



CALIFORNIA WETFISH PRODUCERS ASSOCIATION

PO Box 1951 • Buellton, CA 93427 • Office: (805) 693-5430 • Mobile: (805) 350-3231 • Fax: (805) 686-9312 • www.californiawetfish.org

March 15, 2017

Mr. Herb Pollard, Chair
And Members of the Pacific Fishery Management Council
7700 NE Ambassador Place #200
Portland OR 97220-1384

RE: Agenda Item G.5. Sardine Assessment, Specifications, and Management Measures

Dear Ms. Pollard and Council members,

As Executive Director of the California Wetfish Producers Association (CWPA), representing the majority of coastal pelagic species 'wetfish' fishermen and processors in California, I appreciate your consideration of the following points in the continuing discussion regarding sardine management.

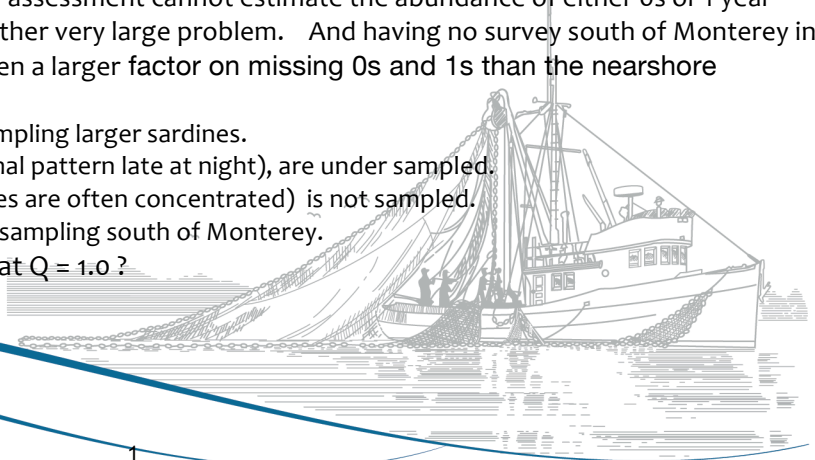
First, it is important to understand that the sardine harvest control rule (HCR) is extraordinarily precautionary – perhaps the best example of ecosystem-based management in the world. **“The CPS Management Team recommended control rule [adopted by the Council] significantly reduces the allocation of surplus production to the fishery in favor of considerably higher biomass levels for forage.”** (Richard Parrish, PhD, Agenda Item E.2.c, Public Comment November 2014).

The sardine HCR is based on stock assessments that are acknowledged to have great uncertainty. This is coupled with a lack of flexibility in the Terms of Reference to adapt management to the reality observed in the ocean. This is a recipe for disaster – and the impact is being felt by California's historic wetfish industry, with the 2017 sardine STAR panel review of the 2016 “least-worst” sardine assessment as a prime example.

I was the CPS Advisory Subpanel representative at the STAR panel meeting, and my continuing concerns on behalf of the fishery at large, and California's historic wetfish industry in particular are highlighted in the STAR panel report.

In essence: Without a fishery to sample the stock assessment team is forced to rely on the ATM survey, which does not cover the nearshore area and therefore the assessment cannot estimate the abundance of either 0s or 1-year-olds very well. The lack of aged samples is another very large problem. And having no survey south of Monterey in the 2017 summer survey is highly likely to be even a larger factor on missing 0s and 1s than the nearshore problem. To summarize:

- The trawl speed likely results in under sampling larger sardines.
- The sardines at the surface, (i.e. the normal pattern late at night), are under sampled.
- The nearshore area (where young sardines are often concentrated) is not sampled.
- The upcoming cruises appear to have no sampling south of Monterey.
- So the best solution is to "assume" that $Q = 1.0$?



Excerpt from the Pacific Sardine STAR Panel Meeting Report:

The estimate of age 1+ biomass on 1 July 2017 from model ALT is 86,586t (CV 0.363). Model ALT indicates that age 1+ biomass has rebuilt close to that in 2014, owing to a substantial increase in biomass based on the indices from the survey (Fig. 6). The estimate of age 1+ biomass is less than the estimate of age 1+ biomass on 1 July 2016 from the 2016 stock assessment (106,137t). This is a consequence of the change in assessment methodology, in particular that selectivity for the ATM survey is assumed to be uniform for fish aged 1 and older (**assuming that selectivity is logistic in model ALT increases the estimate of 1+ biomass from 86,586t to 153,020t**). [p.9]

5) Unresolved Problems and Major Uncertainties [p.10]

The core issues for stock assessments continue to be related to the temporal and spatial scale of the surveys and insufficient sample sizes of age-length for sardine in the ATM survey. The ability of a single boat following fixed transects along the entire sardine NSP region over a single period to sufficiently observe and sample a highly mobile schooling fish that exhibits high variability in recruitment, migratory patterns and timing, school structure, and depth distribution remains a core challenge. The relatively small sample size of sardine for biological analysis remains a concern related to acoustic expansions, population model estimates, and projection forecasts that depend on age composition and size-at-age information. **A solution may require more resources than SWFSC has at its disposal so that will require Council action;** resolution of this issue is outside of the ability of the Panel to address.

The Panel identified concerns with all of the proposed assessment approaches as highlighted in Section 3 of this report. In relation to model ALT, **the Panel was unable to fully resolve the issue of observations of age-0 animals in the ATM survey age compositions, and how to compute age-composition and weight-at-age for the ATM survey.**

Highlights from my CPSAS statement in the Pacific Sardine STAR Panel Meeting Report:

The CPSAS representative commends the Panel and STAT for their extensive and thoughtful body of work throughout the 2017 sardine STAR panel. Unfortunately, the 2017 sardine assessment again encountered the same difficulties observed in previous STAR panels. **Most of the unresolved problems and major uncertainties listed in the 2011 and 2014 STAR panel reports still exist.**

Earlier panels pointed out significant scaling issues. **The 2017 assessment also encountered issues with ageing, notably an age-length key that was deemed incorrect. One persistent problem is the very small sample size for biological composition data obtained during ATM surveys and other sampling; another is the high variability in length-at-age observed in sardine year-to-year.** As pointed out during the meeting, an age/length key averaged over seasons is not valid; it ignores differential cohort strengths. This presents a major problem in model projections, and adds another layer of uncertainty considering the current time lag between field surveys and the development of either ATM survey-based or model-based management advice for the fishery.

Assigning July 1 as the standardized birth date for sardine also presents problems, particularly in light of recent year ocean conditions that have **precipitated sardine spawning earlier in the year, too early to be observed in April DEPM surveys, and producing age-0 fish assumed too small to be captured in ATM surveys. Yet an abundance of small fish exists!** In fact, the 2015 summer ATM survey did encounter a spike of very small fish. A record number of pelagic juvenile sardines (and anchovies) also was found in the 2015 juvenile rockfish cruise. **However, the length-composition data for the small fish were omitted from the assessment model in 2015 because the biomass estimate produced was “unrealistic.”**

Ironically, none of the approaches considered at this STAR panel meeting found adequate evidence of recruitment in 2016 to boost the stock assessment “number” in 2017. **In fact, the projected biomass estimate for 2017 is lower than 2016 at a time that sardines are increasing in abundance, apparently coast-wide, but certainly in California.** The current report attributed this to a change in assessment methodology.

Fishermen from the Pacific Northwest and California who attended the STAR panel meeting reported that they have observed an abundance of 3-6 inch fish for the past couple of years, particularly in live bait catches. California fishermen delivered samples of these fish to the SWFSC and California Department of Fish and Wildlife (CDFW). But while the 2016 draft stock assessment did include a small number of live bait catches (now the only active non-treaty fishery for sardine on the West Coast), the corresponding biological-composition data were not aged and hence not included in the assessment.

In the opinion of the fishermen, an opinion shared by this CPSAS representative, none of the four approaches considered during the panel meeting accurately reflect the biomass of sardine now in the ocean. The Panel also voiced concerns with all the methods presented; those concerns are reflected in the body of this report under Technical Merits and/or Deficiencies of the assessment.

The CPSAS representative highlights major concerns, including:

- **The STAT now recommends the ATM survey as the most objective survey method. However, ATM surveys at present do not capture fish in the upper water column, nor a large biomass of young fish (sizes 3 inches and up) that fishermen have observed in nearshore waters since late 2014; this biomass is largely inside ATM survey tracks. But the ATM survey is assigned a catchability quotient (Q) of 1 nonetheless, meaning it “sees” all the fish. The Q for Model ALT, which is based largely on ATM survey data, is estimated at 1.1, which the STAR Panel report calls into question, given for example the unquantified volume of fish in nearshore waters.**
- **The summer 2016 ATM survey reported a fourfold increase in age 1+ biomass, but the biomass estimate produced is substantially lower than the estimate used for management in 2016. The STAR panel found fault with the methodology used to project the 2016 biomass to 2017. So do we – but using the 2016 ATM biomass estimate without adjusting for recruitment ignores reality.**
- **In addition, the proposal to simply use the biomass estimate from the summer ATM survey directly, to avoid uncertainty in model assumptions, could bypass surveying a substantial portion of the biomass if/when cruises are shortened, or disrupted. For example, the 2017 summer survey schedule is only 50 days, down from 80 days in 2016. This means the survey may not extend much below San Francisco, which will miss a substantial portion of California’s historical fishing grounds.**
- **Also, a proposal to change the fishing season start date to more closely follow the survey, thus avoiding the need to project recruitment, is not as simple as it sounds. The current seasonal structure is tied to an allocation framework that would require serious discussion and analysis before any change could be implemented.**
- **At the end of the day, the STAR panel cautiously recommended proceeding with Model ALT, as the “least-worst” way to produce the age 1+ biomass estimate and CV required for management in 2017. The CPSAS hopes the SSC and Council will acknowledge all the caveats, and recognize that this is a “stop-gap” approach until the ATM methodology review can be accomplished in 2018, along with further review and improvement of Model ALT input and assumptions and potential review of other assessment indices.**
- **The CPSAS representative again voices concern that stock assessments appear to be gravitating toward one independent index measuring one point in time, based on ATM surveys. We strongly encourage a continuation of multiple surveys as each survey type has strengths and weaknesses. Other fishery-independent research, i.e. the juvenile rockfish survey, was informative in 2016 and should be approved to provide information for future sardine stock assessments, as this could serve as another indicator of recruitment.**
- **Clearly the small sample size and inadequate biological composition data are causing serious problems in assessing the sardine (and anchovy) resource. Industry has offered to help collect data, and we hope this offer will be acted upon in a way that such information can be incorporated into future stock assessments.**
- **As we have noted in the past, industry wants to see a sustainable resource (to the degree that environmental conditions will allow) that is in no danger of being overfished. Current sardine stock assessments and harvest policy are very precautionary. We sincerely hope that going forward we can develop a truly collaborative research program for the CPS complex.**

Other recommendations:

- **Please work collaboratively with industry to resolve persistent data deficiencies, including assessing the nearshore and upper water column, and the need for substantial increase in sample size and biological composition data for sardine (and other CPS), particularly ageing.**
- **Recognize that the 2017 assessment is “déjà vu all over again” and most of the unresolved problems and major uncertainties listed in the 2011 and 2014 STAR panel reports still exist.**
- **Prior panel, SSC, CPSMT and CPSAS reports have recommended a methods review of the ATM survey ASAP as a high priority research and data need. We continue to emphasize this need, and further recommend that such review also encompass review of Model ALT and other potential data collection options, including the juvenile rockfish survey, CDFW/CWPA aerial survey and any other promising data collection prospects available by the time of the scheduled ATM review in January 2018.**
- **We also support the STAT high-priority recommendation to address: “technical issues related to echosounder deployment and associated signal interpretation (e.g., uncertainty surrounding species-specific target strength [TS], sonar bias related to backscatter uncertainty, and areas of the upper water column that potentially are not capable of being surveyed).”**

Dr. Zwolinski noted that target strength is currently based on “similar” fish, not Coastal Pelagic Species (CPS) found in the California Current. The STAT and Panel recognized that incorrect target strength could result in both over or under-estimation of biomass

Finally, the CPSAS representative points out that improving survey and assessment methodology to accurately reflect abundance of sardine (and other CPS) is absolutely essential: the future of the industry hangs in the balance.

California fishermen and markets attending the April Council meeting will again testify to the abundance of sardine that they have been seeing in the ocean since at least 2015. **Fishermen and markets alike wonder why Council policy is quick to consider emergency closure, but there is no comparable “emergency” policy to reopen a fishery when fish are abundant in the ocean, but obviously missed in field surveys** that could not measure fish, for example, in the nearshore, where the majority of the catch occurs in CA.

It is apparent that we need to improve field surveys, as well as biological sampling and model assumptions, on which assessments are based,. CWPA Is willing to participate however we can to advance cooperative research.

We again offer the following recommendations:

General

- Reiterating recommendations made repeatedly by the SSC and CPS advisory bodies, it is **critically important for the Acoustic Trawl Method to undergo methods review as soon as possible**, in particular to reevaluate the model assumption that Q (catchability quotient) is 1, meaning that acoustics “see” all the fish.
- Assessments need to be based on more than one survey or index. The juvenile rockfish survey was informative as evidence of recruitment in the 2016 assessment and should be included as another line of evidence in future stock assessments.
- The Terms of Reference for stock assessments should be revised to provide more flexibility, particularly in update years, to incorporate new findings and data into assessments that more accurately reflect conditions in the ocean. The TOR should also provide for a process to reopen a fishery based on new lines of evidence as soon as possible, rather than the current requirement to wait for the next full assessment. **Without flexibility to adaptively manage dynamic CPS stocks, industry is forced to sit idle for the better part of one or two years, or even more -- beyond its economic tipping point.**

Sardine fishery management

Please understand the importance of sardines to California’s wetfish industry. From historic times to the present, this industry has relied on a complex of coastal pelagic species, including sardines as the foundation fishery – the “potatoes” -- while mackerels and anchovy are seasonally important, and market squid is “the gravy.” Until recent years, **California’s wetfish industry has produced on average 80 percent of total fishery landings, and close to 40 percent of dockside value statewide.**

California's wetfish industry also is hugely important to fishing communities as it supports harbor infrastructure and allied businesses. An adequate incidental set-aside during the sardine fishery closure can help the wetfish industry survive the tough times they're currently experiencing. **We would appreciate the Council's recognition of the continuing importance of the sardine resource to California's historic wetfish industry.**

Thank you for considering these comments.



Diane Pleschner-Steele
Executive Director

Cc: Sam Rauch, Acting Assistant Administrator for NOAA Fisheries
Barry Thom, Regional Administrator, West Coast Region
Steve Freese, Acting Assistant Regional Administrator
Kevin Duffy, Groundfish & CPS Branch
Frank Lockhart, Groundfish & Coastal Pelagic Species Senior Policy Advisor
Charlton Bonham, Director, CDFW