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Portuguese Investigations in the ICNAF Area during 1956Additional Note to the Study of the Morphological Variation of Clavella adunca (H. Ström) = C. uncinata (O. F. Müller), Parasite Copepod of Gadus callarias L., Region of Labrador.

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I

In a preliminary note presented to the last meeting of ICNAF, 1956, Document No. 20, a summary was given of observations on the morphological variation of *Clavella adunca* (H. Ström) = *C. uncinata* (O. F. Müller), a parasite Lernaeopodid Copepod of *Gadus callarias* L.

The comparative study of more than 200 specimens collected on cod from Newfoundland and Greenland made it possible to separate three morphological types, constant for each of the normal regions of fixation of the parasite on the host: (a) buccal cavity and pharyngeal cavity; (b) anal region; (c) fins.

The biometric study of this material confirmed the separation of these three types and permitted us to establish in a more objective way the differences which characterize the types, especially the relative dimensions of the various parts of the body.

Later a comparison of the cephalic appendages furnished facts that confirmed the results obtained by the observation of the soft parts (Rev. Fac. Ciên. Lisboa, in print.).

In fact, even though the morphological structure of the appendages of the three types of individuals is identical, their dimensions differ considerably, being characteristic for each type and independent of age.

The morphological and biometric characteristics found led to the following conclusion "sur *Gadus callarias* L. on trouve trois types de *Clavella* qui se distinguent: morphologiquement, par des différences des proportions relatives des parties molles du corps, aussi bien que des appendices céphaliques; physiologiquement, par la zone de fixation sur l'hôte".

We therefore propose a trinomial nomenclature for each of these biological forms of *Clavella adunca* (H. Ström), namely:

- C. adunca* (H. Ström) f. *sciatherica* Leigh-Sharpe - buccal cavity and pharyngeal region.
C. adunca (H. Ström) f. *iadda* Leigh-Sharpe - fins.
C. adunca (H. Ström) f. *analís* nov. - anal region.

II

The study of the material collected in Labrador waters from *Gadus callarias* L. during the last Portuguese campaign of 1956 confirmed completely the previous conclusions.

As it was done for the specimens from Newfoundland and Greenland, we give a summary in the form of tables of the data relative to the various measurements carried out (Tables 1 and 2).

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Table 1. Labrador, 23 August, 1956.

Region of Fixation	No. of Spec.	Head		Cephalo-thorax Length	Trunk		Genital App. Length	Length. Ceph. to Trunk	Trunk Length/Breadth
		Length	Breadth		Length	Breadth			
Buccal Cavity (incl. pharynx and gills)	17	1.16	0.84	4.53	3.06	2.18	0.66	1.45	1.36
	4	1.14	0.77	4.76	2.85	2.13	0.69	1.65	1.38
	3	1.16	0.77	4.50	2.94	2.45	0.68	1.55	1.16
	3	1.18	0.79	5.40	3.15	2.60	0.75	1.68	1.23
	1	1.19	0.81	4.65	3.15	2.40	0.60	1.46	1.33
	1	1.16	0.77	4.35	3.00	2.55	0.60	1.46	1.15
	2	1.16	0.81	4.43	2.70	2.03	0.60	1.62	1.35
	6	1.16	0.81	4.50	3.02	2.30	0.65	1.50	1.30
	Mean	1.16	0.79	4.64	2.98	2.33	0.65	1.54	1.28
Anus	2	0.94	0.69	3.15	2.17	2.40	0.45	1.45	0.91
	2	0.92	0.67	3.45	2.25	2.48	0.45	1.52	0.92
	1	0.92	0.69	3.30	1.96	2.25	0.45	1.65	0.86
	1	0.96	0.70	4.05	2.10	2.40	0.53	2.05	0.87
		Mean	0.93	0.68	3.48	2.12	2.38	0.47	1.66
Fins	2	0.77	0.54	3.75	2.70	2.25	0.30	1.40	1.17
	2	0.81	0.58	3.30	2.93	2.03	0.43	1.13	1.45
		Mean	0.79	0.56	3.52	2.81	2.14	0.36	1.26

Table 2. Labrador, 24 August, 1956.

Region of Fixation	No. of Spec.	Head		Cephalo-thorax Length	Trunk		Genital App. Length	Length. Ceph. to Trunk	Trunk Length/Breadth
		Length	Breadth		Length	Breadth			
Buccal Cavity (incl. pharynx and gills)	10	1.16	0.82	4.52	2.88	2.31	0.64	1.55	1.26
	3	1.20	0.83	4.55	3.05	2.45	0.69	1.48	1.24
	5	1.17	0.78	4.92	2.94	2.52	0.63	1.68	1.16
	4	1.18	0.80	4.80	3.03	2.40	0.69	1.60	1.25
	2	1.17	0.79	3.98	2.70	2.25	0.64	1.48	1.17
	2	1.19	0.84	4.88	3.60	2.55	0.64	1.36	1.38
	4	1.16	0.84	3.90	2.78	2.21	0.69	1.39	1.27
		Mean	1.17	0.81	4.50	2.99	2.38	0.66	1.50
Anus	4	0.92	0.67	2.85	1.58	2.40	0.41	1.81	0.66
	2	0.91	0.64	2.60	1.89	2.10	0.42	1.52	0.90
		Mean	0.91	0.65	2.72	1.73	2.25	0.41	1.66
Fins	2	0.71	0.54	3.15	2.70	2.03	0.30	1.18	1.35
	4	0.74	0.60	3.18	2.70	2.18	0.30	1.18	1.22
		Mean	0.72	0.57	3.16	2.70	2.10	0.30	1.18

Although we do not for the Labrador area dispose of more than two samples (a total of 89 individuals) from fish of only two trawlers, the results are of interest. However, the fact that the parasites were found on cod living under identical conditions of environment, stresses the importance of the particular biotopes - zones of fixation on the host - corresponding to the three biological forms mentioned above.

In the last two columns of Tables 1 and 2 are given the figures showing the proportion of the length of the cephalothorax to the length of the trunk, and of the length of the trunk to the breadth of the trunk.

In Tables 3 and 4 are summarized for the three zones of collection, Newfoundland, Greenland and Labrador, the data obtained as well as the figures calculated.

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Table 3. Length in mm. of various parts of the body.

Region of Fixation	Buccal Cavity			Anus			Fins		
	Newfoundland	Greenland	Labrador	Newfoundland	Greenland	Labrador	Newfoundland	Greenland	Labrador
Head	1.15-0.78	1.15-0.80	1.16-0.80	0.96-0.69	-	0.92-0.66	0.77-0.52	0.78-0.55	0.75-0.56
Cephalo-thorax	4.27	4.78	4.57	3.53	-	3.01	3.28	3.76	3.34
Trunk	2.67-2.13	3.13-2.22	2.98-2.35	2.20-2.62	-	1.92-2.31	2.77-2.10	3.20-2.32	2.75-2.12
Genital Appendage	0.63	0.66	0.65	0.43	-	0.44	0.27	0.33	0.33

Table 4. Relation of length of cephalothorax to length of trunk, and of length of trunk to breadth of trunk.

Area	Length-Ceph. to Length Trunk			Trunk, Length to Breadth		
	Buccal Cavity	Anus	Fins	Buccal Cavity	Anus	Fins
Newfoundland	1.57	1.62	1.18	1.24	0.86	1.33
Greenland	1.53	-	1.40	1.36	-	1.40
Labrador	1.52	1.66	1.22	1.26	0.83	1.29

In the previous note we indicated an appreciable difference in the size between the *Clavella* coming from cod from Newfoundland and from Greenland. The individuals collected in Labrador have a tendency to occupy an intermediate position, especially as far as the dimensions of the cephalothorax and the trunk are concerned.

Bibliography

NUNES-RUIVO (L.), 1956 - Contribution to the study of *Clavella uncinata* (O.F.Müller), parasite on Cod (*Gadus callarias* L.) in Greenland and Newfoundland waters. ICNAF Ser.379, Doc.20.

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