ABSTRACT
ASPECTS OF MARINE TROPICAL ZOOPLANKTON QUANTIFICATION AS BASIS FOR PHILIPPINE ENVIRONMENTAL IMPACT STUDIES

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Marine zooplankton, composed mostly of copepods, play a significant role in marine food webs. In the Philippines, we know little about their diversity from marine and other habitats. Although zooplankton is a target component in Environmental Impact Assessment (EIA) studies, no guidelines or protocols for monitoring zooplankton currently exist. This study aims to fill these gaps and has three objectives: (1) prepare and compile a species checklist of copepods from accessible literature, including taxonomic studies conducted in the last 50 years; (2) establish mesh size and sampling protocols appropriate for tropical coastal zooplankton studies; and (3) demonstrate how sampling protocols and species-level identification provide an optimal approach to discern ecological changes in zooplankton communities. The list of 444 species, 128 genera, 55 families from 7 different orders has been compiled from both published and unpublished records. The inventory comprised of 403 marine planktonic species, 20 freshwater species, 15 species were described with their associated or parasitic host, 3 phreatic species, and 3 anchialine species were recorded locally. Copepod catch abundance was underestimated in 20 μm over 64 μm mesh plankton net (n = 14, p = 0.006). Difference in copepod abundance collected between the two net types varied by species and life stages. Replicated samples A and B in both net types were similar in the mean catch abundance of the various copepod species at p>0.05. Hence two replicated tows, instead of three, with 64 μm mesh plankton net is enough for
EIA studies to yield minimal sampling bias. However, despite the discrepancy between the two net types, correction factor for 20 μm mesh plankton net was determined. TWINSPAN and CCA showed a similar community patterns at genus and family levels. However, a marked difference in community structure and patterns between species and higher taxonomic levels was exhibited. Communities resulting from the TWINSPAN analysis at species level clustered distinctly along the ordination axes 1 and 2 of CCA, which were more apparent than at higher taxonomic levels. Communities determined at genus, family, and order levels tended to be closely aggregated, overlapping at the center of the CCA ordination bi-plot. The behavior of the zooplankton community in response to environmental change is statistically detectable at species level. It is hoped that the results with these studies be incorporated in monitoring guidelines and sampling protocols for the study of coastal plankton.