



Honeycomb Worm

Reefs

Cumbria is close to the northern limit of the geographical range of the honeycomb worm. Because of this, exceptionally cold winters can kill off many of the individual worms that make up the reefs in shallow coastal waters.

Current status

Honeycomb worm reefs are formed in coastal waters by the honeycomb worm (*Sabellaria alveolata*), a polychaete worm which constructs tubes in tightly packed masses with a distinctive honeycomb appearance. These reefs can be up to 30 or even 50cm thick and take the form of hummocks, sheets or more massive formations. Reefs are mainly found on the bottom third of the shore, but may reach mean high water of neap tides and extend into the shallow subtidal in places. They do not seem to penetrate far into low salinity areas. Reefs form on a variety of hard substrata, from pebbles to bedrock, in areas with a good supply of suspended sand grains from which the animals form their tubes. The larvae are strongly stimulated to settle by the presence of existing colonies or their dead remains. Honeycomb worm has a very variable recruitment and the cover in any one area may vary greatly over a number of years, although in the long term reefs tend mainly to be found on the same shores.

In Britain, honeycomb worm reefs are found only on shores with moderate water movement in the south and west, extending up as far as the Scottish

coast of the Solway Firth. The British Isles represents the northern extremity of the range in the north east Atlantic. Within Britain, the most numerous and extensive areas occur on the Cumbria coast, particularly between the Duddon Estuary and Dubmill Point on the Solway Firth. Honeycomb worm reefs occur within the following Natural Areas in Cumbria: Morecambe Bay, Cumbrian Coast and Solway Firth. Honeycomb worm reefs occur in five Sites of Special Scientific Interest, four of which lie within four candidate Special Areas of Conservation.

Characteristic wildlife

On the Cumbria coast the reefs show a variety of forms. On the more wave-exposed shores, such as at Selker Point and on Walney Island, the reefs often form a blanket or hummock structure 20-30cm tall covering extensive areas. Where there is more stability and less scouring, for example in Tarn Bay, the reefs form discrete domes, sometimes exceeding 50cm in height. At Dubmill Point the reefs form more discrete colonies encrusting larger, more stable boulders. At St Bees Head honeycomb worm colonies develop on vertical rock faces up to 2m off the ground, an indication of

the amount of sand that must be stirred up and transported by wave action. The reefs show a cyclical pattern of growth, erosion and re-growth. In their growing phase the apertures of the tubes are sharply defined. This is lost as the reefs senesce and are eroded. Honeycomb worms also form a minor component of many of the intertidal and shallow communities. The Ross worm (*Sabellaria spinulosa*), a subtidal relative of the honeycomb worm, has been recorded from Morecambe Bay and elsewhere on the Cumbria coast, but its current distribution and status is not known.

Individual worms have a lifespan of typically three to five years, and possibly up to nine years, but reefs themselves may last longer as a result of further settlement of worms onto existing colonies. Typically, in the first two years or so, after a heavy intertidal settlement, there are few associated species, but as the colonies age seaweeds including fucoid brown algae, sea lettuce and red algae, and animals including barnacles, mussels, winkles and dogwhelks, appear. Polychaete worms, crabs and blennies can be found within crevices. Older reefs may increase the biodiversity of what would otherwise be sand-abraded rocks and boulders. Sheet-like reefs may restrict drainage of the shore, creating shallow rockpools where there would otherwise be none.

Key species

The following rare or threatened species are associated with honeycomb worm reefs in Cumbria. Species were selected on the basis that they are UK BAP Priority Species (marked P) or species of County importance in Cumbria. Where species of County importance are also UK BAP Species of Conservation Concern, they are marked C.

honeycomb worm *Sabellaria alveolata* C

Best management practice

Ensuring that the coastal processes, including sediment supply and transport, can continue to function naturally is the single most important safeguard for honeycomb worm reefs. This should be addressed in the relevant Shoreline Management Plans and achieved through the appropriate design of specific coastal defence schemes.

Current issues

- Honeycomb worm reefs are at the northern end of their range in Britain and, particularly in Cumbria, are affected by extremely cold winters, after which they may die back for many years, especially at higher shore levels.
- By their nature, these reefs occur in areas which are naturally subject to large-scale changes in the amount of sand. They can tolerate burial for a period of days or even weeks, but prolonged burial will cause mortality.
- Honeycomb worm reefs are potentially vulnerable to accumulations or losses of sand as a result of shoreline development, including the construction and maintenance of coastal defences. The effects may be positive or negative, depending upon the nature of the changes.
- Trampling from public access, incidental damage from mussel fisheries and boulder-turning during 'peeler' crab collection or bait digging may cause local impact.
- There may be competition for space with common mussels on boulder scars. Heavy settlement of mussels on honeycomb worm reefs may destabilise reefs.
- Coastal oil pollution incidents and any subsequent mechanical clean-up of shorelines present a risk, but to date incidents have been infrequent and small.

Current action

- A report on the ecological requirements of the honeycomb worm was published recently as part of the UK Marine Special Areas of Conservation EU LIFE project (Holt *et al.* 1998).
- Cumbria Sea Fisheries Committee has done some initial mapping of honeycomb worm reefs as part of their coastal biological survey.
- English Nature provides available information on the location of honeycomb worm reefs to coastal engineers to help safeguard the reefs during coast protection works.

Context in relation to other plans:

UK Habitat Action Plans

There is a UK Biodiversity Action Plan for the honeycomb worm in UK Biodiversity Group Tranche 2 Action Plans Vol. 5 (1999), which sets the following UK objectives and targets:

- Maintain the extent and quality of significant areas of *Sabellaria alveolata* [honeycomb worm] reef habitat.
- Within 15 years to have re-established *Sabellaria alveolata* reefs in five areas where they were formerly present.

National Lead Agency

Countryside Council for Wales

Local contacts

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Associated plans in the Cumbria BAP

The following Cumbria habitat action plans are of relevance to this plan:

Phase I

- coastal habitats

Phase II

- intertidal rocky shores and reefs

References

Holt, TJ, Rees, EI, Hawkins, SJ and Seed, R. 1998. *Biogenic Reefs (Volume IX). An overview of dynamic and sensitivity characteristics for conservation management of marine SACs*. Scottish Association of Marine Science (UK Marine SACs Project).

Objectives, targets and proposed actions for Coastal Habitats in Cumbria

Broad Objective A	Ensure the favourable condition of all sites			
Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
1 Ensure the extent and status of honeycomb worm reefs is known	1 Map the extent of honeycomb worm reefs on the Cumbria coast and assess their status. By 2001.	EN, MCS, CWT, LDNPA	S	RM
	2 Disseminate the above information to key interests and organisations. By 2002.	EN	M	SS
	3 Develop and implement a programme to monitor the stage(s) of development of the honeycomb worm reefs at a small number of key sites. By 2005.	EN, MCS, CWT, LDNPA	M	RM
2 Ensure that honeycomb worm reefs are properly represented in statutory and non-statutory sites	1 Review the representation of honeycomb worm reefs within SSSIs, Wildlife Sites and Marine Protected Areas and take appropriate action. By 2001.	EN, CWT	S	SS

Operational Objective	Action Required	Suggested organisational involvement	Time-scale	Type
3 Ensure that the wildlife value of honeycomb worm reefs is integrated into the management of the coast and coastal resources	1 Ensure that the distribution and conservation requirements of honeycomb worm reefs are taken account of in Shoreline Management Planning and Shoreline Management Plans.	LAs, EN	O	SS
	2 Ensure that any developments that are likely to affect reefs (particularly sea defences and breakwaters, which can affect sediment supply) are subject to environmental impact assessment.	LAs, EN, CWT	O	SS
	3 Ensure that honeycomb worm reefs are taken account of in the management of commercial fisheries and shellfisheries.	CSFC, NWNWSFC, EN, MCS	O	SS
4 Promote awareness of the beauty and ecological importance of honeycomb worm reefs	1 Use the environmental awareness programme for the Cumbria Coast identified within the Cumbria Coastal Habitats BAP (Action D2.2).	EN, CWT, RSPB, LAs, SRI, SFCs	O	CP
	2 Formulate and promote a code of conduct for responsible recreational angling, including bait digging, in consultation with sea angling associations and other relevant bodies. By 2001.	MCS	S	CP

Key to Tables

Suggested organisational involvement: Key Deliverers in bold type; Partners in plain type.

CCC = Cumbria County Council; CSFC = Cumbria Sea Fisheries Committee; CWT = Cumbria Wildlife Trust; EA = Environment Agency; EN = English Nature; LAs = Local Authorities; LDNPA = Lake District National Park Authority; MCS = Marine Conservation Society; NT = National Trust; NWNWSFC = North Western & North Wales Sea Fisheries Committee; RSPB = Royal Society for the Protection of Birds; SFCs = Sea Fisheries Committees; SRI = Solway Rural Initiative.

Timescale: O=ongoing; S=short term (2000-2001); M=medium (2002-2005); L=long (2006-2010).

Type: Type of action; PL=Policy & Legislation; SS=Site Safeguard & Management; SP=Species Management and Protection (species plans only); A=Advisory; RM=Research & Monitoring; CP=Communications and Publicity.