Identification of myctophid larvae in the Southern Ocean using DNA barcoding

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Although myctophids (lanternfishes) are important components of the food web in the Southern Ocean, information on their early life history is limited due to difficulty with species identification at larval stages. This study identified larval myctophids collected from the Southern Ocean using morphology and DNA barcoding. Larvae were sampled in the Indian Ocean sector of the Southern Ocean. Mucosal fluid was sampled to obtain DNA by rubbing the lateral surface of each larva gently using a swab. After DNA sampling, the larvae were fixed with 5% formalin for subsequent morphological description. Total genomic DNA was extracted using Chelex 100 Resin and the mitochondrial COI region (approximately 650 bp) was amplified by PCR. The sequences were Blast searched against the NCBI database and identified to species based on homology exceeding 97%. These analyses identified seven species of myctophid larvae, for which the morphology has never been described or partially described, based on genetics, known morphology, and geographical distribution: *Electrona paucirastra*, *Gymnoscopelus braueri*, *G. microlampas*, *Lampanyctus achirus*, *Metelectrona herwigi*, *Protomyctophum parallelum*, and *P. normani*. Of these, this paper describes three species: *E. paucirastra* (*n* = 2, 6.7–8.9 mm BL, body length), *G. braueri* (*n* = 3, 10.8–14.6 mm BL), and *P. normani* (*n* = 1, 12.8 mm BL).