

Appendix 7: Consideration of “species sensitivity” data

Information originating in data supplied by Natural England

One set of data examined to assess species sensitivity originated from an upload by Natural England to the Huddle system (Charlie Moffat, 6 March 2017), in a spreadsheet titled “Copy of Indication of sensitivity of EA grab stations in the Wash 2011”. This spreadsheet contained the following worksheets (Table 1):

Table 1 Worksheets within document uploaded by NE on 6 March 2011 titled “Copy of Indication of sensitivity of EA grab stations in the Wash 2011”

Worksheet	Description
Stations and sensitive species	A list of station numbers, with associated latitudes and longitudes, and sediment types. Identifies “number of 'sensitive' species present at station”, “number of species at relatively high abundance” and “number of taxa present”, but does not identify sensitivity of any named species (there are no species named on this worksheet). No date or year given for sample data.
2011 EA Grab survey, The Wash	A list of station names, with numbers of named taxa present at each station. Sensitivity for the taxa described in some instances, however no references as to where this sensitivity data originated were listed. No precise date for sampling (2011 only, presumed from title).
Abundance at each station	A list of station names, with numbers of individuals for each taxa (described in very broad terms e.g. “sponges”, “hydroids”, “worms”) from each station. No date or year given for sample data.
Presence absence of sensitive sp	A list of station names, with numbers of individuals for each taxa (described in precise terms – species, or genus, names in general) from each station. No date or year given for sample data. Data only given as presence (indicated by 1) or absence (indicated by blank cell). Calculates and sums the total number of species present at a station, and indicates those species “at relatively high abundance”. Seemingly no description as to how “high abundance” was calculated.
Cefas 2014 epifauna	A list of station names, with associated latitudes and longitudes. For each station, EUNIS level 2 and broadscale habitat description, EUNIS Level 3 (for most), MNCR (Marine Nature Conservation Review) code and number of taxa recorded. Biota accorded one of 10 “assemblages”, and this was recorded for each station. No precise date for sampling (2014 only, presumed from title).

Further work was undertaken on data from worksheet “Presence absence of sensitive sp”, to better understand the rationale behind the identification of species as “sensitive”, and therefore be better able to examine our compiled dataset and extract relevant information.

Information on the intolerance, recoverability, sensitivity and confidence in the evidence, for the physical pressure *Abrasion* was obtained from the Marine Life Information Network (MarLIN) website displacement for as many species as possible.

The combined information on taxa considered “sensitive”, as per the worksheet “Presence absence of sensitive sp”, and the available information on sensitivity from the MarLIN system are presented as Table 2. This identified that of the 90 taxa listed in the worksheet, MarLIN information on sensitivity was available for 23 of these (Table 2; Figure 1). This indicated that, in general, the taxa for which there is MarLIN information available for exhibit low sensitivity/intolerance to the pressures examined.

Table 2. Taxa as per worksheet "Presence absence of sensitive sp" with associate sensitivity information from MarLIN system

Taxa as per worksheet "Presence absence of sensitive sp"	From MarLIN			
	Abrasion Intolerance	Abrasion Sensitivity	Displacement Intolerance	Displacement sensitivity
	"Int" = Intermediate, "Mod" = Moderate, "NS" = Not Sensitive, "Tol" = Tolerant, "V" = Very			
<i>Abra alba</i>	Int	Low	Int	V Low
<i>Aphelochaeta marioni</i>	Int	Low	Tol	NS
<i>Aphrodita aculeata</i>	Int	Low	Low	NS
<i>Arctica islandica</i> <small>(see Footnote 1)</small>	High	High	NC	NC
<i>Asterias rubens</i>	Int	Low	Low	NS
<i>Balanus crenatus</i>	Int	Low	High	Mod
<i>Cerastoderma edule</i>	Int	Low	Low	Low
<i>Echinocardium cordatum</i>	High	Mod	Low	Low
<i>Flustra foliacea</i>	Int	Low	High	Mod
<i>Lanice conchilega</i>	Int	Low	Int	Low
<i>Macoma balthica</i> (Taxon as per WoRMS taxon match - <i>Limecola balthica</i>)	Int	Low	Int	Low
<i>Molgula manhattensis</i>	High	Low	High	Low
<i>Musculus discors</i>	Int	Low	Low	V Low
<i>Mytilus edulis</i>	Int	Low	Int	Low
<i>Nephtys hombergii</i>	Int	Low	Tol	NS
<i>Nucula nitidosa</i>	Int	Low	Low	Low
<i>Owenia fusiformis</i>	Low	Low	High	Mod
<i>Polydora ciliata</i> (agg)	Int	Low	Low	Low
<i>Psammechinus miliaris</i>	Int	Low	Tol	NS
<i>Sabellaria spinulosa</i>	Int	Low	High	Mod
<i>Spiophanes bombyx</i>	Int	Low	Low	V Low
<i>Spisula solida</i>	Int	Low	Int	Low
<i>Venerupis corrugata</i>	Int	Low	Int	Low
Footnotes				
1: <i>Arctica islandica</i> – no data available on sensitivity etc. in MarLIN system; this information taken from MarESA system. (http://www.marlin.ac.uk/species/detail/1519) "NC" = No Content, no information available within MarESA system.				

For the taxa below, no information was available within the MarLIN system	
<i>Alcyonidium diaphanum</i>	<i>Macrochaeta</i>
<i>Ampelisca diadema</i>	<i>Macropodia</i>
<i>Amphipholis squamate</i>	<i>Magelona johnstoni</i>
<i>Angulus fabula</i> (Taxon as per WoRMS taxon match - <i>Fabulina fabula</i>)	<i>Maja brachydactyla</i>
<i>Aricidea minuta</i>	<i>Minuspio cirrifera</i> (Taxon as per WoRMS taxon match - <i>Prionospio cirrifera</i>)
<i>Asciidiella aspersa</i>	<i>Myrianida</i>
<i>Balanidae</i>	<i>Nephtys cirrosa</i>
<i>Barentsia</i>	<i>Notomastus</i>
<i>Bugula</i>	<i>Nucula nucleus</i>
<i>Capitella</i>	<i>Nuculana minuta</i>
<i>Caulleriella alata</i>	<i>Nuculidae</i>
<i>Caulleriella zetlandica</i> (Taxon as per WoRMS taxon match - <i>Chaetozone zetlandica</i>)	<i>Ophiura albida</i>
<i>Chaetozone christiei</i>	<i>Ophiura ophiura</i>
<i>Cirriformia</i>	<i>Ophiuridae</i>
<i>Cirriformia tentaculate</i>	<i>Pagurus bernhardus</i>
<i>Clymenura</i>	<i>Pedicellina</i>
<i>Crossaster papposus</i>	<i>Pholoe baltica</i> (sensu Petersen)
<i>Eucratea loricate</i>	<i>Pholoe inornata</i> (sensu Petersen)
<i>Eumida</i>	<i>Polycirrus</i>
<i>Eumida bahusiensis</i>	<i>Pomatoceros triqueter</i> (Taxon as per WoRMS taxon Match - <i>Spirobranchus triqueter</i>)
<i>Eumida sanguinea</i>	<i>Psamathe fusca</i>
<i>Glycera lapidum</i> (agg)	<i>Pseudocuma</i> (<i>Pseudocuma</i>) <i>longicorne</i>
<i>Golfingia elongate</i>	<i>Pseudomystides limbata</i>
<i>Grania</i>	<i>Scoloplos armiger</i>
<i>Halecium</i>	<i>Sertularia</i>
<i>Harmothoe extenuate</i>	<i>Sphaerosyllis taylori</i>
<i>Harmothoe impar</i> (agg)	<i>Spio martinensis</i>
<i>Hesionura elongate</i>	<i>Spirobranchus lamarcki</i>
<i>Hydrallmania falcata</i>	<i>Spisula</i>
<i>Hydrobia ulvae</i> (Taxon as per WoRMS taxon match - <i>Peringia ulvae</i>)	<i>Syllides</i>
<i>Kurtiella bidentate</i>	<i>Syllis armillaris</i>
<i>Laonice bahusiensis</i>	<i>Tellina fabula</i> (Taxon as per WoRMS taxon Match - <i>Fabulina fabula</i>)
<i>Lepidonotus squamatus</i>	<i>Thyone fusus</i>
<i>Loxosomella varians</i>	<i>Tubificoides benedii</i>
	<i>Tubificoides galiciensis</i>

	<i>Tubificoides pseudogaster</i> (agg)
	<i>Venerupis senegalensis</i> (Taxon as per WoRMS taxon match - <i>Venerupis corrugata</i>)

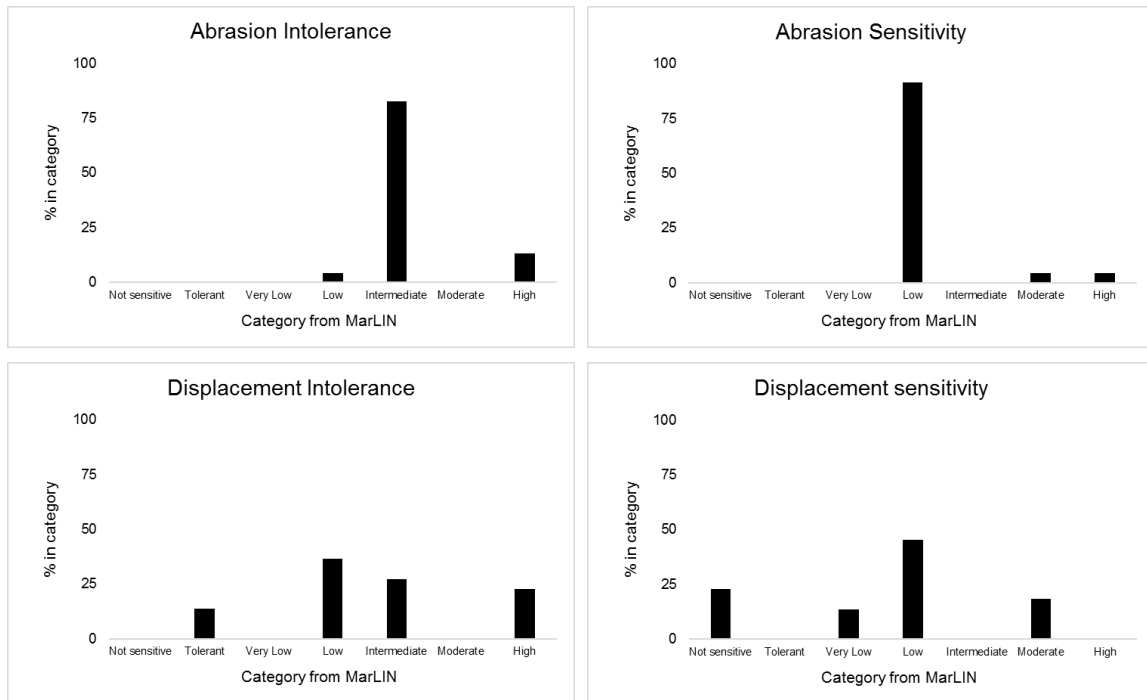


Figure 1. Graphic representation of percentage of taxa in each category for which information is available in MarLIN system for Abrasion Intolerance and Sensitivity, and Displacement Intolerance and Sensitivity. Categories on X axis are (left:right): Not sensitive, tolerant, very low, low, intermediate, moderate and high.

For “sensitivity”, 91% of the taxa were in the “low”, “very low” or “not sensitive” category when considered against the pressure “abrasion”, and 82% of taxa were in the “low”, “very low” or “not sensitive” category when considered against the pressure of “displacement”. For “intolerance”, 4% of taxa were in the “low” category, 83% in the category “intermediate” when considered against the pressure “abrasion”, and 50% of the taxa were in the “low” category, 27% in the category “intermediate” when considered against the pressure “displacement”. See table 3 for summary of this.

To determine which species to examine further and to better understand trends in abundance and distribution of sensitive species, any species which returned in any of the categories sensitivity or intolerance to the pressure “abrasion”; or the categories sensitivity or intolerance to the pressure “displacement”, a level of “intermediate” or higher sensitivity, was screened in for further examination.

This approach resulted in all 23 of the species for which MarLIN information is available being taken forward for further examination. This is considered a precautionary level of examination, as many of these species exhibit “low” sensitivity

to both abrasion and displacement. For these 23 species, the number of records, and total numbers of individuals, within the Eastern IFCA compiled dataset (generated as described below), are presented in Table 4.

Table 3. Summary of numbers of taxa showing various levels of Sensitivity and Intolerance to two pressures for taxa for which information is available in MarLIN system

	Abrasion Intolerance	Abrasion Sensitivity	Displacement Intolerance	Displacement sensitivity
Not sensitive	0	0	0	5
Tolerant	0	0	3	0
Very Low	0	0	0	3
Low	1	21	8	10
Intermediate	19	0	6	0
Moderate	0	1	0	4
High	3	1	5	0

Explanation for the processing of data that originated in the Environment Agency data request

Data on benthic biota present in the Wash and North Norfolk Coast SAC was collated from data requests to the Environment Agency (NR55938, 4 August 2017). The datasets were then compiled and put into a single format to create one large spreadsheet containing all data the Environment Agency provided to Eastern IFCA (this data included surveys by the Environment Agency, Natural England and contractors of the two organisations). The final dataset covered a period from 1973 to 2015, although not all years within this period were represented. The WoRMS Taxon Match Service (WoRMS, 2017) was used once the datasets had been compiled to correct for taxa that had been recorded using multiple synonyms, previous names, or with typographical errors in names (these corrections are detailed in Table 2 and 4). Data for each sample was normalised to an area of 0.1m², the standard area of a day grab.

Table 4. "Sensitive species" from worksheet "Presence absence of sensitive sp", with number of individuals and number of records from Eastern IFCA compiled dataset

Species	Within Compiled Dataset	
	No. Individuals	No. Records
<i>Abra alba</i>	26206	391
<i>Aphelochaeta marioni</i>	725	63
<i>Aphrodita aculeata</i>	36	25
<i>Arctica islandica</i>	1	1
<i>Asterias rubens</i>	51	27
<i>Balanus crenatus</i>	2775	22
<i>Cerastoderma edule</i>	7139	72
<i>Echinocardium cordatum</i>	39	23
<i>Flustra foliacea</i>	(Footnote 1)	94
<i>Lanice conchilega</i>	28746	334
<i>Macoma balthica</i> (Taxon as per WoRMS taxon match - <i>Limecola balthica</i>)	24900	159
<i>Molgula manhattensis</i>	657	30
<i>Musculus discors</i>	1	1
<i>Mytilus edulis</i>	5244	263
<i>Nephtys hombergii</i>	18818	534
<i>Nucula nitidosa</i>	181	19
<i>Nucula nucleus</i> (This species is listed as a distinct species within the Eastern IFCA compiled dataset. It is not identified within the data from worksheet "Presence absence of sensitive sp", but is included here, as it is well represented in the Compiled Dataset)	3786	119
<i>Owenia fusiformis</i>	74	20
<i>Polydora ciliata</i> (agg)	648	42
<i>Polydora</i> (This is listed as a distinct taxon within the Eastern IFCA compiled dataset. It is not identified within the data from worksheet "Presence absence of sensitive sp", but is included here, as it is well represented in the Compiled Dataset)	3144	58
<i>Psammechinus miliaris</i>	13	9
<i>Sabellaria spinulosa</i>	39549	180
<i>Spiophanes bombyx</i>	31557	493
<i>Spisula solida</i>	36	10
<i>Venerupis corrugata</i>	56	13
Footnotes –		
1. A colonial animal, only recorded as "present" within any sample rather than being counted.		

Information originating within Catchpole *et al.* (2008)

An additional list of species was determined from the list of bycatch species as per Catchpole *et al.* (2008), identifying several epibenthic species (Table 5). The number of records, and total numbers of individuals, within Eastern IFCA's compiled dataset is also presented, as an indication of which species are sufficiently well represented in the dataset to support further examination.

Although the specific species *Ophiothrix fragilis* was not well represented in the compiled dataset, 'brittle stars' in general were. Examination of variations in Brittle star¹ abundance over time when examined by depth range and EUNIS code were conducted and graphed (Appendix 8j).

The only other species for which there may potentially be sufficient records within the compiled dataset to allow meaningful analysis were *Carcinus maenas* and *Asterias rubens*. However, examination of the dataset revealed that for these species, there were no cases where more than three animals were recorded per sample, with the vast majority being one or two individuals. Therefore, there will be no indication of trend of abundance, and examination would only show when the grab samples randomly encountered these patchily distributed animals. Accordingly, no further examination of these species was conducted.

Table 5. Bycatch species recorded from a study in The Wash (Catchpole *et al.*, 2008), with numbers of individuals, and records, within Eastern IFCA compiled dataset.

Species		Type	Within compiled dataset	
			No. Individuals	No. Records
<i>Carcinus maenas</i>	Shore crab	Epibenthic	63	37
<i>Liocarcinus spp.</i>	Swimming crab	Epibenthic	3	2
<i>Asterias rubens</i>	Starfish	Epibenthic	51	27
<i>Ophiothrix fragilis</i>	Brittlestar	Epibenthic	2	2
N.B. Although the number of records of <i>O. fragilis</i> specifically within the compiled dataset is low, for generic "brittlestars" there are numerous records				
<i>Macropodia spp.</i>	Tiny spider crab	Epibenthic	16	13
<i>Pomatoschistus minutus</i>	Sand goby	Fish		
<i>Pleuronectes platessa</i>	Plaice	Fish		
<i>Merlangius merlangus</i>	Whiting	Fish		
<i>Clupea harengus</i>	Herring	Fish		
<i>Limanda limanda</i>	Dab	Fish		
<i>Sprattus sprattus</i>	Sprat	Fish		
<i>Agonus cataphractus</i>	Pogge	Fish		
<i>Osmerus eperlanus</i>	Smelt	Fish		
<i>Gadus morhua</i>	Cod	Fish		
<i>Syngnathidae</i>	Pipefish	Fish		
<i>Platichthys flesus</i>	Flounder	Fish		
<i>Pegusa lascaris</i>	Sand sole	Fish		
<i>Liparis liparis</i>	Sea-snail	Fish		
<i>Taurulus spp.</i>	Scorpion fish	Fish		

¹ Abundance in spreadsheet listed for *Ophiothrix fragilis*, *Ophiura*, *Ophiura albida*, *Ophiura ophiura*, *Ophiuridae* and *Ophiuroidea* were included in this assessment.

<i>Dicentrarchus labrax</i>	Bass	Fish		
<i>Echiichthys vipera</i>	Lesser weaver	Fish		
<i>Solea solea</i>	Sole	Fish		
<i>Ciliata mustela</i>	5 bearded rockling	Fish		
<i>Raja clavata</i>	Thornback ray	Fish		
<i>Lycodes esmarkii</i>	Eelpout	Fish		
<i>Sepiola atlantica</i>	Little cuttlefish	Free swimming		

Information originating within the MarLIN ‘BIOTIC’ system

The taxa list in the dataset compiled by Eastern IFCA was submitted to the MarLIN Biological Traits Information Catalogue (BIOTIC) (MarLIN, 2006). BIOTIC generated information on the biological traits of taxa within the list that it held sufficient information on. This information was then used, following a method outlined by de Juan and Demestre (2012), to investigate the possible sensitivity of species found in The WNNC SAC to beam trawling. De Juan and Demestre (2012) evaluated the adequacy of using an indicator of trawl disturbance based on position, feeding, motility, size and other attributes. The paper proposed the trawl disturbance index, which uses the biological traits mentioned, as a tool for fisheries managers to assess ecosystem health. While the data available from BIOTIC was not sufficient to follow the exact method used in the paper, as traits differed slightly (Table 6), it was used to scope out species that were not sensitive by removing those associated with “Score 0” traits (species known to be burrowers, scavengers, highly mobile, small ($\leq 2\text{cm}$), and/or robust).

Table 6. Traits provided by BIOTIC that best match those used in de Juan and Demestre (2012) to investigate the sensitivity of species to trawl disturbance

Trait identified by de Juan and Demestre (2012)	Associated BIOTIC Trait Used
Position	Habit
Motility	Mobility
Feeding	Feeding method
Size	Size
Other attributes	Fragility

The species remaining after those with “Score 0” traits were scoped out, and those with insufficient data to investigate sensitivity were removed, are listed in Table 7. The number of records, and total numbers of individuals, within the Eastern IFCA “compiled dataset” is also presented in Table 7, as an indication of which species are sufficiently well represented in the dataset to support further examination.


Following these methods the species identified as sensitive and taken for further examination are detailed in Table 8.

Table 7 Identification of species within Eastern IFCA Complied Dataset showing potential sensitivity after WebRef2

BioticID	Species	Size	Fragility	Habit	Feeding Method	Mobility	Within Compiled Dataset		
							No. Individuals	No. Records	
4109	<i>Sabellaria spinulosa</i>	S-M	Intermediate	Tubicolous	3,2	10	39549	180	
4129	<i>Cancer pagurus</i>	M-L	Intermediate	Free living	22	5	7	6	
4237	<i>Amphiura filiformis</i>	M	Fragile	Free living	3,2,4,5	5,6	3	3	
4250	<i>Mytilus edulis</i>	M	Intermediate	Attached	3,2	8,10	5244	263	
4286	<i>Carcinus maenas</i>	S-M	Fragile	Free living	8	5	63	37	
4302	<i>Modiolus modiolus</i>	M	Intermediate	Attached	3,2	8,10	58	3	
4330	<i>Conopeum reticulum</i>	S-M	Fragile	Attached	2	10	(Footnote 1)	85	
4340	<i>Flustra foliacea</i>	M	Fragile	Attached	3,2	10	(Footnote 1)	94	
4403	<i>Electra pilosa</i>	S-M	Fragile	Attached	2	10	(Footnote 1)	87	
4406	<i>Spio filicornis</i>	S-M	Fragile	Tubicolous	4,5	6	2	2	
4410	<i>Owenia fusiformis</i>	S-M	Fragile	Tubicolous	3,2,4,5	6	74	20	
4538	<i>Obelia longissimi</i>	M-L	Fragile	Attached	3	10	(Footnote 1)	5	
5989	<i>Alcyonidium diaphanum</i>	M-L	Intermediate	Attached	2	10	(Footnote 1)	18	
5999	<i>Bathyporeia elegans</i>	S-M	Intermediate	Free living	4,5	6	836	146	
6006	<i>Hydrallmania falcata</i>	M	Fragile	Erect	3	10	(Footnote 1)	73	
6011	<i>Mediomastus fragilis</i>	S-M	Fragile	Tubicolous	5	6	12303	264	
6025	<i>Thyone fusus</i>	M	Fragile	Free living	4	5	30	16	
6029	<i>Amphipholis squamata</i>	S-M	Fragile	Free living	NC	5	712	89	
6032	<i>Sertularia cupressina</i>	L	Fragile	Erect	22	10	(Footnote 1)	9	
6035	<i>Abietinaria abietina</i>	M-L	Fragile	Erect	22	10	(Footnote 1)	3	
6039	<i>Harmothoe spp.</i>	S-M	Intermediate	Free living	NC	NC	(Footnote 2)		
	<i>Harmothoe impar</i>	By far the most abundant species of the genus within the dataset						433	59
6173	<i>Pagurus bernhardus</i>	S-M	Intermediate	Free living	4,22,2	5	13	3	
6226	<i>Aonides paucibranchiata</i>	S-M	NC	NC	4,5	6	2357	80	
6500	<i>Travisia forbesii</i>	S-M	NC	NC	4,5	6	30	8	
6528	<i>Spio martinensis</i>	S-M	Fragile	Tubicolous	4,29	6	3502	180	

Footnotes
1: A colonial animal, only recorded as “present” within any sample rather than being counted.
“NC” = No Content, no information available within the BIOTIC system
For details of coding used for traits, see WebRef 3
2: No species identified within the BIOTIC system. <i>Harmothoe impar</i> included here as it is the most represented member of the genus within the Compiled Dataset.

Table 8 Species identified as sensitive and examined further. For each species, the traits used to assess sensitivity are listed, along with the Appendix that details further examination.

<i>Abra alba</i>	
 <p>Budd (2007)</p>	<p>Common name: White furrow shell</p> <p>Position: Infaunal</p> <p>Size: Small (1-2cm)</p> <p>Fragility: Intermediate</p> <p>Habit: Burrow dwelling</p> <p>Feeding Method: Suspension (passive and active) and deposit feeders (surface and sub-surface)</p> <p>Mobility: Burrower (MarLIN, 2006)</p> <p>Sensitivity source: Table 4 Further examination: Appendix 8c</p>
<i>Bathyporeia elegans</i>	
 <p>Richards (2008)</p>	<p>Common name: Sand hopper</p> <p>Position: Infaunal</p> <p>Size: Small (1-2cm) - medium (3-10cm)</p> <p>Fragility: Intermediate</p> <p>Habit: Free living</p> <p>Feeding Method: Deposit feeders (surface and sub-surface)</p> <p>Mobility: Burrower (MarLIN, 2006)</p> <p>Sensitivity source: Table 7 Further examination: Appendix 8d</p>
<i>Flustra foliacea</i>	
 <p>Tyler-Walters and Ballerstedt (2007)</p>	<p>Common name: Hornwrack</p> <p>Position: Epifaunal</p> <p>Size: Medium (3-10cm)</p> <p>Fragility: Fragile</p> <p>Habit: Attached</p> <p>Feeding Method: Suspension feeder (passive and active)</p> <p>Mobility: Permanent attachment (MarLIN, 2006)</p> <p>Sensitivity source: Table 7 Further examination: Appendix 8e</p>

Hydrallmania falcata

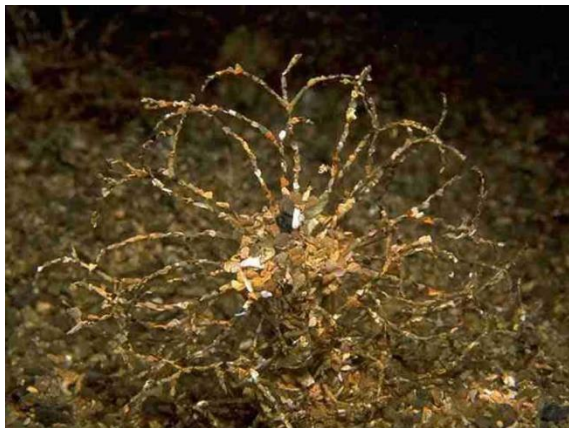


Picton and Morrow (2016)

Common name: Helter skelter hydroid
Position: Epifaunal
Size: Medium (3-10cm)
Fragility: Fragile
Habit: Erect
Feeding Method: Passive suspension feeder
Mobility: Permanent attachment
(MarLIN, 2006)

Sensitivity source: Table 7
Further examination: Appendix 8f

Lanice conchilega



Ager (2008)

Common name: Sand mason
Position: Epifaunal
Size: Medium (3-10cm) – Large (11-20cm)
Fragility: Fragile
Habit: Tubicolous
Feeding Method: Suspension (passive and active) and deposit feeders (surface and sub-surface)
Mobility: Swimmer, Crawler, Burrower
(MarLIN 2006)

Sensitivity source: Table 4
Further examination: Appendix 8g

Mediomastus fragilis



GTH (2017)

Common name: A Bristleworm
Position: Infaunal
Size: Small (1-2cm) - medium (3-10cm)
Fragility: Fragile
Habit: Tubicolous
Feeding Method: Sub-surface deposit feeder
Mobility: Burrower
(MarLIN 2006)

Sensitivity source: Table 7
Further examination: Appendix 8h

***Mytilus edulis* (Mytilidae)**



Tyler-Walters (2008)

Common name: Common mussel

Position: Epifaunal

Size: Medium (3-10cm)

Fragility: Intermediate

Habit: Attached

Feeding Method: Suspension (passive and active)

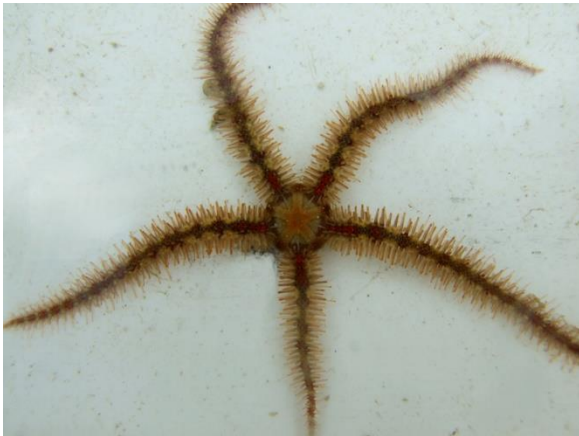
Mobility: Temporary or permanent attachment (MarLIN 2006)

Sensitivity source: Table 7

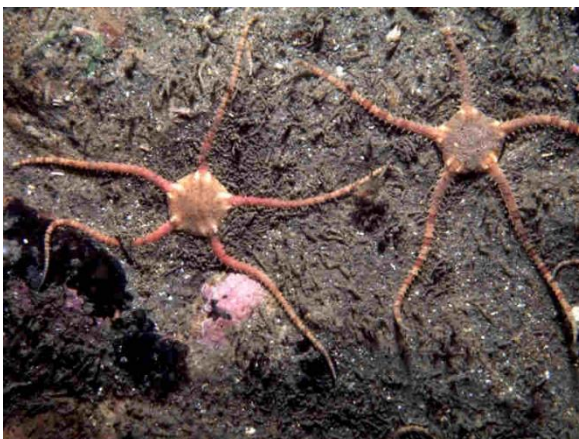
Further examination: Appendix 8i

Ophiuroidea

Ophiothrix fragilis



Ophiura albida



Common name: Brittle stars

Position: Epifaunal

Size: Small (1-2cm) - medium (3-10cm)

Fragility: Fragile

Habit: Free living

Feeding Method: Suspension (passive and active), deposit feeders (surface and sub-surface), Predator, Scavenger

Mobility: Swimmer, Crawler, Burrower (MarLIN 2006)

Sensitivity source: Table 5

Further examination: Appendix 8j

Ophiura ophiura



Wilson (1999); Jackson (2008); Ruiz (2008)

References

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