

Codend selectivity in the East China Sea of a trawl net with the legal minimum mesh size

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Table 1. Parameters of maturity and spawning for female of each species

English name	Species name	Dimension of body*	Fish body size for reproduction (cm)				References
			Minimum maturity	First spawning	50% maturity	100% maturity	
Daggertooth pike conger	<i>Muraenesox cinereus</i>	AL	30	18	-	41	Mio et al (1975), Otaki (1980), Yamada et al (2001)
Smallmouth argentine	<i>Argentina kagoshimae</i>	FL	-	-	-	-	No reference
Deep-sea smelt	<i>Glossanodon semifasciatus</i>	FL	-	12	-	18	Mio (1969)
Large-scaled grinner	<i>Saurida macrolepis</i>	FL	14	-	-	24.5	Tatara (1962)
Black large-scaled grinner	<i>Saurida umeyoshii</i>	FL	22.8	-	-	-	Sakai et al (2010)
John dory	<i>Zeus faber</i>	TL	27.0	-	32.6	-	Yoneda et al (2006)
Blackthroat seaperch	<i>Doederleinia berycoides</i>	FL	19.9	-	-	-	Seikai National Fisheries Research Institute, unpublished data
Red bigeye	<i>Priacanthus macracanthus</i>	TL	21	-	-	-	Oki (1999), Liu et al (2001)
Red tilefish	<i>Branchiostegus japonicus</i>	TL	20	-	25.3	-	Yamashita et al (2011)
Jack mackerel	<i>Trachurus japonicus</i>	FL	17.1	-	20.7	30	Yoda et al (2014)
Japanese scad	<i>Decapterus maruadsi</i>	FL	24.0	-	-	-	Ohshimo et al (2006)
Whitefin jack	<i>Kaiwarinus equula</i>	FL	15.1	-	17.2	24	Yoneda et al (2002)
Yellowback seabream	<i>Dentex hypselosomus</i>	FL	15	-	-	-	Shindo (1960), Oki and Tabeta (1998)
Silver croaker	<i>Pennahia argentata</i>	TL	16.1	-	23	-	Saishu et al (1954)
Pacific rudderfish	<i>Psenopsis anomala</i>	FL	16.8	-	-	-	Wang et al (2016)
Largehead hairtail	<i>Trichiurus japonicus</i>	AL	14	-	-	-	Munekiyo (1991)
Blue mackerel	<i>Scomber australasicus</i>	FL	-	-	28	36	Kurota et al (2016)
Chub mackerel	<i>Scomber japonicus</i>	FL	22	-	27.5	33.5	Ouchi and Hamasaki (1979), Watanabe and Yatsu (2006)
Ridged-eye flounder	<i>Pleuronichthys cornutus</i>	TL	17.5	-	-	19	Matsuoka (1996), Masaki et al (1987)
Lesser-spotted leatherjacket	<i>Thamnaconus hypargyreus</i>	TL	11.6	-	-	-	Qian et al (2001)
Swordtip squid	<i>Loligo edulis</i>	ML	7.5	-	-	-	Yoda and Fukuwaka (2016)
Japanese common squid	<i>Todarodes pacificus</i>	ML	22.4	-	-	-	Kaga et al (2016)

*Dimension of animal body; AL, preanal length; FL, fork length; TL, total length; ML, mantle length

Table 2. Parameter estimates of codend selection curve and the model fitness

English name	Species name	Dimension of body*	Logistic parameters				Selection curve parameters				Model fitness		
			a	SE(a)	b	SE(b)	l_{50}	SE(l_{50})	SR	SE(SR)	deviance	d.o.f	P
Daggertooth pike conger	<i>Muraenesox cinereus</i>	AL	-12.41	1.396	0.48	0.054	26.03	0.380	4.61	0.522	39.3	61	0.986
Smallmouth argentine	<i>Argentina kagoshimae</i>	FL	-4.10	0.453	0.22	0.031	18.93	0.686	10.14	1.455	28.3	27	0.395
Deep-sea smelt	<i>Glossanodon semifasciatus</i>	FL	-5.31	0.328	0.31	0.021	16.99	0.176	7.04	0.479	90.2	36	0.000*
Large-scaled grinner	<i>Saurida macrolepis</i>	FL	-7.06	0.473	0.37	0.032	18.95	0.566	5.90	0.510	77.9	63	0.099
Black large-scaled grinner	<i>Saurida umeyoshii</i>	FL	-7.49	0.591	0.42	0.033	17.98	0.369	5.28	0.415	48.8	73	0.987
John dory	<i>Zeus faber</i>	TL	-5.96	0.315	0.82	0.037	7.27	0.097	2.68	0.120	42.6	88	1.000
Blackthroat seaperch	<i>Doederleinia berycoides</i>	FL	-5.06	0.240	0.55	0.027	9.13	0.099	3.97	0.192	54.2	66	0.851
Red bigeye	<i>Priacanthus macracanthus</i>	TL	-9.31	1.754	0.97	0.192	9.64	0.369	2.28	0.452	13.7	52	1.000
Red tilefish	<i>Branchiostegus japonicus</i>	TL	-9.63	1.171	0.62	0.070	15.55	0.301	3.55	0.403	44.1	56	0.874
Jack mackerel	<i>Trachurus japonicus</i>	FL	-5.66	0.135	0.43	0.010	13.17	0.082	5.11	0.113	89.2	58	0.005*
Japanese scad	<i>Decapterus maruadsi</i>	FL	-4.29	0.491	0.28	0.037	15.43	0.729	7.90	1.061	53.1	45	0.189
Whitefin jack	<i>Kaiwarinus equula</i>	FL	-7.91	0.156	0.91	0.019	8.68	0.054	2.41	0.051	70.2	65	0.307
Yellowback seabream	<i>Dentex hypselosomus</i>	FL	-5.37	0.249	0.67	0.024	8.04	0.107	3.29	0.118	88.1	53	0.002*
Silver croaker	<i>Pennahia argentata</i>	TL	-7.00	0.824	0.62	0.066	11.32	0.237	3.55	0.377	21.5	44	0.998
Pacific rudderfish	<i>Psenopsis anomala</i>	FL	-8.85	0.416	0.88	0.039	10.06	0.118	2.50	0.110	48.8	48	0.439
Largehead hairtail	<i>Trichiurus japonicus</i>	AL	-2.57	0.118	0.24	0.009	10.84	0.252	9.28	0.360	75.9	77	0.513
Blue mackerel	<i>Scomber australasicus</i>	FL	-6.46	0.750	0.49	0.057	13.10	0.224	4.46	0.518	18.0	43	1.000
Chub mackerel	<i>Scomber japonicus</i>	FL	-4.86	0.407	0.35	0.031	14.04	0.244	6.35	0.569	33.2	56	0.993
Ridged-eye flounder	<i>Pleuronichthys cornutus</i>	TL	-8.48	1.677	0.84	0.137	10.13	0.463	2.63	0.431	25.5	38	0.939
Lesser-spotted leatherjacket	<i>Thamnaconus hypargyreus</i>	TL	-4.93	0.354	0.70	0.041	7.00	0.159	3.12	0.181	83.0	44	0.000*
Swordtip squid	<i>Loligo edulis</i>	ML	-7.50	0.155	1.20	0.025	6.26	0.031	1.83	0.039	57.3	57	0.465
Japanese common squid	<i>Todarodes pacificus</i>	ML	-5.46	0.116	0.61	0.012	8.90	0.053	3.58	0.072	216.4	54	0.000*

* $P < 0.01$ lack of model fitness at the significance level of 0.01

