Estimation of mortality rates Z and M of Hake *Merluccius merluccius* (Linnaeus, 1758), Blue Whiting *Micromesistius poutassou* (Risso, 1826) and Striped Mullet *Mullus barbatus* Linnaeus, 1758

Paloma MARTIN

Instituto de Ciencias del Mar (CSIC), Paseo Nacional s/n., 08003 Barcelona (Espana)

Hake, blue whiting and striped mullet are species traditionally exploited in the Catalan coast.

Hake and blue whiting catches are similar, about 2000 annual tones, while striped mullet catches are smaller, given that combined annual catch of striped and red mullet is about 700 tones. With respect to economic yield from these species, at present, annual income from hake is about 2.000 million pesetas, and those of blue whiting and mullet (striped and red mullet) are similar, of about 500 million pesetas.

Hake is mainly exploited by trawling, but locally long line catches can be as important as those of trawling. This is the case of the hake fishery in Port de la Selva. Blue whiting and striped mulled are fished by trawling.

We present estimations of natural mortality rate M ant total mortality rate Z obtained by means of different methods, of hake, blue whiting and striped mullet.

Methods that have been used are as follows:

1) Taylor (1959), based on the parameters of the Von Bertalanfy growth equation Linf, k and to.

$$M = \frac{2.996\,k}{2.996 + k\,to}$$

p= arbitrary fraction of Linf
$2.996 = -\ln(1-p)$

2) Pauly (1980), where Linf, k and temperature are used.

$\log M = -0.0066 - 0.279 \log Linf + 0.6543 \log k + 0.4634 \log T$

3) Beverton and Holt (1956), from Linf, k, l' (smallest length fully recruited) and lm (mean length estimated from l').

$$(F+M) = Z = k\,\frac{(Linf - lm)}{(lm - l')}$$

4) Jones (1984), from Linf, k, lt (length at age t) and Nt (cumulated frequency of specimen until age t).

$\ln(Nt) = a + b(Linf - lt); \quad b = Z/k$

DATA:

- annual exploited lenght composition of: hake exploited by trawling (June 1982– May 1983); hake exploited simultaneously by trawling and long line (data from Port de la Selva, December 1987– November 1988); and blue whiting (June 1981–May 1982) and striped mullet (June 1982– May 1983), exploited by trawling.

- parameters of the Von Bertalanfy growth equation:

	Linf	k	to	
hake	103.0	0.0495		Charbonier, 1986
blue whiting	40.3	0.22	-1.29	Verón, 1986
striped mullet	29.72	0.0891	-4.4207	Sánchez et al., 1983

- selectivity of gear:

	l'	lm	lmin	lmax
trawling hake	21	27.6	8	69
long line hake	49	58.3	33	85
blue whiting	21	23.2	9	37
striped mullet	13	14.5	6	22

RESULTS:

		traw. hake	long l. hake	blue whiting	striped mullet
1)Taylor, 1959	M	0.050	0.050	0.243	0.103
2)Pauly, 1980	M	0.124	0.124	0.428	0.258
3)Bev.&Holt, 1956	Z	0.566	0.238	1.71	0.904
4)Jones, 1984	Z/k	8.304	4.808	4.829	6.889
	Z	0.411	0.238	1.062	0.614

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