Yellow staghorn sponge (*Axinella dissimilis*)

MarLIN – Marine Life Information Network
Biology and Sensitivity Key Information Review

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A report from:
The Marine Life Information Network, Marine Biological Association of the United Kingdom.

Please note. This MarESA report is a dated version of the online review. Please refer to the website for the most up-to-date version [https://www.marlin.ac.uk/species/detail/1380]. All terms and the MarESA methodology are outlined on the website (https://www.marlin.ac.uk)

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***Axinella dissimilis* at Stoke Point, Plymouth.**
Photographer: Keith Hiscock
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See online review for distribution map

Distribution data supplied by the Ocean Biogeographic Information System (OBIS). To interrogate UK data visit the NBN Atlas.

Researched by	Angus Jackson	**Refereed by**	This information is not refereed.
Authority	(Bowerbank, 1866)		
Other common names	-	**Synonyms**	*Axinella polypoides* Schmidt, 1862

Summary

Description

A medium sized, branching, finger-like sponge. Usually about 15 cm high and yellow / orange in colour. The branches are approximately oval and are rather irregular in diameter along their length, being typically around 1.5 cm. The sponge often branches in nearly the same plane forming a rough fan-shape. There is a short stem, rather thicker than the branches. The sponge surface has a velvety texture and is moderately firm but elastic.

Recorded distribution in Britain and Ireland

Present at a few sites around Mull, the south west of England and the western extremities of Wales. In Ireland there are records from the south east, the south west, and along the Atlantic coast round to the north east.

Global distribution

South western British Isles, the Channel Isles, Atlantic coasts of France and Spain. Recorded also from Iceland.

Habitat

Axinella dissimilis is typically found in exposed open coasts, on upward facing bedrock or other hard surfaces in the circalittoral zone.

Depth range

? - 100+

Identifying features

- A yellow / orange branching sponge about 15 cm in height.
- Skeletal spicules give the surface a velvety texture.
- Sponge surface cracks if bent more than 90 °C.
- A number of short, shallow grooves radiate from the oscula.

Additional information

Axinella polypoides is still used by some authors (e.g. Hayward and Ryland, 1995). However, *Axinella polypoides* is now considered to be a separate species confined to the Mediterranean (Howson & Picton, 1997). *Axinella dissimilis* may be confused with other branching sponges e.g. *Stelligera stuposa* and *Raspailia hispida*. However the relatively thicker branches and grooves surrounding the oscula are distinguishing features.

Listed by

Further information sources

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Biology review

Taxonomy

Phylum	Porifera	Sponges
Class	Demospongiae	Siliceous sponges
Order	Axinellida	
Family	Axinellidae	
Genus	Axinella	
Authority	(Bowerbank, 1866)	
Recent Synonyms	Axinella polypoides Schmidt, 1862	

Biology

Typical abundance	Moderate density
Male size range	up to 15cm
Male size at maturity	
Female size range	Medium(11-20 cm)
Female size at maturity	
Growth form	Fan-like
Growth rate	No information found
Body flexibility	High (greater than 45 degrees)
Mobility	
Characteristic feeding method	Active suspension feeder, No information
Diet/food source	
Typically feeds on	Suspended particulate matter.
Sociability	
Environmental position	Epibenthic
Dependency	No information found.
Supports	No information found
Is the species harmful?	Data deficient

Biology information

Size range refers to height. There is no information detailing whether the sexes are separate. Although elastic and flexible the surface of the sponge cracks if bent more than 90° (Moss & Ackers 1982). There is no information regarding the toxicity of this species.

Habitat preferences

Physiographic preferences	Open coast, Offshore seabed
Biological zone preferences	Lower circalittoral, Lower infralittoral, Upper circalittoral
Substratum / habitat preferences	Bedrock, Large to very large boulders
Tidal strength preferences	

Wave exposure preferences	Exposed, Extremely exposed, Moderately exposed, Very exposed
Salinity preferences	Full (30-40 psu)
Depth range	? - 100+
Other preferences	No text entered
Migration Pattern	Non-migratory / resident

Habitat Information

Konnecker (1977) also records *Axinella dissimilis* as an offshore species found on rock patches surrounded by shell gravel or coarse sand. In the Channel Islands, Brittany and Lough Hyne, Co. Cork the species also occurs on infralittoral bedrock (Picton & Costello, 1997). The sponge is recorded from depths of at least 100 m (Cabioch, 1968)

Life history

Adult characteristics

Reproductive type	No information
Reproductive frequency	No information
Fecundity (number of eggs)	No information
Generation time	Insufficient information
Age at maturity	Insufficient information
Season	Insufficient information
Life span	Insufficient information

Larval characteristics

Larval/propagule type	-
Larval/juvenile development	No information
Duration of larval stage	No information
Larval dispersal potential	No information
Larval settlement period	Insufficient information

Life history information

No information is available regarding the longevity or reproductive mechanism of this species.

Sensitivity review

This MarLIN sensitivity assessment has been superseded by the MarESA approach to sensitivity assessment. MarLIN assessments used an approach that has now been modified to reflect the most recent conservation imperatives and terminology and are due to be updated by 2016/17.

Physical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Substratum Loss	High		High	High

The species is permanently attached to the substratum. Substratum loss would result in the entire population. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Smothering	Intermediate		High	Low

Axinella dissimilis is an upright branching sponge up to 15 cm in height. Smothering by 5 cm of sediment may cover or damage some individuals of the population. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Increase in suspended sediment	Intermediate		High	Low

Sponges are active particulate suspension feeders. Increases in deposition of suspended sediment may interfere with feeding, clogging pores and channels etc. Many sponges have cleaning mechanisms for dealing with siltation such as sloughing of outer cells or mucus production. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Decrease in suspended sediment

Dessication	High		High	Low

The species inhabits the lower infralittoral and circalittoral zones and as such is never exposed to the air. Desiccation, although unlikely, would probably result in death. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Increase in emergence regime	High		High	Low

The species inhabits the lower infralittoral and circalittoral zones and as such is never subject to an emergence regime. Emergence, although unlikely, would probably result in death. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Decrease in emergence regime

Increase in water flow rate	Low		Moderate	Low

Axinella dissimilis inhabits rocky, wave exposed areas where water flow rate is potentially high. The species has an upright branching growth form protruding up in to water column. Large

increases in water flow rate may interfere with the posture of the animal, cause physical damage. Reductions in water flow rate may affect feeding efficiency. No information is available regarding growth rates or recovery from physical damage. The cellular level of organisation in Porifera facilitates regeneration.

Decrease in water flow rate

Increase in temperature Intermediate High Low

There is no available information about the tolerance of *Axinella dissimilis* to changes in temperature. In the British Isles it has a mainly southern and western distribution. The species is found in warmer waters as far south as Spain. It is replaced in the Mediterranean by the very similar species, *Axinella polypoides* (Howson & Picton, 1997). Long term increases in temperature may cause extension of the British Isles populations and decreases in temperature may result in population shrinkage. Short term acute changes in temperature may also cause death. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Decrease in temperature

Increase in turbidity Tolerant Not sensitive High

The species has no ability for visual perception hence it is tolerant to changes in light penetration and attenuation. It is found at depths of at least 100 m (Cabioch, 1968) where light levels are low.

Decrease in turbidity

Increase in wave exposure Intermediate High Very low

Axinella dissimilis lives in wave exposed areas. Decreases in wave exposure may result in conditions outside the preferred range of the species and may cause shrinkage in population distribution. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Decrease in wave exposure

Noise Tolerant Not sensitive Low

It is unlikely that the species has any facility for detection of noise vibrations

Visual Presence Tolerant Not sensitive High

The species has no ability for visual perception hence it is not sensitive to visual disturbance. It is found at depths of at least 100 m (Cabioch, 1968) where light levels are low.

Abrasion & physical disturbance Intermediate High Low

The species is quite elastic and flexible (Moss & Ackers, 1982). However, if the sponge is bent more than 90 ° the surface will crack. The sponge branches upright into the water column. Abrasion may physically damage or dislodge the sponge. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Displacement High High Low

The species is permanently attached to the substratum. It is unlikely to be able to reform this

attachment if displaced. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.

Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Synthetic compound contamination				Not relevant
Insufficient information				
Heavy metal contamination				Not relevant
Insufficient information				
Hydrocarbon contamination				Not relevant
Insufficient information				
Radionuclide contamination				Not relevant
Insufficient information				
Changes in nutrient levels				Not relevant
Insufficient information				
Increase in salinity	High		High	Low
The species inhabits open coasts and off-shore areas where salinity is likely to be full. Decreases in salinity will result in conditions outside the preferred range for the species, probably causing death..				
Decrease in salinity				
Changes in oxygenation	Intermediate		High	Low
There is no information regarding the tolerance of *Axinella dissimilis* to changes in oxygen concentration. However, Cole *et al*., (1999) suggest possible adverse effects on marine species below 4 mg/l and probable adverse effects below 2mg/l. No information is available regarding the reproduction or dispersal abilities of this species so no assessment of recoverability can be made. Most sponges however, tend to be slow growing and long lived.				

Biological Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Introduction of microbial pathogens/parasites				Not relevant
Insufficient information				
Introduction of non-native species				Not relevant
Insufficient information				
Extraction of this species	Not relevant	Not relevant	Not relevant	Low
As this sponge species has no current commercial, culinary or research value, it is unlikely that it will be exploited and extracted.				
Extraction of other species	Tolerant		Not sensitive	Very low

Axinella dissimilis has no known obligate relationships so the loss of other species is unlikely to have an impact.

Additional information

Importance review

Policy/legislation

- no data -

Status

National (GB) importance	-	**Global red list (IUCN) category**	-

Non-native

Native	-		
Origin	-	**Date Arrived**	-

Importance information

Axinella dissimilis may occur amongst quite dense assemblages of animals but there is no information regarding actual abundances (Cabioch, 1968). Many sponges provide shelter for small organisms such as shrimps but there are no records of such with *Axinella dissimilis*.

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