

European eel (*Anguilla anguilla*) throughout its natural range

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied for European eel, all anthropogenic impacts (e.g. caused by recreational and commercial fishing on all life stages, hydropower, pumping stations, and pollution) that decrease production and escapement of silver eels should be reduced to, or kept as close as possible to, zero in 2021.

Stock development over time

The status of European eel remains critical.

Indices of both glass and yellow eel recruitment strongly declined from 1980 to 2011. The latest glass eel recruitment in the “North Sea” index area, compared to that in 1960–1979, was 0.5% in 2020 (provisional) and 1.4% in 2019 (final). In the “Elsewhere Europe” index series it was 6.5% in 2020 (provisional) and 5.6% in 2019 (final), based on available dataserries. For the yellow eel dataserries, recruitment for 2019 was 17% (final) of the 1960–1979 level; the 2020 data collection for yellow eel is ongoing. Statistical analyses of the time-series from 1980 to 2020 show that glass eel recruitment remains at a very low level’.

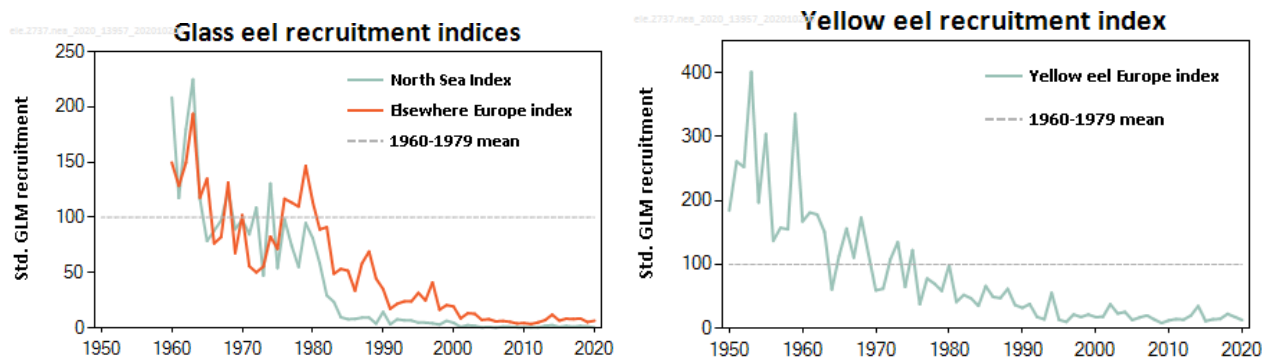


Figure 1 European eel. **Left panel:** Indices, geometric mean of estimated (generalized linear model; GLM) glass eel recruitment for the continental “North Sea” and “Elsewhere Europe” series. The GLM was fitted to 52 time-series, comprising either pure glass eel or a mixture of glass + yellow eels (24 “North Sea” and 28 “Elsewhere Europe”). The predictions were then scaled to the 1960–1979 average $\bar{p}_{1960-1979}$. The “North Sea” series are from Norway, Sweden, Germany, Denmark, the Netherlands, and Belgium. The “Elsewhere” series are from UK, Ireland, France, Spain, Portugal, and Italy. In the Baltic area, recruitment occurs at the yellow eel stage only, and series are thus not included in the glass eel recruitment index. **Right panel:** Estimated (GLM) yellow eel recruitment trends for Europe. The GLM was fitted to 16 yellow eel time-series and scaled to the 1960–1979 average $\bar{p}_{1960-1979}$. The series are from Denmark, Germany, Ireland, Sweden, and the UK.

Stock and exploitation status

ICES cannot assess the exploitation status relative to the maximum sustainable yield (MSY) and precautionary approach (PA) reference points, because the reference points are undefined. While stock-size reference points are also undefined, it is considered likely that the stock size is well below potential biological reference points.

Table 1 European eel. State of the stock and the fishery relative to reference points.

	Fishing pressure				Stock size					
		2018	2019	2020		2018	2019	2020		
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	MSY	×	×	×	Below potential reference points
Precautionary approach	$F_{pa}F_{lim}$?	?	?	Unknown	$B_{pa}B_{lim}$	×	×	×	Below potential reference points
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	?	?	?	Highly impaired recruitment

Catch scenarios

ICES does not have the information needed to provide a reliable estimate of the total catches of eel. Furthermore, the understanding of the stock dynamics is not sufficient to determine/estimate the level of impact that fisheries or non-fisheries anthropogenic factors (at the glass, yellow, or silver eel stage) have on the reproductive capacity of the stock.

Basis of the advice

Table 2 European eel. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	<p>A management framework for eel within the EU was established in 2007 by Council Regulation (EC) No. 1100/2007 (EU, 2007; also referred to as the “Eel regulation”), but no internationally coordinated management plan exists for the entire stock area, which extends beyond the EU.</p> <p>The objective of the EU regulation is the protection, recovery, and sustainable use of the stock. To achieve that objective, EU Member States have developed Eel Management Plans (EMPs) for their river basin districts. These are designed to reduce anthropogenic mortalities, permitting with high probability the escapement to the sea of at least 40% of the silver eel biomass. This is relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock.</p> <p>Council Regulation (EC) No. 1100/2007 (EU, 2007), establishing measures for the recovery of the stock of European eel, has not been evaluated by ICES for its conformity with the precautionary approach and, for this reason, has not been used as the basis for the advice. ICES work is progressing in this area.</p> <p>Since 2018, a consecutive three-month closure for eel commercial fishing has been in place at the EU level under the Fishing Opportunities Regulation for eels above 12 cm in European Union waters of ICES area, including in the Baltic Sea (EU, 2018). These measures have been modified and rolled over to 2020 (EU, 2019, 2020a).</p> <p>The General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/42/2018/1 (GFCM, 2018), establishing management measures for European eel (<i>Anguilla anguilla</i>) in the Mediterranean Sea, comprising a consecutive three-month closure period. Work is ongoing towards the development of an adaptive regional management plan for eel in the Mediterranean Region under the auspices of GFCM.</p>

Quality of the assessment

The advice is based on two glass eel recruitment indices and a yellow eel recruitment index, each comprised of multiple time-series. The indices are based on data from fisheries and scientific surveys, forming the longest and most reliable time-series that constitute an index of abundance. The quality of the underlying recruitment data and the number of time-series reported yearly is variable. The current advice is based on the fact that the indices used by ICES are well below the 1960–1979 levels. The decline in yellow eel recruitment becomes more pronounced when data from the 1950s are used rather

than the currently used baseline. However, because so few robust pre-1960s time-series are available, the baseline was set to 1960–1979 as in previous advice.

An eel data call, issued for the first time in 2017, substantially improved the coverage and completeness of the data being reported to ICES. Subsequent annual calls were issued, including every third year the national stock indicators and associated data as reported to the EU in the progress reports. The most recent call was issued in 2020 (ICES, 2020a). Data on eel, fisheries, and other anthropogenic impacts across the whole stock, however, remain incomplete. There is no international legislative requirement to collect and provide data that cover the entire stock area.

In 2018, nine of 95 eel management plans did not report all biomass indicators, and 17 did not report all mortality indicators (ICES, 2018). Differences persist in the approaches used to calculate reported stock indicators, which might not necessarily cover the entire distribution area of the species. A complete reporting of standardized and quality-checked indicators, covering the entire distribution area of European eel, is required.

Issues relevant for the advice

Many fishery-based time-series are utilized to assess temporal trends in recruitment and escapement. Changes to these time-series (e.g. through new fishery regulations or changes to habitat) may introduce biases in the time-series and compromise their use in the analyses. Sensitivity analyses showed that the current assessment was not sensitive to changes in fishery-based time-series; yet, losing these time-series would increase the noise in the outcome (i.e. standard error around the trend increases). This means that the implementation of new fishery-independent time-series should be encouraged, especially since all time-series need to run for ten years before they can be incorporated into the recruitment index.

Of the 68 datasets currently included in the recruitment trend used in the advice for the 2020 data call, 12 (i.e. 17%) recorded significant reductions to the sampling efforts directly attributed to COVID-19 impacts. The bulk of these reductions occurred across the western edge of Europe, coinciding with the spread of COVID-19 across the continent during spring, affecting six sites from the North Sea (NS series), four from the Elsewhere Europe (EE), and two for yellow eel recruitment. In the total dataset of 95 series (the database also includes series that are either too short or too biased to be included in the analysis), 17 of these series were affected. Note that of those index series used to assess recruitment trends, only one, normally reported at the time of WGEEL, was absent (SeEAG on the Severn UK).

Total landings and effort data are incomplete. In addition, a great heterogeneity is present among the time-series of landings owing to inconsistencies in reporting by, and between, countries. However, there has been a considerable improvement in both data consistency and area coverage since the introduction of standardized eel data calls in 2017. Changes in eel management practices have also affected commercial and non-commercial/recreational fisheries and the reporting of these fisheries.

The European eel has been listed in the IUCN Red List as Critically Endangered since 2008.

The European eel (*Anguilla anguilla*) has been listed in CITES Appendix II and in the EU implementation of CITES rules (Annex B to Council Regulation (EC) No 338/97; EU, 1996) since 13 March 2009. Since 2010, import and export of eel from the EU has been prohibited. Some non-EU range states allow export of European eel, mostly to the Far East.

The assessment and management of the fisheries and non-fisheries mortality factors are carried out by national and regional authorities. Fisheries take place on all available continental life stages throughout the distribution area, although fishing pressure varies from area to area, from almost nil to heavy overexploitation. Illegal, unreported, and unregulated (IUU) fishing is known to occur. The non-fishing anthropogenic mortality factors can be grouped into those resulting from the following: (a) hydropower, pumping stations, and other water intakes; (b) habitat loss or degradation; (c) pollution, diseases, and parasites; and (d) other management actions that may affect levels of predation (e.g. conservation vs. control of predators). Climate change may have further effects, but these have not been quantified.

ICES has considered the quantification of the impacts of non-fishery factors (ICES, 2019a, 2020b). The current total potential loss of eel to all non-fishery anthropogenic mortalities (largely hydropower and pumps), from approximately half of the countries reporting to ICES, amounted to 1625 tonnes annually. This estimate would require further improvement

through better and more consistent data delivery from EU Member States. A quantitative assessment of the effects of habitat loss proved to be challenging through lack of appropriate data; this will be addressed in future data calls.

Environmental impacts in marine, transitional, and freshwaters all contribute to the anthropogenic stresses on eels, their mortality, and their reproductive success; these include, e.g. habitat alteration, barriers to eel passage, deterioration in water quality, and the presence of non-native species, diseases and parasites. The implementation of environmental legislation (e.g. the EU Water Framework [WFD] and the Marine Strategy Framework directives [MSFD]) that result in improvements to the continental environment may also have a positive effect on the reproductive potential of silver eel.

ICES notes that the restocking of eels, which is considered a management action in the EU regulation and in many eel management plans, is reliant on a glass eel fishery catch. Evidence shows that translocated and stocked eel can contribute to yellow and silver eel production in recipient waters, but information on the contribution to actual spawning is missing because of a general lack of knowledge of eel spawning. Internationally coordinated research is required to determine any net benefit of restocking on the overall population, including carrying capacity estimates of glass eel source estuaries, detailed mortality estimates at each step of the restocking process, and performance estimates of stocked vs. non-stocked eels.

Estimation of the prospective net benefit should be carried out prior to any restocking activity, such as increasing silver eel escapement by restocking to attain stock recovery. Restocking should take place only where survival in silver eel escapement is high, and it should not be used as an alternative to reducing anthropogenic mortality. Where eel are translocated and stocked, measures should be implemented to evaluate their fate and their contribution to silver eel escapement. Such measures should include regionally-coordinated mass marking of eels to distinguish stocked eels from natural recruits in future scientific surveys.

Recruitment at the 1960–1979 level is currently regarded as an unimpaired recruitment level.

Reference points

No defined reference points are used by ICES for this stock.

Basis of the assessment

Table 3 European eel. Basis of the assessment.

ICES stock data category	3 (ICES, 2019b).
Assessment type	Trend analysis, GLM of glass and yellow eel recruitment indices.
Input data	Glass eel and yellow eel recruitment indices (informed by 52 glass eel and 16 yellow eel time-series).
Discards and bycatch	Not included.
Indicators	None.
Other information	None.
Working group	Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL).

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 4 European eel. History of ICES advice.

Year	ICES advice	Predicted catch corresponding to the advice	TAC *	ICES catch **
1999	A recovery plan	-		
2000	No fishery and a recovery plan	0	-	-
2001	A recovery plan should be implemented for the eel stock and fishing mortality should be reduced to the lowest possible level until such a plan is agreed upon and implemented.	-	-	-
2002	Exploitation should be reduced to the lowest possible level until a recovery plan is agreed upon and implemented	-	-	-
2003	All anthropogenic mortality as close to zero as possible, until a recovery plan is agreed upon and implemented	-	-	-
2004	-	-	-	-
2005	-	-	-	-
2006	All anthropogenic mortality as close to zero as possible, until a recovery plan is agreed upon and implemented	-	-	-
2007	All exploitation and other anthropogenic impacts should be reduced to a level as close to zero as possible and a recovery plan for the whole stock should be implemented urgently	-	-	-
2008	All exploitation and other anthropogenic impacts should be reduced to as low as possible until there are clear signs of recovery	-	-	-
2009	All exploitation and other anthropogenic impacts should be reduced to as close to zero as possible	-	-	-
2010	All anthropogenic impacts should be reduced to as close to zero as possible until stock recovery is achieved	-	-	-
2011	All anthropogenic mortality as close to zero as possible until there is clear evidence that the stock is increasing	-	-	-
2012	All anthropogenic mortality as close to zero as possible until there is clear evidence that both recruitment and the adult stock are increasing	-	-	-
2013	All anthropogenic mortality as close to zero as possible until there is clear evidence that both recruitment and the adult stock are increasing	-	-	-
2014	All anthropogenic mortality as close to zero as possible, until there is clear evidence of sustained increase in both recruitment and the adult stock	-	-	-
2015	All anthropogenic mortality as close to zero as possible	-	-	-
2016	All anthropogenic mortality as close to zero as possible	-	-	-
2017	All anthropogenic impacts as close to zero as possible	-	-	-
2018	All anthropogenic impacts as close to zero as possible	-	-	-
2019	All anthropogenic impacts as close to zero as possible	-	-	-
2020	All anthropogenic impacts as close to zero as possible	-	-	-
2021				

* There has never been a TAC for this stock.

** There are no ICES catch estimates for the complete stock.

History of catch and landings

Landings data are not complete for the entire natural range of the European eel. However, Tables 5–8 present the landings reported to ICES, the European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC), and GCFM. Landings are reported either through responses to the ICES data call (ICES, 2020a), in country reports (Annex 6 in ICES, 2020b), or integrated by ICES in 2017 (ICES, 2017), using data from previous reports. Not all countries have reported all their landings; hence, the values indicated here should be considered a minimum. Care should be taken with the interpretation of landings as indicators of the stock since the landings statistics now reflect the status of reduced fisheries activity as well as of stock levels.

Data deficiencies in reports on recreational fisheries (Tables 7–8) were described by ICES (2016). Though there has been evidence of improvements since then, the amount of landings in recreational fisheries remains largely unquantified. Estimates from countries, where they are available, show that landings in recreational fisheries can be of the same order of magnitude as in commercial fisheries (except for glass eels).

Information on fishing effort and the capacity of the fisheries is lacking, information which is necessary to fully interpret the changes to the landings data over the years. The gathering of such information is challenging because of the wide variety of fisheries and gear types (ICES, 2019a).

Few countries reported the level of misreporting and illegal fisheries to ICES, EIFAAC, and GFCM (i.e. the seizure of illegal nets as well as the illegal trade of glass eels from countries both inside and outside the EU). However, customs seizures indicate that the illegal export of glass eel could be substantial, potentially exceeding the legal market.

Table 5 European eel. Commercial landings (tonnes) of glass eel (1945–2019), as reported to ICES by EU countries and the UK where fisheries exist, combining information from the 2020 data call and the WGEEL database.

Year	United Kingdom	France	Spain	Portugal	Italy
1945			119		
1946			72		
1947			100		
1948			111		
1949			9		
1950			4		
1951			2		
1952			0		
1953			3		
1954			6		
1955			0.906		
1956			0.884		
1957			3		
1958			0.402		
1959			7		
1960			9		
1961			17		
1962			11		
1963			8		
1964			11		
1965			4		
1966			6		
1967			5		
1968			4		
1969			4		
1970			5		
1971			1		
1972	17		1		
1973	28		1		
1974	58		2	2	
1975	10		3	6	
1976	13		12	13	
1977	39		18	23	
1978	61	1393	22	7	
1979	67	1850	17	18	
1980	40	1491	15	20	
1981	37	890	13	36	
1982	48	866	19	44	
1983	17	791	10	13	
1984	25	528	16	32	
1985	20	444	18	30	
1986	19	423	6	14	

Year	United Kingdom	France	Spain	Portugal	Italy
1987	21	461	9	19	
1988	21	504	10	5	
1989	21	410	10	6	
1990	21	325	5	9	
1991	1	179	7	6	
1992	5	183	4	9	
1993	6	329	5	7	
1994	10	329	2	6	
1995	12	413	5	11	
1996	19	262	15	17	
1997	9	287	12	9	
1998	11	195	14	9	
1999	0	242	14	7	
2000	0	206	11	6	0
2001	0.809	101	12	2	0
2002	0.521	203	9	2	0
2003	2	154	10	3	0
2004	0.97	98	5	2	0
2005	2	98	6	2	0
2006	1	74	4	5	0
2007	2	83	5	2	0
2008	0.817	86	5	2	0
2009	0.291	2	4	3	0
2010	1	41	6	5	0
2011	2	31	5	2	0
2012	3	34	5	2	0
2013	6	34	7	2	0
2014	12	35	11	2	0.425
2015	3	36	9	3	0.159
2016	4	46	7	0.856	0.06
2017	3	43	11	4	0.146
2018	4	53	5	1	0.243
2019 *	6	49	4	0.587	0.243
2020 *		48	6	0.891	0

* Preliminary data.

0 = No catch.

Empty cell = No information or Not collected or Not pertinent.

The figures in the table are rounded unless < 1 tonne.

Table 6a European eel. Official commercial landings (tonnes) of yellow and silver eel (1908–2020) in Norway (NO), Sweden (SE), Finland (FI), Estonia (EE), Latvia (LV), Lithuania (LT), Poland (PL), Germany (DE), Denmark (DK), Netherlands (NL), and Belgium (BE), combining information from the 2020 data call and the WGEEL database. Landings from other countries are shown in Table 6b.

Year	NO	SE	FI	EE	LV	LT	PL	DE *	DK	NL	BE
1908	268										
1909	327										
1910	303										
1911	384										
1912	187										
1913	213										
1914	282	1461									
1915	143	997									
1916	117	1078									
1917	44	1284									
1918	35	884									
1919	64	1145									
1920	80	970							3413		

Year	NO	SE	FI	EE	LV	LT	PL	DE *	DK	NL	BE
1921	79	1072							3443		
1922	94	926							3760		
1923	140	948							3396		
1924	290	1201							4130		
1925	325	1714							4880		
1926	341	1707							4726		
1927	354	2011							4648		
1928	325	1040							4117		
1929	425	1394							4375		
1930	450	1529							4773		
1931	329	1795							4195		
1932	518	1589							5088		
1933	694	1494							5014		
1934	674	1769							5171		
1935	564	1951							4316		
1936	631	1654							4332		
1937	603	1725							4329		
1938	526	1871							3849		
1939	434	1774							4662		
1940	143	1626							3709		
1941	174	1822							3717		
1942	131	1226							3140		
1943	136	1828							3917		
1944	150	2320							4245		
1945	102	1906							4169	2668	
1946	167	1745							4269	3492	
1947	268	2347			10	8			4784	4502	
1948	293	2212			10	14			4386	4799	
1949	214	2329			50	21			4492	3873	
1950	282	2628			10	29			4500	4152	
1951	312	2311			10	32			4400	3661	
1952	178	1848			10	39			3900	3978	
1953	371	2756			20	80			4300	3157	
1954	327	2459			20	147	609		3800	2085	
1955	451	3338			40	163	732		4800	1651	
1956	293	1702			20	131	656		3700	1817	
1957	430	2494			20	168	616		3600	2509	
1958	437	2024			20	149	635		3300	2674	
1959	409	3522			24	155	566		4000	3413	
1960	430	1905			37	165	733		4937	2999	
1961	449	2387			43	139	640		4110	2452	
1962	356	2171			41	155	663		4122	1443	
1963	503	2334			56	260	762		4166	1618	
1964	440	2612		3	37	225	884		3505	2068	
1965	523	2051		0.3	35	125	682		3402	2268	
1966	510	2219		2	33	238	804		3901	2339	
1967	491	1835		3	39	153	906		3679	2524	
1968	569	2052		3	28	165	943		4476	2209	
1969	522	1922		49	36	134	935		3878	2389	
1970	422	1209		62	29	118	847		3558	1111	
1971	415	1391		60	29	124	722		3378	853	
1972	422	1204		73	25	126	696		3429	857	
1973	409	1212		69	27	120	645		3656	823	
1974	368	1034		51	20	86	691		2977	840	
1975	407	1391		82	19	114	810		3485	1000	
1976	386	935		72	24	88	761		3054	1172	
1977	352	989		66	16	68	868		2502	783	

Year	NO	SE	FI	EE	LV	LT	PL	DE *	DK	NL	BE
1978	347	1076		63	18	70	910		2492	719	
1979	374	954		28	21	57	979		1904	530	
1980	387	1112		26	9	45	1214		2288	664	
1981	369	887		22	10	27	944		2227	722	
1982	385	1161		14	12	28	911		2541	842	
1983	324	1212		29	9	23	868		2119	937	
1984	310	963		72	12	27	819		1871	691	
1985	352	1029		75	18	29	1022	1097	1630	679	
1986	272	829		61	19	32	921	1119	1672	721	
1987	282	700		67	25	20	887	1031	1279	538	
1988	513	933		110	15	23	943	1018	1878	425	
1989	313	903		55	13	21	813	964	1696	526	
1990	336	918		61	13	19	768	830	1675	472	
1991	323	1060		52	14	16	670	725	1465	573	
1992	372	1154		39	17	12	638	762	1451	548	
1993	340	1121		59	19	10	568	790	1080	293	
1994	472	1265		47	19	12	635	833	1200	330	
1995	454	950		45	38	9	642	778	892	354	
1996	353	1053		55	24	9	629	603	752	300	
1997	467	1065		59	25	11	526	616	797	285	
1998	331	646		44	30	17	544	567	597	323	
1999	447	702		65	26	18	599	645	717	332	
2000	281	531	0	67	14	22	444	591	628	368	3
2001	304	643	0	67	17	23	435	569	707	440	3
2002	311	591	0	50	10	26	373	544	614	371	3
2003	240	565	0	49	10	24	366	498	648	311	3
2004	237	583	0	39	11	32	337	475	546	311	3
2005	249	676	0	31	10	45	220	455	534	256	3
2006	293	732	0	33	8	32	184	472	596	241	0
2007	194	702	0	31	10	30	181	424	537	197	0
2008	211	671	1	31	13	27	160	406	466	148	0
2009	69	514	2	22	5	17	161	374	467	109	0
2010	32	525	2	19	9	38	173	366	422	444	0
2011	0	450	2	16	6	23	119	279	370	371	0
2012	0	340	2	18	6	16	119	245	317	353	0
2013	0	374	1	17	5	28	137	265	356	321	0
2014	0	324	1	17	4	15	117	232	346	321	0
2015	0	246	0.609	14	5	12	102	224	282	293	0
2016	3	279	1	15	4	28	138	205	265	314	0
2017	11	244	1	16	9	24	173	80	257	422	0
2018	3	250	1	18	6	20	146	87	182	461	0
2019 **	4	0	0.344	22	6	9	168	67	183	484	0
2020 **	0	0	0	0				0		0	0

* German data after 2016 are incomplete.

** Preliminary data.

0 = No catch.

Empty cell = No data or Not collected or Not pertinent.

The figures in the table are rounded unless < 1 tonne.

Table 6b Official commercial landings (tonnes) of yellow and silver eel (1908–2020) in Ireland (IE), United Kingdom (UK), France (FR), Spain (ES), Portugal (PT), Italy (IT), Slovenia (SL), Croatia (HR), Greece (GR), Turkey (TR), Tunisia (TN), and Morocco (MA), combining information from the 2020 data call and the WGEEEL database.

Year	IE	UK	FR	ES	PT	IT	SL	HR	GR	TR	TN	MA
1951				90								
1952				102								
1953				80								
1954				98								
1955				103								
1956				106								
1957				80								
1958				115								
1959				100								
1960		772		98								
1961		768		154								
1962		696		115								
1963		788		137								
1964		549		92								
1965		784		130								
1966		881		192					15			
1967		569		164					19			
1968		586		176					5			
1969		606		136		2469			3	342		
1970	200	752		119		2300			0	441		
1971	200	842		107		2113			0	460		
1972	200	633		119		1997			4	220		
1973	91	723		100		588			15	315		
1974	67	765		93		2122			130	588		
1975	79	762		78		2886			134	448		
1976	150	622		83		2596			159	499		
1977	108	691		80		2390			89	282		
1978	76	824		67		2172			225	283		
1979	110	1045		97		2354			185	396		
1980	75	912		90		2198			227	224		
1981	94	907		98		2270			251	374		
1982	144	943		20		2025	0.795		255	424		
1983	117	866		18		2013	0.67		201	588		
1984	88	973		11		2050	1		285	616		
1985	87	750		17		2135	2		190	583		
1986	87	651	1944	13		2134	3		152	517		
1987	230	684	2062	21		2265	2		266	543		
1988	215	934	2265	14		2027	2		268	756		
1989	400	875	1746	5	27	1243	1		156	472		
1990	256	784	1778	9	26	1088	2		194	230		
1991	245	737	1645	50	47	1097	1		209	262		
1992	234	715	1321	54	59	1084	0.061		185	245		
1993	260	671	1280	66	68	782	0.066		182	261		
1994	300	778	1280	51	53	771	0.718		201	329		
1995		900	1280	69	47	1047	0.01		201	390		
1996		805	1280	62	51	953	0.012		151	342		
1997		731	1223	61	49	727	0.002		137	400		
1998		693	1150	49	47	666	0.003		88	300		
1999	250	668	1005	53	46	634			81	200		
2000	250	587	1009	59	44	588	0.004	0	88	176	53	
2001	98	583	1024	133	30	520	0.019	0	93	122	93	
2002	123	551	30	109	54	415	0.009	0	136	147	251	
2003	111	552	21	102	21	446		0	77	158	137	
2004	136	472	13	93	18	379		0	58	165	95	

Year	IE	UK	FR	ES	PT	IT	SL	HR	GR	TR	TN	MA
2005	101	476	8	93	14	75	0.002	0	116	176	107	
2006	133	383	15	121	20	56	0.014	0	77	162	288	
2007	114	450	26	88	21	277	0.009	0	90	179	257	
2008	108	399	31	73	14	56	0.031	0	71	171	194	
2009	0	460	42	100	16	330	0.002	0	78	158	141	
2010	0	461	20	82	22	265	0.003	0	59	182	114	
2011	0	456	368	66	12	190	0	0	83	28	122	
2012	0	415	473	90	8	182	0	0	55	38	141	
2013	0	427	504	92	5	172	0.001	0	38	48	180	23
2014	0	406	434	74	7	185	0	0.516	58	56	137	23
2015	0	341	357	50	6	170	0	0.149	60	71	95	4
2016	0	347	443	64	5	205	0	0.595	84	75	299	7
2017	0	322	434	83	2	214		0.56	62	81	149	2
2018 *	0	365	617	71	4	159		0.61	41	111	153	2
2019 *	0	267	292	47	2	210		0.562		330	0	
2020 *	0		0	60	0	0		0		0	126	

* Preliminary data.

0 = No catch.

Empty cell = No data or Not collected or Not pertinent.

The figures in the table are rounded unless < 1 tonne.

Table 7 European eel. Recreational landings (tonnes) of glass eel (1978–2020) in countries where fisheries exist, i.e. France (FR) and Spain (ES), combining information from the 2020 data call and the WGEEL database.

Year	FR	ES
1978	647	
1979	697	
1980	1303	
1981	904	
1982	219	
1983	161	
1984	156	
1985	71	
1986	87	
1987	172	
1988	40	
1989	110	
1990	54	
1991	87	
1992	77	
1993	130	
1994	74	
1995	113	
1996	25	
1997	39	
1998	6	
1999	6	
2000	2	0
2001	1	0
2002	37	0
2003	0	0
2004	0	0.858
2005	0	1
2006	1	2
2007	0	1
2008	0	2
2009	0	0.439
2010	0	0.821
2011	0	0.389
2012	0	1
2013	0	2
2014	0	2
2015	0	2
2016	0	2
2017	0	2
2018	0	2
2019 *	0	0.865
2020 *	0	0.662

* Preliminary data.

0 = No catch.

Empty cell = No data or Not collected or Not pertinent.

The figures in the table are rounded unless < 1 tonne.

Table 8a European eel. Recreational landings (tonnes) of yellow and silver eel (1980–2020) in Norway (NO), Sweden (SE), Finland (FI), Estonia (EE), Latvia (LV), Lithuania (LT), Poland (PL), Germany (DE), Denmark (DK), Netherlands (NL), and Belgium (BE), combining information from the 2020 data call and the WGEEL database.

Year	NO	SE	FI	EE	LV	LT	PL	DE *	DK	NL	BE
1980											
1981											
1982											
1983											
1984											
1985								523			
1986		0						496			
1987		0						495			
1988		0						490			
1989		0						467			
1990		0						444			
1991		0						438			
1992		0						432			
1993		0						421			
1994		0						439			
1995		0						400			
1996		0						387			
1997		0						378			
1998		0						403			
1999		0						386			
2000	0	0	0	0	2	0	0	391		0	34
2001	0	0	0	0	1	0	0	386		0	34
2002	0	0	0	0	1	0	0	389		0	34
2003	0	0	0	0	0.418	0	0	385		0	34
2004	0	0	0	0	0.655	0	0	380		0	34
2005	0	0	0	2	3	0	0	357		0	34
2006	0	0	0	1	0.326	0	0	359		0	34
2007	0	0	0	0.958	0.34	0	0	346		0	34
2008	0	0	17	1	0.183	0	0	293		0	34
2009	0	0	0	1	0.69	0	0	286	100	0	34
2010	0	0	10	1	0.348	0	0	253	118	111	30
2011	0	0	0	0.98	0.383	0	0	251	80	0	30
2012	0	0	5	0.612	0.415	1	32	246	52	59	30
2013	0	0	0	0.589	0.738	3	27	251	50	0	30
2014	0	0	20	0.536	0.503	2	30	254	57	70	30
2015	0	0	0	0.744	0.45	5	26	256	118	0	30
2016	0	0	8	0.634	0.17	2	34	258	164	24	30
2017	0	0	0	0.579	0.45	3	31	36	117	0	30
2018	0	0	2	1	0.166	0.587	30	34	105	0	30
2019 **	0	0	0	0.615	0.258	6	30	35	105	0	30

* German data after 2016 are incomplete.

** Preliminary data.

0 = No fishing or No information.

Empty cell = No data or Not collected or Not pertinent.

The figures in the table are rounded unless < 1 tonne.

Table 8b European eel. Recreational landings (tonnes) of yellow and silver eel (1980–2020) in Ireland (IE), United Kingdom (UK), France (FR), Spain (ES), Portugal (PT), Italy (IT), Slovenia (SL), Croatia (HR), and Greece (GR), combining information from the 2020 data call and the WGEEL database. Countries omitted include those where recreational landings are prohibited, as well as those that have not reported.

Year	IE	UK	FR	ES	PT	IT	SL	HR	GR
1980							0		
1981							0		
1982							0		
1983							0		
1984							0		
1985							0		
1986							0.07		
1987							0.14		
1988							0.134		
1989							0.11		
1990							0.06		
1991							0.058		
1992							0.092		
1993							0.078		
1994							0.036		
1995							0.029		
1996							0.143		
1997							0.207		
1998							0.088		
1999							0.023		
2000	0	0	21	0	0	0	0.004	0	
2001	0	0	20	0	0	0	0.02	0	
2002	0	0	19	0	0	0	0.033	0	
2003	0	0	15	0	0	0	0.004	0	
2004	0	0	17	0	0	0	0.006	0	
2005	0	0	13	0	0	0	0	0	
2006	0	0	684	0	0	0	0.004	0	
2007	0	0	15	0	0	0	0	0	
2008	0	0	15	0	0	0	0	0	
2009	0	0	7	0	0	0	0	0	
2010	0	0	5	0	0	150	0	0	
2011	0	0	3	0	0	61	0	0	
2012	0	0	5	0	0	74	0	0	
2013	0	0	5	0	0	70	0	0	0
2014	0	0	4	0	0	70	0	0	0
2015	0	0	4	0	0	60	0	0	0
2016	0	0	3	0	0	57	0	0	0
2017	0	0	3	0	0	41		0	0
2018	0	0	3	0	0	38		0	1
2019 *	0	0	1	0.265	0	30		0	

* Preliminary data.

0 = No fishing or No information.

Empty cell = No data or Not collected or Not pertinent.

The figures in the table are rounded unless < 1 tonne.

Summary of the assessment

Table 9 European eel. Recruitment indices: geometric means of estimated (GLM) recruitment for glass eel in the continental “North Sea” and “Elsewhere Europe”, and recruitment of yellow eel in Europe. The glass eel GLM (predicting recruitment as a function of area, year, and site) was fitted to 52 time-series, comprising either pure glass eel or a mixture of glass eels and yellow eels and scaled to the 1960–1979 geometric mean so that values correspond to the recruitment as a percentage of 1960–1979. The yellow eel GLM (predicting recruitment as a function of year and site) was fitted to 16 yellow eel time-series and scaled to the 1960–1979 geometric mean so that values correspond to the recruitment as a percentage of 1960–1979. These indices are updated on an annual basis and, as they are presented in relative terms, these updates may change the historical values. Confidence intervals (CI) = 95%.

Year	Elsewhere Europe index	North Sea index	Yellow eel Europe index	Elsewhere Europe index		North Sea index		Yellow eel index	
				CI Lower	CI Upper	CI Lower	CI Upper	CI Lower	CI Upper
1950			183					48	694
1951			262					76	903
1952			252					73	871
1953			401					116	1383
1954			197					57	679
1955			304					88	1049
1956			136					39	470
1957			157					45	542
1958			154					45	533
1959			335					97	1157
1960	150	208	167	62	364	52	831	52	540
1961	128	118	181	61	270	29	469	56	587
1962	149	180	178	74	300	45	716	55	576
1963	194	225	151	96	389	56	897	47	487
1964	118	117	61	48	287	35	386	18.8	197
1965	135	79	114	67	271	24	261	35	369
1966	76	88	156	41	141	27	291	48	505
1967	82	97	111	44	152	29	322	36	341
1968	132	124	173	71	243	37	410	56	533
1969	68	89	116	37	125	30	267	38	357
1970	102	98	59	55	189	33	293	19.3	182
1971	56	85	62	31	101	28	254	20	191
1972	50	109	108	28	89	39	305	34	351
1973	56	47	135	31	98	17.8	126	44	415
1974	83	131	65	48	143	47	366	21	200
1975	72	54	122	43	120	21	140	40	376
1976	117	98	38	69	197	39	246	12.2	116
1977	113	75	78	66	196	30	187	25	240
1978	110	55	70	64	189	22	138	23	215
1979	147	95	58	87	247	40	228	19.0	180
1980	114	81	99	69	190	33	199	33	293
1981	89	58	41	52	152	25	138	13.9	122
1982	91	29	52	55	151	12.3	71	17.6	154
1983	49	24	47	29	82	9.9	57	15.9	139
1984	53	9.7	35	32	90	4.1	23	11.9	104
1985	52	8.0	66	32	84	3.4	19	22	194
1986	34	8.2	49	21	55	3.4	20	17.1	140
1987	59	9.4	47	36	94	3.9	23	16.5	135
1988	69	9.5	61	42	113	4.0	22	21	176
1989	45	4.0	36	27	73	1.71	9.3	11.8	112
1990	35	14.6	32	22	57	6.1	35	10.8	94
1991	17.3	3.3	38	10.6	29	1.38	7.9	12.3	116
1992	22	7.9	17.7	13.4	36	3.3	18.5	6.2	51
1993	24	7.0	14.1	14.8	39	3.0	16.4	4.9	40
1994	24	6.8	55	15.2	38	2.9	16.0	19	159
1995	32	4.9	13.2	20	51	2.1	11.5	4.5	39

Year	Elsewhere Europe index	North Sea index	Yellow eel Europe index	Elsewhere Europe index		North Sea index		Yellow eel index	
				CI Lower	CI Upper	CI Lower	CI Upper	CI Lower	CI Upper
1996	25	4.9	10.1	15.7	40	2.1	11.5	3.5	29
1997	41	4.3	21	26	65	1.81	10.0	7.8	59
1998	16.6	3.1	17.5	10.5	26	1.31	7.3	6.3	49
1999	21	6.5	21	13.0	33	2.7	15.5	7.7	60
2000	19	4.7	17.7	12.2	31	2.0	11.2	6.2	51
2001	8.7	1.00	17.9	5.6	13.7	0.43	2.4	6.4	50
2002	13.4	2.6	38	8.5	21	1.08	6.2	13.7	103
2003	12.9	1.94	24	8.3	20	0.80	4.7	8.8	63
2004	7.3	0.65	25	4.7	11.5	0.28	1.53	9.4	68
2005	8.0	1.11	12.9	5.2	12.8	0.46	2.6	5.0	34
2006	6.0	0.45	17.0	3.8	9.0	0.20	1.04	6.5	44
2007	6.4	1.26	20	4.2	10.2	0.55	2.9	7.7	53
2008	5.6	1.16	13.6	3.5	8.6	0.52	2.6	5.3	35
2009	4.2	0.83	8.2	2.5	6.8	0.37	1.84	3.2	21
2010	4.4	0.73	12.3	2.8	7.2	0.32	1.64	4.8	32
2011	3.6	0.49	27	2.2	5.7	0.22	1.08	11.0	68
2012	5.1	0.56	13.8	3.1	8.6	0.26	1.23	5.3	36
2013	7.2	1.74	18.1	4.4	11.7	0.79	3.8	7.3	45
2014	12.1	2.8	32	7.4	20	1.26	6.0	13.3	79
2015	6.7	0.87	11.1	4.1	10.9	0.40	1.90	4.5	27
2016	8.5	1.91	13.1	5.1	14.0	0.87	4.2	5.3	33
2017	8.1	1.16	13.5	5.0	13.4	0.54	2.5	5.4	34
2018	8.6	1.88	20	5.0	14.8	0.87	4.1	8.1	51
2019	5.6	1.43	16.6	3.3	9.3	0.66	3.1	6.6	42
2020	6.5	0.49		3.8	11.0	0.29	0.83		

The figures in the table are rounded.

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