**Stock: Sandeel in Sub-area IV (North Sea)**

**Assessment Quality Control Diagram 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(1-2 ,u) | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| 1989 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1994 | 0.66 | 0.52 | 0.83 | 0.36 | 0.54 | 0.46 |  |  |  |  |  |  |  |  |
| 1995 | 0.64 | 0.54 | 0.78 | 0.70 | 0.43 | 0.32 | 0.35 |  |  |  |  |  |  |  |
| 1996 | 0.64 | 0.54 | 0.82 | 0.71 | 0.46 | 0.37 | 0.49 | 0.38 |  |  |  |  |  |  |
| 1997 | 0.72 | 0.67 | 0.76 | 0.73 | 0.46 | 0.35 | 0.54 | 0.44 | 0.55 |  |  |  |  |  |
| 1998 | 0.71 | 0.66 | 0.74 | 0.72 | 0.45 | 0.34 | 0.53 | 0.44 | 0.54 | 0.36 |  |  |  |  |
| 1999 | 0.71 | 0.66 | 0.74 | 0.71 | 0.45 | 0.34 | 0.52 | 0.44 | 0.53 | 0.35 | 0.51 |  |  |  |
| 2000 | 0.71 | 0.66 | 0.74 | 0.71 | 0.45 | 0.34 | 0.52 | 0.42 | 0.48 | 0.36 | 0.56 | 0.47 |  |  |
| 2001 | 0.71 | 0.66 | 0.75 | 0.72 | 0.45 | 0.34 | 0.53 | 0.42 | 0.48 | 0.36 | 0.56 | 0.46 | 0.51 |  |
| 2002 | 0.89 | 0.69 | 0.83 | 0.78 | 0.44 | 0.35 | 0.48 | 0.38 | 0.51 | 0.35 | 0.55 | 0.55 | 0.87 | 0.62 |

Annual F in the period 1988-2001 has been calculated at sum of the half year average F by area**Stock: Sandeel in Sub-area IV (North Sea)**

**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (age 1) Unit: millions | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| 1989 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19941994 | 321  332 | 128  138 | 287  273 | 385  287 | 111  134 |  |  |  |  |  |  |  |  |  |
| 1995 | 329 | 146 | 292 | 362 | 160 | 502 |  |  |  |  |  |  |  |  |
| 1996 | 323 | 155 | 288 | 332 | 148 | 279 | 439 | 133 |  |  |  |  |  |  |
| 1997 | 315 | 146 | 281 | 351 | 140 | 263 | 378 | 132 | 761 |  |  |  |  |  |
| 1998 | 317 | 147 | 284 | 356 | 141 | 266 | 364 | 162 | 906 | 87 |  |  |  |  |
| 1999 | 317 | 147 | 284 | 356 | 142 | 266 | 365 | 157 | 969 | 156 | 143 |  |  |  |
| 2000 | 317 | 148 | 285 | 358 | 142 | 267 | 396 | 159 | 911 | 155 | 173 | 369 |  |  |
| 2001 | 317 | 147 | 284 | 356 | 141 | 266 | 394 | 158 | 907 | 159 | 177 | 372 |  |  |
| 2002 | 339 | 150 | 321 | 379 | 152 | 342 | 395 | 169 | 941 | 154 | 163 | 273 | 280 | 232 |

Sum of separate assessments for the Northern North Sea and the Southern North Sea.

**Stock: Sandeel in Sub-area IV (North Sea)**

**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 |
| 1989 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 655 | 1913 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 | 711 | 804 | 498 | 647 | 2020 |  |  |  |  |  |  |  |  |  |  |  |
| 19941994 | 687  677 | 789  844 | 524  452 | 755  657 | 1299  859 |  |  |  |  |  |  |  |  |  |  |  |
| 1995 | 685 | 829 | 490 | 755 | 1209 | 962 |  |  |  |  |  |  |  |  |  |  |
| 1996 | 688 | 812 | 477 | 732 | 1077 | 834 | 1158 |  |  |  |  |  |  |  |  |  |
| 1997 | 498 | 659 | 472 | 705 | 1134 | 832 | 1074 | 1070 |  |  |  |  |  |  |  |  |
| 1998 | 513 | 671 | 486 | 726 | 1165 | 859 | 1109 | 1047 | 642 |  |  |  |  |  |  |  |
| 1999 | 514 | 672 | 487 | 727 | 1168 | 861 | 1113 | 1050 | 632 | 2015 |  |  |  |  |  |  |
| 2000 | 519 | 676 | 490 | 733 | 1177 | 869 | 1123 | 1150 | 704 | 1919 | 1083 |  |  |  |  |  |
| 2001 | 512 | 670 | 484 | 724 | 1164 | 858 | 1109 | 1137 | 692 | 1903 | 1081 | 707 |  |  |  |  |
| 2002 | 572 | 758 | 522 | 878 | 1404 | 988 | 1407 | 1357 | 692 | 2014 | 1135 | 614 | 620 | 641 |  |  |

Sum of separate assessments for the Northern North Sea and the Southern North Sea.