Supplementary Information (SI) for

Forecasting size-at-maturity shifts under global warming: A case study on European hake, a widely distributed species

Reviews in Fish Biology and Fisheries

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This pdf file includes:

- **Online Resource 1** Table containing size-at-maturity (L_{50}) data of European hake, *Merluccius merluccius* (Linnaeus, 1758), compiled from a literature review and used as the basis for the analyses in this study. Each data entry is linked to a reference number, with the full list of bibliographic references provided at the end of the table

Online Resource 1 Size-at-maturity (L_{50}) data of European hake, *Merluccius merluccius* (Linnaeus, 1758), examined in this study. **Geographic area** is referred to thermal zones: North European Atlantic Ocean with cold waters (from 60ºN to 45ºN), South European Atlantic Ocean with temperate waters (from 45ºN to 30ºN) and Mediterranean Sea with warm waters (from 5ºW to 40ºE). The **Management unit** are different for the Atlantic and Mediterranean areas: ICES and GSAs zones respectively. Values from Atlantic Morocco, which is managed by the Fishery Committee for the Eastern Central Atlantic (CECAF), have been included in the South European Atlantic Ocean due to thermal and geographical affinity. The years in which samples were collected for the calculation of size-at-maturity are listed in the year's column **Year**. The months in which sampling was carried out for sample collection are indicated in the **Months** column. The **Sex** of the specimens analysed is defined as M for males, F for females and C for both sexes combined. In the column ***N***, the number of samples used for the calculation of the size-at-maturity is given. $\mathbf{L_{50}}$ is the value of the size-at-maturity obtained, through different estimates, for each sex. *NA* stands for *'Not Available'* in any case

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
1	North European Atlantic Ocean	ICES 3a	1928	Jun	F	305	70.7	1 in 2
2	North European Atlantic Ocean	ICES 3a & 4a	2012	Jan-Febr, Jul, Sep-Nov	M	260	45.4	3
3	North European Atlantic Ocean	ICES 3a & 4a	2013	Jan-Febr, Jul, Sep-Nov	M	455	39.4	3
4	North European Atlantic Ocean	ICES 3a & 4a	2014	Jan-Febr, Jul, Sep-Nov	M	329	36.7	3
5	North European Atlantic Ocean	ICES 3a & 4a	2015	Jan-Febr, Jul, Sep-Nov	M	228	40	3
6	North European Atlantic Ocean	ICES 3a & 4a	2011	Jan-Febr, Jul, Sep-Nov	F	63	57.4	3
7	North European Atlantic Ocean	ICES 3a & 4a	2012	Jan-Febr, Jul, Sep-Nov	F	312	59.2	3
8	North European Atlantic Ocean	ICES 3a & 4a	2013	Jan-Febr, Jul, Sep-Nov	F	702	52.8	3
9	North European Atlantic Ocean	ICES 3a & 4a	2014	Jan-Febr, Jul, Sep-Nov	F	323	50.4	3
10	North European Atlantic Ocean	ICES 3a & 4a	2015	Jan-Febr, Jul, Sep-Nov	F	378	56	3
11	North European Atlantic Ocean	ICES 4a	1928	Jun	F	438	71.4	1 in 2
12	North European Atlantic Ocean	ICES 6a	1927	Apr	F	135	82.2	1 in 2
13	North European Atlantic Ocean	ICES 6a	1927	Sep	F	144	79.9	1 in 2
14	North European Atlantic Ocean	ICES 6a	1926	Jan	F	362	81.2	1 in 2
15	North European Atlantic Ocean	ICES 6a	1926	May	F	202	83.2	1 in 2
16	North European Atlantic Ocean	ICES 6a	1927	Sep	F	124	80.2	1 in 2
17	North European Atlantic Ocean	ICES 6a	1928	Oct	F	362	75.1	1 in 2
18	North European Atlantic Ocean	ICES 6a	1927	Mar	F	292	81	1 in 2
19	North European Atlantic Ocean	ICES 6ab & 7bckjghe	1994	Feb-May	C	6497	44.9	4 in 5
20	North European Atlantic Ocean	ICES 7bcgjk	2003-2004	Sep & Nov 2003; Jan-Nov 2004	M	*NA*	26.5	6
21	North European Atlantic Ocean	ICES 7bcgjk	2003-2004	Sep & Nov 2003; Jan-Nov 2004	F	*NA*	49.8	6
22	North European Atlantic Ocean	ICES 7j	1926	Feb	F	321	78.9	1 in 2

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
23	North European Atlantic Ocean	ICES 7j	1928	Apr-May	F	315	75.7	1 in 2
24	North European Atlantic Ocean	ICES 7j	1928	Aug	F	87	72.1	1 in 2
25	North European Atlantic Ocean	ICES 7j	1926	Mar	F	443	79.5	1 in 2
26	North European Atlantic Ocean	ICES 7j	1926	Apr	F	351	80	1 in 2
27	North European Atlantic Ocean	ICES 7j	1926	May-Jun	F	630	80.5	1 in 2
28	North European Atlantic Ocean	ICES 7j	1926	Jun	F	648	81	1 in 2
29	North European Atlantic Ocean	ICES 7j	1926	Jul	F	562	81.5	1 in 2
30	North European Atlantic Ocean	ICES 7j	1926	Aug	F	193	70.5	1 in 2
31	North European Atlantic Ocean	ICES 7j	1926	Oct	F	381	85	1 in 2
32	North European Atlantic Ocean	ICES 7j	1925	Nov-Dec	F	263	85	1 in 2
33	North European Atlantic Ocean	ICES 7j	*NA*	July-August	M	*NA*	20*	7
34	North European Atlantic Ocean	ICES 7j	*NA*	July-August	M	*NA*	24*	7
35	North European Atlantic Ocean	ICES 7j	*NA*	July-August	F	*NA*	55*	7
36	North European Atlantic Ocean	ICES 7j	*NA*	July-August	F	*NA*	59*	7
37	North European Atlantic Ocean	ICES 7	1928	Aug	M	1136	28.5	1 in 2
38	North European Atlantic Ocean	ICES 7 & 8a	1983-1986	*NA*	M	854	38.4	8 in 2
39	North European Atlantic Ocean	ICES 7 & 8a	1987-1989	Mar, Dec	M	*NA*	33.2	9 in 2
40	North European Atlantic Ocean	ICES 7 & 8a	1983-1986	*NA*	F	781	50.4	8 in 2
41	North European Atlantic Ocean	ICES 7 & 8a	1987-1989	Mar, Dec	F	*NA*	59.2	9 in 2
42	North European Atlantic Ocean	ICES 7 & 8a	1983-1986	*NA*	C	1635	43.3	8 in 2
43	North European Atlantic Ocean	ICES 7 & 8a	1987-1989	Mar, Dec	C	*NA*	40	9 in 2
44	North European Atlantic Ocean	ICES 8a	1988-1990	Jan 1988 - May 1990	M	231	34,9	2
45	North European Atlantic Ocean	ICES 8a	1988-1990	Jan 1988 - May 1990	F	263	48.4	2
46	North European Atlantic Ocean	ICES 8b	1988-1990	Jan 1988-May 1990	M	643	38.4	2
47	North European Atlantic Ocean	ICES 8b	1988-1990	Jan 1988-May 1990	F	545	51.3	2
48	North European Atlantic Ocean	ICES 8ab	1986	*NA*	M	*NA*	40	10
49	North European Atlantic Ocean	ICES 8ab	1986	*NA*	F	*NA*	57	10
50	North European Atlantic Ocean	ICES 8abc	1988-1990	Jan 1988 - May 1990	M	1129	37.7	2
51	North European Atlantic Ocean	ICES 8abc	1988-1990	Jan 1988 - May 1990	F	1013	50.5	2
52	North European Atlantic Ocean	ICES 8abc	1988-1990	Jan 1988 - May 1990	C	2142	41.4	2
53	North European Atlantic Ocean	ICES 8abc	1987-1990	Jan 1987 - May 1990	M	1129	37.7	2
54	North European Atlantic Ocean	ICES 8abc	1988-1990	Jan-Mar	M	700	37	2

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
55	North European Atlantic Ocean	ICES 8abc	1988-1990	Apri-Jun	M	608	39.2	2
56	North European Atlantic Ocean	ICES 8abc	1988-1990	Jul-Sep	M	743	45	2
57	North European Atlantic Ocean	ICES 8abc	1988-1990	Oct-Dec	M	1049	41.6	2
58	North European Atlantic Ocean	ICES 8abc	1987-1990	January 1987 to May 1990	F	1013	50.5	2
59	North European Atlantic Ocean	ICES 8abc	1988-1990	Jan-Mar	F	486	48.2	2
60	North European Atlantic Ocean	ICES 8abc	1988-1990	Apri-Jun	F	681	53.6	2
61	North European Atlantic Ocean	ICES 8abc	1988-1990	Jul-Sep	F	674	59.5	2
62	North European Atlantic Ocean	ICES 8abc	1988-1990	Oct-Dec	F	1023	56.3	2
63	North European Atlantic Ocean	ICES 8abc	*NA*	Dec-Jun	M	191	38.6	11
64	North European Atlantic Ocean	ICES 8abc	*NA*	Dec-Jun	F	39	53.3	11
65	North European Atlantic Ocean	ICES 8abd	1996-1997	Jan-May	M	*NA*	37.9^{+}	12
66	North European Atlantic Ocean	ICES 8abd	1996-1997	Jan-May	F	*NA*	48.8^{+}	12
67	North European Atlantic Ocean	ICES 8abd	1996-1997	Jan-May	C	*NA*	42.2^{+}	12
68	North European Atlantic Ocean	ICES 8abd	1996-1997	Jan-May	M	*NA*	38.8^{-}	12
69	North European Atlantic Ocean	ICES 8abd	1996-1997	Jan-May	F	*NA*	48.7^{-}	12
70	North European Atlantic Ocean	ICES 8abd	1996-1997	Jan-May	C	*NA*	43.5^{-}	12
71	North European Atlantic Ocean	ICES 8abd	1987	*NA*	F	*NA*	56.5	13
72	North European Atlantic Ocean	ICES 8abd	1988	*NA*	F	*NA*	54	13
73	North European Atlantic Ocean	ICES 8abd	1989	*NA*	F	*NA*	52	13
74	North European Atlantic Ocean	ICES 8abd	1990	*NA*	F	*NA*	55	13
75	North European Atlantic Ocean	ICES 8abd	1996	*NA*	F	*NA*	51.5	13
76	North European Atlantic Ocean	ICES 8abd	1997	*NA*	F	*NA*	47.5	13
77	North European Atlantic Ocean	ICES 8abd	1998	*NA*	F	*NA*	47	13
78	North European Atlantic Ocean	ICES 8abd	1999	*NA*	F	*NA*	43.5	13
79	North European Atlantic Ocean	ICES 8abd	2000	*NA*	F	*NA*	52	13
80	North European Atlantic Ocean	ICES 8abd	2001	*NA*	F	*NA*	47.3	13
81	North European Atlantic Ocean	ICES 8abd	2002	*NA*	F	*NA*	44	13
82	North European Atlantic Ocean	ICES 8abd	2003	*NA*	F	*NA*	42	13
83	North European Atlantic Ocean	ICES 8abd	2004	*NA*	F	*NA*	41.5	13
84	North European Atlantic Ocean	ICES 8	1987-1990	Jan-May	M	1129	37.7	2
85	North European Atlantic Ocean	ICES 8	1965, 1966	Apr, May	M	*NA*	36	7

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
86	North European Atlantic Ocean	ICES 8	1965, 1966	Apr, May	M	*NA*	37	7
87	North European Atlantic Ocean	ICES 8	1987-1990	Jan - May	F	1013	50.5	2
88	North European Atlantic Ocean	ICES 8	1965, 1966	Apr, May	F	*NA*	54	7
89	North European Atlantic Ocean	ICES 8	1965, 1966	Apr, May	F	*NA*	57	7
90	North European Atlantic Ocean	ICES 8	1987-1990	Jan-May	C	2142	41.4	2
1	South European Atlantic Ocean	ICES 8c	1988-1990	Jan 1988-May 1990	M	254	38.5	2
2	South European Atlantic Ocean	ICES 8c	1988-1990	Jan 1988-May 1990	F	205	51.5	2
3	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	M	*NA*	40**	14
4	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	M	*NA*	40**	14
5	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	M	*NA*	44**	14
6	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	M	*NA*	44**	14
7	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	F	*NA*	45**	14
8	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	F	*NA*	49**	14
9	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	F	*NA*	55**	14
10	South European Atlantic Ocean	ICES 8c	1980	Feb-Dec	F	*NA*	59**	14
11	South European Atlantic Ocean	ICES 8c & 9a	1984–1993	Nov–Apr	F	3298	40.9	15 in 5
12	South European Atlantic Ocean	ICES 8c & 9a	1980–1998	Dec–Jul	C	17882	36	16 in 5
13	South European Atlantic Ocean	ICES 8c & 9a	1996-1997	Dec-May	M	247	32.8	5
14	South European Atlantic Ocean	ICES 8c & 9a	1996-1997	Dec-May	F	312	45.4	5
15	South European Atlantic Ocean	ICES 8c & 9a	1996-1997	Dec-May	C	559	37.9	5
16	South European Atlantic Ocean	ICES 8c & 9a	1982	Dec-Mar	F	159	44.3	17
17	South European Atlantic Ocean	ICES 8c & 9a	1983	Dec-Mar	F	46	40.9	17
18	South European Atlantic Ocean	ICES 8c & 9a	1984	Dec-Mar	F	277	42.9	17
19	South European Atlantic Ocean	ICES 8c & 9a	1985	Dec-Mar	F	386	41.9	17
20	South European Atlantic Ocean	ICES 8c & 9a	1986	Dec-Mar	F	141	44.3	17
21	South European Atlantic Ocean	ICES 8c & 9a	1988	Dec-Mar	F	80	39	17
22	South European Atlantic Ocean	ICES 8c & 9a	1989	Dec-Mar	F	243	38.7	17
23	South European Atlantic Ocean	ICES 8c & 9a	1990	Dec-Mar	F	186	40.9	17
24	South European Atlantic Ocean	ICES 8c & 9a	1991	Dec-Mar	F	186	38.5	17
25	South European Atlantic Ocean	ICES 8c & 9a	1992	Dec-Mar	F	20	42.9	17

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
26	South European Atlantic Ocean	ICES 8c & 9a	1994	Dec-Mar	F	67	43.5	17
27	South European Atlantic Ocean	ICES 8c & 9a	1995	Dec-Mar	F	106	46.4	17
28	South European Atlantic Ocean	ICES 8c & 9a	1996	Dec-Mar	F	238	36.3	17
29	South European Atlantic Ocean	ICES 8c & 9a	1997	Dec-Mar	F	134	42.6	17
30	South European Atlantic Ocean	ICES 8c & 9a	1998	Dec-Mar	F	55	39.8	17
31	South European Atlantic Ocean	ICES 8c & 9a	1999	Dec-Mar	F	64	45.8	17
32	South European Atlantic Ocean	ICES 8c & 9a	2000	Dec-Mar	F	124	42.3	17
33	South European Atlantic Ocean	ICES 8c & 9a	2001	Dec-Mar	F	52	44.8	17
34	South European Atlantic Ocean	ICES 8c & 9a	2003	Dec-Mar	F	927	44.1	17
35	South European Atlantic Ocean	ICES 8c & 9a	2004	Dec-Mar	F	930	48.5	17
36	South European Atlantic Ocean	ICES 8c & 9a	2005	Dec-Mar	F	472	43.6	17
37	South European Atlantic Ocean	ICES 8c & 9a	2006	Dec-Mar	F	247	43.4	17
38	South European Atlantic Ocean	ICES 8c & 9a	2007	Dec-Mar	F	18	46.1	17
39	South European Atlantic Ocean	ICES 8c & 9a	2008	Dec-Mar	F	486	42.9	17
40	South European Atlantic Ocean	ICES 8c & 9a	1982	Dec-Mar	C	327	36.9	17
41	South European Atlantic Ocean	ICES 8c & 9a	1983	Dec-Mar	C	145	33.6	17
42	South European Atlantic Ocean	ICES 8c & 9a	1984	Dec-Mar	C	529	37.3	17
43	South European Atlantic Ocean	ICES 8c & 9a	1985	Dec-Mar	C	859	32.4	17
44	South European Atlantic Ocean	ICES 8c & 9a	1986	Dec-Mar	C	295	36.2	17
45	South European Atlantic Ocean	ICES 8c & 9a	1988	Dec-Mar	C	273	29.9	17
46	South European Atlantic Ocean	ICES 8c & 9a	1989	Dec-Mar	C	481	35.8	17
47	South European Atlantic Ocean	ICES 8c & 9a	1990	Dec-Mar	C	758	35.2	17
48	South European Atlantic Ocean	ICES 8c & 9a	1991	Dec-Mar	C	440	33.9	17
49	South European Atlantic Ocean	ICES 8c & 9a	1992	Dec-Mar	C	151	32.8	17
50	South European Atlantic Ocean	ICES 8c & 9a	1994	Dec-Mar	C	227	35.8	17
51	South European Atlantic Ocean	ICES 8c & 9a	1995	Dec-Mar	C	677	36.9	17
52	South European Atlantic Ocean	ICES 8c & 9a	1996	Dec-Mar	C	504	32.9	17
53	South European Atlantic Ocean	ICES 8c & 9a	1997	Dec-Mar	C	292	34.4	17
54	South European Atlantic Ocean	ICES 8c & 9a	1998	Dec-Mar	C	231	35.2	17
55	South European Atlantic Ocean	ICES 8c & 9a	1999	Dec-Mar	C	325	30.2	17
56	South European Atlantic Ocean	ICES 8c & 9a	2000	Dec-Mar	C	326	37.3	17
57	South European Atlantic Ocean	ICES 8c & 9a	2001	Dec-Mar	C	148	41.3	17

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
58	South European Atlantic Ocean	ICES 8c & 9a	2003	Dec-Mar	C	1512	31.5	17
59	South European Atlantic Ocean	ICES 8c & 9a	2004	Dec-Mar	C	1388	35.7	17
60	South European Atlantic Ocean	ICES 8c & 9a	2005	Dec-Mar	C	1009	35.6	17
61	South European Atlantic Ocean	ICES 8c & 9a	2006	Dec-Mar	C	743	33.9	17
62	South European Atlantic Ocean	ICES 8c & 9a	2007	Dec-Mar	C	85	42	17
63	South European Atlantic Ocean	ICES 8c & 9a	2008	Dec-Mar	C	1325	35.5	17
64	South European Atlantic Ocean	ICES 8c & 9a	1980	Jan-Dec	M	1539	39	18
65	South European Atlantic Ocean	ICES 8c & 9a	1980-1981	Jan-Dec	M	*NA*	39	19 in 2
66	South European Atlantic Ocean	ICES 8c & 9a	1980-1982	Jan-Dec	M	1865	35	20
67	South European Atlantic Ocean	ICES 8c & 9a	1980-1982	Jan-Dec	M	1865	39	20
68	South European Atlantic Ocean	ICES 8c & 9a	1980	Apr-Dec	M	1230	39.5	21 in 5
69	South European Atlantic Ocean	ICES 8c & 9a	1980	Jan-Dec	F	922	56	18
70	South European Atlantic Ocean	ICES 8c & 9a	1980-1981	All Quarters	F	*NA*	56	19 in 2
71	South European Atlantic Ocean	ICES 8c & 9a	1980	Jan-Dec	F	832	58	20
72	South European Atlantic Ocean	ICES 8c & 9a	1980	Apr-Dec	F	832	58	21 in 5
73	South European Atlantic Ocean	ICES 8c & 9a	1980-1997	Dec-Jun	M	2234	33.4	11
74	South European Atlantic Ocean	ICES 8c & 9a	1980-1997	Dec-Jun	F	1732	44.1	11
75	South European Atlantic Ocean	ICES 8c & 9a	1980	Dec-May	M	80	40.7	22
76	South European Atlantic Ocean	ICES 8c & 9a	1981	Dec-May	M	109	36	22
77	South European Atlantic Ocean	ICES 8c & 9a	1982	Dec-May	M	205	36.6	22
78	South European Atlantic Ocean	ICES 8c & 9a	1983	Dec-May	M	167	33.1	22
79	South European Atlantic Ocean	ICES 8c & 9a	1984	Dec-May	M	284	33.7	22
80	South European Atlantic Ocean	ICES 8c & 9a	1985	Dec-May	M	307	33.9	22
81	South European Atlantic Ocean	ICES 8c & 9a	1986	Dec-May	M	309	35.4	22
82	South European Atlantic Ocean	ICES 8c & 9a	1988	Dec-May	M	45	29.2	22
83	South European Atlantic Ocean	ICES 8c & 9a	1989	Dec-May	M	369	35.5	22
84	South European Atlantic Ocean	ICES 8c & 9a	1990	Dec-May	M	840	31	22
85	South European Atlantic Ocean	ICES 8c & 9a	1991	Dec-May	M	280	30	22
86	South European Atlantic Ocean	ICES 8c & 9a	1992	Dec-May	M	108	30.2	22
87	South European Atlantic Ocean	ICES 8c & 9a	1993	Dec-May	M	28	38.3	22
88	South European Atlantic Ocean	ICES 8c & 9a	1994	Dec-May	M	140	30.2	22
89	South European Atlantic Ocean	ICES 8c & 9a	1995	Dec-May	M	217	31.9	22

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
90	South European Atlantic Ocean	ICES 8c & 9a	1996	Dec-May	M	153	31	22
91	South European Atlantic Ocean	ICES 8c & 9a	1997	Dec-May	M	243	33.3	22
92	South European Atlantic Ocean	ICES 8c & 9a	1998	Dec-May	M	105	37.5	22
93	South European Atlantic Ocean	ICES 8c & 9a	1999	Dec-May	M	132	27.2	22
94	South European Atlantic Ocean	ICES 8c & 9a	2000	Dec-May	M	62	30.7	22
95	South European Atlantic Ocean	ICES 8c & 9a	2001	Dec-May	M	51	35.4	22
96	South European Atlantic Ocean	ICES 8c & 9a	2002	Dec-May	M	145	31.6	22
97	South European Atlantic Ocean	ICES 8c & 9a	2003	Dec-May	M	331	31.2	22
98	South European Atlantic Ocean	ICES 8c & 9a	2004	Dec-May	M	425	27.8	22
99	South European Atlantic Ocean	ICES 8c & 9a	2005	Dec-May	M	478	29.2	22
100	South European Atlantic Ocean	ICES 8c & 9a	2006	Dec-May	M	593	30.6	22
101	South European Atlantic Ocean	ICES 8c & 9a	2007	Dec-May	M	480	29.8	22
102	South European Atlantic Ocean	ICES 8c & 9a	2008	Dec-May	M	757	29.2	22
103	South European Atlantic Ocean	ICES 8c & 9a	2009	Dec-May	M	681	28.1	22
104	South European Atlantic Ocean	ICES 8c & 9a	2010	Dec-May	M	635	32.1	22
105	South European Atlantic Ocean	ICES 8c & 9a	2011	Dec-May	M	481	28.2	22
106	South European Atlantic Ocean	ICES 8c & 9a	2012	Dec-May	M	843	25.8	22
107	South European Atlantic Ocean	ICES 8c & 9a	2013	Dec-May	M	490	29.4	22
108	South European Atlantic Ocean	ICES 8c & 9a	1980	Dec-May	F	79	55.3	22
109	South European Atlantic Ocean	ICES 8c & 9a	1981	Dec-May	F	40	44.5	22
110	South European Atlantic Ocean	ICES 8c & 9a	1982	Dec-May	F	161	46.1	22
111	South European Atlantic Ocean	ICES 8c & 9a	1983	Dec-May	F	126	41.1	22
112	South European Atlantic Ocean	ICES 8c & 9a	1984	Dec-May	F	414	38.7	22
113	South European Atlantic Ocean	ICES 8c & 9a	1985	Dec-May	F	351	43	22
114	South European Atlantic Ocean	ICES 8c & 9a	1986	Dec-May	F	231	44.3	22
115	South European Atlantic Ocean	ICES 8c & 9a	1988	Dec-May	F	30	39,5	22
116	South European Atlantic Ocean	ICES 8c & 9a	1989	Dec-May	F	352	39	22
117	South European Atlantic Ocean	ICES 8c & 9a	1990	Dec-May	F	765	43	22
118	South European Atlantic Ocean	ICES 8c & 9a	1991	Dec-May	F	222	41.6	22
119	South European Atlantic Ocean	ICES 8c & 9a	1992	Dec-May	F	52	43.6	22
120	South European Atlantic Ocean	ICES 8c & 9a	1993	Dec-May	F	42	43.6	22
121	South European Atlantic Ocean	ICES 8c & 9a	1994	Dec-May	F	176	46.7	22

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
122	South European Atlantic Ocean	ICES 8c & 9a	1995	Dec-May	F	228	47.1	22
123	South European Atlantic Ocean	ICES 8c & 9a	1996	Dec-May	F	168	38.6	22
124	South European Atlantic Ocean	ICES 8c & 9a	1997	Dec-May	F	318	46.5	22
125	South European Atlantic Ocean	ICES 8c & 9a	1998	Dec-May	F	158	53.4	22
126	South European Atlantic Ocean	ICES 8c & 9a	1999	Dec-May	F	110	47.2	22
127	South European Atlantic Ocean	ICES 8c & 9a	2000	Dec-May	F	69	41.8	22
128	South European Atlantic Ocean	ICES 8c & 9a	2001	Dec-May	F	76	46.8	22
129	South European Atlantic Ocean	ICES 8c & 9a	2002	Dec-May	F	214	47.4	22
130	South European Atlantic Ocean	ICES 8c & 9a	2003	Dec-May	F	907	46.4	22
131	South European Atlantic Ocean	ICES 8c & 9a	2004	Dec-May	F	1059	44.3	22
132	South European Atlantic Ocean	ICES 8c & 9a	2005	Dec-May	F	925	45.3	22
133	South European Atlantic Ocean	ICES 8c & 9a	2006	Dec-May	F	643	43.6	22
134	South European Atlantic Ocean	ICES 8c & 9a	2007	Dec-May	F	702	43.7	22
135	South European Atlantic Ocean	ICES 8c & 9a	2008	Dec-May	F	862	44	22
136	South European Atlantic Ocean	ICES 8c & 9a	2009	Dec-May	F	728	48.3	22
137	South European Atlantic Ocean	ICES 8c & 9a	2010	Dec-May	F	822	47.5	22
138	South European Atlantic Ocean	ICES 8c & 9a	2011	Dec-May	F	455	47.4	22
139	South European Atlantic Ocean	ICES 8c & 9a	2012	Dec-May	F	1128	42	22
140	South European Atlantic Ocean	ICES 8c & 9a	2013	Dec-May	F	543	44.2	22
141	South European Atlantic Ocean	ICES 8c & 9a	1980	Dec-May	C	159	46.9	22
142	South European Atlantic Ocean	ICES 8c & 9a	1981	Dec-May	C	149	37.3	22
143	South European Atlantic Ocean	ICES 8c & 9a	1982	Dec-May	C	366	37.5	22
144	South European Atlantic Ocean	ICES 8c & 9a	1983	Dec-May	C	293	34.9	22
145	South European Atlantic Ocean	ICES 8c & 9a	1984	Dec-May	C	698	36.4	22
146	South European Atlantic Ocean	ICES 8c & 9a	1985	Dec-May	C	658	35.1	22
147	South European Atlantic Ocean	ICES 8c & 9a	1986	Dec-May	C	540	36.7	22
148	South European Atlantic Ocean	ICES 8c & 9a	1988	Dec-May	C	75	30.6	22
149	South European Atlantic Ocean	ICES 8c & 9a	1989	Dec-May	C	721	36.6	22
150	South European Atlantic Ocean	ICES 8c & 9a	1990	Dec-May	C	1605	35.8	22
151	South European Atlantic Ocean	ICES 8c & 9a	1991	Dec-May	C	502	33.9	22
152	South European Atlantic Ocean	ICES 8c & 9a	1992	Dec-May	C	160	33.2	22
153	South European Atlantic Ocean	ICES 8c & 9a	1993	Dec-May	C	70	41.6	22

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
154	South European Atlantic Ocean	ICES 8c & 9a	1994	Dec-May	C	316	38	22
155	South European Atlantic Ocean	ICES 8c & 9a	1995	Dec-May	C	445	37.7	22
156	South European Atlantic Ocean	ICES 8c & 9a	1996	Dec-May	C	312	35	22
157	South European Atlantic Ocean	ICES 8c & 9a	1997	Dec-May	C	561	40.1	22
158	South European Atlantic Ocean	ICES 8c & 9a	1998	Dec-May	C	263	51.9	22
159	South European Atlantic Ocean	ICES 8c & 9a	1999	Dec-May	C	242	37.3	22
160	South European Atlantic Ocean	ICES 8c & 9a	2000	Dec-May	C	131	35.6	22
161	South European Atlantic Ocean	ICES 8c & 9a	2001	Dec-May	C	127	41.1	22
162	South European Atlantic Ocean	ICES 8c & 9a	2002	Dec-May	C	359	42.6	22
163	South European Atlantic Ocean	ICES 8c & 9a	2003	Dec-May	C	1238	39	22
164	South European Atlantic Ocean	ICES 8c & 9a	2004	Dec-May	C	1484	36.4	22
165	South European Atlantic Ocean	ICES 8c & 9a	2005	Dec-May	C	1403	37.6	22
166	South European Atlantic Ocean	ICES 8c & 9a	2006	Dec-May	C	1236	36.1	22
167	South European Atlantic Ocean	ICES 8c & 9a	2007	Dec-May	C	1182	35.2	22
168	South European Atlantic Ocean	ICES 8c & 9a	2008	Dec-May	C	1619	35.8	22
169	South European Atlantic Ocean	ICES 8c & 9a	2009	Dec-May	C	1409	36.9	22
170	South European Atlantic Ocean	ICES 8c & 9a	2010	Dec-May	C	1457	39	22
171	South European Atlantic Ocean	ICES 8c & 9a	2011	Dec-May	C	936	34.3	22
172	South European Atlantic Ocean	ICES 8c & 9a	2012	Dec-May	C	1971	31.5	22
173	South European Atlantic Ocean	ICES 8c & 9a	2013	Dec-May	C	1033	36	22
174	South European Atlantic Ocean	ICES 8c & 9a	1990	Dec-May	F	*NA*	43.1	23
175	South European Atlantic Ocean	ICES 8c & 9a	1991	Dec-May	F	*NA*	41.3	23
176	South European Atlantic Ocean	ICES 8c & 9a	1992	Dec-May	F	*NA*	47.9	23
177	South European Atlantic Ocean	ICES 8c & 9a	1993	Dec-May	F	*NA*	46.6	23
178	South European Atlantic Ocean	ICES 8c & 9a	1994	Dec-May	F	*NA*	48.5	23
179	South European Atlantic Ocean	ICES 8c & 9a	1995	Dec-May	F	*NA*	46.6	23
180	South European Atlantic Ocean	ICES 8c & 9a	1996	Dec-May	F	*NA*	38	23
181	South European Atlantic Ocean	ICES 8c & 9a	1997	Dec-May	F	*NA*	44.9	23
182	South European Atlantic Ocean	ICES 8c & 9a	1998	Dec-May	F	*NA*	46.7	23
183	South European Atlantic Ocean	ICES 8c & 9a	1999	Dec-May	F	*NA*	48.5	23
184	South European Atlantic Ocean	ICES 8c & 9a	2000	Dec-May	F	*NA*	45.2	23
185	South European Atlantic Ocean	ICES 8c & 9a	2001	Dec-May	F	*NA*	41.2	23

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
186	South European Atlantic Ocean	ICES 8c & 9a	2002	Dec-May	F	*NA*	43.9	23
187	South European Atlantic Ocean	ICES 8c & 9a	2003	Dec-May	F	*NA*	42.8	23
188	South European Atlantic Ocean	ICES 8c & 9a	2004	Dec-May	F	*NA*	43	23
189	South European Atlantic Ocean	ICES 8c & 9a	2005	Dec-May	F	*NA*	43.2	23
190	South European Atlantic Ocean	ICES 8c & 9a	2006	Dec-May	F	*NA*	42.1	23
191	South European Atlantic Ocean	ICES 8c & 9a	2007	Dec-May	F	*NA*	41.1	23
192	South European Atlantic Ocean	ICES 8c & 9a	2008	Dec-May	F	*NA*	41.9	23
193	South European Atlantic Ocean	ICES 8c & 9a	2009	Dec-May	F	*NA*	41.8	23
194	South European Atlantic Ocean	ICES 8c & 9a	2010	Dec-May	F	*NA*	44	23
195	South European Atlantic Ocean	ICES 8c & 9a	2011	Dec-May	F	*NA*	42.7	23
196	South European Atlantic Ocean	ICES 8c & 9a	2012	Dec-May	F	*NA*	42.6	23
197	South European Atlantic Ocean	ICES 8c & 9a	2013	Dec-May	F	*NA*	41.7	23
198	South European Atlantic Ocean	ICES 8c & 9a	2014	Dec-May	F	*NA*	41.1	23
199	South European Atlantic Ocean	ICES 8c & 9a	2015	Dec-May	F	*NA*	40.7	23
200	South European Atlantic Ocean	ICES 8c & 9a	2016	Dec-May	F	*NA*	42.7	23
201	South European Atlantic Ocean	ICES 8c & 9a	2017	Dec-May	F	*NA*	38.6	23
202	South European Atlantic Ocean	ICES 8c & 9a	2018	Dec-May	F	*NA*	43.5	23
203	South European Atlantic Ocean	ICES 8c & 9a	2019	Dec-May	F	*NA*	40.4	23
204	South European Atlantic Ocean	ICES 8c & 9a	2002-2004	Nov2002-Nov2004	F	*NA*	43	24 in 25
205	South European Atlantic Ocean	ICES 9a	1980	Mar-May & Sep-Nov	F	*NA*	55.5	13
206	South European Atlantic Ocean	ICES 9a	1982	Mar-May & Sep-Nov	F	*NA*	51	13
207	South European Atlantic Ocean	ICES 9a	1983	Mar-May & Sep-Nov	F	*NA*	46	13
208	South European Atlantic Ocean	ICES 9a	1984	Mar-May & Sep-Nov	F	*NA*	43.5	13
209	South European Atlantic Ocean	ICES 9a	1985	Mar-May & Sep-Nov	F	*NA*	45	13
210	South European Atlantic Ocean	ICES 9a	1986	Mar-May & Sep-Nov	F	*NA*	43.5	13
211	South European Atlantic Ocean	ICES 9a	1987	Mar-May & Sep-Nov	F	*NA*	40.5	13
212	South European Atlantic Ocean	ICES 9a	1988	Mar-May & Sep-Nov	F	*NA*	39.5	13
213	South European Atlantic Ocean	ICES 9a	1989	Mar-May & Sep-Nov	F	*NA*	42	13
214	South European Atlantic Ocean	ICES 9a	1990	Mar-May & Sep-Nov	F	*NA*	43.5	13
215	South European Atlantic Ocean	ICES 9a	1991	Mar-May & Sep-Nov	F	*NA*	42	13
216	South European Atlantic Ocean	ICES 9a	1992	Mar-May & Sep-Nov	F	*NA*	44	13
217	South European Atlantic Ocean	ICES 9a	1993	Mar-May & Sep-Nov	F	*NA*	44	13

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
218	South European Atlantic Ocean	ICES 9a	1994	Mar-May & Sep-Nov	F	*NA*	46	13
219	South European Atlantic Ocean	ICES 9a	1995	Mar-May & Sep-Nov	F	*NA*	47	13
220	South European Atlantic Ocean	ICES 9a	1996	Mar-May & Sep-Nov	F	*NA*	48	13
221	South European Atlantic Ocean	ICES 9a	1997	Mar-May & Sep-Nov	F	*NA*	51	13
222	South European Atlantic Ocean	ICES 9a	1998	Mar-May & Sep-Nov	F	*NA*	53	13
223	South European Atlantic Ocean	ICES 9a	1999	Mar-May & Sep-Nov	F	*NA*	47	13
224	South European Atlantic Ocean	ICES 9a	2000	Mar-May & Sep-Nov	F	*NA*	46	13
225	South European Atlantic Ocean	ICES 9a	2001	Mar-May & Sep-Nov	F	*NA*	48	13
226	South European Atlantic Ocean	ICES 9a	2002	Mar-May & Sep-Nov	F	*NA*	46	13
227	South European Atlantic Ocean	ICES 9a	2003	Mar-May & Sep-Nov	F	*NA*	47.5	13
228	South European Atlantic Ocean	ICES 9a	2004	Mar-May & Sep-Nov	F	*NA*	46.5	13
229	South European Atlantic Ocean	ICES 9a	*NA*	Dec-June	F	507	46.5	11
230	South European Atlantic Ocean	ICES 9a	2006-2009	Jan2006-May 2009	M	*NA*	24.2^{+}	26
231	South European Atlantic Ocean	ICES 9a	2006-2009	Jan2006-May 2010	F	*NA*	39^{+}	26
232	South European Atlantic Ocean	ICES 9a	2006-2009	Jan2006-May 2011	M	*NA*	12.8^{-}	26
233	South European Atlantic Ocean	ICES 9a	2006-2009	Jan2006-May 2012	F	*NA*	32^{-}	26
234	South European Atlantic Ocean	ICES 9a	2006-2009	Jan2006-May 2013	C	*NA*	32.2^{+}	26
235	South European Atlantic Ocean	ICES 9a	2006-2009	Jan2006-May 2014	C	*NA*	21.5^{-}	26
236	South European Atlantic Ocean	ICES 9a	1980-1981	Mar 1980-June 1981	M	*NA*	33	19 in 2
237	South European Atlantic Ocean	ICES 9a	1980-1983	Apr 1980-Mar 1983	M	*NA*	32	27 in 2
238	South European Atlantic Ocean	ICES 9a	1983	Jun	M	2252	31.6	28 in 2
239	South European Atlantic Ocean	ICES 9a	1984	Jun	M	199	28.6	28 in 2
240	South European Atlantic Ocean	ICES 9a	1987	Feb-Mar	M	1254	27.5	29 in 2
241	South European Atlantic Ocean	ICES 9a	1981	Jan-Sep	M	428	37	28 in 2
242	South European Atlantic Ocean	ICES 9a	1982	Jan-Jun	M	207	36.5	28 in 2
243	South European Atlantic Ocean	ICES 9a	1983	Jan-Jun	M	162	32.5	28 in 2
244	South European Atlantic Ocean	ICES 9a	1984	Jan-Jun	M	176	37	28 in 2
245	South European Atlantic Ocean	ICES 9a	1985	Jan-Jun	M	176	32	28 in 2
246	South European Atlantic Ocean	ICES 9a	1959	Apr-Sep	F	2023	57.7	30 in 2
247	South European Atlantic Ocean	ICES 9a	1980-1981	Mar & Jun	F	*NA*	49	19 in 2
248	South European Atlantic Ocean	ICES 9a	1980-1983	Apr-Mar	F	*NA*	49	27 in 2

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
249	South European Atlantic Ocean	ICES 9a	1983	Jun	F	453	55.5	28 in 2
250	South European Atlantic Ocean	ICES 9a	1984	Jun	F	271	58	28 in 2
251	South European Atlantic Ocean	ICES 9a	1986	Feb-Mar	F	874	51	29 in 2
252	South European Atlantic Ocean	ICES 9a	1981	Quarters 1, 2 & 3	F	285	49.5	28 in 2
253	South European Atlantic Ocean	ICES 9a	1982	Quarters 1 & 2	F	190	47	28 in 2
254	South European Atlantic Ocean	ICES 9a	1983	Quarters 1 & 3	F	141	46	28 in 2
255	South European Atlantic Ocean	ICES 9a	1984	Quarters 1 & 4	F	320	45	28 in 2
256	South European Atlantic Ocean	ICES 9a	1985	Quarters 1 & 5	F	263	47	28 in 2
257	South European Atlantic Ocean	ICES 9a	1982-1984	*NA*	C	*NA*	39	31 in 2
258	South European Atlantic Ocean	ICES 9a	*NA*	Dec-Jun	M	2062	30.5	11
259	South European Atlantic Ocean	ICES 9a	2010-2013	Jan 2010-Dec 2013	F	2870	40.6^{+}	32
260	South European Atlantic Ocean	ICES 9a	2010-2013	Jan 2010-Dec 2013	F	4013	38.3^{-}	32
261	South European Atlantic Ocean	ICES 9a	2010-2013	Jan 2010-Dec 2013	C	2870	34.4^{+}	32
262	South European Atlantic Ocean	ICES 9a	2010-2013	Jan 2010-Dec 2013	C	4013	26.3^{-}	32
263	South European Atlantic Ocean	ICES 9a	2005-2010	Jan 2005-Dec 2010	M	*NA*	25	33
264	South European Atlantic Ocean	ICES 9a	2005-2010	Jan 2005-Dec 2010	F	*NA*	26	33
265	South European Atlantic Ocean	CECAF	2001-2003	Nov 2001-Dec 2003	M	558	28.6	34
266	South European Atlantic Ocean	CECAF	2001-2003	Nov 2001-Dec 2003	F	546	33.8	34
267	South European Atlantic Ocean	CECAF	2017-2018	Aug 2017-Aug 2018	M	*NA*	*NA*	35
268	South European Atlantic Ocean	CECAF	2017-2018	Aug 2017-Aug 2018	F	*NA*	*NA*	35
269	South European Atlantic Ocean	CECAF	2019	Jan 2019 - Dec 2019	M	589	24.9	36
270	South European Atlantic Ocean	CECAF	2019	Jan 2019 - Dec 2019	F	333	29.7	36
271	South European Atlantic Ocean	CECAF	*NA*	*NA*	M	*NA*	38^{*}	37 in 38
272	South European Atlantic Ocean	CECAF	*NA*	*NA*	M	*NA*	42^{*}	37 in 38
273	South European Atlantic Ocean	CECAF	*NA*	*NA*	F	*NA*	38^{*}	37 in 38
274	South European Atlantic Ocean	CECAF	*NA*	*NA*	F	*NA*	42^{*}	37 in 38
275	South European Atlantic Ocean	CECAF	*NA*	*NA*	M	*NA*	37.8	39 in 36
276	South European Atlantic Ocean	CECAF	*NA*	*NA*	F	*NA*	41.1	39 in 36
277	South European Atlantic Ocean	CECAF	*NA*	*NA*	M	*NA*	35	40 in 36
278	South European Atlantic Ocean	CECAF	*NA*	*NA*	F	*NA*	46.5	40 in 36

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
1	Mediterranean Sea	GSA 1 & 10	*NA*	*NA*	M	*NA*	18*	41 in 42
2	Mediterranean Sea	GSA 1 & 10	*NA*	*NA*	M	*NA*	35*	41 in 42
3	Mediterranean Sea	GSA 1 & 10	*NA*	*NA*	F	*NA*	18*	41 in 42
4	Mediterranean Sea	GSA 1 & 10	*NA*	*NA*	F	*NA*	41*	41 in 42
5	Mediterranean Sea	GSA 3	1995-1998	Random	C	*NA*	33.6	43 in 44
6	Mediterranean Sea	GSA 4	1987-1988	Nov 1987 - Nov 1988	M	*NA*	21.5	38
7	Mediterranean Sea	GSA 4	1987-1988	Nov 1987 - Nov 1988	F	*NA*	30.6	38
8	Mediterranean Sea	GSA 4	2017-2018	Jan-Dec	M	*NA*	20.5	45
9	Mediterranean Sea	GSA 4	2017-2018	Jan-Dec	F	*NA*	33.5	45
10	Mediterranean Sea	GSA 4	2021	Jan-Dec	C	500	14.8	46
11	Mediterranean Sea	GSA 4	*NA*	*NA*	M	*NA*	21.5	47 in 38
12	Mediterranean Sea	GSA 4	*NA*	*NA*	F	*NA*	30.6	47 in 38
13	Mediterranean Sea	GSA 4	*NA*	*NA*	F	*NA*	30.5	48
14	Mediterranean Sea	GSA 4	*NA*	*NA*	M	*NA*	20.5	49 in 42
15	Mediterranean Sea	GSA 4	*NA*	*NA*	F	*NA*	33.5	49 in 42
16	Mediterranean Sea	GSA 4	*NA*	*NA*	F	*NA*	30.6	38
17	Mediterranean Sea	GSA 5	1977-1979	*NA*	M	*NA*	27	50 in 51
18	Mediterranean Sea	GSA 5	1977-1979	*NA*	F	*NA*	34.5	50 in 51
19	Mediterranean Sea	GSA 5	1980-1986	Jan-Dec	M	*NA*	27.6	52
20	Mediterranean Sea	GSA 5	1980-1986	Jan-Dec	F	*NA*	36.3	52
21	Mediterranean Sea	GSA 5	1990-1992	Jan-Dec	M	*NA*	27	53 in 44
22	Mediterranean Sea	GSA 5	1990-1992	Jan-Dec	F	*NA*	36	53 in 44
23	Mediterranean Sea	GSA 5	1981	Jan-Mar	M	*NA*	29.9	52
24	Mediterranean Sea	GSA 5	1981	Apr-Jun	M	*NA*	27	52
25	Mediterranean Sea	GSA 5	1981	Jul-Sep	M	*NA*	23	52
26	Mediterranean Sea	GSA 5	1981	Oct-Dec	M	*NA*	26	52
27	Mediterranean Sea	GSA 5	1982	Jan-Mar	M	*NA*	32	52
28	Mediterranean Sea	GSA 5	1982	Apr-Jun	M	*NA*	36	52
29	Mediterranean Sea	GSA 5	1982	Oct-Dec	M	*NA*	24	52
30	Mediterranean Sea	GSA 5	1983	Jan-Mar	M	*NA*	28	52
31	Mediterranean Sea	GSA 5	1983	Jul-Sep	M	*NA*	26.5	52

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
32	Mediterranean Sea	GSA 5	1983	Oct-Dec	M	*NA*	26	52
33	Mediterranean Sea	GSA 5	1984	Jan-Mar	M	*NA*	34	52
34	Mediterranean Sea	GSA 5	1984	Apr-Jun	M	*NA*	28	52
35	Mediterranean Sea	GSA 5	1984	Jul-Sep	M	*NA*	24.1	52
36	Mediterranean Sea	GSA 5	1984	Oct-Dec	M	*NA*	20	52
37	Mediterranean Sea	GSA 5	1985	Jan-Mar	M	*NA*	23	52
38	Mediterranean Sea	GSA 5	1985	Apr-Jun	M	*NA*	32	52
39	Mediterranean Sea	GSA 5	1985	Jul-Sep	M	*NA*	26.9	52
40	Mediterranean Sea	GSA 5	1985	Oct-Dec	M	*NA*	28	52
41	Mediterranean Sea	GSA 5	1986	Jan-Mar	M	*NA*	32	52
42	Mediterranean Sea	GSA 5	1986	Jul-Sep	M	*NA*	28	52
43	Mediterranean Sea	GSA 5	1986	Oct-Dec	M	*NA*	34	52
44	Mediterranean Sea	GSA 5	1980	Jan-MAr	F	*NA*	36	52
45	Mediterranean Sea	GSA 5	1980	Apr-Jun	F	*NA*	36	52
46	Mediterranean Sea	GSA 5	1981	Jan-Mar	F	*NA*	36	52
47	Mediterranean Sea	GSA 5	1981	Apr-Jun	F	*NA*	34	52
48	Mediterranean Sea	GSA 5	1981	Jul-Sep	F	*NA*	34	52
49	Mediterranean Sea	GSA 5	1981	Oct-Dec	F	*NA*	38.5	52
50	Mediterranean Sea	GSA 5	1982	Jul-Sep	F	*NA*	37	52
51	Mediterranean Sea	GSA 5	1982	Oct-Dec	F	*NA*	30.5	52
52	Mediterranean Sea	GSA 5	1983	Jan-Mar	F	*NA*	34.5	52
53	Mediterranean Sea	GSA 5	1983	Apr-Jun	F	*NA*	32	52
54	Mediterranean Sea	GSA 5	1983	Jul-Sep	F	*NA*	36	52
55	Mediterranean Sea	GSA 5	1983	Oct-Dec	F	*NA*	35.9	52
56	Mediterranean Sea	GSA 5	1984	Jan-Mar	F	*NA*	34	52
57	Mediterranean Sea	GSA 5	1984	Apr-Jun	F	*NA*	34	52
58	Mediterranean Sea	GSA 5	1984	Jul-Sep	F	*NA*	44.1	52
59	Mediterranean Sea	GSA 5	1984	Oct-Dec	F	*NA*	41.9	52
60	Mediterranean Sea	GSA 5	1985	Jan-Mar	F	*NA*	36.2	52
61	Mediterranean Sea	GSA 5	1985	Apr-Jun	F	*NA*	38.1	52
62	Mediterranean Sea	GSA 5	1985	Jul-Sep	F	*NA*	44	52
63	Mediterranean Sea	GSA 5	1985	Oct-Dec	F	*NA*	38.1	52

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
64	Mediterranean Sea	GSA 5	1986	Jan-Mar	F	*NA*	36	52
65	Mediterranean Sea	GSA 5	1986	Apr-Jun	F	*NA*	34.5	52
66	Mediterranean Sea	GSA 5	1986	Jul-Sep	F	*NA*	37.9	52
67	Mediterranean Sea	GSA 5	1986	Oct-Dec	F	*NA*	36	52
68	Mediterranean Sea	GSA 5	*NA*	*NA*	M	*NA*	27	54 in 42
69	Mediterranean Sea	GSA 5	*NA*	*NA*	F	*NA*	36	54 in 42
70	Mediterranean Sea	GSA 6	1997-1998	Nov 1997 - Dec1998	F	635	35.8	55
71	Mediterranean Sea	GSA 6	1954	Jan-Mar	M	*NA*	21	56 in 51
72	Mediterranean Sea	GSA 6	1954	Jan-Mar	F	*NA*	24	56 in 51
73	Mediterranean Sea	GSA 6	1963-1969	Jan-Apr	M	*NA*	24.3	57 in 51
74	Mediterranean Sea	GSA 6	1963-1969	Jan-Apr	M	*NA*	32.2	57 in 51
75	Mediterranean Sea	GSA 6	1981-1983	Jun 1981- Mar1983	M	*NA*	35	58 in 51
76	Mediterranean Sea	GSA 6	1981-1983	Jun 1981- Mar1983	F	*NA*	40	58 in 51
77	Mediterranean Sea	GSA 6	1981-1983	Jun 1981 - June1983	M	*NA*	32	59 in 51
78	Mediterranean Sea	GSA 6	1981-1983	Jun 1981 - June1983	F	*NA*	39	59 in 51
79	Mediterranean Sea	GSA 6	1989-1992	Sep 1989 - Apr 1992	M	185	28.4	60
80	Mediterranean Sea	GSA 6	1989-1992	Sep 1989 - Apr 1992	F	124	37	60
81	Mediterranean Sea	GSA 6	1991-1993	Jan 1991 - Dec1993	M	502	25	61
82	Mediterranean Sea	GSA 6	1991-1993	Jan 1991 - Dec1993	F	955	31	61
83	Mediterranean Sea	GSA 6	1991-1993	Jan 1991 - Dec1993	C	1457	27	61
84	Mediterranean Sea	GSA 6 & 7	1989-1991	Sep 1989 to Jun 1991	M	619	28.8	62
85	Mediterranean Sea	GSA 6 & 7	1989-1991	Sep 1989 to Jun 1991	F	308	38	62
86	Mediterranean Sea	GSA 6 & 7	*NA*	*NA*	M	*NA*	25*	63
87	Mediterranean Sea	GSA 6 & 7	*NA*	*NA*	M	*NA*	30*	63
88	Mediterranean Sea	GSA 6 & 7	*NA*	*NA*	F	*NA*	42*	63
89	Mediterranean Sea	GSA 6 & 7	*NA*	*NA*	F	*NA*	43*	63
90	Mediterranean Sea	GSA 7	1981-1990	*NA*	M	*NA*	25*	64
91	Mediterranean Sea	GSA 7	1981-1990	*NA*	M	*NA*	27*	64
92	Mediterranean Sea	GSA 7	1981-1990	*NA*	F	*NA*	42	64
93	Mediterranean Sea	GSA 7	*NA*	*NA*	F	*NA*	38.6	65 in 42
94	Mediterranean Sea	GSA 8	*NA*	*NA*	M	*NA*	22*	66 in 51

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
95	Mediterranean Sea	GSA 8	*NA*	*NA*	M	*NA*	25*	66 in 51
96	Mediterranean Sea	GSA 8	*NA*	*NA*	F	*NA*	30*	66 in 51
97	Mediterranean Sea	GSA 8	*NA*	*NA*	F	*NA*	37*	66 in 51
98	Mediterranean Sea	GSA9	1998-1999	Feb 1998 - Dec 1999	F	2729	35.3	55
99	Mediterranean Sea	GSA9	1992-1993	Jan 1992 - Oct 1993	M	*NA*	21.7	67
100	Mediterranean Sea	GSA9	1992-1993	Jan 1992 - Oct 1993	F	*NA*	35.9	67
101	Mediterranean Sea	GSA9	1992	Jan 1992 - Dec 1992	M	1062	17*	68
102	Mediterranean Sea	GSA9	1992	Jan 1992 - Dec 1992	M	1062	27*	68
103	Mediterranean Sea	GSA9	1992	Jan 1992 - Dec 1992	F	584	23.5*	68
104	Mediterranean Sea	GSA9	1992	Jan 1992 - Dec 1992	F	584	46.5*	68
105	Mediterranean Sea	GSA9	*NA*	*NA*	F	*NA*	35.1	69 in 42
106	Mediterranean Sea	GSA 10	2007-2015	Mar-Jun & Sep-Dec	F	1602	33	70
107	Mediterranean Sea	GSA 10	2009	Mar-Jun & Sep-Dec	F	*NA*	31.4	70
108	Mediterranean Sea	GSA 10	2014	Mar-Jun & Sep-Dec	F	*NA*	34	70
109	Mediterranean Sea	GSA 10	*NA*	*NA*	F	*NA*	33.8	71 in 42
110	Mediterranean Sea	GSA 11	2012-2015	Mar-Jun & Sep-Dec	F	2522	30	70
111	Mediterranean Sea	GSA 12 & 14	1971-1972	*NA*	M	1559	23*	72
112	Mediterranean Sea	GSA 12 & 14	1971-1972	*NA*	M	1559	28*	72
113	Mediterranean Sea	GSA 12 & 14	1971-1972	*NA*	F	1872	29*	72
114	Mediterranean Sea	GSA 12 & 14	1971-1972	*NA*	F	1872	38*	72
115	Mediterranean Sea	GSA 12, 13 & 14	*NA*	*NA*	M	*NA*	21.5	73 in 42
116	Mediterranean Sea	GSA 12, 13 & 14	*NA*	*NA*	F	*NA*	29	73 in 42
117	Mediterranean Sea	GSA 12 & 16	2010-2011	Nov 2010 - Oct 2011	F	634	28.8+	25
118	Mediterranean Sea	GSA 12 & 16	2010-2011	Nov 2010 - Oct 2011	F	234	29-	25
119	Mediterranean Sea	GSA 15 & 16	*NA*	*NA*	M	*NA*	21.5*	74
120	Mediterranean Sea	GSA 15 & 16	*NA*	*NA*	M	*NA*	28*	74
121	Mediterranean Sea	GSA 15 & 16	*NA*	*NA*	F	*NA*	33.5	74
122	Mediterranean Sea	GSA 15 & 16	2005-2006	July 2005 - June 2006	F	*NA*	38	75 in 42
123	Mediterranean Sea	GSA 16	*NA*	*NA*	F	*NA*	33.5	65 in 42
124	Mediterranean Sea	GSA 17	2019	Jan-Dec	M	*NA*	20.7	76

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
125	Mediterranean Sea	GSA 17	2019	Jan-Dec	F	*NA*	22.4	76
126	Mediterranean Sea	GSA 17	2013-2015	Jan 2013 - Dec 2015	F	*NA*	30.8^{+}	77
127	Mediterranean Sea	GSA 17	2013-2015	Jan 2013 - Dec 2015	F	*NA*	33.7^{-}	77
128	Mediterranean Sea	GSA 17	2017-2019	Jan 2017 - Dec 2019	M	232	18.6^{+}	78
129	Mediterranean Sea	GSA 17	2017-2019	Jan 2017 - Dec 2019	M	232	15.4^{-}	78
130	Mediterranean Sea	GSA17	*NA*	*NA*	C	*NA*	24	79 in 80
131	Mediterranean Sea	GSA17	*NA*	*NA*	M	*NA*	20^{*}	81 in 80
132	Mediterranean Sea	GSA17	*NA*	*NA*	M	*NA*	28^{*}	81 in 80
133	Mediterranean Sea	GSA17	*NA*	*NA*	F	*NA*	23^{*}	81 in 80
134	Mediterranean Sea	GSA17	*NA*	*NA*	F	*NA*	33^{*}	81 in 80
135	Mediterranean Sea	GSA17	*NA*	*NA*	M	*NA*	22^{*}	82 in 80
136	Mediterranean Sea	GSA17	*NA*	*NA*	M	*NA*	30^{*}	82 in 80
137	Mediterranean Sea	GSA17	*NA*	*NA*	F	*NA*	31.3	83 in 70
138	Mediterranean Sea	GSA17	*NA*	*NA*	F	*NA*	23^{*}	84 in 42
139	Mediterranean Sea	GSA17	*NA*	*NA*	F	*NA*	33^{*}	84 in 42
140	Mediterranean Sea	GSA17	*NA*	*NA*	C	*NA*	25^{*}	84 in 42
141	Mediterranean Sea	GSA17	*NA*	*NA*	C	*NA*	30^{*}	84 in 42
142	Mediterranean Sea	GSA17	*NA*	*NA*	F	*NA*	34.7	65 in 42
143	Mediterranean Sea	GSA 17 & 18	*NA*	*NA*	M	*NA*	23^{*}	85 in 86
144	Mediterranean Sea	GSA 17 & 18	*NA*	*NA*	M	*NA*	25^{*}	85 in 86
145	Mediterranean Sea	GSA 17 & 18	*NA*	*NA*	F	*NA*	29^{*}	85 in 86
146	Mediterranean Sea	GSA 17 & 18	*NA*	*NA*	F	*NA*	32^{*}	85 in 86
147	Mediterranean Sea	GSA 17 & 18	1972-1975	RANDOM	M	*NA*	29.5	87 in 44
148	Mediterranean Sea	GSA 17 & 18	*NA*	*NA*	F	*NA*	38	88 in 89
149	Mediterranean Sea	GSA 18	2009-2015	Mar-Jun & Jun-Sep	F	4202	32	70
150	Mediterranean Sea	GSA 18	2011	Mar-Jun & Jun-Sep	F	*NA*	30.8	70
151	Mediterranean Sea	GSA 18	2013	Mar-Jun & Jun-Sep	F	*NA*	33.1	70
152	Mediterranean Sea	GSA 18	*NA*	*NA*	F	*NA*	33.7	71 in 42
153	Mediterranean Sea	GSA 19	2007-2015	Mar-Jun & Jun-Sep	F	2076	32.9	70
154	Mediterranean Sea	GSA 19	2010	Mar-Jun & Jun-Sep	F	*NA*	32	70

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month		Sex	*N*	L_{50}	References
155	Mediterranean Sea	GSA 19	2013	Mar-Jun & Jun-Sep		F	*NA*	37.8	70
156	Mediterranean Sea	GSA 19	*NA*	*NA*		F	*NA*	34.6	71 in 42
157	Mediterranean Sea	GSA 20	*NA*	*NA*		M	*NA*	30	90 in 86
158	Mediterranean Sea	GSA 20	*NA*	*NA*		F	*NA*	36	90 in 86
159	Mediterranean Sea	GSA 20	*NA*	*NA*	M	*NA*	36		90 in 86
160	Mediterranean Sea	GSA 20	*NA*	*NA*	F	*NA*	43		90 in 86
161	Mediterranean Sea	GSA 20	*NA*	*NA*	M	*NA*	31		90 in 86
162	Mediterranean Sea	GSA 20	*NA*	*NA*	F	*NA*	36		90 in 86
163	Mediterranean Sea	GSA 20	1983–1985	*NA*	F	*NA*	36		91 in 25
164	Mediterranean Sea	GSA 20	1983–1985	*NA*	F	*NA*	43		91 in 25
165	Mediterranean Sea	GSA 20	1983–1985	*NA*	F	*NA*	36		91 in 25
166	Mediterranean Sea	GSA 21	1972	*RANDOM*	M	*NA*	26*		92 in 86
167	Mediterranean Sea	GSA 21	1972	*RANDOM*	M	*NA*	28*		92 in 86
168	Mediterranean Sea	GSA 21	1972	*RANDOM*	F	*NA*	29*		92 in 86
169	Mediterranean Sea	GSA 21	1972	*RANDOM*	F	*NA*	30*		92 in 86
170	Mediterranean Sea	GSA 22	2004-2007	Jul 2004 - Jun 2007	M	707	25.7		93
171	Mediterranean Sea	GSA 22	2004-2007	Jul 2004 - Jun 2007	F	792	21.5		93
172	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	30		94 in 86
173	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	34		94 in 86
174	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	26		94 in 86
175	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	30		94 in 86
176	Mediterranean Sea	GSA 22	*NA*	*NA*	F	*NA*	34		94 in 86
177	Mediterranean Sea	GSA 22	*NA*	*NA*	F	*NA*	38		94 in 86
178	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	30		94 in 86
179	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	34		94 in 86
180	Mediterranean Sea	GSA 22	*NA*	*NA*	M	*NA*	33		95
181	Mediterranean Sea	GSA 22	1986–1988	*NA*	F	*NA*	36		96 in 25
182	Mediterranean Sea	GSA 22 & 27	*NA*	*NA*	M	*NA*	22*		41 in 42
183	Mediterranean Sea	GSA 22 & 27	*NA*	*NA*	M	*NA*	32*		41 in 42
184	Mediterranean Sea	GSA 22 & 27	*NA*	*NA*	F	*NA*	30*		41 in 42
185	Mediterranean Sea	GSA 22 & 27	*NA*	*NA*	F	*NA*	39*		41 in 42

Online Resource 1 (Continued)

Nº	Geographic area	Management unit	Year	Month	Sex	*N*	L_{50}	References
186	Mediterranean Sea	GSA 26	2017	Jan-Dec	F	*NA*	34.4	97
187	Mediterranean Sea	GSA 26	2005-2007	Sep 2005 - Oct 2007	F	*NA*	32.5	98
188	Mediterranean Sea	GSA 28	2014-2015	Oct 2014 - Sep 2015	M	192	22.5	99
189	Mediterranean Sea	GSA 28	2014-2015	Oct 2014 - Sep 2015	F	341	29.9	99
190	Mediterranean Sea	GSA 28	2016-2017	Feb 2016 - Jan 2017	M	*NA*	22	100
191	Mediterranean Sea	GSA 28	2016-2017	Feb 2016 - Jan 2017	F	*NA*	26.5	100
192	Mediterranean Sea	GSA 28	*NA*	*NA*	M	*NA*	23	101 in 102
193	Mediterranean Sea	GSA 28	*NA*	*NA*	F	*NA*	27	101 in 102

* range of values; $^{+}$ macroscopy study; $^{-}$ microscopy study; ** L50 are given in range for each sex and gear (“volanta” and “anzuelo”)

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