**Stock: Sandeel in the Shetland area**

**Assessment Quality Control Diagram 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(1-3,u) | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| 1989 | 0.105 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 0.063 | 0.057 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 0.04 | 0.08 | 0.05 |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 0.13 | 0.08 | 0.08 | 0 |  |  |  |  |  |  |  |  |  |  |
| 1993 | 0.18 | 0.14 | 0.15 | 0 | 0 |  |  |  |  |  |  |  |  |  |
| 1994 | 0.12 | 0.10 | 0.11 | 0 | 0 | 0 |  |  |  |  |  |  |  |  |
| 1995 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1997 | 0.05 | 0.03 | 0.03 | 0 | 0 | 0 | 0 | 0.009 | 0.007 |  |  | |  |  |
| 1998 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1999 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2000 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2001 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

"Hand" tuned. *Ad hoc* tuned. Separable.

**Remarks:**

**Stock: Sandeel in the Shetland area**

**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (age 0) Unit: '000 million | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
| 1989 | 20.7 |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1990 | 1.3 |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1991 | 6.4 | 25.3 |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1992 | 3.6 | 6.9 | 1.7 |  |  |  |  |  |  |  |  |  |  |  | |
| 1993 | 1.4 | 3.7 | 1.6 | 54.0 | 4.7 |  |  |  |  |  |  |  |  |  | |
| 1994 | 1.8 | 4.9 | 2.3 | 69.8 | 8.3 | 30.9 |  |  |  |  |  |  |  |  | |
| 1995 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1996 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1997 | 6.8 | 13.1 | 9.5 | 144.2 | 25.5 | 45.3 | 34.0 | 23.2 | 60.7 |  |  | |  |  | |
| 1998 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1999 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2000 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2001 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

**Remarks:**

**Stock: Sandeel in the Shetland area**

**Assessment Quality Control Diagram 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Spawning stock biomass | | | | | | | | | | | | | | | |
| Date of Assessment | Year Class | | | | | | | | | | | | | | | |
|  | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| 1989 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 40.7 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 18.9 | 16.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 18.0 | 13.6 | 13.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 | 11.9 | 7.6 | 6.5 | 5.9 | 43.8 | 34.9 |  |  |  |  |  |  |  |  |  |  |
| 1994 | 18.3 | 11.2 | 9.3 | 7.9 | 55.3 | 53.3 |  |  |  |  |  |  |  |  |  |  |
| 1995 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1996 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1997 | 108.5 | 75.8 | 59.6 | 48.0 | 161.5 | 155.4 | 152.1 | 139.9 | 117.9 |  |  |  |  |  |  |  |
| 1998 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1999 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2000 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2001 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Forecast.

**Remarks**