

**A LENGTH-AGE KEY FOR *MICROMESISTIUS POUTASSOU* (RISSO),
OSTEICHTHYES, GADIDAE, OF THE LIGURIAN SEA.**

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Résumé — Des échantillons de *Micromesistius poutassou* on été récoltés au chalut en Mer Ligure (S. Margherita), pour un total de 1745 spécimens dont la composition en groupes d'âge a été étudiée par lecture de la sagitta: on est parvenu à identifier huit groupes d'âges chez les femelles et six chez les mâles. Les longueurs maximales chez les deux sexes étaient de 41 cm et de 32,8 cm respectivement. Le taux de croissance est différent pendant la première maturation, lorsque le poisson a environ deux ans. On propose aussi une clé âge/longueurs.

Summary — The age composition in samples of *Micromesistius poutassou* — 1745 specimens in total — trawled in the Ligurian Sea (S. Margherita) was studied by sagitta readings: eight age classes were found in females, six in males. Maximum total lengths were cm 41 in females and 32.8 in males. An age/length key is proposed. Growth rates differ at the first maturation, when the fish is about two year old.

Blue withing *Micromesistius poutassou*, is exploited in the Ligurian sea both on neritic and bathyal fishing grounds, where mainly the immature and adult fish respectively are among the products of the trawlers. Owing to its perishable flesh, generally this fish has only a low market value. In 1978 the catches of young fish increased surprisingly and since then they were very abundant. In the same period also the North-East Atlantic catches were huge: landings surpassed a million tonnes in 1979, the blue withing resulting probably the most abundant fish of commercial importance for North-Europa (Bailey 1982). Time is ripe for a better utilisation of this resource, with the aid of up-to-date technics, but, at least in the Ligurian Sea, the population dynamics of *M. poutassou* is unknown. The present contribution concerns the age composition of the commercial product, where generally the size range from about 15 cm average t. l. in the younger fishes caught in November on the continental shelf, to a maximum of 30 cm in the adult ones trawled on bottoms at 300-500 m depth. Larger fish occasionally reach the market during the season of deep trawling for red shrimps (late spring-autumn).

TAB. 1

Length/frequency distribution of immature, male and female *Micromesistius poutassou* of different ages from the Ligurian sea, based on otolith readings.

st. l. cm	AGE 0	AGE 1	AGE 2		AGE 3		AGE 4		AGE 5		AGE 6		AGE 7	
	M + F	M + F	M	F	M	F	M	F	M	F	M	F	M	F
5	2*													
6	8*													
7	3*													
8	8*													
9	9*													
10	9*													
11	3* + 3													
12	44* + 12													
13	52* + 54	1												
14	8* +103	12												
15	2* +156	49												
16	1* +140	124												
17	30	89												
18	3	62	9	3										
19	1	118	34	9										
20		140	30	30		1								
21		84	21	25		1								
22		45	9	23										
23		6	6	32	1			1						
24		2	8	22		1								
25			2	7		3								
26			1	7	1	4		1						
27			1	3		6	1	1						
28					1	5	2	2						
29						4			1					
30						2		4						
31						4		3						
32						2	1	4		2				
33						1				2		1		
34								3		2		2		
35								1		4				2
36										1		1		
37														1
Totals	651	732	121	161	3	34	4	20	1	11		4		3
Av. length	14.6	18.9	20.9	22.6	26.2	28.2	29.2	31.0	29.5	34.5		34.7		36.2

* Unmarketable fish

T 1745

Samples of *M. poutassou* were collected between September 1978 and June 1982, from the catches of the trawlers at Santa Margherita (East-Ligurian Riviera). Fish smaller than marketable size, that were necessary to study the early growth of the sagitta, were obtained as discard of neritic trawling; fish of rare larger sizes from trawling at 600-700 m depths during a research program of P. F. Oceanografia e Fondi Marini. 1745 specimens were measured as standard length, sexed, when possible, by simple dissection, and their otoliths were drawn for reading of age. Sagittae were ground to expose the alrger longitudinal plane, washed, preserved in tap water, and read in incident light under the dissecting microscope.

Table 1 summarize length/frequency distribution of fishes of different age. As referred in a previous note (Relini Orsi e Peirano 1982), *M. poutassou* spawns in the Ligurian Sea in the late January-early in February and achieves sexual maturity at two years. Therefore age classes are divided on the base of a conventional birthday on 1 February. Age 0 includes *M. poutassou* actually fished from March to December; ages 1-4 several samples from 1 February to the next 31 January. Sexes can be distinguished during the second summer of life and a small difference in growth rate is evident since during the first maturation: this one was neglected in tab. 1, where sexes are separated as from the first spawning, i. e. 1. Feb. of age 2. In males maximum age was 5 years and total (*) length 32.8 cm; in females was 7 years and 41 cm. In our samples males older than two years were less than 0.5 per cent.

Comparing monthly samples, the growth resulted strongly influenced by the season, as previously noted by Bas and Morales (1966). A single von Bertalanffy function appeared ill-suited to describe juvenile and adult growth: so annual curves were used (Orsi Relini and Peirano 1982).

TAB. 2

Age-Length key for ligurian *Micromesistius poutassou*.

standard length	AGE						Number
	0	1	2	3	4	5-6-7	
11	100.0						15
13	92.4	7.6					170
15	63.1	36.9					469
17	16.8	77.0	6.2				196
19	0.3	71.0	28.4	0.3			363
21		62.0	37.5	0.5			208
23		10.2	86.0	2.5	1.3		79
25			65.4	30.8	3.8		26
27			18.2	54.5	27.3		22
29				54.5	36.4	9.1	11
31				37.5	50.0	12.5	16
33				9.1	27.3	63.6	11
35					11.1	88.9	9
37						100.0	1

From the above exposed data, excluding the small sized unmarketable fish, a length-age key was derived (tab. 2). The class of size is from 2 to 2 cm and the ages older than 4 years were grouped together because of the scarce number of otholiths and also because the most catches encompass the first 4 years of age. Group 0 has a part in the commercial landings only during a brief period, from the end of October to the next January. Next groups are landed all the year long, particularly group I and group II contribute in bulk to the catches. In our samples all males and 3/4 of females ageing three years or more were caught by deepest trawling (600-700 m).

- * The total lengths were calculated by the following regressions due to Lucena and Garcia, 1981

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- * The total lengths were calculated by the following regressions due to Lucena and Garcia, 1981:

$$\text{Lt/Lst Male } y = 0.8783x - 6.5656 \qquad \text{Female } y = 0.9194x - 2.0423$$