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Exploratory stock assessments for North Sea skates using the SPiCT model

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Abstract

There are currently four main skate species that are of commercial interest to fisheries in the North Sea. To date, ICES has primarily used a data-limited approach with survey trends from scientific trawl surveys to inform on stock trends. However, developments and new approaches to assess data-limited stocks offer opportunities for new methods to be explored. One model that is increasingly used within the ICES community is the Surplus Production in Continuous Time (SPiCT) model. Based on data availability, two North Sea skates (cuckoo ray *Leucoraja naevus* and thornback ray *Raja clavata*) were selected for exploratory stock assessments. Total landings and two time series of survey biomass were used as input data. Given that there are only seven years of species-specific skate landings data available, earlier landings for both species were estimated from total skate landings by ICES Division, and recent species composition (Division-specific) in the landings. Based on the SPiCT results, the thornback ray stock increased since the year 2000, whereas fishing mortality decreased in the same period. Currently, the stock is in a favourable state compared to estimated MSY reference points. The cuckoo ray stock showed a similar trend but biomass was estimated to be currently below the MSY level. The exploratory assessments conducted in this study showed that SPiCT can be used to inform on the stock status and fishing pressure for some skate species, albeit with some uncertainty, and could be considered as a basis for the provision of catch advice in the future.

Keywords: thornback ray, cuckoo ray, SPiCT, Surplus Production in Continuous Time, stock assessment, MSY

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