MarLIN

Marine Information Network

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

Dead man's fingers (*Alcyonium digitatum*)

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/1187]. All terms and the MarESA methodology are outlined on the website (https://www.marlin.ac.uk)

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Dense bed of *Alcyonium digitatum*.
Photographer: Sue Scott
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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	Georgina Budd	**Refereed by**	Dr Richard G. Hartnoll
Authority	Linnaeus, 1758		
Other common names	-	**Synonyms**	-

Summary

Description

Mature colonies form thick, fleshy masses of irregular shape, typically of stout, finger-like lobes that usually exceed 20 mm in diameter. Young, developing colonies form encrustations about 5 -10mm thick. The height and breadth of colonies are up to 200 mm. Colonies are white or orange in colour, but may appear reddish or brownish during periods of inactivity when the polyps are withdrawn into the colony, owing to the development of a film of epibiota.

Recorded distribution in Britain and Ireland

Found on all British and Irish coasts.

Global distribution

Alcyonium digitatum is recorded along the Atlantic Coasts of Europe from Portugal to Norway, in Iceland.

Habitat

Attached to rocks, shells and stones where the otherwise dominant algae are inhibited by a lack of light and occasionally on living crabs and gastropods. Generally found in situations where strong water movement prevails. Occasionally on the lower shore but more common sublittorally, down

to about 50 m.

Depth range

Low water (springs) to 50 m

Identifying features

- White, yellow, orange or brownish in colour.
- Colonies form erect fleshy masses of stout, finger-like lobes.
- Polyps monomorphic, secondary polyps arising from solenia within the coenenchyme.
- Sclerites abundant in surface layer of coenenchyme, forming a crust.
- Anthocodia translucent white.
- Cross-sections of fingers have few cavities, usually less than 12.
- Found in areas of strong water movement, unlike *Alcyonium glomeratum* which prefers sheltered sites.

Additional information

May be confused with *Alcyonium glomeratum*, which prefers sites sheltered from wave action or tidal streams. It is blood red or rust coloured (occasionally pale orange or yellowish), has relatively slender branches, and a softer, more flaccid texture but a rough surface. In *Alcyonium glomeratum* the colonies are also more contractile, and cross sections through the fingers show numerous cavities.

Listed by

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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	Alcyonacea	
Family	Alcyoniidae	
Genus	Alcyonium	
Authority	Linnaeus, 1758	
Recent Synonyms	-	

Biology

Typical abundance	Low density
Male size range	< 200 (height)mm
Male size at maturity	
Female size range	Medium(11-20 cm)
Female size at maturity	
Growth form	Digitate
Growth rate	Data deficient
Body flexibility	Low (10-45 degrees)
Mobility	
Characteristic feeding method	Active suspension feeder, Non-feeding
Diet/food source	
Typically feeds on	Phytoplankton & zooplankton
Sociability	
Environmental position	Epifaunal
Dependency	Independent.
Supports	Host *Enalcyonium forbesi* and *Enalcyonium rubicundum*, the amphipod *Jassa falcata*, and layers of epibiota. Prey for *Simnia patula* and *Tritonia hombergi*.
Is the species harmful?	No

Biology information

Cycles of activity

Alcyonium digitatum normally spends part of each day with its polyps expanded, during which time the colony is actively feeding, and part of the day contracted when the tentacles and columns of the polyps are withdrawn into the body of the colony (Hartnoll, 1975). The diurnal periodicity was studied by Ceccatty *et al.*, (1963) in tideless conditions, who observed three to five periods of expansion in every 24 hours, with no co-ordination between colonies. In contrast, Hickson (1892; 1895) observed a marked tidal rhythm of expansion and contraction in colonies within Plymouth Sound.

From February through to July all colonies expand and feed regularly. However, from late July through to December the colonies of *Alcyonium digitatum* remain contracted, during which time they do not feed and assume a shrunken appearance with a reddish or brownish colour. The change of colour is a result of the periods of inactivity as the surface of the colonies become covered with a layer of epibiota (diatoms and prostrate thalloid and filamentous algae initially, from which arises a forest of erect algae and hydroids). The amphipod *Jassa falcata* also builds its mucous and detritus tubes amongst the other epibiota, adding to and consolidating the covering (Hartnoll, 1975). Once the colonies recommence expansion in December the epibenthic film is sloughed off. The season of prolonged inactivity coincides with the final months of gonad maturation and the shedding of the epibenthic film immediately precedes the spawning of the gametes (see reproduction) (Hartnoll, 1975; 1977)

Feeding
Roushdy & Hansen (1961) demonstrated filtration of phytoplankton by *Alcyonium digitatum* using radiolabelled algae. In *Alcyonium digitatum* the current maintained in and out of the polyps by ciliary action not only conveys oxygen but also constantly brings a supply of food into reach (Hickson, 1901).

Chemical defences
Mackie (1987) reported that methanol extracts of the octocorals *Alcyonium digitatum* and *Pennatula phosphorea* contained substances that deterred feeding in the Dover sole, *Solea solea*.

Anatomy
Hickson (1895) describes the microscopic structure of *Alcyonium digitatum*.

Habitat preferences

Physiographic preferences	Open coast, Offshore seabed
Biological zone preferences	Circalittoral offshore, Lower circalittoral, Upper circalittoral
Substratum / habitat preferences	Artificial (man-made), Bedrock, Caves, Cobbles, Large to very large boulders, Overhangs, 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.)
Wave exposure preferences	Exposed, Moderately exposed, Sheltered, Very exposed, Very sheltered
Salinity preferences	Full (30-40 psu), Variable (18-40 psu)
Depth range	Low water (springs) to 50 m
Other preferences	*Alcyonium digitatum* prefers slopes of different gradient at different depths. Around the Isle of Man, *Alcyonium digitatum* prefers overhangs down to 10 m, from 10-20 m it extends onto vertical slopes, whilst below 20 m it is also found on gentle slopes and horizontal hard surfaces (Hartnoll, 1975).
Migration Pattern	Non-migratory / resident

Habitat Information

- *Alcyonium digitatum* prefers areas of strong water movement resulting from wave turbulence or currents.

- Records of *Alcyonium digitatum* from New England, USA have been shown to be *Alcyonium siderium* Verrill, which differs in both morphology and reproduction and lacks the seasonal quiescent phase (Sebens, 1983; Hartnoll pers. comm.).

Life history

Adult characteristics

Reproductive type	Gonochoristic (dioecious)
Reproductive frequency	Annual episodic
Fecundity (number of eggs)	10,000-100,000
Generation time	1-2 years
Age at maturity	2 or 3 years old
Season	December - January
Life span	See additional information

Larval characteristics

Larval/propagule type	-
Larval/juvenile development	Lecithotrophic
Duration of larval stage	See additional information
Larval dispersal potential	Greater than 10 km
Larval settlement period	January to February

Life history information

Lifespan
Evidence suggests that *Alcyonium digitatum* has an extensive lifespan. Observations of marked colonies showed that colonies 10-15 cm in height were between 5 and 10 years old (Hartnoll, unpublished). The lifespan certainly exceeds 20 years as colonies have been followed for 28 years in marked plots (Lundälv, pers. Comm., in Hartnoll, 1998).
Sex ratio
The majority of colonies are either male or female, < 1% are hermaphroditic and these have both apparently functional ova and testes which may develop within the same polyp (Hartnoll, 1977). The soft coral genus *Alcyonium* is among the most reproductively diverse invertebrate taxa known. The genus includes species that vary both in mode of reproduction and sexual expression (Mc Fadden, 2000).
Sexual maturity
The development of the gametes takes 12 months, so the earliest onset of sexual maturity can only be in the second year, at which point the smallest of colonies have usually attained a wet weight of 1g. However in some colonies maturity is delayed until the third or subsequent year, by which time the colony may have attained a wet weight of 20 g (Hartnoll, 1975; 1977).
Gamete maturation
The annual reproductive cycle commences when the gametes begin to develop during December and January; the testes have a diameter of 0.05 mm and the ova 0.15 mm at this stage. The ova steadily increase in size and exceed 0.5 mm in diameter by July / August, and reach a final diameter of 0.6 mm in October which is retained until spawning in December. The mature ova are bright

orange in colour owing to their heavy yolk content. Growth of the testes is less regular. The onset of growth occurs in May when they rapidly increase in size and are opaque white in appearance. A second period of slow growth occurs from August to December (Hartnoll, 1975). In both sexes the gonads develop on the edges of the mesenteries (partitions that divide the coelenteron), and lie within the gastric cavity, attached to the mesentery, until spawning occurs. The maturing gonads occlude the gastric cavity of the polyps and it is postulated that the quiescent period in the annual cycle of activity of *Alcyonium digitatum* is caused by the inability to feed, however the same seasonal cessation of activity occurs in a proportion of sexually immature colonies. White colonies of *Alcyonium digitatum* were reported to spawn slightly earlier than orange colonies and this may favour a degree of sexual isolation between the two colour morphs (Hartnoll, 1975).

Spawning

Alcyonium digitatum spawns during December and January. Gametes are released into the water and fertilization occurs externally. The embryos are neutrally buoyant and float freely for 7 days. The embryos give rise to actively swimming lecithotrophic planulae which may have an extended pelagic life (See below) before they eventually settle (usually within one or two further days) and metamorphose to polyps (Matthews, 1917; Hartnoll, 1975).

Survival in the pelagic zone

In laboratory experiments, several larvae of *Alcyonium digitatum* failed to settle within 10 days, presumably finding the conditions unsuitable, these larvae proved to be able to survive 35 weeks as non-feeding planulae. After 14 weeks some were still swimming and after 24 weeks the surface ciliation was still active although they rested on the bottom of the tanks, by the end of the experiment at 35 weeks the larvae had shrunk to a diameter of 0.3 mm. This ability to survive for long periods in the plankton may favour the dispersal and eventual discovery of a site suitable for settlement (Hartnoll, 1975).

Advantages of mid-winter spawning

The combination of spawning in winter and the long pelagic lifespan may allow a considerable length of time for the planulae to disperse, settle and metamorphose ahead of the spring plankton bloom. Young *Alcyonium digitatum* will consequently be able to take advantage of an abundant food resource in spring and be well developed before the appearance of other forms that may otherwise compete for the same substrata. In addition because the planulae do not feed whilst in the pelagic zone they do not suffer by being released at the time of minimum plankton density and they may also benefit by the scarcity of predatory zooplankton which would otherwise feed upon them (Hartnoll, 1975).

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	Moderate	Moderate

Alcyonium digitatum is permanently attached to rocky substratum. Removal of the substratum would also remove this species within the area under consideration and mortality is judged to be high.
Recoverability, see additional information below.

Smothering	Intermediate	High	Low	Low

Alcyonium digitatum is permanently attached to the surface of rocky substrata. Thus it would be unable to avoid the deposition of a smothering layer of material up to a depth of 5 cm. Some colonies can attain a height of up to 20 cm so would still be able to expand tentacles and columns of the polyps to filter feed, and materials may be sloughed off with a large amount of mucous (see siltation). Smaller / younger colonies that initially form encrustation's between 5 and 10 mm thick are likely to be killed by smothering as respiration is likely to be hindered and an intolerance of intermediate is recorded.
Recoverability, see additional information below.

Increase in suspended sediment	Low	Very high	Very Low	Moderate

Alcyonium digitatum has been shown to be tolerant of high levels of suspended sediment. Hill *et al.* (1997) demonstrated that *Alcyonium digitatum* sloughed off settled particles with a large amount of mucous (see adult biology, additional information). Siltation is normally only a problem in sheltered areas, and the slope of the rock is also important as little silt will settle on vertical surfaces and overhangs (Hiscock & Hoare, 1973) where *Alcyonium digitatum* is found.

Decrease in suspended sediment

Dessication	Not relevant	Not relevant	Not relevant	Moderate

The population of *Alcyonium digitatum* is predominantly subtidal so the factor is judged not relevant. However, a few specimens of *Alcyonium digitatum* may be found on the lower shore, attached to rocks where the otherwise dominant algae are inhibited by a lack of light, such as under overhangs and in crevices. Although their location may offer some protection form sunlight and a drying wind, these specimens are likely to be highly intolerant of desiccation as *Alcyonium digitatum* has a large surface area to volume ratio and turgid body form.

Increase in emergence regime	Not relevant	Not relevant	Not relevant	Moderate

Alcyonium digitatum is predominantly a subtidal species so the factor is judged not relevant. A change in emergence regime will only effect a small proportion of specimens found on the lower shore where it favours locations under overhangs and in crevices where otherwise dominant algae are inhibited by a lack of light. Thus to some extent its position on the substrata may protect this species from the desiccating factors of air and direct sunlight. *Alcyonium digitatum* has a large surface area to volume ratio, and a turgid body form which

would make it prone to mortality caused by desiccation following a change in emergence and a longer exposure to air and direct sunlight.

Decrease in emergence regime

Increase in water flow rate	Tolerant*	Not relevant	Not sensitive*	Moderate

Alcyonium digitatum is a suspension feeder relying on water currents to supply food. It therefore thrives in conditions of vigorous water flow e.g. around Orkney and St Abbs (Scotland), where it may experience tidal currents of 3 and 4 knots during spring tides (Kluijver, 1993).

Decrease in water flow rate	Intermediate	High	Low	Moderate

A decreased water flow rate may impact upon *Alcyonium digitatum* in that feeding efficiency could decrease as less material (phytoplankton & zooplankton) would be brought into contact with the colonies. Also a lower energy environment favours siltation and although *Alcyonium digitatum* has been found to tolerate a high level of suspended sediment, the energetic cost of producing enough mucous to slough off deposited material may reduce the species viability and an intermediate intolerance is recorded. Recoverability, see additional information below.

Increase in temperature	Low	High	Low	Moderate

The geographic range of *Alcyonium digitatum* from Iceland in the North, to Portugal in the South illustrates that the species is tolerant of a range of temperatures and it is unlikely that this species will be adversely affected by a long term temperature change in British waters.

Decrease in temperature	Low	High	Low	Moderate

The geographic range of *Alcyonium digitatum* from Iceland in the North, to Portugal in the South illustrates that the species is tolerant of a range of temperatures and it is unlikely that this species will be adversely affected by a long term temperature change in British waters. *Alcyonium digitatum* was also reported to be apparently unaffected by the severe winter of 1962-1963 (Crisp, 1964).

Increase in turbidity	Low	Very high	Very Low	Moderate

Alcyonium digitatum filter feeds on both phytoplankton and zooplankton. Increased turbidity that reduces the amount of light available for primary production by phytoplankton for a period of one month may impact upon the food resource available to *Alcyonium digitatum*. The effect of a change in turbidity and hence food resources is likely to be greater between February and July (when the colony is active) rather than between August and December when the colony is inactive. An intolerance of low is recorded as the species would only be suffering from a short term sub-lethal effect. However, *Alcyonium digitatum* may benefit indirectly from increased turbidity as decreased light penetration may cause the decline of algal species making new substrata available for larval settlement. Recoverability, see additional information below.

Decrease in turbidity

Increase in wave exposure	Tolerant	Not relevant	Not sensitive	Moderate

Alcyonium digitatum is tolerant of very strong wave action and is unlikely to be adversely affected by increased wave exposure.

Decrease in wave exposure	Intermediate	High	Low	Moderate

In the absence of moderate or strong tidal streams, a decrease in wave action is likely to have an adverse effect on *Alcyonium digitatum* as food supplies will be reduced and siltation may

occur (see siltation and water flow). Recoverability, see additional information below.

Noise	Tolerant	Not relevant	Not sensitive	Not relevant

Alcyonium digitatum does not have the ability to perceive noise.

Visual Presence	Tolerant	Not relevant	Not sensitive	Not relevant

Alcyonium digitatum does not have the ability to detect the visual presence of objects.

Abrasion & physical disturbance	Intermediate	High	Low	Moderate

Alcyonium digitatum is prone to damage and abrasion by fishing gears e.g. rock hopper otter trawls and Newhaven scallop dredges that are designed to penetrate the sea bed (Hartnoll, 1998). In addition, the anchoring of boats for purposes of recreational diving may cause cumulative damage in heavily visited sites. Magorrian & Service (1998) reported that trawling for queen scallops resulted in removal of emergent epifauna and damage to horse mussel beds in in Strangford Lough. They suggested that the emergent epifauna such as *Alcyonium digitatum* were more intolerant than the horse mussels themselves and reflected early signs of damage (Service & Magorrian, 1997; Magorrian & Service, 1998; Service 1998). Veale *et al.*, 2000 reported that the abundance, biomass and production of epifaunal assemblages, including *Alcyonium digitatum*, decreased with increasing fishing effort. An intolerance rank of intermediate is recorded as it is likely that the proportion of the population on vertical slopes and under overhangs will be unaffected by mechanical abrasion. The population inhabiting horizontal surfaces at greater depths are at risk from abrasion. However, the fact that *Alcyonium digitatum* is more abundant on high fishing effort grounds suggests that this seemingly fragile species is more resistant to abrasive disturbance than might be assumed (Bradshaw *et al.*, 2000), presumably owing to the ability for the replacement of senescent cells and regeneration of damaged tissue in addition to the early larval colonization of available substrata. Recoverability, see additional information below.

Displacement	High	High	Moderate	Low

Alcyonium digitatum is likely to be highly intolerant of displacement. The species is permanently attached to the substratum and once displaced does not have the ability to re-establish its attachment. Recoverability, see additional information below.

Chemical Pressures

	Intolerance	Recoverability	Sensitivity	Confidence
Synthetic compound contamination	Intermediate	High	Low	Moderate

Smith (1968) reported dead colonies of *Alcyonium digitatum* at a depth of 16 m in the locality of Sennen Cove (Pedu-men-du, Cornwall) resulting from the offshore spread and toxic effect of detergents (a mixture of a surfactant and an organic solvent) e.g. BP 1002 sprayed along the shoreline to disperse oil from the *Torrey Canyon* tanker spill. Possible sub-lethal effects of exposure to synthetic chemicals, may result in a change in morphology, growth rate or disruption of reproductive cycle. The vulnerability of this species to concentrations of pollutants may also depend on variations in other factors e.g. temperature and salinity conditions outside the normal range. However, no additional information concerning the direct biological effects of synthetic compound contamination on *Alcyonium digitatum* has been found to comment further.

Heavy metal contamination	Not relevant

Possible sub-lethal effects of exposure to heavy metals, may result in a change in morphology, growth rate or disruption of reproductive cycle. The vulnerability of this species to

concentrations of pollutants may also depend on variations in other factors e.g. temperature and salinity conditions outside the normal range. However, no information on the direct biological effects of heavy metal contamination on *Alcyonium digitatum* has been found to comment further.

Hydrocarbon contamination Low High Low Very low

The vast proportion of the population of *Alcyonium digitatum* is permanently subtidal and because oil pollution is mainly a surface phenomenon its impact upon circalittoral turf communities is likely to be limited (Hartnoll, 1998). In addition *Alcyonium digitatum* is able to retract its colonies and slough off material from its surface so may be able to tolerate a light oiling. However, Smith (1968) reported dead colonies of *Alcyonium digitatum* at a depth of 16m in the locality of Sennen Cove (Pedu-men-du, Cornwall) resulting from the offshore spread and toxic effect of detergents sprayed along the shoreline to disperse oil from the *Torrey Cannon* tanker spill (see synthetic chemicals).

Radionuclide contamination Not relevant

There is insufficient information available to comment on the biological effects of radionuclide contamination on *Alcyonium digitatum*.

Changes in nutrient levels Low High Low Very low

Alcyonium digitatum is a passive suspension feeder on phytoplankton and zooplankton. Nutrient enrichment of coastal waters (eutrophication) that enhances the population of phytoplankton may be beneficial to *Alcyonium digitatum* in terms of an increased food supply but the effects are uncertain (Hartnoll, 1998). However, the survival of *Alcyonium digitatum* may be influenced indirectly. High primary productivity in the water column combined with high summer temperature and the development of thermal stratification (which prevents mixing of the water column) can lead to hypoxia of the bottom waters and *Alcyonium digitatum* is likely to be highly intolerant of periods of hypoxia (see oxygenation).

Increase in salinity Intermediate High Low Very low

Alcyonium digitatum does inhabit situations such as the entrances to sea lochs where low salinity may occasionally occur. However, its distribution and the depth at which it occurs suggest that *Alcyonium digitatum* is unlikely to survive significant dilution.

Decrease in salinity

Changes in oxygenation High High Moderate Very low

Alcyonium digitatum mainly inhabits environments in which the oxygen concentration usually exceeds 5 ml l^{-1} and respiration is aerobic. Assimilation of oxygen occurs simply by diffusion through the epidermis of exposed tissues and transport to tissues is facilitated by hydroplasmic flow and ciliary activity (Hickson, 1901). It is likely that *Alcyonium digitatum* would be highly intolerant of a period of hypoxia so an intolerance assessment of high is recorded. Recoverability, see additional information below.

Biological Pressures

Intolerance Recoverability Sensitivity Confidence

Introduction of microbial pathogens/parasites Not relevant

Alcyonium digitatum acts as the host for the endoparasitic species *Enalcyonium forbesi*and *Enalcyonium rubicundum* (Stock, 1988). Parasitisation may reduce the viability of a colony but

not to the extent of killing them but no further evidence was found to substantiate this suggestion.

Introduction of non-native species Not relevant

Insufficient information.

Extraction of this species Not relevant | Not relevant | Not relevant | Not relevant

Alcyonium digitatum is not a commercially exploited species.

Extraction of other species Intermediate | High | Low | Moderate

Alcyonium digitatum is a sedentary species that might be expected to suffer from the effects of dredging. However it has been found present in great abundance on some high-effort scallop dredging grounds around the Isle of Man, Irish Sea (Bradshaw *et al.*, 2000) (see also adult abrasion and physical disturbance). Hill *et al.*, (1997) demonstrated that *Alcyonium digitatum* is tolerant of high levels of suspended sediment (that may be generated by dredging) as it sloughs off settled particles with a large amount of mucous. This mechanism may help *Alcyonium digitatum* survive in heavily disturbed areas and this seemingly fragile species is evidently more resistant to disturbance than might be assumed. An intolerance rank of intermediate is recorded as it is likely that the proportion of the population on vertical slopes and under overhangs will be unaffected by mechanical abrasion caused by equipment used to catch other species, whereas the population inhabiting horizontal surfaces at greater depths is at risk from abrasion. Recoverability, see additional information below.

Additional information

Recoverability

It is likely that *Alcyonium digitatum* has a high recovery potential. Its reproductive strategy is to 'broadcast' gametes into the water for fertilization indicates that fecundity is high. The combination of spawning in winter and that the larvae may have a long pelagic life allows a considerable length of time for the planulae to disperse (recruits from other populations can replace impacted populations), settle and metamorphose ahead of the spring plankton bloom. Young *Alcyonium digitatum* will consequently be able to take advantage of an abundant food resource in spring and be well developed before the appearance of other forms which may compete for the same substrata. In addition because the planulae do not feed whilst in the pelagic zone they do not suffer by being released at the time of minimum plankton density. They may also benefit by the scarcity of predatory zooplankton which would otherwise prey upon them (Hartnoll, 1975).

Importance review

Policy/legislation

- no data -

Status

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

Non-native

Native	-		
Origin	-	**Date Arrived**	-

Importance information

Biofouling

Alcyonium digitatum is often a predominant member of macrofouling assemblages on offshore structures (Sell, 1992). Along with other species in a biofouling assemblage its presence increases drag and accelerates corrosion (Pipe, 1981).

Food source

The nudibranch*Tritonia hombergii* feeds exclusively on *Alcyonium digitatum* (Allmon & Sebens, 1998; Picton & Morrow, 1994).

Provision of substratum

From late July through to December the colonies of *Alcyonium digitatum* remain contracted, during which time they do not feed and assume a shrunken appearance with an obvious reddish or brownish colour. As a result of this period of inactivity the surface of the colonies becomes covered with a layer of epibiota; diatoms and prostrate thalloid and filamentous algae initially, from which arises a forest of erect algae and hydroids. The amphipod *Jassa falcata* also builds its mucous and detritus tubes amongst the other epibiota, adding to and consolidating the covering (Hartnoll, 1975).

Role in organic cycles

Migné *et al.* (1996) conducted a biometric study on *Alcyonium digitatum* with the aim of relating both the carbon and the nitrogen content of this species to a simple and rapid measurement. It appeared useful to express the biomass of this species in terms of carbon or nitrogen and then to consider dynamic processes such as respiration or excretion as fluxes of carbon and nitrogen. Converting biomass into a more fundamental measurement of living matter such as carbon or nitrogen content should enable understanding and quantification of the species role in carbon and nitrogen cycles. For instance, the bottom of the Dover Strait (eastern English Channel) is dominated by suspension feeders (Davoult, 1990) that probably play a leading role in the exchange of organic matter at the bottom boundary layer (Migné *et al.*, 1996). Three species, including *Alcyonium digitatum* accounted for 97% of the total biomass of the suspension feeding community studied in the English Channel (Migné & Davoult, 1995 b).

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