Dahlia anemone (*Urticina felina*)

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

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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/1392]. All terms and the MarESA methodology are outlined on the website (https://www.marlin.ac.uk)

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***Urticina felina* at Scapa Flow, Orkneys.**
Photographer: Robert Keen
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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 & Dr Keith Hiscock	**Refereed by**	Prof. Daphne Fautin
Authority	(Linnaeus, 1761)		
Other common names	-	**Synonyms**	*Tealia felina* (Linnaeus, 1761)

Summary

Description

A large anemone (base up to 15 cm diameter) with up to 160 short (up to 2 cm), stout tentacles arranged in multiples of ten. Individuals from offshore tend to be larger. The coloration is very variable, ranging through white, yellow, orange, red, blue, grey, purple and brown being either plain or more commonly in some combination. Perhaps most commonly with a red column blotched with green/grey and a prominent pattern of red lines amongst the tentacle bases. The tentacles are usually banded but may be plain. There are numerous grey warts on the column to which gravel and shell fragments stick. When the tentacles are fully retracted, the body of the anemones may be almost obscured by these adherent particles.

Recorded distribution in Britain and Ireland

Found on all coasts of the British Isles.

Global distribution

The species is boreal-arctic with a possible circumpolar distribution. Found throughout Europe from northern Russia to Biscay but not in the Mediterranean. Records from elsewhere are incomplete and there is considerable confusion in taxonomy.

Habitat

Typically found on the lower shore and subtidally, particularly on shores with strong wave action or subtidal areas with strong tidal streams. Small individuals may be found as high as the mid-tide line. Attaches very firmly to rocks and boulders, typically in crevices and gullies, sometimes forming dense carpets. Occurs in estuaries where hard substrata are present.

Depth range

down to at least 100m

Identifying features

- Large size, up to 15 cm across the base (bigger than most other anemones).
- Large verrucae or warts present on the column, often with gravel or shell fragments attached.
- Up to 160 short stout tentacles arranged in multiples of ten.

Additional information

The taxonomy and relationships of this sea anemone are in some confusion with anemones of very similar appearance and apparently reproductive biology to *Urticina felina* occurring on the north-west (Pacific) coast of north America. An attempt is made below to establish relationships important for using literature to support sensitivity and recoverability assessments elsewhere in this review. Stephenson (1935) identifies "*Tealia* (=*Urticina*) *crassicornis*" of M&#252ller as a variety (*crassicornis*) of *Tealia* (=*Urticina*) *felina* (L.) but not the variety *coriacea* which is the "*Tealia crassicornis*" of Gosse (1860). However, Stephenson notes that, in his "var. *crassicornis*", the embryos develop up to a late stage in the coelenteron of the parent and later describes it as "viviparity". Since Appelöff (1900) cited in Chia & Spaulding (1972) reported that, in Europe, *Tealia* (=*Urticina*) *crassicornis* releases it's gametes freely into the sea (i.e. is not viviparous) and that the species they studied in the northwest USA similarly produced ova and sperm, it seems likely that their "*Tealia crassicornis*" has closer affinities to the British "*Urticina felina*" than to the species that occurs further north of the British Isles and is called "*Tealia crassicornis* (M&#252ller)".

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Biology review

Taxonomy

Phylum	Cnidaria	Sea anemones, corals, sea firs & jellyfish
Class	Anthozoa	Sea anemones, soft & cup corals, sea pens & sea pansies
Order	Actiniaria	
Family	Actiniidae	
Genus	Urticina	
Authority	(Linnaeus, 1761)	
Recent Synonyms	Tealia felina (Linnaeus, 1761)	

Biology

Typical abundance	Moderate density
Male size range	up to 150mm
Male size at maturity	
Female size range	Medium(11-20 cm)
Female size at maturity	
Growth form	Globose
Growth rate	Data deficient
Body flexibility	High (greater than 45 degrees)
Mobility	
Characteristic feeding method	Non-feeding, Predator
Diet/food source	
Typically feeds on	See Additional Information.
Sociability	No information
Environmental position	Epibenthic
Dependency	No information found.
Supports	No information
Is the species harmful?	Yes The stinging nematocysts in the anemones tentacles are used to trap and paralyse prey. The nematocysts can also provoke itching and blistering of the skin in humans but the effects vary considerably between individual humans.

Biology information

Densities vary from solitary individuals to dense carpets in ideal locations such as crevices and gullies. Measurements of size refer to the diameter across the base. Growth is dependent on the level of feeding so size is not proportional to age. Gosse (1860) notes [most likely from aquarium observations] that "the shore crab (*Carcinus*) is its ordinary prey but it feeds on limpets, and other Mollusca and nereids and shrimps and on *Echinus* [now *Psammechinus*] *miliaris*. Rasmussen (1973) records *Urticina felina* as feeding mainly on gammarids in banks of *Mytilus edulis*.

Habitat preferences

Physiographic preferences	Open coast, Offshore seabed, Strait / sound, Sea loch / Sea lough, Ria / Voe, Estuary
Biological zone preferences	Lower circalittoral, Lower eulittoral, Lower infralittoral, Sublittoral fringe, Upper circalittoral, Upper infralittoral
Substratum / habitat preferences	Bedrock, Crevices / fissures, Large to very large boulders, Other species, Small boulders
Tidal strength preferences	Moderately Strong 1 to 3 knots (0.5-1.5 m/sec.), Strong 3 to 6 knots (1.5-3 m/sec.), Very Strong > 6 knots (>3 m/sec.), Weak < 1 knot (<0.5 m/sec.)
Wave exposure preferences	Exposed, Extremely exposed, Moderately exposed, Sheltered, Very exposed
Salinity preferences	Full (30-40 psu), Low (<18 psu), Reduced (18-30 psu), Variable (18-40 psu)
Depth range	down to at least 100m
Other preferences	No text entered
Migration Pattern	Non-migratory / resident

Habitat Information

- Individuals found further offshore tend to be larger in size.
- *Urticina eques* is a similar but larger species (up to 30 cm tentacle spread) with longer tentacles and more commonly found offshore and in deeper water to 400 m. This species has fewer or no verrucae and no attached gravel or other particles.
- Rasmussen, (1973) records *Urticina felina* as being very common in banks of *Mytilus* feeding mostly on gammarids.
- *Urticina felina* is recorded from several estuarine sites including Mucking in Thames estuary and the river Blackwater estuary and so will be subject to variable or low salinities. In the Westerschelde estuary, Braber & Borghouts (1977) found that *Urticina* (as *Tealia*) *felina* penetrated to about the 11ppt Chlorinity (about 20 psu) isohaline at mid tide during average water discharge making it tolerant of reduced salinity conditions.

Life history

Adult characteristics

Reproductive type	Gonochoristic (dioecious)
Reproductive frequency	Annual protracted
Fecundity (number of eggs)	No information
Generation time	Insufficient information
Age at maturity	See additional information
Season	April - June
Life span	See additional information

Larval characteristics

Larval/propagule type	-

Larval/juvenile development	Lecithotrophic
Duration of larval stage	See additional information
Larval dispersal potential	See additional information
Larval settlement period	Insufficient information

Life history information

- No information has been found regarding the longevity of *Urticina felina* but given the large size, slow growth rate and few predators it is likely that it survives for quite a long time. Specimens in aquarium tanks are known to still be flourishing fifty years after collection (P. G. Moore pers. comm.).
- Age at maturity is not known. Chia & Spaulding (1972) working with the similar (see 'Taxonomy') *Tealia crassicornis* (see below) found no sign of gonad development at 14 months old. The smallest fertile *Urticina lofotensis*, a similar species in California, are recorded as at least 18 months old (Wedi & Dunn, 1983).
- Solé-Cava *et al.* (1985) considered that sexual reproduction is the most important, if not the only, method of reproduction in *Urticina felina*. Appeloff (1900) (reported in Chia & Spaulding, 1972) observed that in Europe "*Tealia* (=*Urticina*) *crassicornis*" releases its gametes into the sea and that larval development is independent of the adult. Chia & Spaulding (1972), in observing that *Tealia crassicornis* from the north-west of the USA (the Pacific coast) has a mode of development similar to that described by Appeloff (almost certainly for what is now called "*Urticina felina*") suggests that the information they collected on *Tealia crassicornis* can be used with some validity here. It is not known whether *Urticina felina* reproduces asexually as do several other anemones (such as *Actinia equina* and *Metridium dianthus*).
  Stephenson (1935) reports that viviparity has been suspected because of the sudden appearance apparently from "nowhere" of individuals in aquaria.

- The Plymouth Marine Fauna (Marine Biological Association, 1957) records *Urticina felina* as breeding in May. Chia & Spaulding (1972) record the similar *Tealia crassicornis* from San Juan Island on the north-west coast of the USA as spawning in the morning during April, May and June.
- Chia & Spaulding (1972) bred and grew *Tealia crassicornis* from the north-west coast of the USA. In *Tealia crassicornis*, mucus containing gametes were expelled from the mouth. The yellow eggs (500-700 µm diameter) formed little clusters which then broke apart and began to float.
- The duration of the larval stage may vary. For *Tealia crassicornis*, Chia & Spaulding (1972) found that nine days after fertilization, the planula was ready to settle and, a further four days after settling, had 4 tentacles. Certain substrata (such as *Phyllochaetopterus* sp. and *Sabellaria cementaria* tubes) could induce settlement rapidly in the laboratory. In the absence of inducing substrata larvae could remain in the water column for at least 17 days but settled within the second month after fertilization.
- The species is probably quite slow growing. Chia & Spaulding (1972) found that fed individuals of the similar *Tealia crassicornis* were only 10mm in diameter after a year and there was no gonad development present in 14 month old anemones. However, at 18 months, individuals were 4 cm diameter with 60-70 tentacles.
- Solé-Cava *et al.* (1994) suggested that the large sub-littoral sea anemone *Urticina eques* (very similar to *Urticina felina*) with its large lecithotrophic larvae is probably not truly planktonic and has poor dispersive powers.

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	Moderate	Moderate	Moderate

Urticina felina anemones adhere strongly to the substratum. Substratum loss would result in mortality. Some individuals might, however, be left behind as they typically live in fissures. Recruitment to replace lost individuals is likely to be slow (see 'Additional Information' below).

Smothering	Low	Very high	Very Low	High

Urticina felina anemones adhere strongly to the substratum and would be entirely covered by smothering material. However, *Urticina felina* lives in situations where it may be covered from time-to-time by sediment, especially coarser substrata which suggests some ability to survive. For example, Holme & Wilson (1985) observed *Urticina felina* attached to pebbles, cobbles or rock subject to sand scour or periodic smothering by sand at 50-55m depth, offshore, in the western English Channel. The tidal streams in the central parts of the Channel may reach 125 cm/s during neaps and 166 cm/s on springs. Therefore, he suggested that *Urticina felina* was tolerant of sand scour or periodic smothering by < ca. 5cm of sand, being able to extend its column to maintain its disc above the sand surface (Holme & Wilson, 1985). Thus the species is considered to have low intolerance to smothering. As the species is able to maintain its disc above the smothering material recovery is very rapid. Adults can also detach from the substratum and relocate but locomotive ability is very limited.

Increase in suspended sediment	Low	Very high	Very Low	Moderate

Being an epibenthic species, *Urticina felina* would be exposed to changes in siltation. Increases in siltation may begin to cover the anemone or interfere with feeding. An energetic cost will result from efforts to clean off the silt particles, e.g. through mucus production and sloughing. Repeated energetic expenditure in cleaning off silt particles may cause loss of condition. Recovery of condition may take several months.

Decrease in suspended sediment	Tolerant*	Not relevant	Not sensitive*	High

Reduction of the need to keep the anemone surface clear of silt will mean less energy expenditure and mucus production and therefore likely benefit to the anemone.

Dessication	Intermediate	Moderate	Moderate	Low

The species is found on the lower shore as well as subtidally. Small individuals have been recorded as high as the mid tide line (Manuel, 1988). Decreases in desiccation will have no effect. The anemone is able to detach from the substratum and relocate in order to find better or avoid unfavourable conditions. Increases in desiccation may cause part of an intertidal population to die before suitable relocation can occur. Recruitment to replace lost individuals is likely to be slow (see 'Additional Information' below). A precautionary assessment of 'moderate' recoverability is made but with a low confidence.

Increase in emergence regime	Intermediate	Moderate	Moderate	Low

Increase in emergence is likely to result in exposure to desiccation and a decreased opportunity for feeding. Increased emergence may have no effect for anemones in damp fissures or pools. Assuming that desiccation or heat stress (see 'Increase in temperature' below) occurs, intolerance and recoverability will be as desiccation. Recruitment to replace lost individuals is likely to be slow (see 'Additional Information' below). A precautionary assessment of 'moderate' recoverability is made but with a low confidence.

Decrease in emergence regime Tolerant* Not relevant Not sensitive* High

Urticina felina is predominantly a subtidal species so that decrease in emergence is likely to lead to more habitats for colonization becoming available.

Increase in water flow rate Tolerant Not relevant Not sensitive Moderate

The species favours areas with strong tidal currents (Holme & Wilson, 1985; Migné & Davoult, 1997) although it is also found in more calm and sheltered areas as well as deep water. The anemone is very firmly attached and, although there may be some inhibition of feeding in very strong flows, increases in water flow rate are not likely to have a significant effect on *Urticina felina*.

Decrease in water flow rate Intermediate Moderate Moderate Moderate

In the absence of wave action, water flow is likely to be very important in preventing siltation and stagnation and in bringing food. Therefore, in conditions where water flow rates fall to very low levels, anemones may be adversely affected, lose condition and, especially if some stagnation occurs, some may die. Although recolonization is likely to occur from nearby populations, frequency and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made (see 'Additional Information' below).

Increase in temperature Intermediate High Low Low

The species distribution extends to the north and south of the British Isles (Manuel, 1988) and so the species is unlikely to be affected by an increase in open water temperatures. Gosse (1860) observed that *Urticina felina* (as *Actinia crassicornis*) was "one of the most difficult [anemones] to keep in an aquarium" and that "the heat of the summer is generally fatal to our captive specimens". It is therefore likely that local warming may adversely affect individuals and that some mortality might occur. Although recolonization is likely to occur from nearby populations, frequency and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made (see 'Additional Information' below).

Decrease in temperature Intermediate High Low Low

The species distribution extends to the north and south of the British Isles (Manuel, 1988) and so the species is unlikely to be affected by a decrease in open water temperatures. Although *Urticina felina* was apparently unaffected by the extremely cold winter of 1962/3 (Crisp, 1964), Gosse (1860) observed that "after the intense and protracted frost of February 1855, the shores of South Devon were strewn with dead and dying anemones, principally of this species". Bearing in mind the equivocal observations from two cold winters, it is suggested that at least some individuals might be killed by extreme cold. Although recolonization is likely to occur from nearby populations, frequency and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made (see 'Additional Information' below).

Increase in turbidity Tolerant Not relevant Not sensitive Low

Urticina felina occurs in clear to highly turbid waters and occurs down to depths of at least 100m (Manuel, 1988) where light levels are low. The anemone is not known to contain symbiotic algae and is likely to tolerate changes in turbidity or the resulting change in light

attenuation.

Decrease in turbidity	Tolerant	Not relevant	Not sensitive	High

Urticina felina occurs in clear to highly turbid waters and occurs down to depths of at least 100m (Manuel, 1988) where light levels are low. The anemone is not known to contain symbiotic algae and is unlikely to be sensitive to changes in turbidity or the resulting change in light attenuation.

Increase in wave exposure	Tolerant	Not relevant	Not sensitive	Low

The species favours areas with strong wave action (Manuel, 1988) and strong tidal currents (Migné & Davoult, 1997) although it is also found in more calm and sheltered areas as well as deep water.

Decrease in wave exposure	Intermediate	High	Low	Moderate

In the absence of tidal streams, wave action is likely to be very important in preventing siltation and stagnation and in bringing food. Therefore, in conditions where wave action falls to very low levels, anemones may be adversely affected, lose condition and, especially if some stagnation occurs, some may die. Assuming that some individuals survive, local recruitment is likely to occur within a few years.

Noise	Tolerant	Not relevant	Not sensitive	Low

Urticina felina is likely to have poor ability for detection of noise vibrations and as such is unlikely to be sensitive to noise.

Visual Presence	Tolerant	Not relevant	Not sensitive	High

Urticina felina has very limited, if any, ability for visual perception. The anemone is unlikely to be sensitive to visual presence.

Abrasion & physical disturbance	Intermediate	Moderate	Moderate	Low

The species occurs frequently in areas with strong tidal currents and coarse sediments and so may be exposed to and tolerant of particle scour. The anemone is also soft, flexible and can reform its attachment to the substratum. The anemone lives in fissures, which may be protected from abrasive forces. However, physical impact is likely to cause damage and mortality to exposed individuals. It is therefore suggested that some individuals may be killed by a physical disturbance event. Although recolonization is likely to occur from nearby populations, frequency, and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made (see additional information below).

Displacement	Low	Immediate	Not sensitive	Low

Although *Urticina felina* adheres strongly to the substratum, it does not form a permanent attachment. The anemones can move around to re-attach in a better position. Displacement may result in loss of a good position or hinder feeding but will only have serious consequences if the basal tissue is damaged - as often happens when anemones are collected for the aquarium. The assessment made here assumes no damage to the tissue. Relocation to a suitable area will be accompanied by recovery.

Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Synthetic compound contamination	Intermediate	Moderate	Moderate	Low

Very little information has been found. Hoare & Hiscock (1974) observed that *Urticina felina*

survived near to an acidified halogenated effluent discharge in a 'transition' zone where many other species were unable to survive, suggesting a tolerance to chemical contamination. However, *Urticina felina* was absent from stations closest to the effluent which were dominated by pollution tolerant species particularly polychaetes. Those specimens closest to the effluent discharge appeared generally unhealthy. Because it appears that *Urticina* was unable to tolerate the most polluted conditions, intolerance has been assessed as intermediate. Although recolonization is likely to occur from nearby populations, frequency and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made (see 'Additional Information' below).

Heavy metal contamination Not relevant

Insufficient information.

Hydrocarbon contamination Low Very high Very Low Moderate

One month after the *Torrey Canyon* oil spill the dahlia anemone, *Urticina felina*, was found to be one of the most resistant animals on the shore, being commonly found alive in pools between the tide-marks which appeared to be devoid of all other animals (Smith, 1968). Intolerance is, therefore, assessed as low for dispersed or liquid oil. 'Condition' would be likely to return to normal once the oil is removed. However, the species may be susceptible to smothering effects and, in the case of thick oil, mortality seems likely.

Radionuclide contamination Not relevant

Insufficient information

Changes in nutrient levels Not relevant

Insufficient information

Increase in salinity Not relevant Not relevant Not relevant Not relevant

Urticina felina lives in full salinity situations and the factor is assessed as Not Relevant.

Decrease in salinity Low Very high Very Low Moderate

Although *Urticina felina* is predominantly marine, the species does penetrate into estuaries (e.g. the Thames estuary at Mucking (NMMP, 2001) and the River Blackwater estuary (Davis, 1967). Braber & Borghouts (1977) found that *Urticina* (as *Tealia*) *felina* penetrated to about the 11ppt Chlorinity (about 20psu) isohaline at mid tide during average water discharge in the Westerschelde estuary suggesting that, during high river flow, it would be tolerant of reduced salinity conditions. Intertidal and rock pool individuals will also be subject to variations in salinity because of precipitation on the shore; albeit for short periods on the lower shore. Therefore, the species seems to have a high tolerance to reduction in salinity but may have to retract tentacles and suffer reduced opportunity to feed. Intolerance has therefore been assessed as low suggesting that individuals are unlikely to be killed by changes at the level of the benchmark. Recovery is in terms of condition and is therefor very high.

Changes in oxygenation Intermediate High Low Low

There is no information about *Urticina felina* tolerance to changes in oxygenation but Cole *et al*., (1999) suggest possible adverse effects on marine species below 4 mg/l and probable adverse effects below 2mg/l. The large size and slow growth rate of this anemone suggests that it is quite long lived. Although recolonization is likely to occur from nearby populations, frequency and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made (see 'Additional Information' below).

Biological Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Introduction of microbial pathogens/parasites				Not relevant

Insufficient information

Introduction of non-native species				Not relevant

No known non-native species compete with *Urticina felina*.

Extraction of this species	High	Moderate	Moderate	Moderate

Urticina felina is not currently subject to extraction. However if a cold water marine aquarium trade were to take-off, this species is likely to be collected. Although *Urticina felina* probably breeds every year there is no information regarding fecundity. Although recolonization is likely to occur from nearby populations, frequency and success of recruitment is unclear and a precautionary assessment of 'Moderate' is made. See 'Additional Information' below.

Extraction of other species	Tolerant	Not relevant	Not sensitive	Low

Urticina felina has no known obligate relationships so removal of other species is unlikely to have any direct effect. The incidental physical effects of removal of other species can be assessed under the relevant factors.

Additional information

Recoverability is likely to be slow in populations where nearby individuals do not exist. The large size, slow growth rate and evidence from aquarium populations suggests that *Urticina felina* is long lived. Although it probably breeds each year there is no information regarding fecundity. Breeding probably does not occur until the anemone is at least 1.5 years old. Dispersal ability is considered to be poor in the similar *Urticina eques* (Solé-Cava *et al*., 1994). The larva is most likely benthic and, although unlikely to settle for many days after release (based on work on the similar *Tealia crassicornis* for north-west USA), is unlikely to travel far. However, assuming that there are populations surviving nearby (further down the shore), recruitment is likely to occur over the short distances involved but how rapidly is uncertain. Adults can detach from the substratum and relocate but locomotive ability is very limited. There is potential for some immigration of adults from other populations via water currents or rafting. Gosse (1853) noted that an *Eolis papillosa* had "eaten a hole the size of a pea in the side before being discovered". Under its current name of *%Aeolidia papillosa%*, Reidy (1996) describes how the plumose anemone *%Metridium senile%* is preferred as a food source to *%Urticina crassicornis%* but that newly settled *Aeolidea papillosa* occurred especially adjacent to individuals of *Urticina crassicornis*. (*Urticina crassicornis* is a similar species to *Urticina felina*)

Importance review

Policy/legislation

- no data -

Status

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

Non-native

Native	-		
Origin	-	**Date Arrived**	-

Importance information

In ideal conditions such as crevices and gullies on wave exposed shores the species can form dense carpets. The role of *Urticina* sea anemones as refuges and feeding stations for the painted greenling *Oxylebius pictus* (NE Pacific) has been investigated by Elliott (1992). The same roles may be filled by species in the British Isles although there are no records of this for *Urticina felina*. In some strong tidal current communities, *Urticina felina*, along with *Alcyonium digitatum* and *Ophiothrix fragilis* can constitute a large proportion of the biomass. In addition, they are thought to be responsible for the major part of carbon / nitrogen exchange at the sediment - water boundary (Migné & Davoult, 1995; Migné & Davoult, 1997a). Although 'Culinary use' is indicated as 'no', Gosse (1853) describes methods of cooking the dahlia anemone and seemed reasonably impressed with it boiled or fried.

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