SOUTHERN CALIFORNIA ASSOCIATION OF

ICHTHYOLOGICAL TAXONOMISTS AND ECOLOGISTS

06 May 2013, CMA

Attendance: Julianne Passarelli (CMA); Bill Power, Fred Stern, Terra Petry, Bill Furlong, JoAnne Linnenbrink (LACSD); Mike Mengel (OCSD); Jim Rounds, Craig Cambell (CLA - Hyperion); Robin Gartman (CSD); Dario Diehl, Ken Schiff (SCCWRP); Danny Heilprin, Todd Chapman (Ecorp Consulting); Rick Feeney, Camm Swift (LACM); Bill Isham (Weston); Don Buth (UCLA); Jonathan Baskin (Cal Poly Pomona); Emmanuel Riclet (CLA).

Meeting Summary:

Dr. Juli Passarelli opened the meeting with announcements regarding upcoming events and SCAITE business.

1. Upcoming meetings:

Visit the SCAITE website at www.scaite.org for the latest meeting announcements. Note that a November 4th meeting, at SCCWRP, has been added. It was suggested that starting in January monthly meetings may be needed to review more of the revised Miller and Lea keys.

2. Miller and Lea revision:

Keys for Gobiidae and Macrouridae are now ready for review. An appendix will be added to the back of the book listing species that are rarely encountered and found near the outer boundaries of either the geographic or depth range limits.

Juli then introduced the guest speaker, Dr. Camm Swift from LACM, who gave a presentation on gobies of southern California. The described characteristics that Camm discussed are as follow:

Anterior body shape or cross section (located in front of pectoral fins)

- most gobies: round in cross section or slightly depressed
- *Lythrypnus*: compressed
- *Tridentiger*: fairly depressed

Dorsal spine counts

- ranges from 3 to 7 or 8 with the last one or two more widely spaced

Dorsal ray counts

- ranges from 10 to 17; lots of overlap among species

Space between dorsal fins

- varies among species; however relative distance generally remains constant between juvenile and adult forms

Caudal ray counts

- most gobies: 25 to 27 rays; of which 17 are primary rays
- *Ilypnus*, *Quietula*, *Eucyclogobius*: 15 primary rays

Scales can vary from well scaled to naked

- most native bay gobies: hard to see or not there at, when present generally uniform in size
- *Eucyclogobius*, *Clevelandia*, *Lepidogobius*: very small and develop very late in growth
- *Lepidogobius*: anterior scales are 1/3 the size of posterior scales
- *Lethops*, *Typhlogobius*: lack scales
- *Acanthogobius*, *Ctenogobius*, *Lythrypnus*: modified ctenoid scales in a single row along the edge

Modified pelvic fins

- all gobies: one spine and five segmented rays on each side that are fused to form a single disc
- most gobies: disc extends half way from origin of the fin to the vent
- *Lythrypnus*: disc is elongated extending all most to the vent
- *Gillichthys*, *Quietula*: disc is rounder in shape

Lateral line development on head

- all gobies: reduction in pored lateral line system; mandibular and infraorbital canals absent; other canals (supratemporal,preopercular, supraorbital, temporal) vary among species
- *Lethops*, *Typhlogobius*: lack all canals
- *Gillichthys*: have temporal and supraorbital canals

Coloration of spinous dorsal fin

- most gobies: mottled black and white
- *Rhinogobiops*, *Lepidogobius*: dark dorsal tip

- *Eucyclogobius*: clear dorsal tip

Coloration of anal fin

- most gobies: mottled black and white
- *Clevelandia*: black bar with pale areas above and below
- *Tridentiger trigonocephalus*, *T. bifasciatus*: multiple dark bars

Coloration of caudal fin

- most gobies: mottled black and white
- *Acanthogobius*: black with white lower edge
- *Ctenogobius*: black edges with white stripe

Maxillary related to a vertical alignment behind eye

- most gobies: terminal end of maxillary bone to or advance of the eye
- *Quietula*, *Gillichthys*, *Clevelandia*: distinctly extends beyond eye (juvenile *Gillichthys* have a shorter maxillary than adult forms)

Gill rakers

- similar among species

Teeth shape

- canine
- forked
- trifid (*Tridentiger*)

Comparisons between *Clevelandia*, *Ilypnus*, *Quietula*, *Gillichthys*:

- *Clevelandia* – uniform body shape with fine speckling
- *Ilypnus* – anteriorly larger body shape with larger speckling; an oval spot on cheek; may have black pigmentation on ventral side; prefer sand habitat
- *Quietula* – anteriorly larger body shape (chunkier than Ilypnus) with darker dorsal hashing and ventrally lighter
- *Gillichthys* – large blotches; transparent to white at caudal peduncle

After the presentation, the key for Gobiidae was handed out and several specimens from the Los Angeles County Museum were keyed out during the remainder of the morning session.

The latter portion of the meeting was used to discuss trawl data quality objects (DQOs)/SWAMP compatible data. At the last SCAITE meeting, 04 March 2013, Ken discussed introducing data

errors to the Bight'08 data set which was said to be "truth" to determine how differing types of errors impact the overall data and what accuracy is needed to maintain quality conclusions.

Today, Ken presented the results of those data manipulations. The three categories of errors were counting, taxonomic resolution, and taxonomic accuracy. Four types of biological response were evaluated: fish response index (FRI), fish abundance, fish species richness, and diversity. Two habitats were examined: bays and harbors, and middle shelf (30-120 m). Subsequent data analysis, requested by the Bight'13 Field Committee, was to evaluate introduced errors to biomass, size class, and anomalies. Introduced errors were evaluated at 5, 10, 15, and 20 percent.

The results indicated that when up to 20% error was introduced by reducing the overall count, there was no statistical difference among the biological responses. Taxonomic resolution was evaluated by selecting three genera Bight wide (Citharichthys, Sebastes, Icelinus) and lumped all species within the respective genus. The results indicated that there was no significant difference among the four biological responses. Three out of the four subcategories of taxonomic accuracy (high vs low abundance, common vs rare, and high vs low P-value) indicated no statistical difference, while the subcategory of Bight'08 voucher review which introduced the uncorrected errors from the voucher review process and promulgated the error throughout the entire data set, revealed a significant difference for the average FRI for the middle shelf. Yet when the percent non-reference area was evaluated, there was no impacted area with correct or incorrect names. Biomass was evaluated by introducing errors of increasing biomass by a tenth of a kilogram to Dover sole from the middle shelf and recalculating the average biomass per station. The results indicate a statistical difference can occur if the error is large (0.3-0.5kg) and is occurring at a lot of sites (15-20%). Size class accuracy was evaluated by altering the size classes of Pacific sanddab by one class smaller and then at random start introducing the error at increasing frequencies. Overall trends between frequency plots were similar and not much of a change was observed, though unable to run statistics on the analysis. Tumors on Dover sole from the middle shelf were analyzed for the category fish anomalies. The assumption made was that tumors were being missed during processing thus for the analysis, tumors were randomly being added to an increasing number of fish (0-5). The results indicate that when the percent of fish with tumors was recalculated, the difference was less than 0.1% not statistical different. Yet when the percent of area was calculated a significant difference is found starting at three fish and the overall error across 0-5 fish ranged from 3 to 18% $\pm$ 10%.

Summary Points:

- Most sampling associated with data quality objects are consistent among agencies; taxonomic consistency and documentation can be improved upon
- Taxonomic error propagation seems to initiate little change in regional Bight assessments; counting errors, taxonomic resolution, taxonomic accuracy, size classing
- Taxonomic errors will be crucial for tracking individual species; single species trends
- Rare occurrences are important; tumor and other anomalies

DQOs recommendations:

Counting precision set at ±10%; Identification accuracy set at ±10% with a ±5% benchmark to strive for; Length precision set at ±10%; Biomass precision set at ±10%; change Gross Pathology category to reflect specific pathologies (tumors, skeletal deformities, eye copepods, ambicoloration) and set accuracy to ±2%.