

Opisthobranch Newsletter

November, 1999 -- 25(11):33

Steven J. Long, editor; 20220 21st Avenue N.W., Shoreline, WA 98177-2314; 206-546-5977; 206-546-5076 fax; <http://www.seaslug.com>
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EDITOR'S NOTES

I need your input – I have considered uploading natural history notes and articles (unedited) to the website (link on main page to the specific material). In that manner a large number of people could look at the material and comment before it was "published." The material would only be on the web for a short time and would not qualify as published by my definition. It would also be marked as "review material."

I am changing the ON to voluntary subscriptions – donations of money or reprints. I will only mail printed copies of the annual issue. Everything **except** the annual issue will be available on the web. Contributions will go to pay for printing, postage, and internet costs.

Additional data on the food-preferences of the nudibranch *Facelina bostoniensis* (Couthouy, 1838) (Aeolidoidea: Facelinidae).

by Jussi Evertsen and Torkild Bakken

Introduction

During preliminary work regarding the ecology of the pennatulacea-feeding nudibranch *Armina loveni* (Bergh, 1860) in February 1999, the soft-bottom associated nudibranch *Facelina bostoniensis* was observed feeding on the sea-pen *Virgularia mirabilis* (O.F. Müller, 1776).

Ecology of *Facelina bostoniensis*

Facelina bostoniensis is a soft-bottom associated species with an amphi-Atlantic distribution (Brown 1981; Thompson & Brown 1984). In Europe it has a boreal-Lusitanian distribution from the Mediterranean (Cattaneo-Vietti et al. 1990), the Iberian peninsula, the Atlantic coast of France and the British Isles (Thompson & Brown 1984; Thompson 1988). In the North Atlantic it is found along the coasts of Kattegat and Sweden (Meyer & Möbius 1865; Odhner 1907; Platts 1985), and there are records from the Faroes (Lemche 1929). In Norway the distribution is scattered along the whole coast (Friele & Hansen

1876; Odhner 1907, 1926, 1939; Løyning 1922; Dons 1942; Høisæter et al. 1997).

From British waters the diet of *F. bostoniensis* in sublittoral waters is described to consist of athecate hydroids like *Tubularia larynx* Ellis & Solander, 1786, *T. indivisa* L., 1758 and *Clava multicornis* (Forskål, 1775) (Thompson & Brown 1984, Thompson 1988, Picton & Morrow 1994), with reports of suspected predation upon thecate hydroids like *Obelia geniculata* (L., 1758), *Hydrallmania falcata* (L., 1758) and *Sertularia cupressina* (L., 1758). In laboratory conditions almost any hydroid species will be attacked (Thompson & Brown 1984, Thompson 1988), as well as other nudibranchs (Thompson 1988).

During investigations to rediscover the occurrence of *Armina loveni* from *Virgularia*-beds at a locality at Trondhjem Biological Station, several specimens of *F. bostoniensis* were observed feeding on this sea-pen (Fig. 1). Subsequent observations in the laboratory where sea-pens were kept in aquarium confirmed this association. Several *F. bostoniensis* were observed feeding directly on the polyps of the sea-pens. Individuals of sea-pens were also observed retreating into their burrows, probably in an attempt to escape the predation. The nudibranchs were kept with the sea-pens for a period of three weeks, where they almost obliterated the occurrence of the sea-pens in the aquarium.

Discussion

Nudibranch food-preferences are generally considered to be quite stenophagous, where most nudibranchiate groups are specialized predators with a narrow choice of prey organisms. Species within a group usually feed on similar types of prey, and sometimes nudibranchs species are restricted to only one species of prey. For example are the Tritoniid species *Tritonia hombergi* Cuvier, 1803 and *T. plebeia* Johnston, 1828 reported to solely feed upon the alcyonarian *Alcyonium digitatum* (L., 1758).

According to Nybakken & McDonald (1981) there are some traits related to functional relations between the shape of the radula and food-organisms. Aeolidian nudibranchs which feed upon hydroids have either uniseriate or triseriate radula. Nudibranchs with a uniseriate radula feed by puncturing the perisarc of the hydroid and ingesting the coenosarc, while nudibranchs with a triseriate radula feed directly upon the polyps. The picture is, however, complicated by species that switch their diet from juvenile to adult stages (Thompson & Brown 1984). Cattaneo-Vietti & Boero (1988) tried in their review to show the relationship between aeolid nudibranchs and cnidarian prey species. Their survey

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showed that aeolid food preferences are not strictly correlated to radular morphology. The Flabellinidae which have triseriate radulae, tend to feed upon athecate hydroids, but are also known to feed upon thecate hydroids. Morse (1969) showed a totally different feeding preference for flabellinids by showing that *Coryphella verrucosa* (M. Sars, 1829) also feeds upon ascidiaceans. A strategy of directly feeding upon the polyps would seem to be a more adaptive way of feeding, allowing to feed upon both kinds of hydroids.

For nudibranchs like the Facelinidae which have a uniseriate radula, Cattaneo-Vietti & Boero (1988) showed that this group has a varied and complex diet with a preference to athecate hydroids, but could not show any food preferences expanding these traits. Primary preferences were Tubulariidae and Eudendriidae (athecate) with secondary preferences to thecate hydroids belonging to Sertulariidae and Campanulariidae, as also suspected by Morse (1969). The observations of *Facelina bostoniensis* feeding upon the sea-pen *Virgularia mirabilis* confirms the complexity of food preferences, and as Morse (1969) and Cattaneo-Vietti & Boero (1988) also showed, radular morphology does not necessarily restrict a group of nudibranchs to a specific group of food organisms.

Conclusion

The observations of *Facelina bostoniensis* feeding on *Virgularia mirabilis* at Trondhjem Biological Station in February 1999, and subsequent observations in aquarium show that nudibranch species might not be as stenophagous as previously believed. *F. bostoniensis* at TBS might have altered a preference to the sea-pens coinciding with low availability of athecate hydroids like *Tubularia larynx*. The occurrence of *Virgularia mirabilis* at the locality where the nudibranchs were collected can be characterized as abundant throughout the whole season.

These observations coincide with the three criteria suggested by Swennen (1961) to accept an association between a nudibranch and suspected associated food organisms. 1) Association of the nudibranch with the food organism in situ, 2) laboratory or in situ observations of the nudibranch feeding on this organism, and 3) subsistence on the food organism alone for some time.

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Legend

Figure 1. *Facelina bostoniensis* Couthouy, 1838 feeding on *Virgularia mirabilis* (O. F. Müller, 1776) at Trondhjem Biological Station, in the Trondheimsfjord, Norway. Photo: Torkild Bakken. Department of Natural History, Norwegian University of Science and Technology, N-7491 Trondheim, Norway, E-mail: jussie@stud.ntnu.no, torkild.bakken@vm.ntnu.no, <http://www.ntnu.no/~vmzotbak/nudibranchia>

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PERSONAL NOTES

From Yukinobu Adachi: I live in Okinawa, Japan and have a site of underwater photography [with many opisthobranchs] at <http://www.cosmos.ne.jp/~breach> My email address is breach@cosmos.ne.jp.

PUBLICATION NOTE

Hawaiian Shell News History

from John Jacobs

The first HSN was published as Volume 1, number 1 in March, 1952. This was a type-written mimeographed newsletter without pictures, but still contained a lot of good information. The 1952 issues comprised 21 total pages in 8 issues. Because HSN began in March, the complete volume ended during February of the following year.

In January, 1960, a new look was given to the HSN. It became a more professional looking publication printed on coated paper, and finally included pictures. *Strombus taurus* was the first shell pictured in HSN. The new format remained until HSN's ending in 1996. The 1966 issues went to Vol XIV, No. 14 so that 1967 could begin with Vol. XV, No. 1.

It was a great publication and revered around the world. I think all HMS members looked forward each month to receiving the next issue of the Hawaiian Shell News, I sure did. I urge all to save the Internet HSN; you'll be glad you did. - John & Cheryl Jacobs, Seffner, FL, Sat, 27 Nov 1999 20:17:55 -0500 (CONCH-L), johncheryl@earthlink.net

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brevicauda, *Phidiana exigua*, *Phidiana inca*, *Phidiana lynceus*, *Phidiana patagonica*, *Phidiana pugnax*, *Phidiana seleneca*, *Phidiana selenkai*, *Phyllaplysia depressa*, *Phyllaplysia engeli*, *Phyllaplysia lafontii*, *Phyllidiopsis (Phyllidiopsis) papilligera*, *Phyllidiopsis papilligera*, *Platydoridopsis angustipes*, *Platydoridopsis rubra*, *Pleurobranchaea agassizii*, *Pleurobranchaea capensis*, *Pleurobranchaea hedgpethi hamva*, *Pleurobranchaea hedgpethi hedgpethi*, *Pleurobranchaea hedgpethi*, *Pleurobranchaea japonica*, *Pleurobranchaea maculata*, *Pleurobranchaea meckelii*, *Pleurobranchaea meckelii*, var. *occidentalis*, *Pleurobranchaea melanopus*, *Pleurobranchaea morosa*, *Pleurobranchaea novaezealandiae*, *Pleurobranchaea occidentalis*, *Pleurobranchaea tarda*, *Pleurobranchus (Pleurobranchus) aureolatus*, *Pleurobranchus (Susania) atlanticus*, *Pleurobranchus areolatus*, *Pleurobranchus crossei*, *Pleurobranchus occidentalis*, *Risbecia francoisi*, *Risbecia odhneri*, *Risbecia reticulata*, *Risbecia versicolor*, *Sebadoris crosslandi*, *Siraius ilo*, *Siraius kyolis* n.sp., *Spurilla neapolitana* var. *braziliana*, *Spurilla neapolitana*, *Spurilla sargassicola*, *Stylocheilus citrinus*, *Stylocheilus longicauda*, *Susania gardineri*, *Taringa aivica* n.sp., *Taringa armata*, *Taringa telopia disa* n.ssp., *Taringa telopia telopia*, *Taringa telopia*, *Thordisa clandestina*, *Thordisa diuda*, *Thordisa hilaris*, *Thordisa maculosa*, *Thordisa souriei*, *Titiscania limacina*, *Tridachia crispata*, *Tridachia diomedeae*, *Tritonia (Candiella) bayeri* n.sp., *Tritonia (Tritonidoxa) wellsii*, *Tritonia indecora*, *Tritonia palmeri*, *Tritonia reticulata*, *Tritonidoxa*, *Tritoniopsis elegans*, *Umbraculum bermudensis*, *Umbraculum plicatum*, *Umbraculum umbraculum*]

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[*Acanthodoris falklandica*, *Acanthodoris globbosa*, *Acanthodoris lutea*, *Acanthodoris metulifera*, *Acanthodoris pilosa purpurea*, *Acanthodoris pina* n.sp., *Acanthodoris rhodoceras*, *Aeolia (Phidiana?) iodinea*, *Aplysia (Aplysia) cedrosensis*, *Aplysia (Aplysia) dura*, *Aplysia (Aplysia) juliana*, *Aplysia (Aplysia) reticulopoda*, *Aplysia (Neaplysia) californica*, *Aplysia (Pruvotaplysia) parvula*, *Aplysia californica*, *Aplysia depilans*, *Aplysia dura*, *Aplysia nigra*, *Aplysia vaccaria*, *Audura*, *Austrodroris nivium*, *Awuka*, *Berthella plumula*, *Berthellina amarilla*, *Berthellina circularis*, *Berthellina edwardsi*, *Berthellina edwardsii*, *Berthellina engeli ilisma* n.ssp., *Berthellina engeli*, *Berthellina quadridens*, *Boreodoris*, *Bornella*, *Bouvieria*, *Bulla gouldiana*, *Cadlina bergii*, *Cadlina evelinae*, *Cadlina flavomaculata*, *Cadlina juvenca*, *Cadlina limbaughi*, *Cadlina marginata*, *Cadlina rumina*, *Cadlina scabruscula*, *Cadlina sparsa*, *Cadlinella*, *Carminodoris*, *Casella atromarginata pallida*, *Casella atromarginata*, *Casella cincta*, *Casella foxi*, *Casella rufomarginata*, *Casella sedna* n.sp., *Ceratosoma*, *Chelidonura*, *Chromodoris agassizii*, *Chromodoris amoena*, *Chromodoris banksi banksi*, *Chromodoris banksi sonora* n.ssp., *Chromodoris banksi*, *Chromodoris californiensis*, *Chromodoris dalli*, *Chromodoris macfarlandi*, *Chromodoris nona*, *Chromodoris norrisi*, *Chromodoris punctilucens*, *Chromodoris universitatis*, *Conualevia alba*, *Conualevia mizuna* n.sp., *Coryphella fisheri*, *Coryphella californica*, *Coryphella cooperi*, *Coryphella cynara* n.sp., *Coryphella dushia*, *Coryphella fusca*, *Coryphella iodinea*, *Coryphella lineata*, *Coryphella ornata*, *Coryphella pellucida*, *Coryphella piumca*, *Coryphella rufibranchialis*, *Coryphella trilineata*, *Coryphella trophina*, *Dendrodoris atropos*, *Dendrodoris krebsii*, *Dendronotus frondosus*, *Dendronotus gracilis*, *Dendronotus iris*, *Dendronotus nanus* n.sp., *Dendronotus robustus*, *Diailuia sangiegensis*, *Dictyodoris tessellata*, *Dirona albolineata*, *Dirona aurantia*, *Dirona picta*, *Discodoris heathi*, *Discodoris mavis* n.sp., *Discodoris pusae*, *Doridigitata maculata*, *Doridopsis atropos*, *Doridopsis krebsii* var. *pallida*, *Doriopsilla albopunctata*, *Doriopsilla areolata*, *Doriopsilla fulva*, *Doriopsilla janaina*, *Doriopsilla leia*, *Doriopsilla pharpa*, *Doriopsilla rowena* n.sp., *Doriopsis reticulata*, *Doris (Asteronotus) alabastrina*, *Doris echinata*, *Doris odonoghuei*, *Doris pickensi* n.sp., *Doris verrucosa*, *Doto amyra*, *Doto columbiana*, *Doto kya*, *Doto lancei* n.sp., *Duvaucella*,

Erythrodoris, *Felimare*, *Flabellina affinis*, *Flabellina iodinea*, *Flabellina ornata*, *Flabellina telja* n.sp., *Flabellinopsis iodinea*, *Galacera*, *Glossodoridiformia alba*, *Greilada*, *Guyonia*, *Haminoea coirala*, *Haminoea hillae*, *Haminoea strongi*, *Haminoea virescens rosacea*, *Haminoea virescens*, *Hermatea hillae* n.sp., *Hermatea ornata*, *Hermatea vancouverensis*, *Hermatea oliviae*, *Hermatea smithi*, *Hermatea*, *Hermessenda crassicornis*, *Hoffmannola hansii* n.sp., *Hoffmannola leslei*, *Hypselodoris californiensis*, *Hypselodoris eudenticulata*, *Hypselodoris sycilla*, *Inuda luarna* n.gen., n.sp., *Jorunna*, *Kentrodoris*, *Lamellaria diegoensis*, *Lamellaria digueti*, *Lamellaria orbiculata*, *Lamellaria perspicua mopsicolor*, *Lamellaria perspicua perspicua*, *Lamellaria rhombica*, *Lamellaria stearnsii*, *Lissodoris*, *Madrella*, *Marsenia*, *Mieseae*, *Navanax inermis*, *Nembrotha capensis*, *Nembrotha divae*, *Nembrotha eliora* n.sp., *Nembrotha gratiosa*, *Nembrotha lineolata*, *Nembrotha morosa*, *Nembrotha nigerrima*, *Nembrotha sagamiana*, *Neodoris*, *Onchidella binneyi*, *Onchidella borealis*, *Onchidella carpenteri*, *Onchidella celtica*, *Onchidella evelinae*, *Onchidella hildae*, *Onchidella indolens*, *Onchidella marginata*, *Onchidium carpenteri*, *Otinodoris*, *Phialodoris*, *Phyllobranchopsis enteromorphae*, *Phyllobranchopsis enteromorphae*, *Placida*, *Pleurobranchus (Pleurobranchus) areolatus*, *Pleurobranchus areolatus*, *Pleurobranchus atlanticus*, *Pleurobranchus digueti*, *Pleurobranchus membranaceus*, *Pleurobranchus patagonicus*, *Pleurobranchus plumula*, *Pleurobranchus tuberculatus*, *Polycera alabe*, *Polycera aurisula*, *Polycera chilluna*, *Polycera gnupa* n.sp., *Polycera hedgpethi*, *Polycera herthae*, *Polycera hummi*, *Polycera marplatensis*, *Polycera odhneri*, *Polycera priva*, *Polycera zosteriae*, *Risbecia*, *Rosodoris*, *Sebadoris*, *Siraius*, *Spongiodoris*, *Spurilla chromosoma*, *Stiliger fuscovittatus*, *Stylocheilus longicauda*, *Tambja sagamiana*, *Taringa aivica aivica*, *Taringa aivica timia* n.ssp., *Tayuva ketos* n.gen. n.sp., *Thorunna*, *Titiscania limacina*, *Tochuina (tetraquetra)*, *Tridachia diomedeae*, *Tritonia (Candiella) bayeri*, *Tritonia (Candiella) pickensi* n.ssp., *Tritonia festiva*, *Tritonia hombergi*, *Tritonia palmeri*, *Tritonia pickensi*, *Tritonidoxa*, *Watsoniella*]

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