

Table 6. For the overfishing analysis, the list of species with normalized catch ≤ 0.3 for at least 10 yr in succession or 15 yr total over 1961–2000, and lower and upper assignments of MSY as a percentage of maximum catch C_{\max} in that time period

Species	t_{\max}	t_m	Lower MSY, %	Upper MSY, %
<i>Anarhichas lupus</i>	26.2	5.5	5	10
<i>Boreogadus saida</i>	7	2–5	20	40
<i>Brevoortia tyrannus</i>	8.4	2.1	20	40
<i>Chaenocephalus aceratus</i>	16.9	3.8	5	10
<i>Chaenodraco wilsoni</i>	9.8	2.4	20	40
<i>Champscephalus gunnari</i>	13	4	10	20
<i>Clupea harengus</i>	25	2–5	30	66
<i>Clupea pallasii</i>	19	1.4	30	60
<i>Clupeonella cultriventris</i>	11.7	3.3	20	40
<i>Coryphaenoides rupestris</i>	54	9–11	0	0
<i>Decapterus maruadsi</i>	3	0.8	30	60
<i>Dentex angolensis</i>	7	–	20	40
<i>Electrona carlsbergi</i>	5.1	1.6	20	40
<i>Engraulis capensis</i>	4	1	30	60
<i>Engraulis mordax</i>	7	1–4	20	40
<i>Engraulis ringens</i>	3	1	30	60
<i>Euphausia superba</i>	6–7	2–3	30	60
<i>Euthynnus alletteratus</i>	8	2	20	40
<i>Gadus morhua</i>	15.2	3.1	10	49
<i>Glyptocephalus cynoglossus</i>	25	–	5	39
<i>Gobionotothen gibberifrons</i>	41	9.7	0	0
<i>Hippoglossoides platessoides</i>	30	2–11	5	25
<i>Hippoglossus hippoglossus</i>	50	–	0	0
<i>Hippoglossus stenolepis</i>	57.9	11.1	0	0
<i>Illex illecebrosus</i>	1	–	30	60
<i>Jasus lalandii</i> *	10	–	20	40
<i>Lepidonotothen squamifrons</i>	19	7–9	5	10
<i>Limanda aspera</i>	19	4.5	5	10
<i>Makaira mazara</i>	28	4	5	10
<i>Mallotus villosus</i>	5	3	30	60
<i>Melanogrammus aeglefinus</i>	20	2–5	5	25
<i>Merlangius merlangus</i>	20	2–4	5	10
<i>Merluccius bilinearis</i>	12	2–3	10	20
<i>Merluccius gayi peruanus</i>	13	–	10	20

<i>Merluccius hubbsi</i> [†]	–	6	10	20
<i>Merluccius merluccius</i>	20	2–8	5	10
<i>Micromesistius australis</i>	30	2–5	5	10
<i>Micromesistius poutassou</i>	20	1–5	5	10
<i>Nemadactylus bergi</i>	–	2	20	40
<i>Notothenia rossii</i>	16	–	5	10
<i>Oncorhynchus gorbuscha</i>	3	2	30	60
<i>Oncorhynchus keta</i>	6	2–5	20	40
<i>Oncorhynchus nerka</i>	7	2–4	20	40
<i>Osmerus eperlanus</i>	10	2–4	20	40
<i>Ostrea lutaria</i> [‡]	6	–	20	40
<i>Paralithodes camtschaticus</i>	20–30	–	5	10
<i>Parastromateus niger</i>	10.6	2.4	10	20
<i>Patagonotothen brevicauda</i>	8.8	2.4	20	40
<i>Perna viridis</i>	2–3	–	30	60
<i>Pleuragramma antarcticum</i>	20	3–4	5	10
<i>Pollachius virens</i>	16.9	3.6	5	33
<i>Pomatomus saltator</i>	9	2	20	40
<i>Pseudochaenichthys georgianus</i>	12	4	10	20
<i>Reinhardtius hippoglossoides</i>	30	7–12	5	10
<i>Sarda chiliensis chiliensis</i>	–	2	30	60
<i>Sarda sarda</i>	5	1	30	60
<i>Sardina pilchardus</i>	5.8	1.6	20	40
<i>Sardinops sagax</i>	6.6	1.7	30	60
<i>Scomber japonicus</i>	18	2–3	5	10
<i>Scomber scombrus</i>	17	2–3	5	67
<i>Sebastes alutus</i>	100	–	0	23
<i>Sebastes marinus</i>	60	10–12	0	23
<i>Stephanolepis cirrhifer</i>	8.8	2.4	20	40
<i>Tetrapturus audax</i>	9	2–3	20	40
<i>Theragra chalcogramma</i>	22.1	4.9	5	10
<i>Thunnus alalunga</i>	10	4–6	20	40
<i>Thunnus albacares</i>	8	2–5	20	40
<i>Thunnus maccoyii</i>	20	8–9	5	10
<i>Thunnus thynnus</i>	15	3–5	10	20
<i>Thyrsites atun</i>	10	2–4	20	40
<i>Todarodes pacificus</i>	1	0	30	60
<i>Trachurus declivis</i>	25	2–4	5	10
<i>Trachurus japonicus</i>	6	–	20	40

<i>Trachurus mediterraneus</i>	12	–	10	20
<i>Trachurus trachurus</i>	11	2–3	10	20
<i>Trachurus trecae</i>	11	2.6	10	20
<i>Trematomus eulepidotus</i>	12.9	3.2	10	20

A dash indicates that we did not find data for the species. Upper values shown in italics are derived from data from the NOAA's Northeast Fisheries Science Center (NEFSC, www.nefsc.noaa.gov/sos/).

*For most species in the genus *Jasus*, the maximum lifespan is unknown, but laboratory-raised *J. lalandii* have lived up to 10 yr (1).

†Low resilience, minimum population doubling time 4.5–14 yr (2).

‡Medium resilience, minimum population doubling time 1.4–4.4 yr (2).

1. Bliss D (1982) *Shrimps, Lobsters, and Crabs* (New Century, Piscataway, NJ).
2. Froese R, Pauly D (2006) FishBase, www.fishbase.net.