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Analysing Fishery-Dependent and Independent Data to Analyse Ground Fish Distributions

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Abstract

We look into the possibility of using fishery-dependent time series to fill in regional and temporal data gaps in the absence of scientific, fishery-independent data. Understanding Oregon's nearshore ground fish fishery has been hindered by sampling coverage restrictions and a historical emphasis on ground fish that live on continental slopes. The statistics are constrained by the years and seasons surveyed as well as the lack of information for locations shallower than 55 m in water depth, despite fisheries-independent surveys having been undertaken across the majority of the fishery's depth range. For such shallow seas and over a wider time span, there are data that are depending on the fisheries. The coverage was established by the locations that fishers chose to fish, yet these statistics were self-reported. We examined capture rates, gaps in fisheries (logbook) and scientific (NOAA survey) data, and regional and temporal variations in catch rates for six flatfishes in order to look into the possibility of future integrated uses for these data sources.

Keywords: Fishery, Ground fishes;Flatfishes

Introduction

The two main informational sources that fisheries scientists employ to analyse population distributions through time and space are data that are independent of the fishery and data that are dependent on the fishery. Depending on the approaches used, each has benefits and drawbacks; but, when used in tandem, they are useful for the management of various fisheries. Because locations are not always accurately or at all documented by fisheries-dependent sources and because fishery-dependent data are a consequence of fishery behaviour, mapping of species distributions for several regions is only reliable when employing fishery-independent data. Because of the inherent biases present in fishery-dependent data, visualisation and mapping are more challenging in areas where fisher's consistently record location data, as opposed to fishery-independent data, which are standardised and have a scientific sampling design built in Fishery-independent surveys might also provide problems. Lack of resources and time can limit the scope of sampling in terms of time and space, but other problems can arise from poor survey design or coverage. To assess if it is feasible or necessary to combine fishery-dependent and -independent data in order to improve species distribution analyses and organise future surveys, region- and fishery-specific research is required [1, 2, 3].

Fishing effort and catch

Here, we concentrate on flatfishes in the nearshore commercial bottom trawl fishing zones off the coasts of Oregon and Washington. These waters must be no deeper than 200 metres. The continental shelf in the northern California Current is mostly covered by this region. Comparatively little is known about the shelf's inshore region, which is around 55 metres deep, compared to the area's slope and other parts. After the ground fish fishery on the US West Coast collapsed in 2000, there was a decline in interest in nearshore commercial trawling. Many flatfishes, including those that are actively sought by the ground fish fishery, like petrel sole (Rosetta Jordan) and Dover sole, can be found in these nearshore fishing regions [4,5].

Many of these animals use the shelf to finish their life cycles or to live out their entire lives. Additionally, compared to rockfish (Sebastes spp.) and round fish, flatfish's exhibit distinct behaviour near trawl gear, hence utilising solely flatfish species for analysis enables for a better comparison between species. In comparison to rockfishes, flatfishes have historically been more reliably assigned to specific species in logbook data [6, 7].

Discussion

With new opportunity to revitalize the nearshore fishery, it is crucial for managers to understand the current and past ecology of Oregon's continental shelf. Should species like starry flounder and sand sole become increasingly targeted or caught as bycatch, spatiotemporal data from logbooks could allow for better future assessment and a more complete historical baseline dataset. English sole and Pacific sanddab are perhaps more likely than the other species to gain market interest in Oregon. It is essential for managers to comprehend the present and historical ecology of Oregon's continental shelf given the fresh potential to revive the nearshore fishery. Spatial and temporal information from logbooks may be used to improve future assessments and provide a more comprehensive historical baseline dataset if species like starry flounder and sand sole are increasingly targeted or caught as bycatch. Perhaps more than the other species, English sole and Pacific sanddabs will attract market attention in Oregon. [8, 9, 10].

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Conflict of Interest Statement

The author affirm that they have no known financial or interpersonal conflicts that would have appeared to have an impact on the research presented in this study.

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