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Response ecosystem indicators from hydroacoustic and trawl surveys in the southern Yellow Sea of Korea

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Recent fishing capacity in the Yellow Sea of Korea is well above the renewal ability of the fisheries resources, especially demersal species. It is necessary to collect data and figure out pertinent reference points, to activate the interventions and to introduce simple and user-friendly monitoring indicators. The objective of this study was to propose three operational status as ecosystem indicators of survey variations, considering relative displacement at both uni- or multi-species level, on the basis of parameters which may be derived with minimal elaboration.

Data on the abundance and relevant biological features for fisheries resources were gathered during spring hydroacoustic and trawl surveys from 2002 to 2003, carried out in the southern Yellow Sea of Korea within the fishery independent scientific monitoring program of the National Fisheries Research and Development Institute (NFRDI). The following parameters were estimated for the entire area and by each year in order to have a simultaneous view of the year-by-year fluctuation for each species: mean abundance index in biomass (BI), mean body weight (MeanW), overall (i.e., all specimens pooled) median length (MedLO), overall sex-ratio (SRO), sex-ratio by a selected "critical" length-class (SRLC), percentage of female (FM) at the various maturity stages and the corresponding mean (MeanLM) and median (MedLM) lengths. The mean values by year were standardized to the respective "Great Mean" values and organized as multidimensional uni-specific 8-pointed kite polygons.

The proposed methodology, once enlarged by including more species and more geographical units to increase the constant capability and reduce the uncertainty could be used as a diagnostic tool to provide an early warning of serious worsening of the situation and monitor possible improvements following any management intervention.