

**TRACKING NORTH PACIFIC ALBATROSSES
TO
UNDERSTAND FISHERY INTERACTIONS**

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SCED 531: Life and Marine Science: Tracking Marine Animals

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TRACKING NORTH PACIFIC ALBATROSSES TO UNDERSTAND FISHERY INTERACTIONS

Summary:

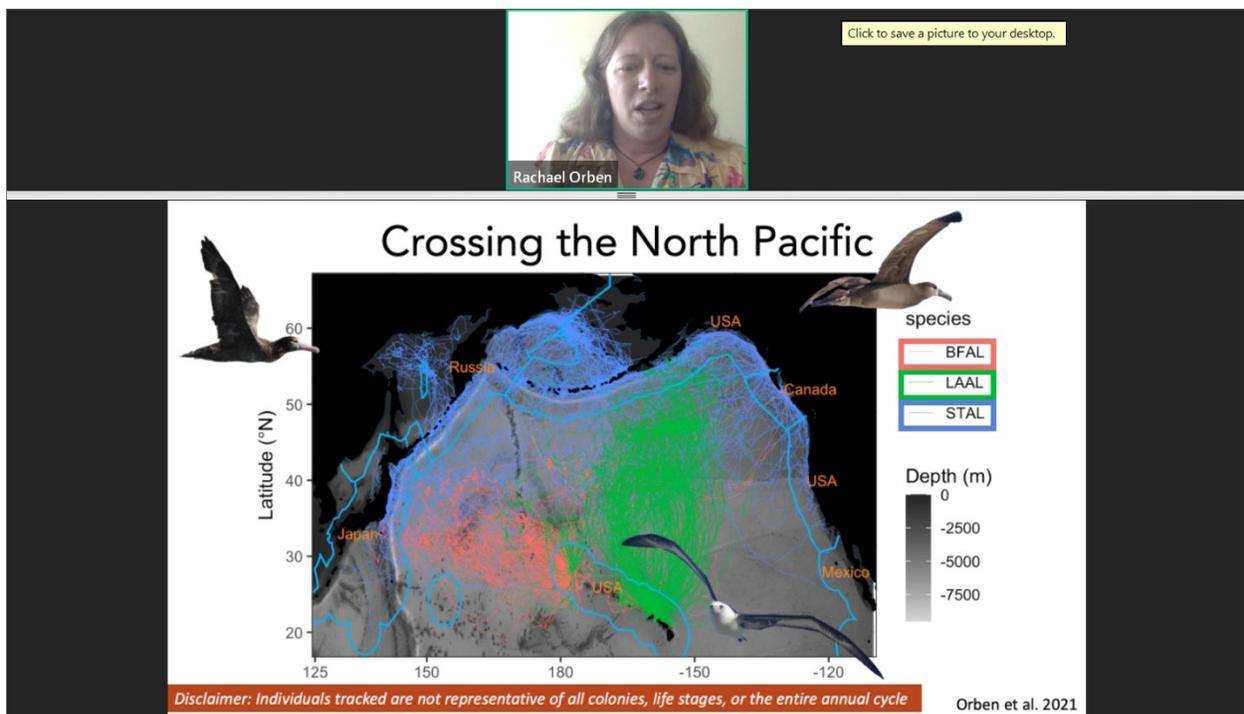
On July 28, 2022, NOAA Sanctuary Education and the PAPA HANAUMOKUAKEA Marine National Monument hosted Rachael Orben from Oregon State University and the Department of Fisheries, Wildlife and Conservation Science. I chose this particular webinar as research for a grant project where I am on the guiding coalition and for its direct correlation to tracking marine animals, the focus of this course. Field-based learning has shown remarkable results with educating the public on global climate and, in reference to this course, ocean literacy. Dr. Orben spoke of her interaction with the Albatrosses in the North Pacific since all but one species, the Black-footed albatross, is not endangered (2022).

Albatrosses with their huge wingspans are noted for their efficient long-distance gliding flight (Pacheco & Liebach, n.d.). Since these birds can travel thousands of miles across the sea, the ability to track their movements is imperative. Orben believes that by tracking these birds, we can begin to mitigate the factors causing their population declines. In her discussion she approached the interactions between fisheries operations and the albatross. One of the greatest impacts on the populations has been long-line fisheries (Orben, 2022). The birds see the bait attached to the lines, strike, become hooked, and then drown (Orben, 2022). However, we can't make assumptions that all albatrosses suffer the same fate especially with the birds' history of long-distance flights. Orben went into some of the conditions that cause the albatross to interact with fishing vessels. The team used radar detecting biologging devices to identify fishing vessel encounters surrounding the Papahānaumokuākea monument and in the North Pacific. The biologging method gave an alternative perspective to this issue by combining movement data from predators and fishing vessels which allowed researchers to analyze parameters like environmental

conditions, predator behavior, and vessel attributes (Orben, et al.,2021). Collaborative studies between different organizations are needed to mitigate global ocean management (Orben, 2022).

Let's take a look at why the Albatross is such a special bird. These birds have a long-lifespan. They travel phenomenal distances foraging for food and then returning to their native habitats. This bird is very faithful to its nesting grounds and colony (Orben, 2022). The following image from the webinar

shows the numbers and range for many albatrosses in the North Pacific region (Orben, 2022).



Since these birds rarely have more than one chick, the range of their foraging cycle is limited when the albatross is raising its offspring. This next slide shows the difference in foraging distances during the nesting, raising and weaning cycles.

Click to save a picture to your desktop.

Rachael Orben

Seasonal cycles of movement

Central-place foraging

(Orben, 2022)

One solution mentioned in the webinar was introducing Streamer lines. This method attaches a brightly colored streamer at intervals along the fishing line that flap freely in the surface winds scaring the birds away. This next slide and graph show how effective the streamer lines have been.

[Click to save a picture to your desktop.](#)



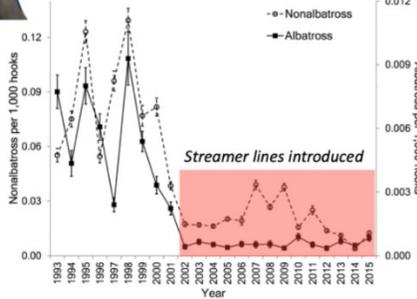
Rachael Orben

Fisheries bases solutions

Streamer lines



Alaskan longline fisheries combined



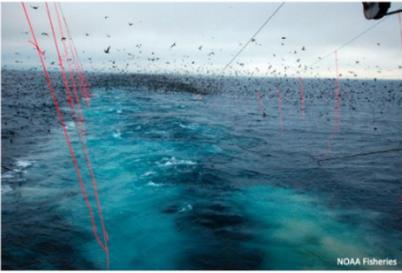
Nonalbatross per 1,000 hooks

Albatross per 1,000 hooks

Year

Streamer lines introduced

Melvin et al. 2019



N.O.A. Fisheries

(Orben, 2022).

Why does the albatross follow fishing vessels so closely that they endanger their lives? There are many factors that can attribute to this behavior. First, let's look at intrinsic factors. Orben identified 6 intrinsic factors that increase the likelihood that albatrosses will encounter fishing vessels.

- The physical condition of the bird. Birds in a depleted condition will try to find the easiest source of food.
- The age of the bird. Younger birds may not have experienced the dangers of fishing vessels and try to take a wide berth when they are around, or they could be advanced in age and choose to take the risk.
- Hunger! When an animal is hungry and their normal feeding grounds yield no results, they take greater risks.
- Territory defense: These birds are very faithful to their colonies. If the fishing vessel is a perceived threat, they may attack en masse, getting tangled in the lines.

- The stage of breeding. If the birds are feeding young chicks, they will take greater risks to get food that is closer to the nest.
- Spatial memory: The birds prior memories of positive conditions for foraging bring them in contact with undesirable interlopers.

(Orben, 2022)

Orben also identified 6 extrinsic factors the birds have little to no control over.

- Weather conditions: Even without global warming, birds cannot predict or modify the weather.
- Competitors: As populations of lower-level consumers are depleted, other albatrosses or species that eat the same food will compete for the same resources.
- Prey availability/aggregation: Here the albatross may have to find other areas where their preferred food aggregates forming a foraging ground. The intrinsic spatial memory of those grounds is affected when prey moves due to changing environmental conditions or maybe overfishing.
- Conspecific attraction or avoidance: This deals with habitat selection. How does a colony react and solve the issues of habitat loss due to natural or human interactions? This deals with moving the colony, or maybe even expanding the colony as the population grows.
- Predator avoidance: As overfishing depletes population of prey for numerous species, those species may choose to seek other energy sources. In this respect an organism that wasn't a predator before, could now be a predator needing to be avoided.
- Humans: Humans have consistently taken what they want from the earth, even if it is not a need. This overexploitation has caused dramatic decreases in the resources needed for sustainability.

(Orben, 2022)

Orben indicated that the best way to really know what is happening in the vastness of the ocean is to collaborate with different organizations, sharing data and comparing that data to make reasonable plans to reduce human impact and restore the balance. She spoke about some methods to mitigate this plan. The

first is to identify “Encounter” events at 30 km and daily scale between albatross tracks and fishing vessels (Orben, 2022). The second is to identify “Association” events from within an “Encounter” dataset at scales of: 3 km and 10 minutes (LAAL and BFAL) as well as 3 km and 1 hour (STAL) (Orben, 2022).

In this particular study with the above parameters, Orben’s team found that the Laysan albatross typically encountered long-liners but only approached vessels 36% of the time; the Short-tailed albatross approached vessels 28% of the time and >99% of these were national exclusive economic zones (EEZ); and the Black-footed albatross approached vessels 62% of the time, however the dataset only had 21 encounter events therefore explanatory factors were not investigated (Orben, 2022). In conclusion, the Orben team determined that Vessel nation and fishing type didn’t influence when birds approached boats (Orben, 2022). Orben is continuing the study where she intends to characterize the occurrence and drivers of Hawaiian albatross encounters with fishing vessels inside and outside the national monument (Orben, 2022).

References:

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