

This Working Document has not been peer-reviewed by ICES WGDEEP and should not be interpreted as the view of the Group. The Working Document is appended for information only.

The Blackspot seabream Spanish target fishery of the Strait of Gibraltar: updating the available information

Juan Gil, Lucía Rueda, Carlos Farias, Juan Carlos Arronte, Juan José Acosta and Mar Soriano
Centro Oceanográfico de Cádiz
Puerto Pesquero. Muelle de Levante s/n
11006 Cádiz, Spain

Abstract

*This paper includes the available information of the Blackspot seabream (*Pagellus bogaraveo*) Spanish target fishery in the Strait of Gibraltar updating the documents presented in previous years with the information from 2019. So, data about landings, fishing effort, CPUEs and landings length frequencies are presented to its discussion within the 2020 WGDEEP.*

1. Introduction and fishery description

Since the early 1980's a Spanish artisanal fishery targeting Blackspot seabream (*Pagellus bogaraveo*, namely "voraz") have been developed in the Strait of Gibraltar area (ICES 9a South). This fishery has already been broadly described in previous Working Documents presented to the ICES WGDEEP (Gil *et al.*, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019). Spanish Blackspot seabream fishery in the Strait of Gibraltar is almost a mono-specific fishery with a clear target species which represents the 74% from the total landed species which constitutes a fleet component by itself (Silva *et al.*, 2002).

In 2006, 2008, 2010, 2012 and 2016 different trials were attempted to assess this resource within the ICES WGDEEP (ICES, 2006, 2008, 2010, 2012, 2016 and 2018). Finally, 2018 scientific advice was based on abundance indexes (DLS category 3). All the available information from this target fishery (including the abundance index used as the basis for the assessment) were updated with 2019 data.

Thus, the main objective of this paper is to provide to the 2020 ICES WGDEEP a summary of the available information of this deep-water fishery located in a very narrow place of the ICES area 9.

2. Material and methods

Fishery information from the sale sheets was gathered for the period 1983-2019: monthly landings, monthly number of sales (as a proxy of fishing trip) and the number of days in which those sales were carried out. Moreover, landings length distributions was also estimated from the data collected by IEO monitoring programme (Gil *et al.*, 2000).

Geo-referenced information from SLSEPA devices (a sort of Vessel Monitoring System) on the “voracera” fleet operating at the Strait of Gibraltar were more recently available (from 2009 onwards): this monitoring system, locally called “green boxes” (to differentiate them from the EU VMS “blue boxes”), send every three minutes to a control centre several information about the fishing boat: time, positions, course and speed. Data were filtered and analyzed, according to the protocols proposed by Burgos *et al.* in 2013, to estimate fishing effort and catch rates of the Blackspot seabream Spanish target fishery.

3. Results and discussion

- Landings data: Figure 1 shows a continuous increase of Spanish landings from the beginning of the time series to reach a maximum in 1994. Since then landings’ trend decreased till 2002, despite the peaks in 1996 and 1997. Again, it shows an increasing trend from 2003 to 2009, decreasing afterwards except for a slight increase in 2014. Landings in 2018 show the lowest values of the series, with only 8 tons landed from the Spanish “voracera” fleet.

Until now, discards can be assumed to be zero or negligible. However, the established minimum landing size of 33 centimeters for the species (both for NE Atlantic and Mediterranean Sea) and the landing obligation (EU Regulation 2013/1380) don’t might have an effect on the discards of this target fishery because its high survival exemption.

Hence landings are currently being used as a proxy of catches. However, it should be noted that not all the Spanish catches/landings come exclusively from ICES area 9 but they are considered from the same stock unit because the fishing area (Strait of Gibraltar) is placed between different Advice bodies/Regional Fisheries Organizations (ICES, GCFM and CECAF) boundaries. In fact, last years Spanish Blackspot seabream landings available at InterCatch tool comprise three different areas: 27.9.a (ICES), 34.1.11 (CECAF) and 37.1.1 (GFCM).

Data from Moroccan longliners fishing Blackspot seabream in the Strait of Gibraltar area are available since 2001. The information are available on FAO GFCM statistics (WGSAD-SAC and SRC-WW) so, when possible, it is included in the WGDEEP landings estimates because Moroccan boats target the same population sharing the main fishing grounds with Spain (ICES, 2016).

- CPUEs: Nominal abundance index shows ups and downs throughout the historical series (Figure 2). It is important to emphasize that the effort unit chosen (number of sales) may not be appropriate as does not consider the missing effort. So in the most recent years, when the resource is not quite abundant, the missing effort might increase substantially (fishing boats with no catches and no sale sheet records). Therefore, the LPUE trend since the first fishery's decline (1997) should be interpreted with caution because it cannot be a real image of the resource abundance. A severe decreasing trend is observed since 2010, whereas it increases in the last two years (2014 and 2015), similarly to landings. But, like in landings in 2016 and 2017 the signal fall again.

Table 1 updates the available information from regional VMS (SLSEPA), following the data compilation and its process described by Burgos *et al.* in 2013.

Table 1. Estimates of fishing effort and CPUEs (2013-2019) from the “voracera” fleet targeting Blackspot seabream based on regional VMS (SLSEPA) and fishery statistics (sales sheets).

Data Source	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
VMS	Landings (kg)	459,010	274,882	190,786	79,163	39,799	94,261	137,344	73,508	24,716	4,402	4,825
	No. sales	7,200	5,863	4,711	2,946	2,086	2,989	3,079	1,873	1,017	309	248
	Fishing days (trips)	8,373	7,238	6,160	3,686	2,695	4,191	4,234	2,724	1,740	1,046	607
	CPUE 1 (Landings/No. sales)	64	47	40	27	19	32	45	39	24	14	19
	CPUE 2 (Landings/Fishing days)	55	38	31	21	15	22	32	27	14	4	8
	Missing effort (%)	14	19	24	20	23	29	27	31	42	70	59
TOTAL	Landings (kg)	579,140	316,546	239,751	126,006	66,159	137,623	166,651	99,727	42,991	7,633	18,693
	No. sales	8,892	6,932	5,659	3,638	2,222	3,527	3,384	2,418	1,308	429	794
	CPUE 1 (Landings/No. sales)	65	46	42	35	30	39	49	41	33	18	24

CPUE 1 (nominal) estimated from total landings and number of sales decreased in the period 2009-2013 from 65 to 30 k fishing trip⁻¹ for the total “voracera” fleet as well as the (nominal) CPUE 1 for the fleet equipped with the SLSEPA device (64 to 19 k fishing trip⁻¹). Afterwards, it increases till 49 and 45 k fishing trip⁻¹ in 2015, respectively. As expected, CPUE 2 (landings/fishing days), where the effort is estimated from the VMS device also declined with lower values than CPUE 1 because the fact of the missing effort. So, as expected, 2009 - 2019 CPUEs estimates from VMS analysis shows the same trend but lower values than the nominal one, from sale sheets (Figure 2).

- Length frequencies: The mean length of landings seems to have decreased in two different periods: from 1995 to 1998 and from 2009 to 2013 (Figure 3). Knowledge about the geographic and bathymetric distribution related to length of the species is scarce.

4. Main conclusions

The general trend for the time series of both, landings and CPUEs, continues showing a decreasing pattern during the last years, exhibiting the lowest values of the whole series in 2018. This might be a consequence of an overexploitation status of the stock, which is addressing the fishery into a critical situation.

It should be noted that GFCM started a work plan to establish a management plan for this target fishery in 2019 (Recommendation GFCM/41/2017/2 on the management of blackspot sea bream fisheries in the Alboran Sea, geographical subareas 1 - 3, for a two-year transition period). The 2019 SRC-WM suggested that the experts would continue pursuing the benchmark work on this species during the intersession, submitting the information to the WGSAD and/or perform any additional activity needed to submit final results to the next 2020 SRC-WM (GFCM, 2019).

Acknowledgments

We would like to express our most sincere gratefulness to all those institutions and people for their collaboration in the execution of the monitoring of the Spanish “voracera” fishery: Spanish Institute of Oceanography (IEO), Consejería de Agricultura y Pesca de la Junta de Andalucía and Tarifa’s Fishermen Brotherhood and 1st sale fishmarket.

References

- BURGOS, C., J. GIL and L.A. del OLMO, 2013. The Spanish blackspot seabream (*Pagellus bogaraveo*) fishery in the Strait of Gibraltar: Spatial distribution and fishing effort derived from a small-scale GPRS/GSM based fisheries vessel monitoring system. *Aquatic Living Resources*, 26: 399–407.
- GFCM. 2019. Report of the Third meeting of the Subregional Committee for the Western Mediterranean. SAC/SRC-WM. Sète, France 5 April 2019. 38 pp.
- GIL, J., J. J. ACOSTA, C. FARIAS and M.M. SORIANO, 2012. Updating the information about the Red seabream (*Pagellus bogaraveo*) Spanish fishery in the Strait of Gibraltar (ICES Subarea IX). Work. Doc. to the 2012 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., J. J. ACOSTA, M.M. SORIANO, C. FARIAS and C. BURGOS, 2011. The Red seabream (*Pagellus bogaraveo*) fishery in the Strait of Gibraltar: ICES Subarea IX updated data. Work. Doc. to the 2011 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., C. BURGOS, C. FARIAS, J.J. ACOSTA and M. SORIANO, 2017. The Spanish Red seabream fishery of the Strait of Gibraltar: an update of the available information. Work. Doc. to the 2017 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).

- GIL, J., C. BURGOS, C. FARIAS, J.J. ACOSTA and M. SORIANO, 2018. The Blackspot seabream Spanish target fishery of the Strait of Gibraltar: an update of the available information. Work. Doc. to the 2018 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., J. CANOURA, C. BURGOS and C. FARIAS, 2005. Update of the Red seabream (*Pagellus bogaraveo*) fishery data in the Strait of Gibraltar (ICES IXa south) including biological information. Work. Doc. to the 2005 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., J. CANOURA, C. BURGOS & C. FARIAS, 2009. The Red seabream (*Pagellus bogaraveo*) fishery in the Strait of Gibraltar: Data updated for assessment of the ICES Subarea IX Work. Doc. to the 2009 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., J. CANOURA, C. BURGOS and C. FARIAS, 2010. The Red seabream (*Pagellus bogaraveo*) Spanish fishery in the Strait of Gibraltar: Useful information that should be considered for the ICES Subarea IX assessment update exercise. Work. Doc. to the 2010 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., J. CANOURA, C. BURGOS, C. FARIAS and V. POLONIO, 2008. Red seabream (*Pagellus bogaraveo*) assessment of the ICES IX from the information available of the fishery in the Gibraltar Strait. Work. Doc. to the 2008 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., J. CANOURA, C. BURGOS and I. SOBRINO, 2007. Red seabream (*Pagellus bogaraveo*) fishery of the Strait of Gibraltar (ICES IXa south): Update of the available information. Work. Doc. to the 2007 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., S. CERVIÑO and B.T. ELVARSSON, 2016. A preliminary gadget model to assess the Spanish Red seabream fishery of the Strait of Gibraltar. Work. Doc. to the 2016 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., C. FARIAS, C. BURGOS, J.J. ACOSTA and M. SORIANO, 2016. Updating the available information from Spanish Red seabream fishery in the Strait of Gibraltar. Work. Doc. to the 2016 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).

- GIL, J., C. FARIAS, J. CANOURA and J.J. ACOSTA, 2013. The Red seabream fishery in the Strait of Gibraltar: update of the available information from the fishery statistics and some considerations about the current knowledge on the target species growth. Work. Doc. to the 2013 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., C. FARIAS, J. CANOURA, J.J. ACOSTA, M. SORIANO and C. BURGOS, 2015. Updating the available information from Spanish Red seabream fishery in the Strait of Gibraltar. Work. Doc. to the 2015 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., C. FARIAS, C. BURGOS, J.J. ACOSTA and J. CANOURA, 2014. The red seabream fishery in the Strait of Gibraltar: an update of the available information. Work. Doc. to the 2014 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., L. RUEDA, C. BURGOS, C. FARIAS, J.C. ARRONTE, J.J. ACOSTA and M.M. SORIANO, 2019. The Blackspot seabream Spanish target fishery of the Strait of Gibraltar: updating the available Information. Work. Doc. to the 2019 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., I. SOBRINO and M. P. JIMÉNEZ, 2000. A brief description of the Strait of Gibraltar red seabream (*Pagellus bogaraveo*) fishery. Working Document to the 2000 Report of the *ICES Study Group on the Biology and Assessment of Deep-sea Fisheries Resources* (SGDEEP).
- GIL, J. and I. SOBRINO, 2001. New biological information about the red seabream (*Pagellus bogaraveo*) of the Strait of Gibraltar (ICES IXa). Work. Doc. to the 2001 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J. and I. SOBRINO, 2002. Update of the information about the red seabream (*Pagellus bogaraveo*) from the Strait of Gibraltar (ICES IXa south). Work. Doc. to the 2002 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J. and I. SOBRINO, 2004. Red seabream (*Pagellus bogaraveo*) fishery of the Strait of Gibraltar (ICES IXa south): Update of the information available. Work. Doc. to the 2004 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).

- GIL, J., I.SOBRINO and J. CANOURA, 2003. Update of the information about the red *seabream* (*Pagellus bogaraveo*) fishery in the Strait of Gibraltar (ICES IXa south). Work. Doc. to the 2003 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- GIL, J., I.SOBRINO and J. CANOURA, 2006. The fishery of the Strait of Gibraltar (ICES IXa south): Update of the information available required for the assessment of the red seabream (*Pagellus bogaraveo*). Work. Doc. to the 2006 Report of the *ICES Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources* (WGDEEP).
- ICES, 2006. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES CM 2006/ACFM: 28.
- ICES, 2008. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES CM 2008/ACOM: 14.
- ICES, 2010. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES CM 2010/ACOM: 17.
- ICES, 2012. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES CM 2012/ACOM: 17.
- ICES, 2016. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES CM 2016/ACOM: 18.
- ICES, 2018. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES CM 2018/ACOM: 14.
- SILVA, L., J. GIL and I. SOBRINO, 2002. Definition of fleet components in the Spanish artisanal fisheries of the Gulf of Cádiz (SW Spain, ICES Division IXa). *Fisheries Research* 59 (2002):117-128.

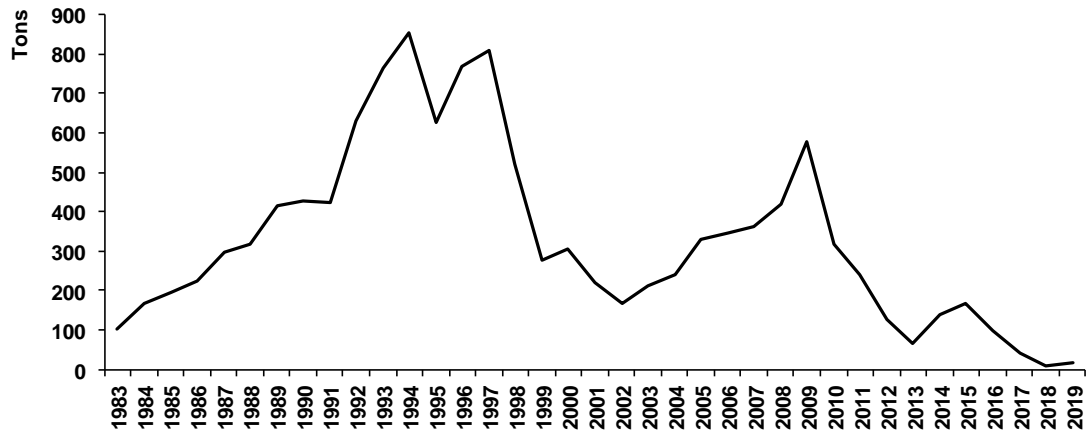


Figure 1. Blackspot seabream Spanish “voracera” fishery of the Strait of Gibraltar: total landings (1983-2017).

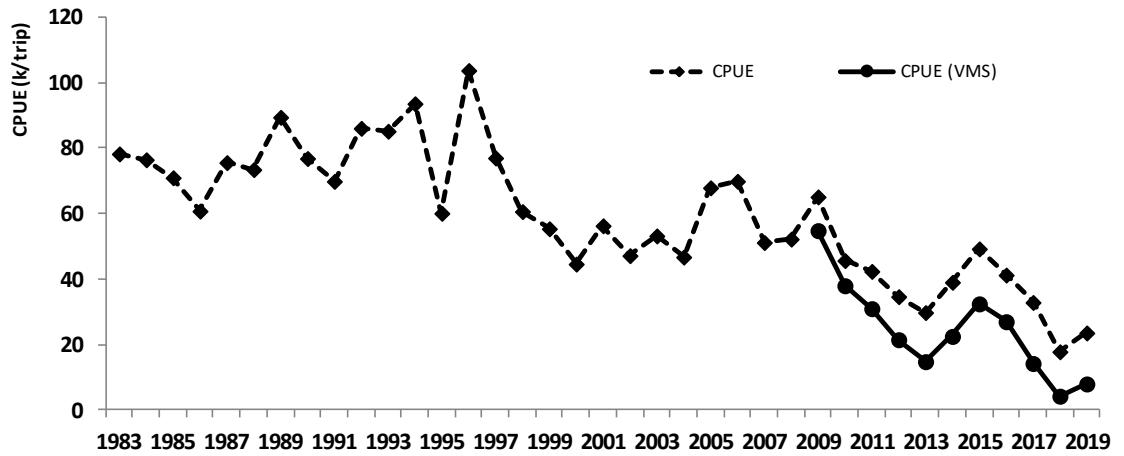


Figure 2. Blackspot seabream Spanish “voracera” fishery of the Strait of Gibraltar: nominal (sale sheets) CPUE (1983-2019) and standardized (VMS) CPUE (2009-2019).

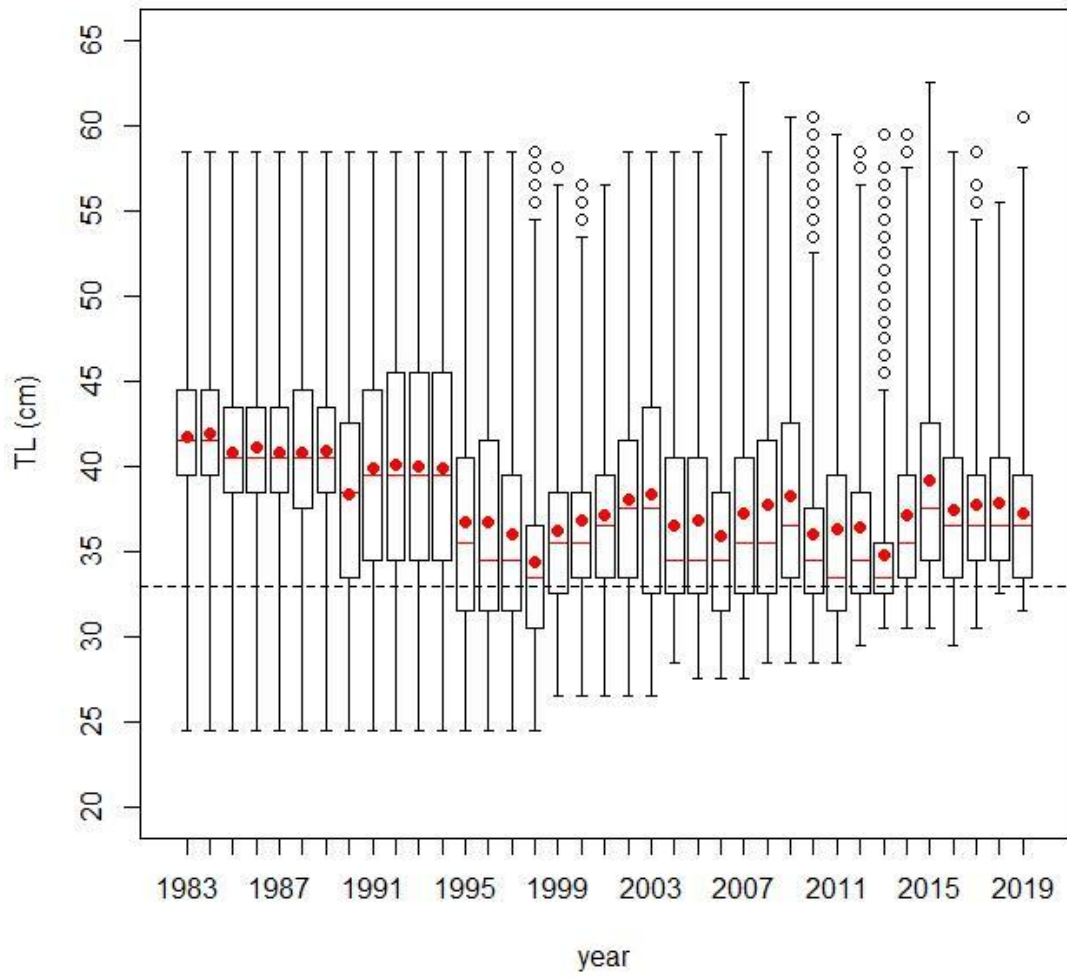


Figure 3. Blackspot seabream Spanish "voracera" fishery of the Strait of Gibraltar: landings length distribution descriptive statistics (red dot: mean value, red line: median value, box and whiskers: Interquartile Range plus Q_1-3IQR and Q_3+3IQR , circles: outliers).