

Black-bellied anglerfish (*Lophius budegassa*) in Subarea 7 and divisions 8.a–b and 8.d (Celtic Seas, Bay of Biscay)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2024 should be no more than 25 579 tonnes.

ICES notes the existence of a precautionary management plan developed and adopted by one of the relevant management authorities for this stock.

The use of combined species TAC for the two anglerfish species, black-bellied anglerfish (*Lophius budegassa*) and white anglerfish (*Lophius piscatorius*), prevents effective control of the single-species exploitation rates and could lead to the overexploitation of either species.

ICES advice on conservation aspects

ICES has not identified any conservation aspects.

Stock development over time

Fishing pressure on the stock is below F_{MSY} , and spawning-stock size is above MSY $B_{trigger}$, B_{pa} , and B_{lim} .

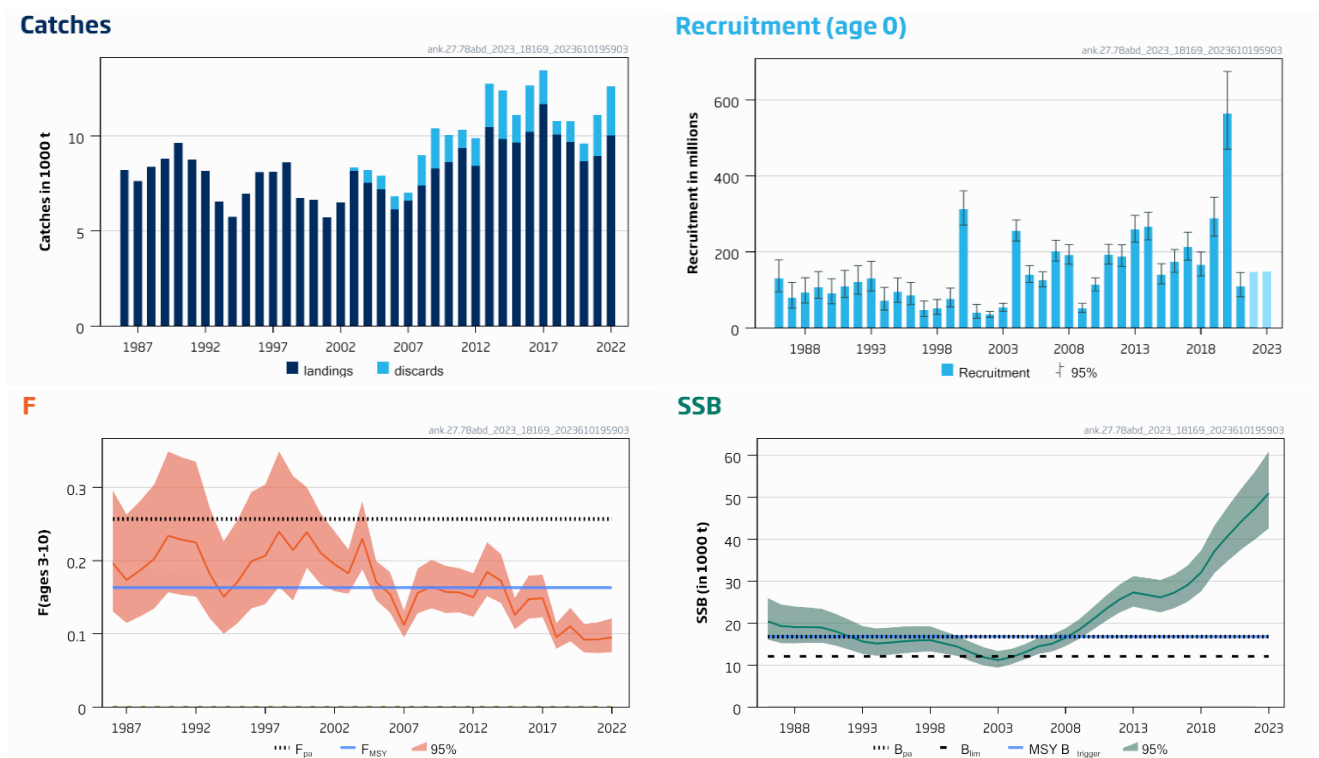


Figure 1 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. Summary of the stock assessment. Discard observations are available since 2003. The assumed recruitment values for 2022 and 2023 are shaded in a lighter colour.

Conservation status

ICES is not aware of any information on stock specific conservation status.

Catch scenarios

Table 1 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. Values in the forecast and for the interim year.

Variable	Value	Notes
$F_{\text{ages 3–10}}$ (2023)	0.093	<i>Status quo</i> $F_{\text{ages 3–10}}$ (average 2020–2022).
SSB (2024)	56821	Short-term forecast (STF); in tonnes.
$R_{\text{age 0}}$ (2023)	147781	Predicted from stock–recruitment relationship; in thousands.
$R_{\text{age 0}}$ (2024)	148368	Predicted from stock–recruitment relationship; in thousands.
Catch (2023)	15338	STF; in tonnes.
Projected landings (2023)	12148	STF assuming average landings ratio-by-age (2020–2022); in tonnes.
Projected discards (2023)	3190	STF assuming average discards ratio-by-age (2020–2022); in tonnes.

Table 2 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. Annual catch scenarios. All weights are in tonnes.
 Note: the % change in TAC is not computed because the TAC is for both species of anglerfish.

Basis	Total catch (2024)	Projected landings* (2024)	Projected discards** (2024)	$F_{\text{ages 3–10}}$ Total (2024)	$F_{\text{ages 3–10}}$ Projected landings (2024)	$F_{\text{ages 3–10}}$ Projected discards (2024)	SSB (2025)	% SSB change***	% advice change^
ICES advice basis									
MSY approach = F_{MSY}	25579	21175	4404	0.163	0.155	0.0081	60186	5.9	9.1
Other options									
$F_{\text{MSY lower}}$	17990	14896	3094	0.112	0.106	0.0056	63335	11.5	–23
$F_{\text{MSY upper}}$	37050	30659	6390	0.24	0.23	0.0122	55448	–2.42	58
$F = 0$	0	0	0	0	0	0	70841	25	–100
F_{pa}	38656	31987	6669	0.26	0.24	0.0128	54786	–3.6	65
$\text{SSB}_{2025} = B_{\text{lim}}$	147906	121633	26273	1.77	1.68	0.088	12073	–79	531
$\text{SSB}_{2025} = B_{\text{pa}} = \text{MSY } B_{\text{trigger}}$	134868	111042	23825	1.44	1.37	0.072	16776	–70	475
$\text{SSB}_{2025} = \text{SSB}_{2024}$	33718	27906	5812	0.22	0.21	0.0110	56821	0	44
$F = F_{2023}$	15096	12501	2595	0.093	0.089	0.0046	64539	13.6	–36

* Marketable landings, assuming recent discard rate.

** Including BMS landings (EU stocks), assuming recent discard rate.

*** SSB 2025 relative to SSB 2024 (56 821 tonnes).

^ Advice value for 2024 relative to advice value for 2023 (23 436 tonnes).

The advice for 2024 is 9.1% higher than last year because the stock size is projected to continue to increase.

Basis of the advice

Table 3 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. The basis of the advice.

Advice basis	MSY approach
Management plan	ICES is aware of the multiannual management plan (EU MAP) that was adopted by the EU for this stock (EU, 2019) and which ICES considers to be precautionary. There is no agreed shared management plan with UK for this stock, and ICES provides advice according to the ICES MSY approach. Catch scenarios consistent with the MAP F_{MSY} ranges are provided.

Quality of the assessment

The stock was benchmarked in 2022 (ICES, 2023c). The perception of the stock has not changed in the 2023 assessment.

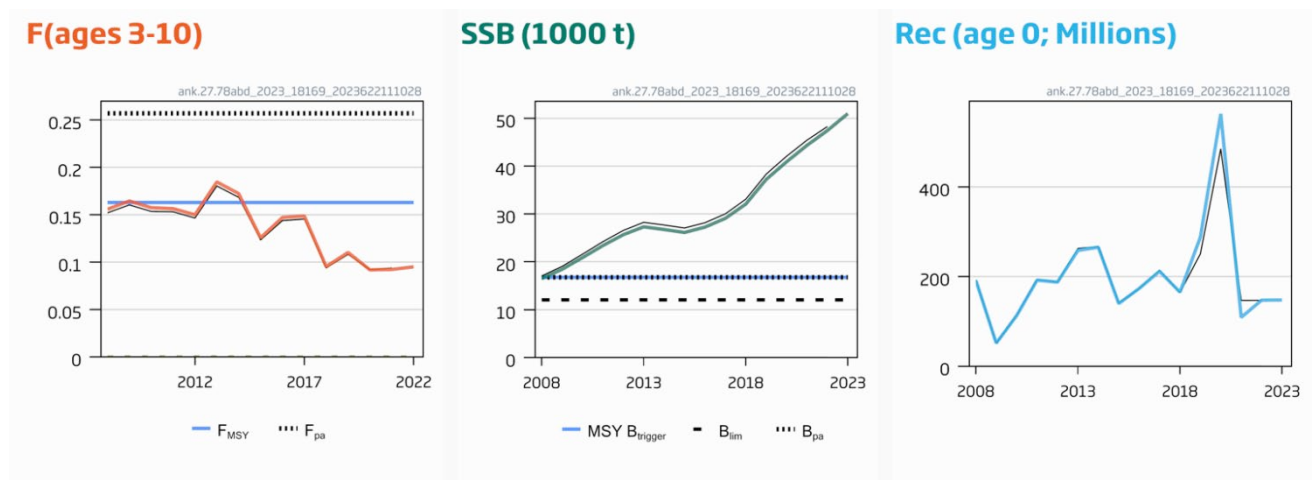


Figure 2 Black-bellied anglerfish in Subarea 7 and divisions 8.a–8.b and 8.d. Historical assessment results. The basis for the advice has changed from a trends-based analysis (category 3) to an analytical assessment (category 1) in 2022, and there are no previous estimates of SSB, F, or R.

Issues relevant for the advice

The two anglerfish species (*Lophius budegassa* and *Lophius piscatorius*) are not separated in the landings statistics. The TACs are set separately for Subarea 7 and divisions 8.a, 8.b, 8.d, and 8.e, with each TAC covering catches of both species. Species-specific landings are estimated by ICES. ICES considers that management of the catches of these two species under a combined TAC prevents effective control of single-species exploitation rates and could lead to overexploitation of either species.

Reference points

Table 4 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY B _{trigger}	16776	B _{pa} ; in tonnes.	ICES, 2023c
	F _{MSY}	0.163	Stochastic simulations (EqSim) with Beverton–Holt stock-recruitment relationship estimated by the assessment model.	ICES, 2023c
Precautionary approach	B _{lim}	12073	SSB ₂₀₀₄ ; lowest observed SSB with high recruitment; in tonnes.	ICES, 2023c
	B _{pa}	16776	B _{lim} × exp(σ × 1.645), where σ = 0.2; in tonnes.	ICES, 2023c
	F _{lim}	Undefined	Inconsistent with F _{pa} .	ICES, 2023c
	F _{pa}	0.257	F _{P05} ; the F that leads to SSB ≥ B _{lim} with 95% probability.	ICES, 2023c
Management plan	MAP MSY B _{trigger}	16776	MSY B _{trigger} ; in tonnes.	ICES, 2023c
	MAP B _{lim}	12073	B _{lim} ; in tonnes.	ICES, 2023c
	MAP F _{MSY}	0.163	F _{MSY} .	ICES, 2023c
	MAP range F _{lower}	0.112	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with F _{MSY} .	ICES, 2023c
	MAP range F _{upper}	0.245	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with F _{MSY} .	ICES, 2023c

Basis of the assessment

Table 5 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. The basis of the assessment.

ICES stock data category	1 (ICES, 2023a).
Assessment type	Length-based age-structured Stock Synthesis model that uses catches in the model and forecast (ICES, 2023b).
Input data	Commercial landings and discards and three surveys: IAMS [G3098]; IE-IGFS [G7212], and EVHOE [G9527]; the latter two surveys are combined into a single index.
Discards and bycatch	Discard estimates are available since 2003 and used in the assessment.
Indicators	None.
Other information	Last benchmarked in 2022 (ICES, 2023c).
Working group report	Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE).

History of the advice, catch, and management

Table 6 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. History of ICES advice, the agreed TAC, and ICES estimates of landings. All weights are in tonnes. ICES estimated landings and catches were revised at the 2022 benchmark (ICES, 2023c).

Year	<i>L. budegassa</i>	<i>L. budegassa</i>	Combined <i>L. budegassa + piscatorius</i>			<i>L. budegassa</i>	
	ICES advice	Catch/landings corresponding to advice*, **	Catch/landings corresponding to advice*, **	Agreed TAC ***	ICES landings	ICES landings	ICES catches
1986	Not assessed	-	-		33198	8218	
1987	Not assessed	-	-	39080	30710	7620	
1988	Not assessed	-	-	42990	29696	8382	
1989	Not assessed	-	-	42990	32835	8820	
1990	Not assessed	-	-	42990	30615	9632	
1991	No advice	-	-	42990	25543	8780	
1992	No advice	-	-	42990	21793	8176	
1993	SSB is decreasing	-	-	25100	21461	6566	
1994	SSB is decreasing	-	-	23900	22945	5744	
1995	No increase in F	-	20000	23200	27987	6955	
1996	No increase in F	-	30300	30400	31426	8093	
1997	No increase in F	-	34300	34300	31097	8115	
1998	No increase in F	-	33000	34300	29073	8600	
1999	No increase in F	-	32900	34300	25531	6739	
2000	≥ 20% decrease in F	-	<22300	29600	21096	6644	
2001	Reduce F below F_{pa}	-	<27600	27600	23021	5729	
2002	Reduce F below F_{pa}	-	<19900	23700	28588	6505	
2003	≥ 30% decrease in F	-	<16400	21000	36104	8171	8350
2004	≥ 10% decrease in F	-	<26700	26700	36565	7538	8214
2005	Maintain $F < F_{pa}$	-	<37800	31200	35056	7187	7914
2006	Maintain $F < F_{pa}$	-	<33900	34000	33783	6130	6834
2007	Maintain $F < F_{pa}$	-	<36000	36000	37821	6608	7021
2008	< average landings	-	<33000	36000	34452	7398	8983
2009	Same advice as 2008	-	<33000	36000	30122	8287	10400
2010	No increase in effort	-	-	41400	30841	8627	10063
2011	No increase in effort	-	-	40900	34005	9348	10319
2012	Reduce catch	-	-	38897	36617	8429	9888
2013	Reduce catch <i>pro rata</i> biomass decrease	< 6900	<24800	36953	41086	10475	12760
2014	Increase landings <i>pro rata</i> biomass increase	< 10757	<37448	42496	38306	9832	12402
2015	Same advice as 2014	< 10757	<37448	42496	37508	9651	11111
2016	PA; same as 2015	≤ 10757	≤37448	42496	39303	10220	12661
2017	PA; same as 2016	≤ 10757	≤37448	42496	37324	11689	13459
2018	PA; same as 2017	≤ 10757	≤37448	42496	32421	10077	10804

Year	<i>L. budegassa</i>	<i>L. budegassa</i>	Combined <i>L. budegassa</i> + <i>piscatorius</i>			<i>L. budegassa</i>	
	ICES advice	Catch/landings corresponding to advice*, **	Catch/landings corresponding to advice*, **	Agreed TAC ***	ICES landings	ICES landings	ICES catches
2019	PA (catch advice)	≤ 10799	≤41841	41370	30512	9679	10763
2020	PA (catch advice)	≤ 12959	≤44757	44307	28713	8676	9602
2021	PA (catch advice)	≤ 15551	≤50130	48338	31005	8965	11107
2022	PA (catch advice)	≤ 18661	≤52936	52205	31379	10035	12600
2023	MSY approach	≤ 23436	≤57976	57976			
2024	MSY approach	≤ 25579	≤61081				

* Includes Division 7.a since the 2018 benchmark (ICES, 2018).

** PA and MSY advice refer to landings up to 2018 and catches since 2019.

*** Combined TACs for Subarea 7 and divisions 8.a–b and 8.d–e (note that 8.e is not part of the assessment area; however, catches are negligible).

History of catch and landings

Table 7 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. Catch distribution by fleet in 2022 as estimated by ICES. All weights are in tonnes.

Catch	Landings					Discards
	80% otter trawl demersal fish	7% otter trawl <i>Nephrops</i>	5% beam trawl	5% gillnets	3% others	
12600	10035					2564

Table 8 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. History of the ICES estimates of the catch and landings by area and by country. All weights are in tonnes.

Year	ICES estimated landings from Subarea 7						ICES estimated landings from divisions 8.a, 8.b, 8.d				ICES estimated: Subarea 7 and divisions 8.a, 8.b, 8.d		
	ESP	FRA	GBR	IRL	OTH	Total 7	ESP	FRA	OTH	Total 8.a, 8.b, 8.d	Landings	Discards	Catch
1986	2816	2251	949	262	165	6443	485	1289	0	1775	8217		
1987	2174	1868	805	241	28	5116	953	1551	0	2504	7620		
1988	2316	2572	1160	234	65	6347	695	1341	0	2035	8382		
1989	2445	2932	472	310	275	6434	602	1785	0	2387	8820		
1990	2393	2914	1030	614	109	7061	571	2000	0	2571	9632		
1991	2180	2390	809	858	17	6254	799	1727	0	2526	8780		
1992	1763	2440	1002	774	28	6008	536	1632	0	2168	8176		
1993	1304	1941	727	607	68	4646	589	1331	0	1919	6566		
1994	1374	1820	378	290	86	3948	624	1172	0	1796	5744		
1995	1668	2448	389	630	69	5204	463	1287	0	1750	6954		
1996	1909	2763	576	641	90	5979	525	1589	0	2114	8093		
1997	2143	2804	644	557	38	6185	366	1563	0	1929	8114		
1998	2042	2419	763	1234	53	6510	441	1648	0	2089	8599		
1999	2434	1771	193	529	141	5068	458	1212	0	1670	6739		
2000	2051	1961	167	873	169	5220	445	980	0	1424	6645		
2001	2083	1516	131	580	168	4478	333	918	0	1251	5728		
2002	2451	1710	146	309	119	4734	463	1309	0	1771	6505		
2003	3600	2175	181	180	119	6256	396	1520	0	1916	8171	179	8351
2004	2875	1845	256	224	157	5358	471	1708	0	2178	7537	676	8213
2005	2902	1530	248	365	167	5214	415	1559	0	1974	7187	727	7914
2006	2737	1536	131	200	71	4675	282	1171	2	1456	6131	704	6835
2007	2451	1747	150	348	162	4857	316	1434	1	1751	6608	413	7021
2008	3017	2030	279	508	205	6039	265	1095	1	1360	7399	1585	8985
2009	3498	1635	304	797	244	6478	293	1515	2	1809	8287	2113	10400
2010	2866	2179	469	981	316	6812	317	1490	8	1815	8626	1436	10062
2011	3812	1863	418	941	382	7416	503	1423	8	1933	9348	971	10319
2012	2888	2032	365	621	53	5959	692	1612	167	2471	8429	1459	9888
2013	3896	2211	484	615	68	7274	790	2032	379	3200	10475	2285	12760
2014	1629	2829	862	720	74	6114	945	2526	246	3718	9832	2570	12402
2015	1384	2945	1046	839	69	6284	749	2480	136	3365	9649	1460	11109
2016	1118	2881	1063	970	94	6127	918	2968	206	4093	10220	2441	12660
2017	1287	4255	1183	793	0	7518	941	3000	231	4172	11690	1770	13460
2018	890	3443	898	1110	0	6341	766	2807	161	3734	10076	727	10803
2019	1366	3500	993	940	0	6800	645	2156	79	2880	9680	1084	10764
2020	1538	2575	757	1445	187	6502	611	1547	16	2174	8676	926	9601
2021	1548	3790	1309	721	78	7445	422	1085	13	1520	8965	2141	11107
2022	1758	4345	873	995	213	8185	527	1321	3	1851	10035	2564	12600

Summary of the assessment

Table 9 Black-bellied anglerfish in Subarea 7 and divisions 8.a–b and 8.d. Assessment summary. High and Low refer to 95% confidence intervals. Weights are in tonnes and recruitment is in thousands. Discard observations are available since 2003.

Year	Recruitment (age 0)			Stock size			Landings (tonnes)	Discards (tonnes)	F ages 3–10		
	Low	R	High	Low	SSB	High			Low	F	High
1986	94904	130283	178850	16088	20449	25991	8217		0.131	0.197	0.3
1987	51997	78962	119912	15228	19285	24421	7620		0.115	0.174	0.26
1988	65400	92922	132028	15185	19082	23980	8382		0.124	0.187	0.28
1989	77990	107520	148231	15295	19050	23727	8820		0.135	0.2	0.3
1990	63328	90312	128792	15306	18931	23414	9632		0.157	0.23	0.35
1991	80052	110039	151260	14639	18044	22242	8780		0.153	0.23	0.34
1992	88261	120105	163438	13690	16889	20835	8176		0.151	0.22	0.34
1993	97377	130608	175180	12647	15633	19324	6566		0.121	0.182	0.27

Year	Recruitment (age 0)			Stock size			Landings (tonnes)	Discards (tonnes)	F ages 3–10		
	Low	R	High	Low	SSB	High			Low	F	High
1994	46740	70640	106760	12243	15142	18727	5744		0.1	0.151	0.23
1995	67165	93827	131074	12457	15359	18937	6954		0.114	0.171	0.26
1996	61208	85436	119254	12780	15655	19176	8093		0.135	0.199	0.29
1997	30059	46100	70700	13069	15876	19285	8114		0.14	0.21	0.3
1998	35560	51493	74565	13251	15967	19239	8599		0.164	0.24	0.35
1999	55071	75901	104610	12705	15164	18098	6739		0.145	0.21	0.32
2000	270751	312608	360936	12191	14393	16992	6645		0.19	0.24	0.3
2001	25290	39535	61806	10912	13002	15493	5728		0.168	0.21	0.26
2002	27922	34716	43164	9871	11840	14202	6505		0.158	0.195	0.24
2003	43709	53180	64703	9380	11194	13358	8171	179	0.155	0.183	0.22
2004	228876	254965	284028	10209	11897	13865	7537	676	0.188	0.23	0.28
2005	119640	139906	163605	11370	13057	14993	7187	727	0.146	0.171	0.2
2006	107814	126088	147459	12675	14472	16523	6131	704	0.129	0.154	0.184
2007	175821	201434	230778	13213	15101	17259	6608	413	0.095	0.112	0.132
2008	167679	191704	219171	14518	16519	18795	7399	1585	0.128	0.156	0.189
2009	40753	51389	64801	16244	18444	20941	8287	2113	0.135	0.165	0.2
2010	97144	113129	131744	18380	20885	23731	8626	1436	0.129	0.158	0.193
2011	167841	192109	219886	20567	23406	26638	9348	971	0.129	0.157	0.19
2012	161384	187668	218233	22545	25680	29251	8429	1459	0.123	0.15	0.183
2013	225516	258417	296119	23907	27316	31212	10475	2285	0.151	0.185	0.23
2014	231651	265598	304520	23248	26754	30789	9832	2570	0.142	0.172	0.21
2015	115898	139878	168819	22568	26143	30285	9649	1460	0.106	0.126	0.149
2016	146184	173556	206053	23541	27255	31556	10220	2441	0.121	0.147	0.18
2017	178060	211866	252090	25082	29090	33738	11690	1770	0.122	0.149	0.181
2018	136898	165228	199421	27561	32073	37325	10076	730	0.079	0.095	0.115
2019	241241	288185	344264	31960	37220	43347	9680	1099	0.09	0.11	0.136
2020	470211	563375	674998	34921	40906	47917	8676	939	0.074	0.092	0.114
2021	81776	109023	145348	37655	44346	52227	8965	2166	0.074	0.092	0.116
2022		147359*		40004	47436	56249	10035	2564	0.075	0.095	0.121
2023		147781*		42615	50975	60974					

* Assumed recruitment based on stock–recruitment relationship.

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