

Seabird Interactions in Hawaii Longline Fisheries for 2013



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NOAA
FISHERIES
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Regional Office



Introduction & Background

- NMFS/PIRO and WPFMC manage Hawaii Longline Fisheries
- Seabirds are known to interact with these fisheries
- The PIRO observer program documents these interactions, mitigation efforts, and ESA-listed species sightings
- The following species have documented interactions (to date):
 - Black-footed Albatross (*Phoebastria nigripes*)
 - Laysan Albatross (*Phoebastria immutabilis*)
 - Sooty Shearwater (*Puffinus griseus*)
 - Unidentified Shearwater spp. (*Puffinus* spp.)
 - Red-footed Boobies (*Sula sula*)
 - Brown Boobies (*Sula leucogaster*)
 - Northern Fulmars (*Fulmarus glacialis*)



Observer Program History

- **1992 Program began**
- **1994 Became mandatory**
 - Limited to 164 vessels
 - Coverage 3-5%
 - Single fishery
- **2000 20% mandatory coverage**
- **2001 Fishery split**
 - Shallow set fishery closed
- **2002*Some seabird mitigation**
- **2004 Shallow set fishery reopens**
 - Increased regulations
 - 100% mandatory coverage
 - *Full seabird mitigation



Seabird Mitigations Requirements

| 1. How do you set your gear → 2. Do you shallow-set or deep-set, and where are you → 3. What you need to do ↓ | <u>STERN-SETTING</u> | | <u>SIDE-SETTING</u> | |
|--|-----------------------------|----------------------------|----------------------------|----------------------------|
| | Shallow-Set Anywhere | Deep-Set North of 23° N | Shallow-Set Anywhere | Deep-Set North of 23° N |
| Deploy mainline from port or starboard side at least 1 m forward of stern corner | | | Yes | Yes |
| If line shooter is used, mount it at least 1 m forward from stern corner | | | Yes | Yes |
| Use a specified bird curtain aft of the setting station during the set | | | Yes | Yes |
| Deploy gear so that hooks do not resurface | | | Yes | Yes |
| Attach 45 g or heavier weights within 1 m of hook of each hook | | Yes | Yes | Yes |
| Use a line shooter to set the mainline | | Yes | | |
| Keep two 1-pound containers of blue-dye on boat | Yes | Yes | | |
| Use completely thawed and blue-dyed bait | Yes | Yes | | |
| Keep fish parts and spent bait with all hooks removed for strategic offal discard | Yes | Yes | | |
| Cut all swordfish heads in half, and use heads and livers for strategic offal discard | Yes | Yes | | |
| Night Set - begin set 1 hour after local sunset and finish 1 hour before next sunrise and keep lighting to a minimum | Yes | | | |

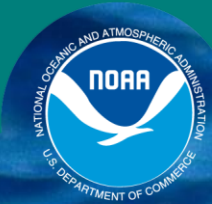


Do These Seabird Mitigation Measures Work?

>90% Reduction in seabird interactions

2000 -2,433 Total seabird interactions

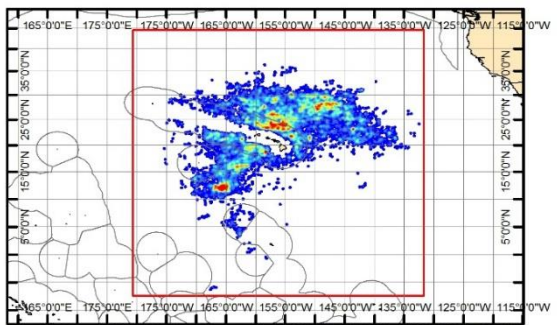
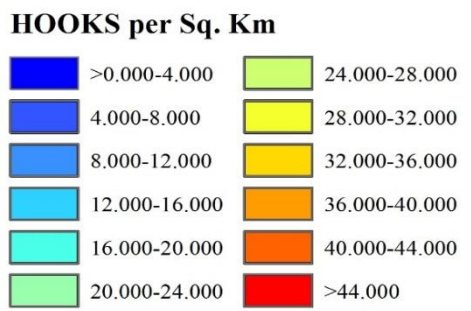
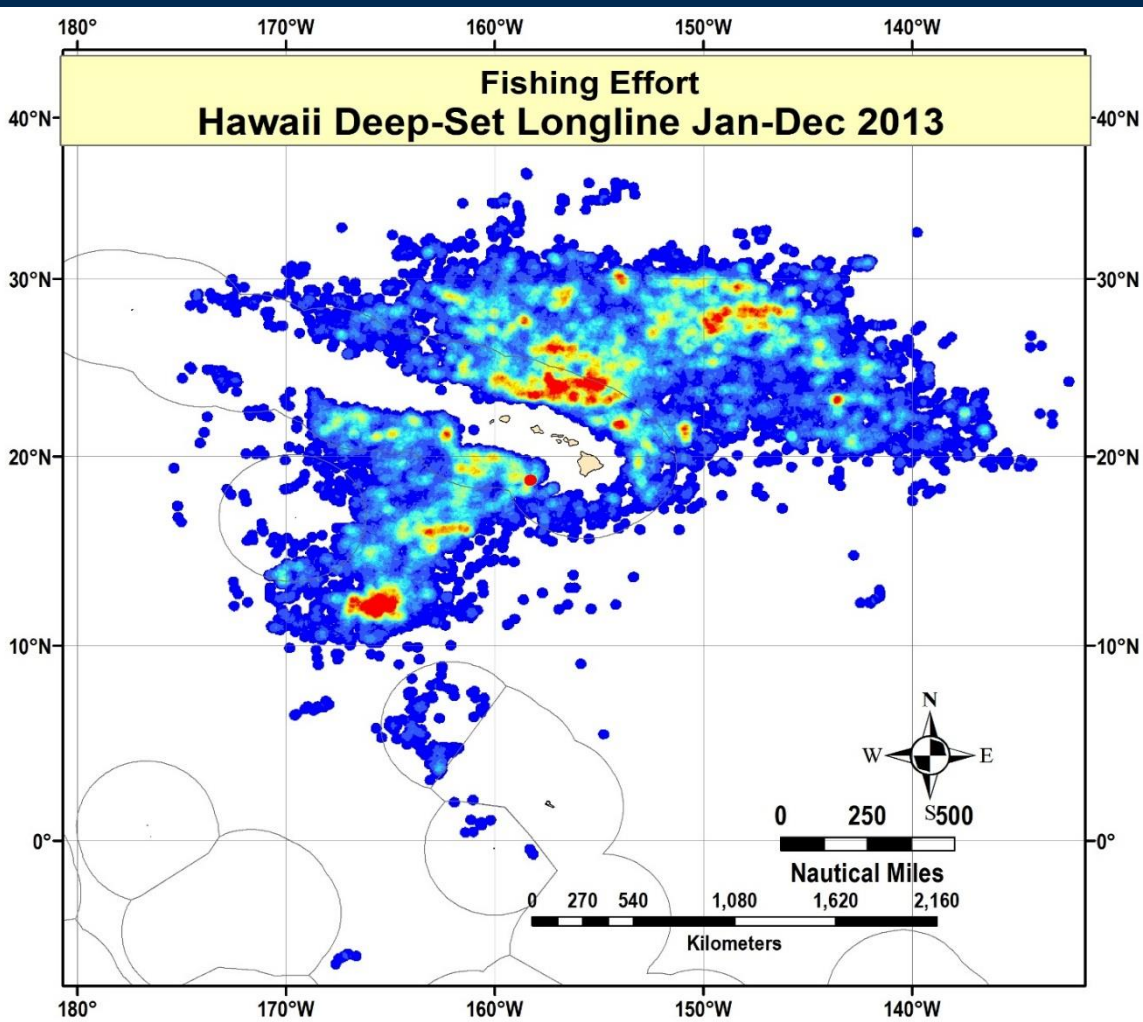
2013 -180 Total seabird interactions



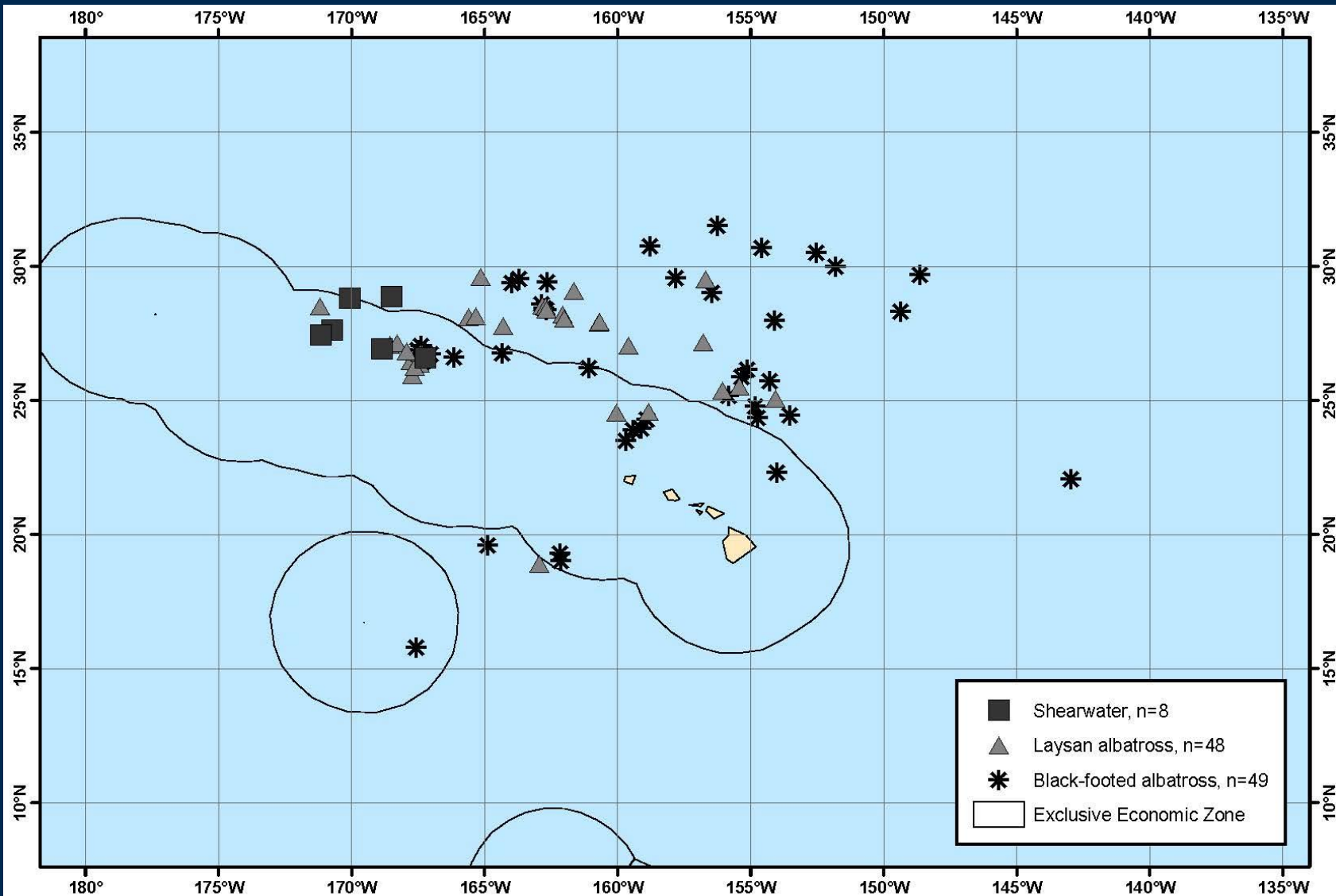
2013 Deep Set Fishery

- 129 active deep set vessels
- 1,383 trips
- 18,772 sets
- 46,919,110 hooks
- 20.4% observer coverage
- 105 Seabird interactions observed
 - 49 Black-footed Albatross
 - 48 Laysan Albatross
 - 8 Sooty Shearwaters
- 100 were released dead
- 5 were released injured and alive





Source: Nonconfidential data summary 10/6/2014 PIFSC/FRMD/IFMP (MKL)
using Fishery Analyst ArcGIS application by Mappamondo GIS

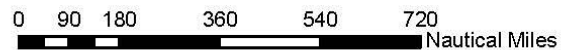


Title: Seabird Interaction in the Hawaii Deep-Set Fishery, 2013

Description: This map depicts the locations of seabird interactions in the observed portion of the Hawaii deep-set fishery during 2013.



Coordinate System: GCS WGS 84



Source: NOAA Fisheries Pacific Island Regional Office Observer Program





Estimated Total 2013 Deep Set Seabird Interactions

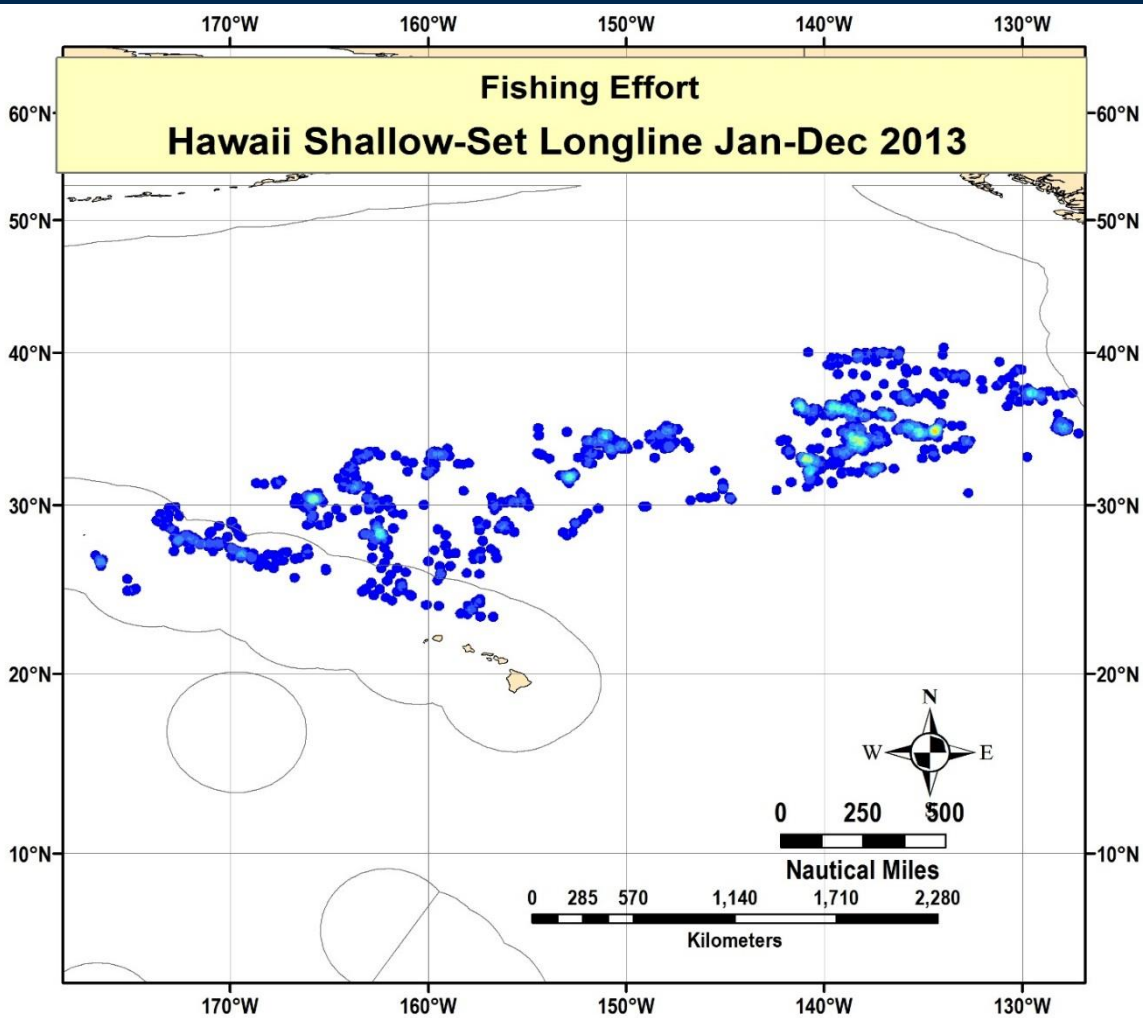


| Species | Total annual estimate | 95% confidence interval |
|-------------------------------|------------------------------|--------------------------------|
| Black-footed albatross | 257 | 174 - 352 |
| Laysan albatross | 236 | 150 - 334 |
| Shearwaters | 43 | 21 - 75 |

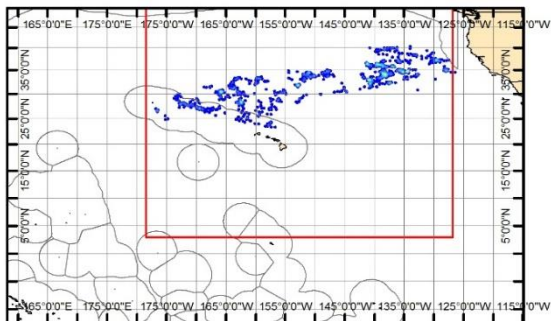


2013 Shallow Set Fishery

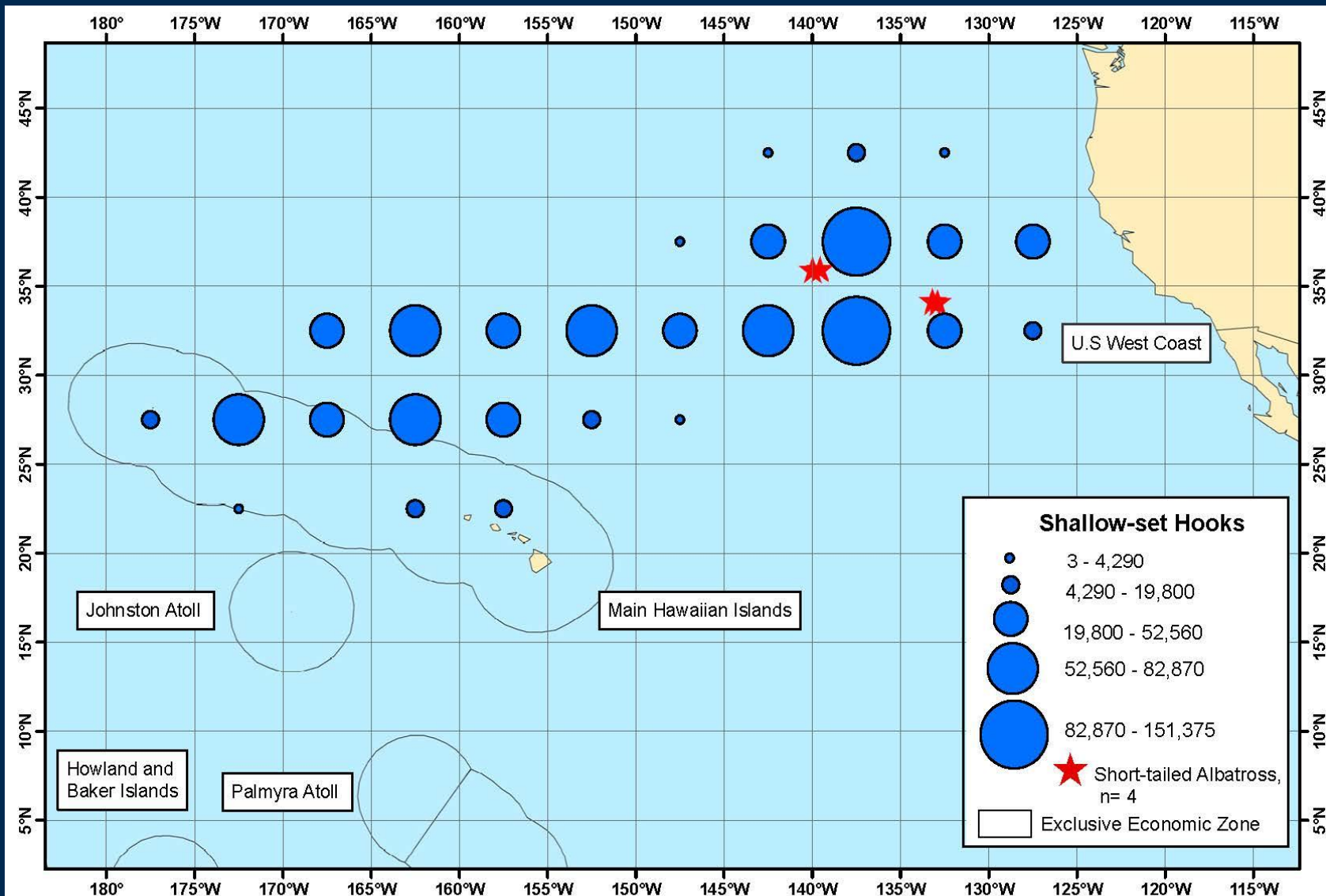
- 15 active shallow set vessels
- 58 trips
- 962 sets
- 1,074,909 hooks
- 100% observer coverage
- 75 seabird interactions observed
 - 45 Laysan Albatross
 - 28 Black-footed Albatross
 - 2 Sooty Shearwaters
- 48 were released injured and alive
- 27 were released dead



HOOKS per Sq. Km



Source: Nonconfidential data summary 10/6/2014 PIFSC/FRMD/IFMP (MKL)
using Fishery Analyst ArcGIS application by Mappamondo GIS



Title: Short-tailed Albatross Sightings in the Hawaii Shallow-Set Fishery and Total Shallow-set Effort in 2013

Description: This map depicts the total number of hooks set for each 5 degree interval and the sighting of a short-tailed albatross in the shallow-set fishery.



Coordinate System: GCS WGS 84



Source: NOAA Fisheries Pacific Island Regional Office Observer Program





Observed Seabird Interactions 2012 to 2013

| | 2012 | 2013 |
|--|--------------|--------------|
| Seabirds observed in deep-set fishery | 74 | 105 |
| Seabirds observed in shallow-set fishery | 99 | 75 |
| Deep-set interaction rate (birds per 1,000 hooks observed) | 0.008 | 0.011 |
| Shallow-set interaction rate (birds per 1,000 hooks observed) | 0.067 | 0.070 |

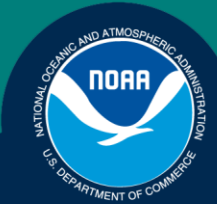


Observed Deep Set Seabird Interactions 2004 to 2013

| Year | Laysan albatross | Black-footed albatross | Sooty shearwater | Other or unidentified bird species | Total birds observed caught | Birds released injured and alive | Birds released dead | Total observed effort (hooks) | Seabird interaction rate (birds per 1,000 hooks observed) |
|------|------------------|------------------------|------------------|------------------------------------|-----------------------------|----------------------------------|---------------------|-------------------------------|---|
| 2004 | 2 | 5 | | 2 | 9 | | 9 | 7,868,613 | 0.001 |
| 2005 | 6 | 11 | | 1* | 18 | | 18 | 9,328,681 | 0.002 |
| 2006 | 1 | 17 | 5 | | 23 | | 23 | 7,437,498 | 0.003 |
| 2007 | 7 | 18 | | | 25 | | 25 | 7,728,502 | 0.003 |
| 2008 | 14 | 30 | 14 | 2** | 60 | 4 | 56 | 8,747,496 | 0.007 |
| 2009 | 18 | 23 | 4 | | 45 | | 45 | 7,872,668 | 0.006 |
| 2010 | 39 | 17 | 1 | | 57 | 1 | 56 | 8,161,800 | 0.007 |
| 2011 | 32 | 13 | 3 | | 48 | 2 | 46 | 8,314,744 | 0.006 |
| 2012 | 31 | 36 | 7 | | 74 | 5 | 67 | 8,845,848 | 0.008 |
| 2013 | 48 | 49 | 8 | | 105 | 5 | 100 | 9,296,069 | 0.011 |

*Brown Booby

**Red-footed Booby and Unidentified Seabird



Observed Shallow Set Seabird Interactions 2004 to 2013

| Year | Laysan albatross | Black-footed albatross | Sooty shearwater | Other or unidentified bird species | Total birds observed caught | Birds released injured and alive | Birds released dead | Total observed effort (hooks) | Seabird interaction rate (birds per 1,000 hooks observed) |
|------|------------------|------------------------|------------------|------------------------------------|-----------------------------|----------------------------------|---------------------|-------------------------------|---|
| 2004 | 1 | | | | 1 | 1 | | 115,718 | 0.009 |
| 2005 | 62 | 7 | | | 69 | 47 | 22 | 1,358,247 | 0.051 |
| 2006 | 8 | 3 | | | 11 | 5 | 6 | 676,716 | 0.016 |
| 2007 | 40 | 8 | | | 48 | 40 | 8 | 1,353,761 | 0.035 |
| 2008 | 33 | 6 | | | 39 | 24 | 15 | 1,460,042 | 0.027 |
| 2009 | 81 | 30 | 1 | | 112 | 88 | 24 | 1,694,550 | 0.066 |
| 2010 | 40 | 38 | | 1*** | 79 | 61 | 18 | 1,832,471 | 0.043 |
| 2011 | 49 | 19 | | | 68 | 53 | 15 | 1,505,467 | 0.045 |
| 2012 | 62 | 37 | | | 99 | 77 | 21 | 1,476,969 | 0.067 |
| 2013 | 45 | 28 | 2 | | 75 | 48 | 27 | 1,074,909 | 0.070 |

***Northern Fulmar



Acknowledgements & Contacts

Acknowledgements:

- NMFS PIRO Fisheries Observer Program
- NMFS PIRO SFD
- NMFS PIFSC

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For more information, please visit:

http://www.fpir.noaa.gov/SFD/SFD_seabirds.html