Species composition and diversity of fish larvae in the Subtropical Convergence Zone of the Sargasso Sea from morphology and DNA barcoding

Specific regions of otherwise oligotrophic oceans seem to attract fish spawning and sustain significant abundances of fish larvae. The Sargasso Sea in the North Atlantic subtropical gyre is known as the spawning area of the Atlantic eels, but numerous other fish species also spawn in the area. In order to evaluate spatial variability of larval fish in the region, we examined species diversity, composition and abundances at eight stations in the Subtropical Convergence Zone (STCZ) using morphological identification and DNA barcoding.

From a total of approximately 3500 specimens collected, at least 154 species from 50 families could be identified. The family Myctophidae had the highest species richness, with at least 32 species represented. The myctophids Lepidophanes gaussi, Bolinichthys indicus, Notolychnus valdiviae and Ceratoscopelus warmingii were the four most abundant species. Other common species included the three eels: Nemichthys scolopaceus, Ariosoma balearicum and Anguilla anguilla. Larval fish species composition differed substantially between the relatively closely spaced stations on either side of prominent hydrographic fronts in the study area, presumably because of the strong environmental gradients. Common eel species were concentrated between the fronts whereas common myctophids were of highest abundance at the outer edges of the fronts. The abundances of most species were generally enhanced in the vicinity of the fronts. The use of combined morphological and DNA-barcoding identification methods facilitated species identification, and we could document substantially higher levels and a larger degree of spatial variability in species diversity of fish larvae than previously shown for oligotrophic ocean areas.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Marine Ecology and Oceanography, University of Copenhagen
Contributors: Ayala, D. J., Munk, P., Riemann, L.
Pages: 85-104
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: Fisheries Oceanography
Volume: 25
Issue number: 1
ISSN (Print): 1054-6006
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 1.86
Web of Science (2017): Impact factor 1.794
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.19
Web of Science (2016): Impact factor 1.578
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.4
Web of Science (2015): Impact factor 2.73
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.61
Web of Science (2014): Impact factor 2.543
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 2.61
Web of Science (2013): Impact factor 2.542