**Stock: Western horse mackerel**

**Assessment Quality Control Diagram 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average F(5-14,u) | | | | | | | | | | | | | | | |
| Date of assessment | Year | | | | | | | | | | | | | | |
|  | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | |
| 1989 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1993 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1994 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1995 # | 0.05 | 0.07 | 0.12 | 0.09 | 0.12 | 0.17 | 0.18 |  |  |  |  |  |  |  |  | |
| 1996 # | 0.04 | 0.05 | 0.09 | 0.07 | 0.09 | 0.14 | 0.14 | 0.32 |  |  |  |  |  |  |  | |
| 1997 \* | F/M=0.74 | F/M=1.10 | F/M=1.46 | F/M=1.59 | F/M=1.82 | F/M=2.58 | F/M=2.47 | F/M=4.49 | F/M=2.82 |  |  |  |  |  |  | |
| 1998 \* | F/M=0.73 | F/M=1.07 | F/M=1.39 | F/M=1.49 | F/M=1.64 | F/M=2.20 | F/M=1.97 | F/M=3.25 | F/M=1.77 | F/M=3.88 |  |  |  |  |  | |
| 1999 \* | F/M=0.72 | F/M=1.06 | F/M=1.39 | F/M=1.48 | F/M=1.64 | F/M=2.20 | F/M=1.95 | F/M=3.08 | F/M=1.62 | F/M=3.60 | F/M=2.86 |  |  |  |  | |
| 2000 $ | 0.09 | 0.11 | 0.18 | 0.18 | 0.18 | 0.14 | 0.11 | 0.18 | 0.09 | 0.18 | 0.19 | 0.16 |  |  |  | |
| 2001 | 0.088 | 0.105 | 0.173 | 0.176 | 0.180 | 0.140 | 0.123 | 0.201 | 0.093 | 0.236 | 0.197 | 0.227 | 0.230 |  |  | |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

**Remarks:**

# = assessments based on maximum-likelihood ADAPT analysis, where M = 0.15.

\* = expectation from Bayesian assessment, where M is unceertain. Only F/M can be presented (F(5-14)W)/M

$ = assessment based on Separable VPA/ADAPT assessment, where M = 0.15. Fbar(4-10) due to reduced assessment age range.

**Stock: Western horse mackerel**

**Assessment Quality Control Diagram 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Recruitment (age 1) Unit: millions | | | | | | | | | | | | | | | |
| Date of assessment | Year class | | | | | | | | | | | | | | |
|  | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | |
| 1989 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1993 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1994 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 1995 # | 4864 | 677 | 724 | 696 | 1931 | 11816 | 402 |  |  |  |  |  |  |  |  | |
| 1996 # | 4906 | 645 | 1076 | 442 | 1463 | 4397 | 2147 | 519 |  |  |  |  |  |  |  | |
| 1997 \* | 2565 | 935 | 963 | 682 | 1195 | 2886 | 1478+ | 1440+ |  |  |  |  |  |  |  | |
| 1998\* | 2899 | 1315 | 1470 | 1169 | 1406 | 3161 | 3866 | 1907+ | 1871+ | 1933+ |  |  |  |  |  | |
| 1999 \* | 3016 | 1208 | 1454 | 1279 | 1933 | 3325 | 3829 | 4432 | 2207+ | 2153+ | 2229+ |  |  |  |  | |
| 2000 $ | 5993 | 2346 | 2414 | 2318 | 3699 | 6774 | 8244 | 8293 | 5518 | 1112 | 2127 | 1071 |  |  |  | |
| 2001 | 5026 | 3404 | 2676 | 2024 | 3018 | 5322 | 6014 | 5636 | 3507 | 1095 | 514 | 863 | 912 |  |  | |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |
| 2003 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |

**Remarks:**

# = assessments based on maximum-likelihood ADAPT analysis, where M = 0.15.

\* = expectation from Bayesian assessment, where M is uncertain.

$ = assessment based on Separable VPA/ADAPT assessment, where M = 0.15. + = expectation of geometric mean

**Stock: Western horse mackerel**

**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 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1990 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1991 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1992 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1993 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1994 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1995 # | 3346 | 3196 | 2526 | 2268 | 1762 | 1552 | 1428 |  |  |  |  |  |  |  |  |  |  |
| 1996 # | 4227 | 3740 | 3606 | 2841 | 2545 | 1944 | 1472 |  |  |  |  |  |  |  |  |  |  |
| 1997 \* | 2305 | 2889 | 2853 | 2320 | 2372 | 1982 | 1624 | 1415 |  |  |  |  |  |  |  |  |  |
| 1998\* | 2423 | 3123 | 3137 | 2613 | 2755 | 2399 | 2057 | 1922 | 1221 |  |  |  |  |  |  |  |  |
| 1999\* | 2486 | 3141 | 3149 | 2622 | 2772 | 2427 | 2107 | 2004 | 1329 | 1170 |  |  |  |  |  |  |  |
| 2000 $ | 2628 | 2247 | 2158 | 1958 | 1994 | 1772 | 1704 | 2029 | 1687 | 1417 | 1424 |  |  |  |  |  |  |
| 2001 | 2631 | 2235 | 2135 | 1935 | 2032 | 1705 | 1567 | 1978 | 1145 | 1486 | 1092 | 863 |  |  |  |  |  |
| 2002 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Forecast.

**Remarks:**

# = assessments based on maximum-likelihood ADAPT analysis, where M = 0.15

\* = expectation from Bayesian assessment, where M is uncertain

$ = assessment based on Separable VPA/ADAPT assessment, where M = 0.15.