# Stock: Celtic Sea and Division VIIj herring

**Assessment Quality Control Diagram 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(2 - 7)u | | | | | | | | | | | | | | | | |
| Date of assessment | | Year | | | | | | | | | | | | | | |
|  | 1988 | | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | |
| 1990 |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1991 |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1992 |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1993 |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1994 | 0.41 | | 0.62 | 0.45 | 0.63 | 0.71 |  |  |  |  |  |  |  |  |  |  | |
| 1995 | 0.43 | | 0.62 | 0.50 | 0.71 | 0.93 | 0.77 |  |  |  |  |  |  |  |  |  | |
| 1996 | 0.42 | | 0.57 | 0.41 | 0.52 | 0.92 | 0.51 | 0.48 |  |  |  |  |  |  |  |  | |
| 1997 | 0.39 | | 0.52 | 0.38 | 0.49 | 0.80 | 0.42 | 0.43 | 0.44 | 0.38 |  |  |  |  |  |  | |
| 1998 | 0.39 | | 0.52 | 0.39 | 0.51 | 0.75 | 0.45 | 0.38 | 0.5 | 0.39 | 0.38 |  |  |  |  |  | |
| 1999 | 0.38 | | 0.52 | 0.39 | 0.50 | 0.75 | 0.43 | 0.38 | 0.48 | 0.36 | 0.37 | 0.32 |  |  |  |  | |
| 2000 | 0.39 | | 0.52 | 0.39 | 0.51 | 0.77 | 0.45 | 0.39 | 0.51 | 0.41 | 0.43 | 0.34 | 0.34 |  |  |  | |
| 2001 | 0.39 | | 0.53 | 0.40 | 0.52 | 0.79 | 0.50 | 0.43 | 0.55 | 0.48 | 0.60 | 0.60 | 0.94 | 0.95 |  |  | |
| 2002 | 0.37 | | 0.50 | 0.38 | 0.50 | 0.75 | 0.45 | 0.38 | 0.54 | 0.46 | 0.58 | 0.58 | 0.90 | 0.77 | 0.44 |  | |
| 2003 | 0.37 | | 0.5 | 0.38 | 0.49 | 0.75 | 0.45 | 0.38 | 0.54 | 0.48 | 0.58 | 0.59 | 1.04 | 0.94 | 0.63 | 0.30 | |

**Remarks:** Very high value of F in 1992. Basic catch data should be checked for this year. (NB.This was checked but needs to be further investigated.)

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**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (age) Unit: millions | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | |
|  | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1994 | 526 | 451 | 204 | 1022 | 244 |  |  |  |  |  |  |  |  |  |
| 1995 | 451 | 379 | 156 | 710 | 208 | 698 |  |  |  |  |  |  |  |  |
| 1996 | 510 | 442 | 197 | 870 | 331 | 876 | 1136 |  |  |  |  |  |  |  |
| 1997 | 514 | 426 | 205 | 902 | 322 | 778 | 664 | 462 |  |  |  |  |  |  |
| 1998 | 523 | 449 | 195 | 811 | 349 | 843 | 880 | 415 | 462 |  |  |  |  |  |
| 1999 | 527 | 450 | 190 | 768 | 358 | 916 | 964 | 470 | 423 | 887 |  |  |  |  |
| 2000 | 519 | 453 | 189 | 909 | 352 | 819 | 863 | 464 | 515 | 515 | 2186 |  |  |  |
| 2001 | 520 | 446 | 183 | 753 | 310 | 786 | 803 | 353 | 355 | 241 | 438 | 387 |  |  |
| 2002 | 525 | 450 | 188 | 878 | 332 | 732 | 773 | 341 | 410 | 283 | 595 | 523 | 1477 |  |
| 2003 | 524 | 450 | 187 | 891 | 325 | 741 | 668 | 327 | 443 | 277 | 467 | 444 | 370 | 408 |

**Remarks:** Very poor recruitment from the 1989 year class. The 1990 year class appears strong. Estimates are very similar prior to 1990. The 1992 and 1993 year classes both appear to be strong.

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**Assessment Quality Control Diagram 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Spawning stock biomass ('000 t) | | | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | | | |
|  | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 | No assessments | | | |  |  |  |  |  |  |  |  |  |  |  |  |
| 1994 | 72 | 65 | 55 | 62 | 63 | 60 | 60-63 |  |  |  |  |  |  |  |  |  |
| 1995 | 66 | 57 | 46 | 45 | 41 | 45 | 43 | 35-40 |  |  |  |  |  |  |  |  |
| 1996 | 69 | 65 | 56 | 58 | 55 | 68 | 85 | 93 | 85-90 |  |  |  |  |  |  |  |
| 1997 | 71 | 66 | 57 | 60 | 58 | 68 | 71 | 68 | 68 | 69 |  |  |  |  |  |  |
| 1998 | 73 | 69 | 59 | 57 | 56 | 69 | 56 | 69 | 80 | 75 | 69 |  |  |  |  |  |
| 1999 | 74 | 70 | 59 | 56 | 54 | 70 | 84 | 80 | 73 | 83 | 89 | 88 |  |  |  |  |
| 2000 | 73 | 69 | 59 | 60 | 59 | 70 | 78 | 75 | 72 | 72 | (117) | 74 | 73 |  |  |  |
| 2001 | 73 | 69 | 58 | 54 | 51 | 61 | 71 | 65 | 54 | 43 | 38 | 33 |  |  |  |  |
| 2002 | 74 | 70 | 59 | 59 | 57 | 65 | 70 | 63 | 56 | 48 | 46 | 45 | (69) |  |  |  |
| 2003 | 75 | 70 | 59 | 60 | 58 | 66 | 68 | 59 | 54 | 47 | 42 | 37 | 34 | (40) |  |  |

Forecast.

**Remarks:**The SSBs brackets indicate poorly estimated values caused by the high number of 1 ringers.