**Stock: Whiting in Sub-area IV (North Sea) and Division VIId (Eastern English Channel)**

**Assessment Quality Control Diagram 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(2-6,u) | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| 1989 | 0.81 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 0.78 | 0.69 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 0.82 | 0.81 | 0.77 |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 0.82 | 0.79 | 0.87 | 0.96 |  |  |  |  |  |  |  |  |  |  |
| 1993 | 0.82 | 0.78 | 0.78 | 0.70 | 0.85 |  |  |  |  |  |  |  |  |  |
| 1994 | 0.81 | 0.77 | 0.74 | 0.64 | 0.64 | 0.68 |  |  |  |  |  |  |  |  |
| 1995 | 0.81 | 0.77 | 0.74 | 0.64 | 0.65 | 0.69 | 0.65 |  |  |  |  |  |  |  |
| 1996 | 0.92 | 0.99 | 0.92 | 0.78 | 0.74 | 0.81 | 0.70 | 0.51 |  |  |  |  |  |  |
| 1997 | 0.91 | 1.03 | 0.95 | 0.76 | 0.75 | 0.79 | 0.75 | 0.64 | 0.52 |  |  | |  |  |
| 1998 | 0.81 | 0.80 | 0.76 | 0.64 | 0.66 | 0.73 | 0.75 | 0.71 | 0.71 | 0.52 |  |  |  |  |
| 1999 | 0.81 | 0.80 | 0.76 | 0.65 | 0.67 | 0.73 | 0.76 | 0.73 | 0.75 | 0.55 | 0.49 |  |  |  |
| 2000 | 0.89 | 1.02 | 0.95 | 0.76 | 0.75 | 0.80 | 0.80 | 0.77 | 0.76 | 0.61 | 0.55 | 0.65 |  |  |
| 2001 | 0.88 | 0.95 | 0.91 | 0.79 | 0.74 | 0.80 | 0.82 | 0.77 | 0.72 | 0.56 | 0.43 | 0.42 | 0.41 |  |
| 2002 | 0.90 | 0.96 | 0.94 | 0.78 | 0.75 | 0.79 | 0.82 | 0.78 | 0.74 | 0.60 | 0.52 | 0.54 | 0.59 | 0.44 |

First assessment of combined IV and VIId whiting Assessment using TSA.

**Remarks:** Reference F is for human consumption landings + discards, age 2-6

**Stock: Whiting in Sub-area IV (North Sea) and Division VIId (Eastern English Channel)**

**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (1989-1998 assessments, age 0; 1999-2000 assessments, age 1) Unit: millions | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| 1989 | 70480 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 72010 | 48155 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 64780 | 44169 | 65840 |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 46065 | 38134 | 45240 | 43856 |  |  |  |  |  |  |  |  |  |  |
| 1993 | 52593 | 23286 | 20814 | 48623 | 49573 |  |  |  |  |  |  |  |  |  |
| 1994 | 56305 | 25500 | 26834 | 34605 | 34700 | 38551 |  |  |  |  |  |  |  |  |
| 1995 | 56909 | 25284 | 25033 | 29478 | 29814 | 30565 | 23495 |  |  |  |  |  |  |  |
| 1996 | 58477 | 26530 | 26369 | 29165 | 32734 | 35204 | 35197 | 37827 |  |  |  |  |  |  |
| 1997 | 57978 | 26169 | 25315 | 27576 | 29073 | 29501 | 25830 | 21576 | 27212 |  |  | |  |  |
| 1998 | 57986 | 26126 | 25039 | 26800 | 27260 | 26547 | 22667 | 19457 | 8786 | 1250 |  |  |  |  |
| 1999 | 4415 | 2014 | 1870 | 1804 | 2003 | 1796 | 1603 | 950 | 716 | 951 | 1507 |  |  |  |
| 2000 | 4404 | 2012 | 1873 | 1805 | 1980 | 1766 | 1549 | 1012 | 801 | 1109 | 2302 | 2423 |  |  |
| 2001 | 4379 | 1910 | 1851 | 1735 | 2005 | 1906 | 1580 | 1099 | 808 | 1360 | 2123 | 1294 | 2360 |  |
| 2002 | 3673 | 1953 | 1838 | 1764 | 1951 | 1759 | 1535 | 1064 | 814 | 1253 | 1852 | 1465 | 1645 | 1949 |

First assessment of combined IV and VIId whiting Untapered geometric mean (1990-1997) at age 1 TSA prediction estimate

Tapered geometric mean Recruitment at age 1

Untapered geometric mean (1989-1995) at age 0 RCT3 calibration estimate

**Remarks:**

**Stock: Whiting in Sub-area IV (North Sea) and Division VIId (Eastern English Channel)**

**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 | 325 | 391 | 354 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 | 365 | 474 | 444 | 375 |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 | 269 | 351 | 400 | 422 | 347 |  |  |  |  |  |  |  |  |  |  |  |
| 1992 | 243 | 264 | 291 | 305 | 308 | 286 |  |  |  |  |  |  |  |  |  |  |
| 1993 | 261 | 286 | 228 | 209 | 265 | 315 | 289 |  |  |  |  |  |  |  |  |  |
| 1994 | 271 | 301 | 259 | 267 | 284 | 297 | 325 | 360 |  |  |  |  |  |  |  |  |
| 1995 | 271 | 303 | 259 | 256 | 249 | 256 | 263 | 250 | 267 |  |  |  |  |  |  |  |
| 1996 | 283 | 321 | 277 | 271 | 254 | 274 | 334 | 367 | 375 | 374 |  |  |  |  |  |  |
| 1997 | 279 | 317 | 278 | 268 | 246 | 244 | 276 | 265 | 260 | 285 | 307 |  |  |  |  |  |
| 1998 | 279 | 317 | 277 | 266 | 240 | 229 | 245 | 223 | 197 | 172 | 200 | 221 |  |  |  |  |
| 1999 | 278 | 317 | 277 | 265 | 239 | 224 | 233 | 203 | 169 | 134 | 141 | 168 | 188 |  |  |  |
| 2000 | 279 | 317 | 277 | 265 | 239 | 222 | 229 | 198 | 168 | 140 | 151 | 224 | 271 | 274 |  |  |
| 2001 | 271 | 298 | 277 | 256 | 228 | 223 | 234 | 204 | 175 | 147 | 167 | 234 | 241 | 295 | - |  |
| 2002 | 262 | 278 | 265 | 253 | 230 | 220 | 226 | 197 | 171 | 145 | 156 | 204 | 209 | 237 | 267 | - |

Forecast. Assessment using TSA

First assessment of combined IV and VIId whiting

**Remarks**