**Stock: Cod - Kattegat**

# Assessment Quality Control Diagram 1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(2-6,u) | | | | | | | | | | | | | | | | | | | | |
| Date of assessment | | Year | | | | | | | | | | | | | | | | | | |
| 19/4-2000 | 1989 | | 1990 | 1991 | 1992 | 1993 | 1994 | | 1995 | 1996 | | 1997 | 1998 | 1999 | | 2000 | 2001 | | 2002 | 2003 |
| 1989 |  | |  |  |  |  |  | |  |  | |  |  |  | |  |  | |  |  |
| 1990 | 1.28 | |  |  |  |  |  | |  |  | |  |  |  | |  |  | |  |  |
| 1991 | 1.13 | | 1.07 |  |  |  |  | |  |  | |  |  |  | |  |  | |  |  |
| 1992 | 1.20 | | 1.49 | 1.02 |  |  |  | |  |  | |  |  |  | |  |  | |  |  |
| 1993 | 1.19 | | 1.28 | 1.44 | 0.89 |  |  | |  |  | |  |  |  | |  |  | |  |  |
| 1994 | No analytical assessment | | | | | | |  | |  |  | |  | |  |  | |  |  |  |
| 1995 | 1.20 | | 1.60 | 1.41 | 1.03 | 1.11 | 1.34 | |  |  | |  |  |  | |  |  | |  |  |
| 1996 | 1.20 | | 1.58 | 1.39 | 0.94 | 0.76 | 0.58 | | 1.27 |  | |  |  |  | |  |  | |  |  |
| 1997 | 1.20 | | 1.55 | 1.40 | 0.93 | 0.74 | 0.56 | | 1.07 | 0.91 | |  |  |  | |  |  | |  |  |
| 1998 | 1.30 | | 1.81 | 1.62 | 1.06 | 0.86 | 0.64 | | 1.2 | 0.95 | | 1.16 |  |  | |  |  | |  |  |
| 1999 | 1.32 | | 1.84 | 1.65 | 1.08 | 0.88 | 0.65 | | 1.26 | 0.99 | | 1.24 | 1.05 |  | |  |  | |  |  |
| 2000 | 1.30 | | 1.92 | 1.62 | 1.06 | 0.86 | 0.64 | | 1.23 | 0.96 | | 1.20 | 1.08 | 1.02 | |  |  | |  |  |
| 2001 | 1.31 | | 1.43 | 1.67 | 1.15 | 0.94 | 0.79 | | 1.22 | 0.92 | | 1.24 | 1.32 | 1.19 | | 1.13 |  | |  |  |
| 2002 | 1.31 | | 1.43 | 1.67 | 1.15 | 0.94 | 0.79 | | 1.22 | 0.92 | | 1.24 | 1.33 | 1.23 | | 1.23 | 0.98 | |  |  |
| 2003 | 1.3105 | | 1.418 | 1.6479 | 1.1299 | 0.9135 | 0.7824 | | 1.204 | 0.9129 | | 1.2282 | 1.3152 | 1.2256 | | 1.2871 | 1.6376 | | 1.1353 |  |
| 2004 | 1.3135 | | 1.4263 | 1.6676 | 1.1422 | 0.9344 | 0.7904 | | 1.2174 | 0.9221 | | 1.2409 | 1.3246 | 1.2354 | | 1.3086 | 1.7254 | | 1.4441 | 1.2057 |

**Remarks: The VPA results from 1996 is not considered reliable**

NB seem to be some problems with what is the agespan to be used. Last years values are F-3-6. This age range is also used this year. In repport F3-5 is used as reference F

**Stock: Cod - Kattegat**

**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (age 1) Unit: millions | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | | | | | | | | | | | | |
| 19/4-2000 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | | 1995 | | | 1996 | | 1997 | 1998 | | 1999 | | | 2000 | 2001 | 2002 | | 2003 | |
| 1989 | 14.7 |  |  |  |  |  |  |  | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1990 | 9.2 | 11.8 |  |  |  |  |  |  | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1991 | 8.5 | 4.8 | 16.5 |  |  |  |  |  | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1992 | 7.9 | 3.8 | 15.0 | 10.4 |  |  |  |  | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1993 | 7.8 | 3.4 | 14.5 | 7.6 | 8.5 |  |  |  | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1994 | No analytical assessment | | | | | | | |  | |  |  | |  | | |  | |  |  | |  | |  |  | |
| 1995 | 7.9 | 3.4 | 14.9 | 6.9 | 11.0 | 3.4 | 0.7 |  | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1996 | 7.9 | 3.4 | 15.4 | 7.6 | 13.3 | 6.7 | 4.4 | 2.3 | |  | | |  | |  |  | |  | | |  |  |  | |  | |
| 1997 | 7.9 | 3.4 | 15.4 | 7.7 | 13.4 | 7.6 | 8.0 | 8.3 | | 8.2 | | |  | |  |  | |  | | |  |  |  | |  | |
| 1998 | 7.9 | 3.4 | 15.4 | 7.6 | 13.5 | 7.7 | 8.7 | 19.1 | | 4.2 | | | 9.8 | |  |  | |  | | |  |  |  | |  | |
| 1999 | 7.9 | 3.4 | 15.4 | 7.6 | 13.5 | 7.7 | 9 | 18.3 | | 4.4 | | | 14.9 | | 15.8 |  | |  | | |  |  |  | |  | |
| 2000 | 7.9 | 3.4 | 15.4 | 7.7 | 13.5 | 7.7 | 8.9 | 17.6 | | 4.2 | | | 12.9 | | 11.3 | 10.4 | |  | | |  |  |  | |  | |
| 2001 | 7.9 | 3.4 | 15.4 | 7.6 | 13.5 | 7.7 | 8.9 | 17.4 | | 4.2 | | | 11.9 | | 9.1 | 9.8 | | 4.0 | | |  |  |  | |  | |
| 2002 | 7.9 | 3.4 | 15.4 | 7.6 | 13.5 | 7.7 | 8.9 | 17.4 | | 4.2 | | | 11.7 | | 8.5 | 7.7 | | 4.7 | | | 4.9 |  |  | |  | |
| 2003 | 7.9 | 3.4 | 15.4 | 7.6 | 13.5 | 7.7 | 8.9 | 17.4 | | 4.3 | | | 11.6 | | 7.9 | 6.2 | | 3.2 | | | 2.5 | 2.7 |  | |  | |
| 2004 | 7.9 | 3.4 | 15.4 | 7.6 | 13.5 | 7.7 | 8.9 | 17.4 | | 4.3 | | | 11.6 | | 7.9 | 6.1 | | 2.9 | | | 2.3 | 4.5 | 0.2 | |  | |

**Remarks: The VPA results from 1996 is not considered reliable**

**Stock: Cod - Kattegat**

**Assessment Quality Control Diagram 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Spawning stock biomass ('000 t) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | | | | | | | | | | | | |
| 19/4-2000 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | | | 1999 | 2000 | | | 2001 | | 2002 | | 2003 | | 2004 | 2005 | 2006 |
| 1989 | 6.1 | 9.7 | 8.2 |  |  |  |  |  |  |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1990 | 8.6 | 6.7 | 5.0 | 7.7 |  |  |  |  |  |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1991 | 9.2 | 8.2 | 6.4 | 13.2 | 13.6 |  |  |  |  |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1992 | 9.1 | 7.4 | 4.9 | 9.1 | 10.0 | 11.0 |  |  |  |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1993 | 9.1 | 7.2 | 4.1 | 8.3 | 8.9 | 9.6 | 10.9 |  |  |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1994 | No analytical assessment | | | | | | | | | |  |  | | |  |  | |  | |  | |  | |  |  |
| 1995 | 8.8 | 6.6 | 5.3 | 7.4 | 8.4 | 8.8 | 5.8 | 7.7 | 10.4 |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1996 | 8.7 | 6.6 | 5.4 | 7.8 | 9.9 | 12.5 | 9.3 |  |  |  | | |  |  | | |  | |  | |  | |  |  |  |
| 1997 | 10.6 | 7.9 | 7.0 | 9.7 | 12.5 | 15.2 | 12.5 | 9.3 | 10.4 | 12.0 | | | 13.2 |  | | |  | |  | |  | |  |  |  |
| 1998 | 8.9 | 6.4 | 6.5 | 9.3 | 9.5 | 14.3 | 12.2 | 6.6 | 12.8 | 10.5 | | | 7.9 | 9.5 | | |  | |  | |  | |  |  |  |
| 1999 | 8.9 | 6.4 | 6.5 | 9.3 | 9.5 | 14.2 | 12.1 | 6.5 | 12.5 | 9 | | | 8.6 | 10.6 | | | 11.7 | |  | |  | |  |  |  |
| 2000 | 8.9 | 6.5 | 6.5 | 9.3 | 9.5 | 14.3 | 12.2 | 6.5 | 12.2 | 8.3 | | | 8.3 | 8.9 | | | 9 | | 8.7 | |  | |  |  |  |
| 2001 | 8.9 | 6.4 | 6.5 | 9.3 | 9.5 | 14.3 | 12.1 | 6.4 | 12.1 | 8.0 | | | 7.5 | 6.0 | | |  | |  | |  | |  |  |  |
| 2002 | 8.9 | 6.4 | 6.5 | 9.3 | 9.5 | 14.3 | 12.1 | 6.4 | 12.1 | 8.0 | | | 7.3 | 6.0 | | | 6.2 | |  | |  | |  |  |  |
| 2003 | 8.9 | 6.5 | 6.6 | 9.3 | 9.5 | 14.3 | 12.2 | 6.5 | 12.1 | 8.0 | | | 7.3 | 5.6 | | | 4.7 | | 2.6 | |  | |  |  |  |
| 2004 | 8.9 | 6.4 | 6.5 | 9.3 | 9.5 | 14.3 | 12.1 | 6.4 | 12.1 | 7.9 | | | 7.2 | 5.6 | | | 4.6 | | 2.7 | | 3.0 | | 2.8 | 3.2 |  |

Forecast.Shift of maturity ogive in 1995 assessment. Shift of maturity ogive in 1997. Shift of maturity ogive.

**Remarks:** The VPA results for 1996 is not considered reliable. No forecast is made in 1996.