41. Herring spawning areas

Sensitivity Assessment

Table A11.41. Sensitivity assessment for herring spawning areas. Associated sectors include activities related to offshore renewable energy (O), Fishing (F), or shipping (S). NR = not relevant, NA = not assessed, NEv = no evidence, H = high, M = medium, L = low, NS = not sensitive.

Pressures		**Associated sector(s)**	**Resistance**				**Resilience**				**Sensitivity**			
Classification	**Pressure type**		**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**
Physical	Physical loss (to land or freshwater habitat)	O	N	H	H	H	VL	M	M	H	H	M	H	H
	Physical change (to another seabed type)	O, F	L	H	H	H	VL	M	M	H	H	M	H	H
	Physical change (to another sediment type)	O, F	L	H	H	H	VL	M	M	H	H	M	H	H

Pressures		Associated sector(s)	Resistance				Resilience				Sensitivity			
Classification	**Pressure type**		**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**
	Habitat structure change-removal of substratum (extraction)	O	L	H	H	H	VL	M	M	H	H	M	H	H
	Abrasion/disturbance of substratum surface or seabed	O, F	M	H	H	H	M	M	M	H	M	M	H	H
	Penetration or disturbance of substratum subsurface	O, F	M	H	H	H	M	M	M	H	M	M	H	H
	Changes in suspended solids (water clarity)	O, F	M	H	H	H	H	M	M	H	L	M	M	H
Physical	Smothering and siltation changes (light)	O	L	H	H	H	L	M	M	H	H	M	M	H

Pressures		Associated sector(s)	Resistance				Resilience				Sensitivity			
Classification	**Pressure type**		**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**
	Smothering and siltation changes (heavy)	O	L	H	H	H	L	M	M	H	H	M	M	H
	Underwater noise	O, F, S	NEv	NR	NR	NR	NEv	NR	NR	NR	NEv	NR	NR	NR
	Electromagnetic energy	O	NEv	NR	NR	NR	NEv	NR	NR	NR	NEv	NR	NR	NR
	Barrier to species movement	O, F	NA	NR	NR	NR	NA	NR	NR	NR	NA	NR	NR	NR
	Death or injury by collision	O, F, S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Hydrological	Water flow changes	O	M	L	M	L	M	L	L	L	M	L	L	L
Chemical	Transition elements & organo-metal contamination	O, F, S	M	M	M	H	M	L	L	L	M	L	L	M

Pressures		Associated sector(s)	Resistance				Resilience				Sensitivity			
Classification	**Pressure type**		**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**	**Score**	**QoE**	**AoE**	**DoC**
	Hydrocarbon & PAH contamination	O, F, S	M	M	M	H	M	M	M	M	M	M	M	M
	Synthetic compound contamination	O, F, S	NEv	NR	NR	NR	NEv	NR	NR	NR	NEv	NR	NR	NR
	Introduction of other substances	O, F, S	NEv	NR	NR	NR	NEv	NR	NR	NR	NEv	NR	NR	NR
	Deoxygenation	O	M	M	M	M	H	M	M	M	L	M	M	M
Biological	Introduction or spread of invasive non-indigenous species	O, F, S	NEv	NR	NR	NR	NEv	NR	NR	NR	NEv	NR	NR	NR
	Removal of target species	F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Removal of non-target species	F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

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Literature search

Web of Science search terms

AB=("herring" OR "Clupea harengus" OR "C. harengus")

AND AB = ("spawning bed" OR "spawning area" OR "spawning ground" OR "coarse sediment")

AND AB=("angl*" OR "beam" OR "bottom trawl*" OR "by-catch" OR "dredge*" OR "fish*" OR "gear" OR "gillnet*" OR "hook*" OR "injury" OR "net*" OR "otter trawl*" OR "remov*" OR "aggregate*" OR "anchor*" OR "ballast" OR "barrier*"OR "beach*" OR "launch*" OR "moor*" OR "noise" OR "ship*" OR "steaming" OR "collision*" OR "construction" OR "electro*" OR "turbine*"OR "renewable*" OR "wave" OR "wind" OR "wind farm*" OR "anoxia" OR "copper" OR "current*" OR "deoxy*" OR "disease*" OR "disturbance" OR "endocrine disru*" OR "eutrophication" OR "exposure" OR "heavy metals" OR "hydrocarbon" OR "hypoxia" OR "litter*" OR "non-native*" OR " "nitrate*" OR "nitrite*"

OR "noise" OR “radionuclide” OR "nutrient*" OR "oil" OR "PAH*" OR "PCB*" OR “regime” OR "sedimentation" OR "silt*" OR "tributyltin" OR “turbid*”)

Database

ISI Web of Science

Search date

7th February 2024 - 74 results

Search output and screening process

Abstracts screened for relevance i.e. must describe herring spawning and mention of one of the listed sectors and/or pressures from MARESA. Workflow follows the Rapid Evidence Assessment approach. The title and all auxiliary information (including abstract) were downloaded from ISI Web of Science in a .ris and excel format. In Excel, abstracts were read and listed to either pass or fail the initial screening process with a reason provided.

Outcome from screening

Seven abstracts passed initial screening. Of these seven, one did not pass secondary screening (i.e., on further reading were determined as not relevant), one could not be accessed and therefore applicability could not be determined, and five passed secondary screening and were accessible. One of these was a recent literature review of the subject that had screened over 700 relevant papers. Nine additional papers were added to the analysis based on the reviewers knowledge. Sensitivity assessments were therefore made based on evidence provided by the resultant 14 papers.