

### 7.3.1 Anchovy (*Engraulis encrasicolus*) in Division IXa (Atlantic Iberian Waters)

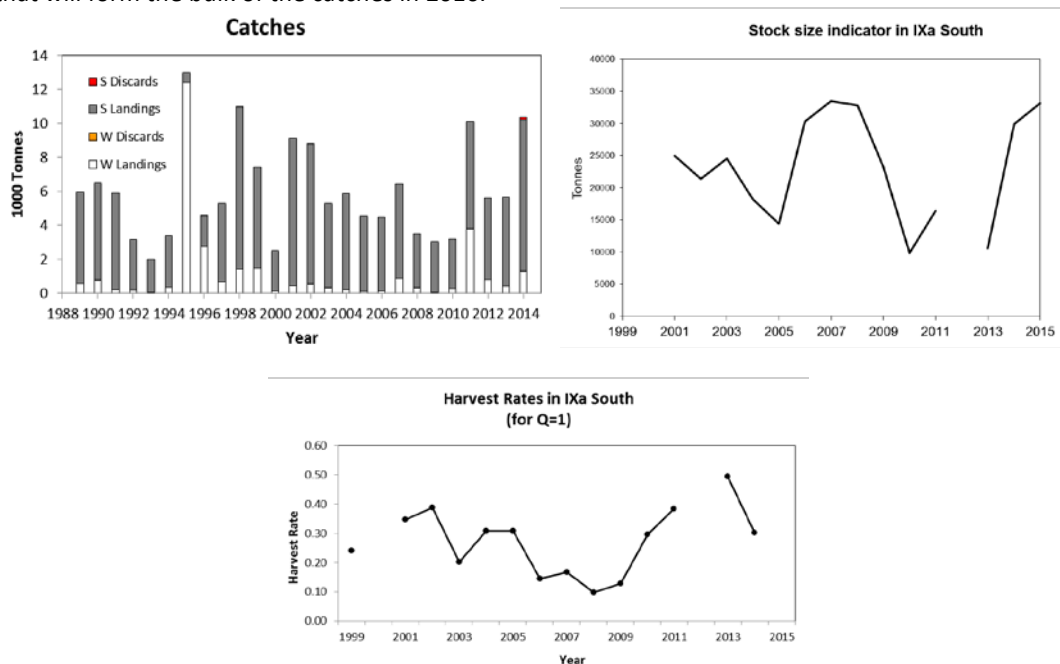
### ICES stock advice

**Please note:** An updated version of this advice is available at ICES (2016).

ICES cannot give catch advice for 2016. This is due to the lack of available data on year classes that constitute the bulk of the biomass and catches.

## Stock development over time

The biomass stock size indicator in Subdivision IXa South (where the main part of the catches are taken) is highly variable without clear trends, although it has shown an increase in the last 2 years. The biomass is variable because it is largely composed of one year old fish. The observed harvest rates on anchovy in Subdivision IXa South (10–50%) are considered low since these result in 50–90% of the potential spawning biomass being allowed to spawn. There is no information on the recruitment that will form the bulk of the catches in 2016.



**Figure 7.3.1.1** Anchovy in Division IXa. Upper left panel: catches in Division IXa (in thousand tonnes) differentiated between Western (W; Subdivisions IXa North to IXa Central–South) and Southern (S; Subdivision IXa South) areas. Upper right panel: average survey biomass estimates in Subdivision IXa South, from the PELAGO, ECOCADIZ (acoustic) and BOCADEVA (DEPM) surveys. Lower panel: average yearly harvest rates in Subdivision IXa South based on the same surveys, with the assumption of catchability equal to 1 for all surveys.

## Stock and exploitation status

**Table 7.3.1.1** Anchovy in Division IXa. State of the stock and fishery relative to reference points.

|                           |                                    | Fishing pressure |      |      |                                 | Stock size                         |   |      |      |                |
|---------------------------|------------------------------------|------------------|------|------|---------------------------------|------------------------------------|---|------|------|----------------|
|                           |                                    | 2012             | 2013 | 2014 |                                 | 2013                               |   | 2014 | 2015 |                |
| Maximum Sustainable Yield | F <sub>MSY</sub>                   | ?                | ?    | ?    | Undefined                       | MSY                                | ? | ?    | ?    | Undefined      |
| Precautionary approach    | F <sub>pa</sub> , F <sub>lim</sub> | ?                | ?    | ?    | Undefined                       | B <sub>pa</sub> , B <sub>lim</sub> | ? | ?    | ?    | Undefined      |
| Management Plan           | F <sub>MGT</sub>                   | -                | -    | -    | Not applicable                  | SSB <sub>MGT</sub>                 | - | -    | -    | Not applicable |
| Qualitative evaluation    | -                                  | ?                | ✓    | ✓    | Below possible reference points | -                                  | ? | ↗    | ↗    | Increasing     |

### Catch options

No catch advice can be given for 2016 because of lack of available data for the year classes that will constitute the bulk of the biomass and catches.

### Basis of the advice

**Table 7.3.1.3** Anchovy in Division IXa. The basis of the advice.

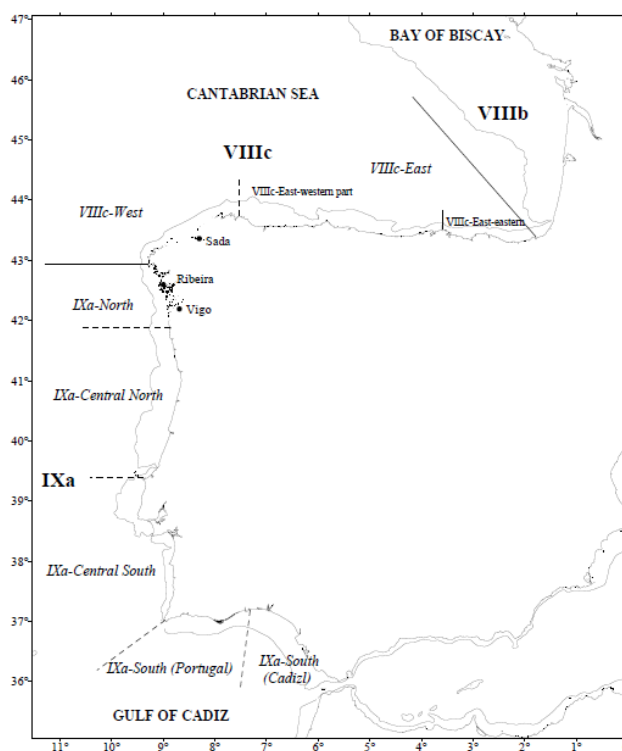
|                 |                                                       |
|-----------------|-------------------------------------------------------|
| Advice basis    | No catch advice can be given for 2016.                |
| Management plan | There is no management plan for anchovy in this area. |

### Quality of the assessment

The 2015 surveys provide information on the current state of the stock. However, the survey indices do not provide sufficient information on the incoming year classes that will constitute the bulk of the biomass and catches in 2016. The autumn acoustic survey (ECOCADIZ-RECLUTAS) may give information on incoming recruits in the Gulf of Cadiz but the time-series is short so far. No survey estimates in Division IXa were available in spring-summer 2012, excepting the estimate from the Subdivision IXa North.

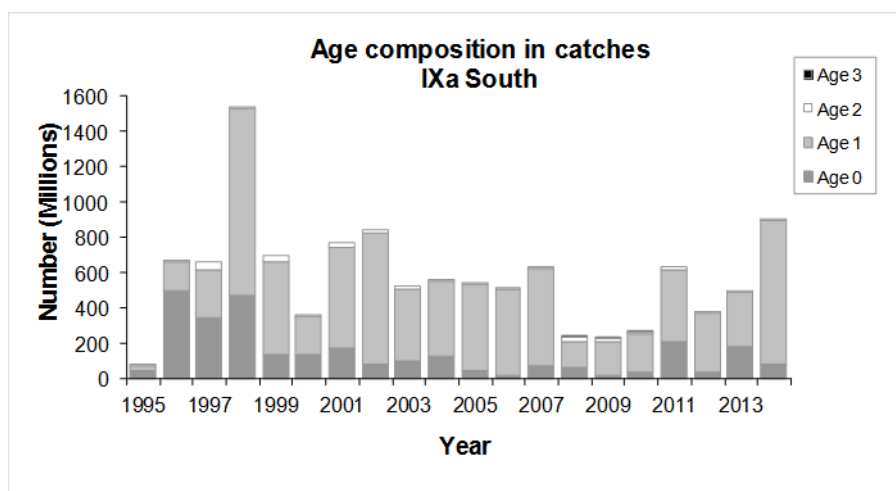
### Issues relevant for the advice

Most of the fishery for this anchovy stock takes place in Subdivision IXa South (Figure 7.3.1.2). The fleets in the northern and western parts of Division IXa (targeting sardine) occasionally target anchovy when abundant, which occurred in 1995, 2011 and 2014. Recent studies on genetics indicate that the stock inhabiting Division IXa South (Algarve and Cadiz) is different genetically from the one inhabiting the remaining parts of Division IXa (Zarraonaindia *et al.*, 2012).



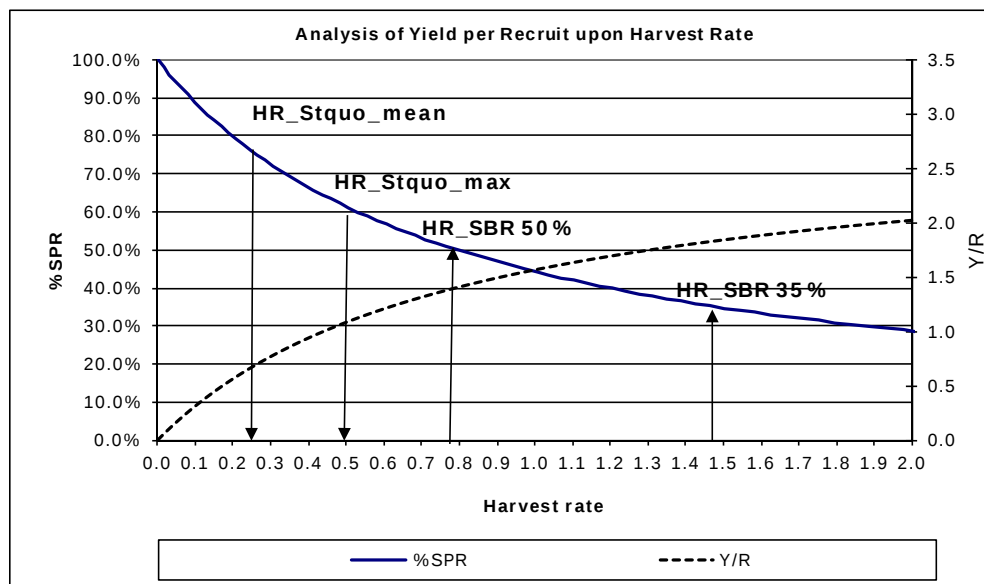
**Figure 7.3.1.2** Anchovy in Division IXa. ICES Divisions and Subdivisions in Southern Europe. Note that Subdivision IXa South (which includes the European waters of the Gulf of Cadiz) is also differentiated between Portuguese and Spanish waters.

In-year advice could be based on information from the *PELAGO* and *PELACUS* spring surveys available on 1st of May, this will depend on the continued availability of time-series of data from these surveys. Advice in December for the following calendar year could be based on results from an o-group survey in the autumn.

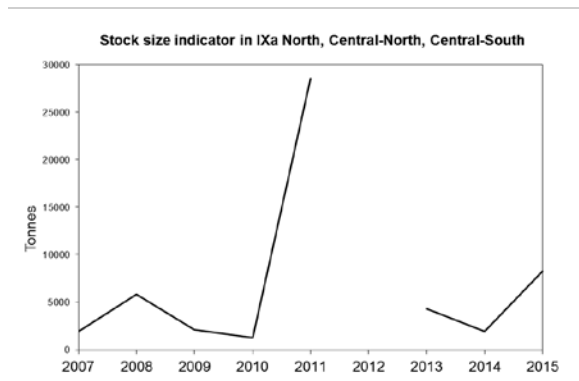


**Figure 7.3.1.3** Anchovy in Subdivision IXa. Age composition in catches (in millions) in Subdivision IXa South.

The sensitivity analysis on harvest rate on anchovy in Subdivision IXa South over a range of potential survey catchabilities (0.6 to 1.6) suggests that the current harvest rate leads to levels at or below the 50% SPR which is considered a sustainable level of exploitation (Figure 7.3.1.4).



**Figure 7.3.1.4** Anchovy in Subdivision IXa. Reference points for Harvest Rates (HR) corresponding to a selectivity-at-age fitted with a presumed  $F_{\text{at-age } 1} = 1.0$ .



**Figure 7.3.1.5** Sum of the survey biomass estimates in Subdivision IXa North, Central-North and Central-South, from the PELAGO, PELACUS (acoustic) surveys.

## Reference points

No reference points are defined for this stock.

## Basis of the assessment

**Table 7.3.1.4** Anchovy in Division IXa. The basis of the assessment.

|                          |                                                                                                                                                                                                                          |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ICES stock data category | 3 (ICES 2015a)                                                                                                                                                                                                           |
| Assessment type          | Survey based assessment without catch advice.                                                                                                                                                                            |
| Input data               | Commercial landings, ages and length frequencies from landing sampling. Survey indices: SAR Q2/PELAGO (Subdivision IXa South), ECOCÁDIZ (Subdivision IXa South), triennial DEPM survey BOCADEVA (Subdivision IXa South). |
| Discards and bycatch     | Discard estimates are available for some fisheries in 2014 and are considered negligible.                                                                                                                                |
| Indicators               | Survey indices. Acoustic spring surveys PELACUS (Subdivision IXa North), SAR Q2/PELAGO (Subdivision IXa Central–North, Central–South).                                                                                   |
| Other information        | None. It is planned to be benchmarked in 2017.                                                                                                                                                                           |
| Working group            | Working Group on Southern Horse mackerel, Anchovy and Sardine ( <a href="#">WGHANSA</a> )                                                                                                                                |

## Information from stakeholders

There is no available information.

## History of advice, catch and management

**Table 7.3.1.5** Anchovy in Division IXa. History of ICES advice, the agreed TAC, and ICES estimates of landings. Weights in thousand tonnes.

| Year | ICES Advice                                                              | Predicted catch/landings<br>corresp. to advice | Agreed TAC* | Official<br>landings | ICES landings |
|------|--------------------------------------------------------------------------|------------------------------------------------|-------------|----------------------|---------------|
| 1987 | Not assessed                                                             | -                                              | 4.6         | 3.9                  | n/a           |
| 1988 | Not assessed                                                             | -                                              | 6           | 3.3                  | 4.7           |
| 1989 | Not assessed                                                             | -                                              | 6           | 4.4                  | 6.0           |
| 1990 | Not assessed                                                             | -                                              | 9           | 2.2                  | 6.5           |
| 1991 | Not assessed                                                             | -                                              | 9           | 3.5                  | 5.9           |
| 1992 | Not assessed                                                             | -                                              | 12          | 2.2                  | 3.2           |
| 1993 | If required, precautionary TAC                                           | -                                              | 12          | 1.1                  | 2.0           |
| 1994 | If required, precautionary TAC                                           | -                                              | 12          | 1.4                  | 3.4           |
| 1995 | If required, precautionary TAC                                           | -                                              | 12          | 7.6                  | 13.0          |
| 1996 | If required, precautionary TAC                                           | -                                              | 12          | 3.5                  | 4.6           |
| 1997 | If required, TAC at pre-95 catch level                                   | -                                              | 12          | 4.0                  | 5.3           |
| 1998 | No advice                                                                |                                                | 12          | 7.1                  | 11.0          |
| 1999 | If required, TAC at pre-95 catch level                                   | 4.6                                            | 13          | 6.1                  | 7.4           |
| 2000 | Fishery less than pre-95 level and develop and implement management plan | 4.6                                            | 10          | 2.5                  | 2.5           |
| 2001 | Average catch excl. 95 and 98                                            | 4.9                                            | 10          | 5.2                  | 9.1           |
| 2002 | Average catch excl. 95 and 98                                            | 4.9                                            | 8           | 4.7                  | 8.8           |
| 2003 | Average catch excl. 95, 98, and 01                                       | 4.7                                            | 8           | 5.6                  | 5.3           |
| 2004 | Average catch excl. 95, 98, 01, and 02                                   | 4.7                                            | 8           | 6.0                  | 5.8           |
| 2005 | Average catch excl. 95, 98, 01, and 02                                   | 4.7                                            | 8           | 4.5                  | 4.5           |
| 2006 | Average catch excl. 95, 98, 01, and 02                                   | 4.7                                            | 8           | 4.0                  | 4.5           |
| 2007 | Average catch 1988–2005 excl. 95, 98, 01, 02                             | 4.8                                            | 8           | 5.4                  | 6.5           |
| 2008 | Average catch 1988–2006 excl. 95, 98, 01, 02                             | 4.8                                            | 8           | 2.9                  | 3.5           |
| 2009 | Same advice as last year                                                 | 4.8                                            | 8           | 2.3                  | 3.0           |
| 2010 | Same advice as last year                                                 | 4.8                                            | 8           | 3.2                  | 3.2           |
| 2011 | See scenarios                                                            | -                                              | 7.6         | 9.7                  | 10.1          |
| 2012 | Reduce catches                                                           | -                                              | 8.6         | 5.6                  | 5.6           |
| 2013 | Historical fishery appears sustainable                                   | -                                              | 8.8         | 5.6                  | 5.6           |
| 2014 | Historical fishery appears sustainable                                   | -                                              | 8.8         | 7.7                  | 10.3          |
| 2015 | No catch advice                                                          | -                                              | 9.7         |                      |               |
| 2016 | No catch advice                                                          | -                                              |             |                      |               |

\*TAC for Subareas IX and X and CECAF 34.1.1.

## History of catch and landings

**Table 7.3.1.6** Anchovy in Division IXa. Catch distribution by fleet in 2014 as estimated by ICES.

| Total catch (2014) | ICES estimated landings | Official landings   |                       | Discards |
|--------------------|-------------------------|---------------------|-----------------------|----------|
| 10.332 kt          | 10.202 Kt               | 99.8% purse-seiners | 0.2% other gear types | 0.130 kt |
|                    |                         | 7.739 kt            |                       |          |

**Table 7.3.1.7** Anchovy in Division IXa. History of commercial catch and landings, both official and ICES estimated values are presented by area for each country participating in the fishery. Weights in tonnes.

| Year | Official landings |           |       | ICES catches |         |       |       |         |       |       |       |       |
|------|-------------------|-----------|-------|--------------|---------|-------|-------|---------|-------|-------|-------|-------|
|      | Portugal          | Spain     | TOTAL | Portugal*    |         |       |       | Spain** |       |       | Total | TOTAL |
|      | Total IXa         | Total IXa | IXa   | IXa C-N      | IXa C-S | IXa S | Total | IXa N   | IXa S | Total | IXa S | IXa   |
| 1943 | -                 | -         | -     | 7121         | 355     | 2499  | 9975  | -       | -     | -     | -     | -     |
| 1944 | -                 | -         | -     | 1220         | 55      | 5376  | 6651  | -       | -     | -     | -     | -     |
| 1945 | -                 | -         | -     | 781          | 15      | 7983  | 8779  | -       | -     | -     | -     | -     |
| 1946 | -                 | -         | -     | 0            | 335     | 5515  | 5850  | -       | -     | -     | -     | -     |
| 1947 | -                 | -         | -     | 0            | 79      | 3313  | 3392  | -       | -     | -     | -     | -     |
| 1948 | -                 | -         | -     | 0            | 75      | 4863  | 4938  | -       | -     | -     | -     | -     |
| 1949 | -                 | -         | -     | 0            | 34      | 2684  | 2718  | -       | -     | -     | -     | -     |
| 1950 | 4145              | 11645     | 15790 | 31           | 30      | 3316  | 3377  | -       | -     | -     | -     | -     |
| 1951 | 4145              | 13784     | 17929 | 21           | 6       | 3567  | 3594  | -       | -     | -     | -     | -     |
| 1952 | 3619              | 13243     | 16862 | 1537         | 1       | 2877  | 4415  | -       | -     | -     | -     | -     |
| 1953 | 4656              | 17103     | 21759 | 1627         | 15      | 2710  | 4352  | -       | -     | -     | -     | -     |
| 1954 | 1550              | 16959     | 18509 | 328          | 18      | 3573  | 3919  | -       | -     | -     | -     | -     |
| 1955 | 5031              | 27290     | 32321 | 83           | 53      | 4387  | 4523  | -       | -     | -     | -     | -     |
| 1956 | 5574              | 23699     | 29273 | 12           | 164     | 7722  | 7898  | -       | -     | -     | -     | -     |
| 1957 | 7810              | 23921     | 31731 | 96           | 13      | 12501 | 12610 | -       | -     | -     | -     | -     |
| 1958 | 13562             | 28807     | 42369 | 1858         | 63      | 1109  | 3030  | -       | -     | -     | -     | -     |
| 1959 | 3132              | 22808     | 25940 | 12           | 1       | 3775  | 3788  | -       | -     | -     | -     | -     |
| 1960 | 6815              | 32992     | 39807 | 990          | 129     | 8384  | 9503  | -       | -     | -     | -     | -     |
| 1961 | 9890              | 30098     | 39988 | 1351         | 81      | 1060  | 2492  | -       | -     | -     | -     | -     |
| 1962 | 3557              | 37718     | 41275 | 542          | 137     | 3767  | 4446  | -       | -     | -     | -     | -     |
| 1963 | 4638              | 22493     | 27131 | 140          | 9       | 5565  | 5714  | -       | -     | -     | -     | -     |
| 1964 | 5714              | 27337     | 33051 | 0            | 0       | 4118  | 4118  | -       | -     | -     | -     | -     |
| 1965 | 7610              | 44581     | 52191 | 7            | 0       | 4452  | 4460  | -       | -     | -     | -     | -     |
| 1966 | 4461              | 41226     | 45687 | 23           | 35      | 4402  | 4460  | -       | -     | -     | -     | -     |
| 1967 | 3824              | 36754     | 40578 | 153          | 34      | 3631  | 3818  | -       | -     | -     | -     | -     |
| 1968 | 1161              | 14078     | 15239 | 518          | 5       | 447   | 970   | -       | -     | -     | -     | -     |
| 1969 | 1364              | 12636     | 14000 | 782          | 10      | 582   | 1375  | -       | -     | -     | -     | -     |
| 1970 | 1193              | 23127     | 24320 | 323          | 0       | 839   | 1162  | -       | -     | -     | -     | -     |
| 1971 | 0                 | 91        | 91    | 257          | 2       | 67    | 326   | -       | -     | -     | -     | -     |
| 1972 | 0                 | 1563      | 1563  | -            | -       | -     | -     | -       | -     | -     | -     | -     |
| 1973 | 126               | 2458      | 2584  | 6            | 0       | 120   | 126   | -       | -     | -     | -     | -     |
| 1974 | 437               | 2845      | 3282  | 113          | 1       | 124   | 238   | -       | -     | -     | -     | -     |
| 1975 | 372               | 3114      | 3486  | 8            | 24      | 340   | 372   | -       | -     | -     | -     | -     |
| 1976 | 88                | 8703      | 8791  | 32           | 38      | 18    | 88    | -       | -     | -     | -     | -     |
| 1977 | 3261              | 11306     | 14567 | 3027         | 1       | 233   | 3261  | -       | -     | -     | -     | -     |
| 1978 | 1022              | 9023      | 10045 | 640          | 17      | 354   | 1011  | -       | -     | -     | -     | -     |
| 1979 | 790               | 20879     | 21669 | 194          | 8       | 453   | 655   | -       | -     | -     | -     | -     |
| 1980 | 994               | 994       | 1988  | 21           | 24      | 935   | 980   | -       | -     | -     | -     | -     |
| 1981 | 1370              | 1370      | 2740  | 426          | 117     | 435   | 978   | -       | -     | -     | -     | -     |
| 1982 | 699               | 715       | 1414  | 48           | 96      | 512   | 656   | -       | -     | -     | -     | -     |
| 1983 | 1015              | 1115      | 2130  | 283          | 58      | 332   | 673   | -       | -     | -     | -     | -     |
| 1984 | 461               | 463       | 924   | 214          | 94      | 84    | 392   | -       | -     | -     | -     | -     |

| Year | Official landings |           |       | ICES catches |         |       |       |         |       |       |       |       |
|------|-------------------|-----------|-------|--------------|---------|-------|-------|---------|-------|-------|-------|-------|
|      | Portugal          | Spain     | TOTAL | Portugal*    |         |       |       | Spain** |       |       | Total | TOTAL |
|      | Total IXa         | Total IXa | IXa   | IXa C-N      | IXa C-S | IXa S | Total | IXa N   | IXa S | Total | IXa S | IXa   |
| 1985 | 2435              | 2487      | 4922  | 1893         | 146     | 83    | 2122  | -       | -     | -     | -     | -     |
| 1986 | 2152              | 3223      | 5375  | 1892         | 194     | 95    | 2181  | -       | -     | -     | -     | -     |
| 1987 | 1621              | 3895      | 5516  | 84           | 17      | 11    | 112   | -       | -     | -     | -     | -     |
| 1988 | 892               | 3281      | 4173  | 338          | 77      | 43    | 458   | -       | 4263  | 4263  | 4306  | 4721  |
| 1989 | 824               | 4435      | 5259  | 389          | 85      | 22    | 496   | 118     | 5330  | 5448  | 5352  | 5944  |
| 1990 | 644               | 2245      | 2889  | 424          | 93      | 24    | 541   | 220     | 5726  | 5946  | 5750  | 6487  |
| 1991 | 222               | 3531      | 3753  | 187          | 3       | 20    | 210   | 15      | 5697  | 5712  | 5717  | 5922  |
| 1992 | 138               | 2213      | 2351  | 92           | 46      | 0     | 138   | 33      | 2995  | 3028  | 2995  | 3166  |
| 1993 | 28                | 1102      | 1130  | 20           | 3       | 0     | 23    | 1       | 1960  | 1961  | 1960  | 1984  |
| 1994 | 236               | 1383      | 1619  | 231          | 5       | 0     | 236   | 117     | 3035  | 3152  | 3035  | 3388  |
| 1995 | 2530              | 7576      | 10106 | 6724         | 332     | 0     | 7056  | 5329    | 571   | 5900  | 571   | 12956 |
| 1996 | 2775              | 3481      | 6256  | 2707         | 13      | 51    | 2771  | 44      | 1780  | 1824  | 1831  | 4595  |
| 1997 | 632               | 3982      | 4614  | 610          | 8       | 13    | 632   | 63      | 4600  | 4664  | 4613  | 5295  |
| 1998 | 1613              | 7104      | 8717  | 894          | 153     | 566   | 1613  | 371     | 8977  | 9349  | 9543  | 10962 |
| 1999 | 1374              | 6112      | 7486  | 957          | 96      | 355   | 1408  | 413     | 5587  | 6000  | 5942  | 7409  |
| 2000 | 265               | 2452      | 2717  | 71           | 61      | 178   | 310   | 10      | 2182  | 2191  | 2360  | 2502  |
| 2001 | 748               | 5159      | 5907  | 397          | 19      | 439   | 855   | 27      | 8216  | 8244  | 8655  | 9098  |
| 2002 | 916               | 4720      | 5636  | 433          | 90      | 393   | 915   | 21      | 7870  | 7891  | 8262  | 8806  |
| 2003 | 519               | 5627      | 6146  | 211          | 67      | 200   | 478   | 23      | 4768  | 4791  | 4968  | 5269  |
| 2004 | 663               | 5981      | 6644  | 83           | 139     | 434   | 657   | 4       | 5183  | 5187  | 5617  | 5844  |
| 2005 | 129               | 4467      | 4596  | 82           | 6       | 38    | 126   | 4       | 4385  | 4389  | 4423  | 4515  |
| 2006 | 111               | 4020      | 4131  | 79           | 15      | 14    | 108   | 15      | 4368  | 4383  | 4381  | 4491  |
| 2007 | 871               | 5411      | 6282  | 833          | 7       | 34    | 874   | 4       | 5576  | 5580  | 5610  | 6454  |
| 2008 | 335               | 2909      | 3244  | 211          | 87      | 37    | 335   | 5       | 3168  | 3173  | 3204  | 3508  |
| 2009 | 72                | 2277      | 2349  | 35           | 5       | 32    | 72    | 19      | 2922  | 2941  | 2954  | 3013  |
| 2010 | 130               | 3161      | 3291  | 100          | 2       | 28    | 130   | 179     | 2901  | 3080  | 2929  | 3210  |
| 2011 | 3318              | 6816      | 10134 | 3239         | 1       | 78    | 3318  | 541     | 6216  | 6758  | 6294  | 10076 |
| 2012 | 796               | 4793      | 5589  | 521          | 220     | 56    | 796   | 39      | 4754  | 4793  | 4810  | 5589  |
| 2013 | 391               | 5241      | 5632  | 192          | 131     | 67    | 391   | 69      | 5172  | 5241  | 5240  | 5632  |
| 2014 | 818               | 6921      | 7739  | 678          | 21      | 118   | 818   | 581     | 8933  | 9515  | 9051  | 10332 |

( - ) Not available

( 0 ) Less than 1 tonne

\*Discards considered negligible.

\*\*Catch estimates available for 2014. In previous years discards are considered negligible and landings are assumed equal to catch.

## Summary of the assessment

**Table 7.3.1.8** Anchovy in Division IXa.

a) Biomass estimates (in tonnes) from each survey series on a regional basis.

| Year | Acoustic survey Biomass estimates |                                    |                                       |                          |                     |                       |                      | DEPM                |
|------|-----------------------------------|------------------------------------|---------------------------------------|--------------------------|---------------------|-----------------------|----------------------|---------------------|
|      | Spring                            |                                    |                                       |                          | Summer              | Autumn                |                      | Summer              |
|      | Sp. survey<br>IXa N               | Port. survey<br>IXa C-N to IXa C-S | Sp.+Port. Surveys<br>IXa N to IXa C-S | Port.<br>survey<br>IXa S | Sp. survey<br>IXa S | Port. survey<br>IXa S | Sp. survey<br>IXa S  | Sp. survey<br>IXa S |
|      | PELACUS                           | PELAGO                             | PELACUS+<br>PELAGO                    | PELAGO                   | ECOCADIZ            | SAR-NOV               | ECOCADIZ<br>RECLUTAS | BOCADEVA            |
| WHEN | March–<br>April                   | March–April                        | March–April                           | March–<br>April          | July                | Oct–Nov               | Oct–Nov              | June–July           |
| 1998 |                                   |                                    |                                       |                          |                     | 30695                 |                      |                     |
| 1999 |                                   | 596                                |                                       | 24763                    |                     |                       |                      |                     |
| 2000 |                                   |                                    |                                       |                          |                     | 33909                 |                      |                     |
| 2001 |                                   | 368                                |                                       | 24913                    |                     | 25578                 |                      |                     |
| 2002 |                                   | 1542                               |                                       | 21335                    |                     |                       |                      |                     |
| 2003 |                                   | 112                                |                                       | 24565                    |                     |                       |                      |                     |
| 2004 |                                   |                                    |                                       |                          | 18177               |                       |                      |                     |
| 2005 |                                   | 1062                               |                                       | 14041                    |                     |                       |                      | 14637               |
| 2006 |                                   | 0                                  |                                       | 24082                    | 36521               |                       |                      |                     |
| 2007 | 0                                 | 1945                               | 1945                                  | 38020                    | 28882               | 23723                 |                      |                     |
| 2008 | 306                               | 5505                               | 5811                                  | 34162                    |                     |                       |                      | 31527               |
| 2009 | 26                                | 2089                               | 2115                                  | 24745                    | 21580               |                       |                      |                     |
| 2010 | 42                                | 1188                               | 1230                                  | 7395                     | 12339               |                       |                      |                     |
| 2011 | 1508                              | 27050                              | 28558                                 | 0                        |                     |                       |                      | 32757               |
| 2012 | 45                                |                                    |                                       |                          |                     |                       | 13680                |                     |
| 2013 | 0                                 | 4284                               | 4284                                  | 12414                    | 8487                |                       |                      |                     |
| 2014 | 0                                 | 1947                               | 1947                                  | 28917                    | 29219               |                       | 8113                 | 31569*              |
| 2015 | 0                                 | 8237                               | 8237                                  | 33100                    |                     |                       |                      |                     |

\*Preliminary estimate.

N: North, C: Central, S: South

b) Biomass stock size indicator (in tonnes). Values in the last column correspond to those represented in Figure 7.3.1.1.

| Year | Western component | Southern component           |
|------|-------------------|------------------------------|
|      | PELACUS+PELAGO    | PELAGO+ECOCADIZ<br>+BOCADEVA |
|      | IXa N to IXa CS   | IXa S                        |
|      | SUM OF ESTIMATES  | MEAN ESTIMATE                |
| 1999 |                   | 24763                        |
| 2000 |                   |                              |
| 2001 |                   | 24913                        |
| 2002 |                   | 21335                        |
| 2003 |                   | 24565                        |
| 2004 |                   | 18177                        |
| 2005 |                   | 14339                        |
| 2006 |                   | 30301                        |
| 2007 | 1945              | 33451                        |
| 2008 | 5811              | 32845                        |
| 2009 | 2115              | 23163                        |
| 2010 | 1230              | 9867                         |
| 2011 | 28558             | 16379                        |
| 2012 |                   |                              |
| 2013 | 4284              | 10593                        |
| 2014 | 1947              | 29902                        |
| 2015 | 8237              | 33100                        |

**Table 7.3.1.9** Anchovy in Division IXa. Harvest rates on anchovy. Catchability assumed equal to 1 for all surveys. Stock sizes taken from Table 7.3.1.8b.

| Year | Southern component |            |      |
|------|--------------------|------------|------|
|      | IXa S              |            |      |
|      | Catches            | Stock size | HR   |
| 1999 | 5942               | 24763      | 0.24 |
| 2000 | 2360               |            |      |
| 2001 | 8655               | 24913      | 0.35 |
| 2002 | 8262               | 21335      | 0.39 |
| 2003 | 4968               | 24565      | 0.20 |
| 2004 | 5617               | 18177      | 0.31 |
| 2005 | 4423               | 14339      | 0.31 |
| 2006 | 4381               | 30301      | 0.14 |
| 2007 | 5610               | 33451      | 0.17 |
| 2008 | 3204               | 32845      | 0.10 |
| 2009 | 2954               | 23163      | 0.13 |
| 2010 | 2929               | 9867       | 0.30 |
| 2011 | 6294               | 16379      | 0.38 |
| 2012 | 4810               |            |      |
| 2013 | 5240               | 10593      | 0.49 |
| 2014 | 9051               | 29902      | 0.30 |
| 2015 |                    | 33100      |      |

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