

COASTAL PELAGIC FISHERIES ADVISORY SUBPANEL REPORT ON THE
CALIFORNIA CURRENT ECOSYSTEM (CCE) AND INTEGRATED ECOSYSTEM
ASSESSMENT (IEA) REPORT AND SCIENCE REVIEW TOPICS

In a joint webinar on February 21 with the Coastal Pelagic Species Management Team (CPSMT), the CPS Advisory Subpanel (CPSAS) heard a summary presentation by Dr. Toby Garfield, Acting Director of the Southwest Fisheries Science Center (SWFSC), on the California Current Integrated Ecosystem Assessment (CCIEA) California Current Ecosystem Status Report, 2018. The CPSAS also reviewed the written report (Agenda Item F.1.a, NMFS Report 1). The CPSAS thanks Dr. Garfield for his review and compliments the IEA Team for its illuminating and very educational report. Overall the IEA contained more detail than in past years.

The report was organized into sections, and the CPSAS offers the following comments:

3 ~ Climate and Ocean Drivers

This section was very informative, as it reported the transition toward average or even La Niña conditions in the central and southern CCE, and lingering evidence of unfavorable conditions under surface waters in the north, characteristic of high spatiotemporal variability among regions. Validation for the transition in California was evident in the resurgence of the market squid fishery, where preliminary landings topped 74,000 tons in February 2018, compared to 42,000 tons in March 2017.

The CPSAS is pleased that the IEA is now reporting on ocean acidification and hypoxia, noting a major hypoxic event in the northern CCE in summer 2017. It is critically important to monitor and correlate water chemistry and upwelling along with other indicators. Indicators as well as impacts will likely differ between regions so we suggest that future reports retain the three-region structure as reported, i.e. the northern CCE, central CCE and southern CCE, with breaks as noted at Cape Mendocino and Point Conception. IEA reports are now being used by the National Marine Sanctuaries (NMS), and close collaboration among multiple partners, including the fishing community, is essential to better track and understand potential impacts from climate change, region by region.

4 ~ Ecological Integrity

4.2 Regional Forage Availability

The report noted an increase in some forage species in the central and southern CCE, including a rebound of both market squid and krill in the “core area” (central CCE) of the juvenile rockfish survey. That survey did not document an increase in adult anchovy and sardine in 2017, but it was not designed to do that. However, it did document record numbers of larvae and pelagic juveniles of both species in 2015, but that information was not included in this IEA report. We suggest that future IEA reports include this data. It should be noted that fishermen have reported an abundance of both anchovy and sardine in California nearshore waters inshore of NOAA research surveys since 2015.

In the southern CCE, where forage indicators come from CalCOFI surveys, several trends were evident: of particular interest, larval anchovy are increasing. Figure G.3.1, mean abundance of larvae of key forage species in the southern CCE (Agenda Item F.2.a, NMFS Report 2, IEA appendices, page S-21) indicates that the most recent egg and larval survey found that the central stock of anchovy is at the levels also found during the historic peak of the fishery and the 2005-6 bubble, when the biomass exceeded one million tons. A conservative interpretation of Figure G.3.1 is that 2016 larval anchovy abundance is now above the historical average.

The IEA also reported larval sardine also up slightly in 2017. Although sardine remained below the long-term average in CalCOFI surveys, fishermen have reported a large biomass inshore of CalCOFI and NOAA acoustic trawl surveys for the past few years, as noted above. It is essential that the nearshore biomass of CPS is documented and included in future stock assessments. The California Wetfish Producers Association EFP proposal for summer 2018 plans to address this omission.

Minority Statement on 4.2 Regional Forage Availability

One member of the CPSAS offers the following additional observations regarding regional forage availability, which may differ somewhat from the majority of the CPSAS. While the increase in abundance of larval anchovy in the Southern CCE is very encouraging, as are recent survey results showing an uptick in adult biomass, the conservation representative notes that adult anchovy abundance remains low across the CCE. The IEA Report indicates that in the Central and Northern CCE, adult anchovy continue to experience a “low and decreasing” five-year trend through 2017; most forage species in the Northern CCE fall into this category as well, along with adult anchovy. While these trends may change course as the CCE (hopefully) continues to return to more neutral conditions, ongoing low forage abundance in the Central and Northern portions of the CCE in particular suggests that the potential for predator and other ecosystem impacts remains.

4.6 Marine Mammals

The report noted that sea lion growth rates for the 2016 cohort were significantly improved from 2012, indicating better foraging conditions during 2016-17, coinciding with higher frequencies of anchovies and hake in their diets. Report highlights stated that pup growth at San Miguel Island was normal. However, the IEA did not include findings from a recent research paper (Laake et al, Status of California Sea Lions 2017), indicating that California sea lions have reached optimum sustainable population (OSP), and may have attained (or possibly exceeded) their carrying capacity. This information should be included in the IEA when reporting on California sea lions. Further, CPSAS fishery representatives suggest that California sea lions should not be considered as a biological indicator of ecosystem state changes, as the IEA suggested in section 7.2, “identifying ecosystem thresholds in indicators potentially deserving of management attention,” unless the negative characteristics of a population at carrying capacity (i.e. increased disease and juvenile mortality, and reduced population growth) also are acknowledged.

4.7 Seabirds

The IEA reported that there were no mass seabird mortality events in 2017. The report noted that density patterns varied within and across species and regions. However, in some regions

seabirds did well in 2017. For example, sooty shearwaters in the southern CCE reached their highest recorded density in 2017, and common murre density in both the central and southern CCE also were the highest ever recorded. In the northern CCE, Cassin's auklet density was above the long-term mean. It is important to note that these increases occurred in the presence of the anchovy fishery, supporting the finding that environmental cycles drive abundance, and fishing has a negligible impact.

5 ~ Human Activities

The CPSAS appreciates the IEA's inclusion of the human element and socio-economics in the report. The current IEA employs four geographical regions for this discussion, and places Moss Landing in Southern California, which is incorrect. Further, the fleet activity section uses five geographical regions. Essentially, California is included as only one region in some of the results, two in other sections and three in some sections. We suggest that in future reports, all sections of the IEA, including human activities and socioeconomic discussions, maintain the same three-region structure as suggested above: i.e. the northern CCE, central CCE and southern CCE, with breaks as noted at Cape Mendocino and Point Conception. This will enable direct comparison of oceanographic, biological and social-economic impacts over time. As preliminary research has indicated, impacts are likely to affect the northern CCE first.

The IEA reported steep declines in major fisheries, driven in part by the decline in CPS fisheries, in light of the sardine fishery closure and El Niño impact on market squid. The closure of the sardine fishery will continue to impact CPS fisheries across the West Coast, but particularly in California, i.e. the central CCE and southern CCE.

6 ~ Human Wellbeing

6.1 Social Vulnerability

The IEA assessed coastal community social vulnerability indices (CSVI), but the report apparently lacked information to assess accurately the vulnerability and commercial fishing reliance of key ports in California, where CPS (wetfish) have represented as much as 99 percent of total commercial fishery landings, obviously essential to support harbor infrastructure and the socio-economic wellbeing of those fishing communities. The report also lumped San Pedro and Terminal Island into the broad category Los Angeles, which may have dampened the socio-economic impact felt by those ports. California fishery representatives on the CPSAS suggest that future IEAs need to strengthen the data to assess the importance of CPS to fishing communities, particularly in California.

6.2 Fleet Diversity Indices

The IEA noted that catches and prices exhibit high variability, but variability can be reduced by diversifying fishing activities. The report also stated that as of 2016, West Coast and Alaska fishing vessels were less diverse than at any time in the past 36 years. Diversity once was the hallmark of the 'wetfish' industry in California: the fleet relied on the ability to move from one CPS to another in its time of abundance. But increasing regulatory constraints, coupled with natural cycles and the closure of the sardine fishery, have had a major impact on fishing opportunity, both in California and the Pacific Northwest. The CPSAS suggests that the IEA investigate the impact of current fishing restrictions on the fleet with respect to the inability of fishermen and processors to maintain viable fishing and processing opportunity yearlong, and particularly in the face of climate change. As noted above, Figure Q.1, trends in diversification (Agenda Item F.2.a, NMFS Report 2, IEA appendices p. S-43), lists Moss Landing among

selected southern California ports. Moss Landing (and Monterey Harbor) should be listed in Central California.

7 ~ Synthesis

7.1 Early Warning Index and 7.2 Identifying Ecosystem Thresholds in Indicators

The CPSAS urges the IEA team to keep in mind the characteristic high spatiotemporal variability between and among regions when identifying early warning signals and ecosystem thresholds. The CCE is a widely diverse ecosystem, as reported in the IEA, and one size definitely does not fit all.

PFMC
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