

Observer data as a tool for “What if” calculations

From Key Outcomes Memorandum First TRT Meeting:

Consider solutions at four different conceptual levels	Potential mechanisms
1) avoid overlap between FKW and the fishery (in time and space):	Time/area restrictions; reduce total effort
2) avoid interaction (if FKW and longliners are in the same areas)	Reduce depredation rate (gear modifications, decrease vessel detectability)
3) avoid hookings and entanglements (if interactions occur)	Reduce FKW catch probability when they are present
4) avoid serious injuries (if hookings or entanglements result)	Reduce mortality and serious injury (M&SI) probability

Observer data as a tool for “What if” calculations

Can we use 2003-2009 (deep-set) fishery observer data to examine potential reductions in false killer whale (FKW) mortality and serious injury (M&SI) with changes in each of these four potential parameters?

We have:

- Information on % sets with depredation and take rates with and without depredation:

	DEEP-SET				SHALLOW-SET			
	# Sets	%	Sets with Takes		# Sets	%	Sets with Takes	
False Killer Whales								
With depredation	1179	6%	19	1.61%	183	3%	0	0.00%
Without depredation	19545	94%	9	0.05%	6045	97%	1	0.02%
TOTAL	20724		28	0.14%	6228		1	0.02%
False Killer Whales and Unid. Blackfish								
With depredation	1179	6%	22	1.87%	183	3%	0	0.00%
Without depredation	19545	94%	11	0.06%	6045	97%	2	0.03%
TOTAL	20724		33	0.16%	6228		2	0.03%

We
also
have:

- Information on current M&SI levels, PBR, target % reduction

Average annual HI EEZ mortality and serious injury estimate for DSL, 2004-2008:	8
PBR for HI EEZ from Final 2009 SAR (= target annual M&SI level):	2.5
Target reduction in M&SI level for deep-set fishery:	68.8%

- Total effort in deep-set fishery from logbook data

Logbook effort			
(Deep-set, all areas)	# Trips	# Sets	# Hooks
2006	1380	16397	34,486,898
2007	1426	17809	38,825,977
2008	1380	17881	40,078,613
2009	1241	16749	37,630,802
Average 2006-2009	1357	17209	37,755,573

- Estimate of % of false killer whales takes that are M&SI

Mortality & serious injury rate (all observer data)	89.0%
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CALCULATIONS BASED ON RATES IN 2003-2009 FLEET-WIDE OBSERVER DATA		
Assumptions (can play around with these):		'Current'
Overlap/effort (Total sets/yr)		17209
Depredation Rate (% sets w/ depr.)		5.7%
FKW catch probability (relative to current)		100%
FKW serious injury probability if caught		89%
Total sets observed, 2003-09	20724	
Sets with depredation	1179	979
% with depredation	5.7%	
FKW takes with depredation	19	15.8
FKW take rate with depredation	1.61%	
Sets without depredation	19545	16230
% w/o depredation	94.3%	
FKW takes w/o depredation	9	7.5
FKW take rate w/o depredation	0.05%	
TOTAL FKW TAKES/YR		23.3
Total FKW M&SI (per year)		20.7
Target % reduction (by 68.8%):		6.5

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CALCULATIONS BASED ON RATES IN 2003-2009 FLEET-WIDE OBSERVER DATA			
Assumptions (can play around with these):		'Current'	<i>Reduce Depredation by 99%</i>
Overlap/effort (Total sets/yr)		17209	17209
Depredation Rate (% sets w/ depr.)		5.7%	0.06%
FKW catch probability (relative to current)		100%	100%
FKW serious injury probability if caught		89%	89%
Total sets observed, 2003-09		20724	
Sets with depredation	1179	979	10
% with depredation	5.7%		
FKW takes with depredation	19	15.8	0.2
FKW take rate with depredation	1.61%		
Sets without depredation	19545	16230	17199
% w/o depredation	94.3%		
FKW takes w/o depredation	9	7.5	7.9
FKW take rate w/o depredation	0.05%		
TOTAL FKW TAKES/YR		23.3	8.1
Total FKW M&SI (per year)		20.7	7.2
Target % reduction (by 68.8%):		6.5	

Excel spreadsheet demonstration

‘Draft’ exploratory tool....

- Provide interactive overview of how spreadsheet works
- Review caveats & assumptions
- TRT questions and feedback
 - Is this useful to you?
 - Should there be additional calculations?