

Raywatch - A study on the population biology and survival of seven ray species in the Northeast Atlantic

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The Common Fisheries Policy (CFP) strives to create profitable and sustainable fisheries based on healthy fish stocks. An important stepping stone in the reformation of the CFP, was the introduction of the Landing Obligation (LO). Since the first of January 2019, all TAC-regulated fish have to be brought to land. Skates and rays have been granted a three year exemption on the LO based on high survival probability. As part of the temporal exemption for rays and skates, the EC mandated a research trajectory as outlined in a “Roadmap for skates and rays” to improve the current scientific knowledge about these species.

“Raywatch” is a two-year EMFF-funded project that aims to improve data collection for rays within the National Data Gathering Programme (NDGP). Raywatch will focus on collecting more biological, catch and survival data for seven ray species; thornback ray (*Raja clavata*), blonde ray (*Raja brachyura*), spotted ray (*Raja montagui*), undulate ray (*Raja undulata*), small eyed ray (*Raja microocellata*), sandy ray (*Leucoraja circularis*) and cuckoo ray (*Leucoraja naevus*) in the Western Waters and English Channel. A data collection protocol was established as part of the existing standardized NDGP programme. Total catch weights and length frequencies for the discard and landing fraction will be collected per sex. A vitality score will be given to several individuals (A (excellent condition), B (good condition), C (poor condition) or D (dead)) based on the amount of injuries and the liveliness of the individual (Catchpole, *et al.*, 2017; Ellis, McCully Phillips, & Poisson, 2017; Schram & Molenaar, 2018). A subset of the sampled (dead) rays will be taken to the lab, where maturity will be assessed based on the stages discriminated in the ICES Workshop on Elasmobranchs Maturity (Workshop on Elasmobranchs maturity (WKSEL 3; outputs from 2018 meeting), 2020). Additionally, various techniques for age determination will be reviewed and tested. Environmental and technical data that was collected on board (e.g. fishing duration, wind speed, sea temperature, depth, etc.) will be used in models predicting the immediate (“at vessel”) and delayed mortality of rays. In order to improve catch advice for rays in the future, discard and landing data will be extrapolated to fleet level and historical catch data will be integrated too. A length-based stock assessment model will be made for thornback ray based on the estimated life history parameters, stock structure and landing and discard data collected during the project.

With this biological data, more insight will be granted in the distribution of rays, the appearance of seasonal patterns, the proportion of landings and discards as well as the length, age and maturity structure of the ray populations. This data will provide a basis for stock assessment models for rays and will result in a better, more accurate catch advice for the species.

Keywords: Rajidae; Fisheries management; Population biology; Stock assessment