

Habitat	Seagrass beds	
Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays	
Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Accessing or crossing shore (includes trampling) (C) (12,21,29,30,34,48,59)	
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	x	
	Species collected by given method	
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	All species	
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)		
<i>Perinereis cultrifera</i> (C) (28,29,48)		
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)		
<i>Arenicola defodiens</i> (C) (25,29,31,48)		
<i>Nephtys</i> spp. (O?) (29-31,46-48)		
<i>Ensis</i> spp. (O) (29-31,48,53)		
<i>Mya arenaria</i> (R) (29,48,53)		
<i>Cerastoderma edule</i> (R) (29,34,48,53)		
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)		
Fanworm (R*) (53)		
<i>Littorina littorea</i> (R) (29,32,48)		
<i>Sabellaria</i> (R*) (37,48,81)		
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea?</i> (89,90)		
Piddocks (R*) (85,91,92)		
Impacts	Impact (Low-High)	Evidence (Low-High)
Habitat impact (seagrass shoot density, biomass, reproduction)	H	H (98-100)
Impact target species	-	-
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	M	M (98)
Impact non-target birds	M	M (16,28,38,42,45,49,56,60)
	Recovery (sediment type)	Evidence (L-H)
Recovery rate habitat	- Months (mostly sandy with mud and gravel)	- M (98)
	Years (mostly sandy with mud and gravel)	M (98)
Recovery target species	-	-
Recovery non-target	-	-

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Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays	
Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Hand digging (C) (5-7,12,16,26,28-31,34,35,38,42,46-48,56,58-61)	
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	x	
	Species collected by given method	
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	<i>A. virens</i>	
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)	<i>H. diversicolor</i>	
<i>Perinereis cultrifera</i> (C) (28,29,48)	<i>P. cultrifera</i>	
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)	<i>A. marina</i>	
<i>Arenicola defodiens</i> (C) (25,29,31,48)	<i>A. defodiens</i>	
<i>Nephtys</i> spp. (O?) (29-31,46-48)	<i>Nephtys</i> spp.	
<i>Ensis</i> spp. (O) (29-31,48,53)	<i>Ensis</i> spp.	
<i>Mya arenaria</i> (R) (29,48,53)	<i>M. arenaria</i>	
<i>Cerastoderma edule</i> (R) (29,34,48,53)	Fanworm	
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)	<i>Sabellaria</i>	
Fanworm (R*) (53)	'Rockworms'	
<i>Littorina littorea</i> (R) (29,32,48)	Piddocks	
<i>Sabellaria</i> (R*) (37,48,81)		
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea</i> ? (89,90)		
Piddocks (R*) (85,91,92)		
Impacts	Impact (L-H)	Evidence (L-H)
Habitat impact (seagrass shoot density, biomass, reproduction)	H	H (54,94,96,97,99)
Impact target species	-	-
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	M	M (43,54,95,96)
Impact non-target birds	L	M (44)
	Recovery (sed.)	Evidence (L-H)
Recovery rate habitat	Weeks (not described)	M (97)
	Months (mudflat; intertidal flats; muddy sand)	H (94,96,99)
	Years (intertidal flats)	M (94)
Recovery target species	-	-
Recovery non-target	Months (mudflat)	M (54)

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Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Bait dragging (L) (5,28,29,30,31,38,42,48)	
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	x	
	Species collected by given method	
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	<i>A. virens</i>	
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)		
<i>Perinereis cultrifera</i> (C) (28,29,48)		
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)		
<i>Arenicola defodiens</i> (C) (25,29,31,48)		
<i>Nephtys</i> spp. (O?) (29-31,46-48)		
<i>Ensis</i> spp. (O) (29-31,48,53)		
<i>Mya arenaria</i> (R) (29,48,53)		
<i>Cerastoderma edule</i> (R) (29,34,48,53)		
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)		
Fanworm (R*) (53)		
<i>Littorina littorea</i> (R) (29,32,48)		
<i>Sabellaria</i> (R*) (37,48,81)		
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea</i> ? (89,90)		
Piddocks (R*) (85,91,92)		
	Impact (L-H)	Evidence (L-H)
Habitat impact (seagrass shoot density, biomass, reproduction)	-	-
Impact target species	-	-
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	-	-
Impact non-target birds	-	-
	Recovery (sed.)	Evidence (L-H)
Recovery rate habitat	-	-
Recovery target species	-	-
Recovery non-target	-	-

Habitat	Seagrass beds	
Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays	
Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Bait pump (C?) (29,30,31,48,59,64)	
	x	
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	Species collected by given method	
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	<i>A. defodiens</i>	
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)	<i>Ensis</i> spp.	
<i>Perinereis cultrifera</i> (C) (28,29,48)		
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)		
<i>Arenicola defodiens</i> (C) (25,29,31,48)		
<i>Nephtys</i> spp. (O?) (29-31,46-48)		
<i>Ensis</i> spp. (O) (29-31,48,53)		
<i>Mya arenaria</i> (R) (29,48,53)		
<i>Cerastoderma edule</i> (R) (29,34,48,53)		
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)		
Fanworm (R*) (53)		
<i>Littorina littorea</i> (R) (29,32,48)		
<i>Sabellaria</i> (R*) (37,48,81)		
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea?</i> (89,90)		
Piddocks (R*) (85,91,92)		
Impacts	Impact (L-H)	Evidence (L-H)
Habitat impact (seagrass shoot density, biomass, reproduction)	-	-
Impact target species	-	-
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	L	M (95)
Impact non-target birds	-	-
	Recovery (sed.)	Evidence (L-H)
Recovery rate habitat	-	-
	-	-
Recovery target species	-	-
Recovery non-target	-	-

Habitat	Seagrass beds	
Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays	
Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Raking (L?) (19,48,50,67,88)	
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	x	
	Species collected by given method	
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	C. edule	
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)	M. edulis	
<i>Perinereis cultrifera</i> (C) (28,29,48)		
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)		
<i>Arenicola defodiens</i> (C) (25,29,31,48)		
<i>Nephtys</i> spp. (O?) (29-31,46-48)		
<i>Ensis</i> spp. (O) (29-31,48,53)		
<i>Mya arenaria</i> (R) (29,48,53)		
<i>Cerastoderma edule</i> (R) (29,34,48,53)		
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)		
Fanworm (R*) (53)		
<i>Littorina littorea</i> (R) (29,32,48)		
<i>Sabellaria</i> (R*) (37,48,81)		
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea</i> ? (89,90)		
Piddocks (R*) (85,91,92)		
Impacts	Impact (L-H)	Evidence (L-H)
Habitat impact (seagrass shoot density, biomass, reproduction)	M	M (71,96,101)
Impact target species	-	-
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	L	M (96)
Impact non-target birds	-	-
	Recovery (sed.)	Evidence (L-H)
Recovery rate habitat	-	-
	-	-
Recovery target species	-	-
Recovery non-target	-	-

Habitat	Seagrass beds			
Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays			
Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Salting (?) (48,64)			
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	Species collected by given method			
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	<i>Ensis</i> spp.			
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)				
<i>Perinereis cultrifera</i> (C) (28,29,48)				
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)				
<i>Arenicola defodiens</i> (C) (25,29,31,48)				
<i>Nephtys</i> spp. (O?) (29-31,46-48)				
<i>Ensis</i> spp. (O) (29-31,48,53)				
<i>Mya arenaria</i> (R) (29,48,53)				
<i>Cerastoderma edule</i> (R) (29,34,48,53)				
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)				
Fanworm (R*) (53)				
<i>Littorina littorea</i> (R) (29,32,48)				
<i>Sabellaria</i> (R*) (37,48,81)				
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea?</i> (89,90)				
Piddocks (R*) (85,91,92)				
Impacts			Impact (L-H)	Evidence (L-H)
Habitat impact (seagrass shoot density, biomass, reproduction)			-	-
Impact target species	-	-		
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	-	-		
Impact non-target birds	-	-		
	Recovery (sed.)	Evidence (L-H)		
Recovery rate habitat	-	-		
	-	-		
Recovery target species	-	-		
Recovery non-target	-	-		

Habitat	Seagrass beds	
Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays	
Bait collection activity with potential to interact with habitat (range of activity; Limited - Common)	Hand picking (?) (29,31,32,37,48,50)	
UK bait species: use 'Rare', 'Occasional', or 'Common' (29,48). *Indicates use not included in refs. 29 or 48	x	
	Species collected by given method	
<i>Alitta virens</i> (C) (5,7,15,21,23,26-31,38,46-48,58-61)	<i>M. edulis</i>	
<i>Hediste diversicolor</i> (C) (28-31,36,48,53)	<i>C. edule</i>	
<i>Perinereis cultrifera</i> (C) (28,29,48)	<i>Ensis</i> spp.	
<i>Arenicola marina</i> (C) (6,13,15,17,21,23,25-27,29-31,34-36,41,46-48,53,56,59)	<i>L. littorea</i>	
<i>Arenicola defodiens</i> (C) (25,29,31,48)		
<i>Nephtys</i> spp. (O?) (29-31,46-48)		
<i>Ensis</i> spp. (O) (29-31,48,53)		
<i>Mya arenaria</i> (R) (29,48,53)		
<i>Cerastoderma edule</i> (R) (29,34,48,53)		
<i>Mytilus edulis</i> (O) (15,21,29-31,48,84,88)		
Fanworm (R*) (53)		
<i>Littorina littorea</i> (R) (29,32,48)		
<i>Sabellaria</i> (R*) (37,48,81)		
'Rockworms' from chalk reefs (R*) <i>Marphysa sanguinea</i> ? (89,90)		
Piddocks (R*) (85,91,92)		
Impacts	Impact (L-H)	Evidence (L-H)
Habitat impact (seagrass shoot density, biomass, reproduction)	-	-
Impact target species	-	-
Impact non-target macrofaunal assemblage (univariate/multivariate/broad taxonomic groups)	-	-
Impact non-target birds	-	-
	Recovery (sed.)	Evidence (L-H)
Recovery rate habitat	-	-
	-	-
Recovery target species	-	-
Recovery non-target	-	-

Habitat	Seagrass beds	
Relevant Annex I habitats	Sandbanks which are slightly covered by seawater all the time, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Coastal lagoons, Large shallow inlets and bays	
Impact summary - Habitat	Key habitat impacts included changes in seagrass shoot density and biomass, with one study identifying impacts on reproductive effort.	
Impact summary - Non-target assemblage	Significant effects were identified for trampling with respect to the number of shrimp and for digging with respect to richness, abundance, and multivariate composition in one study and with respect to infauna and broad groups including polychaetes, gastropods, and bivalves in another study, with the remaining studies finding no significant effects on the assemblage.	
Impact summary - Non-target birds	Evidence identified for disturbance caused by accessing and crossing shore and harvester presence on shore. One study found presence of harvesters to have a significant effect on foraging activity of curlews, however a number of other measures of curlew feeding/foraging behaviour were not negatively affected across this and another study.	
MIMO Risk Matrix for protected features of European Marine Sites. https://www.gov.uk/government/publications/fisheries-in-european-marine-sites-matrix	Bait digging (with forks) and intertidal handwork also considered relevant to bait collection were rated as 'Red' for seagrass in SACs ('Amber' for seagrass in SPAs). Bait dragging was rated 'Amber'.	Red: Where it is clear that the conservation objectives for a feature (or sub-feature) will not be achieved because of its sensitivity to a type of fishing – irrespective of feature condition, level of pressure, or background environmental conditions in all EMSs where that feature occurs – suitable management measures will be identified and introduced as a priority to protect those features from that fishing activity or activities. Amber: Where there is doubt as to whether conservation objectives for a feature (or subfeature) will be achieved because of its sensitivity to a type of fishing, in all EMSs where that feature occurs, the effect of that activity or activities on such features will need to be assessed in detail at a site specific level. Appropriate management action should then be taken based on that assessment.