**Stock: Sardine in Divisions VIIIc and IXa**

**Assessment Quality Control Diagram 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(2-5,u) | | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
| 1989 | 0.23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 0.21 | 0.23 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 0.15 | 0.15 | 0.16 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 0.30 | 0.35 | 0.48 | 0.41 |  |  |  |  |  |  |  |  |  |  |  |
| 1993 | 0.34 | 0.38 | 0.46 | 0.32 | 0.29 |  |  |  |  |  |  |  |  |  |  |
| 1994 | 0.46 | 0.51 | 0.59 | 0.53 | 0.36 | 0.38 |  |  |  |  |  |  |  |  |  |
| 1995 | 0.39 | 0.44 | 0.55 | 0.41 | 0.33 | 0.44 | 0.41 |  |  |  |  |  |  |  |  |
| 1996 | 0.48 | 0.48 | 0.62 | 0.48 | 0.39 | 0.55 | 0.54 | 0.66 |  |  |  |  |  |  |  |
| 1997 | 0.48 | 0.48 | 0.63 | 0.51 | 0.42 | 0.52 | 0.45 | 0.44 | 0.58 |  |  | |  |  |  |
| 1998 | 0.42 | 0.42 | 0.40 | 0.49 | 0.41 | 0.44 | 0.38 | 0.34 | 0.50 | 0.70 |  |  |  |  |  |
| 1999 | 0.34 | 0.35 | 0.38 | 0.38 | 0.32 | 0.31 | 0.23 | 0.22 | 0.31 | 0.37 | 0.39 |  |  |  |  |
| 2000 | 0.34 | 0.34 | 0.37 | 0.29 | 0.26 | 0.25 | 0.25 | 0.24 | 0.34 | 0.39 | 0.41 | 0.30 |  |  |  |
| 2001 | 0.33 | 0.33 | 0.36 | 0.28 | 0.25 | 0.24 | 0.22 | 0.21 | 0.31 | 0.37 | 0.41 | 0.34 | 0.28 |  |  |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

f(2-6,u)

**Remarks:** Assessments of 1995-2000 performed using ICA.

**Stock: Sardine in Divisions VIIIc and IXa**

**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (age 0) Unit: millions | | | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | | | |
|  | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2003 |
| 1989 | 24.8 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 18.5 | 9.9 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 19.3 | 9.4 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 10.6 | 5.5 | 3.9 | 6.0 |  |  |  |  |  |  |  |  |  |  |  |
| 1993 | 11.6 | 6.0 | 6.6 | 5.1 | 9.0 |  |  |  |  |  |  |  |  |  |  |
| 1994 | 10.1 | 5.9 | 6.0 | 5.7 | 13.7 | 7.6 |  |  |  |  |  |  |  |  |  |
| 1995 | 10.8 | 5.9 | 5.6 | 5.8 | 15.1 | 7.6 | 1.1 |  |  |  |  |  |  |  |  |
| 1996 | 10.5 | 5.4 | 5.2 | 4.9 | 13.0 | 7.5 | 1.3 | 1.6 |  |  |  |  |  |  |  |
| 1997 | 10.0 | 5.7 | 5.5 | 4.9 | 13.3 | 9.6 | 2.3 | 2.6 | 1.2 |  |  | |  |  |  |
| 1998 | 10.9 | 6.3 | 6.1 | 5.9 | 13.5 | 10.3 | 3.8 | 3.8 | 2.5 | 6.7 |  |  |  |  |  |
| 1999 | 11.1 | 6.9 | 7.0 | 7.0 | 17.1 | 12.9 | 5.3 | 5.0 | 3.8 | 7.7 | 7.9 |  |  |  |  |
| 2000 | 11.6 | 7.2 | 7.2 | 6.7 | 15.9 | 12.1 | 5.3 | 5.5 | 4.2 | 7.2 | 7.3 | 12.4 |  |  |  |
| 2001 | 11.6 | 7.3 | 7.4 | 7.0 | 16.4 | 12.3 | 5.4 | 5.5 | 4.5 | 6.5 | 5.7 | 7.9 | 8.3 |  |  |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Remarks:** Assessments of 1995-2000 performed using ICA.

**Stock: Sardine in Divisions VIIIc and IXa**

**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 | 2005 |
| 1989 | 891 | 888 | 884 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 545 | 519 | 515 | 508 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 819 | 748 | 786 | 764 | 772 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 313 | 275 | 227 | 222 | 246 | 297 |  |  |  |  |  |  |  |  |  |  |  |
| 1993 | 301 | 282 | 294 | 290 | 377 | 408 | 418 |  |  |  |  |  |  |  |  |  |  |
| 1994 | 271 | 236 | 242 | 350 | 368 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1995 | 314 | 279 | 277 | 399 | 421 | 320 |  |  |  |  |  |  |  |  |  |  |  |
| 1996 | 281 | 242 | 233 | 230 | 345 | 261 | 200 |  |  |  |  |  |  |  |  |  |  |
| 1997 | 293 | 253 | 242 | 341 | 372 | 323 | 290 | 187 |  |  |  |  |  | |  |  |  |
| 1998 | 294 | 290 | 269 | 375 | 427 | 406 | 403 | 285 | 220 |  |  |  |  |  |  |  |  |
| 1999 | 349 | 337 | 328 | 480 | 568 | 572 | 608 | 468 | 358 | 405 |  |  |  |  |  |  |  |
| 2000 | 364 | 357 | 358 | 482 | 546 | 529 | 565 | 453 | 356 | 324 | 367 |  |  |  |  |  |  |
| 2001 | 371 | 366 | 370 | 501 | 569 | 553 | 592 | 479 | 364 | 301 | 293 | 308 |  |  |  |  |  |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Forecast.

**Remarks:** Assessments of 1995-2000 performed using ICA.