Estimating population age structure using otolith morphometrics - DTU Orbit (25/12/2018)

Estimating population age structure using otolith morphometrics: a test with known-age Atlantic cod (Gadus morhua) individuals

Traditional age reading is a rather subjective method that lacks true reproducibility, producing ageing error that propagates up to stock assessment. One alternative is represented by the use of otolith morphometrics as a predictor of age. An important issue with such a method is that it requires known-age fish individuals. Here we used known-age Atlantic cod (Gadus morhua) from the Faroe Bank and Faroe Plateau stocks. Cod populations usually show quite large variation in growth rates and otolith shape. We showed that including otolith morphometrics into ageing processes has the potential to make ageing objective, accurate, and fast. Calibration analysis indicated that a known-age sample from the same population and environment is needed to obtain robust calibration; using a sample from a different stock more than doubles the error rate, even in the case of genetically highly related populations. The intercalibration method was successful but generalization from one stock to another remains problematic. The development of an otolith growth model is needed for generalization if an operational method for different populations is required in the future.

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