

# Ocean Resources Enhancement and Hatchery Program Scientific Advisory Committee Meeting Minutes

MICROSOFT TEAMS VIDEO CONFERENCE ONLY

Date: August 23, 2022

Time: 11:00 a.m. – 1:00 p.m. (PST)

## Attendees:

*Scientific Advisory Committee (SAC) Members:* Ken Cain, Ph.D., Tanya Darden, Ph.D., Jackson Gross, Ph.D., Kai Lorenzen, Ph.D., Nicole Williamson, and Ron Zweig

*Ocean Resources Enhancement Advisory Panel (OREAP) Members:* John Ballotti and Wayne Kotow

*California Department of Fish and Wildlife (CDFW):* Adam Frimodig, Kathryn Johnson, Kirsten Ramey, and Valerie Taylor

*California Sea Grant:* Theresa Sinicrope-Talley

*Guests and Members of the Public:* Mark Drawbridge (Hubbs-SeaWorld Research Institute [HSWRI]), Ruari MacNamara (HSWRI), and Steve Santen

## 1. Introductions and announcements

*Valerie Taylor*

- Brian Small has officially resigned. Cannot commit to the time required for the SAC. Down to six members, but the areas of expertise are still covered by current members.

## 2. Discussion of format and how to approve of meeting minutes

*Valerie Taylor and SAC*

- Discussion regarding level of detail of meeting minutes and approval method. Several members agreed that the minutes from the previous meeting were too concise, and they would like to see more detail in the future.
- Valerie Taylor suggests approving meeting minutes that have already been completed.
- Proposed changes to future minutes: draft minutes to be sent out following a meeting, members can review and submit comments on the draft, and the minutes will be approved at the next meeting.
  - Vote to approve changes is unanimous (6 yay votes).
- Vote to approve June meeting minutes is unanimous (6 yay votes).

## 3. Discussion and vote on SAC Bylaws

*Valerie Taylor and SAC*

- Discussion about edits of the SAC bylaws regarding consulting outside experts not on the SAC.
- Valerie will clean up the draft and send the final version before SAC members vote.

#### **4. Summary and discussion of recent white seabass genetics study completed by the South Carolina Department of Natural Resources (SCDNR)**

*Tanya Darden, Ph.D. and SAC*

- Tanya Darden presented a summary of the genetics study:
  - Thesis project of graduate student that would develop a stock enhancement tool with a new microsatellite panel and create a genetic parentage model to track the hatchery contribution in the wild.
  - Ended up with a 15-locus panel and used it to genotype 456 broodstock.
  - Hatchery records indicated 43 spawning groups were used in white seabass production; 90% of broodstock were genotyped.
  - Used the CERVUS parentage model to test samples from fishery independent juvenile surveys and fishery dependent Mexico samples.
  - Coded Wire Tag (CWT) sampling showed the hatchery contribution was 7.4%, while the genetics tool showed the hatchery contribution as 27.7%.
  - Dataset supports the theory that there is a single, large population of white seabass across California and Mexico.
  - Next steps might include using a genetic tool to: estimate the hatchery contribution to the adult wild population; estimate the hatchery contribution to the commercial or recreational fisheries; determine age at recruitment; look at coded wire tag retention discrepancies; determine hatchery contribution to year classes or temporal patterns; analyze samples from experimental hatchery releases to answer specific questions like method of release, size at release, regional contributions, etc.
- Tanya responded to questions from SAC members previously submitted:
  - (1) How do you reconcile the difference in estimated contribution from the hatchery (CWT vs. genetics)?
    - The prior estimate was a contribution to adult white seabass. Our CWT estimate was based on juvenile fisheries independent sampling (Kai clarified they had estimated juvenile contribution as 5-10%).
    - Kai Lorenzen: the actual contribution estimates were not based on modeling, but the percent contribution and it doesn't include the much lower estimate in adult fish.
      - Sampling for juveniles occurs close to the release site and release date because the fish haven't yet dispersed.

- Hatchery fish die at higher rates compared to wild fish – that’s the pattern we saw with the coded wire tagged fish.
  - Nicole Williamson asked for clarification – how many adults were tested for genetics, if any?
    - Tanya - 40 adults from Mexico were tested and attempts were made to get genetic material from 70 otoliths. Only 15 adult samples were genotyped, of which 4 were determined to be hatchery fish (equates to about 27%) but more adult samples are needed to make a robust statement about adult contribution.
    - Mark Drawbridge - HSWRI is working with the recreational industry and commercial processors to acquire adult samples. Tissue samples from heads are being collected to send to Tanya and her team.
  - Kai - In terms of overall success of the program, the low percent contribution in the adult population is of concern since adults are the ones caught in the fisheries and the ones that breed. Juveniles can be recaptured relatively early on after release. The information can be gathered sooner, and the samples are much larger. Juvenile data are important because it gives more information quicker on survivorship, seasonality and size at release. Ultimately, we are interested in adult contribution but being able to get the information from the juvenile surveys is valuable in determining release strategies.
- (2) Why were the otoliths collected originally?
  - For future aging purposes
  - Potential contamination?
    - Not likely. The otoliths were collected, the tissue removed, and the otoliths were then dried and placed in an envelope.
    - Tanya: Contamination can be determined through the chromatography so there is zero concern in taking DNA from otoliths.
- (3) Prior to this study were any hatchery fish recovered from Mexico through CWT detection?
  - No
- (4) Question about assigning parentage to the adult fish assigned as hatchery fish and whether there were any mismatches? How many of the mismatches were based on exclusion alone?
  - One fish was a two-parent pair and the other three were single-parent. This is most likely the result of mutations – the mutation rate is in the ballpark of what we would expect to see.
  - How do these differences arise? Non-detection, CWT loss? There isn’t enough information to understand it.

- For the three fish identified as hatchery fish from the Mexico samples? One fish was a two-parent pair and the other two were single parent.
- Ron Zweig - This genetics work could prove to be a really important tool for the program. What are the implications for the program? How might the program be structured in the future or considered in the future in terms of the release information? The size of the fingerlings is quite large. How was this size determined? Was it because of the CWTs or was it something else? Could it be with this tool that we would consider changing the size at release?
- Tanya will post the slides from her presentation on the OREHP SAC Microsoft TEAMS.
- HSWRI will be looking for guidance from the SAC on experiments/research to be done in the future. Juvenile surveys aren't being conducted right now. Checking broodstock fish to make sure they aren't hatchery fish using genetic testing? HSWRI would like input from the SAC on where to use the genetics tool and management of broodstock in a much more rigorous fashion.
- John Ballotti – the Ocean Resources Enhancement Advisory Panel (OREAP) has authorized funding for comprehensive genetics study and are waiting for the SAC to approve the additional funding of \$150,000 for genetics study. Hoping the SAC will move forward with assembling a scope of work.
- Steve Santen asked if the OREHP Stamp should be statewide?
  - Valerie – that change would have to be done through the legislature.
  - Wayne Kotow– Waiting for this process to evolve and waiting for the SAC and Advisory Panel to answer some of the questions as to whether we stay with white seabass, expand to other species, should we open it throughout the state? We're under the sunset clause to answer these questions.
- Theresa Sinicrope-Talley asked if there are plans to have the genetics work peer reviewed so it can be a more robust tool for OREHP decision making?
  - Yes, there are already plans on publication and peer-review of the study.
- Kai – Some of the same fish have been held in the net pens and are spawning independently. For perspective, that would affect the single-parent assignments. The two parent assignments are very robust. Not all of the single-parent assigned fish may be hatchery fish.
  - Tanya – we recognize that as a possibility and there is the potential for overestimation, but the likelihood of those net pen spawns surviving to adulthood and being sampled is probably small. If they spawned before they were collected and spawned at the hatchery, the genetics tool would pick those up.
- If there are other questions, you can send them to Tanya to answer.
- John Ballotti – The OREAP wants a comprehensive genetics study to answer those questions (Where do we go from here? How do we proceed?) and is willing to fund that. Hoping that the SAC will develop a Scope of Work within the next month or two asking for what needs to be accomplished.

- Kai – what should we do at this stage? This is the first significant new information received since the evaluation. We only have one geneticist on the SAC and that geneticist happens to be the principal investigator of this study. Should we look to other experts to get some independent input that could help chart the way for the program? Contract with a few additional people? It's important we don't let that linger.
- John Ballotti – I think that's perfect for a subcommittee to look at but there is no additional money for contracting. Time is of the essence, and we would like to get started as soon as possible.
- Tanya – I like the idea of a subcommittee too. I'm in a bit of an awkward position, but happy to participate in whatever role the SAC finds appropriate.
- Discussion about outside experts, extending timeline, using the California State or University of California system since it would not have to go out to bid.
- Kai – consider recruiting another SAC member or two with stock enhancement expertise?
  - Ken Caine has suggestions for subject matter experts that he's willing to provide.
  - Kai makes a motion that the two vacancies on the SAC be filled and Ken Cain seconds the motion. Vote is unanimous and motion carries.
- SAC members agree on the formation of a subcommittee to solicit outside experts to review the genetics work. Kai volunteers and Ron will provide support.

## **5. Discussion and development of quantitative criteria, benchmarks, and timelines for the OREHP**

*Valerie Taylor and SAC*

- Kai updated the table – please take a look and start thinking about these benchmarks and timelines.

## **6. Updates on member activities the chair did not anticipate being discussed (no vote)**

*Ron Zweig and SAC*

No other business.

## **7. Public comment on agenda items and closing of meeting.**

*Valerie Taylor and SAC*

Questions about the meeting can be directed to the OREHP Coordinator, Valerie Taylor, at [Valerie.Taylor@wildlife.ca.gov](mailto:Valerie.Taylor@wildlife.ca.gov) or [OREHP@wildlife.ca.gov](mailto:OREHP@wildlife.ca.gov).

Meeting notices, agendas, and minutes can be found at <https://wildlife.ca.gov/Conservation/Marine/OREHP/Scientific-Advisory-Committee>.