

# Comments on Pacific sardine management for 2016-17

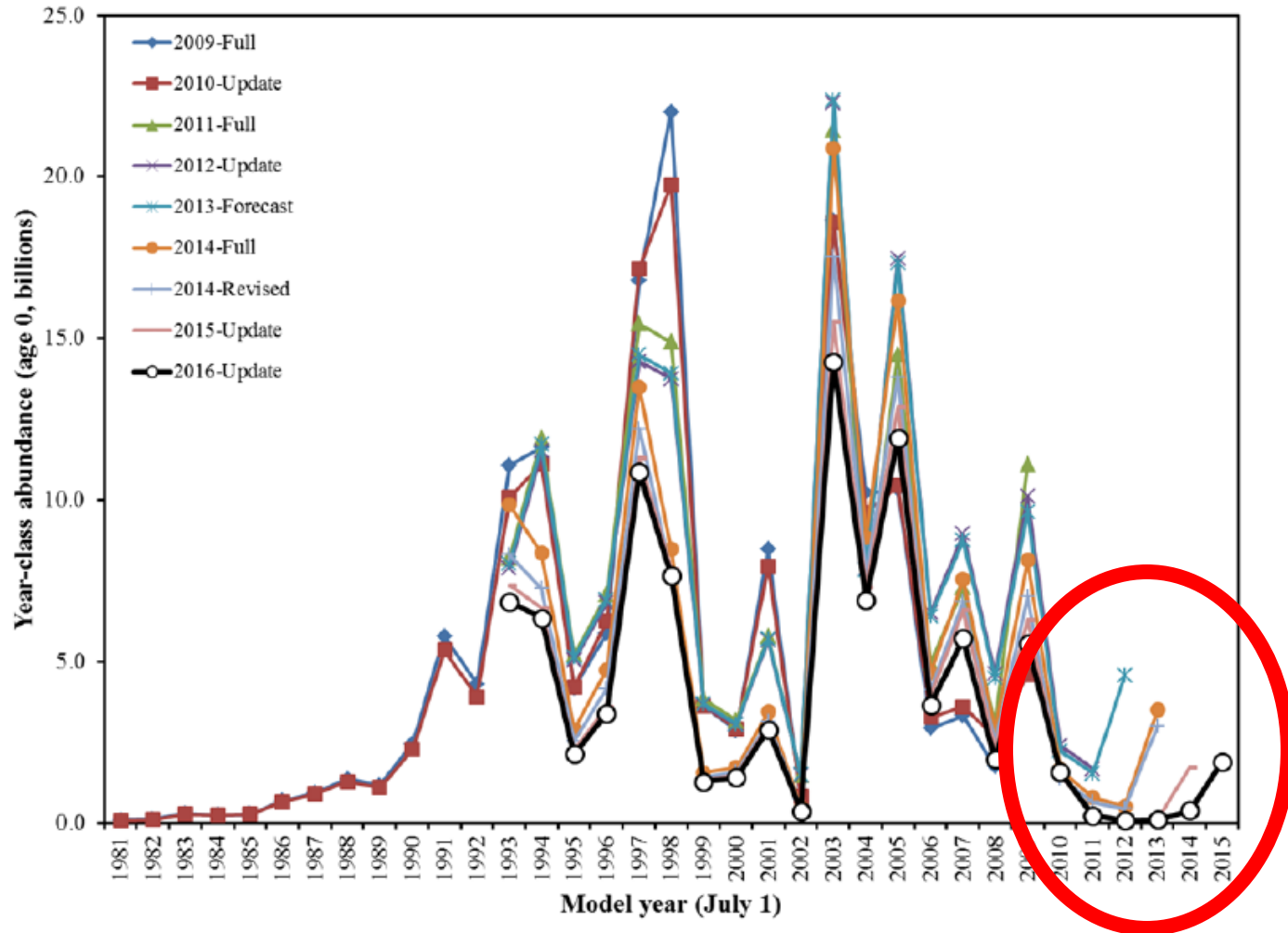
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Oceana

Presentation to Pacific Fishery Management Council

April 10, 2016

# “Recruitments have been systematically over-estimated”



**Figure 40.** Estimated stock biomass (upper) and recruitment (lower) time series for the proposed update model and past management models.

# Preliminary 2016 Assessment

- *“Given the low magnitude of biomass (DEPM and ATM) estimated from surveys conducted during 2015 and the fact that recent (terminal year) **recruitments have been systematically over-estimated** in the past several assessments, a stock biomass projection of **64,422 mt**, based on recent (2012-2014) average recruitment strength for the 2015 year class, is recommended for setting 2016-17 harvest specifications.”*

# Keep Directed Fishery Closed

- Both 2016 stock assessment estimates (64,442 mt or 106,137 mt ) are below CUTOFF
- Directed fishery must remain closed as per CPS FMP

Note: 20% FRACTION not allowed under CPS FMP

# Minimize Incidental Sardine Catch

## CPS FMP:

- “By the time BIOMASS falls as low as CUTOFF, the harvest rate is reduced to zero”
- “...the incidental amount and the amount harvested directly **must** equal the total HG”
- “ACT: Equal to HG or ACL, whichever value is less”
- HCR Analysis in CPS FMP analyzed max of 2,000 mt (incidental + bait) when stock below CUTOFF

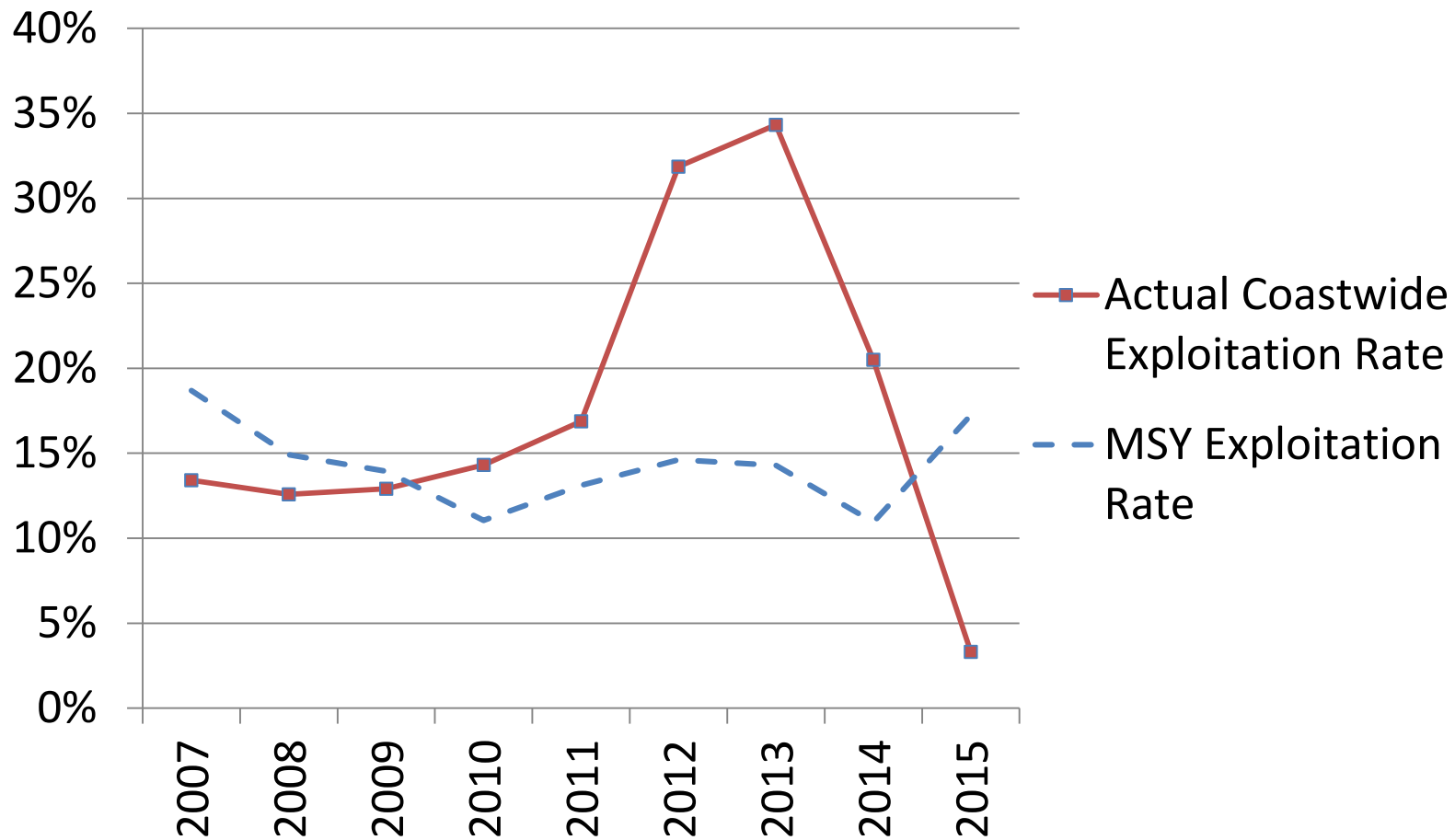
“Incidental catch” should not be a backdoor way to allow targeted sardine fishing

- Objective should be include strong incentive to minimize incidental catch
- Keep per-trip incidental catch allowance % minimal

California total incidental catch for 2015-16 season (as of April 5, 2016) : **104 mt**

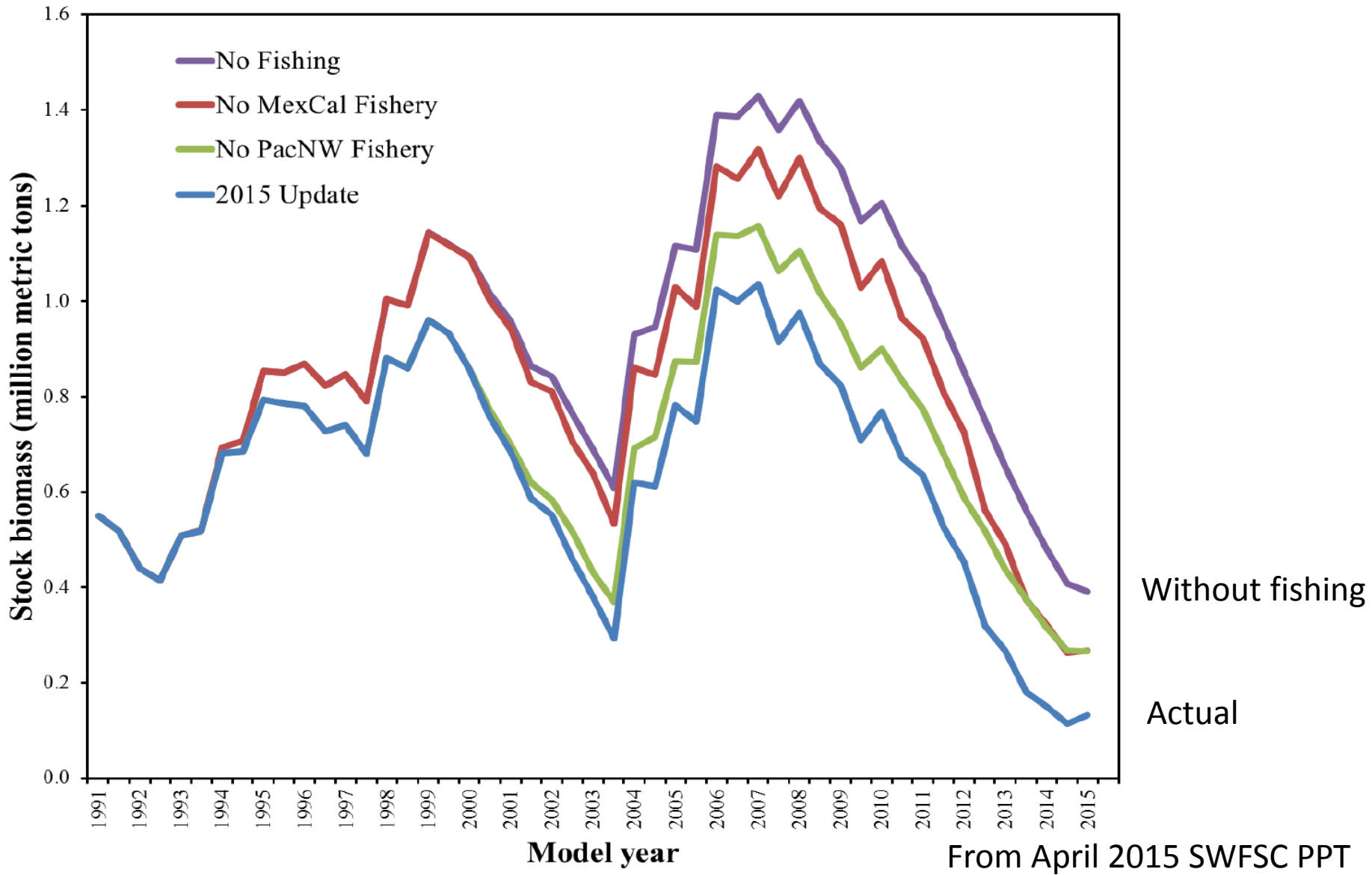
# Overfishing Occurred in 2010-14

Stock Declined ~90% from 2007-2015



Exploitation Rate and CalCOFI Emsy Data from 2016 Stock Assessment

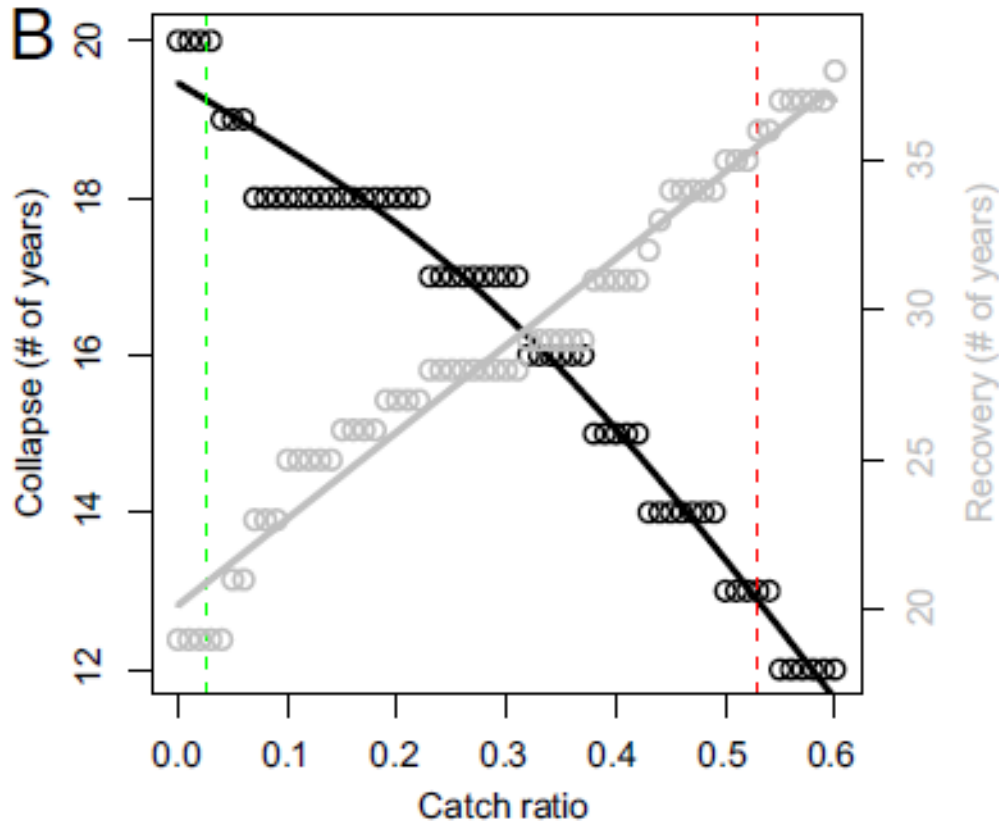
# Fishing Worsened a Natural Decline



# Climate, fishing, and fluctuations of sardine and anchovy in the California Current

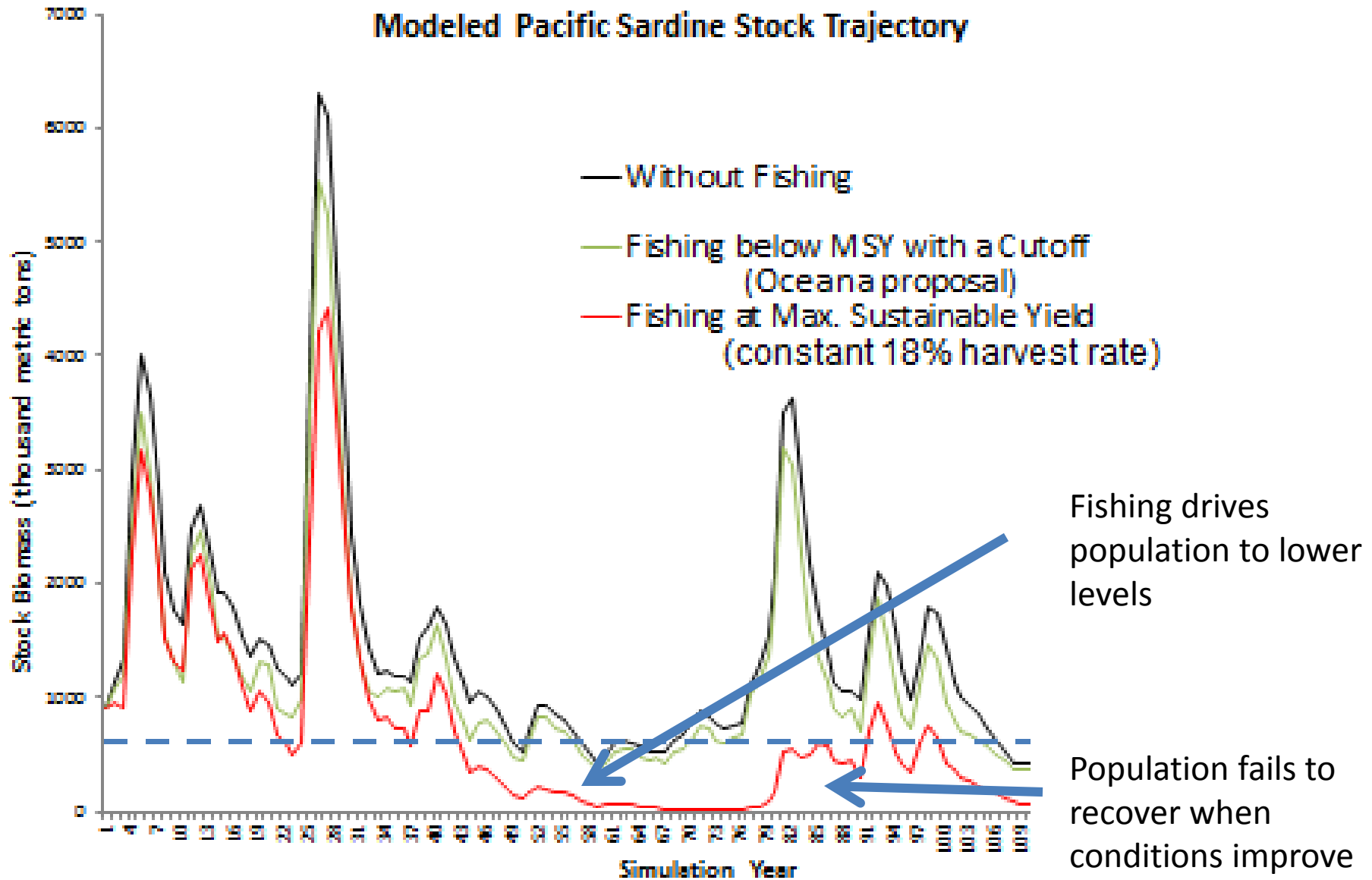
Martin Lindegren<sup>a,1</sup>, David M. Checkley, Jr.<sup>a</sup>, Tristan Rouyer<sup>b</sup>, Alec D. MacCall<sup>c</sup>, and Nils Chr. Stenseth<sup>d</sup>

“...reducing exploitation would markedly affect the rate of decline (i.e., delay the stock collapse and accelerate its subsequent recovery; Fig. 2B)”.





## Modeled Pacific Sardine Stock Trajectory



Trajectories based on 2013 Hurtado & Punt model

## Food limitation of sea lion pups and the decline of forage off central and southern California

Sam McClatchie, John Field, Andrew R. Thompson, Tim Gerrodette, Mark Lowry, Paul C. Fiedler, William Watson, Karen M. Nieto, Russell D. Vetter

Published 2 March 2016. DOI: [10.1098/rsos.150628](https://doi.org/10.1098/rsos.150628)

- “In the last decade off central California, where breeding female sea lions from San Miguel rookery feed, *sardine and anchovy greatly decreased* in biomass, whereas market squid and rockfish abundance increased.”
- “A shift from high to poor quality forage for breeding females results in *food limitation* of the pups, ultimately flooding animal rescue centres with starving sea lion pups.”



# Scientific Recommendations on Cutoff

	CUTOFF %
Lenfest Forage Fish Task Force (2011)	40%
Third for the Birds (Cury et al. 2011)	33%
Essington et al. 2015	50%
Zwolinski & Demer 2012	48%
<b>Oceana Proposed</b>	<b>40%</b>
<b>Status Quo (CPS FMP)</b>	<b>10%</b>

CUTOFFs as % of Mean Unfished Biomass

# Requests

- Keep 2016-17 directed fishery closed
- Keep ACL and Incidental Catch at Minimal Levels
- Consider increasing CUTOFF in CPS FMP
  - Achieve Optimum Yield
- Request Independent Review of Management
- Encourage improved coastwide assessment