



**NOAA
FISHERIES**

Pacific Islands
Regional Office

Characterization of Hooks and Observed Interactions

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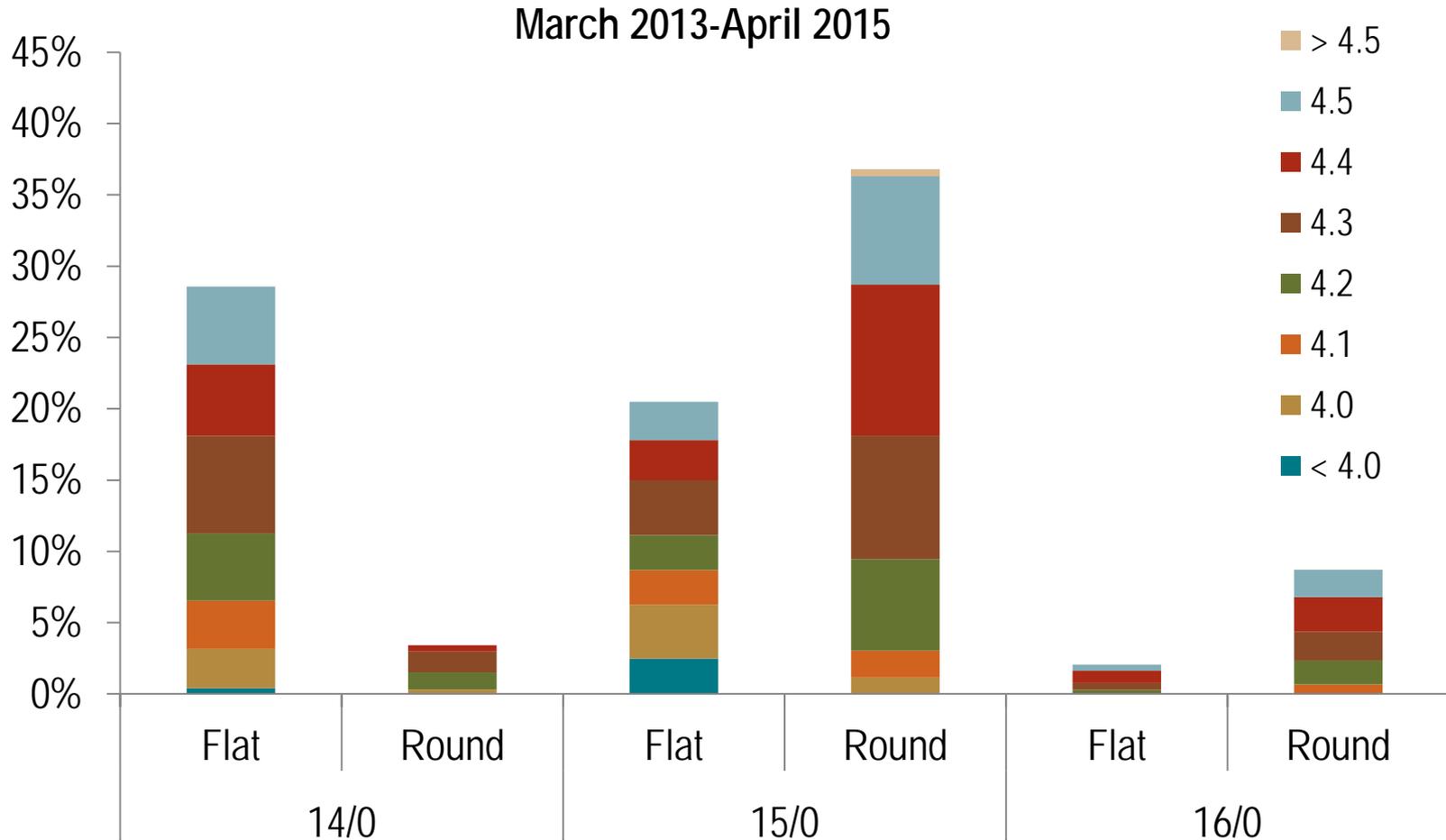
Outline

- Deep-set fishery hook characterization
 - Variety of hook “types” from observer data
 - Hooks involved in false killer whale interactions
- Characterizing observed interactions
- Longline closure areas

Deep-set Fishery Hook Characterization

- Summary of observer data on hook “types” used in deep-set fishery
 - “Type” = unique combination of hook size, cross-sectional shape (flat/round), and wire diameter
- Caveats
 - Observer coverage is random sample, may over- or under-estimate vessels in dataset
 - Unique hook types may not actually be unique
 - Hooks within a type may not be the same hook

Deep-set Fishery Hook Characterization



Hooks in Deep-set False Killer Whale Interactions

- 13 false killer whale hookings in deep-set fishery after Observer Program changed data forms (March 2013)
- Tables present hook types (overall and by year) in “rank” order, and list false killer whale interactions on that hook type
 - Color-coding for confirmed vs. possible involvement

Hooks in Deep-set False Killer Whale Interactions

March 2013-April 2015					
"Rank" (from obs %)	Size	Cross-sectional shape	Wire diam	Obs %	Observed false killer whale interactions
1	15	Round	4.4	10.6%	
2	15	Round	4.3	8.7%	False killer whale (2/3/2014)
					False killer whale (7/11/2014)
					False killer whale (7/11/2014)
					Possibly involved in false killer whale hooking (9/30/2014, 30% of hooks)
3	15	Round	4.5	7.6%	Possibly involved in two false killer whale hookings (both 3/1/2014; both 20% of hooks)
4	14	Flat	4.3	6.9%	False killer whale (9/29/2014)
5	15	Round	4.2	6.4%	
6	14	Flat	4.5	5.4%	
7	14	Flat	4.4	5.0%	
8	14	Flat	4.2	4.7%	False killer whale (6/21/2014)
9	15	Flat	4.3	3.9%	False killer whale (4/20/2013)
					Possibly involved in false killer whale hooking (10/2/2014, 40% of hooks)
10	15	Flat	4.0	3.8%	Possibly involved in false killer whale hooking (3/1/2014; 80% of hooks)
					Possibly involved in false killer whale hooking (3/1/2014; 80% of hooks)
11	14	Flat	4.1	3.4%	
12	15	Flat	4.4	2.8%	Possibly involved in false killer whale hooking (9/30/2014; 70% of hooks)
13	14	Flat	4.0	2.7%	
14	15	Flat	4.5	2.7%	
15	15	Flat	< 4.0	2.5%	Possibly involved in false killer whale hooking (3/30/2015; 55% of hooks)
16	15	Flat	4.2	2.4%	
17	16	Round	4.4	2.4%	False killer whale (9/14/2014)
18	15	Flat	4.1	2.4%	
19	16	Round	4.3	2.0%	
20	16	Round	4.5	1.9%	
21	15	Round	4.1	1.9%	
22	16	Round	4.2	1.7%	
23	14	Round	4.3	1.5%	Possibly involved in false killer whale hooking (10/2/2014; 60% of hooks)
24	14	Round	4.2	1.2%	
25	15	Round	4.0	1.1%	Possibly involved in false killer whale hooking (3/30/2015; 45% of hooks)
26	16	Flat	4.4	0.8%	False killer whale (6/19/2014)
27	16	Round	4.1	0.7%	
28	16	Flat	4.3	0.5%	
29	15	Round	> 4.5	0.4%	
30	14	Round	4.4	0.4%	
31	16	Flat	4.5	0.4%	
32	14	Flat	< 4.0	0.4%	
33	14	Round	4.0	0.3%	
34	16	Flat	4.2	0.3%	

Hooks in Deep-set False Killer Whale Interactions

Size	Cross-sectional shape	Wire diam (mm)	Branchline diam (mm)	Interaction "outcome"	Injury det
14/0	Flat	4.2	2.1	Hook bent, then broke	CBD
14/0	Flat	4.3	2.1	Line cut	SI*
15/0	Flat	4.3	2.0	Hook bent	NSI
15/0	Round	4.3	2.0	Line broke	SI
15/0	Round	4.3	unk	Hook bent	NSI*
15/0	Round	4.3	unk	Line cut	SI*
16/0	Flat	4.4	2.0	Line broke	SI*
16/0	Round	4.4	2.0	Line cut	SI*

Characterizing Observed Interactions

Characterizing Observed Interactions

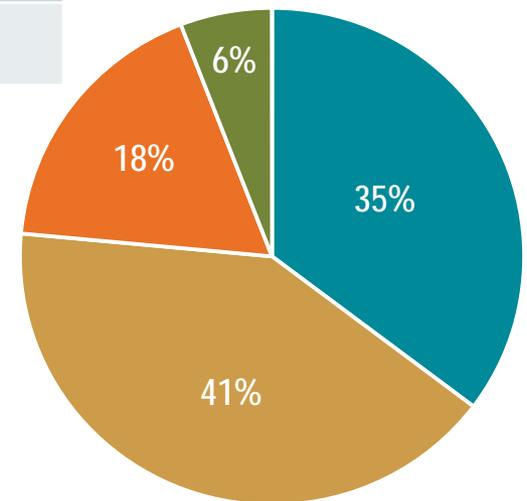
- Examined false killer whale interactions to see if we could find “typical” scenarios or common threads
- Considerations
 - Hooked/entangled
 - Hooking location
 - Captain supervision
 - Handling/release
 - Hook outcome (e.g., straightened/bent, broke, did not straighten)
 - Interaction outcome (e.g., animal released, line broke, line cut)
 - Gear involved (hook and branchline specs)
- Summaries of individual considerations for now, may consider classification tree tool in the future

Interaction Type

- 16 observed false killer whale interactions in deep-set fishery and 1 in shallow-set fishery 2013-April 2015
- All hooked (no entanglements)

Hooking Location

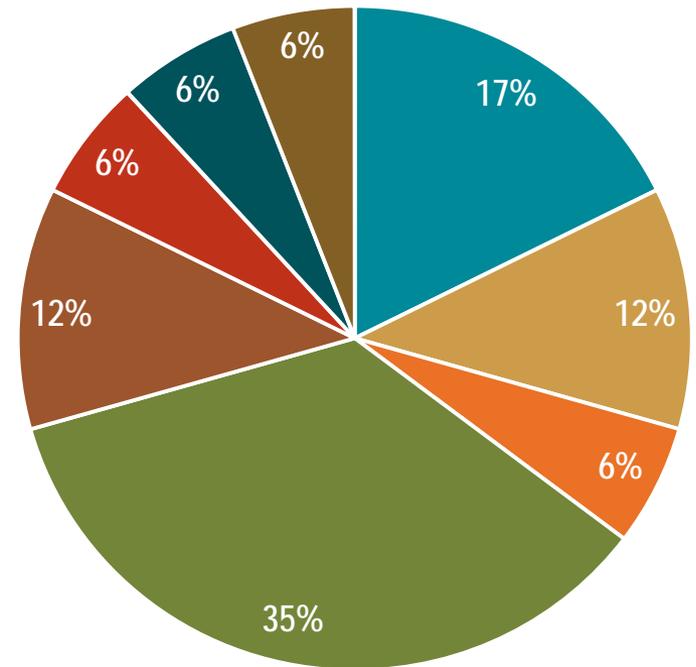
Location	2013	2014	2015*	Total
Mouth	1	5		6
Mouth or ingested	1	6		7
Head/mouth or ingested	1	1	1	3
Unknown	1			1



■ Mouth
 ■ Mouth or ingested
 ■ Head/mouth or ingested
 ■ Unknown

Animal Size (as estimated by observer)

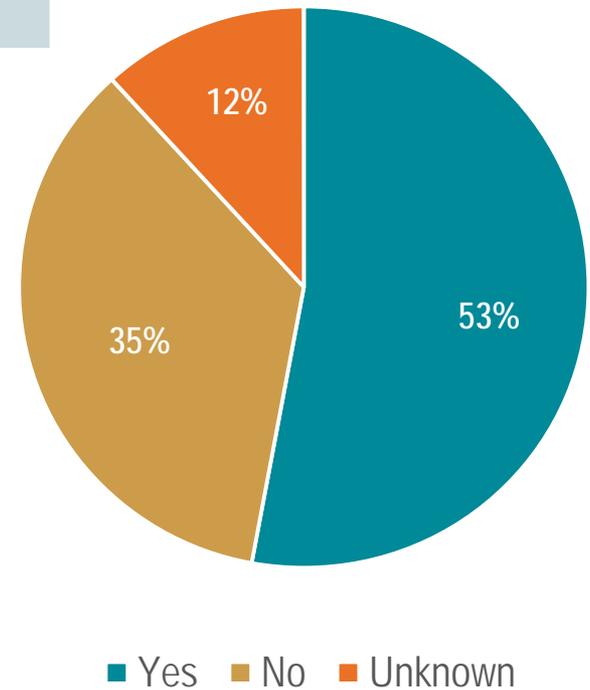
Size (ft)	2013	2014	2015*	Total
8	1	2		3
10	1	1		2
11			1	1
12	1	5		6
13		2		2
14	1			1
15		1		1
18		1		1



- 8 ft
- 10 ft
- 11 ft
- 12 ft
- 13 ft
- 14 ft
- 15 ft
- 18 ft

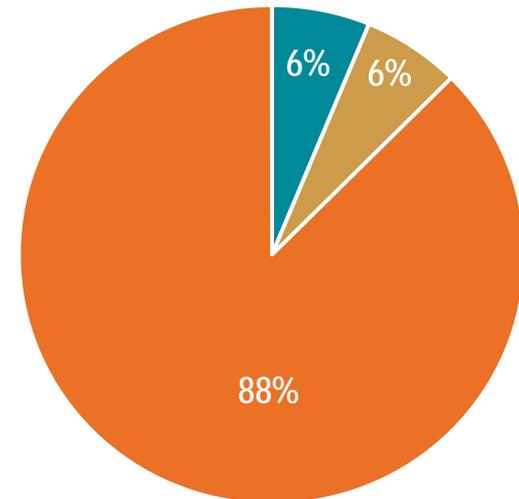
Captain Present

Captain present?	2013	2014	2015*	Total
Yes	2	7		9
No	1	4	1	6
Unknown	1	1		2



Handling

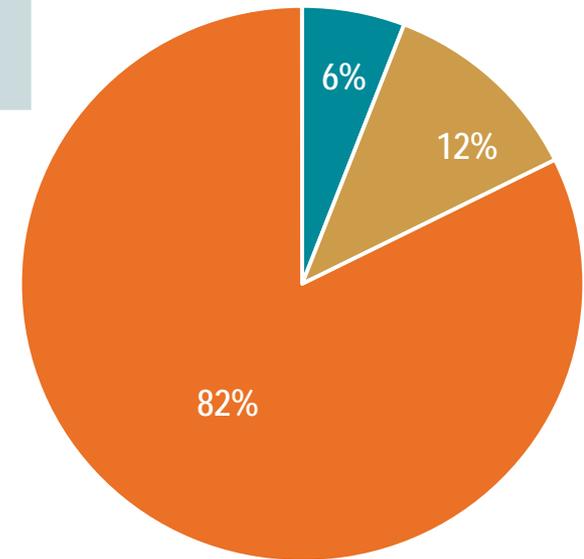
Handling	2013	2014	2015*	Total
Tie off		1		1
Active tension	3	11	1	15
No handling	1			1



■ Tie off ■ No handling ■ Active tension

Hook Outcome

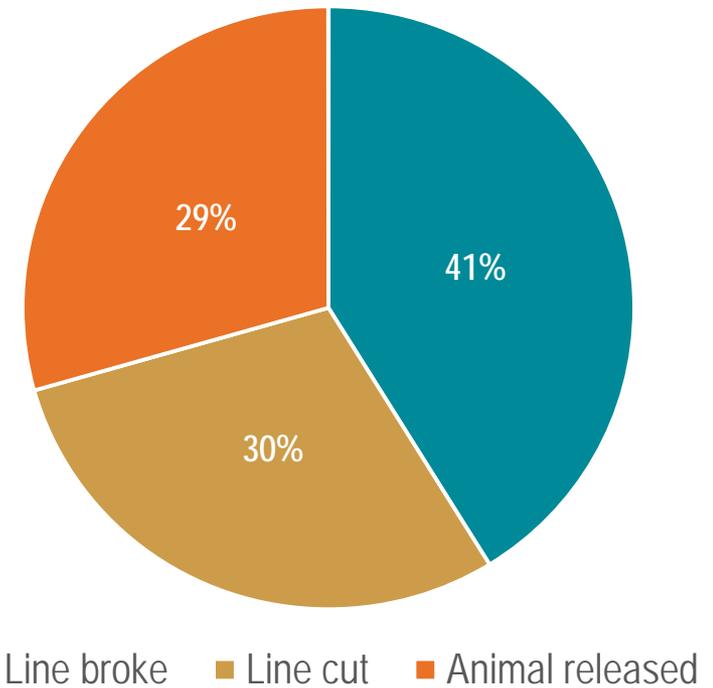
Outcome	2013	2014	2015*	Total
Hook broke		1		1
Hook straightened	1	1		2
Hook did not straighten	3	10	1	14



- Hook broke
- Hook bent/straightened
- Hook did not straighten

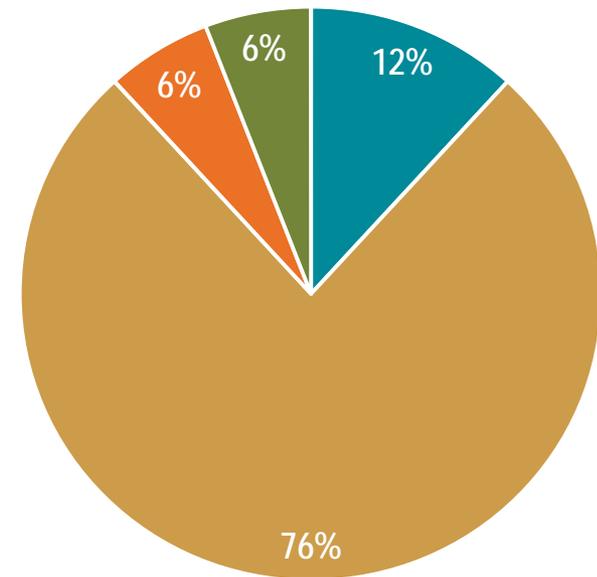
Interaction Outcome

Outcome	2013	2014	2015*	Total
Line broke	2	4	1	7
Line cut		5		5
Animal released (came free or hook broke/straightened)	2	3		5



Interaction Length

Outcome	2013	2014	2015*	Total
< 1 min	1	1		2
1-5 min	3	9	1	13
5-7 min		1		1
> 7 min		1		1



■ < 1 min ■ 1-5 min ■ 5-7 min ■ > 7 min

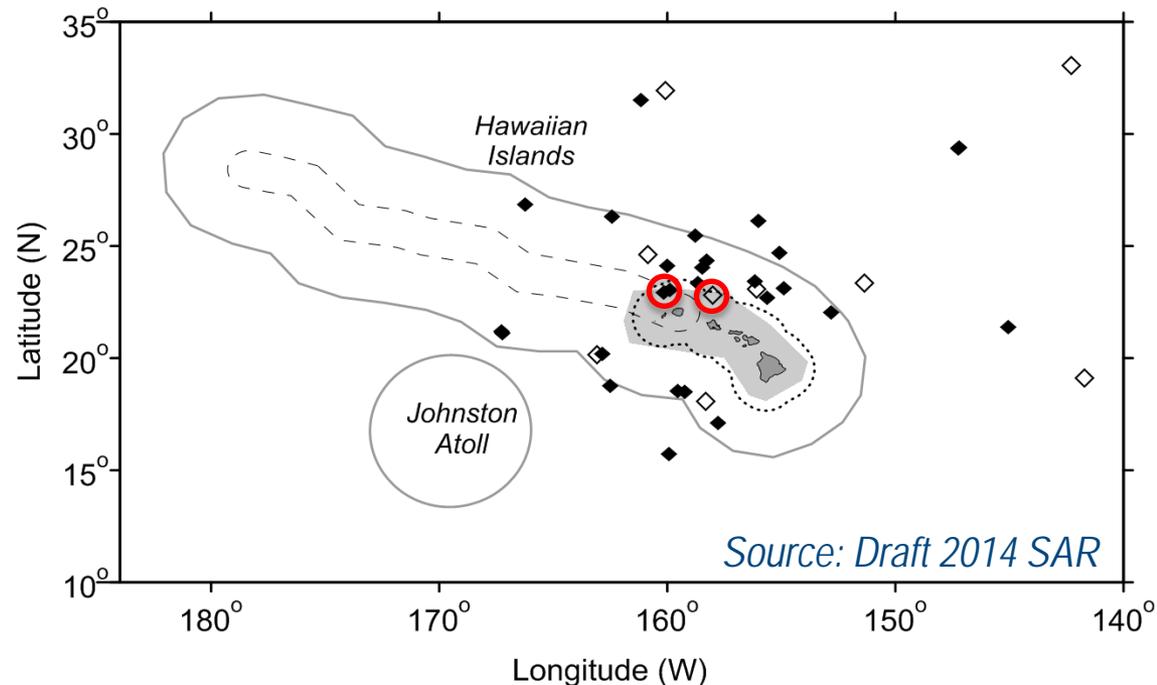
Longline Closure Areas

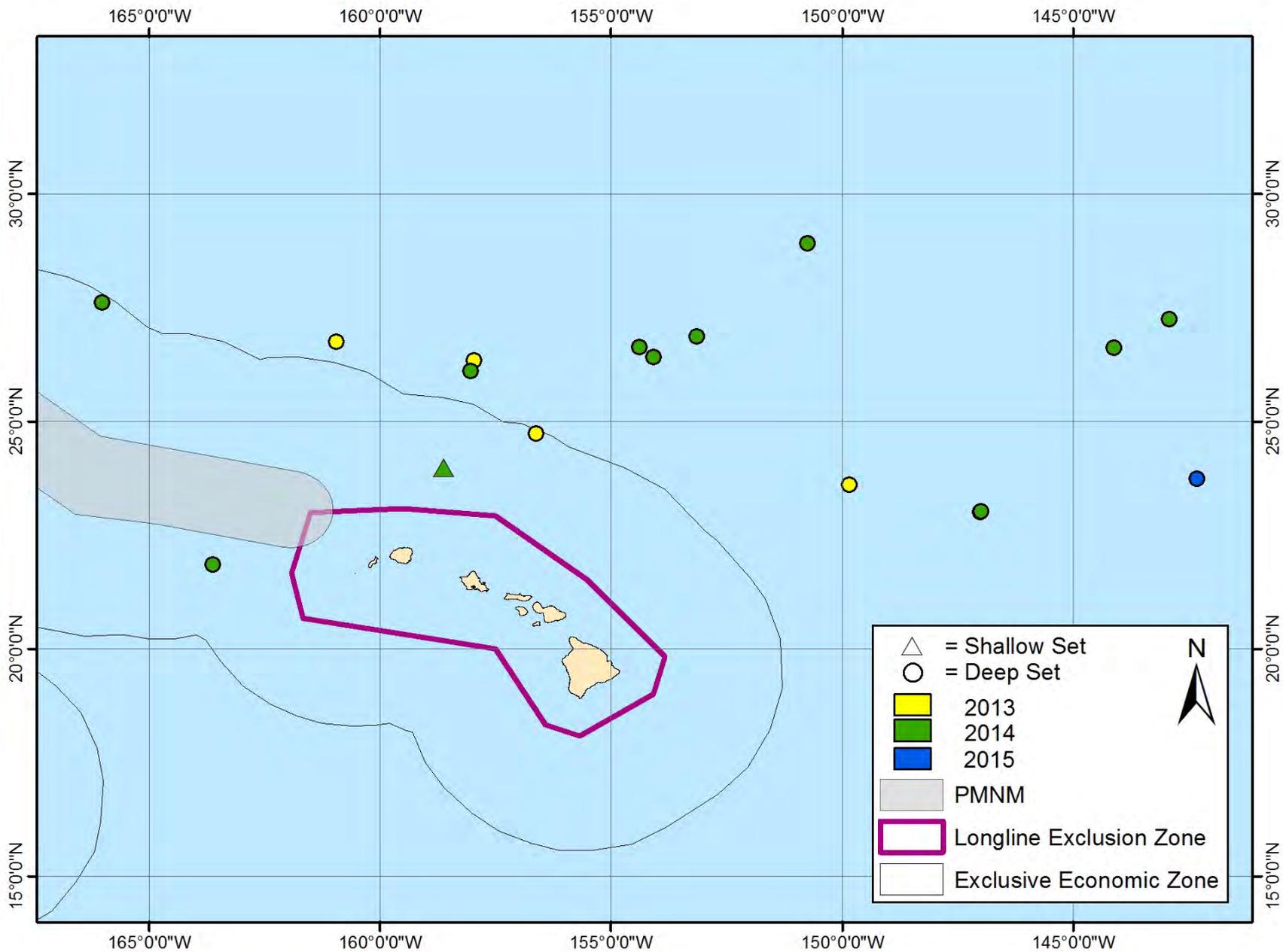
Longline Closure Areas

- Revision to MHI Longline Fishing Prohibited Area
 - Mainly to protect MHI insular stock
 - Observed interactions:

Pre-TRP: 3 serious injuries 2008-2012

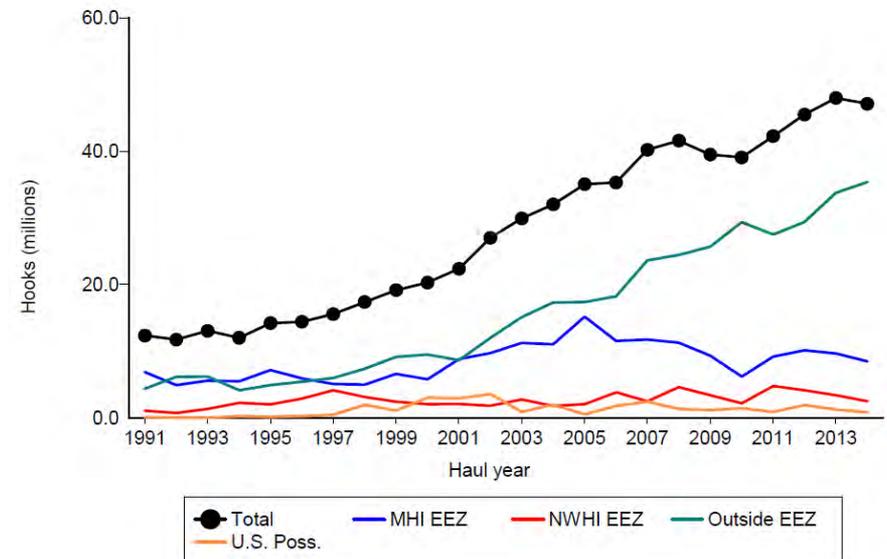
Post-TRP (as of 4/24/15): no observed interactions within range of MHI insular stock (as currently defined)





Longline Closure Areas

- Southern Exclusion Zone
 - Mainly to protect HI pelagic stock
 - If triggered, would protect stock from further takes in that area, expected to reduce overall risk of further takes in EEZ
 - One SI each in 2013 and 2014 counted toward trigger, but no closure
 - Threat of closure potentially pushing effort and takes to high seas?
 - Observer effect?



Source: PIFSC 2015 - Hawaii Longline Logbook Summary Report for 2014



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