

The Case for Current Anchovy Management

Agenda Item G.4.b
Supplemental Public Comment PPT 2
(Pleschner-Steele)
November 2016



Anchovy management controversy ~
a manufactured “crisis”

Biological facts

- **“Anchovy biomass is extremely variable and this variability occurs with and without a significant fishery [R.Parrish]**
- Young anchovies (ages 0, 1) concentrate in depths less than 50 fathoms (91 meters), and older anchovies (ages 2-6) concentrate in depths deeper than 500 fathoms (914 meters)
- **Young anchovies always occupy the nearshore** – the offshore areas have fewer eggs than nearshore **even when biomass is high.**
- Converting egg/larval abundance to biomass is dependent on daily egg production that is **highly age-dependent and area-dependent.**
- Assuming egg production is the same in all areas is questionable
- Conversion rate for age 1 anchovies should be **five times that of older anchovies** [R.Parrish]
- The MacCall et al analysis based on the CalCOFI time series deliberately omitted nearshore egg-larval data, also omitted peak spawning in Feb.-Mar
- **MacCall analysis missed a likely substantial portion of anchovy biomass.**

Review of Egg/Larval Indices – Report by the SWFSC

- Peak anchovy spawning is Feb. and Mar, but
- CalCOFI cruise periods cover only the tails of spawning activity ~ January and April
 - CalCOFI survey was designed for sardine, not anchovy
- No correlation between winter and spring cruise data, so averaging the two is inappropriate
- We agree with the report conclusion: [existing egg/larval data] are **not suitable for estimating biomass...the [CalCOFI survey area] is smaller than the geographical range of the stock**

Key Issues...

- The CalCOFI survey track does not extend into the nearshore area inside 50 meters, where age 0-1 anchovy live and huge schools of anchovy have been observed since 2013.
- Mexico and the area north of the SCB are excluded from the survey also, and a northward shift of all CPS has been observed in recent years.
- “Record” recruitment was observed in 2015 and again in 2016 (juvenile rockfish survey)
- The 2016 SWFSC summer SaKe survey also saw a lot of anchovy
- Fishermen have been reporting large anchovy schools in the nearshore from San Diego to Northern CA.
- The full extent of nearshore abundance is **not measured** in existing CalCOFI surveys.
- **This lack of data precludes developing an accurate biomass estimate.**

Evidence of Abundance

Grind TV - Helicopter ride reveals enormous mass of anchovies, herded by dolphins and whales: November 10, 2013 By [Pete Thomas](#) ...
(Ventura coast)

It's not often that one of these swirling bait balls contains perhaps millions of anchovies and is large enough to dwarf, by many times, some of the largest predators to roam the ocean.



More media reports (and there are many others)

Whales Feeding Frenzy at Farallons a Feast for the Eyes – SF Chron - By Tom Stienstra Saturday, July 11, 2015

A humpback whale in full breach last Sunday near the Southeast Farallon Island. Researchers stationed at the island counted 93 humpback whales, 21 blue whales and one fin whale in a single hour

A vast amount of krill has brought in the blue whales. Large schools of anchovies and mackerel have attracted the humpbacks.

Humpback and blue whales feeding in record numbers off SF coast – SF Chron - By Peter Fimrite Sunday, May 22, 2016

Record numbers of humpback and blue whales are feeding off the coast of San Francisco in a display of gluttony virtually unprecedented for this time of year, ... The researchers suspect the giant cetaceans are following prey – including the tiny shrimp-like creatures known as krill, anchovies and schools of small fish.

And only two weeks ago...

two miles from Monterey harbor



Monterey Bay Whale Watch at

Monterey Bay Whale Watch.

on Monday ·

Hungry Humpback: lunging humpback whale, only two miles from Monterey Harbor! So this just happened: Nat. Geo moments, with thousands of anchovies leaping from a vertical lunge-feeding humpback, with hundreds of California sea lions! This happened again and again and again. Cell phone video, by Alisa Schulman-Janiger.

13,100 Views

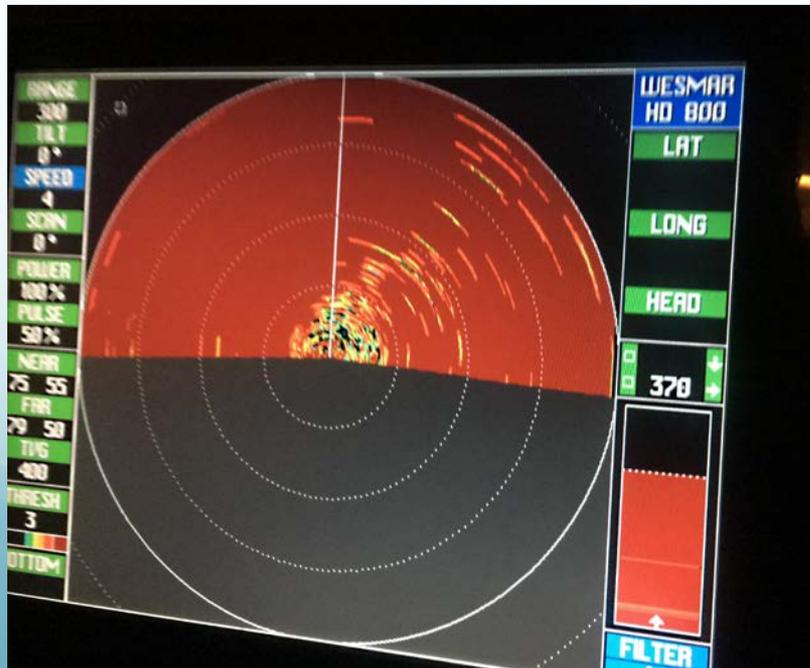


Write a comment...



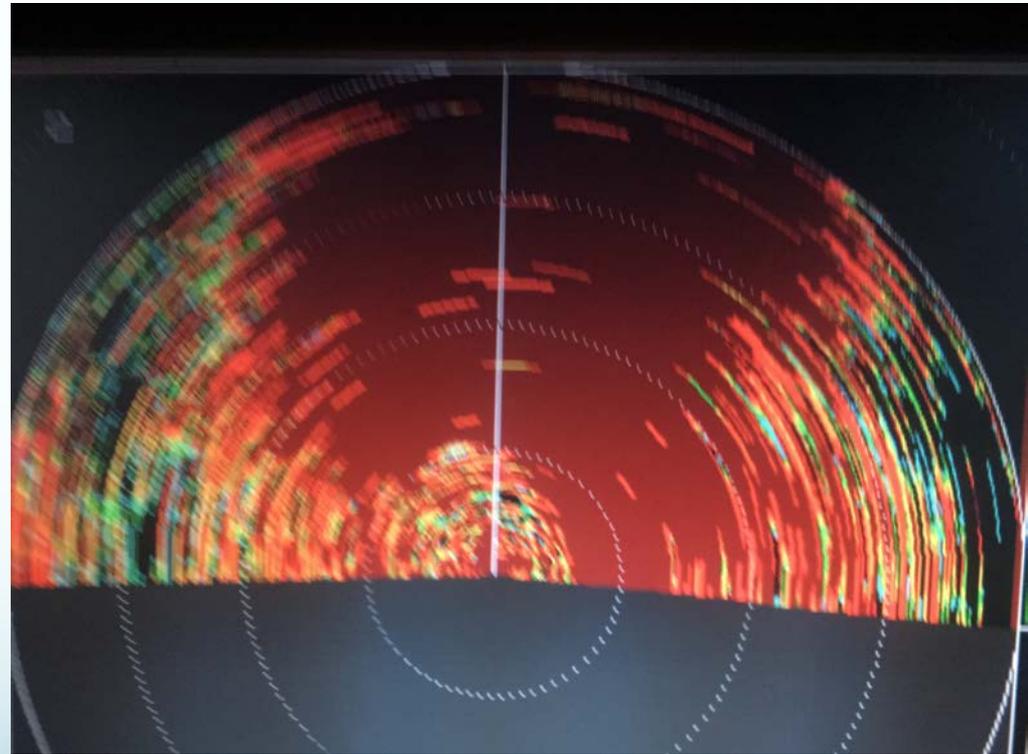
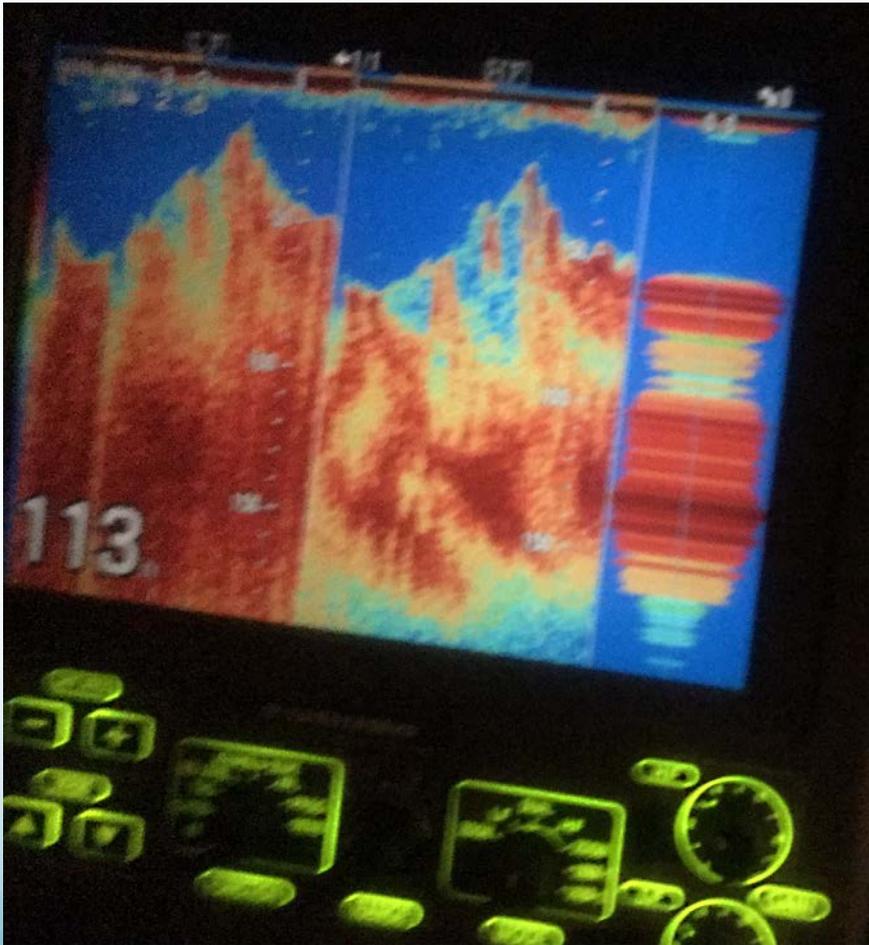
Fishermen's sonar and fathometer screen images

Half Moon Bay to
Farallon Islands...
Schools for miles and miles ~
thousands of tons



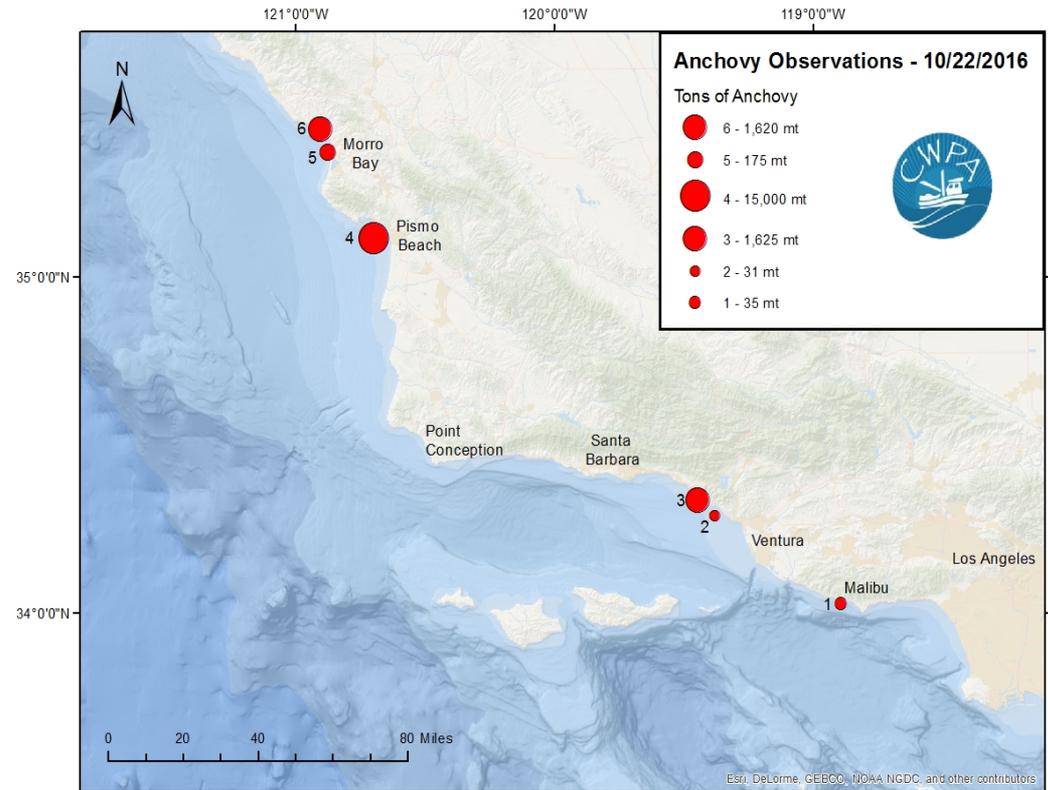
Monterey Bay

Monster anchovy schools outside Marina

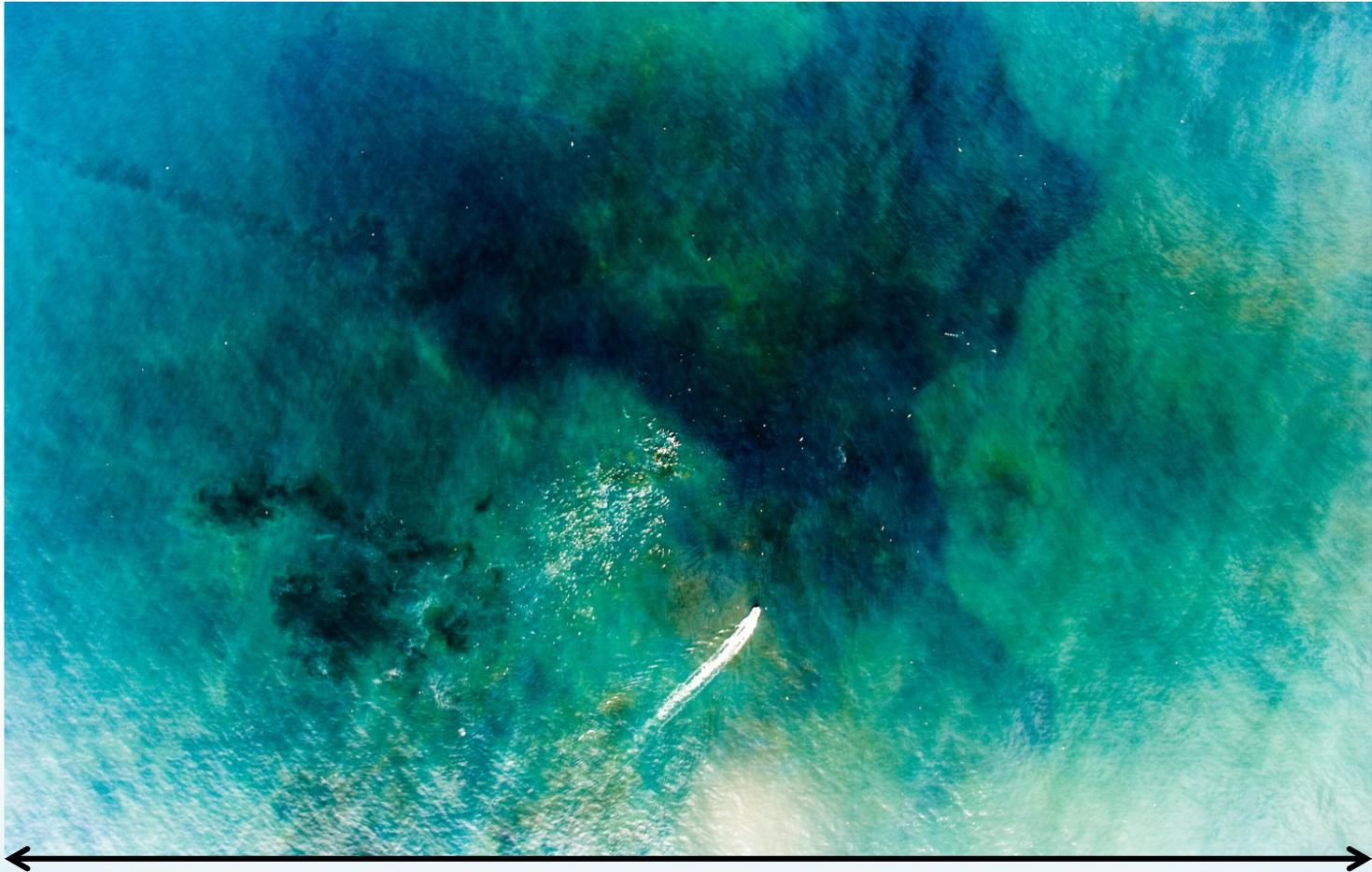


Also near Morro Bay

- In August I went from Monterey to Morro Bay - I ran down the **20 fathom edge**. About **4 miles below Monterey** we ran into **solid anchovies**. It was right at dark and they were pushing in. It was **top to bottom anchovies for roughly four consecutive hours (32 miles)**. John Barry
- This is very similar to the squid fleet [sightings] last year - lots of humpback whales, basking sharks, whale sharks all feeding on this huge biomass. Also the guys are saying there's a **huge biomass forming from Ventura in 20 fathoms all the way down to Point Mugu Canyon**. ... there's so many anchovies [squid fishermen] can't set their nets. Don Brockman



Aerial Photos ~ Central Coast



Observation #4 – 2,300 ft.

- Too many schools to count, 15,000 tons (not all schools depicted).
- Location: Pismo Beach
- Altitude: 1,542 ft.

And in Southern CA

photos from BD Outdoors ~ Tuna and anchovies off Pyramid Head

July 21, 2016 33 11 x 118 05 Bait ball



33 05 x 118 00 Bait ball



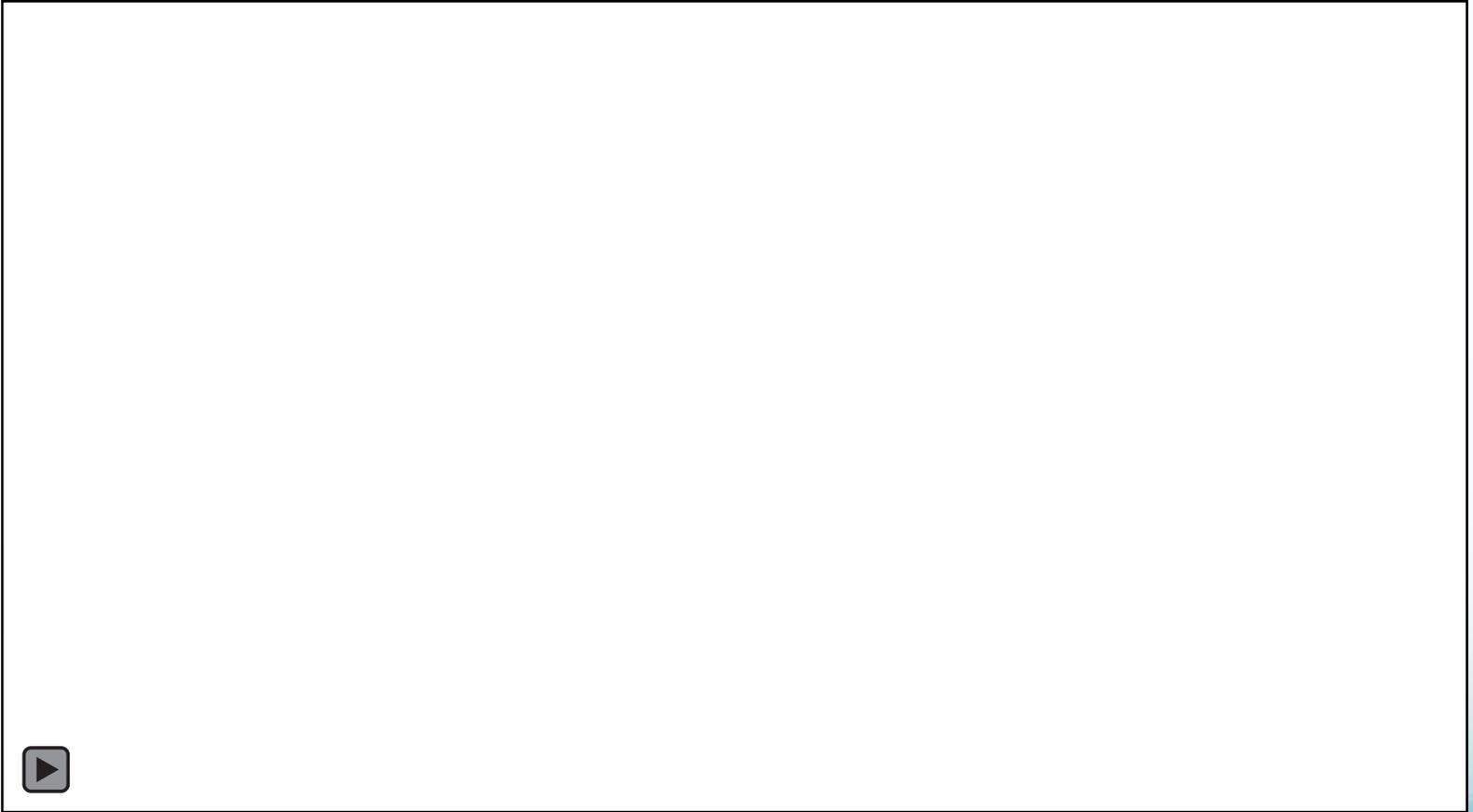
7/23/2016 IMG_7995 Gut check on the bluefin shows they are still on anchovies and stuffed. 32.02 x 117.23



Fishing near San Clemente Island



Impressive anchovy schools also seen near Santa Cruz Island

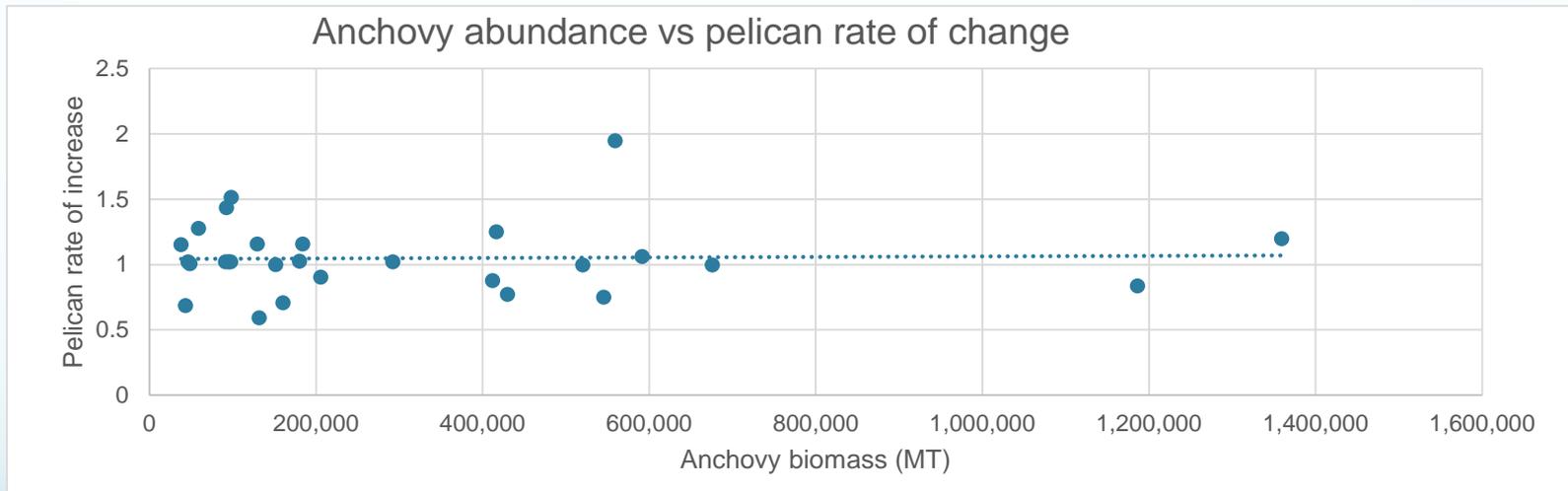


Anchovy Management Facts

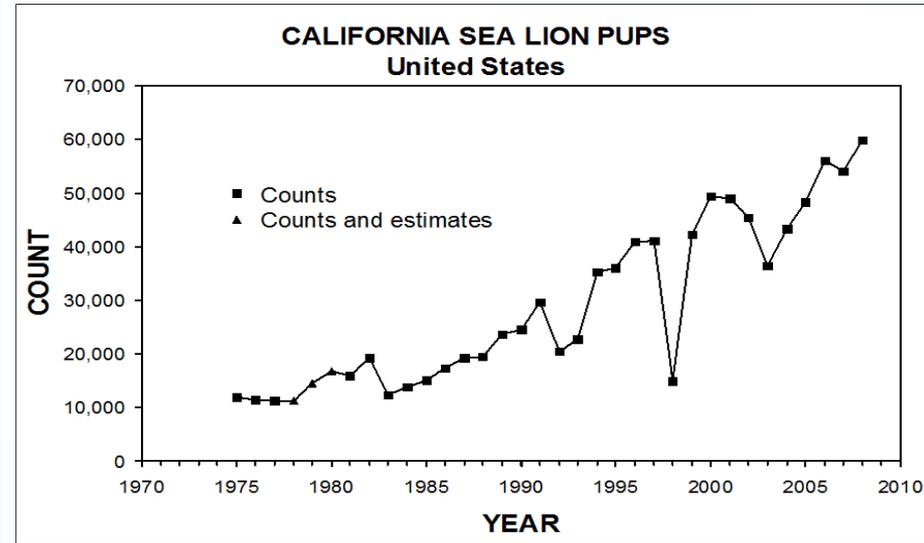
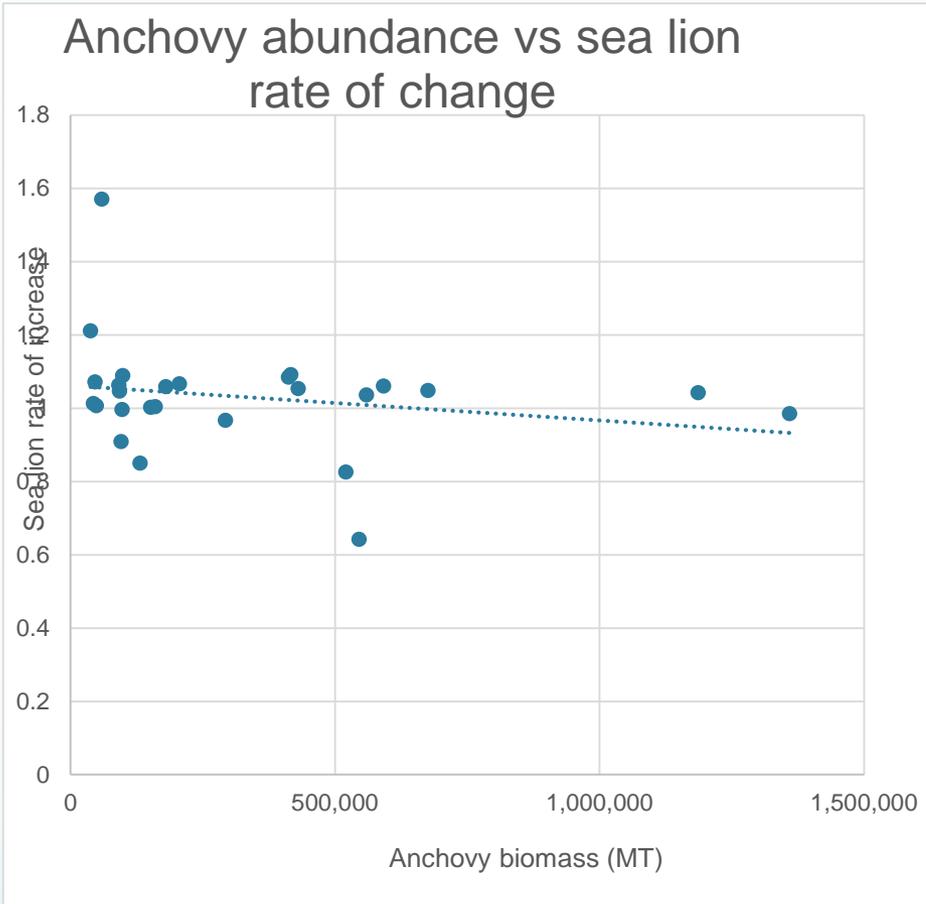
- The anchovy OFL is not based on a single stock assessment ~ OFL/MSY is intended to reflect the largest **average** fishing mortality rate that can be harvested over the long term
- The ACL/harvest limit was **reduced from OFL by 75%**
- Removing 25,000 mt is unlikely to reduce total anchovy abundance or have negative impact on predators [Final Rule, Multi-year specifications for Monitored Stocks]
 - No documented evidence that current fishing level has competition effect on dependent predators
 - **Most predators have opportunistic diets**
- **Anchovy is only one component of much larger forage pool**

For example:

- Research indicates anchovy abundance is driven primarily by environmental forcing
 - Neither anchovy nor sardine abundance influences the rate of change in either Sea Lion or Brown Pelican populations



The estimated yearly central subpopulation of northern anchovy biomass ranged widely, from ~40,000 to nearly 1.4 million metric tons during the period from 1981-2009. Despite a wide range of anchovy prey available, the rate of increase of pelican nests remained unchanged during the same time period



Lowry and Maravilla (2005) and unpublished NMFS data

The amount of anchovy prey available in the water also had little effect on the rate of change on the abundance of sea lion pup counts from 1981-2006.

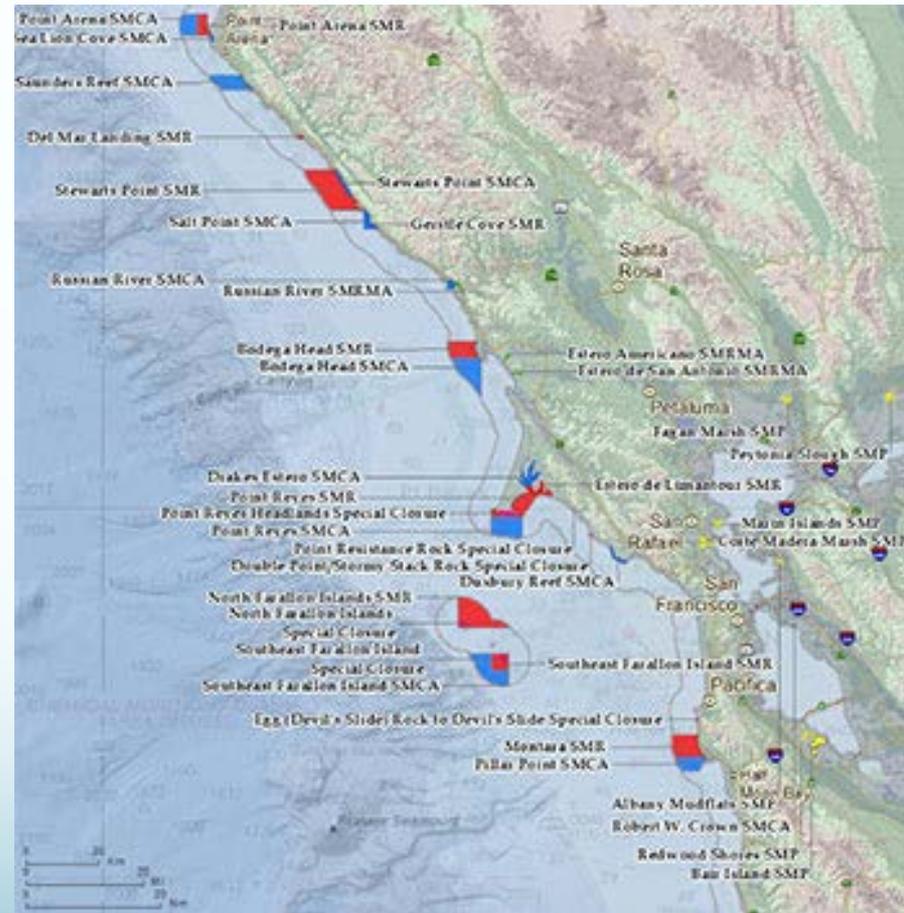
CA Sea lion pup count increased 600% 1975-2008 despite variability in anchovy abundance

Hilborn, R., Amoroso, R, Bogazzi, E., Jensen, O.P., Parma, A, Szuwalsky, C., Walters, C.J., In review. *When does fishing forage species affect their predators?* Fisheries Research (Amsterdam).

More MPAs

Central California

North Central CA



More Facts

- **The anchovy fishery is very important to CA's historic wetfish industry**
- Anchovy is a fishery of last resort – necessary to keep fishing boats employed and market doors open when no other CPS are available (as in 2015)
 - Precautionary annual harvest limit is larger than the current market. (Reduction fishery is history.)
 - Landings for the past two decades averaged less than 10,000 mt per year (2016 landings thru Sep. 4,909 mt)
- **CA's wetfish industry needs to maintain opportunity to fish anchovy when other CPS are not available**

CWPA Is Committed to Expand Anchovy / CPS Surveys

- CWPA is applying for a Saltenstall-Kennedy grant to survey nearshore waters now largely excluded from current field surveys
 - Our research proposes to duplicate Cal-COFI egg / larval survey methods in nearshore waters <50 meters ~ where a large abundance of fish (both anchovy and sardine) reside
 - Survey in collaboration with SWFSC and CDFW
 - Intended as a pilot in SC Bight to develop survey methods that could be applied in nearshore waters coast-wide
- We would appreciate the Council's support of this critically important research.

Recommendations for Anchovy Management

- [1] **Retain status quo management** option for the anchovy fishery, including **monitored status with the current harvest specifications**
 - **25,000 mt is a reasonable and precautionary harvest limit**, in light of the variability in anchovy abundance and the negligible impact of the fishery on anchovy abundance or other marine life.
 - Given the extreme variability of anchovy, **annual stock assessments would be hugely expensive** for a fishery that has averaged less than 10,000 mt per year over the past two decades
 - **“Clearly the biomass variations ... demonstrate that in the central stock of northern anchovy, biomass estimates are worth very little for real time management if they are more than 1 year old. “ [R. Parrish]**
- [2] Acknowledge recent record anchovy recruitment and abundance reported by fishermen coast-wide
- [3] Support the need to expand surveys into the nearshore, as well as the upper water column, to assess biomass accurately
 - (both anchovy and sardine)

No crisis exists

- There is **no biological point of concern** re: anchovy abundance
- but there could be a serious **socio-economic point of concern** if the small harvest limit now allowed in the anchovy fishery is further restricted.



Questions?

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