

A contribution to the knowledge of
ichthyofauna of the Adriatic
Arnoglossus rueppelli (Cocco, 1844)
(Heterosomata, Bothidae)

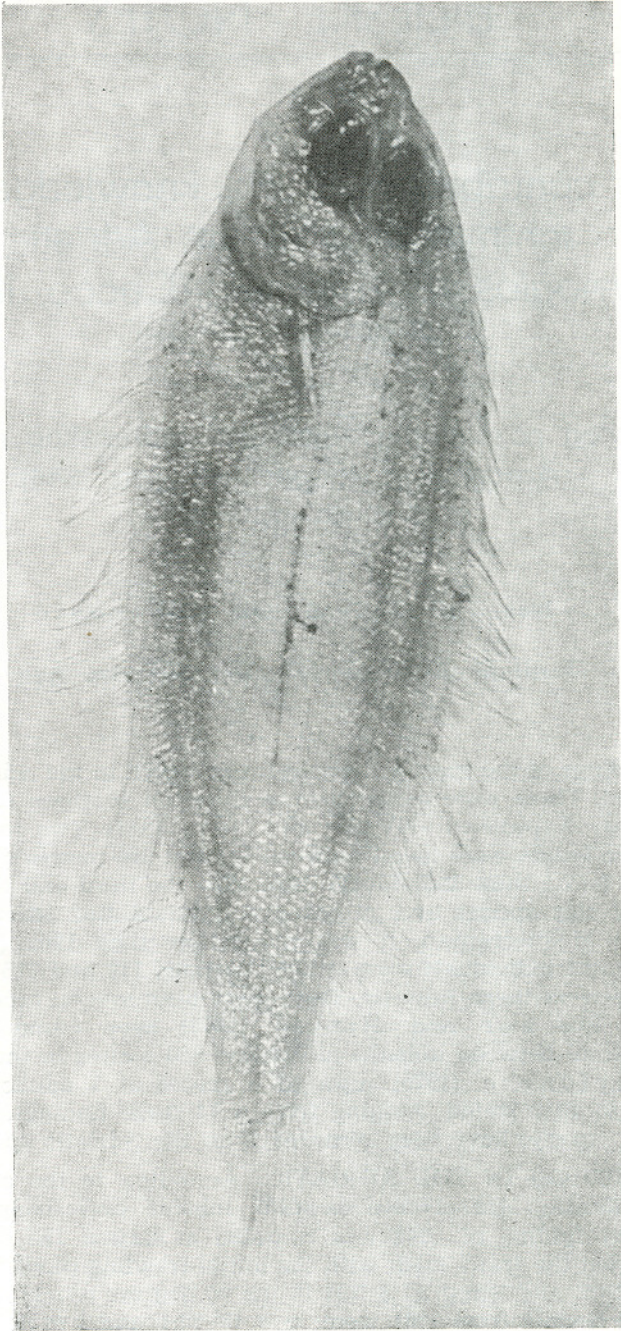
Prilog poznavanju ihtiofaune Jadranskog mora
Arnoglossus rueppelli (Cocco, 1844)
(Heterosomata, Bothidae)

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First findings of the species *Arnoglossus rueppelli* in the Adriatic date from 1948 (13 June). These were recorded from the open southern Adriatic during Fishery-Biology Expedition »HVAR« (Šoljan, 1948). Two individuals of 11 and 11.5 cm in length were found between 110 and 266 metres depths. According to Šoljan (o. c.) these individuals were only the third and the fourth adult individuals of this species ever recorded and established scientifically in the Atlantic and Mediterranean. It was not earlier than 1961 (31 July) when further 10 adult individuals were caught between 110 and 165 metres depths, also in the open southern Adriatic. There have been several other records since then. Thus, Merker and Ninčić (1973) have found a total of 32 adults at bottoms between isobaths of 200 and 300 metres in the open southern Adriatic. Tortonese (1975) reported a record of 7 adults caught in the Adriatic, no locality stated. Judging from a 11 these findings, only 51 individuals of this species have been recorded from the Adriatic up to now.

DISTRIBUTION IN THE ADRIATIC: According to the accurate records from the Adriatic, *Arnoglossus rueppelli* inhabit exclusively the southern Adriatic. First finding of 1948 was recorded at station 155 of the »HVAR« Expedition from the trawl catch with the initial trawling coordinates $\varphi = 41^{\circ}07'$ and $\lambda = 18^{\circ}50.5'$ and length of 3 NM in the 90 degrees course. The coordinates of the second finding from 1961 were: $\varphi = 41^{\circ}53.4'$ and $\lambda = 18^{\circ}42.4'$ — initial



Arnoglossus rueppelli (Cocco, 1844), magnified

trawling position and $\varphi = 41^{\circ} 54.5'$ and $\lambda = 18^{\circ} 45.2'$ — final trawling position (135 degrees course). Findings reported by Merker and Ninčić (1973) refer probably to the stations 23, 29, 30 and 37 in the area Bar—Bojana River Estuary (no more detailed data on these findings have been available). All these findings were recorded from the margins of the South Adriatic Pit.

Depths from which these findings were recorded ranged from 110 to 300 metres. Bottom was rather rough mud (ooze).

Specimens of *Arnoglossus rueppelli* caught in 1961 have been worked out in more detail. Morphometric and meristic characters and the results of the analyses of stomach contents are given. Material comprised 10 adults of 79 to 119 mm in length; of them 7 males and 3 females.

MORPHOMETRY: 19 morphometric and meristic body characters were taken from each individual. Results of individual and group analyses are given in Tables 1, 2, 3 and in the Appendix.

Table 1. Morphometric characters of *Arnoglossus rueppelli* in percentage of standard length (Ls) (n = 10)

Morphometric characters	Range		\bar{X}	s	s-x	V
	Min.	Max.				
Head length	23.20	24.97	24.13	0.618	0.195	2.56
Preanal length	24.64	27.60	25.99	1.032	0.326	3.97
Tail length	94.44	99.78	96.83	2.124	0.672	2.19
Greatest depth	30.16	33.40	31.99	1.055	0.334	3.30
Peduncle depth	8.14	9.33	8.56	0.337	0.107	3.94
Dorsal fin base length	93.91	96.81	95.06	0.991	0.313	1.04
Anal fin base length	69.44	77.00	73.52	2.166	0.685	2.95
Pectoral fin length	10.21	12.51	11.59	0.708	0.224	6.11

Table 2. Morphometric characters of *Arnoglossus rueppelli* in percentage of head length (n = 10)

Morphometric characters	Range		\bar{X}	s	s-x	V
	Min.	Max.				
Snout length	21.15	23.81	22.61	0.780	0.247	3.45
Postorbital length	40.26	44.64	42.74	1.288	0.407	3.01
Eye diameter	30.77	34.82	33.05	1.554	0.491	4.70
Mandibular length	49.54	52.68	51.57	0.989	0.313	1.92
Maxillary sheath length	35.58	39.52	37.37	1.308	0.414	3.50

Table 3. Meristic characters of *Arnoglossus rueppelli* from the Adriatic Sea (n = 10) and other parts of the Mediterranean

Meristic characters	Data of authors	Norman (1934)	Dieuzeide, et al. (1954)	Bini (1968)	Tortonese (1975)
D	(106) 111—116	110—116 (118)	110—118	111—113	111—113
A	86—95	86—94	86—94	86—91	86—91
P					
(eye side)	11—14	13	13	11—13	—
V					
(eye side)	(5) 6	—	6	6	—

Variability in body characters was, in general, less marked. Variability coefficient (V) ranged from 1 to 6 percent, mainly between 3 and 4 percent.

According to the meristic characters taken the formula for fins is:

D. (106) 111—116, A. 86—95, P. sin. 11—14, V. sin. (5) 6

These values are in a almost complete agreement with the relevant values obtained for the other parts of the Mediterranean (Table 3). Relative ratios of body dimensions are also in broad agreement with the relevant ratios given by Norman (1934).

NUTRITION: Stomachs of the analyzed specimens contained 2 euphausiids, some mysids, smaller individuals of decapod crustaceans and one adolescent individual of flatfish (Heterosomata). Stomachs were mainly full up and stomach contents mainly digested.

According to the data on distribution *Arnoglossus rueppelli* is the Atlantic-Mediterranean species. In addition to its being reported from the Mediterranean (without the Black Sea) it has been reported for the areas out of Gibraltar (Norman, 1934; Nielsen, 1973) along the eastern African coast (Morocco) (Bini, 1968) and in the vicinity of Azores (Tortonese, 1975). According to the same authors they inhabit the depths somewhat smaller then 200 metres down to depths of 500 metres. This has been supported by our data as well.

REFERENCES

- Bini, G., 1968. Atlante dei pesci delle coste italiane. VIII. — Osteitti. Ed. Mondo Sommerso, Roma. 164 p.
- Dieuzeide, R. *et al.*, 1954. Catalogue des poissons des côtes algériennes. Bull. Trav. St. Aq. Pêche Castiglione, n. s. 6: 1—384.
- Merker, K. i T. Ninčić, 1973. Sastav i gustina bentoskih ihtio-naselja u južnom Jadranu. Studia Marina, Kotor, 6: 75—117.
- Nielsen, J., 1973. *Bothidae*. In: *Clofnam*, I: p. 620—622. Ed. J. C. Huerau & Th. Monod, Unesco, Paris.
- Norman, J. R., 1934. A systematic monograph of the flatfishes (Heterosomata). I. — Psetoidea, Bothidae, Pleuronectidae. Ed. Brit. Mus., London. 459 p.
- Šoljan, T., 1948. Ribe Jadrana. Fauna i flora Jadrana, I. Inst. oceanogr. rib., Split. 437 p.
- Tortonese, E., 1975. Osteichthyes (Pesci Ossei). II. Fauna d'Italia, XI. Ed. Calderini, Bologna. 636 p.

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PRILOG POZNAVANJU IHTIOFAUNE JADRANSKOG MORA
ARNOGLOSSUS RUEPELLI (COCCO, 1844)
(Heterosomata, Bothidae)

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KRATAK SADRŽAJ

U radu se iznose morfometrijske i merističke karakteristike te sastav hrane vrste *Arnoglossus rueppelli* na temelju 10 analiziranih primjeraka (7 mužjaka i 3 ženke) ulovljenih 1961. na području južnog otvorenog Jadrana. Ova je vrsta prvi puta zabilježena u Jadranu 1948. i do sada je ulovljen svega 51 odrasli primjerak.

A P P E N D I X

Values of morphometric and meristic characters of analysed specimens of
Arnoglossus rueppelli

Specimen:	1	2	3	4	5	6	7	8	9	10
Sex:	♂	♂	♂	♂	♂	♀	♂	♀	♀	♂
1. Morphometric characters*:										
Total length (Lt)	119	117	114	112	108	106	105	103	81	79
Pectoral fin length	12.0	11.1	10.1	11.4	11.0	10.3	10.0	10.2	7.8	8.0
Standard length (Ls)	99.0	97.4	94.0	91.1	90.0	90.5	87.0	86.5	67.4	66.3
Head length	24.2	22.6	22.9	22.4	22.2	21.0	21.0	21.6	16.3	15.6
Preanal length	25.4	24.0	23.9	22.6	24.2	22.8	23.0	23.9	18.4	17.2
Tail length	93.5	95.7	92.6	90.9	85.6	84.9	86.7	82.5	65.0	63.5
Greatest depth	31.0	32.0	31.4	30.0	29.2	29.2	27.2	26.6	21.9	20.0
Peduncle depth	8.3	8.4	8.1	7.7	8.4	7.6	7.6	7.2	5.8	5.4
Snouth length	5.4	5.0	5.2	4.9	5.2	5.0	4.8	5.0	3.7	3.3
Postorbital length	10.0	9.1	9.9	10.0	9.6	9.2	9.0	9.1	7.1	6.6
Eye diameter	8.3	7.5	7.5	7.8	7.4	7.3	7.2	6.7	5.1	4.8
Mandibular length	12.5	11.6	11.8	11.8	11.5	10.9	11.0	10.7	8.2	8.2
Maxillary sheath length	9.1	8.5	8.8	8.1	8.1	7.7	8.3	7.9	5.8	6.1
Dorsal fin base length	94.0	94.0	83.3	88.2	86.0	85.7	81.7	81.5	64.0	63.0
Anal fin base length	73.0	75.0	69.8	68.0	66.0	67.0	65.7	62.2	46.8	47.3
Pectoral fin length	12.0	11.1	10.1	11.4	11.0	10.3	10.0	10.2	7.8	8.0
2. Meristic characters:										
D	113	106	111	115	111	112	111	111	116	113
A	88	84	90	95	94	85	90	86	88	90
P (eye side)	11	14	11	14	14	13	12	13	14	12
V (eye side)	6	6	6	6	6	6	6	5	6	6

* Values of morphometric characters in mm