



# MarLIN

## Marine Information Network

Information on the species and habitats around the coasts and sea of the British Isles

## Sunset cup coral (*Leptopsammia pruvoti*)

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/1285>]. All terms and the MarESA methodology are outlined on the website (<https://www.marlin.ac.uk>)

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See online review for  
distribution map

*Leptopsammia pruvoti*.  
Photographer: Sue Scott  
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Distribution data supplied by the Ocean  
Biogeographic Information System (OBIS). To  
interrogate UK data visit the NBN Atlas.

<b>Researched by</b>	Angus Jackson	<b>Refereed by</b>	Paul Tranter
<b>Authority</b>	Lacaze-Duthiers, 1897		
<b>Other common names</b>	-	<b>Synonyms</b>	<i>Leptopsammia microcardia</i> Lacaze-Duthiers, 1897

## Summary

### 🔍 Description

The sunset cup coral is a bright yellow or orange stony coral. It has a tentacular polyp that emerges from a porous, calcareous skeleton. The skeleton may be short and cylindrical or tall and inversely conical. It is typically solitary but is rarely found in small groups forming 'pseudocolonies'. The tentacles are quite long and number around 96. When fully retracted the tentacles are barely visible inside the skeleton.

### 📍 Recorded distribution in Britain and Ireland

Portland Bill, Lyme Bay, off Plymouth Sound, the Isles of Scilly and Lundy only. Believed to no longer occur in North Devon near Ilfracombe where it was present in 1969 (K. Hiscock, pers. comm.)

### 📍 Global distribution

Found throughout the Mediterranean west of Cyprus and in the Adriatic. Also on the Atlantic coasts of SW England, the Channel Isles, Brittany and Portugal. It has not been recorded despite targeted survey in Madeira, the Azores, or the Canary Isles.

### 🏠 Habitat

*Leptopsammia pruvoti* prefers shaded bedrock or stable boulders and is typically found in caves and gullies or under overhangs. Found at open coast locations mainly facing away from prevailing winds. It is commonest between 10 and 30 m with a maximum depth of 40 m recorded in the western Mediterranean.

### ↓ Depth range

10-40

### Q Identifying features

- Almost always solitary but sometimes found as small groups of corallia arising from one base (pseudocolonies).
- The disk and tentacles are usually yellow, sometimes with an orange disk.
- The polyp sits in a porous calcified skeleton.
- Possesses about 96 tentacles.
- Attached to bedrock or stable boulders in crevices, caves or overhangs.
- The corallum may be from short and cylindrical to tall and inversely conical, height to 60 mm, diameter of the calyx to 17 mm.

### 🏛️ Additional information

The synonym *Leptopsammia microcardia* was last used by Abel (1959) and Rutzler, 1966 despite the general recognition of their synonymy since 1954.

### ✓ Listed by



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## Biology review

### ☰ Taxonomy

Phylum	Cnidaria	Sea anemones, corals, sea fans & jellyfish
Class	Anthozoa	Sea anemones, soft & cup corals, sea pens & sea pansies
Order	Scleractinia	
Family	Dendrophylliidae	
Genus	Leptopsammia	
Authority	Lacaze-Duthiers, 1897	
Recent Synonyms	Leptopsammia microcardia	Lacaze-Duthiers, 1897

### 🌿 Biology

Typical abundance	Low density
Male size range	up to 60mm
Male size at maturity	
Female size range	Small-medium(3-10cm)
Female size at maturity	
Growth form	Cylindrical
Growth rate	1.3mm/year
Body flexibility	
Mobility	
Characteristic feeding method	No information, Passive suspension feeder
Diet/food source	
Typically feeds on	
Sociability	
Environmental position	Epifaunal
Dependency	Independent. Substratum
Supports	the barnacle <i>Boschia anglica</i> , the horseshoe worm <i>Phoronis hippocrepi</i> , the fan worm <i>Potamilla reniformis</i> and the bivalve <i>Hiatella arctica</i> .
Is the species harmful?	No

### 🏛️ Biology information

Younger individuals have a round calice which becomes elliptical with age. The skeleton is porous. It is not known whether the species is hermaphroditic or gonochoristic. The size range applies to maximum height of the corallum. The longest diameter of the calyx is 17 mm. Growth rate has been observed to be very slow in aquarium specimens which are little fed and in same seawater for several months (2 mm across calice after 18 months) but can be fast if fed and in continuous seawater supply (to 10 mm across calice after one year. (Paul Tranter, pers. comm.). Typically found as solitary individuals but may occur as several corallia from the same base forming 'pseudocolonies': during culture experiments, if any of the tissue overlying the skeletal column was lost, there would eventually appear, over a matter of weeks, one or more small polyps which would

eventually form part of the 'parent' skeleton and give the impression of a naturally formed colony (Paul Tranter, pers. comm.). *Leptopsammia pruvoti* is known to have the ability to control and possibly 'farm' the bacterial content of its coelenteric cavity (Herndl & Velimirov, 1985). These bacteria could be used as an additional food source. The horseshoe worm *Phoronis hippocrepeia* and the fan worm *Potamilla reniformis* bore into the base of the skeleton of *Leptopsammia pruvoti* and the bivalve *Hiatella arctica* further enlarges these boreholes. Once bored, the skeleton is weakened and corals may be easily detached.

## Habitat preferences

<b>Physiographic preferences</b>	Open coast
<b>Biological zone preferences</b>	Lower circalittoral, Lower infralittoral, Upper circalittoral
<b>Substratum / habitat preferences</b>	Bedrock, Large to very large boulders, Small boulders
<b>Tidal strength preferences</b>	Moderately Strong 1 to 3 knots (0.5-1.5 m/sec.), Very Weak (negligible), Weak < 1 knot (<0.5 m/sec.)
<b>Wave exposure preferences</b>	Exposed, Moderately exposed, Sheltered
<b>Salinity preferences</b>	Full (30-40 psu)
<b>Depth range</b>	10-40
<b>Other preferences</b>	No text entered
<b>Migration Pattern</b>	Non-migratory / resident

## Habitat Information

This species is at the northern limit of its range possibly forming a relict from a larger previous distribution. It is now restricted to 'ideal' locations.

## Life history

### Adult characteristics

<b>Reproductive type</b>	Gonochoristic (dioecious)
<b>Reproductive frequency</b>	No information
<b>Fecundity (number of eggs)</b>	11-100
<b>Generation time</b>	Insufficient information
<b>Age at maturity</b>	Insufficient information
<b>Season</b>	July - September
<b>Life span</b>	Insufficient information

### Larval characteristics

<b>Larval/propagule type</b>	-
<b>Larval/juvenile development</b>	Lecithotrophic
<b>Duration of larval stage</b>	1 day
<b>Larval dispersal potential</b>	<10 m
<b>Larval settlement period</b>	Insufficient information

## Life history information

Lifespan has not been established for this species but it is probably quite long lived. Individuals tend to die through weakening of the skeleton by boring organisms and subsequent detachment by agents such as foraging fish or careless divers. However, skeletons (dead individuals) have been found still attached to rocks (K. Hiscock, pers. comm.) Populations tend to become extinct through lack of recruitment. Lacaze-Duthiers, (1897) suggests that the sexes are separate. Eggs are laid in succession, at indefinite, fairly well-spaced intervals over a period of time that must be substantial (Lacaze-Duthiers, 1897). Larvae have been successfully produced in aquaria. The eggs are released from the female stomach cavity and those that are unfertilised may float to the surface. Fertilised eggs (young larvae) swim actively in the water column (K. Hiscock pers. comm.) but settle rapidly to the substratum close to the adult, where after a period of freedom they attach themselves in the shape of an ovoid or a ciliated worm (Lacaze-Duthiers, 1897). The larval settling time is generally short but observations from aquaria suggest that the larval stage may exist for up to six weeks before settling. Recruitment is very sporadic. Over 12 years of monitoring on Lundy has shown little or no recruitment and the population there declined by 22 percent between 1993 and 1997. Recruitment may fail for several reasons. Environmental conditions (primarily temperature) are unsuitable for gamete production to occur or to occur synchronously. Alternatively larvae may be swept away into unsuitable habitat by water currents or be consumed by predators before metamorphosing. Recruitment in the Mediterranean is also sporadic. Some recruitment may occur through influx of southern water bodies bringing with it larvae.

## 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.

### A Physical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
<b>Substratum Loss</b>	High	Very low / none	Very High	High

This species is permanently attached to the substratum so substratum loss would cause death. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.

<b>Smothering</b>	High	Very low / none	Very High	Moderate
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This species is permanently attached to the substratum and would be unable to avoid or 'dig-out' from smothering. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.

<b>Increase in suspended sediment</b>	Intermediate	Very low / none	High	Moderate
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This species is permanently attached to the substratum and would be unable to avoid changes in siltation. However, the species tends to inhabit caves or overhangs which are less likely to be exposed to suspended material settling out. The polyp will most likely 'inflate' with water to expand above the silt if briefly covered. Increased siltation may clog feeding apparatus and there would be an energetic cost to clearing this sediment. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.

#### Decrease in suspended sediment

**Dessication****High****Very low/  
none****Very High****High**

The species is only found subtidally (typically 10-30 m) and the polyp is soft bodied. Exposure to desiccating influences would cause death. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.

**Increase in emergence regime****High****Very High****High**

The species is only found subtidally (typically 10-30m) and the polyp is soft bodied. Emersion from the water would cause death. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring. Recruitment from distant water bodies may occur every 25-30 years. Recovery will take a very long time or may not occur at all.

**Decrease in emergence regime****Increase in water flow rate****Low****Very high****Very Low****Moderate**

Decreases in flow rate are unlikely to have any effect as *Leptopsammia pruvoti* can be found in areas with negligible water flow. Increases in water flow rate may interfere with the ability to feed or to hold the tentacles out in the current. However, a thriving population has been found on the wave exposed west coast of Lundy. Reproduction may be restricted and body condition may be lost as a result of increases in water flow rate. On resumption of 'normal' water flow rates recovery will probably occur within a few months.

**Decrease in water flow rate****Increase in temperature****Intermediate****High****Moderate**

Observations from aquaria suggest that the species is very tolerant to temperature increases, tolerating up to about 30 ° C for several days. Similarly, observations from aquaria suggest that, once established it survives in temperatures below its normal range. *Leptopsammia pruvoti* distribution extends south into the Mediterranean where water temperatures are considerably warmer than in the British Isles. However, the species is at the northern limit of its range and long term chronic decreases in temperature would probably cause death. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.

**Decrease in temperature****Increase in turbidity****Tolerant****Not relevant****Not sensitive****Low**

*Leptopsammia pruvoti* tends to inhabit low light environments such as caves, crevices and overhangs. In the Mediterranean the species is found in very dark conditions (Riedl, 1966). If the presence of some light is of critical importance, increased light transmission may mean that (if recruitment occurs) the species can extend its depth range (In the clear waters of the western Mediterranean the lower depth limit is 40m as opposed to 30m elsewhere).

### Decrease in turbidity

#### Increase in wave exposure

Intermediate

High

Low

The species inhabits a range of wave exposures from exposed to sheltered. Decreases in wave exposure may not have any effect on the species but increases in wave exposure may affect the ability to feed and extend tentacles. However, a thriving population has been found on the wave exposed west coast of Lundy. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.

#### Decrease in wave exposure

#### Noise

Tolerant

Not relevant

Not sensitive

Moderate

This species probably has very limited facility for vibration detection and as such is unlikely to be sensitive to noise.

#### Visual Presence

Tolerant

Not relevant

Not sensitive

High

This species has very limited ability to detect changes in light levels and no visual perception and as such is unlikely to be sensitive to visual disturbance.

#### Abrasion & physical disturbance

High

Very High

Moderate

The calcified skeleton of this species is brittle. Physical disturbance or abrasion would cause detachment and death. Gamete production, synchronous gamete production, or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment was not recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is likely but may also occur from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's (Keith Hiscock pers obs.). Recovery will take a very long time or may not occur at all.

#### Displacement

High

Very High

High

This species is permanently fixed to boulders or bedrock - displacement would certainly cause death. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long

time or may not occur at all.

## Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
<b>Synthetic compound contamination</b> Insufficient information				Not relevant
<b>Heavy metal contamination</b> Insufficient information				Not relevant
<b>Hydrocarbon contamination</b> Insufficient information				Not relevant
<b>Radionuclide contamination</b> Insufficient information				Not relevant
<b>Changes in nutrient levels</b> Changes in nutrient concentration are unlikely to affect this species greatly unless there is a smothering effect through enhanced growth of ephemeral algae. High calcium levels may benefit skeleton construction. On removal of the factor, death of the algae etc and resumption of normal feeding, water flow etc, return to original condition should take only a short time.	Low	Very high	Very Low	Very low
<b>Increase in salinity</b> The species is only found in fully saline environments and at depths unlikely to be affected by freshwater surface runoff (10-30m). Observations from aquaria suggest that these animals are quite tolerant to slight changes in salinity but reductions of one or two salinity bands are likely to cause death. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.	High		Very High	Moderate
<b>Decrease in salinity</b>				
<b>Changes in oxygenation</b> Cole <i>et al.</i> (1999) suggest possible adverse effects on marine species below 4 mg/l and probable adverse effects below 2mg/l. A reduction in oxygen concentration may cause some individuals of a population to die although observations from aquaria suggest that these animals are quite hardy. Gamete production, synchronous gamete production or successful recruitment are very unpredictable and sporadic primarily due to unfavourable environmental conditions. Local recruitment has not been recorded at Lundy during more than 12 years of monitoring but occurred to a small extent in 1998. Local recruitment is most likely but may also be from distant water bodies perhaps every 25-30 years. There has been no observation of colonization of wrecks or new natural surfaces near to existing colonies such as the breakwater at Plymouth Sound constructed in the early 1800's. Recovery will take a very long time or may not occur at all.	Intermediate		High	Moderate

## Biological Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
<b>Introduction of microbial pathogens/parasites</b> Insufficient information				Not relevant
<b>Introduction of non-native species</b> Insufficient information				Not relevant
<b>Extraction of this species</b> It is extremely unlikely that <i>Leptopsammia pruvoti</i> would be extracted. The species is the subject of a UK Biodiversity Action Plan.	Not relevant	Not relevant	Not relevant	Moderate
<b>Extraction of other species</b> <i>Leptopsammia pruvoti</i> has no known obligate relationships so removal of other species is unlikely to have any effect on the population.	Not relevant	Not relevant	Not relevant	Low

## Additional information

## Importance review

### Policy/legislation

- UK Biodiversity Action Plan Priority
- Species of principal importance (England)
- Features of Conservation Importance (England & Wales)

### Status

National (GB) importance	Nationally rare	Global red list (IUCN) category	-
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### Non-native

Native	-		
Origin	-	Date Arrived	-

### Importance information

*Leptopsammia pruvoti* provides a substratum for the barnacle *Boscia anglica* and is also bored into by the horseshoe worm *Phoronis hippocrepi* and the fan worm *Potamilla reniformis*. The holes created by these worms are then enlarged by the bivalve *Hiatella arctica*.

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