

Cyngor Cefn Gwlad Cymru  
Countryside Council for Wales



**Skomer Marine Nature Reserve  
Nudibranch Diversity Survey 2010  
CCW Regional Report  
CCW/WW/10/11**

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## CRYNODEB

Mae noethdagelloigion yn nodwedd o Warchodfa Natur Forol Sgomer, ble mae amrywiaeth rhywogaethau'n un o'r priodoleddau a ddefnyddir i asesu statws cadwraeth. Fe gafodd cyfanswm o 14 o safleoedd a oedd yn cynrychioli amrywiaeth o gynefinoedd eu harolygu ar gyfer rhywogaethau o noethdagelloigion yn ystod 2010, a'r canlyniad oedd cyfanswm o 55 o rywogaethau. Fe gafodd ffotograffau o 54 o rywogaethau eu tynnu yn y fan a'r lle neu mewn acwariwm.

Mae nifer y rhywogaethau a gofnodwyd yn sylweddol uwch nag yn arolygon 2002 (32 rhywogaeth) a 2006 (34 rhywogaeth).

Rhwng 1975 a 2010, mae 72 o rywogaethau o noethdagelloigion wedi eu cofnodi yng Warchodfa Natur Forol Sgomer, a hynny drwy gynnal arolygon deifio a thrwy arolygu'r isfilod a oedd yn byw yn y gwaddodion. Daethpwyd o hyd i 59 o rywogaethau yn yr arolygon a wnaed rhwng 2002 a 2010, ac yn eu plith yr oedd 5 rhywogaeth na chawsant eu cofnodi yng Ngwarchodfa Natur Forol Sgomer cyn 2002. Mae'r rhywogaethau o noethdagelloigion a gofnodwyd yn cynnwys nifer a ystyrir yn anfyfych yn genedlaethol neu'n rhai y ceir nifer cyfyngedig ohonynt yn Ynysoedd Prydain.

Mae amrywiaeth mawr o rywogaethau o noethdagelloigion yng Ngwarchodfa Natur Forol Sgomer, gyda 66% o rywogaethau'r DU yn cael eu cynrychioli mewn ardal o 13.2 o gilometrau sgwâr. Mae'r amrywiaeth eang yma'n adlewyrchiad o'r amrywiaeth o gynefinoedd a'r amodau amgylcheddol a geir yn y Warchodfa Natur Forol a'r cymunedau cyfoethog y mae'r rhain yn eu cynnal. Fel ysglyfaethwyr arbenigol mae gan rywogaethau'r noethdagelloigion ddewis dethol o organebau ysglyfaeth. Maent felly'n ddangosydd da o iechyd cyffredinol yr ecosystem.

## SYNOPSIS

Nudibranchs are a feature of the Skomer MNR for which species diversity is an attribute used to assess conservation status. A total of 14 sites representing a range of habitats were surveyed for nudibranch species during 2010 resulting in a total of 55 species. Photographs of 54 species were taken in situ or in an aquarium.

The number of species recorded is significantly higher than the 2002 (32 species) or 2006 (34 species) surveys.

A total of 72 nudibranch species have been recorded in the Skomer MNR between 1975 and 2010 from both diving and sediment infauna surveys. 59 species have been found on those surveys carried out between 2002 and 2010, of which 5 species were unrecorded in the Skomer MNR before 2002. Nudibranch species recorded include several classed as nationally scarce or with limited national distribution in the British Isles.

The diversity of nudibranch species in the Skomer MNR is very high with 66% of UK species represented in an area of 13.2 squared kilometres. This high diversity is a reflection of the diversity of habitats and environmental conditions found in the MNR and the rich communities that these support. As specialised predators nudibranch species have a very selective choice of prey organisms, they are therefore a good indicator of the overall ecosystem health.

## 1. INTRODUCTION

Nudibranchs are molluscs of the Subclass Opisthobranchia in which the adult stage has completely lost both the shell and operculum. They share this character with the plant eating Sacoglossa (eg. *Elysia viridis* (Montagu)) which are not covered in the present survey. Similarly the Anaspidea or Sea Hares (eg. *Aplysia punctata* (Cuvier)) are also excluded. All known nudibranchs are carnivorous and most are specialised predators feeding on specific prey organisms (Picton & Morrow, 1994). Some feed on ephemeral prey, such as hydroids and tend to exhibit several short-lived generations each year, whilst others feed on perennial prey and tend to live for one year or more. Such knowledge of food preference is useful in searching for nudibranch species and the timing of diversity surveys.

Nudibranchs are a feature of the Skomer Marine Nature Reserve (MNR) for which species diversity and the presence of rare or scarce species are attributes used to assess conservation status. As top predators they can act as an indicator of the health of the communities they rely on.

### 1.1 HISTORICAL SURVEYS

Between 1975 and 1991 surveys of nudibranch diversity in the Skomer MNR were conducted as a series of identification courses/workshops at Dale Fort Field Centre and these showed species diversity to be high. A total of 99 dives at 44 sites were carried out in the Skomer MNR, during which 61 species of nudibranchs were recorded (see Bunker *et al.*, 1993). Although these observations are of interest in the long-term, a different approach is required for monitoring fluctuations in species diversity. An additional 5 species have also been recorded on sediment in-fauna surveys between 1993 and 2006.

In 2002 a nudibranch species survey was completed to establish a baseline over a short time-scale that could be used for future monitoring. A total of 16 sites representing a range of habitats were surveyed on 20 dives, resulting in a total of 32 species (Luddington, 2002). For monitoring purposes a checklist of 16 species (see Appendix 1) was selected with a target of observing 80% of these species annually, and it was recommended that a full species survey was carried out every 4 years.

In 2003 and 2004 all 16 species from the checklist were recorded. A notable record was *Tritonia nilsodhneri* on the pink seafan, *Eunicella verrucosa* at 2 sites. *T. nilsodhneri* is a nationally scarce species (Moore 2002).

In 2006 surveys were completed at 13 sites representing a range of habitats for nudibranch species. 35 species were recorded during 21 dives.

When the species lists for 2002 and 2006 were combined the data revealed that 46 species were recorded during 41 dives at 20 sites. This was lower than the full 'diving' species list of 61 species but the survey effort was far less than that for the historical data. Notable records were *Doris sticta* a nationally scarce species (Moore, 2002) and three species not previously recorded in the historical data set, *Cadlina laevis*, *Doto eireana* and *Onchidoris pusilla* (Burton *et al* 2007).



*Tritonia nilsodhneri*

In 2007 14 of the 16 species from the check list were recorded and in 2009 15 of the 16 species. Notable records were *Trapania tartanella*, a new record for both Skomer and Wales, and *Doto hystrix*, that was not found on either the 2002 or 2006 surveys. These were recorded and photographed by diving volunteers Sarah Bowen and David Kipling (Lock *et al* 2010).



## 1.2 2010 SURVEY AIMS

- To complete a nudibranch species diving survey at sites representing a range of habitats in the Skomer MNR.
- To photograph nudibranch species, both *in situ* or in an aquarium.
- To produce a 2010 survey species list and compare to 2002 and 2006 surveys. Combine survey data to produce a Skomer MNR nudibranch species list.

## 2. METHOD

Sites around the whole Reserve are chosen to provide a range of habitats and environmental conditions. At each site divers firstly search for nudibranch spawn and prey species and search nearby for the animal; special attention being given to the base of hydroids and bryozoans on which spawn is found. Secondly, a small amount of hydroid, bryozoan and algal turf is collected and carefully sorted under a microscope. Species were identified using Picton & Morrow (1994), Thompson (1976) and Thompson & Brown (1984). *In situ* as well as surface photographs are also taken as a record of each species.

The sublittoral habitat found at each site is described briefly and associated nudibranch species recorded as a list for each site. In addition, an overall list of species is compiled for the Skomer MNR.

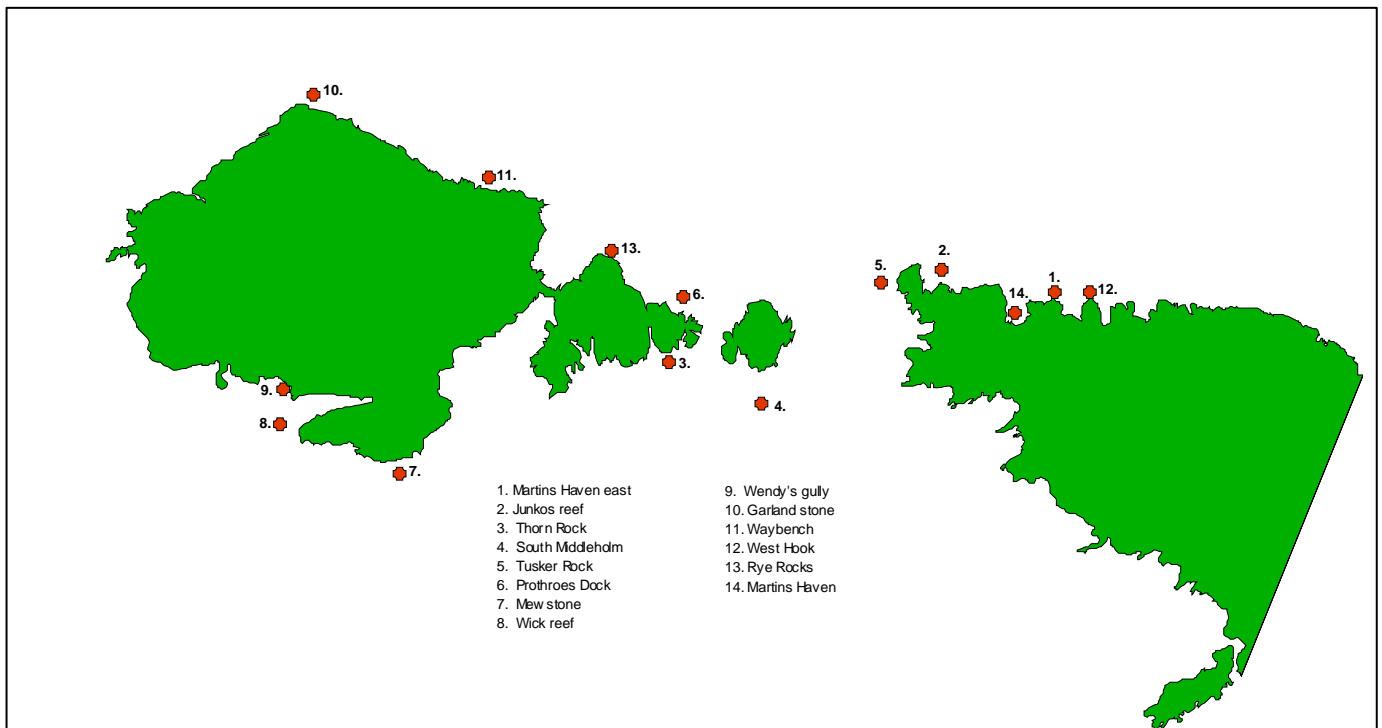
### 2.1 SPECIALIST TRAINING

Specialist identification skills are needed both for nudibranch identification and also for identification of their food preferences. This includes hydroid, bryozoan, sponge and ascidian identification. A five day training course for MNR staff by the UK nudibranch specialist Bernard Picton in June 2010 supported the survey.

### 3. RESULTS

A total of 55 nudibranch species were recorded at 14 survey sites in the Skomer MNR. 27 dives were completed by the Skomer MNR team at 13 sites between 18<sup>th</sup> May and 24<sup>th</sup> June 2010, recording 53 nudibranch species. An additional site (Martins Haven) was surveyed by Seasearch divers (10 dives) as part of a nudibranch identification course and 2 additional species were recorded. A survey site location map is shown in Figure 1.

**Figure 1. Site map for nudibranch diversity survey, Skomer Marine Nature Reserve 2010**



#### 3.1 SITE RECORDS

##### **Site 1. Martins Haven East (MHVe) 22 species, 3 dives.**

A rocky reef extending to 20m below chart datum (bcd) with moderate current exposure, tall hydroid turf dominated in *Nemertesia antennina* and *N. ramosa* and lush algal communities. Below the reef is a plateau of mixed sediments, encrusted cobbles covered in the fine hydroid *Kirchenpaueria pinnata*.

Reef habitat:

- Coryphella lineata* (Loven, 1846)
- Crimora papillata* (Alder & Hancock, 1862)
- Dendronotus frondosus* (Ascanius, 1774)
- Diaphorodoris luteocincta* (M. Sars, 1870)
- Doto fragilis* (Forbes, 1838)
- Doto pinnatifida* (Montagu, 1804)
- Eubranchus farrani* (Alder & Hancock, 1844)
- Eubranchus tricolour* (Forbes, 1838)

*Facelina annulicornis* (Chamisso & Eysenhardt, 1821)  
*Facelina auriculata* (Muller, 1776)  
*Favorinus branchialis* (Rathke, 1806)  
*Flabellina pedata* (Montagu, 1815)  
*Janolus cristatus* (dell Chiaje, 1841)  
*Limacia clavigera* (Muller, 1776)  
*Onchidoris oblonga* (Alder & Hancock, 1845)  
*Polycera faeroensis* (Lemche, 1929)  
*Polycera quadrilineata* (Muller, 1776)  
*Tritonia lineata* (Alder & Hancock, 1848)

Mixed sediment habitat:

*Doto dunnei* (Lemche, 1976)  
*Eubranchnus vittatus* (Alder & Hancock, 1842)  
*Facelina bostoniensis* (Couthouy, 1838)  
*Favorinus blianus* (Lemche & Thompson, 1974)  
*Goniodoris nodosa* (Montagu, 1808)

*Doto fragilis* on *Halecium halecinum* and *Nemertesia ramosa* could be two different species. Samples were taken by Bernard Picton for genetic investigation.

#### Site 2. Junko Reef (JUN) 7 species, 1 dive.

Rocky reef with steep walls, exposed to moderate to strong currents. The rocks are covered in large expanses of *Alcyonium digitatum* and *Corynactis viridis*.

*Crimora papillata*  
*Diaphorodoris luteocincta*  
*Doto fragilis*  
*Facelina annulicornis*  
*Flabellina pedata*  
*Janolus cristatus*  
*Polycera faeroensis*

#### Site 3. Thorn Rock (TRK) 30 species, 4 dives.

A rocky reef extending to 18m bcd with rock platforms and gullies covered with fine silt and exposed to moderate currents. Rocks covered in hydroid and bryozoan turf and rich sponge community. Lush algal meadows are found in the shallows.

<i>Acanthodoris pilosa</i> (Muller, 1789)	<i>Facelina annulicornis</i>
<i>Cuthona amoena</i> (Alder & Hancock, 1845)	<i>Facelina auriculata</i>
<i>Cuthona pustulata</i> (Alder & Hancock, 1854)	<i>Favorinus blianus</i>
<i>Diaphorodoris luteocincta</i>	<i>Flabellina pedata</i>
<i>Diaphorodoris luteocincta var alba</i>	<i>Goniodoris nodosa</i>
<i>Doto cuspidata</i> (Alder & Hancock, 1862)	<i>Janolus cristatus</i>
<i>Doto dunnei</i>	<i>Limacia clavigera</i>
<i>Doto fragilis</i>	<i>Lomanotus genei</i> (Verany, 1846)
<i>Doto lemchei</i> (Ortea & Urgorri, 1978)	<i>Onchidoris oblonga</i>
<i>Doto Pinnatifida</i>	<i>Okenia aspersa</i> (Alder & Hancock)
<i>Eubranchnus tricolour</i>	<i>Okenia elegans</i> (Leuckart, 1828)

*Polycera faeroensis*  
*Polycera quadrilineata*  
*Thecacera pennigera* (Montagu, 1815)  
*Tritonia lineata*

Encrusted site marker rope:  
*Ancula gibbosa* (Risso, 1818)  
*Tergipes tergipes*  
*Doto millbayana* (Lemche, 1976)  
*Doto koenneckeri* (Lemche, 1976)

**Site 4. South Middleholm (SMD) 13 species, 1 dive.**

A rocky reef extending to 18 m bcd with rock plateau, gullies and boulders. Exposed to moderate currents. Short hydroid and bryozoan turf including dense patches of *Alcyonidium diaphanum*. Rich algal meadows in the shallows.

*Acanthodoris pilosa*  
*Coryphella browni* (Picton 1980)  
*Crimora papillata*  
*Cuthona pustulata*  
*Diaphorodoris luteocincta*  
*Doto fragilis*  
*Doto tuberculata* (Lemche, 1976)  
*Facelina annulicornis*  
*Flabellina pedata*  
*Janolus cristatus*  
*Polycera faeroensis*  
*Tritonia hombergii* (Cuvier, 1803)  
*Tritonia lineata*

**Site 5. Tusker Rock (TSK) 19 species, 3 dives.**

Steep rock reef with wide gullies and boulder areas, exposed to strong currents. Lush algal meadows in the shallows, dense walls of *Alcyonium digitatum* and a rich diversity of bryozoan and hydroid turf.

<i>Cadlina laevis</i> (L., 1767)	<i>Doto pinnatifida</i>
<i>Catriona gymnota</i> (Couthouy, 1838)	<i>Eubranchius tricolor</i>
<i>Coryphella lineata</i>	<i>Facelina auriculata</i>
<i>Coryphella gracilis</i> (Alder & Hancock, 1844)	<i>Facelina annulicornis</i>
<i>Crimora papillata</i>	<i>Flabellina pedata</i>
<i>Cuthona pustulata</i>	<i>Janolus cristatus</i>
<i>Doto coronata</i> (Gmelin, 1791)	<i>Limacia clavigera</i>
<i>Doto millbayana</i>	<i>Polycera faeroensis</i>
<i>Doto dunnei</i>	<i>Tritonia hombergii</i>
<i>Doto fragilis</i>	

**Site 6. Protheroe's Dock (PRO) 26 species, 2 dives.**

Bedrock outcrop semi-exposed to current and with tall hydroid and algal communities giving way to a mixed sediment plain at 18m bcd. Large numbers of *Okenia aspersa* egg masses found in the sediment areas, but no individual animals found.

<i>Acanthodoris pilosa</i>	<i>Favorinus branchialis</i>
<i>Archidoris pseudoargus</i> (Rapp, 1827)	<i>Flabellina pedata</i>
<i>Coryphella lineata</i>	<i>Goniodoris nodosa</i>
<i>Crimora papillata</i>	<i>Janolus cristatus</i>
<i>Diaphorodoris luteocincta</i>	<i>Jorunna tomentosa</i> (Cuvier, 1804)
<i>Doto coronata</i>	<i>Limacia clavigera</i>
<i>Doto dunnei</i>	<i>Polycera faeroensis</i>
<i>Doto fragilis</i>	<i>Polycera quadrilineata</i>
<i>Doto maculata</i> (Montagu, 1804)	<i>Rostanga rubra</i> (Risso, 1818)
<i>Eubranchus exiguus</i> (Alder & Hancock, 1849)	<i>Tergipes tergipes</i> (Forsskal, 1775)
<i>Eubranchus tricolour</i>	<i>Thecacera pennigera</i>
<i>Facelina annulicornis</i>	<i>Tritonia lineata</i>
<i>Facelina auriculata</i>	<i>Tritonia nilsodhneri</i> (Marcus 1983)

**Site 7. Mew Stone (MST) 10 species, 1 dive.**

A steep rocky reef extending to 18m bcd with strong wave action and tidal currents. The walls are carpeted in ascidians and *Mytilus edulis*. Hydroid species include *Tubularia sp.*

<i>Coryphella browni</i>
<i>Coryphella lineata</i>
<i>Cuthona pustulata</i>
<i>Dendronotus frondosus</i>
<i>Doto coronata</i>
<i>Eubranchus pallidus</i> (Alder & Hancock, 1842)
<i>Eubranchus tricolour</i>
<i>Janolus cristatus</i>
<i>Limacia clavigera</i>
<i>Polycera faeroensis</i>

**Site 8. Wick Reef (WCK reef) 10 species, 2 dives.**

This reef is located at the entrance of the Wick, steep vertical cliffs and rock platforms exposed to strong wave action. The walls were covered in bryozoan turf with large numbers of the feather star *Antedon bifida*. Small numbers of *Balanophyllia regia* were found on wave scoured boulders at the bottom of steep walled gullies.

<i>Diaphorodoris luteocincta</i>
<i>Doto coronata</i>
<i>Doto fragilis</i>
<i>Doto pinnatifida</i>
<i>Eubranchus farrani</i>
<i>Facelina auriculata</i>
<i>Flabellina pedata</i>
<i>Janolus cristatus</i>
<i>Polycera faeroensis</i>
<i>Tritonia lineata</i>



**Site 9. Wendy's Gully (WEN) 10 species, 1 dive.**

A small inlet that is subject to strong wave surges, but sheltered from tidal streams. The inlet is 15m deep and 4m wide at its entrance narrowing to less than 1m wide. The walls are sheer and overhanging and at the bottom are mobile boulders that scour the base of the cliff. The walls are covered in short animal turf with a high diversity of encrusting sponges.

*Acanthodoris pilosa*  
*Coryphella lineata*  
*Diaphorodoris luteocincta*  
*Doto coronata*  
*Doto fragilis*  
*Eubranchus tricolour*  
*Janolus cristatus*  
*Limacia clavigera*  
*Polycera faeroensis*  
*Tritonia lineata*

**Site 10. Garland Stone (GST) 11 species, 1 dive.**

Steep current swept vertical walls extending to deeper than 40m bcd. Gullies up to 4m wide, with scoured boulders at the bottom. The walls are festooned in bryozoan and hydroid turf, and carpets of *Corynactis viridis* and *Mytilus edulis*.

*Coryphella browni*  
*Crimora papillata*  
*Dendronotus frondosus*  
*Doto coronata*  
*Doto eireana* (Lemche, 1976)  
*Doto fragilis*  
*Eubranchus tricolor*  
*Facelina auriculata*  
*Flabellina pedata*  
*Limacia clavigera*  
*Polycera faeroensis*

**Site 11. Waybench (WAY) 11 species, 1 dive.**

Vertical cliffs and boulder slopes down to a depth of 30 bcd, semi-exposed to wave action from the north and moderate tidal currents. The reef is richly covered in bryozoan and hydroid turf, *Alcyonium digitatum* is abundant and *Eunicella verrucosa* is regularly recorded.

*Acanthodoris pilosa*  
*Coryphella browni*  
*Crimora papillata*  
*Diaphorodoris luteocincta*  
*Doto fragilis*  
*Doto pinnatifida*  
*Facelina annulicornis*  
*Facelina auriculata*  
*Janolus cristatus*  
*Polycera faeroensis*  
*Tritonia lineata*

**Site 12. West Hook (WHK) 11 species, 2 dives.**

Steeply sloping bedrock walls with gullies and boulder slopes extending down to 15m bcd. Semi-exposed to wave action from the north and moderate tidal currents. The vertical walls are covered in the soft coral *Alcyonium digitatum* and rich in bryozoan and hydroid turf. At the bottom of the bedrock a gently sloping plain of muddy shell gravel leads down to 20m bcd.

*Crimora papillata*  
*Diaphorodoris luteocincta*  
*Doto fragilis*  
*Doto pinnatifida*  
*Favorinus brianus*  
*Favorinus branchialis*  
*Flabellina pedata*  
*Limacia clavigera*  
*Okenia aspersa*  
*Polycera faeroensis*

**Site 13. Rye Rocks (RRK) 17 species, 2 dives.**

A rock outcrop, semi-exposed to wave action and moderate tidal currents. The bedrock drops down in a series of 5m steps to a depth of around 40m bcd. Between the rocky areas patches of coarse shell gravel and sand have accumulated and boulder slopes were found. The diverse nature of the seabed substrate in turn leads to a diverse range of habitats and species.

*Acanthodoris pilosa*  
*Diaphorodoris luteocincta*  
*Doto coronata*  
*Doto dunnei*  
*Doto fragilis*  
*Doto hystrix* (Picton & Brown, 1981)  
*Doto pinnatifida*  
*Eubranchius tricolor*  
*Facelina annulicornis*  
*Facelina auriculata*  
*Flabellina pedata*  
*Janolus cristatus*  
*Limacia clavigera*  
*Polycera faeroensis*  
*Polycera quadrilineata*  
*Tergipes tergipes*  
*Thecacera pennigera*

**Site 14. Martins Haven shore dive (MHV) 31 species, Seasearch 10 dives.**

Rocky reef exposed to moderate wave action and currents with tall hydroid turf and algal communities, reef gives way to a mixed sediment plateau with burrowing anemones and scallops.

<i>Acanthodoris pilosa</i>	<i>Facelina auriculata</i>
<i>Aegires punctilucens</i> (Orbigny, 1837)	<i>Favorinus branchialis</i>
<i>Archidoris pseudoargus</i>	<i>Flabellina pedata</i>
<i>Coryphella browni</i>	<i>Goniodoris nodosa</i>
<i>Coryphella lineata</i>	<i>Janolus cristatus</i>
<i>Crimora papillata</i>	<i>Jorunna tomentosa</i>
<i>Diaphorodoris luteocincta</i>	<i>Limacia clavigera</i>
<i>Diaphorodoris luteocincta var alba</i>	<i>Okenia elegans</i>
<i>Doto fragilis</i>	<i>Onchidoris oblonga</i>
<i>Doto lemchei</i>	<i>Polycera faeroensis</i>
<i>Doto maculata</i>	<i>Polycera quadrilineata</i>
<i>Doto pinnatifida</i>	<i>Thecacera pennigera</i>
<i>Doto tuberculata</i>	<i>Trapania pallida</i> (Kress, 1968)
<i>Eubranchus exiguus</i>	<i>Tritonia hombergii</i>
<i>Eubranchus tricolour</i>	<i>Tritonia lineata</i>
<i>Facelina annulicornis</i>	

**3.2 SPECIES RECORDS**

55 nudibranch species were recorded in the Skomer MNR during the 2010 survey. These are listed alphabetically below with sites codes (see Appendix 2) and photographs.

- Acanthodoris pilosa* 7 sites TRK, SMD, PRO, WAY, RRK, MHV, WEN  
Feeds on *Alcyonidium diaphanum*.



Rye Rocks 23/6/10 RG



Protheroes Dock 15/6/10 PN

- Aegires punctilucens* 1 site MHV. Feeds on *Leucosolenia botryoides*.
- Ancula gibbosa* 1 site TRK mooring rope. Feeds on bryozoans.

4. *Archidoris pseudoargus* 2 sites PRO, MHV. Feeds on sponges.



Protheroes Dock  
15/6/10 MB

5. *Cadlina laevis* 1 site TSK. Feeds on *Dysidea fragilis*.



Tusker Rock  
02/06/10 MB

6. *Catriona gymnota* 1 site TSK. Feeds on *Tubularia larynx*.

7. *Coryphella browni* 5 sites SMD, MST, GST, MHV, WAY. Feeds on *Tubularia indivisa* and other hydroids.



Waybench 21/06/10 PN



Protheroes Dock 15/6/10 PN

8. *Coryphella gracilis* 1 site TSK. Feeds on *Eudendrium* spp.



Tusker Rock  
16/06/10 KL  
(microscope)

9. *Coryphella lineata* 7 sites MHVe, TSK, PRO, MST, WEN, WHK, MHV. Feeds on *Tubularia indivisa* and other hydroids.



West Hook 22/06/10 KL



Tusker Rock 02/06/10 PN

10. *Crimora papillata* 9 sites MHVe, JUN, SMD, TSK, PRO, WAY, GST, WHK, MHV. Feeds on *Chartella papyracea* and *Securiflustra securifrons*.



Martins Haven east 15/06/10 KL



Martins Haven east 15/06/10 MC

11. *Cuthona amoena* 1 site TRK. Feeds on *Halecium halecinum*.

12. *Cuthona pustulata* 4 sites TRK, SMD, TSK, MST. Feeds on *Halecium muricatum*.



Mew Stone 16/06/10 MB



Thorn Rock 25/05/10 KL

13. *Dendronotus frondosus* 3 sites MST, MHVe, GST. Feeds on *Tubularia indivisa* and *Sertularia argentea*.



Mew Stone  
16/06/10 PN

14. *Diaphorodoris luteocincta* 10 sites MHVe, JUN, TRK, SMD, PRO, WCK, WEN, WAY, WHK, RRK. Feeds on *Crisia* sp.



Protheroes Dock 03/06/10 MB



Martins Haven east 15/06/10 PN

15. *Diaphorodoris luteocincta* var. *alba* 2 sites TRK, MHV, a distinct species that lacks the red pigment.



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16. *Doto coronata* 6 sites TSK, PRO, MST, WCK, GST, RRK. Feeds on *Sertularia argentea* and *Obelia geniculata*.



Protheroes Dock  
15/6/10 ©BP (aquarium)

17. *Doto cuspidata* 1 site TRK. Feeds on *Nemertisia ramosa*.



Thorn Rock 25/5/10 KL (microscope)

18. *Doto dunnei* 5 sites MHVe, TRK, TSK, PRO, RRK. Feeds on *Kirchenpaueria pinnata*.



Martins Haven east 15/6/10 MC



Martins Haven east 15/6/10 KL

19. *Doto eireana* 1 site GST. Feeds on *Amphisbetia operculata*.

20. *Doto fragilis* 13 sites MHVe, JUN, TRK, SMD, TSK, PRO, WCK, WEN, WAY, GST, WHK, MHV, RRK. Feeds on *Nemertisia antennina*, *N. ramosa* and *Halecium halecinum*.



West Hook 22/06/10 KL



Protheroes Dock 15/06/10 ©BP (aquarium)

21. *Doto hystrix* 1 site RRK. Feeds on *Schizotricha frutescens*.



Rye rocks 23/06/10 MB (microscope)

22. *Doto koenneckeri* 1 site TRK. Feeds on *Aglaophenia pluma*.

23. *Doto lemchei* 2 sites TRK, MHV. Feeds on *Aglaophenia tubulifera*.



Thorn Rock 24/06/10 MB



Thorn Rock 17/06/10 © BP

24. *Doto maculata* 2 sites PRO, MHV. Feeds on *Halopteris catharina*.

25. *Doto millbayana* 2 sites TRK, TSK. Feeds on *Plumularia setacea*.

26. *Doto pinnatifida* 8 sites MHVe, TRK, TSK, WCK, WAY, WHK, RRK, MHV. Feeds on *Nemertesia antennina*.



Rye Rocks 23/06/10 MB



Thorn Rock 17/6/10 KL



27. *Doto tuberculata* 2 sites SMC MHV. Feeds on *Sertularella gayi*.

28. *Eubranthus exiguus* 2 sites PRO MHV. Feeds on *Obelia geniculata*.

29. *Eubranthus farrani* 2 sites PRO MHV. Feeds on *Obelia sp.* and *Aglaophenia pluma*.

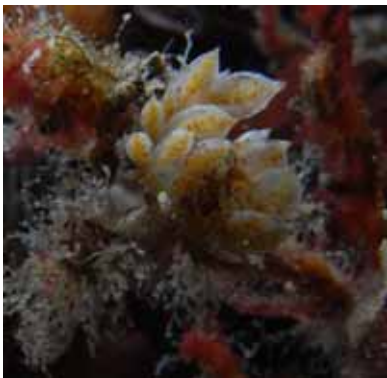


Protheroes Dock 15/6/10 PN



Protheroes Dock 15/6/10 ©BP

30. *Eubranthus pallidus* 1 site MST. Feeds on *Obelia dichotoma* and *Halecium halecinum*.



Mew stone 16/06/10 PN



Mew stone 16/06/10 ©BP (aquarium)

31. *Eubranthus tricolor* 9 sites MHVe, TRK, TSK, PRO, MST, WEN, GST, RRK, MHV. Feeds on *Nemertesia antennina* and *N. ramosa*



Protheroes Dock 15/06/10 MB



Protheroes Dock 15/06/10 © BP

32. *Eubranchus vittatus* 1 site MHVe. Feeds on *Kirchenpaueria pinnata*.



Martins Haven east 15/06/10 KL

33. *Facelina annulicornis* 9 sites MHVe, JUN, TRK, SMD, TSK, PRO, WAY, RRK, MHV. Feeds on hydroids and other aeolid nudibranchs.



Junkos 20/06/10 PN



Protheroes Dock 15/06/10 © BP

34. *Facelina auriculata* 9 sites MHVe, TRK, TSK, PRO, WAY, GST, RRK, WCK, MHV. Feeds on *Obelia geniculata* and other hydroids.



Garland Stone 22/06/10 PN



Tusker Rock 02/06/10 PN

35. *Facelina bostoniensis* 1 site MHVe. Feeds on *Tubularia larynx*.



Martins Haven east 15/06/10 MC

36. *Favorinus blianus* 3 sites MHVe, WHK, TRK. Feeds on spawn of other nudibranchs.



West Hook 22/06/10 KL



Thorn Rock 17/06/10 PN



Thorn Rock 24/06/10 MB

37. *Favorinus branchialis* 4 sites MHVe, PRO, WHK, MHV. Feeds on spawn of other nudibranchs.



Martins Haven east 15/06/10 KL

38. *Flabellina pedata* 11 sites MHVe, JUN, TRK, SMD, TSK, PRO, WCK, GST, WHK, RRK, MHV. Feeds on *Eudendrium spp.*



Protheroes Dock 15/06/10 MB



Tusker Rock 2/06/10 PN

39. *Goniodoris nodosa* 4 sites MHVe, TRK, PRO, MHV. Feeds on *Dendrodoa grossularia* and *Alcyonidium spp.*

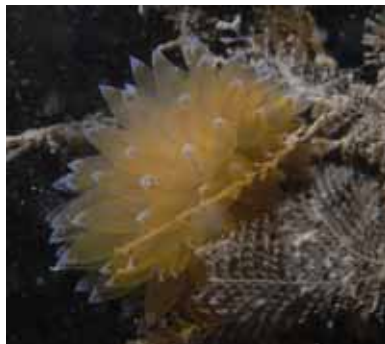


Thorn Rock  
17/06/10 PN

40. *Janolus cristatus* 12 sites MHVe, JUN, TRK, SMD, TSK, PRO, MST, WCK, WEN, WAY, RRK, MHV. Feeds on *Bugula spp.*



Thorn Rock 17/06/10 PN



Tusker Rock 2/06/10 PN



Eggs -Wick Reef 21/06/10 KL

41. *Jorunna tomentosa* 2 sites PRO, MHV. Feeds on *Haliclona spp.*



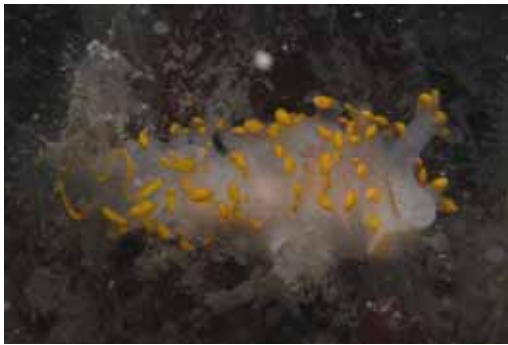
Protheroes Dock  
3/06/10 MB

42. *Limacia clavigera* 10 sites MHVe, TRK, TSK, PRO, MST, WEN, GST, WHK, RRK, MHV. Feeds on *Electra pilosa*.



Martins Haven east  
20/05/10 MB

43. *Lomanotus genei* 1 site TRK. Feeds on *Nemertesia ramosa*.



Thorn Rock 17/06/10 KL



Thorn Rock 24/06/10 MB



Thorn Rock 17/06/10 ©RB

44. *Okenia aspersa* 2 sites TRK, WHK (eggs found at PRO). Feeds on *Molgula occulta*.



West Hook 22/06/10 KL



Eggs - Protheroes Dock 15/06/10 MB

45. *Okenia elegans* 2 sites TRK, MHV. Feeds on *Polycarpa rustica*.



Thorn Rock  
17/06/10 ©RB

46. *Onchidoris oblonga* 3 sites TRK, MHVe, MHV. Feeds on *Cellaria fistulosa*.



Martins Haven east  
15/06/10 PN

47. *Polycera faeroensis* 13 sites MHVe, JUN, TRK, SMD, TSK, PRO, MST, WCK, WEN, WAY, GST, RRK, MHV. Feeds on *Crisia* spp and *Bicellariella ciliata*.



Tusker Rock 2/06/10 PN



Thorn Rock 24/06/10 MB

48. *Polycera quadrilineata* 5 sites MHVe, TRK, PRO, RRK, MHV. Feeds on *Membranipora membranacea*.



Protheroes Dock 15/05/10 MB



Thorn Rock 17/06/10 PN

49. *Rostanga rubra* 1 site PRO. Feeds on *Ophlitaspongia seriata*.



Protheroes Dock  
3/06/10 MB

50. *Tergipes tergipes* 3 sites TRK, PRO, RRK. Feeds on *Obelia geniculata*.



Protheroes Dock  
15/06/10 © BP  
(aquarium)

51. *Thecacera pennigera* 4 sites TRK, PRO, RRK, MHV. Feeds on *Bugula plumosa*.



Protheroes Dock 3/06/10 MB



Protheroes Dock 15/06/10 MB

52. *Trapania pallida* 1 site MHV. Feeds on *Kamptozoans*.



Martins Haven 19/06/10 © David Kipling

53. *Tritonia hombergii* 3 sites SMD, TSK, MHV. Feeds on *Alcyonium digitatum*.



South Middleholm 25/05/10 PN



Tusker Rock 16/06/10 KL

54. *Tritonia lineata* 8 sites MHVe, TRK, SMD, PRO, WCK. WEN, WAY, MHV. Feeds on octocorals such as *Sarcodictyon catenata*.



Waybench 21/06/10 PN

55. *Tritonia nilsodhneri* 1 site PRO. Feeds on *Eunicella verrucosa*.



Protheroes Dock 15/06/10 PN



### 3.3 SKOMER MNR RECORDS

Nudibranch survey records for 2002, 2006 and 2010 have been combined, along with previous records from both diving surveys and sediment grab sampling surveys to produce a list of all current known records for the Skomer MNR, see Table 1.

**Table 1.** Nudibranch species recorded in the Skomer (alphabetical order).

<b>Skomer MNR surveys</b>	<b>2002</b>	<b>2006</b>	<b>2010</b>
<i>Acanthodoris pilosa</i>	Y		Y
<i>Aegires punctilucens</i>	Y		Y
<i>Aeolidia papillosa</i>		Y	
<i>Ancula gibbosa</i>			Y
<i>Archidoris pseudoargus</i>	Y	Y	Y
<i>Cadlina laevis</i>		Y	Y
<i>Catriona gymnota</i>		Y	Y
<i>Coryphella browni</i>		Y	Y
<i>Coryphella gracilis</i>	Y		Y
<i>Coryphella lineata</i>		Y	Y
<i>Crimora papillata</i>	Y	Y	Y
<i>Cuthona amoena</i>		Y	Y
<i>Cuthona pustulata</i>		Y	Y
<i>Cuthona rubescens</i>	Y		
<i>Dendronotus frondosus</i>		Y	Y
<i>Diaphorodoris luteocincta</i>	Y	Y	Y
<i>D. luteocincta var. alba</i>	Y		Y
<i>Doris sticta</i>		Y	
<i>Doto coronata</i>	Y	Y	Y
<i>Doto cuspidata</i>	Y	Y	Y
<i>Doto dunnei</i>			Y
<i>Doto eireana</i>		Y	Y
<i>Doto fragilis</i>	Y	Y	Y
<i>Doto hystrix</i>			Y
<i>Doto koenneckeri</i>	Y		Y
<i>Doto lemchei</i>	Y		Y
<i>Doto maculata</i>			Y
<i>Doto millbayana</i>	Y	Y	Y
<i>Doto pinnatifida</i>	Y	Y	Y
<i>Doto tuberculata</i>	Y?		Y
<i>Eubranchus exiguus</i>	Y		Y
<i>Eubranchus farrani</i>	Y	Y	Y
<i>Eubranchus pallidus</i>		Y	Y
<i>Eubranchus tricolor</i>	Y	Y	Y
<i>Eubranchus vittatus</i>			Y
<i>Facelina annulicornis</i>	Y	Y	Y
<i>Facelina auriculata</i>	Y	Y	Y
<i>Facelina bostoniensis</i>			Y
<i>Favorinus blianus</i>			Y
<i>Favorinus branchialis</i>	Y	Y	Y
<i>Flabellina pedata</i>	Y	Y	Y

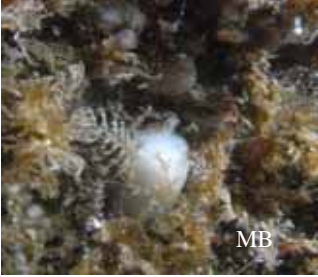
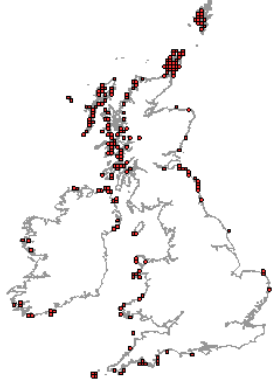



	2002	2006	2010
<i>Goniodoris nodosa</i>		Y	Y
<i>Janolus cristatus</i>	Y	Y	Y
<i>Jorunna tomentosa</i>			Y
<i>Limacia clavigera</i>	Y	Y	Y
<i>Lomanotus genei</i>			Y
<i>Okenia aspersa</i>			Y
<i>Okenia elegans</i>			Y
<i>Onchidoris pusilla</i>		Y	
<i>Onchidoris oblonga</i>			Y
<i>Polycera faeroensis</i>	Y	Y	Y
<i>Polycera quadrilineata</i>	Y	Y	Y
<i>Rostanga rubra</i>		Y	Y
<i>Tergipes tergipes</i>	Y	?	Y
<i>Thecacera pennigera</i>		Y	Y
<i>Trapania pallida</i>			Y
<i>Tritonia hombergii</i>	Y		Y
<i>Tritonia lineata</i>	Y	Y	Y
<i>Tritonia nilsodhneri</i>			Y
<b>Year totals</b>	<b>31</b>	<b>34</b>	<b>55</b>
<b>59 species recorded on MNR diving surveys</b>			
Other diving records in Skomer MNR	Bunker, Picton, Morrow 1992		
<i>Cuthona foliata</i>	75 Saunders fist		
<i>Cuthona concinna</i>	88 JSD		
<i>Eubbranchus doriae</i>	87 PRK		
<i>Discodoris planata</i>	75 BHO, 89 RRK, NWA		
<i>Goniodoris castanea</i>	88 RRK		
<i>Greilada elegans</i>	75 WTK		
<i>Lomanotus marmoratus</i>	91 MHV		
<i>Trapania tartanella</i>	09 RRK		
<i>Tritonia plebeia</i>	89 PRK, 90 GST reef, 91 MST		
<b>67 species recorded on all diving surveys</b>			
Additional records from Sediment Infauna surveys	Rostron 93, 96, Barfield 98, 03, 07		
<i>Okenia pulchella</i>	93 Site 1		
<i>Adalaria (Armina?) loveni</i>	98 Site 7 WTP		
<i>Onchidoris muricata</i>	96 Site 7 WTP		
<i>Onchidoris sparsa</i>	93 Sites 12,19		
<i>Embletonia pulchra</i>	98 Sites 6/7, 03 Sites 6/7/12, 07 Site 6 North Skomer		
<b>72 species recorded on all diving and grab sampling surveys</b>			

### 3.4 NOTABLE NUDIBRANCH SPECIES



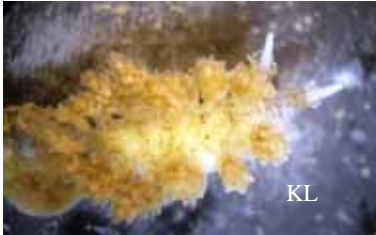





A list of notable species has been selected from diving surveys between 2002 and 2010. These include dives not completed on the dedicated nudibranch surveys. Some of the species are new records to the Skomer MNR; others are notable due to their national scarcity or limited national distribution, see Table 2.





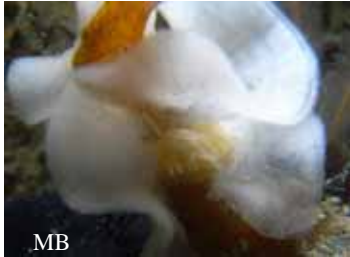


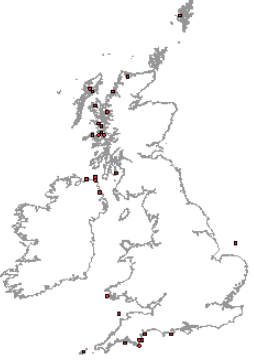
**Table 2. Notable nudibranch records for diving surveys 2002-2010**




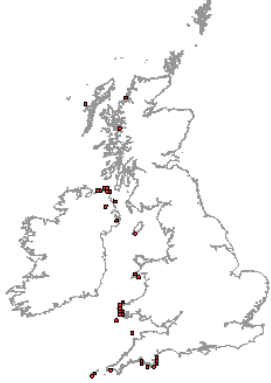


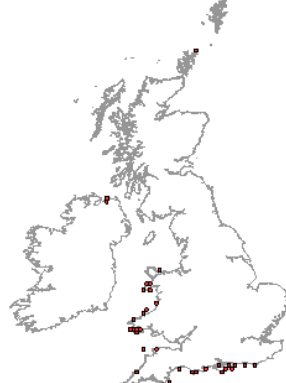
(Maps sourced through the NBN gateway [www.data.nbn.org.uk](http://www.data.nbn.org.uk) The recorders, data provider<sup>1</sup> and the NBN Trust bear no responsibility for any further analysis or interpretation of the data)




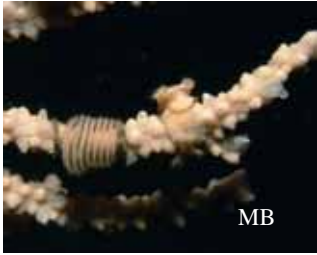

SPECIES	COMMENTS (Picton & Morrow 1994, <a href="http://www.habitas.org.uk">www.habitas.org.uk</a> )	DISTRIBUTION MAP (NBN Gateway <a href="http://www.data.nbn.org.uk">www.data.nbn.org.uk</a> )
<p><i>Cadlina laevis</i></p> 	<p>First record for Skomer MNR in 2006 and recorded in 2010. It has a wide ranging distribution from eastern America, Greenland in the north to Spain in the south.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Cuthona pustulata</i></p> 	<p>A northern species but regularly found around Skomer. It feeds on the hydroid <i>Halecium muricatum</i> which is local in its distribution at scattered exposed localities.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Diaphorodoris luteocincta</i> <i>var. alba</i> ©Rob Spray</p> 	<p>First record for Skomer MNR in 2002 and on several occasions since. Several varieties of <i>D. luteocincta</i> occur in the Mediterranean and the variety <i>alba</i> occurs both in the Mediterranean and the north to south coast of Britain.</p>	<p>No distribution map available</p>

<sup>1</sup> Data providers are listed in Appendix 3

<p><i>Doris sticta</i></p> 	<p>A nationally scarce species found on the west of Ireland and south west Britain (Moore, 2002). Feeds on sponges but it is unknown which species.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Doto cuspidata</i></p> 	<p>An uncommon species that feeds exclusively on <i>Nemertisia ramosa</i>. It is found in the south of Britain but more regularly in the north.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Doto eireana</i></p> 	<p>New record for Skomer MNR in 2006 and recorded in 2010. Feeds exclusively on <i>Amphisbetia operculata</i>. Records are few, mainly due to recent separation from <i>Doto coronata</i>.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Doto hystrix</i></p> 	<p>A scarce species found in deep waters below 25m found on the hydroid <i>Schizotricha frutescens</i>. A north west species with occasional records at Skomer and Lundy.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>

<p><i>Eubranchus vittatus</i></p> 	<p>New record for Skomer MNR in 2010. Feeds on the hydroid <i>Kirchenpaueria pinnata</i>. A frequent species in the north west of Britain but scarcer in the south.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Facelina annulicornis</i></p> 	<p>An uncommon species but with a wide spread distribution in Britain. Particularly common at Skomer MNR. It feeds on a variety of hydroids and has been known to attack and eat other nudibranchs.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Favorinus blianus</i></p> 	<p>Distributed along the north and west coasts of Britain, occasionally found around Skomer. It eats other nudibranch spawn.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Lomanotus genei</i></p> 	<p>A scarce species with sporadic records but with a wide distribution from the west coast of Scotland to the Mediterranean.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>

<p><i>Okenia aspersa</i></p> 	<p>A scarce burrowing nudibranch that feeds on the ascidian <i>Molgula occulta</i>. <i>M. occulta</i> live buried in muddy sand and often the only clue of <i>O. aspersa</i>'s presence is the distinct spawn shaped like coiled springs.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Okenia elegans</i> ©Ross Bullimore</p> 	<p>A nationally scarce species that feeds on <i>Polycarpa rustica</i>. Found at scattered locations on the south and west coasts of Britain. (Moore, 2002)</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Onchidoris pusilla</i></p> <p>No Photo available</p>	<p>New record for the MNR in 2006. Found all around the coast of Britain but rarely recorded as it is particularly well camouflaged. Feeds on encrusting bryozoans.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Thecacera pennigera</i></p> 	<p>A scarce species that is confined to the south and west coasts of Britain. Regularly recorded in the Skomer MNR.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>

<p><i>Trapania tartanella</i> ©David Kipling</p> 	<p>Found on the Atlantic coasts of Spain and Portugal. A rare species first recorded in Britain at the Manacles, Cornwall in 2007. First record for both Wales and Skomer in 2009 was by David Kipling and Sarah Bowen.</p>	<p>Distribution map not available.</p>
<p><i>Trapania pallida</i> ©David Kipling</p> 	<p>First record for the Skomer MNR in 2010. A scarce species found from west Scotland to the Atlantic coast of Spain.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>
<p><i>Tritonia nilsodhneri</i></p>  <p>MB</p>	<p>A nationally scarce species (Moore, 2002) found in the south west of Britain. Feeds on the Pink sea fan, <i>Eunicella verrucosa</i>. Present in small numbers around Skomer.</p>	 <p>© Crown Copyright. All rights reserved NERC 100017897 2004</p>

## 4. DISCUSSION

Overall 14 sites were surveyed in 2010 resulting in a total of 55 species of nudibranchs in the Skomer MNR. The number of species recorded is significantly higher than from the 2002 (32 species) and 2004 (34 species) surveys. There was a general perception within the MNR survey team that nudibranch species in general were particularly abundant during the season at many of the annual monitoring sites compared to previous years. Greater numbers of species may have been recorded due to extra efforts made to target a wider range of habitats. These included mixed sediment sites at Martins Haven east, West Hook, Martins Haven and Protheroes Dock, which had not been previously surveyed. A small number of species were recorded as a direct result of having specialist help from Bernard Picton.

Combining the 2002, 2006 and 2010 survey data, 59 nudibranch species were recorded. In comparison Bunker *et al* (1992) recorded 61 species on dives between 1975 and 1991. Of the 59 species, 5 species, *Cadlina laevis*, *Doto eireana*, *Onchidoris pusilla*, *Eubranchus vittatus* and *Trapania pallida*, had not been recorded before in the MNR. In addition a new species for Wales and the Skomer MNR, *Trapania tartanella* was recorded in 2009. For all diving surveys in the MNR a total of 67 species have been recorded, with an additional 5 species recorded from sediment infauna surveys. 72 nudibranch species have thus been recorded in the MNR from approximately 108 described species from the British Isles (Picton & Morrow, 1994).

The diversity of nudibranch species in the Skomer MNR is very high with 66% of UK species represented in an area of 13.2 squared kilometres. This high diversity is a reflection of the diversity of habitats and environmental conditions found in the MNR and the rich communities that these support. As specialised predators nudibranch species have a very selective choice of prey organisms, they are therefore a good indicator of the overall ecosystem health (Luddington, 2002).

A number of the survey sites have a wide range of habitats including rock, sediment and algae communities and thus support a high diversity of nudibranch species. Particularly rich were Martins Haven (31 species), Thorn Rock (30 species), Protheroes Dock (26 species) and Martins Haven east (22 species). Other sites were selected to target specific prey species which are found under particular environmental conditions. An example is the hydroid *Tubularia spp.*, which is the prey of *Catriona gymnota* and *Dendronotus frondosus* and is found at sites with strong current, such as Tusker Rock, Mew stone and Garland Stone. The most common species (found at 10 sites or more) were *Doto fragilis*, *Janolus cristatus*, *Polycera faeroensis*, *Limacia clavigera*, *Diaphorodoris luteocincta* and *Flabellina pedata*, all of which feed on common hydroid and bryozoan species.

Notable species for the Skomer MNR have previously been selected from the rare and scarce marine species list for the UK (Sanderson 1996). These include *Okenia elegans*, *Tritonia nilsodhneri* and *Doris sticta*. This list is however dated as some species were under recorded and new species have been since found or described in the UK, for example *Trapania tartanella*. The most up to date species distribution maps for the UK are from the Marine Recorder national database administered by the Joint Nature Conservation Council and available on the internet via the National Biodiversity Network gateway. These distribution maps are useful to highlight notable species in the Skomer MNR. This includes species with northern distributions (*Doto hystrix*, *Cuthona pustulata*, *Okenia aspersa* and *Doto eireana*) or southern distributions (*Doris sticta* and *Tritonia nilsodhneri*) and those with a widespread distribution but particularly common in the Skomer MNR (*Facelina annulicornis*). These highlight the importance of Skomer MNR as a location for high nudibranch diversity.



## **5. RECOMMEDATIONS**

- Complete the annual check list.
- Photograph and collect any unusual species for identification;
- Skomer MNR staff to complete specialist identification training;
- Complete a nudibranch species survey in the Skomer MNR every 4 years.

## **6. ACKNOWLEDGEMENTS**

The nudibranch survey could not have been completed without the support of many people. We are grateful for the help of Bernard Picton, who certainly helped boost both the skills of the team and the numbers of nudibranch found. CCW staff, Mike Camplin helped with diving and Anne Bunker with maintaining species lists and microscope work. We are grateful for the help and enthusiasm of our regular diving volunteers Ross Bullimore, Blaise Bullimore and John Archer Thomson and to Flora Kent for help with general logistics.

Finally many thanks to all the Seasearch volunteer divers who contributed their records from Martins Haven during the nudibranch training course on the 19/29<sup>th</sup> June 2010. Special mention goes to David Kipling, Sarah Bowen and Rob Spray for their nudibranch records and photographs in both 2009 and 2010.

## 7. REFERENCES

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**APPENDIX 1.****Hit list of nudibranch species to be observed annually in the Skomer MNR**

<b>Number of species</b>	<b>Species</b>	<b>Food preference</b>
1	<i>Acanthodoris pilosa</i>	<i>Alcyonidium diaphanum</i>
2	<i>Archidoris pseudoargus</i>	Sponges
3	<i>Crimora papillata</i>	<i>Chartella papyracea</i> and <i>Securiflustra securifrons</i> .
4	<i>Diaphorodoris luteocincta</i>	<i>Crisia</i> spp.
5	<i>Doto fragilis</i>	<i>Nemertesia ramosa</i> and <i>Halecium halecinum</i> .
6	<i>Doto pinnatifida</i>	<i>Nemertesia antennina</i> .
7	<i>Eubranchus farrani</i>	<i>Obelia</i> sp. and <i>Aglaophenia pluma</i>
8	<i>Facelina annulicornis</i>	Hydroids
9	<i>Facelina auriculata</i>	<i>Obelia geniculata</i> and <i>Tubularia</i>
10	<i>Flabellina pedata</i>	<i>Eudendrium</i> species.
11	<i>Janolus cristatus</i>	<i>Bugula</i> spp.
12	<i>Limacia clavigera</i>	<i>Electra pilosa</i>
13	<i>Polycera faeroensis</i>	<i>Crisia</i> spp. and <i>Bugula</i> spp.
14	<i>Polycera quadrilineata</i>	<i>Membranipora membranacea</i>
15	<i>Tritonia lineata</i>	Possibly octocorals
16	<i>Tritonia nilsodhneri</i>	<i>Eunicella verrucosa</i>

**APPENDIX 2.****Skomer MNR site code abbreviations**

<b>SITE No.</b>	<b>ABBREVIATION</b>	<b>SITE NAME</b>
1	MHVe	Martins Haven east
2	JUN	Junko's reef
3	TRK	Thorn rock
4	SMD	South Middleholm
5	TSK	Tusker rock
6	PRO	Protheroes dock
7	MST	Mew stone
8	WCKreef	Wick reef
9	WEN	Wendy's gully
10	GST	Garland stone
11	WAY	Waybench
12	WHK	West Hook
13	RRK	Rye rocks
14	MHV	Martins Haven shore
	JSD	Jack Sound
	PRK	Pains rock
	BHO	Bull hole
	NWA	North wall
	WTK	Wooltack bay
	WTP	Wooltack point

**APPENDIX 3**

**National Biodiversity Network gateway: [www.data.nbn.org.uk](http://www.data.nbn.org.uk)**

Data provided by:

Joint Nature Conservation Committee

Marine Conservation Society

Centre for Environmental Data and Recording

Marine Biological Association

Porcupine Marine Natural History Society

Countryside Council for Wales

Scottish Natural Heritage