



Scientific advice on sustainable levels for a stickleback fishery in the Baltic Sea

Ecological Considerations

RÅDGIVNINGSNOTAT FRA DTU AQUA

Til: Fiskerikontrolkontoret 430
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**Indsatsområde på
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Anmodning

Som aftalt her bestilling: Jeg skal bede om et engelsk summery af det notat du tidligere har udarbejdet til os i forbindelse med forsøgsfiskeri efter hundestejler i østersøen og bæredygtig fangstmængde. Materialet skal bruges som supplement til kommissionen i forbindelse med notificeringen og baggrund i forbindelse med to forestående forsøgsfiskerier.

Baggrund og rammesætning

DTU Aqua lavede et notat på dansk: "Spørgsmål vedrørende hundestejlens biomasse i østlig Østersø" 5/3 2024, vores J.nr. 24/1000809). Notatet indeholdt en videnskabelig analyse af bæredygtigheden af et fiskeri i Østersøen målrettet hundestejle. I notatet er der anbefalinger om maksimale fangstmængder for de specifikke underområder. Styrelsen har ønsket en kort engelsk sammenfatning af notatet.

Background

DTU Aqua was in 2024 asked by the Danish Fisheries Agency to provide scientific advice on sustainable levels for a stickleback fishery in the Baltic Sea, specifically a level of 5000 tons (DTU Aqua J.nr. 24/1000809).

Harvest Evaluation

The Advice concluded that an annual fishery harvesting 5,000 tons of three-spined stickleback (*Gasterosteus aculeatus*) in the central Baltic Sea (subdivisions 25-29) is considered sustainable and well below the maximum sustainable yield (MSY). A region-specific analysis suggests maximum harvest recommendations of 4,000 tons in SD 25 and 3,000 tons in SD 26 under conservative productivity estimates. For SD 27, 28, and 29, cautious FMSY estimates allow for catches of 16,000, 29,000, and 23,000 tons, respectively.

Data and Methodology

The stickleback biomass assessment used ICES databases, literature, fishing trials, and acoustic surveys (2001–2020). Biomass in SD 25-29 is estimated at 247,000 tons. The length-based spawning potential ratio (LB-SPR) method calculated sustainable fishing mortality (FMSY) under varying growth, mortality, and selectivity scenarios, with the most conservative approach guiding current advice.

Ecological Considerations

While the ecological effects of stickleback fisheries remain incompletely assessed, literature suggests potential benefits, including mitigating ecosystem cascade effects from stickleback expansion, which affects other fish species and water quality. Concerns about bycatch, particularly salmon and trout, necessitate further investigation. A co-sampling protocol is advised for monitoring catches and bycatch in experimental fisheries.

Research and Management Recommendations

A targeted stickleback fishery should follow precautionary and ecosystem-based management principles. Improved scientific monitoring is essential to refine biomass estimates and life-history data, supporting ecosystem efforts to balance stickleback populations and mitigate their expansion.