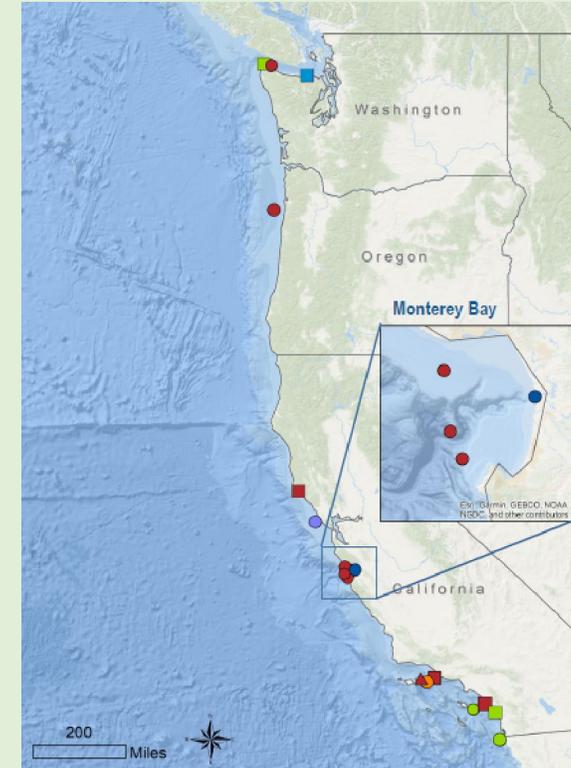
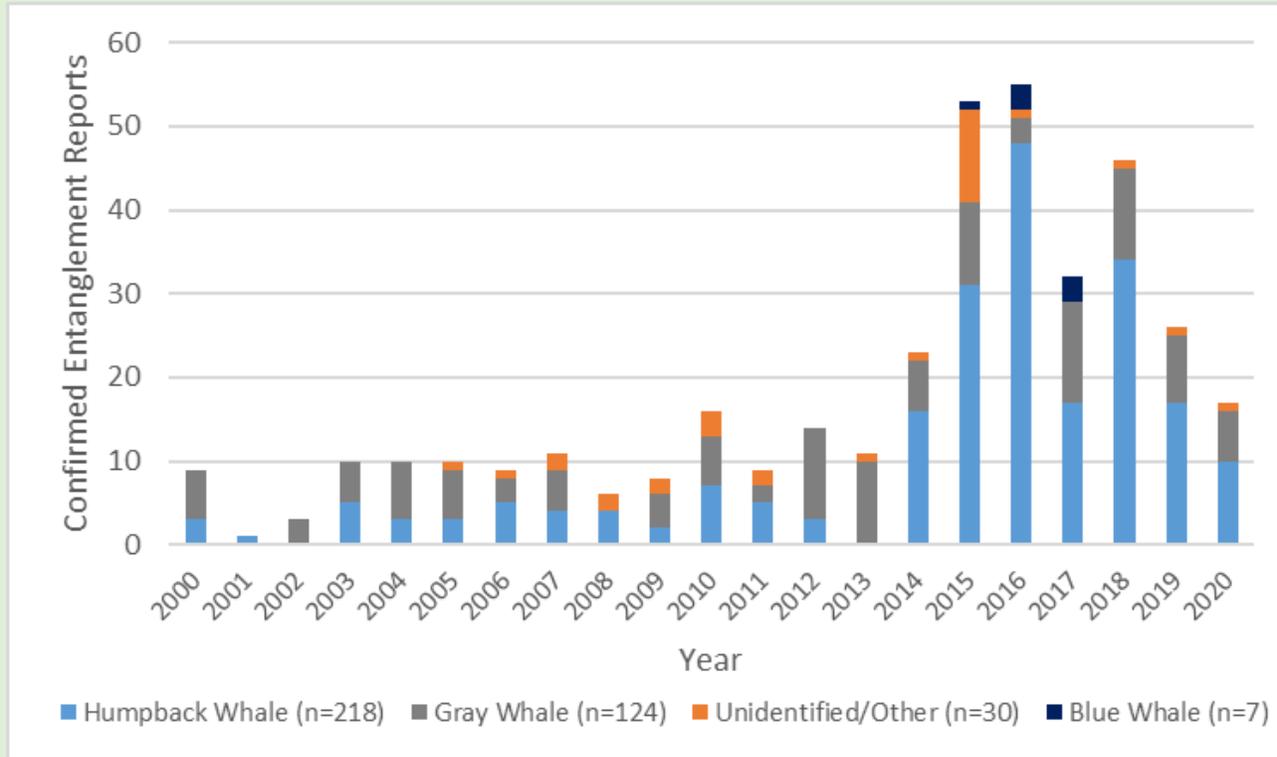


2020 WCR Whale Entanglement Update

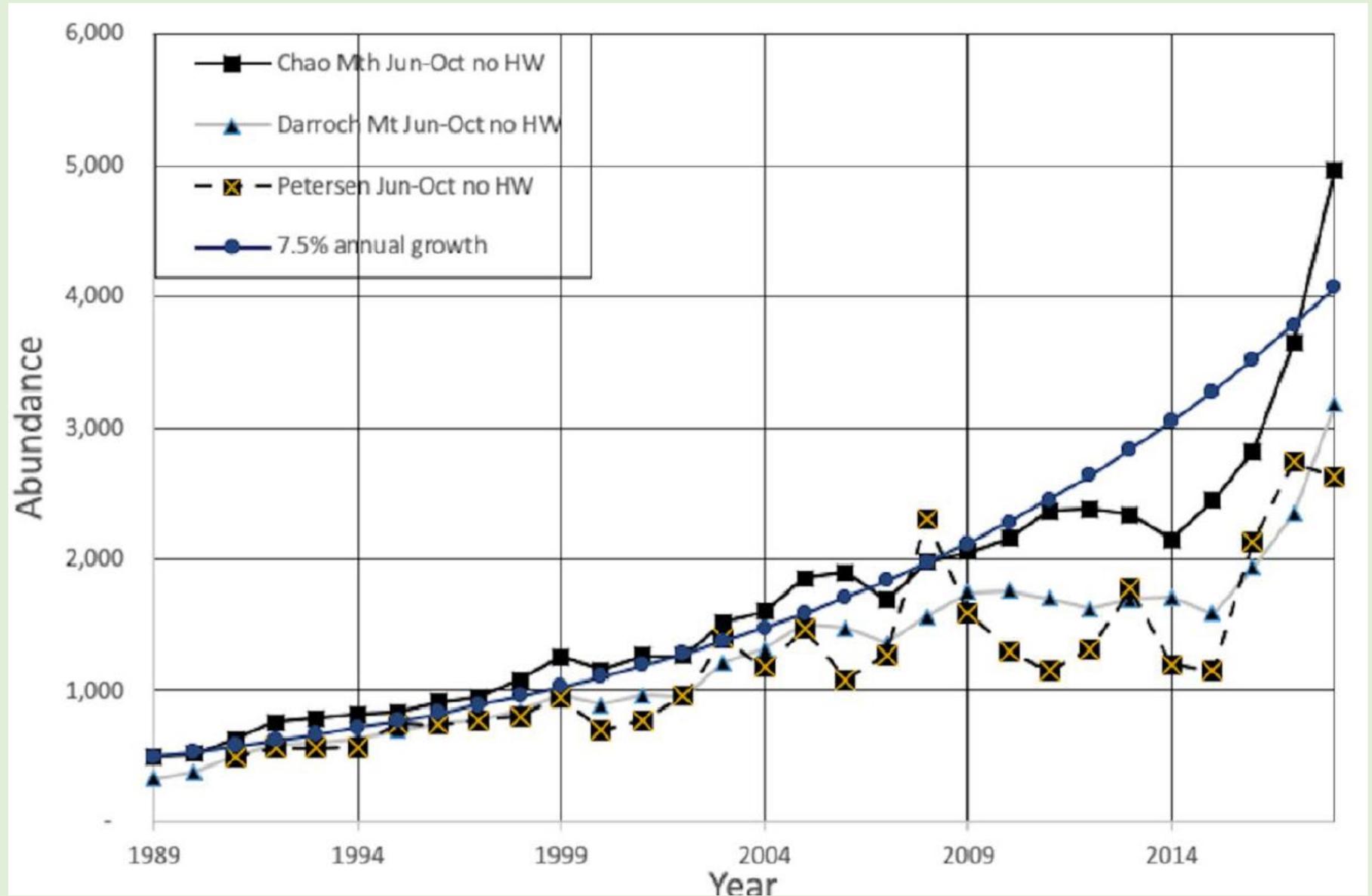


2020 species: 10 humpback, 6 gray, 1 sperm whale

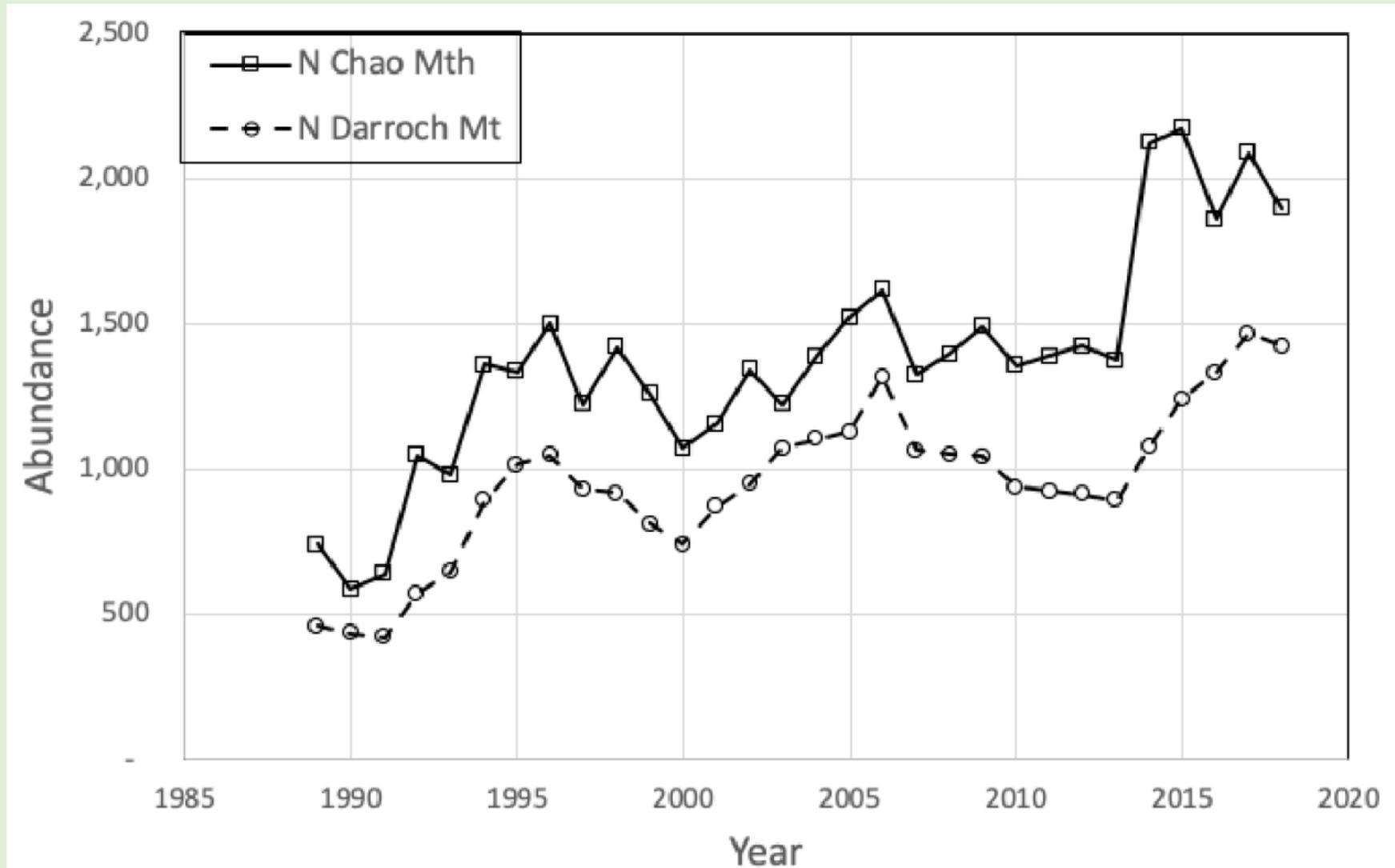
2020 sources: 3 commercial D-crab, 4 gillnet (1 tribal),
1 spot prawn, 9 unid.

Updated Humpback Whale Abundance from Photo ID

- Calambokidis and Barlow 2020. NOAA-TM-NMFS-SWFSC-634



Updated Blue Whale Abundance from Photo ID



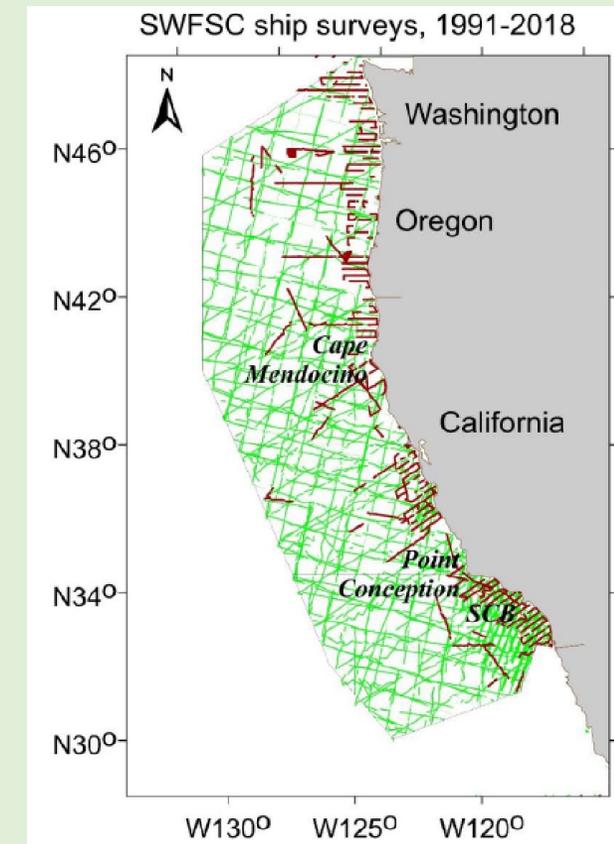
Calambokidis and Barlow 2020.
NOAA-TM-NMFS-SWFSC-634

Humpback and Blue Whale Abundance from CCE Survey

Humpback whale	1996	2001	2005	2008	2014	2018
Abundance	1,181	1,364	1,575	1,727	2,178	4,784
Density	0.0010	0.0012	0.0014	0.0015	0.0019	0.0042
CV _m (Model)	0.147	0.081	0.113	0.175	0.271	0.118
CV _{g0}	0.283	0.283	0.283	0.283	0.283	0.283
CV _{Tot}	0.319	0.294	0.305	0.333	0.392	0.307
Low 95% CI	642	775	878	915	1,038	2,658
High 95% CI	2,173	2,400	2,824	3,259	4,568	8,609
Nmin	909	1,070	1,226	1,315	1,584	3,717

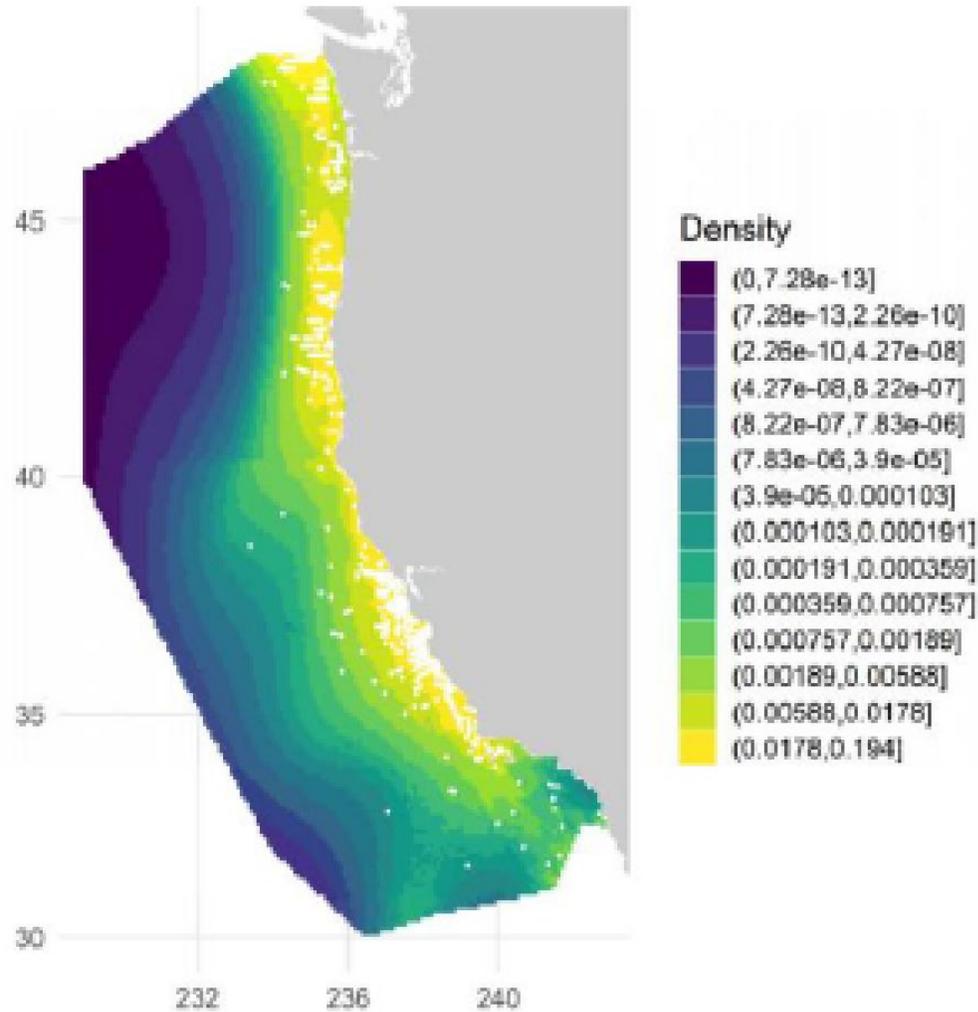
Blue whale	1996	2001	2005	2008	2014	2018
Abundance	1,946	1,657	1,042	919	1,077	670
Density	0.0017	0.0015	0.0009	0.0008	0.0009	0.0006
CV _m (Model)	0.224	0.139	0.149	0.227	0.273	0.299
CV _{g0}	0.309	0.309	0.309	0.309	0.309	0.309
CV _{Tot}	0.382	0.339	0.343	0.383	0.412	0.430
Low 95% CI	945	868	542	445	495	299
High 95% CI	4,009	3,162	2,004	1,899	2,342	1,502
Nmin	1,427	1,255	787	673	771	474

- Becker et al. 2020. NOAA-TM-NMFS-SWFSC-638

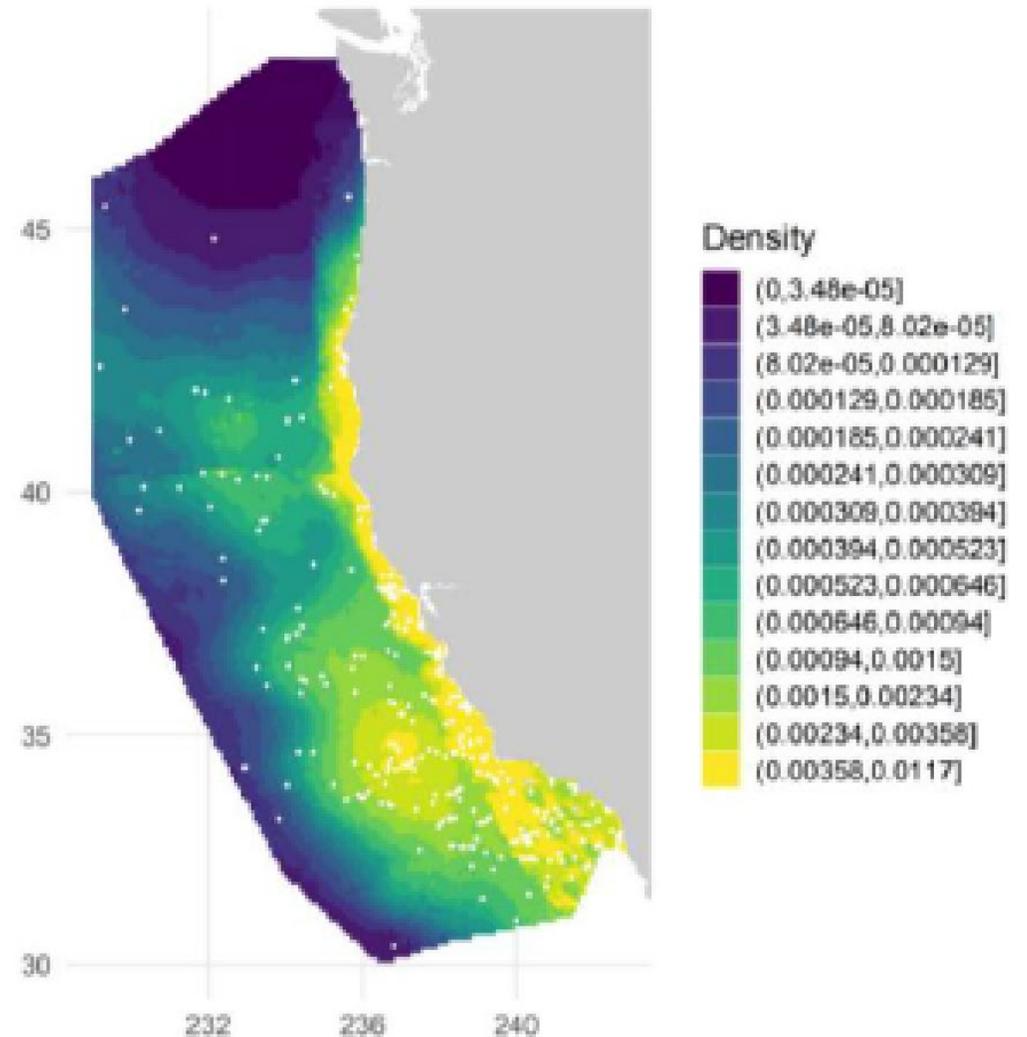


Habitat Density – CCE Survey

(m) Humpback whale



(k) Blue whale



What do these estimates mean for management?

- Lower 20th-percentile estimates of abundance (e.g., 4,776 for humpback whales and 1,767 for blue whales from Calambokidis and Barlow) are calculated to be consistent with the minimum abundance estimates (N_{min}) used to calculate potential biological removal (PBR) in NMFS stock assessment reports (draft in prep).
- PBR used as primary metric for MMPA List of Fisheries
 - 1-50% of PBR = Category II (if more than 10% is associated with fisheries)
 - >50% of PBR = Category I
- N_{min} used as basis for Negligible Impact Determination under MMPA
 - Required for authorization of take of ESA listed species

$$NIT_t = N_{min} \cdot 0.05R_{max}$$
$$NIT_s = N_{min} \cdot 0.0065R_{max}$$