Identification of marine fish and invertebrate larvae using DNA barcoding

F. Porri, South African Institute for Aquatic Biodiversity (SAIAB)
FBIS160513164924

Foundational biological information on the diversity and distribution of many coastal and intertidal species is not yet available in South Africa. Further to this, this knowledge is completely lacking for larval and juvenile stages, which are especially important for fisheries management, where information on settlement and recruitment (connectivity) is needed for reliable stock assessments. The empirical study of larval ecology is however currently limited by the effectiveness of accurately identifying larvae to the species level based on morphological characteristics. Most marine larvae cannot be reliably identified by their morphology, but can be identified to the species level at all stages of the early life history using molecular techniques, more specifically DNA barcoding. Correct identification will also allow for better estimates of diversity for regional checklists, pelagic larval duration, species occurrence and distribution and for monitoring settlement and habitat requirements of specific species. Genetic identification of larval stages of species, using DNA sequences, therefore has a great potential for developing identification keys and as foundational biodiversity information for conservation and management of fisheries resources. This information is further useful for understanding sources and sinks of coastal species and therefore also solving problems in fisheries stock management for sustainable utilisation and ultimately conservation of exploited fisheries resources.