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A contribution to the knowledge of the Adriatic ichthyofauna - *Ranzania laevis* (Pennant, 1776) (Plectognathi, Molidae)

Prilog poznavanju ihtiofaune Jadranskog mora *Ranzania laevis* (Pennant. 1776) (Plectognathi, Molidae)

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The Molidae family is represented in the Mediterranean by two monotype genera: *Ranzania* and *Mola* and by two species: *R. laevis* (Pennant, 1776) and *M. mola* (L., 1759). Both species have been recorded from the Adriatic, as well, *R. laevis* being more rare (Morović, 1974).

R. laevis is an epipelagic and cosmopolitan species of temperate and tropic seas (Tortonese, 1975, 1979). It is rather rare in the Mediterranean and Adriatic. It has never been recorded from the Black Sea (Svetovidov, 1964). It attains up to 90 cm length. However, smaller individuals are generally caught. Data on biology and ecology of this species are scarce.

This species habitus has been described by a number of authors, and very good drawings of the individuals caught in the Adriatic were given for the first time by Perugia (1881, after Ninni, 1912; Tortonese, 1975) and Katurić (1982). The former specimen was taken from the City Museum in Trieste, and the latter was caught in the vicinity of Zadar. This species body is extended and pressed on the side, ending abruptly by an extended and narrow »clavus« (Fig. 1). Mouth aperture is vertical laid in head which cannot be clearly distinguished from the rest of body (mouth aperture is horizontal in *M. mola*). Eyes are big and round. Small and oval gill opening is in front of the pectoral fin basis. Pectoral fins are the only even fins, and of odd ones, apart from »clavus«, there are a strong dorsal and anal fins. The body is dark on the top and on the side and bottom is silvery white, irregular hued on the head and belly. Fins are black and »clavus« yellowish.

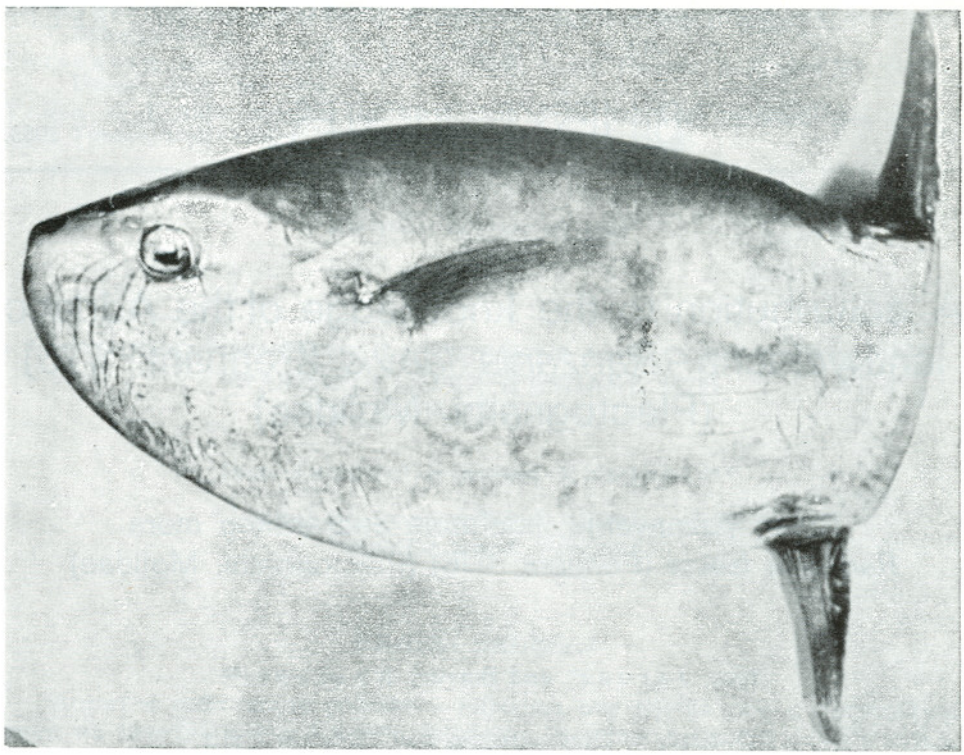

Fig. 1. *Ranzania truncata* (Pennant, 1776) — habitus

Synonymy for this species from the Mediterranean and Atlantic is very rich: apart from the presently valid name *R. laevis,* the following synonyms were also used (Tortonese, 1979): *Ostracion laevis* Penn., *Tetradon truncatus* Retz., *Orthagoriscus oblongus* Schn., *Ranzania truncata* Jord., *Orthagoriscus truncatus* Day. The following synonyms were used in the Adriatic in addition to some of the above mentioned ones: *Mola Planci* Nardo, *Orthagoriscus planci* Can. and *Ranzania laevis laevis* (Penn.). In our country this species is called, after Šoljan (1948): bucanj (butac, bucat, mijeh, samoglav, lopar) mali /small/ (or oštrokrilac); bačva morska (čutura morska; mjesečarka; čubura) mala /small/ (or oštrokrilka).

* * *

R. laevis records from the Adriatic are generally rare and occasional. One or few individuals were recorded in some years. However, there are years with no records at all. Records of more than one individual at the same place and time are very rare. In 1980, however, two individuals were found together in the vicinity of Vela Luka (I. Cetinić, 1980). This fish is recorded all over the Adriatic.

Both earlier and more recent ichthyological literature reports many findings of this species in the Adriatic. Thus Kolombatović (1881, 1882)

recorded it on several occasions from the central Adriatic, particularly from the vicinity of the town of Split, than Trois (1884) reported two records from the norternmost part of the Adriatic (the Gulf of Trieste and Venice), Katurić (1892) two records in the area of Zadar, Kosić (1898, 1903) few records in the area of Dubrovnik, Parenzan (1931) one record in the vicinity of Pula and one record in the vicinity of Kotor (1978). Ninni (1912) gave the records for the whole Adriatic on the basis of some earlier records of Perugia, Levi Morenos, Steindacher, Kolombatović and Katurić. Some earlier records from the northern and central Adriatic were given by Faber (1883) as well. Many museum collections keep the specimens of this fish caught in the Adriatic (Venice, Trieste, Zadar, Split, Zagreb, etc.).

Individuals recorded from the Adriatic for the last ten years are given in Table 1. As shown by the Table, this fish has been recorded from all Adriatic parts, however more frequently from its southern and central parts. Their frequency of occurrence differ from one year to another with no regular

Table. 1. *Ranzania laevis* records in the Adriatic sea for the last then years

Year	Date	Place of records	Source of data
1972	July 21	Port of Trieste	Specchi and Bussani (1973), Morović (1974)
1973	December 31	Marina Bay near Trogir	Morović (1974, 1974a)
1975	April	Vela Luka (Korčula I.)	M. Cetinić (1975)
1977	December 15	Vrbovica Cove (Korčula I.)	Onofri (1977, 1978, 1978a)
	December	Neretva Channel	Onofri, (1978a)
	September	Orahovac (The Bay of Boka Kotorska)	Individual worked out here
1979	October 5	Drače (Pelješac)	Individual worked out here
	November 29	Kaprije I. (Gačice Cove)	Noted by authors
1980	January 10	Ulcinj (Velika plaža)	Individual worked out here
	April 1	Port of Bar	Individual worked out here
	April 2	Klek-Neum Bay	Individual worked out here
	March 28	Klek-Neum Bay	Written communication
	December	Dubrovnik (Port of Gruž)	Bautović (1980)
	January	Vela Luka (two individuals)	I. Cetinić (1980)
	March 25	Kaštela Bay (Vranjic)	Personal communication
1982	May 30	Cape Planka near Rogoznica	Personal communication

pattern. The year 1980 may be distinguished since even eight records were reported from this year. It is also obvious that this fish has been mainly recorded in the colder part of the year. The same is applicable to the majority of earlier records.

Exclusively adult individuals have been recorded from the Adriatic, of lengths smaller than maximum.

* * *

Katurić (1892) first described morphometric properties of this species in more detail. This author gave absolute values for 16 morphometric characters measured at two individuals of which one was caught near Lukoran (48 cm) and the other in the vicinity of Petrčane (46.8 cm) in Zadar area. Some morphometric and meristic characters were also given by Kosić (1898), and recently by Specchi and Bussani (1973) and Onofri (1978, 1978a). Our analysis included 17 morphometric and 5 meristic characters of 5 individuals of total length ranging from 42 — 56 cm caught from the southern and central Adriatic between 1977 and 1980. Our results are given in Table 2.

The comparison of our data with the earlier ones shows broad agreement both in morphometric and particularly meristic values. The only significant differences were obtained in highest body depth (H) and total body length (LT) ratio. Our results show the length : depth up ratio 1 : 2.6 — 3, or, in percentages, depth makes 38.6 — 50% of the total body length. However, some other authors gave exclusively the 1 : 2 ratio (Katurić, 1892; Onofri, 1978, 1978a), or very near of this ratio (Kosić, 1898). Canestrini (1874, after Katurić, 1892) however, reported that body length was 2.5 times the body depth. Specchi and Bussani (1973) found this ratio to be 1 : 2.36. Our data support these earlier reports. These data are mainly indicative of this ratio variability. We assume that this ratio variability is mainly dependent on the body depth variability.

On the basis of our data (Table 2) fin formula is:

D: 17—18, A: 18—20, P: 13—14, V: 0, C (»calvus«): 17—19

* * *

The question is what is the reason for different frequency of occurrence of this species in different years and why the majority of records are from the colder part of the year? It's not easyly answered since, on the one hand the records of these species are still very rare even in years of its increased frequency of occurrence, and of the other hand due to the little known ecology and biology of this species. Specchi and Bussani (1973) held that the individual caught from the Port of Trieste was carried there by water masses from the southern Adriatic and Ionian Sea and that it was in pursuit of small pelagic fish on which it probably feeds. We have treid to find some connection between this species occurrences and some hydrographic changes, that is to connect them with the intensified inflowk of more saline and warmer Eastern Mediterranean waters (Adriatic ingressions). However, this trial did not give any significant results. Namely, the years 1975 and 1976 were markedly ingression years in the period of the last ten years for which we gave rather detailed data on this species records in the Adriatic (Table 1). Hohever, this fish was recorded only once in these two years. Increased salinity was recorded from the southern Adriatic in last years (1979—1981), which may be indicative of the intensified ingression of the Mediterranean water into the Adriatic. In these years this species was most

Table 2. Morphometric and meristic characters of *Ranzania laevis* analised individuals

Ordinal number*:	1	2	3	4	5
Sex:	♂	♂	♂	—	—
Weight (g):	1925	1390	4325	3000	5500
1. *Morphometric characters:*					
Total length, *LT* (cm)	42	43.5	52	53	56
Standard length (cm)	—	—	—	49.0	52.8
% *LT*	—	—	—	92.5	94.3
Preanal length (cm)	32.5	33.5	40.0	—	—
% *LT*	77.4	77.0	76.9	—	—
Predorsal length (cm)	38.5	38.5	46.5	47.0	49.5
% *LT*	91,7	88.5	89.4	88.7	88.4
Preanal length (cm)	36.5	36.5	44.5	44.0	48.0
% *LT*	86.9	83.9	85.6	83.0	85.7
Prepectoral length (cm)	—	—	—	20.0	22.0
% *LT*	—	—	—	37.7	39.3
Head length, *Cpt* (cm)	15.2	16.0	18.8	18.2	19.3
% *LT*	36.2	36.8	36.2	34.3	34.5
Eye diameter (mm)	25.5	25.6	28.2	30.0	35.0
% *Cpt*	16.8	16.0	15.0	16.5	18.1
Preorbital length (cm)	5.5	5.6	7.1	7.0	7.3
% *Cpt*	36.2	35.0	37.8	38.5	37.8
Postorbital length (cm)	8.0	8.0	9.0	8.2	—
% *Cpt*	52.6	50.0	47.9	45.0	—
Greatest depth (cm)	17.5	16.8	24.5	—	28.0
% *LT*	41.7	38.6	47.1	—	50.0
Pectoral fin base length (cm)	—	—	—	2.7	3.0
% *Pl*	—	—	—	26.2	27.3
Pectoral fin length, *Pl* (cm)	—	—	—	10.3	11.0
% *LT*	—	—	—	19.4	19.6
Dorsal fin base length (cm)	—	—	—	4.5	7.0
% *Dl*	—	—	—	34.6	43.8
Dorsal fin length, *Dl* (cm)	—	—	—	13.0	16.0
% *LT*	—	—	—	24.5	28.6
Anal fin base length (cm)	—	—	—	4.5	6.0
% *Al*	—	—	—	32.8	—
Anal fin length, *Al* (cm)	—	—	—	13.7	—
% *LT*	—	—	—	25.8	—
2. *Meristic characters:*					
D	18	18	18	17	—
A	19	19	18	19	20
P	13	13/14	13/14	14	13
V	0	0	0	0	0
C (»clavus«)	19	18	17	19	17

* 1 — Klek-Neum Bay, April 2, 1980; 2 — Port of Bar, April 1, 1980; 3 — Drače (Pelješac), October 5, 1977; 4 — Ulcinj (Velika plaža), January 10, 1980; 5 — Orahovac (The Bay of Boka Kotorska), September 1977

frequently recorded. This possible dependence of this species records on hydrographic factors is even more difficultly relied on since the occurrence of this species and their records are plain coincidance.

The male caught at the beginning of October 1979 near Drače on Pelješac had fully ripe testicles (Figs. 2 and 3), ready for spawning. Testicles occupied a major part of the abdomen and their weight made up 9.13% of the total body weight. The two other males caught in the Port of Bar and Klek-Neum

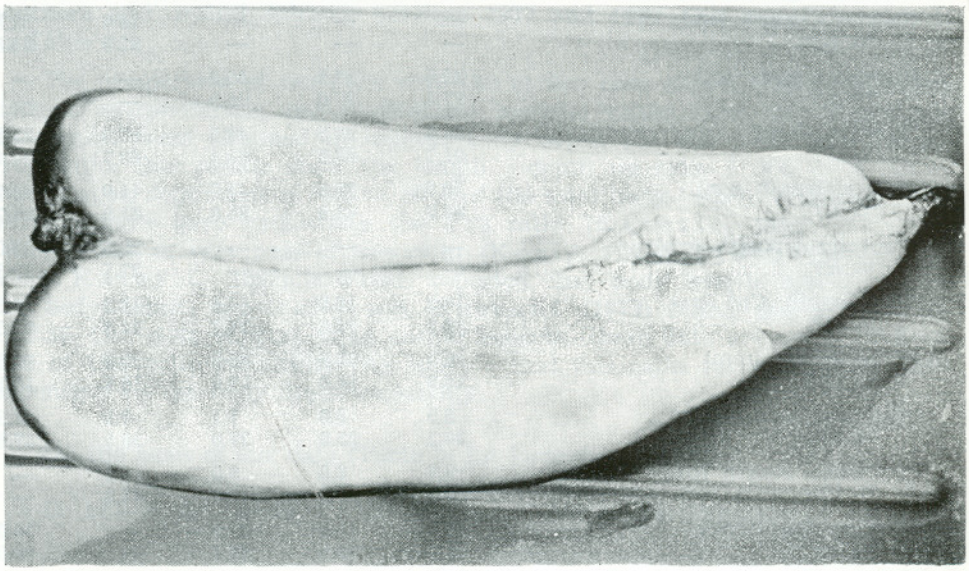

Fig. 2. Fully ripe testicles (male caught at the beginning of October 1979)

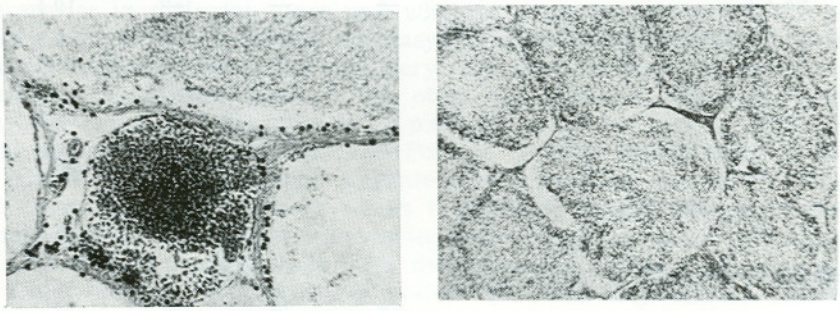

Fig. 3. Histological preparates of fully ripe testicles

Bay respectively at the beginning of April 1980, already spawned. Testicle weight was 0.23% and 0.58% of the total body weight respectively. This shows that this species spawns probably at the end of the year and spawning

extends of the beginning of the following year. This may account for their more frequent records in the colder part of the year when they are closer to the coast.

Frequency rate of this species in relation to frequency rate of *M. mola* species in the Adriatic is different according to different authors. After Morović (1974) *R. laevis* occurs more rarely than *M. mola*. This species is particularly rare according to some other authors (Specchi and Bussani, 1973; Onofri, 1978, 1978a). However, these authors came to wrong conclusions since they neglected numerous earlier records. Kosić (1903), however, reported *M. mola* to occur more rarely in the area of Dubrovnik. The same may be concluded on the basis of our data for the last ten years in the southern and central Adriatic. Namely, *M. mola* has been recorded on two occasions only in this period, on April 13, 1975 near Portorož and May 25, 1977 in the vicinity of Ratac Island near Bar. Irrespective of all these records both these species are rare in the Adriatic.

REFERENCES

Bautović, A. 1980. U gruškoj luci ulovljena rijetka riba. »Slob. Dalm.«, Split, 3. siječnja 1980.

Cetinić, I. 1980. Nesvakidašnji ulov. »Slob. Dalm.«, Split, 26. siječnja 1980.

Cetinić, M. 1975. Ulovili rijetku ribu. »Večernji list«, Zagreb, br. 4825 od 14. travnja 1975.

Faber, G. L. 1883. The Fisheries of the Adriatic and the Fish thereof. B. Quaritch, London, 292 p.

Katurić, M. 1892. *Ranzania truncata,* Nardo. Glasnik HND, 6 (1—6): 10—13.

Kolombatović, J. 1881. Pesci delle acque di Spalato. A. Zannoni, Split, 27 p.

Kolombatović, J. 1882. Mammiferi, anfibi e rettili, e pesci rari e nuovi per l'Adriatico catturati nelle acque di Spalato. God. izvj. C. K. Velikoj Realci u Splitu, 1881/82, 35 p.

Kosić, B. 1898. Nova građa za dubrovačku nomenklaturu i faunu riba. Glasnik HND, 10: 77—88.

Kosić, B. 1903. Ribe dubrovačke. Rad JAZU, Zagreb, 155: 48 p.

Morović, D. 1974. O pojavama rijetkih riba u Jadranu. Pomorski zbornik, 12: 397—410

Morović, D. 1974a. Ulovljena rijetka riba mali bucanj. Priroda, 63 (6): p. 180.

Ninni, E. 1912. Catalogo dei Pesci del Mare Adriatico. C. Bertotti, Venezia, 271 p.

Onofri, I. 1977. Primjerak rijetke ribe. »Slob. Dalm.«, Split, 27. prosinca 1977.

Onofri, I. 1978. O rijetkim organizmima Jadranskog mora. Mornarički glasnik, 5: 855—864.

Onofri, I. 1978a. Bucanj mali (*Ranzania laevis* /Pennant, 1776/). Morsko ribarstvo, 30 (1): 21—22.

Parenzan, P. 1931. Fauna Marina. Bibl. Pop. Colt. N. 134. A Vallardi, Milano.

Parenzan, P. 1978. Un reporto ittico eccezionale per il Golfo di Taranto: *Ranzania laevis* (Penn.). Thalass. Salent., (8): 79—86.

Specchi, M. et Bussani, M. 1973. Cattura di *Ranzania laevis laevis* (Pennant) nel porto di Trieste. Atti Mus. Civ. Stor. Nat. Trieste, 28-2 (19): 465—469.

Svetovidov, A. N. 1964. Ribi Černogo morja. Izd. »Nauka«, Moskva — Leningrad, 550 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, 11, Calderini, Bologna, 636 p.

Tortonese, E. 1979. Molidae. In: *Clofnam*, I. Ed. Hureau, J. C. and Th. Monod, Unesco, Paris, 649—650.

Trois, E. F. 1884. Ricerche sulla struttura della *Ranzania truncata*. Atti R. Ist. Veneto, 2 (6): 1269—1306 (parte I); 1543—1559 (parte II).

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PRILOG POZNAVANJU IHTIOFAUNE JADRANSKOG MORA *RANZANIA LAEVIS* (PENNANT, 1776) (PLECTOGNATHI, MOLIDAE)

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KRATKI SADRŽAJ

Autori u radu iznose podatke o nalazima ove rijetke ribe u Jadranskom moru na temelju starije i novije ihtiološke literature te nekih drugih izvora, a posebno za razdoblje zadnjih 10 godina (1972—1982) za koje, pored ostalih, navode i vlastite nalaze na području južnog i srednjeg Jadrana (Tab. 1). Na temelju detaljnije obrade 5 primjeraka daju njihove morfometrijske i merističke karakteristike u obliku apsolutnih i relativnih vrijednosti (Tab. 2).

Diskutira se o mogućim uzrocima učestalih pojava ove ribe u Jadranskom moru pojedinih godina te u hladnijem dijelu godine.

Daje se također distribucija ove vrste te važnija upotrebljavana sinonimija za Atlantik, Mediteran i Jadran.

BILJEŠKE-NOTES izdaje Institut za oceanografiju i ribarstvo, Split; izlaze povremeno. Odgovorni urednik: Mira Zore-Armanda. Naklada 450 primjeraka.
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