Abstract:

We describe a methodology for estimating relative recruitments for source populations (sources) contributing to mixed fisheries by incorporating age into genetic stock identification models. The approach produced recruitment estimates that were strongly correlated (median correlation = 0.849; 2.5 and 97.5 percentile in correlations = 0.613 and 0.951, respectively) with simulated recruitments across various design factors, including number of sources, genetic divergence among sources, and temporal variation in source recruitments. Sensitivity analyses indicated that the approach was robust to aging inaccuracies and assumed source mortalities. Application to walleye (*Sander vitreus*) sources contributing to the Saginaw Bay, Lake Huron, fishery produced similar recruitment estimates to assessment models. There was greater discrepancy between recruitment estimates for lake trout (*Salvelinus namaycush*) hatchery strains in northern Lake Michigan when compared with strain stocking levels, although this mismatch may stem from stocking levels being a poor recruitment measure. The estimation approach should prove beneficial for indexing source recruitment based on fishery or assessment collections from mixtures, even when long-term time series of harvest and survey data required for integrated assessments are not available.