

ATLAS OF ICELANDIC COD SPAWNING SITES

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The main Atlantic cod (*Gadus morhua*) spawning sites in Icelandic waters are considered to be along the southwest coast, however the small scale structure within this area is not well documented and research has shown areas along the east, north and west coasts also contribute to the surviving juvenile population. A more detailed understanding of spawning site structure is required to elucidate settlement areas and population connectivity. To achieve this, we explored the distribution of fisheries (demersal trawl and gillnet) and the occurrence of spawning cod confirmed by Marine Research Institute samples between 1991 and 2011. Fifty-five spawning regions were constructed to represent all possible spawning aggregations of cod. Once the optimal spatial structure was found, survey data was used to estimate abundance of spawning females per year per region. Results showed distinct differences in the spatial distribution of both gear types; gillnets are typically employed in shallow coastal areas whereas demersal trawls operate in deeper waters offshore. A strong positive relationship is evident between effort and spatial coverage. For all years, the greatest abundance of spawning females is found in Selvogsbanki and Breiðafjörður, and the lowest abundance is found along the northern coast. Steep gradients in abundance between adjacent regions, particularly evident in Selvogsbanki, suggest that spawning is a location-specific event rather than being uniformly distributed throughout the main spawning grounds. Regions in the north and southeast are of sufficient size to suggest they contribute to the population of surviving pelagic juveniles, highlighting the greater than previously thought spatial distribution of spawning cod in Iceland.

Keywords:

Spawning grounds, *Gadus morhua*, Icelandic waters, logbook data.