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CIRRIPEDIA OF THE HIGH ADRIATIC TRAWLING GROUNDS

WITH ONE MAP

by
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S P L I T

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CIRRIPEDIA OF THE HIGH ADRIATIC TRAWLING GROUNDS

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With one map

Only one barnacle, viz., *Scalpellum scalpellum* (Linné 1767), has its home on the trawling grounds, especially in the median parts of the Adriatic, where it has been caught in great numbers by the »Hvar«-Expedition. The extensive collections give us a fairly exhaustive idea of the geographical habitat and its conditions in the Adriatic and are more thoroughly discussed below.

However, on one occasion when investigating near the Albanian coast the trawl at St. 149 (14. VI. 1948, 41° 29.5' N., and 18° 49' E., 422 m depth) also brought up a large piece of an alga, *Cystosira* sp., inhabited by several small *Lepas pectinata* Spengler 1793. Although this species in the literature is characterized as common in the Mediterranean, its occurrence in the Adriatic does not seem to have been especially stated before.

It is also not defensible to characterize the species as »Adriatic« after the present find. The *Cystosira* cannot originate from the bottom of the locality investigated (422 m), but must have been caught by the trawl drifting in intermediate or surface layers, and we must moreover keep in mind that *Lepas pectinata* generally settles on drifting objects. — It is also interesting to note the small size of the specimens: the largest individuals have a capitulum height of only ab. 5 mm, and several specimens with only some 4 mm capitulum height, have already numerous ova in their mantle cavities.

Localities of *Scalpellum scalpellum*

A. Table of specimens examined by the author

Date	St.	Depth m	Numbers	Support
10. V. 48	92	61	ab. 50	Hydroid stems.
10. V. 48	97	128-132	48	Hydroid stems.
10. V. 48	104	128	9	Hydroid stems.
16. V. 48	120	443	1	Hydroid stems.
17. V. 48	123	132-144	4	Hydroid stems.
24. V. 48	132-131	204-125	1	?
4. VI. 48	166	179-108	1	Hydroid stem (with sponge)
17. VI. 48	141	88-97	15	Hydroid stems, axis of a gorgonarian
19. VI. 48	138	56-58	8	Hydroid stems.
23. VI. 48	96-91	144-137	8	Hydroid stems.
26. VII. 48	47	199-186	36	Axis of <i>Funiculina</i> .
30. VII. 48	48	188-164	7	Hydroid stems.
1. VIII. 48	85	161-153	3	Axis of <i>Funiculina</i> .
1. VIII. 48	74	157-150	1	?
22. VIII. 48	2	33	35	Axis of a gorgonarian.
26. VIII. 48	14	79-77	1	Hydroid stem (with sponge).
11. IX. 48	52	188-183	1	Hydroid stems.
14. IX. 48	89	156-92	1	Axis of an antipatharian (?)
20. IX. 48	80	109-107	ab. 50	Axis fragments of <i>Funiculina</i> .
21. IX. 48	87	144-138	1	?
23. IX. 48	92	126-121	28	Hydroid stems (9) and egg capsules of <i>Scyllium</i> (19).
24. IX. 48	105	154-135	16	Hydroid stems.
9. XI. 48	111	149-130	4	Hydroid stems.
20. XI. 48	126	116	2	Hydroid stem.

B. Additional data according to the journal from the expedition:

Date	St.	Depth m	Relative frequency	Support
10. III. 48	15	75		
14. IV. 48	62	154		
6. V. 48	108	110		<i>Lytocarpia myriophyllum</i> (with Actiniae and <i>Avicula</i>).
16. V. 48	119 a	148		<i>Lytocarpia myriophyllum</i> (with Actiniae and <i>Avicula</i>).
20. V. 48	127	190-135		<i>Alcyonium palmatum</i> .
23. V. 48	130	154-114		<i>Cydaris</i> .
27. V. 48	137	106-101	+	<i>Lytocarpia myriophyllum</i> (with Actiniae and <i>Avicula</i> and <i>Serpula</i>).
11. VI. 48	150	123-124	10	
17. VI. 48	140	101-93	+	<i>Lytocarpia myriophyllum</i> . (with Actiniae and <i>Avicula</i>).
15. VII. 48	107	138-150	rr	
24. VIII. 48	5	55-57		<i>Lytocarpia myriophyllum</i> .
29. VIII. 48	69	176-188		Dead <i>Lytocarpia myriophyllum</i> .
24. IX. 48	97	126-122	r	<i>Lytocarpia myriophyllum</i> .

It might at first sight seem surprising that *Scalpellum scalpellum* is so common on the trawling grounds although it settles on a hard support. However, this does not mean that it prefers hard bottom to settle on. Quite on the contrary, the specimens prefer supports which allow them to sit a little elevated above the bottom soil. Consequently we find them attached to stems of hydroids, axes of dead octocorals etc., (evidently the cirriped normally cannot settle on living coral tissues).¹⁾

Scalpellum scalpellum has evidently no special spawning season in the Adriatic, all sizes being found side by side all the year round, and always the greater specimens having large ova in their mantle cavities.

The support is rather varied (see the table). Specimens are found fixed on dead axes of sea pens (*Funiculina* seems to be preferred, probably because it remains upright after the death of the colony), of gorgonarians, exceptionally on dead axes of antipatharians. In one case no less than 19 specimens of all sizes were found on an empty egg capsule of *Scyllium*. But above all the species prefers the stems of large hydroid colonies; here the perisark of the stem seems to be nearly ideal as a place of fixation to the pupa, and probably the stinging cells of the supporting colony may also play a role for the cirriped during its juvenile period. — During its cruises the »Hvar«-Expedition found the species in 37 places, and in no less than 23 of them the cirriped was attached to stems of large hydroid colonies, the stems of *Lytocarpia myriophyllum* (Linné) which are fixed to the soil of the trawling grounds by its root-like filaments predominating.

During the cruises *Scalpellum scalpellum* has bathymetrically been located from 35 to 443 m depth. The deepest find is rather widely separated from the next one, where the depth only amounts to 199 m. — If we arrange the finding places in groups of 50 m bathymetrically, we see that *Scalpellum scalpellum* has only in one case been caught between 0 and 50 m depth, seven times between 50 and 100 m, in sixteen places between 100 and 150 m, and in eleven localities between 150 and 200 m. The single find in 443 m depth accordingly holds a remarkably isolated position. The above data indicate that the bulk of the Adriatic *Scalpellum scalpellum* lives between 100 and 200 m depths, although the species is by no means rare in depths between 50 and 100 m.

A glance at the map reveals that the species is more common and evenly distributed all over the comparatively level grounds from the deep SW of Šibenik to the steep slopes against the great deep south of Mljet. Of the 37 finding places no less than 27 belong to this area. This is in so far natural because the depth here generally is between 100 and 200 m. However, also the banks between Dubrovnik and Vlora to a great extent show depths from 100 to 200 m, but here *Scalpellum scalpellum* must be characterized as rather scarce.

In the temperate northern Atlantic area outside the Mediterranean *Scalpellum scalpellum* prefers rather shallow waters and may along the Scandinavian coast even thrive as shallow as in some 10 m depth. On the other hand, it also penetrates in comparatively great depths (500 m. or a little more) when the temperatures here are above zero.

¹⁾ The journal mentions specimens attached to *Alcyonium* in one case, an St. 127.

Otherwise the ecological demands of the species have been little studied in Atlantic and Mediterranean waters where the species has its home. In the Adriatic the salinities of the finding places vary between 36.60‰ (st. 14) and 38.77‰ (st. 130). In northern waters the salinities are generally much lower, and here the species even may thrive in salinities as low as some 32‰ (e. g., in 10 to 20 m depth along the Swedish west coast in the domain of the Baltic current). The species is also rather eurythermic. In the localities from the »Hvar«-Expedition the temperatures range from 18.1° to 11.4° C. In northern waters the species most commonly lives in temperatures above 6° C. But in one case it has even been found living in temperatures below zero (— 0.3° C., see Broch²⁾).

Looking on the map again, we must confess that the ecological factors regulating the occurrence of the species are at the moment rather enigmatic. Seemingly, the species ought to thrive almost anywhere in the Adriatic, if we only pay heed to depth, temperatures and salinities. Nevertheless *Scalpellum scalpellum* prefers the median part and is, elsewhere, so to say evidently, a casual guest.

It has been touched on above that the species evidently prefers large hydroid colonies (and especially *Lytocarpia myriophyllum*) as support. On the other hand, its habitat certainly does not cover that of *Lytocarpia*. My thanks are due to my friends Dr. Tonko Šoljan and Prof. Otmar Karlovac for the data included in table B.

SUMMARY

Only one species of Cirripedia has its home on the High Adriatic trawling grounds: that is *Scalpellum scalpellum* (L.), which is frequently caught in the median Adriatic.

Lepas pectinata was found at the Station No. 149. The bottom there is 422 m deep and the fragment of the Cystosira, inhabited by the specimens of *Lepas*, was no doubt drifting in intermediate or surface layers when caught by the trawl. This species does not appear in the literature as Adriatic and cannot definitely be called as such, as the fragment of the Cystosira can originate from somewhere else, and the *Lepas pectinata* usually settles on drifting objects. The biggest specimens had a capitulum of only 5 mm; numerous ova in mantle cavities were found already with specimens having a capitulum height of only 3 mm.

Scalpellum scalpellum settles mostly on supports such as stems of hydroids, axes of dead octo-corals, etc., viz. on hard supports a little above the bottom soil.

By arranging the finds bathymetrically, their depths range between 35 and 443 m, whilst only one find lay deeper than 199 m. According to the number of finds, they occurred: between 0 and 50 m depth — one locality; between 50 and 100 m — seven localities; between 100 and 150 m — fifteen localities; and between 150 and 200 m — twenty localities. These data indicate that this species prefers depths ranging between 100 and 200 m, although it not rarely appears between 50 and 100 m. According to the map the species is frequently met with on trawling grounds around Šibenik and Mljet, whilst it is obviously rather scarce between Dubrovnik and Vlora even as deep as 100—200 m.

The salinities of the finding places in the Adriatic vary between 36.60‰ and 38.77‰ and are higher than those found in the northern seas where the species thrives also at about 32‰.

The temperatures of the localities in the Adriatic range from 16.1° to 11.4° C; in the waters of the northern Atlantic the temperatures of the finding places are in most cases above 6° C, but a specimen has been caught in a locality with a negative temperature (— 0.3° C). The distribution of the species, seemingly, does not agree with the distribution of the hydroid *Lytocarpia myriophyllum*, although the latter is preferentially chosen as support.

²⁾ Cirripedia thoragica von Norwegen und dem norwegischen Nordmeere. — Videnskapsselskabets Skrifter. I. Mat.-Naturv. Kl. 1924. Kristiania.

CIRRIPEDIA NA TRAWL-ERSKIM LOVIŠTIMA OTVORENOG JADRANA

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KRATAK SADRŽAJ

Samo jedna vrsta ciripedia je domaća na lovištima otvorenog Jadrana podesnim za ribolov vučom, naime *Scalpellum scalpellum* (L.), koja se u velikom broju hvata u srednjem Jadranu.

Lepas pectinata nađena je na postaji br. 149. Dubina dna iznosi 422 m i odlomak *Cystosira*, na koju su se primjerci naselili, bez sumnje je u srednjim ili površinskim slojevima dospio u povlačnu mrežu vuče. Ova vrsta nije navedena u literaturi za Jadran pa se ne može pouzdano označiti kao jadranska, jer odlomak cistozire može da potječe od nekuda drugdje, a *Lepas pectinata* obično se naseljuje na plovne predmete. Najveći primjerci imali su visinu kapituluma od samih 5 mm; već kod 3 mm visine kapituluma imali su primjerci jaja u plaštanoj duplji.

Scalpellum scalpellum naseljuje se ponajviše na podloge kao što su kolonije hidroida, osovin-ski skeleti mrtvih oktokoralja i sl., t. j. na čvrstu podlogu iznad same površine dna. Batimetrijski su nalazi raspodjeljeni u dubini od 35 do 443 m, ali samo jedan nalaz leži dublje od 199 m. Po broju nalazi stoje ovako: između 0 i 50 m jedan lokalitet, između 50 i 100 m sedam, između 100 i 150 m petnajest, a između 150 i 200 m dvanajest lokaliteta. Prema ovome se vidi, da se vrsta poglavito javlja između 100 i 200 m dubine, iako se nerijetko susreće i između 50 i 100 m. Prema karti (Map) vrsta je česta na lovištima od Šibenika do Mljeta, dok je između Dubrovnika i Vlore čak i u dubinama između 100 i 200 m očito vrlo rijetka.

Slanost na jadranskim nalazištima kreće se, od 36,60‰ do 38,77‰ i viša je nego u sjevernim morima, gdje vrsta uspijeva i kod 32‰ otprilike. Jadranski lokaliteti pokazuju temperaturu od 16,10° do 11,4° C; u sjevernim atlantskim vodama temperatura nalazišta ponajviše nije ispod 6° C, ipak je vrsta jedamput bila uhvaćena i kod negativne temperature (— 0,3° C). Koliko se razabira, njezino se rasprostranjenje ne podudara s rasprostranjenjem hidroida *Lytocarpia myriophyllum*, premda ovu vrstu ponajviše bira kao podlogu.

Map 1

Scalpellum scalpellum

● = — Finding places according to specimens examined
by the author

◆ = — Additional finding places according to the journal
kept during the Expedition

--- = — Combined stations

• = — Negative stations



