

## 11 Alfonsinos/Golden eye perch (*Beryx* spp.) in all ecoregions

### 11.1 The fishery

Alfonsinos includes two species, *Beryx splendens* and *Beryx decadactylus*. Both are generally considered as bycatch species in the demersal trawl and longline mixed fisheries targeting other deep-water species. For most of the fisheries, the catches of alfonsinos are reported under a single category, as *Beryx* spp.

The proportion of each species in the catches are not well known. Detailed landings data by species are available only for the Portuguese (Azores) hook and line fishery in Division 10a2, where the landings of *B. decadactylus* averaged 20% of the catches of both species in the last twenty years. Russian trawl fishery targeted *B. splendens* till 2000. Portuguese, Spanish and French trawlers and longliners are the main fleets involved in this fishery.

Landings from a targeted fishery by Russian vessels operating in the NEAFC area (ICES Division 10.b) were available for the period 1993 - 2000 and some minor landings as bycatch in fisheries targeting other species since 2000. Since 2000, there are no target fisheries occurring in Mid-Atlantic Ridge (NEAFC) (see Section 4).

Currently landings are reported from bycatch fisheries occurring in the EEZ of Portugal (Subarea 9), Spain (6, 7, 8 and 9), France (6, 7 and 8), and from a small-scale target fishery based in the Azores operation in Division 10.a (See Table 11.1 c, d and e).

#### 11.1.1 Landings trends-

The available landings data for Alfonsinos, (*Beryx* spp.), by ICES subarea/division as officially reported to ICES or to the WGDEEP, are presented in Tables 11.1(a–g), 11.2 and 11.3 and Figures 11.1–11.5. Total landings are stabilized since 2005, due to EU management measures introduced (TAC/quotas and effort regulation), being around 333 tonnes between 2005 and 2021, with high landings during 2012 (605 t). Current catches are 205 tonnes. Faroes reported a landing of 141 tonnes for 2015, 48 tonnes for 2016, 5 tonnes for 2019 from ICES area 10.b. There were no landings reported from these fisheries during 2020 and 2021.

#### 11.1.2 ICES Advice

ICES advised that when the precautionary approach is applied, landings should be no more than 224 tonnes in each of the years 2021 and 2022. ICES cannot quantify the corresponding catches.

### 11.2 Management

Fishing with trawl gears is forbidden in the Azores region (EC. Reg. 1568/2005). A box of 100 miles limiting the deep-water fishing to vessels registered in the Azores was created in 2003 under the management of fishing effort of the CFP for deep-water species (EC. Reg. 1954/2003). An EU TAC of 187 t for EC vessels is in force for the period 2021–2022 (see historical developments on the table down).

Technical measures were introduced in the Azores in 1998. During 2009 new measures were adopted, particularly to control the effort of longliners through restrictions on fishing area, minimum length, gear and effort. These measures were updated during 2015-2019. A network of MPAs was implemented on the Azores with closed access to deep-water fisheries (including Sedlo, D. J Castro and Formigas seamounts). The seamount (Condor) was closed to the fishery.

NEAFC adopted effort regulations for fisheries targeting deep-water species and in closed areas to protect vulnerable habitats on the RA. ([http://nea.fc.org/managing\\_fisheries/measures/current](http://nea.fc.org/managing_fisheries/measures/current)).

Regulation	Species	Year	ICES Area	TAC	Landings
Reg 2270/2004	<i>Beryx</i> sp	2005	3, 4, 5, 6, 7, 8, 9, 10, 12	328	422
	<i>Beryx</i> sp	2006	3, 4, 5, 6, 7, 8, 9, 10, 12	328	367
Reg 2015/2006	<i>Beryx</i> sp	2007	3, 4, 5, 6, 7, 8, 9, 10, 12	328	396
	<i>Beryx</i> sp	2008	3, 4, 5, 6, 7, 8, 9, 10, 12	328	405
Reg 1359/2008	<i>Beryx</i> sp	2009	3, 4, 5, 6, 7, 8, 9, 10, 12	328	382
	<i>Beryx</i> sp	2010	3, 4, 5, 6, 7, 8, 9, 10, 12	328	296
Reg 1225/2010	<i>Beryx</i> sp	2011	3, 4, 5, 6, 7, 8, 9, 10, 12	328	331
	<i>Beryx</i> sp	2012	3, 4, 5, 6, 7, 8, 9, 10, 12	328	596
Reg 1262/2012	<i>Beryx</i> sp	2013	3, 4, 5, 6, 7, 8, 9, 10, 12	312	272
	<i>Beryx</i> sp	2014	3, 4, 5, 6, 7, 8, 9, 10, 12	296	282
Reg. 1367/2014	<i>Beryx</i> sp	2015	3, 4, 5, 6, 7, 8, 9, 10, 12	296	365
	<i>Beryx</i> sp	2016	3, 4, 5, 6, 7, 8, 9, 10, 12	296	300
Reg. 2285/2016	<i>Beryx</i> sp	2017	3, 4, 5, 6, 7, 8, 9, 10, 12	280	240
	<i>Beryx</i> sp	2018	3, 4, 5, 6, 7, 8, 9, 10, 12	280	263
Reg. 2025/2018	<i>Beryx</i> sp	2019	3, 4, 5, 6, 7, 8, 9, 10, 12	252	294
	<i>Beryx</i> sp	2020	3, 4, 5, 6, 7, 8, 9, 10, 12	252	233
Reg. 1239/2021	<i>Beryx</i> sp	2021	3, 4, 5, 6, 7, 8, 9, 10, 12	224	205
	<i>Beryx</i> sp	2022	3, 4, 5, 6, 7, 8, 9, 10, 12	224	

### 11.3 Stock identity

No new information.

## 11.4 Data available

### 11.4.1 Landings and discards

Tables 11.1a–g, describe the alfonosinos landings by subarea and country. In 2014 discards estimates for the Azorean longliners were reported (WD, Pinho, 2014). Annual longline discard estimates by year for the sampled trip vessels with alfonosinos catches during the period 2004–2011 range from 0.8% to 8.6% for *B. splendens* and 0.07% to 10.2% for the *B. decadactylus* (Table 11.4). In 2018, discards of combined alfonosinos from longline fisheries represented about 5.8% (8.6 t) of total landings. These discards are mostly a result of the Azorean management measures such as TAC and minimum length.

### 11.4.2 Length compositions

Length data from the Azorean spring bottom longline survey were updated in 2021 only for two statistical areas (Areas I-II), which represent 50% of the total covered area by the survey (Areas I-IV) (Pinho *et al.*, 2020). Detailed information about the Azorean survey estimates for 2021 are provided in WD Medeiros-Leal *et al.* (2022). The length compositions (LF, cm) are shown for both species in Figures 11.6 and 11.7.

Annual mean length from the Azorean survey for both species are presented in Figures 11.8 and 11.9. Annual mean length from Azorean fishery information was not presented because data was not available.

### 11.4.3 Age compositions

No new information

### 11.4.4 Weight-at-age

No new information.

### 11.4.5 Maturity, sex-ratio, length–weight and natural mortality

No new information.

## 11.5 Data analyses

Total landings declined in the late 1990s and since 2003 stabilized at about 357 tonnes (for the two species combined), with a peak of 605 tonnes in 2012 due to the landings reported by Spain for subareas 6–7 (Figure 11.4). Species-specific landings trends in the Azores fishery showed similar trends for both species (Figure 11.5).

Fishery length frequency distributions were not presented because data was not available.

Survey length frequency distributions for *B. splendens* and *B. decadactylus* show that relatively small numbers of *B. decadactylus* are caught on the survey on the sampled depth strata (50–1200m) (Figures 11.6 and 11.7). For *B. splendens* a mode around 20–30 cm is observed and *B. decadactylus* show a bimodal distribution.

Survey mean length for *B. splendens*, shows an increase from 1995 (27 cm) to 1997 (32 cm) and maintained since 1999 around 27 cm fork length, with small decreases throughout the time series

and returning to maintained of the 27 cm fork length (Figure 11.8). For *B. decadactylus* is observed a stable trend from 1995 around 34 cm, with a peak in 2013 (37 cm) and small decreases throughout the time series (Figure 11.9). Similar mean length trend was observed between the Areas I-II and the total covered area by the Azorean survey (Areas I-IV) for both species (Figures 11.8 and 11.9).

Survey abundance index for *B. splendens*, declined significantly between 1995 and 1997 and has remained at low levels with a small increase between 2010 and 2013 (Figure 11.10). For *B. decadactylus* a decrease is observed from 1995 to 1996, maintained thereafter until 2003 at low levels. It increased then from 2003 to 2007 and seems to present thereafter a decrease trend until 2019 but fluctuating along time (Figure 11.11). Abundance index from the Azorean spring bottom longline survey were updated for two statistical areas (Areas I-II), which represent 50% of the total covered area by the survey (Areas I-IV) (Pinho *et al.*, 2020). Detailed information about the statistical procedures to estimate the abundance indices from the Azorean survey areas covered in 2021 are provided in WD Medeiros-Leal *et al.* (2022).

The working group express concerns on the reliability of these indices as an indicator of North East Atlantic abundance due to the relatively small numbers of individuals caught in the survey each year particularly for *B. decadactylus*. The survey may not be designed to sample these highly mobile and aggregative species, particularly *B. decadactylus*. Therefore, the WGDEEP adopt the approach taken in 2018 to base advice on catch history.

## 11.6 Comments on the assessment

No assessment was carryout this here.

## 11.7 Management considerations

The spatial distribution of the two *Beryx* species is closely associated with seamounts. This behaviour as well as their life history make them particularly vulnerable to exploitation been easily overexploited by trawl fishing. Given their life strategy, it is admitted that both species can only sustain low rates of exploitation.

The population dynamics *Beryx* species are uncertain. Age estimates suggest high longevity (>50 years), while other suggest a longevity of about 15 years.

Because of their biology and aggregative behaviour, fisheries on those species should not be allowed to expand above current levels unless it can be demonstrated that such expansion is sustainable. Furthermore, to prevent wiping out entire subpopulations that have not yet been mapped and assessed the exploitation of new seamounts should not be allowed.

## 11.8 References

- ICES. 2018. Report of the Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP), 11- 18 April 2018, ICES Headquarters, Copenhagen. ICES CM 2018/ACOM:14.
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- Pinho, M.; Medeiros-Leal, W.; Sigler, M.; Santos, R.; Novoa-Pabon, A.; Menezes, G.; Silva, H. 2020. Azorean demersal longline survey abundance estimates: Procedures and variability. *Regional Studies in Marine Science*, 39, 101443.

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Santos, R. V. S.; Medeiros-Leal, W., Novoa-Pabon, A. M.; Pinho, M. R. 2020. Updated standardized CPUE for *Beryx splendens* caught by bottom longline fleet in the Azores (ICES Subdivision 27.10.a.2), 1990-2017. Working Document (WD). ICES Working Group on Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), 24 April to 01 May 2020.

## 11.9 Tables and Figures

**Table 11.1a. Landings (tonnes) of *Beryx* spp. from Subarea 4.**

YEAR	FRANCE	TOTAL
1988	0	0
1989	0	0
1990	1	1
1991	0	0
1992	2	2
1993	0	0
1994	0	0
1995	0	0
1996	0	0
1997	0	0
1998	0	0
1999	0	0
2000	0	0
2001	0	0
2002	0	0
2003	0	0
2004	0	0
2005	0	0

YEAR	FRANCE	TOTAL
2006	0	0
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	0	0
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0
2017	0	0
2018	3	3
2019	0	0
2020*	0	0
2021*	0	0

\*Preliminary.

Table 11.1b. Alfonsinos (*Beryx* spp.) from Division 5.b.

YEAR	FAROES	FRANCE	TOTAL
1988			0
1989			0
1990		5	5
1991		0	0
1992		4	4
1993		0	0
1994		0	0
1995	1	0	1
1996	0	0	0
1997	0	0	0
1998	0	0	0
1999	0	0	0
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0
2004	0	0	0
2005	0	0	0
2006	0	0	0
2007	0	0	0
2008	0	0	0
2009	0	0	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	0	0	0

YEAR	FAROEES	FRANCE	TOTAL
2017	0	0	0
2018	0	0	0
2019	0	0.1	0.1
2020*	0	0	0
2021*	0	0	0

\*Preliminary.



Table 11.1c. Alfonsinos (*Beryx* spp.) from Subareas 6 and 7.

YEAR	FRANCE	E & W	SPAIN	IRELAND	SCOTLAND	TOTAL
1988						0
1989	12					12
1990	8					8
1991						0
1992	3					3
1993	0		1			1
1994	0		5			5
1995	0		3			3
1996	0		178			178
1997	17	4	5			26
1998	10	0	71			81
1999	55	0	20			75
2000	31	2	100			133
2001	51	13	116			180
2002	35	15	45			95
2003	20	5	55	4		84
2004	15	3	46			64
2005	15	0	55	0		70
2006	27	0	51	0		78
2007	17	1	47	0		65
2008	22	0	32	0		54
2009	9	0	0	0	1	10
2010	4	0	0	0	1	5
2011	7	0	33	0	0	40
2012	4	0	337	0	0	341
2013	14	1	33	0	0	77
2014	10	0	38	0	0	49
2015	6	0		6	0	12
2016	5	0.45	13	0	1	20

YEAR	FRANCE	E & W	SPAIN	IRELAND	SCOTLAND	TOTAL
2017	7	0	11	0	0	18
2018	27	0.209	19	0	0	46
2019	57		24	0	0	81
2020	7	3.1	14	0	0	25
2021*	6	0	12	0	0	18

\*Preliminary.

Table 11.1d. Alfonsinos (*Beryx* spp.) from Subareas 8 and 9.

YEAR	FRANCE	PORTUGAL	SPAIN	E & W	TOTAL
1988					0
1989					0
1990	1				1
1991					0
1992	1				1
1993	0				0
1994	0		2		2
1995	0	75	7		82
1996	0	43	45		88
1997	69	35	31		135
1998	1	9	258		268
1999	11	29	161		201
2000	7	40	117	4	168
2001	6	43	179	0	228
2002	13	60	151	14	238
2003	10	0	95	0	105
2004	21	53	209	0	283
2005	9	45	141	0	195
2006	8	20	64	3	97
2007	8	45	67	0	120
2008	5	42	54	0	101
2009	1	42	18	0	61
2010	12	27	1	0	41
2011	4	21	40	0	65
2012	4	11	27	0	42
2013	5	17	4	0	26
2014	3	18	81	0	102
2015	3	0	59	0	61
2016	3	1	71	0	76

YEAR	FRANCE	PORTUGAL	SPAIN	E & W	TOTAL
2017	3	2	67	0	73
2018	6	0	52	0	58
2019	5	10	55	0	70
2020	10	11	48	0	69
2021*	6	0	57	0	63

\* Preliminary.

Table 11.1e. Alfonsinos (*Beryx* spp.) from Subarea 10.

YEAR	10.a	10.b				TOTAL
	PORTUGAL	FAROES	NORWAY	RUSSIA**	E & W	
1988	225					225
1989	260					260
1990	338					338
1991	371					371
1992	450					450
1993	533		195			728
1994	644		0	837		1481
1995	529	0	0	200		729
1996	550	0	0	960		1510
1997	379	5	0			384
1998	229	0	0			229
1999	175	0	0	550		725
2000	203	0	0	266	15	484
2001	199	0	0	0	0	199
2002	243	0	0	0	0	243
2003	172	0	0	0	0	172
2004	139	0	0	0	0	139
2005	157	0	0	0	0	157
2006	192	0	0	0	0	192
2007	211	0	0	0	0	211
2008	250	2	0	0	0	252
2009	311	1	0	0	0	312
2010	240	0	0	5	0	245
2011	226	4	0	5	0	235
2012	213	10	0	0	0	222
2013	168	0	0	0	0	168
2014	131	0	0	0	0	131
2015	151	141	0	0	0	292

	10.a	10.b				
2016	156	48	0	0	0	204
2017	149	0	0	0	0	149
2018	159	0	0	0	0	159
2019	138	5	0		0	143
2020	139	0	0		0	139
2021*	124	0	0		0	124

\* Preliminary.

\*\* Not official data from ICES Area 10.b.

Table 11.1f. Alfonsinos (*Beryx* spp.) from Subarea 12.

YEAR	FAROEES	TOTAL
1988		
1989		
1990		
1991		
1992		
1993		
1994		
1995	2	2
1996	0	0
1997	0	0
1998	0	0
1999	0	0
2000	0	0
2001	0	0
2002	0	0
2003	0	0
2004	0	0
2005	0	0
2006	0	0
2007	0	0
2008	0	0
2009	0	0
2010	0	0
2011	2	2
2012	0	0
2013	0	0
2014	0	0
2015	0	0
2016	0	0

YEAR	FAROEES	TOTAL
2017	0	0
2018	0	0
2019	0	0
2020*	0	0
2021*	0	0

\* Preliminary.



Table 11.1g. Landings of Alfonsinos (*Beryx* spp.) from Madeira (Portugal) outside the ICES area.

YEAR	<i>B. splendens</i>	<i>B. decadactylus</i>	TOTAL
1988*			
1989*			
1990*			
1991*			
1992*			
1993*			
1994*			
1995*			
1996*			
1997*			
1998*			
1999*			
2000*			
2001*			
2002*			
2003*			
2004*			
2005*			
2006*			
2007*			
2008	290	342	632
2009	88	16	104
2010	355	17	372
2011	79	137	216
2012	228	51	279
2013	38	11	49
2014	140	26	166
2015	63	12	75
2016	58	20	78

YEAR	<i>B. splendens</i>	<i>B. decadactylus</i>	TOTAL
2017	41	78	119
2018	234	83	317
2019	90	146	236
2020	12	11	23
2021*			

\* No information.

Table 11.1h. Reported landings for the alfonsinos, (*Beryx spp.*), by ICES subarea/division.

YEAR	4	5.b	6+7	8+9	10.a	10.b	12	TOTAL
1988			0	0	225	0		225
1989			12	0	260	0		272
1990	1	5	8	1	338	0		353
1991			0	0	371	0		371
1992	2	4	3	1	450	0		460
1993			1	0	533	195		729
1994			5	2	644	837		1488
1995		1	3	82	529	200	2	817
1996			178	88	550	960	0	1776
1997			26	135	379	5	0	545
1998			81	268	229	0	0	579
1999			75	201	175	550	0	1001
2000			133	168	203	281	0	785
2001			180	228	199	0	0	607
2002			95	238	243	0	0	577
2003			84	105	172	0	0	361
2004			64	283	139	0	0	485
2005			70	195	157	0	0	422
2006			78	97	192	0	0	367
2007			65	120	211	0	0	396
2008	0	0	54	101	250	2	0	407
2009	0	0	10	61	311	1	0	383
2010	0	0	5	41	240	5	0	291
2011	0	0	40	65	226	9	2	342
2012	0	0	341	42	213	10	0	605
2013	0	0	77	26	168	0	0	272
2014	0	0	49	102	131	0	0	282
2015	0	0	12	61	151	141	0	365
2016	0	0	20	76	156	48	0	300

YEAR	4	5.b	6+7	8+9	10.a	10.b	12	TOTAL
2017	0	0	18	73	149	0	0	240
2018	0	0	46	58	159	0	0	263
2019	0	0	81	70	143	0	0	294
2020	0	0	25	69	139	0	0	233
2021*	0	0	18	63	124	0	0	205

\*Preliminary.

**Table 11.3. Reported landings of *Beryx splendens* and *B. decadactylus* in the Azores (ICES Division 10a2).**

YEAR	<i>B. splendens</i>	<i>B. decadactylus</i>	TOTAL
1988	122	103	225
1989	113	147	260
1990	137	201	338
1991	203	168	371
1992	274	176	450
1993	316	217	533
1994	410	234	644
1995	335	194	529
1996	379	171	550
1997	268	111	379
1998	161	68	229
1999	119	56	175
2000	168	35	203
2001	182	17	199
2002	223	20	243
2003	150	22	172
2004	110	29	139
2005	134	23	157
2006	152	40	192
2007	165	46	211
2008	187	63	250
2009	243	68	311
2010	189	51	240
2011	179	47	226
2012	175	37	213
2013	140	28	168
2014	109	22	131
2015	120	31	151
2016	127	29	156

YEAR	<i>B. splendens</i>	<i>B. decadactylus</i>	TOTAL
2017	119	30	149
2018	107	50	157
2019	92	46	138
2020	67	72	139
2021*	70	54	124

\*Preliminary.

Table 11.4. Annual percentage of *Beryx* spp. discarded by year in the Azores (ICES Division 10a2) from the sampled trip vessels that caught and discard alfonsinos.

SPECIES	2004	2005	2006	2007	2008	2009	2010	2011
<i>Beryx splendens</i>	1,79	1,87	1,55	1,02	1,19	8,64	4,69	0,76
<i>Beryx decadactylus</i>	0,37	0,07	1,31	0,14	0,57	10,18	2,36	0,95

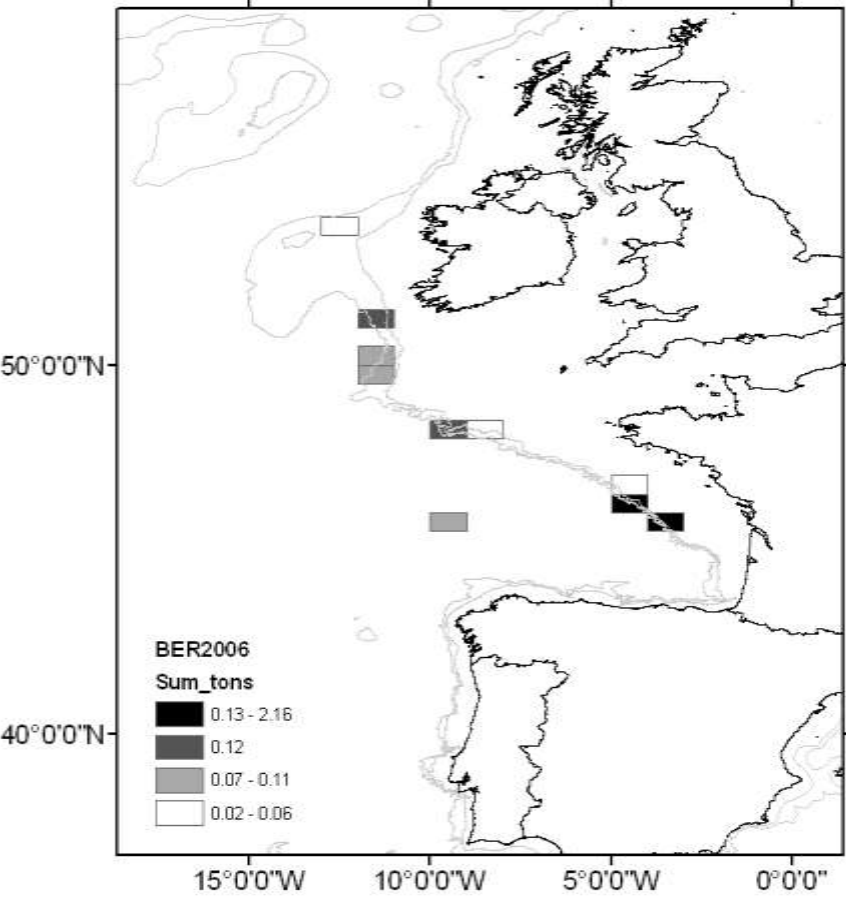


Figure 11.1. Catches of alfonsinos by French, Irish, UK (England and Wales and Scotland) and Icelandic vessels, 2006.

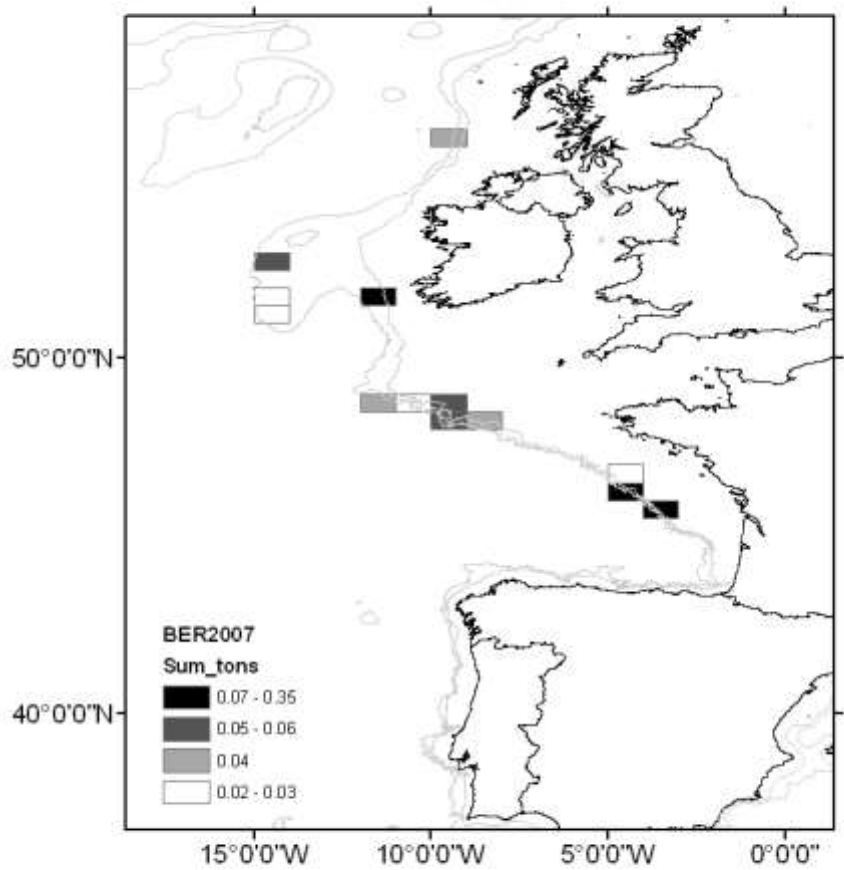


Figure 11.2. Catches of alfonsinos by French, Irish, UK (England and Wales and Scotland) and Icelandic vessels, 2007.

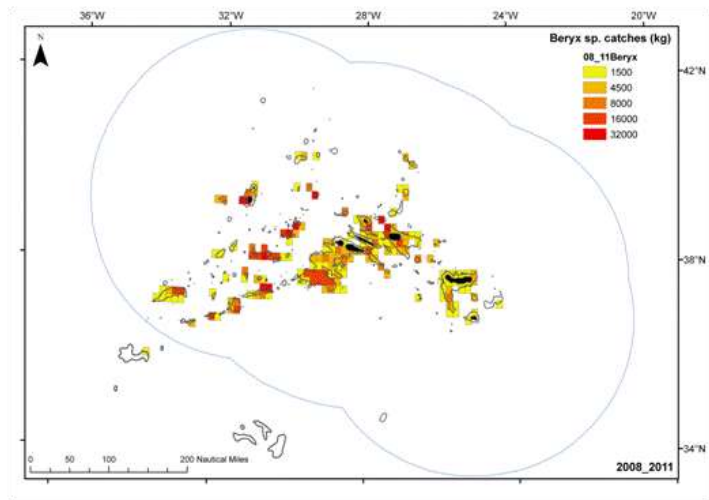


Figure 11.3. Catches of alfonsinos by Azores vessels, 2008–2011 (ICES, 10a2).



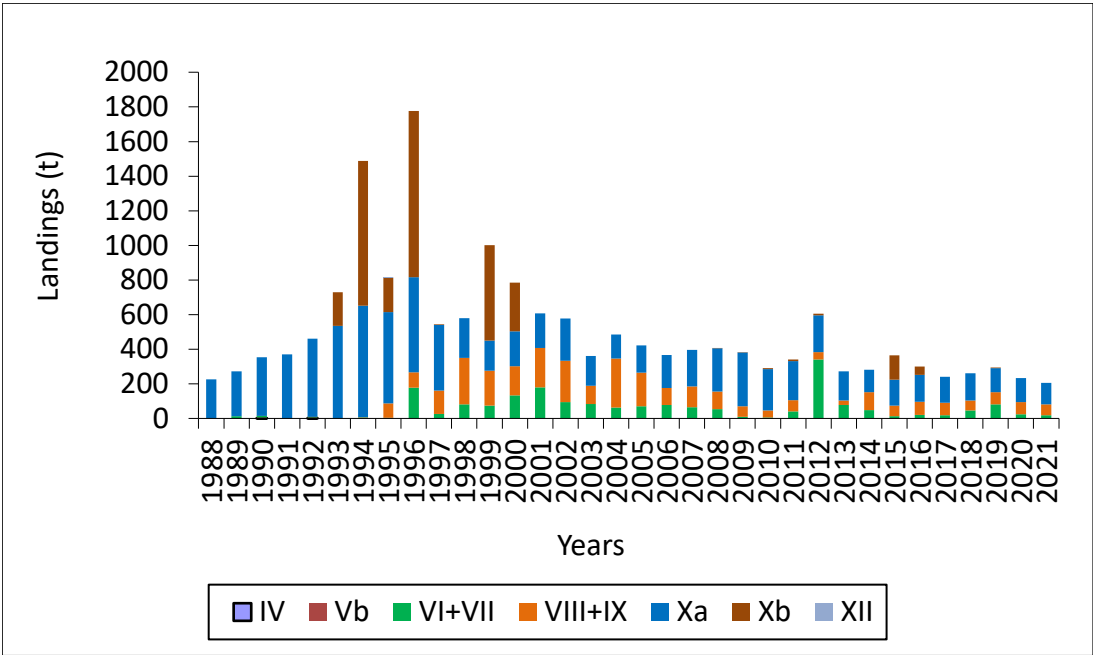


Figure 11.4. Reported landings for the alfonsinos, (*Beryx* spp), by ICES subarea/division.

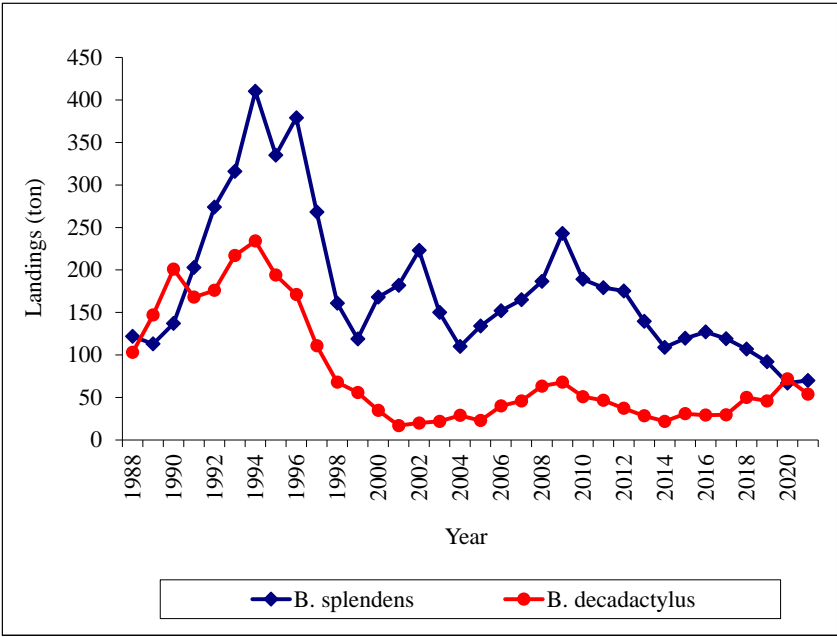


Figure 11.5. Landings of *Beryx splendens* and *B. decadactylus* in Azores (ICES 10a2).

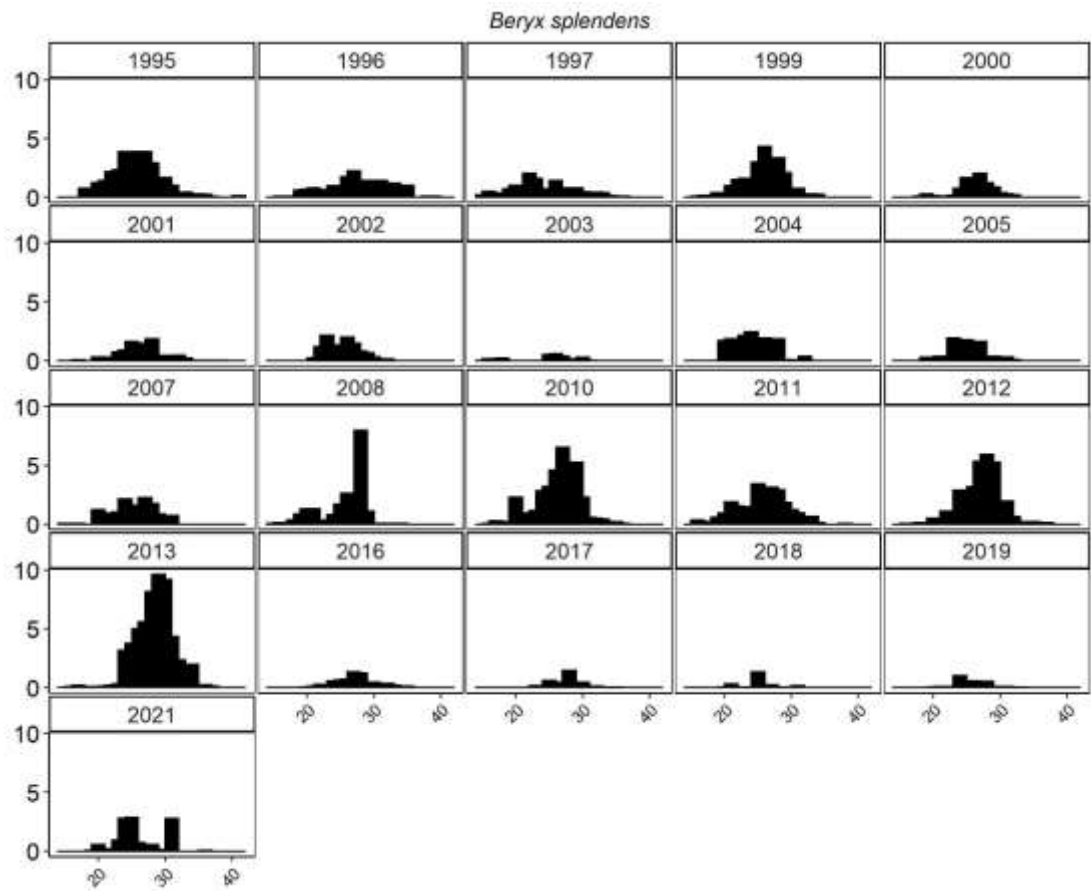


Figure 11.6. *Beryx splendens* annual survey length compositions from the Azores (ICES Subarea 10a2) for the statistical areas I and II (see WD Medeiros-Leal *et al.* (2022)).

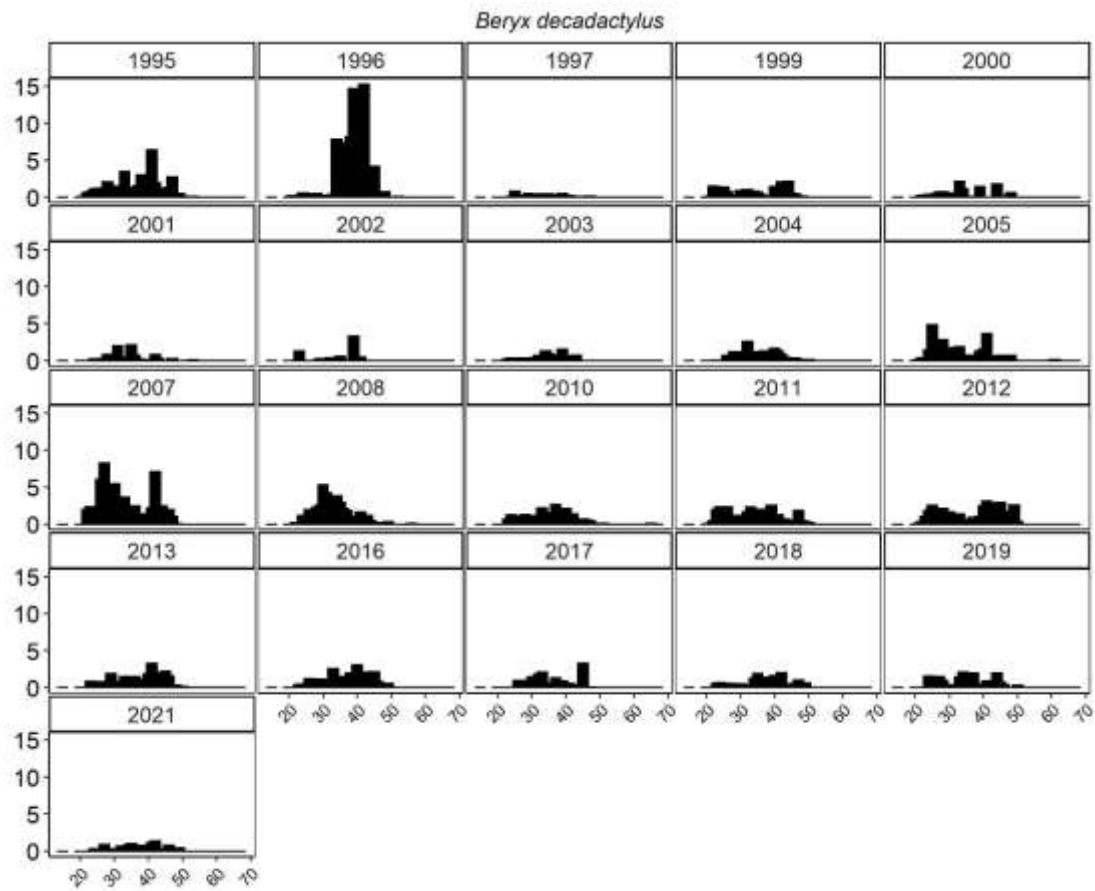


Figure 11.7. *Beryx decadactylus* annual survey length compositions from the Azores (ICES 10a2) for the statistical areas I and II (see WD Medeiros-Leal *et al.* (2022)).

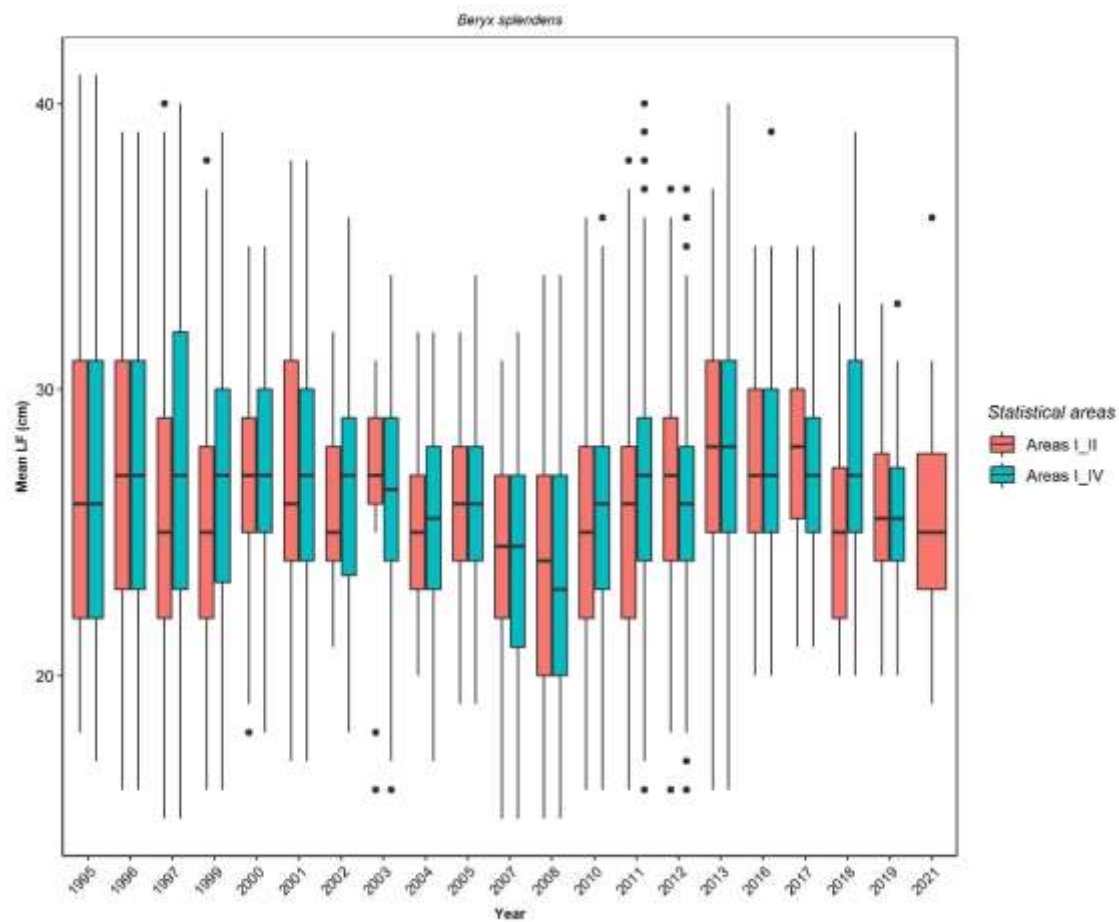


Figure 11.8. Survey annual mean length of *Beryx splendens* from the Azores (ICES 10a2).

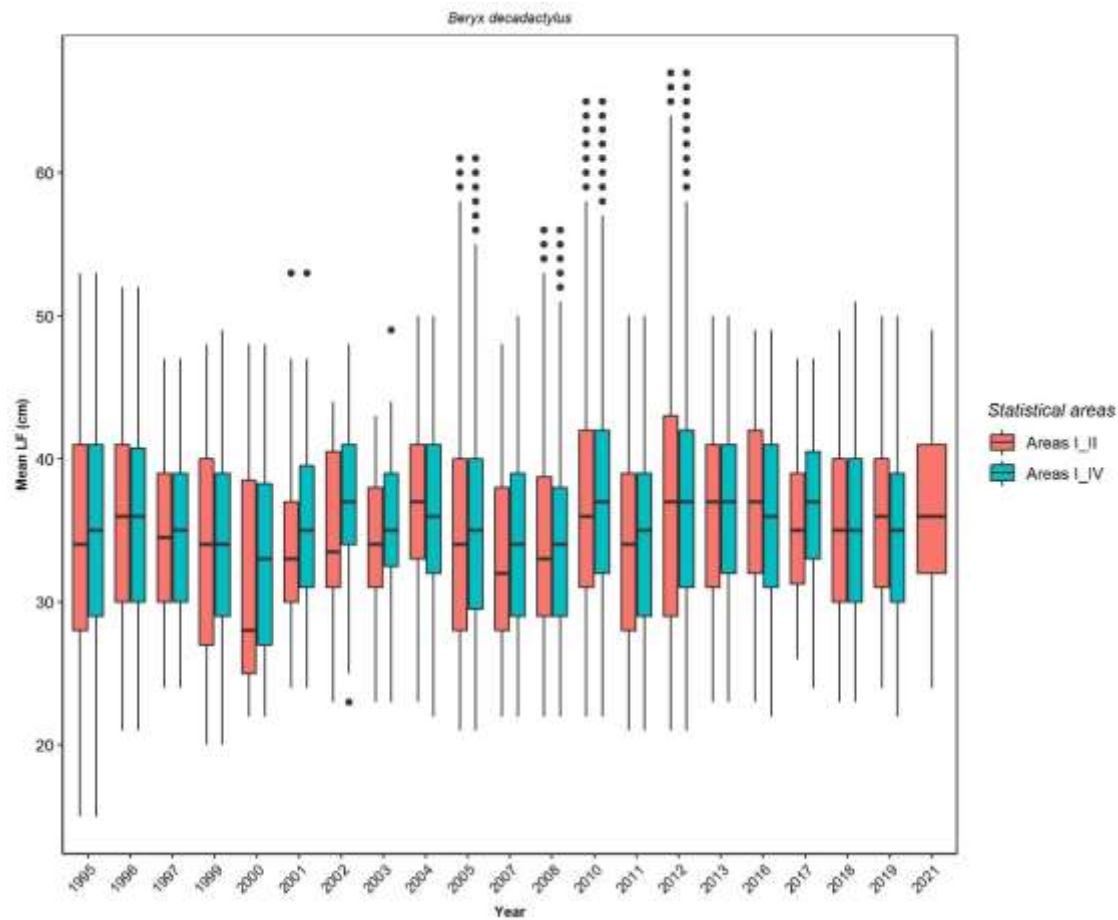


Figure 11.9. Survey annual mean length of *Beryx decadactylus* from the Azores (ICES 10a2).

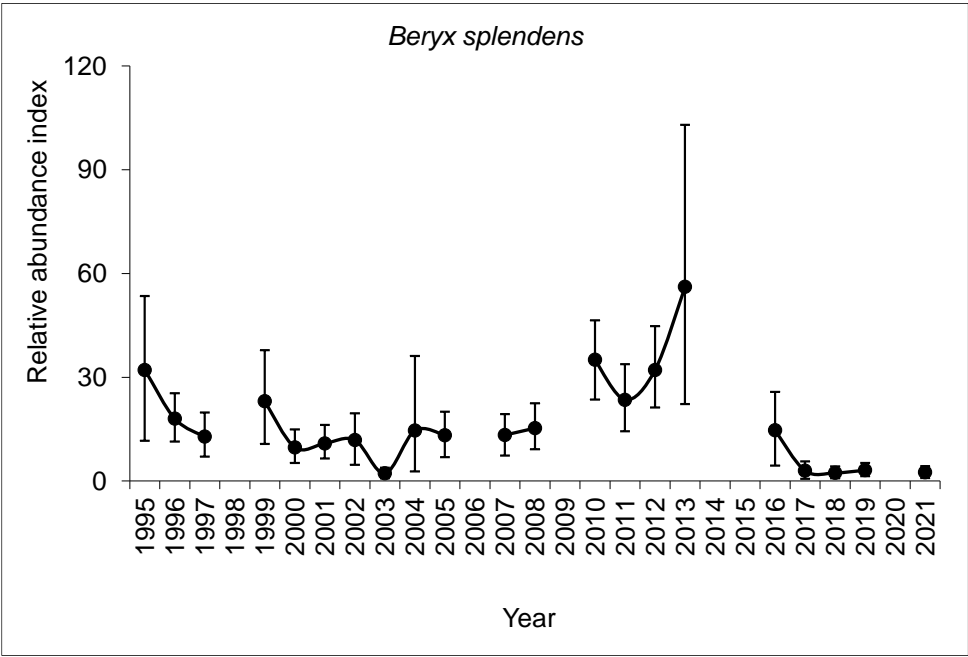


Figure 11.10. Annual bottom longline survey abundance index in number for the alfonsinos (*Beryx splendens*) from the Azores (ICES 10a2) for the statistical areas I and II (see WD Medeiros-Leal *et al.* (2022)).

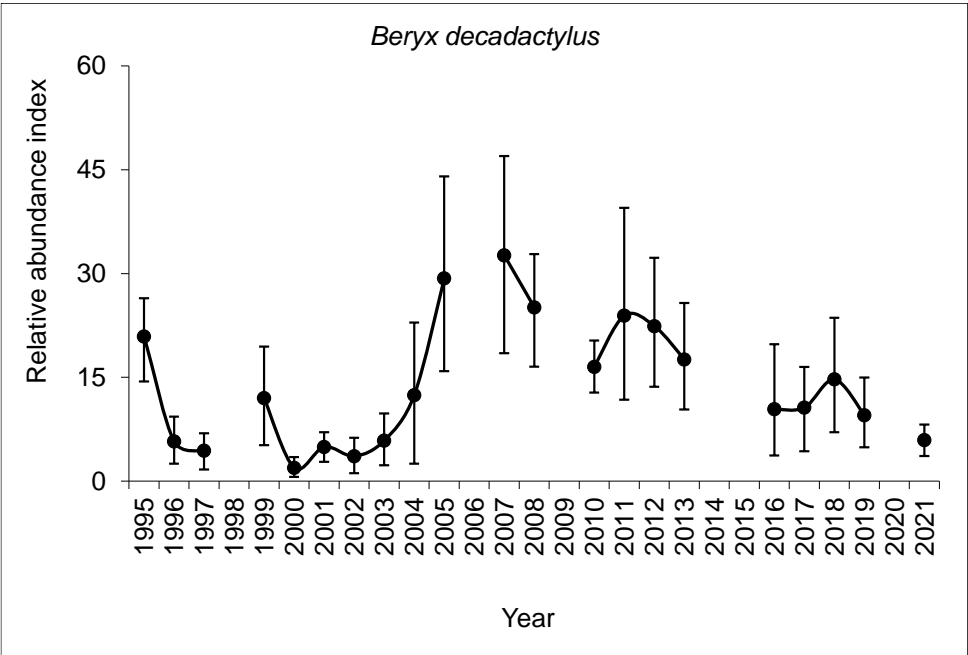


Figure 11.11. Annual bottom longline survey abundance index in number for *B. decadactylus* from the Azores (ICES 10a2) for the statistical areas I and II (see WD Medeiros-Leal *et al.* (2022)).