



**UNITED STATES DEPARTMENT OF
COMMERCE
National Oceanic and Atmospheric
Administration**

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TO: Gregg Waugh.
SAFMC Executive Director

FROM: Bonnie J. Ponwith, Ph.D.
Science and Research Director

SUBJECT: SAFMC Assessment and Related Requests

On March 24, 2017, I responded to your request of March 22 titled, "SAFMC Assessment and Related Requests." In it I discussed the problem of scheduling a golden tilefish assessment, proposed having a workshop to set minimum standards for MRIP catch estimates, and agreed that the SEFSC and MARMAP have adequate aging capacity in the South Atlantic. The attached report addresses an additional concern: if challenges encountered in reading blue-line tilefish carry over into our work on golden tilefish. The attached report was prepared to address that issue.

Please do not hesitate to contact me if you have additional questions.

cc: Monica Smit-Brunello
John McGovern, Rick DeVictor
Theo Brainerd, Trika Gerard, Peter Thompson,
Erik Williams, Larry Massey

Ageing of Tilefish (*Lopholatilus chamaeleonticeps*) in the Southeastern United States

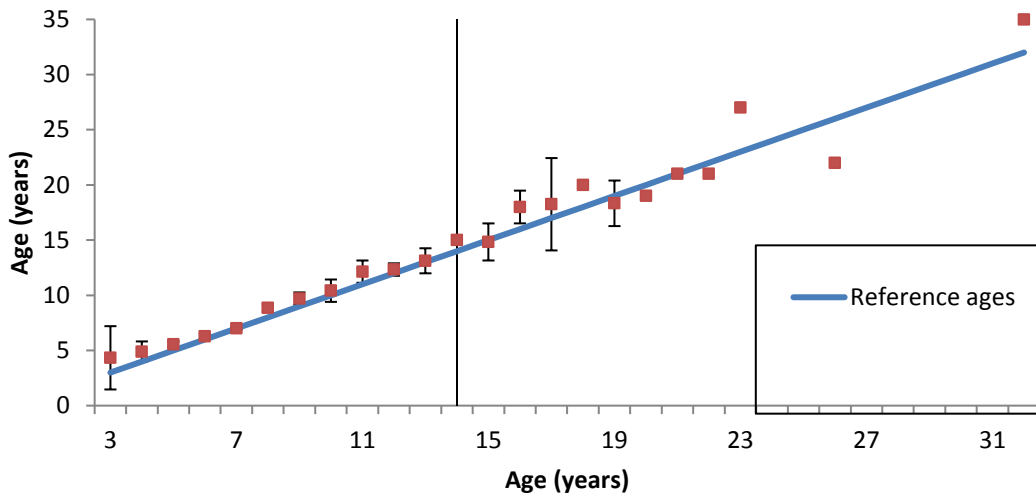
In the Southeastern U.S., the species of the deepwater complex are difficult to age with any consistency and work on validation of ages is in its infancy. Blueline tilefish (*Caulilatilus microps*) is a prime example of the difficulty in interpretation of the growth zones on the otoliths, and the challenges with techniques to validate the age readings. Tilefish (*Lopholatilus chamaeleonticeps*) otoliths are also difficult to interpret, but have exhibited a relatively more consistent pattern of growth zones compared to other deepwater species.

In 2009, a tilefish age workshop was held with expert age readers from NMFS Beaufort, NMFS Panama City, SCDNR, and NMFS Woods Hole. Prior to this meeting, Linda Lombardi-Carlson of NMFS Panama City had completed a radiometric (lead-radium) age validation study of tilefish caught off the east coast of Florida (results published in Lombardi-Carlson and Allen, 2015). Her work involved identifying a consistent pattern of growth zones on the otolith sections to determine age and then comparing those age readings to the estimated ages from the lead-radium ratios. The age reading precision between two readers at Panama City was calculated as average percent error (APE) of 5.5%, which is very good for a long-lived species. She then compared those ages to results of lead-radium dating, and found that all age groups of females and the oldest age groups (unidentified sexes) were validated. The male ages were not validated. The results of her study were used during the workshop to aid in interpretation of the growth zones in the otoliths. Following the age workshop, reference sets were exchanged between laboratories. APEs from this exchange ranged from 6.0% to 9.8% between pairs of age readers. These results were deemed to be very good for long-lived fish with difficult to interpret otoliths. No bias in age readings was noted.

Prior to the 2016 update of SEDAR25 Tilefish assessment, the age readers will read reference sets to ensure that they are still reading the otoliths consistently. NMFS Beaufort re-read their own reference set and NMFS Panama City's tilefish reference set. The APEs were 4.4% and 5.7%, respectively, with no bias in readings (Figure 1). SCDNR follows a similar protocol to ensure their age readers are consistently assigning ages to the samples. They re-read their own reference set and have found comparable APEs to those NMFS Beaufort has achieved. These results have lead our labs to believe that our age readings are consistent between laboratories and over time.

In conclusion, both NMFS Beaufort and SCDNR feel that the age readings of tilefish are useable in stock assessments because of the consistency in age readings between laboratories and the published age validation paper.

a. NMFS Beaufort Reference set



b. NMFS Panama City reference set

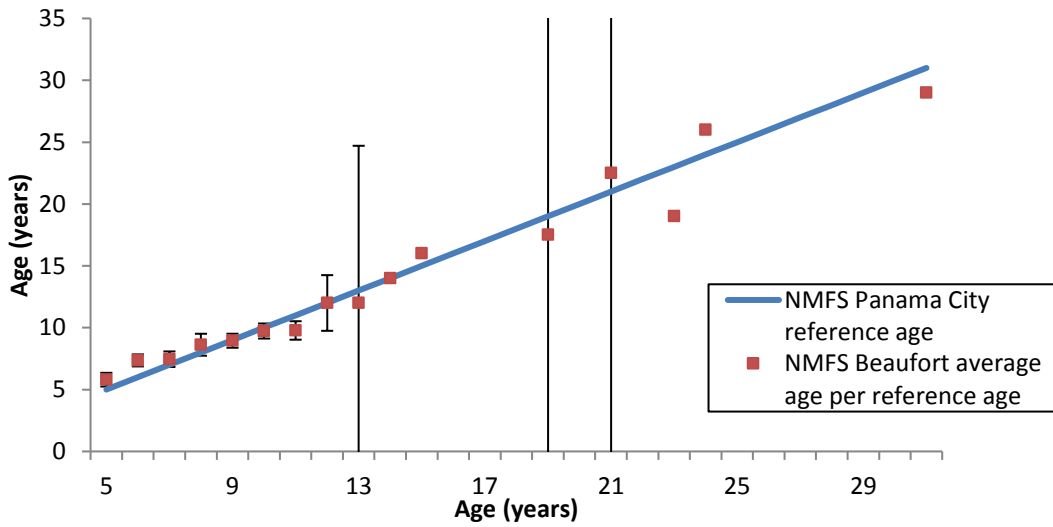


Figure 1. Tilefish age bias plots of NMFS Beaufort readings compared to reference ages of a) NMFS Beaufort reference set and b) NMFS Panama City reference set.