OVERLAP OF NORTH PACIFIC ALBATROSSES WITH THE U.S. WEST COAST GROUNDFISH AND SHRIMP FISHERIES

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Seabird Fisheries Bycatch

• Impact seabird populations
• Impact valuable fisheries
• Mitigation tools available
• First step - determine “overlap”
  – Where seabirds and fisheries co-occur
West Coast Groundfish Fishery

• Focus on albatrosses

• Black-footed takes
  – 44 birds/yr (21-94, 90% CI) *

• Short-tailed take April 2011

• Regulations pending for large longline vessels in 2014

• Fisheries awareness is low, but increasing slowly

Objectives

• Evaluate abundance and spatial distribution of North Pacific albatrosses
  – At-sea surveys
  – Satellite telemetry
• Estimate spatial distribution of fisheries effort
  – Logbook, landings, and fisheries observer data
• Calculate an index of overlap
  – Product of albatross density and fisheries effort
• Prioritize conservation efforts and inform management
Study Area – West Coast

- U.S. EEZ off CA, OR, and WA
- 15 Analysis Zones
  - 5 Management Areas (INPFC)
    - Vancouver = Canada - 47°30’
    - Columbia = 47°30’ - 43°00’
    - Eureka = 43°00’ - 40°30’
    - Monterey = 40°30’ - 36°00’
    - Conception = 36°00’ - Mexico
  - 3 Bathymetric Domains
    - Shelf = <200m
    - Break = 200m - 1000m
    - Slope = 1000m – 2000m
At-Sea Surveys
methods

• Map of survey tracks
• Compiled 8 datasets (2005 -2008)
  – 64,014 km of surveys
  – Strip-transect methods
• Calculated mean density per km²
  – Display in 10 x 10 km grid
  – Overlap index in analysis zones
At-Sea Survey results

- Map of black-footed albatross density
  - Most abundant albatross
    - 4075 recorded
  - Majority are located
    - 99% north of 36° N latitude
    - 95% inside 2000m contour
- Laysan uncommon (not shown)
  - 184 recorded
  - 75% outside of 2000m contour
  - Throughout EEZ
- Short-tailed rare (not shown)
  - 2 recorded
Satellite Tracked Albatrosses (1998-2010)

- Map of 50% kernel density distributions
- Table of % time spent in regions

<table>
<thead>
<tr>
<th></th>
<th>Black-footed n = 12</th>
<th>Short-tailed n=8</th>
<th>Laysan n=42</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North of 36°</strong></td>
<td>Outside 2000m 2%</td>
<td>Inside 2000m 52%</td>
<td>Outside 2000m 40%</td>
</tr>
<tr>
<td></td>
<td>Inside 2000m 52%</td>
<td></td>
<td>Inside 2000m 9%</td>
</tr>
<tr>
<td><strong>South of 36°</strong></td>
<td>Outside 2000m 24%</td>
<td>Inside 2000m 22%</td>
<td>Outside 2000m 39%</td>
</tr>
<tr>
<td></td>
<td>Inside 2000m 22%</td>
<td></td>
<td>Inside 2000m 12%</td>
</tr>
</tbody>
</table>
Distribution Conclusions

• Black-footed and short-tailed primarily co-occur inside 2000 m contour
  – with the groundfish fishery
• Laysan are primarily found outside the 2000 m contour,
  – little to no groundfish fishery effort
• Use black-footed density in overlap calculation
  – surrogate for short-tailed
  – protect both species
Fisheries Effort (02-09)
2 Longline, 4 trawl

<table>
<thead>
<tr>
<th>Sector</th>
<th>Longline (hooks)</th>
<th>Trawl (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sablefish longline</td>
<td>Groundfish trawl*</td>
</tr>
<tr>
<td>Observed %</td>
<td>17.22%</td>
<td>20.50%</td>
</tr>
<tr>
<td>Total Fleet Effort</td>
<td>66,688,391</td>
<td>108,676</td>
</tr>
</tbody>
</table>

*sector with fishing location data available via logbooks
Overlap – Longline
(albatross density x fisheries effort)

Red above average, yellow below average

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Longline (10,000 bird hooks/km²)</th>
<th>Sablefish longline</th>
<th>Near-shore longline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Shelf</td>
<td>Break</td>
<td>Slope</td>
</tr>
<tr>
<td>Vancouver</td>
<td>99.43</td>
<td>1575.01</td>
<td>2.90</td>
</tr>
<tr>
<td>Columbia</td>
<td>46.60</td>
<td>2118.77</td>
<td>11.64</td>
</tr>
<tr>
<td>Eureka</td>
<td>0.23</td>
<td>504.06</td>
<td>0.00</td>
</tr>
<tr>
<td>Monterey</td>
<td>0.62</td>
<td>261.28</td>
<td>53.83</td>
</tr>
<tr>
<td>Conception</td>
<td></td>
<td>20.80</td>
<td>0.02</td>
</tr>
</tbody>
</table>
## Overlap – Trawl
(albatross density x fisheries effort)

Red above average, yellow below average

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Trawl (100 bird hours/km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Groundfish trawl</td>
</tr>
<tr>
<td></td>
<td>Shelf</td>
</tr>
<tr>
<td>Vancouver</td>
<td>26.03</td>
</tr>
<tr>
<td>Columbia</td>
<td>34.11</td>
</tr>
<tr>
<td>Eureka</td>
<td>0.89</td>
</tr>
<tr>
<td>Monterey</td>
<td>4.41</td>
</tr>
<tr>
<td>Conception</td>
<td></td>
</tr>
<tr>
<td></td>
<td>At-sea hake trawl</td>
</tr>
<tr>
<td></td>
<td>Shelf</td>
</tr>
<tr>
<td>Vancouver</td>
<td>7.83</td>
</tr>
<tr>
<td>Columbia</td>
<td>5.06</td>
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<tr>
<td>Eureka</td>
<td>0.07</td>
</tr>
<tr>
<td>Monterey</td>
<td></td>
</tr>
<tr>
<td>Conception</td>
<td></td>
</tr>
</tbody>
</table>
Observed Mortality

Map of observed albatross takes

- **Black-footed**
  - 124 sablefish longline
  - 8 at-sea hake trawl
- **Short-tailed**
  - 1 sablefish longline
- **Laysan**
  - 0 recorded

Adapted From - Risk assessment of U.S. West Coast groundfish fisheries to threatened and endangered seabirds August 24, 2011 review draft. NWFSC
Opportunistic Sightings

- Map of short-tailed sightings and fishery risk
- Observer program
- 2002 - 2010
- $N = 114$
Overlap conclusions and next step

• Sablefish longline highest conservation priority
  – Highest overlap and observed mortality

• Encourage closer look in trawl fisheries
  – Cable strikes not monitored, mortality underestimated

• Collaborative research and community outreach
  – Port-to-port outreach events in March 2014
  – Characterize fishing gear
  – Recruiting host vessels to develop mitigation and performance standards for WC vessels
Albatross Protection and the West Coast Groundfish Fishery: What Fishermen Should Know

Please join us for a lunchtime albatross bycatch information meeting

- Learn about management changes coming in 2014
- Get free streamer lines
- Tell us about your gear and vessel and share ideas to avoid catching albatrosses
- Learn about our planned research and help shape it
- Learn how to identify the three North Pacific albatross species
- Learn what to do if you hook an albatross
- Food and drinks provided

Meetings will be held from 11 a.m. to 1 p.m. at the following locations:

3 March: England Marine, Newport, OR
4 March: Charleston Marina RV Park, Charleston, OR
5 March: Port Orleans Library, Port Orford, OR
20 March: England Marine, Astoria, OR
21 March: Washington Crab Producers Main Office, Westport WA
1 April: Woody Island Harbor District Office, Eureka, CA
3 April: Salmon Trollers Association Hall, Fort Bragg, CA

For the most up-to-date information on non-regulatory aspects of seabird bycatch, see seabirdbycatch.washington.edu or contact Ed Melvin, Washington Sea Grant, 206.543.9968 or edmelvin@uw.edu.

Albatross Protection and West Coast Groundfish Fisheries

What Fishermen Should Know

Changes Are Coming

The short-tailed albatross is an endangered species, with fewer than 4,000 found in the North Pacific. As a result, recent management actions call for West Coast groundfish fisheries to help protect these birds. These fisheries, including all gear types, can take no more than two short-tailed albatross in a two-year period. Fishermen should also avoid catching the more common black-footed albatross, because their bycatch numbers will factor into management policy.

Starting this year, larger non-tribal longline vessels that are 55 feet or longer will be required to use streamer lines to keep seabirds away from their bait. For details, see http://alaskafisheries.noaa.gov/protectedresources/seabirds/westcoast.html. Longline vessels under 55 feet and tribal vessels are encouraged but not required to use streamer lines. By preventing seabird interactions, fishermen can avoid additional restrictions in the future.
Seabird Bycatch Management

Bird access distance

Sinking longline

6 feet
Seabird Bycatch Management

Options
1. Scare Birds
2. Shrink Distance
3. Make baits hard to see
4. Minimize attraction
Gear-vessel survey

West Coast Hook and Line Survey

Scientists at Washington Sea Grant and Oregon State University are researching ways to prevent seabird bycatch and working to share existing information and the information they develop with the West Coast longline fleet. For more information about this program, visit our website at:

http://seabirdbycatch.washington.edu

Developing good seabird bycatch prevention regulations requires in-depth knowledge of the vessels and gear used by the West Coast hook-and-line fleet. The information voluntarily provided here will be used to understand the range of typical vessels and longline gear. This information will be used to structure research and port-based outreach activities. It will also be summarized and incorporated into the research results we report to the Pacific Fishery Management Council and National Marine Fisheries Service. That report will include practical recommendations for action by the fleet based on the results of research, the capabilities of the vessels in the fleet, and feedback from fishermen who choose to participate. Results will only be reported in aggregated form so that individual vessels cannot be identified.

Below are questions regarding your vessel or the vessel that fishes under your permit. They are specific to vessel and gear characteristics that relate to seabird bycatch avoidance options.

Contact Info:
Vessel Name: ________________  Home Port: ___________
Vessel Contact Name: __________ Email: ____________  Vessel Contact Phone: __________

Fishery Permit/Sector Participation (Check all that apply.)
(Why? To determine vessel and gear types that are typical for each category.)

LE Fixed Gear  Catch Shares
Open Access  IPHC Pacific Halibut

Vessel Characteristics
What is the vessel’s overall length (LOA)? _______ ft.
(Pending bird-avoidance regulations are based on vessel overall length.)

Does the vessel have a mast, boom, outrigger poles, or streamer-line davit? (To determine how many vessels have the infrastructure to support streamer lines.)
(Check all that apply.)

Mast  Davit
Boom  None
Poles

Is the product delivered live, whole, headed, or gutted? (Bird interactions may vary in the presence or absence of discarded offal.)
(Choose all that apply or fill in.)

Live  Gutted
Whole  Other _____
Headed

How many crewmembers typically man the vessel? _______
(Crew size can influence which bird avoidance measures should be used.)

Longline Gear Characteristics
(Why? Pending regulations for larger vessels recognize that gear type can affect how fast or slow longlines sink below the reach of birds.)

What type of longline gear does the vessel use? (Choose one)
Snap-on  Stuck (Fixed)  Swivel Gear

If stuck gear or swivel gear is used, by what method? (Choose type or fill in)
Auto-bait  Tub  Skate-Bottom  Other _______

What is the groundline material, and what is the brand? (Choose type and fill in brand)
Nylon  Lead
Poly  Other
Blend  Brand ______

If you use a mix of groundline materials, please estimate the percentages of each type:

What is the typical number of hooks per tub or skate? _______

How far apart are the hooks spaced along the groundline, in inches? _______

During a typical set, how many tubs or skates are set? _______

On a typical trip, how many sets are made per day? _______

Are floats used on the groundline?  Yes  No
If yes, what is the float diameter, in inches? _______

What is the typical number of hooks between floats? _______

Are weights used on the groundline?  Yes  No
If yes, how many pounds and ounces do they typically weigh? _______

What is the typical number of hooks between weights? _______

Are both floats and weights used on the groundline?  Yes  No
If yes, how many hooks are typically set between weights and floats? _______

What is the typical vessel speed. in knots, while setting longline gear? _______
(Vessel speed affects how near or far astern gear sinks beyond the reach of birds.)
**Wildcard – floats on groundline**

- **Tub** = unit of gear = 600’
- 160 -250 hooks per tub
- 38-41” hook spacing
- Float/Weight spaced every 20 hooks
Weights vs. floats, WC tub gear; 5.8 knots

Distance in Feet

Bird access distance

Protection with streamer lines

Weights

Floats
TDR placement
How many hooks exposed to albatrosses (2m)?
More data on the way
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Co-authors and collaborators:

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Scott Shaffer (San Jose State University, UCSC, TOPP)  Michelle Hester (Oikonos)
Kyoaki Ozaki, Tomihiro Deguchi, Fumio Sato, Noboru Nakamura *(Yamashina Institute for Ornithology)*
Greg Balogh (U.S. Fish and Wildlife Service)  Bill Henry (UCSC, TOPP)
The hand extends, it's a beggars palm...
Awaiting the god that abandoned it...
With a lacy threat of poison particles;
Which concerns no one.

Salton's own Polyphemus,
And all the boys trapped in comic book subs,
Good luck.
Dive, for the kernel of which is spoken
Good luck.

The spade that dug the hole
Has long struck spangled corprolite
Polyphemus has learned a thousand
Ways to cook a cichlid
He never lacks a toothpick
Parchment, from the scales
He makes
To keep his lists,
He's an avid birder

... John Mellor, F/V High Hopes