Chile, el cual se basó en los protocolos presentados en la guía de ACAP. Este protocolo está siendo analizado actualmente por IFOP y se pretende continuar trabajando de manera que sea específico para los diferentes tipos de pesquerías.

- b. Capacitación en el programa caminata por las playas que se realiza en la costa de California. Se trabajó en terreno aprendiendo sobre el programa, logrado conocer los protocolos y técnicas que se utilizan en la costa de California, de manera de poder evaluar cómo se puede implementar este tipo de estudios en Chile, cuáles son los datos que deben ser tomados, el tipo de fichas a utilizar, y cómo capacitar a las personas que participan.

Actualmente en Chile se está en proceso de creación la Red Nacional de Respuesta Frente a Varamientos (REVACH), la cual está siendo implementada por el Servicio Nacional de Pesca (SERNAPESCA) y apoyada por Oikonos a través de Verónica López y por la Universidad de Davis a través de Marcela Uhart. Dentro de la difusión a las instituciones públicas, Verónica realizó charlas a funcionarios del Servicio Agrícola y Ganadero (SAG) en las regiones con mayor mortalidad de fardela blanca para lograr que los funcionarios pudieran aprender sobre el reconocimiento de las especies. Además de las capacitaciones, con el apoyo del programa de ciencia ciudadana REVAM, se actualizó la Guía de Identificación de Aves Marinas Muertas Varadas en las Playas (Anexo 4), la cual fue distribuida a través de correo electrónico a los funcionarios de las instituciones públicas de Chile, como Armada, Servicio Agrícola y Ganadero, SERNAPESCA e IFOP. Actualmente se está buscando financiamiento para imprimirla y ser entregada a observadores a bordo del IFOP y otras instituciones como la Armada de Chile y SAG que tienen relación directa en caso de eventos de varamientos. La guía se puede descargar gratuitamente desde el siguiente link: http://oikonos.org/wp-content/uploads/2017/07/GuaavesmarinasmuertasenlasplayasREVAM_OIKONOS_2018.pdf

2. Gestión para la creación de una red hemisférica sobre la captura incidental de fardela blanca:

El día 11 de octubre en el laboratorio de Marine Wildlife Care and Research Center, Ciudad de Santa Cruz, California, EE.UU, se realizó la primera reunión de la creación de la red hemisférica sobre la captura incidental de fardela blanca. Participaron un total de 30 personas, representando a 21 instituciones, tanto de gobierno como de ONGs de diferentes países.

Durante la reunión se revisó la información actualizada sobre la especie a través de 18 presentaciones, las cuales incluyeron información de sus migraciones como en sus colonias reproductivas. Esto se seguirá trabajando principalmente en reuniones con American Bird Conservancy y personas de Oikonos en EE.UU en busca de lograr una segunda reunión el año 2019 que permita seguir aumentando el conocimiento sobre las amenazas de la especie en su rutas migratorias y el trabajo en conjunto compartiendo conocimiento y búsqueda de fondos para seguir avanzando en los estudios en las colonias de nidificación.

Todos los documentos asociados a la reunión (i.e. lista de participantes, presentaciones, bibliografía de la especie, entre otros) se encuentra disponible en el siguiente link. En este link además se puede encontrar un resumen de todos los acuerdos internacionales que posee la especie y archivo word que permite el acceso a todos los documentos, publicaciones y otros, que se encuentran disponibles sobre la especie. Todos estos documentos fueron creados para esta reunión, siendo otro resultado importante de esta pasantía, ya que permite un acceso fácil a toda la información disponible sobre la especie.

<https://drive.google.com/drive/folders/1BdEq0UaG1LHGsuq3NI1fowq2IXRvZDA1>

Tareas a Futuro

En base a las herramientas aprendidas durante las capacitaciones en laboratorio de Marine Wildlife Care and Research Center, se seguirá trabajando en conjunto con diferentes instituciones del Gobierno de Chile en la implementación del programa nacional de estudio de necropsias en aves marinas. En el caso del programa de caminata por las playas, se seguirá trabajando junto a SERNAPESCA en creación de la Red Nacional de Respuesta a Varamientos (REVACH). Actualmente Verónica López se encuentra apoyando la realización de una reunión para el mes de abril o mayo de 2019 en la ciudad de Valparaíso, Chile, donde se pretende dar el inicio a la creación de la Red con reuniones de coordinación interinstitucional y con un día de taller de capacitación para el funcionamiento de la red de respuesta para los funcionarios de diferentes instituciones asociadas en las diferentes regiones de Chile. Esto se trabajará además con Universidades, el grupo de trabajo de aves marinas que lidera la SUBPESCA, entre otros, de manera de avanzar en un trabajo colaborativo a nivel Nacional.

Referente a la creación de la red hemisférica, se planteó el crear cada año dentro de las sesiones de la reunión del Pacific Seabird Group, una reunión asociada a los avances dicha red. Verónica López va asistir a la reunión a realizarse en febrero de 2019 en Kauai, de manera de comenzar las conversaciones para evaluar la opción de poder reunirse anualmente y avanzar en cómo trabajar en conjunto entre diferentes países. Además, durante la reunión en Santa Cruz, se trabajó con Hannah Nevins de American Bird Conservancy, quien fue un apoyo fundamental en la coordinación de la reunión. Con ella se continuará trabajando enfocado en el acercamiento a Perú y Ecuador principalmente en temas asociados a mortalidad con pesquerías, de manera de poder trabajar paralelamente y alineados en los países donde la especie migra.

Unofficial translation courtesy of Master of Translation students from Monash University and University of New South Wales, Australia:

Currently in Chile, purse seines bycatch is considered to be the main threat to the pink-footed shearwater (*Ardenna creatopus*). This is on account of the high mortality rates outlined by the Fisheries Development Institute (IFOP) (1043 pink-footed shearwaters dead in 1,165 observed

incidents during 2015-2016) and the Albatross Task Force (ATF) (3.58 birds per incident, 7.63 birds per fishing trip in 2013). This data coincides with that recorded by scientists on board in around 1-2% of the total events carried out each season.

Throughout this internship, strategies directly involved with the bycatch of seabirds were examined with the aim to implement them in Chile.

1. **Walking program along beaches:** This methodology can provide information associated with the seasons of the year in which greater interaction between fisheries and affected species occur. The pink-footed shearwater is considered to be one of the most impacted species and as such, it is crucial to be able to demonstrate this correlation with facts. Additionally, it can serve as a tool to assess the magnitude of the issue and likewise serve as an indicator to measure the effectiveness of the mitigating measures. Said strategy should result in a decrease in the number of dead birds on beaches.
2. **Necropsy Study:** By conducting necropsies it is possible to determine in detail the characteristics of each species affected by bycatch and in turn, the impact of this threat on seabird populations. By means of this methodology we are able to determine if the individuals are juvenile or adult, male or female, as well as other details such as their diet and other potential threats (e.g. ingestion of plastic or heavy metals).

Furthermore, the work carried out during the internship was centred on learning and scaling the extent to which bycatch threatens the pink-footed shearwater and the countries to which it migrates. A hemispheric meeting was carried out for this purpose as it enabled current knowledge associated with the bycatch of the pink-footed shearwater in various countries to be brought to light. Additionally, the meeting addressed the types of studies and mitigating measures that are currently being implemented.

Methodology

The objective of this internship was to raise the intern's awareness of topics related to investigating and/or reducing bycatch related deaths of the pink-footed shearwater. This was based on two different strategies:

1. Training activities

Training activities were undertaken with the goal to gain the knowledge required to establish Chile's National Stranding Response Network (REVACH), and determine protocols and necropsy techniques.

- a. Training at the Marine Wildlife Care and Research Centre laboratory, California, dealing with the protocols and techniques required to conduct necropsies and examinations of ingested plastic in deceased seabirds in fisheries in Alaska and Hawaii. The head investigator of the laboratory, Jesse Black, provided training in techniques and protocols, among other topics.

The first handling protocol for injured birds on shipping vessels based on the protocols set out in the ACAP guidelines was drafted at the request of the Fisheries Development Institute in Chile (IFOP). Currently, this protocol is being reviewed by IFOP in order to specify the procedures for the various types of fisheries.

- b. Learning about the walking along beaches program along the California coast. Program-related work was conducted on site and participants were instructed on the protocols and techniques used along the California Coast. The objective of this was to evaluate how

these studies could be implemented in Chile. Such specifications included the data that should be collected, the types of files to use and how to train participants.

Currently in Chile, REVACH is in the process of being established. It is being implemented by the National Fisheries and Aquaculture Service of Chile (SENAPESCA) and supported by Oikonos, through the help of Veronica Lopez, and the University of California, Davis, through the help of Marcela Uhart. As part of the awareness being spread to public institutions, Verónica held talks with officials from the Agricultural and Livestock Service of Chile (SAG) in the regions reflecting the highest Pink-footed shearwater mortality rates. The aim of this was to educate officials about the impacted species. In addition to the training conducted, The Identification Guide to Stranded Dead Seabirds was updated with the support of the Citizen Science Program REVAM. The updated version was distributed via e-mail to the officials working in Public Institutions in Chile, such as the Navy, SAG, SERNAPESCA and IFOP. Funding is currently being sought to print and distribute the amended guide to observers at IFOP and to other institutions such as the Chilean Navy and SAG that share a direct connection in the event of strandings. The guide can be downloaded for free from the following link:http://oikonos.org/wp-content/uploads/2017/07/GuaavesmarinasmuertasenlasplayasREVAM_OIKONOS_20.18.PDF

2. Creating a hemispheric network on the bycatch of pink-footed shearwaters

The first meeting on the creation of the hemispheric network on the bycatch of pink-footed shearwaters was held on 11 October, 2018, at the Marine Wildlife Care and Research Center laboratory. A total of 21 governmental and non-governmental institutions were represented in the meeting by 30 attendees.

Up-to-date data on the species' migration patterns and breeding colonies was analysed through 18 presentations. Meetings will continue to be held with American Bird Conservancy and Oikonos, with the hope to arrange the network's second, which will address threats to the species along its migratory routes, collaborative work, and funding for the study of nesting colonies.

Participants can access all this information using the link below. A summary of international treaties and an MS Word file containing documents and publications on the species can also be accessed via this link. The creation of all these documents is an important outcome of this internship, given it facilitates the access to all the information available about the species.

<https://drive.google.com/drive/folders/1BdEq0UaG1LHGSUq3Nl1fowq2IXRvZDA1>

Future activities

The training at the Marine Wildlife Care and Research Center laboratory will be the basis for working with Chile's governmental institutions on the implementation of a national program for necropsy studies of seabirds. As for the walking along beaches program, this researcher will continue to work alongside SENAPESCA on the creation of REVACH. Verónica López is currently organizing a meeting that will be held in April or May of 2019 in Valparaíso, Chile, to launch the network inter-institutional coordination meetings and to train the staff from the participating institutions. The latter will be worked on nationally and in collaboration with universities, a working group on seabirds led by Undersecretary of Fisheries and Aquaculture (SUBPESCA), and other participants.

As for the creation of the hemispheric network, it was agreed that a yearly session would be held at the Pacific Seabird Group's meeting on the progress in the creation of said network. Verónica López will attend the meeting to be held in February 2019 in Kauai to propose the idea of an annual meeting and discuss the ways to work collaboratively across countries. Furthermore, at the Santa Cruz meeting, work with Hannah Nevins from American Bird Conservancy was crucial in the coordination of this meeting. We will continue to work with her on the ways to approach Peru and Ecuador regarding fishery-related mortality in order to align them with the rest of the countries that are part of the migratory routes.