Eastern Bering Sea pollock data and assessment for the North Pacific Fishery Management Council

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Errata from Nov 5 draft

• Table 34

Table 34: Outcomes of decision (expressed as chances out of 100) given different 2025 catches (first row, in kt). Note that for the 2022 and later year-classes average values were assumed. Constant Fs based on the 2025 catches were used for subsequent years.

| | 10 | 325 | 650 | 975 | 1300 | 1625 | 1950 | 2600 |
|--|----|-----|-----|-----|------|------|------|------|
| $P[F_{2025} > F_{MSY}]$ | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13 |
| $P[F_{2025} > F_{35\%}]$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| $P[B_{2026} < B_{MSY}]$ | 33 | 20 | 24 | 28 | 33 | 39 | 45 | 59 |
| $P[B_{2027} < B_{MSY}]$ | 32 | 16 | 20 | 26 | 32 | 40 | 48 | 65 |
| $P\left[B_{2026} < \bar{B}\right]$ | 39 | 8 | 16 | 26 | 39 | 53 | 66 | 86 |
| $P\left[B_{2029} < \bar{B}\right]$ | 21 | 5 | 9 | 15 | 21 | 28 | 36 | 51 |
| $P[B_{2029} < B_{2023}]$ | 32 | 12 | 18 | 25 | 32 | 40 | 47 | 60 |
| $P[B_{2027} < B_{20\%}]$ | 4 | 1 | 2 | 3 | 4 | 5 | 7 | 12 |
| $P\left[p_{a_{5},2027} > \bar{p}_{a_{5}}\right]$ | 62 | 30 | 42 | 53 | 62 | 68 | 74 | 80 |
| $P[D_{2026} < D_{1994}]$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $P[D_{2029} < D_{1994}]$ | 10 | 1 | 2 | 5 | 10 | 16 | 24 | 46 |
| $P[E_{2025} > E_{2024}]$ | 38 | 0 | 0 | 8 | 38 | 64 | 78 | 91 |
| | | | | | | | | |

Errata from Nov 5 draft

• Table 34

Table 34: Outcomes of decision (expressed as chances out of 100) given different 2025 catches (first row, in kt). Note that for the 2022 and later year-classes average values were assumed. Constant Fs based on the 2025 catches were used for subsequent years.

| | 10 | 325 | 650 | 975 | 1300 | 1625 | 1950 | 2600 |
|--|----|-----|-----|-----|------|------|------|------|
| $P[F_{2025} > F_{MSY}]$ | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13 |
| $P[F_{2025} > F_{35\%}]$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| $P[B_{2026} < B_{MSY}]$ | 17 | 20 | 24 | 28 | 33 | 39 | 45 | 59 |
| $P[B_{2027} < B_{MSY}]$ | 12 | 16 | 20 | 26 | 32 | 40 | 48 | 65 |
| $P[B_{2026} < \bar{B}]$ | 4 | 8 | 16 | 26 | 39 | 53 | 66 | 86 |
| $P[B_{2029} < \bar{B}]$ | 2 | 5 | 9 | 15 | 21 | 28 | 36 | 51 |
| $P[B_{2029} < B_{2023}]$ | 7 | 12 | 18 | 25 | 32 | 40 | 47 | 60 |
| $P[B_{2027} < B_{20\%}]$ | 1 | 1 | 2 | 3 | 4 | 5 | 7 | 12 |
| $P\left[p_{a_{5},2027} > \bar{p}_{a_{5}}\right]$ | 18 | 30 | 42 | 53 | 62 | 68 | 74 | 80 |
| $P[D_{2026} < D_{1994}]$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| $P[D_{2029} < D_{1994}]$ | 0 | 1 | 2 | 5 | 10 | 16 | 24 | 46 |
| $P[E_{2025} > E_{2024}]$ | 0 | 0 | 0 | 8 | 38 | 64 | 78 | 91 |

Table 37: Bycatch estimates (t) of pollock caught in the other non-pollock EBS directed fisheries,1991–2024 based on then NMFS Alaska Regional Office reports from observers.

Errata from Nov 5 draft

• Table 37

| Year | Atka.Mackerel | NRock.sole | Other.flats | Other.spp | P.cod | Yellowfin.sole |
|------|---------------|------------|-------------|-----------|--------|----------------|
| 1991 | 129 | 9,711 | 7,992 | 661,886 | 10,695 | NA |
| 1992 | 108 | 9,824 | 1,371 | 520 | 20,778 | 13,100 |
| 1993 | 18 | 18,582 | 2,581 | 604 | 31,292 | 15,253 |
| 1994 | 0 | 15,784 | 6,770 | 89 | 26,594 | 33,200 |
| 1995 | NA | 7,766 | 5,211 | 63 | 25,691 | 27,041 |
| 1996 | 60 | 7,698 | 5,456 | 744 | 22,382 | 22,254 |
| 1997 | NA | 9,123 | | 14 | 33,658 | 24,100 |
| 1998 | 58 | 30 | | | 10,468 | 15,339 |
| 1999 | 246 | | 4,771 | 90. | 131 | 8,701 |
| 2000 | 16 | 5,480 | 7,068 | 503 | 1 | 13,425 |
| 2001 | 238 | 4,577 | 4,739 | 249 | 11,5 | 16,502 |
| 2002 | | 9,942 | 2,220 | 49 | 15,255 | 14,489 |
| 2003 | | 224 | 3,672 | 167 | 15,926 | 11,578 |
| 2004 | 7 | | 6,396 | 80 | 18,650 | 10,383 |
| 2005 | .95 | 7,2 | 5,057 | 25 | 14,109 | 10,312 |
| 2006 | 121 | 6,980 | 3,826 | 21 | 15,168 | 5,966 |
| 2007 | 147 | 3,245 | 4,353 | 128 | 20,319 | 4,020 |
| 2008 | 1 | 4,930 | 222 | 15 | 9,533 | 0,827 |
| 2009 | 7 | 6,171 | | 6 | 7,875 | ,036 |
| 2010 | NA | 6,074 | 3,5 | 85 | 6,575 | ,179 |
| 2011 | 144 | 6,931 | 2,301 | 157 | 8,981 | 8,673 |
| 2012 | 41 | 6,703 | 1,751 | 371 | 8,377 | 1,197 |
| 2013 | 9 | 7,326 | 4,048 | 18 | 9,801 | 20,171 |
| 2014 | IA | 11,258 | 6,404 | | 11,502 | 24,712 |
| 2015 | 0 | 9,386 | 4,993 | 41 | 9,062 | 21,281 |
| 2016 | | 11,850 | 3,687 | 448 | 71 | 22,306 |
| 2017 | | 5,616 | 3,613 | 494 | | 23,414 |
| 2018 | 137 | 5,182 | 3,525 | 819 | 8 | 28,235 |
| 2019 | 54 | 176 | 7,972 | 1,311 | 5 | 23,153 |
| 2020 | 57 | | 2,374 | | 0,512 | 31,651 |
| 2021 | 53 | 2,350 | | -10 | 4,316 | 24,844 |
| 2022 | 602 | 2,976 | 5,505 | 2,023 | 6,260 | 26,514 |
| 2023 | 383 | 11,047 | 4,590 | 2,688 | 7,181 | 22,347 |
| 2024 | 41 | 15,035 | 4,208 | 1,426 | 5,117 | 13,179 |

Table 37: Bycatch estimates (t) of pollock caught in the other non-pollock EBS directed fisheries, 1991–2024 based on then NMFS Alaska Regional Office reports from observers.

Errata from Nov 5 draft

• Table 37

| Year | NRock.sole | Other.flats | Other.spp | P.cod | Yellowfin.sole | Total |
|------|------------|-------------|-----------|--------|----------------|--------|
| 1991 | 9,711 | 6,824 | 755 | 10,669 | NA | 27,961 |
| 1992 | 9,824 | 1,371 | 514 | 20,651 | 13,100 | 45,462 |
| 1993 | 18,582 | 2,581 | 390 | 31,252 | 15,253 | 68,060 |
| 1994 | 15,784 | 6,770 | 89 | 26,584 | 33,200 | 82,429 |
| 1995 | 7,766 | 5,211 | 26 | 25,464 | 27,041 | 65,509 |
| 1996 | 7,698 | 5,456 | 802 | 22,377 | 22,254 | 58,590 |
| 1997 | 9,123 | 3,480 | 14 | 33,645 | 24,100 | 70,364 |
| 1998 | 3,960 | 3,010 | 941 | 10,460 | 15,339 | 33,711 |
| 1999 | 5,207 | 4,771 | 1,193 | 21,106 | 8,701 | 40,980 |
| 2000 | 5,480 | 7,067 | 520 | 14,480 | 13,425 | 40,974 |
| 2001 | 4,577 | 4,707 | 488 | 11,540 | 16,502 | 37,816 |
| 2002 | 9,942 | 2,220 | 51 | 15,234 | 14,489 | 41,938 |
| 2003 | 4,924 | 3,672 | 235 | 15,926 | 11,578 | 36,337 |
| 2004 | 8,975 | 6,396 | 194 | 18,650 | 10,383 | 44,599 |
| 2005 | 7,235 | 5,057 | 201 | 14,109 | 10,312 | 36,917 |
| 2006 | 6,986 | 3,826 | 142 | 15,168 | 5,966 | 32,090 |
| 2007 | 3,245 | 4,353 | 276 | 20,319 | 4,020 | 32,214 |
| 2008 | 4,930 | 4,813 | 17 | 9,533 | 9,827 | 29,122 |
| 2009 | 6,171 | 3,432 | 13 | 7,875 | 7,036 | 24,529 |
| 2010 | 6,074 | 3,140 | 85 | 6,575 | 5,179 | 21,055 |
| 2011 | 6,931 | 2,150 | 300 | 8,977 | 8,673 | 27,033 |
| 2012 | 6,703 | 1,685 | 412 | 8,377 | 11,197 | 28,377 |
| 2013 | 7,326 | 3,991 | 238 | 9,801 | 20,171 | 41,529 |
| 2014 | 11,258 | 6,051 | 202 | 11,502 | 24,712 | 53,727 |
| 2015 | 9,386 | 4,266 | 429 | 9,062 | 21,281 | 44,426 |
| 2016 | 11,850 | 2,717 | 449 | 9,070 | 22,306 | 46,394 |
| 2017 | 5,616 | 3,428 | 507 | 8,319 | 23,414 | 41,286 |
| 2018 | 5,182 | 3,516 | 952 | 8,008 | 28,235 | 45,894 |
| 2019 | 3,176 | 7,968 | 1,362 | 7,593 | 23,153 | 43,254 |
| 2020 | 6,401 | 2,367 | 724 | 5,511 | 31,651 | 46,656 |
| 2021 | 2,398 | 5,124 | 1,381 | 4,315 | 24,844 | 38,065 |
| 2022 | 2,976 | 5,249 | 2,623 | 6,260 | 26,514 | 43,625 |
| 2023 | 11,047 | 4,478 | 3,059 | 7,181 | 22,347 | 48,113 |
| 2024 | 15,035 | 4,190 | 1,463 | 5.117 | 13,179 | 38,985 |





Fishing conditions

Pollock CPUE (by weight) **Catch rates by sector** 150 100 CP 50 Nominal CPUE 0 seas 150 100 CV Α 50 В 0 150 100 SW 50 0 2000 2010 2020 1990 Year

Fishery discard rates among "sectors" in the EBS



Tonnage also low in pollock fishery...

| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.490\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\\ 2.005\\ 1.979\\ 2.450\\ 1.534\\ 3.538\\ 3.660\end{array}$ | 5,968 4,014 2,490 3,444 4,080 4,084 12,556 7,055 8,124 6,848 9,170 7,126 9,364 12,379 9,9250 8,820 | 506,237 450,396 553,802 449,773 585,154 573,809 437,391 622,907 184,574 179,803 328,590 305,202 504,370 350,715 203,091 405,467 266,031 | 176,730 354,238 252,623 744,438 614,791 691,582 845,684 689,193 1,158,948 1,171,173 1,039,523 1,095,040 851,053 1,011,629 889,124 841,214 846,225 | $\begin{array}{r} 990.578\\810.784\\810.186\\1.199.031\\1.205.214\\1.270.760\\1.297.417\\1.329.574\\1.352.681\\1.359.181\\1.359.181\\1.359.181\\1.359.288\\1.409.346\\1.367.236\\1.367.236\\1.367.236\\1.376.258\\1.405.677\\1.259.161\\1.264.512\end{array}$ | 0.8% 0.7% 0.4% 0.4% 0.4% 0.4% 0.4% 0.4% 0.4% 0.4 |
|---|---|--|--|---|--|
| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.490\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\\ 2.005\\ 1.979\\ 2.450\\ 1.534\\ 3.538\end{array}$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 7.055 8.124 6.848 9.170 7.126 9.364 12.379 9.925 | $\begin{array}{c} 506,237\\ 450,396\\ 553,802\\ 449,773\\ 585,154\\ 573,809\\ 437,391\\ 622,907\\ 184,574\\ 179,803\\ 328,590\\ 305,202\\ 504,370\\ 350,715\\ 203,051\\ 905,497\\ 905,4$ | 176,730 354,238 252,623 744,438 614,791 691,582 845,684 689,193 1,158,948 1,171,173 1,039,523 1,039,523 1,095,040 851,053 1,011,629 889,124 841,214 | $\begin{array}{r} 990.578\\810.784\\810.186\\1.199.031\\1.205.214\\1.270.760\\1.297.417\\1.321.574\\1.352.681\\1.359.181\\1.359.181\\1.359.181\\1.379.288\\1.409.346\\1.367.236\\1.376.258\\1.405.677\\1.259.161\end{array}$ | $\begin{array}{c} 0.8\%\\ 0.7\%\\ 0.5\%\\ 0.4\%\\ 0.4\%\\ 0.4\%\\ 0.4\%\\ 0.7\%\\ 0.7\%\\ 0.7\%\\ 0.6\%\\ 0.8\%\\ 0.8\%\\ 0.9\%\\ 1.0\%\\ 1.2\%\\ 1.2\%\\ 1.0\%\\ 1.0\%\\ 1.0\%\\ 1.0\%\\ 0.9\%\\ 0.0\%$ |
| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.490\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\\ 2.005\\ 1.979\\ 2.450\\ 1.534\end{array}$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 7.055 8.124 6.848 9.170 7.126 9.364 12.379 | 506,237 450,596 553,802 449,773 585,154 573,809 437,391 622,907 184,574 179,803 328,590 305,202 504,370 350,715 372,001 | 176,730 354,238 252,623 744,438 614,791 091,582 845,684 689,193 1,158,948 1,171,173 1,039,523 1,055,040 851,053 1,011,629 889,194 | $\begin{array}{r} 990.578\\810.784\\810.186\\1.199.031\\1.205.214\\1.270.760\\1.297.417\\1.327.574\\1.352.681\\1.359.181\\1.359.181\\1.379.288\\1.409.346\\1.367.236\\1.376.258\\1.405.677\end{array}$ | 0.8% 0.7% 0.4% 0.4% 0.4% 0.4% 0.4% 0.7% 0.7% 0.6% 0.8% 0.8% 0.8% 0.9% 1.0% |
| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.190\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\\ 2.005\\ 1.979\\ 2.450\end{array}$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 7.055 8.124 6.848 9.170 7.126 9.364 | 506,237 450,596 553,802 49,773 585,154 573,809 437,391 622,907 184,574 179,803 328,590 305,202 504,370 504,370 | 176,730 354,238 252,623 744,438 614,791 091,582 845,684 689,193 1,158,948 1,171,173 1,039,523 1,095,040 851,053 1,011,629 | $\begin{array}{r} 990.578\\ 810.784\\ 810.186\\ 1.199.031\\ 1.205.214\\ 1.270.760\\ 1.297.417\\ 1.321.574\\ 1.352.681\\ 1.359.181\\ 1.359.181\\ 1.359.181\\ 1.359.181\\ 1.367.236\\ 1.367.236\\ 1.367.236\\ 1.367.236\end{array}$ | $\begin{array}{c} 0.8\%\\ 0.7\%\\ 0.7\%\\ 0.4\%\\ 0.4\%\\ 0.4\%\\ 0.4\%\\ 0.7\%\\ 0.7\%\\ 0.6\%\\ 0.8\%\\ 0.8\%\\ 0.9\%\\ 0.9\%\\ 1.0\%\end{array}$ |
| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.190\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\\ 2.005\\ 1.979\end{array}$ | 5.968 4.014 2,490 3.444 4.080 4.084 12,556 7.055 8.124 6.848 9.170 7,126 | $\begin{array}{c} 506.237\\ 450.596\\ 553.802\\ 449.773\\ 585.154\\ 573.809\\ 437.391\\ 622.907\\ 184.574\\ 179.803\\ 328.590\\ 305.202\\ \end{array}$ | 176,730 354,238 252,623 744,438 614,791 091,582 845,684 689,193 1,158,948 1,171,173 1,039,523 1,095,040 851,067 | $\begin{array}{r} 990.578\\ 810.784\\ 810.186\\ 1.199.031\\ 1.205.214\\ 1.270.760\\ 1.297.417\\ 1.327.417\\ 1.352.681\\ 1.359.181\\ 1.359.181\\ 1.359.181\\ 1.459.288\\ 1.409.346\\ 1.409.346\\ 1.409.346\end{array}$ | $\begin{array}{c} 0.8\%\\ 0.7\%\\ 0.7\%\\ 0.4\%\\ 0.4\%\\ 0.4\%\\ 0.4\%\\ 0.7\%\\ 0.7\%\\ 0.6\%\\ 0.8\%\\ 0.9\%\\ 0.8\%\\ 0.9\%\\ 0.9\%\end{array}$ |
| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.190\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\\ 2.005\end{array}$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 7.055 8.124 6.848 9.170 | 506,237 450,596 553,802 449,773 585,154 573,809 437,391 622,907 184,574 179,803 328,590 | $\begin{array}{c} 176.730\\ 354.238\\ 252.623\\ 744.438\\ 614.791\\ 091.582\\ 845.684\\ 689.193\\ 1.158.948\\ 1.171.173\\ 1.039.523\\ 1.039.523\\ \end{array}$ | 990.578 810.784 810.186 1.199.031 1.205.214 1.205.214 1.270.760 1.297.417 1.329.574 1.329.574 1.352.681 1.359.181 1.359.288 1.409.036 | 0.8% 0.7% 0.4% 0.4% 0.4% 0.4% 0.4% 0.4% 0.4% 0.7% 0.6% 0.8% |
| $\begin{array}{c} 1.643\\ 1.936\\ 1.270\\ 1.376\\ 1.490\\ 1.225\\ 1.786\\ 2.418\\ 1.036\\ 1.356\end{array}$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 7.055 8.124 6.848 | 506,237 450,596 553,802 449,773 585,154 573,809 437,391 622,907 184,574 179,803 | 176,730 354,238 252,623 744,438 614,791 091,582 845,684 689,193 1,158,948 1,171,173 | $\begin{array}{r} 990.578\\ 810.784\\ 810.186\\ 1.199.031\\ 1.205.214\\ 1.270.760\\ 1.297.417\\ 1.321.574\\ 1.352.681\\ 1.359.181\\ 1.359.181\\ 1.359.181\end{array}$ | 0.8% 0.7% 0.4% 0.4% 0.4% 1.1% 0.4% 0.7% 0.7% |
| $1.643 \\ 1.936 \\ 1.270 \\ 1.376 \\ 1.490 \\ 1.225 \\ 1.786 \\ 2.418 \\ 1.036 \\ 1.03$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 7.055 8.124 | 506,237 450,596 553,802 449,773 585,154 573,809 437,391 622,907 184,574 | 176,730 354,238 252,623 744,438 614,791 091,582 845,684 689,193 1,158,948 | $\begin{array}{r} 990.578\\810.784\\810.186\\1.199.031\\1.205.214\\1.205.214\\1.207.417\\1.321.371\\1.321.371\\1.322.681\end{array}$ | 0.8% 0.7% 0.5% 0.4% 0.4% 0.4% 1.1% 0.7% |
| $\begin{array}{c} 1.643 \\ 1.936 \\ 1.270 \\ 1.376 \\ 1.490 \\ 1.225 \\ 1.786 \\ 2.418 \end{array}$ | 5.968 4.014 2.490 3.441 4.080 4.084 12.556 7.055 | 506,237 450,396 553,802 449,773 585,154 573,809 437,391 622,907 | $\begin{array}{c} 176,730\\ 354,238\\ 252,623\\ 744,438\\ 614,791\\ 691,582\\ 845,684\\ 689,193\end{array}$ | $\begin{array}{r} 990.578\\ 810.784\\ 810.186\\ 1.199.031\\ 1.205.214\\ 1.270.760\\ 1.297.417\\ 1.321.574\end{array}$ | 0.8% 0.7% 0.5% 0.4% 0.4% 0.4% 1.1% 0.7% |
| $1.643 \\ 1.936 \\ 1.270 \\ 1.376 \\ 1.190 \\ 1.225 \\ 1.786 \\ 1.78$ | 5.968 4.014 2.490 3.444 4.080 4.084 12.556 | 506,237 450,396 553,802 449,773 585,154 573,869 437,391 | $\begin{array}{c} 176,730\\ 354,238\\ 252,623\\ 744,438\\ 614,791\\ 691,582\\ 845,684\end{array}$ | 990.578 810.784 810.186 1.199.031 1.205.214 1.270.760 1.297.417 | 0.8% 0.7% 0.5% 0.4% 0.4% 0.4% |
| 1.643 1.936 1.270 1.376 1.190 1.225 | 5,968 4,014 2,490 3,444 4,080 4,084 | 506,237 450,596 553,802 449,773 585,154 573,809 | $\begin{array}{c} 476,730\\ 354,238\\ 252,623\\ 744,438\\ 614,791\\ 691,582\end{array}$ | 990.578 810.784 810.186 1.199.031 1.205.214 1.270.760 | 0.8% 0.7% 0.5% 0.4% 0.4% 0.4% |
| 1.643 1.936 1.270 1.376 1.190 | 5.968 4.014 2,490 3.444 4.080 | 506,237 450,596 553,802 449,773 585,154 | $\begin{array}{c} 476,730\\ 354,238\\ 252,623\\ 744,438\\ 614,791 \end{array}$ | 990.578 810.784 810.186 1,199.031 1,205.214 | 0.8% 0.7% 0.5% 0.4% |
| 1.643 1.936 1.270 1.376 | 5,968 4,014 2,490 3,444 | 506,237 450,596 553,802 449,773 | $\begin{array}{c} 476.730\\ 354.238\\ 252.623\\ 744.438\end{array}$ | 990.578 810.784 810.186 1,199.031 | 0.8% 0.7% 0.5% 0.4% |
| 1.643 1.936 1.270 1.276 | 5,968 4,014 2,490 | 506,237 450,596 553,802 | $ \begin{array}{r} 476.730 \\ 354.238 \\ 252.623 \end{array} $ | 990.578 810.784 810.186 | 0.8% 0.7% 0.5% |
| 1.643 1.936 1.970 | 5,968 4,014 | 506,237 450,596 | 176,730 354,238 | 990.578 810.784 | 0.8% |
| 1.643 | 5,968 | 506,237 | 476,730 | 990.578 | 0.82 |
| 1.643 | 5 (10°C) | | | | A + |
| | 14,004 | 622.484 | 715,915 | 1.354,502 | 1.003 |
| 3,769 | 10.221 | 657.147 | 815.330 | 1.488.031 | 1.27 |
| 3.677 | 11.000 | 678,282 | 787.316 | 1.483.022 | 1,6% |
| 2.586 | 11 575 | 387.763 | 1.069.628 | 1.480.559 | 7.15 |
| 2.781 | 20.380 | -0.14629 | 919.397 | 1,490,770 | 1-1/ |
| 2.959 | 13 795 | 319,002 | 1.140.904 | 1.480.776 | 1.2 |
| 1.441 | 19,430 | 422.770 | 947.103 | 1.387 107 | 1.95 |
| 2-150 | 14.874 | 491,391 | 819,499 | 1.139.710 | . 2.99 |
| 1.942 | 19.678 | 204,786 | 756,071 | 989 (180) | 1.4 |
| 1.312 | 26.912 | 201.70 | 257.098 | 1.103 909 | 8.3 |
| L'Ota | 14.291 | 130.094 | 748,858 | 1.121.124 | 6.4 |
| 1.581 | 71.032 | 281.082 | 1.015,414 | 1.102.791 | 1.7% |
| 22,557 | 71.368 | 101 100 | 1.081.814 | 1.264 91- | 7.87 |
| 1.838 | 51.492 | 83.306 | 1,064,476 | 1:329.585 | 5.37 |
| 9.715 | 88,098 | 160.00-2 | 1010 143 | 1326 607 | 2.3 |
| 16.084 | ~1.986 | 206 1179 | 759,365 | 1.390-001 | 2.65 |
| 26,100 | 11.194 | 502.161 | 586,763 | 1.195 200 | Discarden |
| 07,578 | 21.100 | 49.3,859 | SUE ROTATION | Tait | |
| 18.237 | GG Star | All' Rotained | No. | | |
| as an deci | SE Discoult | The lot of | | ratules 202; | Edata Ann |
| W Discourse | | and could | ting system da | an is the | Elis was |
| and and a state of the state of | a future of | ut such-man | Hurt lo tere | Var Sul Sul | I (Prestore |
| olimona | MIFS BL. | Pseuts the FDC | tor the Number | | |
| 1704 | 2023 SE | the pollock of | | | |
| | tharves of class ring Sea [00] 170W, source olimonary, W Discarded 48,257 57,578 26,100 16,084 9,715 1,838 22,557 1,581 1,912 1,942 2,450 1,441 2,959 2,781 | W Discarded SE Discarded 48.257 SE Discarded 57.578 66.792 57.578 66.792 57.578 66.792 57.578 66.792 57.578 71.194 26.100 83.985 16.084 88.098 9.715 87.492 1.838 71.368 22.557 71.032 1.581 14.291 1.912 26.312 1.942 19.678 2.450 14.874 1.441 19.430 2.959 13.795 2.781 20.380 | W Discripted Sec. (99) 2023 SE represents the EBS dimmary. NMF's Blend and carebraction W Discripted SE Discorded NW Rotained 48.257 66.792 NW Rotained 57.578 66.792 202.033 48.257 66.792 NW Rotained 57.578 66.792 100.033 16.084 88.098 206.03 9.715 87.492 82.226 1.838 71.368 101.00 22.557 71.032 281.986 1.581 14.291 130.934 1.912 26.512 204.786 2.555 71.032 281.986 1.581 14.291 130.934 1.912 26.512 204.786 1.942 19.678 291.591 2.450 14.874 422.770 1.441 19.430 319.002 2.959 13.795 554.629 2.781 20.380 387.769 | $\begin{array}{c cccccc} \mbox{ring Sen. 1091} & 2023 & {\rm SE represents the FBS test of YeW} \\ \mbox{T70W, source} & {\rm NMFS Biend and ratchese conding system of YeW} \\ \mbox{Vinvaary}. & {\rm NMFS Biend and ratchese conding system of } \\ \mbox{W Descarded} & {\rm SE Distarded} & {\rm NW Rotained} & {\rm SE Rotained} \\ \hline {\rm 48.257} & {\rm 66.792} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 66.792} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 66.792} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 66.792} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 66.792} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 66.792} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 51.00} & {\rm 510.044} \\ \hline {\rm 48.257} & {\rm 51.00} & {\rm 493.852} & {\rm 586.763} \\ \hline {\rm 48.257} & {\rm 51.368} & {\rm 206.073} & {\rm 1.000.443} \\ \hline {\rm 9.715} & {\rm 87.492} & {\rm 82.26} & {\rm 1.084.844} \\ \hline {\rm 9.715} & {\rm 87.492} & {\rm 82.26} & {\rm 1.084.844} \\ \hline {\rm 9.715} & {\rm 71.368} & {\rm 101.00} & {\rm 1.015.474} \\ \hline {\rm 22.557} & {\rm 71.368} & {\rm 101.00} & {\rm 1.015.474} \\ \hline {\rm 22.557} & {\rm 71.368} & {\rm 101.00} & {\rm 1.015.474} \\ \hline {\rm 1.912} & {\rm 2.6312} & {\rm 204.786} & {\rm 756.071} \\ \hline {\rm 1.942} & {\rm 10.678} & {\rm 201.501} & {\rm 819.499} \\ \hline {\rm 2.450} & {\rm 14.874} & {\rm 422.770} & {\rm 947.403} \\ \hline {\rm 1.441} & {\rm 10.430} & {\rm 319.002} & {\rm 1.40.944} \\ \hline {\rm 2.959} & {\rm 13.795} & {\rm 551.629} & {\rm 919.304} \\ \hline {\rm 2.781} & {\rm 20.380} & {\rm 37.767} & {\rm 100.944} \\ \hline {\rm 1.874} & {\rm 10.830} & {\rm 37.767} & {\rm 100.944} \\ \hline {\rm 1.874} & {\rm 10.830} & {\rm 37.767} & {\rm 100.944} \\ \hline {\rm 1.874} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.946} \\ \hline {\rm 1.881} & {\rm 10.830} & {\rm 37.767} & {\rm 100.94$ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ |



1993 1996 1999 2002 2005 2008 2011 2014 2017 2020 Year



Season catch patterns



Bering Sea Pollock Fish conditions

Trends in weight frequency of catch





A-season

Tow-by-tow mean weight frequency

Season progression by week





2024 season Bit bigger than 2023

Fishery data on pollock "condition"

• Relative [figure 26 updated in SAFE chapter]



Fishery data on pollock "condition"

 Relative [figure 25 updated in SAFE chapter]



Survey data on pollock condition...





Fishery weightat-age

| | Fishery | Survey | Predicted |
|------|---|--|---|
| | | | |
| 1970 | | | 0.38 0.49 0.61 0.72 0.83 0.94 1.05 1.14 |
| | | | 0.37 0.51 0.63 0.75 0.86 0.97 1.07 1.16 |
| | | | 0.4 0.49 0.64 0.76 0.87 0.98 1.08 1.17 |
| | | | 0.38 0.54 0.64 0.78 0.9 1 1.11 1.2 |
| | | | 0.36 0.65 0.77 0.93 1.02 1.16 1.25 1.34 |
| | | | 0.41 0.5 0.8 0.92 1.07 1.16 1.29 1.38 |
| | | | 0.36 0.7 0.79 109 1.2 1.35 1.42 1.53 |
| | | | 0.41 0.5 0.84 0.94 1.23 1.34 1.48 1.55 |
| 1000 | | | 0.38 0.6 0.7 1.04 1.14 1.42 1.52 1.65 |
| 1980 | | | 0.38 0.55 0.76 0.99 1.08 1.41 1.49 1.75 |
| | | 0.18 0.34 0.41 0.78 1.05 1.19 1.4 1.57 | 0.35 0.48 0.67 0.89 1.11 1.2 1.53 1.6 |
| | | 0.21 0.34 0.54 0.77 1.02 1.45 1.41 1.81 | 0.41 0.52 0.66 0.85 1.06 1.28 1.36 1.67 |
| | | 0.22 0.31 0.43 0.6 0.93 1.31 1.27 1.47 | 0.42 0.5 0.62 0.75 0.94 1.15 1.36 1.43 |
| | | 0.23 0.37 0.48 0.72 0.91 1.21 1.72 1.44 | 0.45 0.54 0.63 0.74 0.88 1.06 1.26 1.47 |
| | | 0.17 0.31 0.41 0.61 0.77 1.02 1.3 1.00 | 0.38 0.51 0.6 0.69 0.8 0.94 1.12 1.31 |
| | | 0.25 0.35 0.42 0.55 0.72 0.65 1.01 1.26 | 0.42 0.47 0.6 0.7 0.75 0.89 1.02 1.19 |
| | | 0.17 0.28 0.37 0.55 0.66 0.84 1.03 1 | 0.33 0.46 0.57 0.63 0.76 0.85 0.93 1.03 |
| 1990 | | 0.19 0.36 0.48 0.54 0.61 0.73 1.03 0.98 | 0.34 0.47 0.61 0.72 0.77 0.9 0.98 1.05 |
| | 0.28 0.48 0.6 0.73 0.84 0.88 1.02 1.12 | 0.2 0.33 0.57 0.65 0.78 0.86 1.02 1.1 | 0.33 0.46 0.6 0.74 0.85 0.89 1.01 1.09 |
| | 0.4 0.46 0.65 0.71 0.82 0.99 1.03 1.2 | 0.25 0.4 0.46 0.57 0.76 0.77 0.93 1.01 | 0.43 0.46 0.59 0.73 0.87 0.97 1.01 1.12 |
| | 0.49 0.61 0.65 0.77 0.93 1.06 1.2 1.24 | 0.25 0.41 0.46 0.55 0.66 0.78 0.99 1 | 0.49 0.61 0.65 0.78 0.92 1.04 1.14 1.17 |
| | | 0.17 0.36 0.48 0.65 0.62 0.79 0.91 1.28 | 0.33 0.51 0.72 0.84 0.87 1 113 1.24 |
| | 0.34 0.45 0.68 0.8 0.95 0.96 1.03 1.1 | 0.15 0.3 0.49 0.58 0.76 0.82 0.98 1.02 | 0.38 0.42 0.6 0.81 0.93 0.96 1.08 1.2 |
| | 0.33 0.48 0.56 0.75 0.89 1.07 1.1 1.24 | 0.19 0.28 0.38 0.53 0.67 0.78 1 0.97 | 0.44 0.48 0.53 0.71 0.92 1.03 1.06 1.17 |
| | 0.37 0.59 0.62 0.62 0.78 1.04 1.17 1.28 | 0.21 0.33 0.45 0.52 0.81 0.89 1.08 1.29 | 0.41 0.53 0.58 0.63 0.81 1.01 1.12 1.14 |
| | 0.4 0.51 0.64 0.7 0.73 0.89 1.04 1.25 | 0.22 0.35 0.39 0.53 0.62 0.88 1.04 1.01 | 0.4 0.51 0.64 0.69 0.73 0.91 1.1 1.21 |
| 2000 | 0.35 0.53 0.63 0.73 0.78 0.81 0.97 1.01 | 0.22 0.4 0.47 0.52 0.72 0.76 0.92 1.03 | 0.38 0.51 0.62 0.75 0.79 0.83 1 1.19 |
| | | 0.27 0.4 0.54 0.68 0.71 0.9 1.01 1.05 | 0.4 0.53 0.67 0.78 0.9 0.94 0.97 1.14 |
| | 0.49 0.55 0.65 0.77 0.86 0.95 1.09 1.2 | U 34 0.42 0.65 0.71 0.89 0.87 1.12 1.24 | 0.47 0.55 0.64 0.77 0.9 1.01 1.12 1.15 |
| | 0.41 0.58 0.64 0.76 0.89 0.92 1.04 1.18 | 0.28 0.52 0.6 0.75 0.89 0.93 1.12 1.03 | 0.4 0.57 0.65 0.74 0.87 1 1.1 1.21 |
| | 0.35 0.51 0.64 0.74 0.88 0.96 1.06 1.07 | 0.23 0.39 0.54 0.7 0.86 0.93 0.99 1.22 | 0.34 0.49 0.66 0.74 0.83 0.95 1.08 1.17 |
| | 0.31 0.45 0.61 0.76 0.86 0.96 1.06 1.12 | 0.18 0.46 0.6 0.68 0.79 0.87 1.06 1.17 | 0.33 0.45 0.6 0.77 0.85 0.94 1.06 1.18 |
| | 0.35 0.51 0.64 0.78 0.96 1.1 1.19 1.27 | 0.29 0.49 0.64 0.81 0.93 1.06 1 1.31 | |
| | 0.34 0.53 0.7 0.88 1 1.13 1.4 1.48 | 0.24 0.51 0.69 0.81 1.01 1.07 1.12 1.36 | 0.34 0.53 0.73 0.89 1.01 1.15 1.3 1.35 |
| 2010 | 0.38 0.49 0.67 0.91 1.11 1.28 1.37 1.59 | 0.24 0.5 0.66 0.8 1.1 1.14 1.26 1.38 | 0.31 0.5 0.69 0.89 1.05 1.17 1.3 1.44 |
| | 0.29 0.51 0.67 0.81 0.97 1.22 1.34 1.51 | 0.22 0.51 0.65 0.79 0.91 1.07 1.16 1.25 | 0.29 0.47 0.67 0.86 1.06 1.21 1.32 1.44 |
| | 0.27 0.41 0.64 0.82 0.97 1.17 1.3 1.51 | 0.28 0.41 0.59 0.74 0.87 1.01 1.35 1.2 | 0.29 0.41 0.6 0.8 0.99 1.18 1.32 1.43 |
| | 0.29 0.44 0.56 0.78 1.13 1.28 1.44 1 68 | 0.23 0.52 0.58 0.72 0.97 1.17 1.27 1.46 | 0.32 0.44 0.57 0.76 0.95 1.14 1.32 1.45 |
| | 0.32 0.45 0.62 0.75 0.89 1.16 1.31 1.39 | 0.39 0.45 0.57 0.69 0.74 0.98 1.14 1.34 | 0.42 0.48 0.61 0.73 0.92 1.11 1.28 1.46 |
| | 0.41 0.53 0.56 0.65 0.73 0.8 0.94 1.04 | 0.28 0.52 0.57 0.69 0.76 0.79 0.88 0.92 | 0.38 0.53 0.57 0.63 0.76 0.87 1.06 1.24 |
| | 0.41 0.5 0.65 0.69 0.75 0.83 0.89 0.91 | 0.24 0.49 0.62 0.65 0.74 0.78 0.89 0.92 | 0.4 0.5 0.64 0.69 0.75 0.87 0.98 1.15 |
| | 0.38 0.47 0.57 0.73 0.81 0.85 0.91 1.04 | 0.21 0.44 0.58 0.66 0.76 0.75 0.85 0.89 | 0.41 0.48 0.58 0.72 0.77 0.82 0.94 1.05 |
| 0000 | 0.42 0.57 0.64 0.76 0.88 0.96 1.01 1.06 | 0.29 0.51 0.64 0.71 0.82 0.9 0.9 0.99 | 0.47 0.58 0.65 0.75 0.89 0.93 0.98 1.08 |
| 2020 | 0.39 0.52 0.63 0.72 0.8 0.96 1.01 1.04 | 0.28 0.44 0.59 0.7 0.77 0.85 0.06 1.00 | 0.4 0.52 0.64 0.71 0.81 0.95 0.98 1.03 |
| | 0.44 0.51 0.57 0.72 0.84 0.88 0.98 0.97 | 0.45 0.45 0.58 0.67 0.76 0.85 0.94 0.97 | 0.45 0.5 0.58 0.7 0.81 0.88 0.97 1.1 |
| | 0.49 0.48 0.52 0.61 0.8 0.92 0.96 1.05 | 0.32 0.42 0.53 0.64 0.78 0.92 0.98 1.02 | 0.48 0.47 0.53 0.61 0.73 0.84 0.9 0.99 |
| | | 0 32 0.48 0.58 0.62 0.7 0.95 1.01 1.04 | 0.4 0.67 0.66 0.72 0.79 0.91 1.01 1.06 |
| | | and the second sector is a second second | 0.38 0.53 0.8 0.79 0.85 0.91 1.02 1.12 |
| | | | 0.38 0.51 0.65 0.92 0.92 0.97 1.03 1.13 |
| | 4 6 0 10 | 4 0 0 10 | 4 6 9 10 |
| | 4 b 8 10 | 4 6 8 10 Age | 4 6 8 10 |

Anomaly

0.4 0.2 0.0 -0.2

Fishery weight-at-age²⁰¹⁰

| .61 0.76 .64 0.78 .65 0.77 .67 0.88 .67 0.91 .67 0.81 .64 0.82 .65 0.78 .64 0.78 .65 0.75 .66 0.69 | 0.86 0.96 1 1.11 0.97 0.97 1.13 0.89 0.79 0.73 0.75 | 0.96 1.1 1.05 1.13 1.28 1.22 1.17 1.28 1.16 0.89 0.8 | 1.06 1.19 1.12 1.4 1.37 1.34 1.3 1.44 1.31 1.14 0.94 | 1.12 1.27 1.29 1.48 1.59 1.51 1.51 1.68 1.39 1.2 | |
|--|---|---|---|---|---|
| 64 0.78 65 0.77 0.7 0.88 67 0.91 67 0.81 64 0.82 56 0.75 57 0.69 56 0.65 65 0.65 | 0.96 0.9 1 1.11 0.97 0.97 1.13 0.89 0.79 0.73 0.75 | 1.1 1.05 1.13 1.28 1.22 1.17 1.28 1.16 0.89 0.8 | 1.19 1.12 1.4 1.37 1.34 1.3 1.44 1.31 1.14 0.94 | 1.27 1.29 1.48 1.59 1.51 1.51 1.65 1.39 1.2 | |
| .65 0.77 .7 0.88 .67 0.91 .67 0.81 .64 0.82 .56 0.78 .57 0.69 .56 0.69 .56 0.69 | 0.9 1 1.11 0.97 0.97 1.13 0.89 0.79 0.73 0.75 | 1.05 1.13 1.28 1.22 1.17 1.28 1.16 0.89 0.8 | 1.12 1.4 1.37 1.34 1.3 1.44 1.31 1.14 0.94 | 1.29 1.48 1.59 1.51 1.51 1.65 1.39 1.2 | |
| .7 0.88 .67 0.91 .67 0.81 .64 0.82 .56 0.78 .62 0.75 .57 0.69 .56 0.65 .56 0.65 | 1 1.11 0.97 0.97 1.13 0.89 0.79 0.73 0.75 | 1.13 1.28 1.22 1.17 1.28 1.16 0.89 0.8 | 1.4 1.37 1.34 1.3 1.44 1.31 1.14 0.94 | 1.48 1.59 1.51 1.51 1.65 1.39 1.2 | |
| 67 0.91 67 0.81 64 0.82 56 0.78 62 0.75 57 0.69 56 0.65 62 0.69 | 1.11 0.97 0.97 1.13 0.89 0.79 0.73 0.75 | 1.28 1.22 1.17 1.28 1.16 0.89 0.8 | 1.37 1.34 1.3 1.44 1.31 1.14 0.94 | 1.59 1.51 1.51 1.68 1.39 1.2 | |
| 67 0.81 64 0.82 56 0.78 62 0.75 57 0.69 56 0.65 65 0.69 | 0.97 0.97 1.13 0.89 0.79 0.73 0.75 | 1.22 1.17 1.28 1.16 0.89 0.8 | 1.34 1.3 1.44 1.31 1.14 0.94 | 1.51 1.51 1.65 1.39 1.2 | |
| 64 0.82 56 0.78 62 0.75 57 0.69 56 0.65 65 0.69 | 0.97 1.13 0.89 0.79 0.73 0.75 | 1.17 1.28 1.16 0.89 0.8 | 1.3 1.44 1.31 1.14 0.94 | 1.51 1.65 1.39 1.2 | (|
| 56 0.78 62 0.75 57 0.69 56 0.65 65 0.69 | 1.13 0.89 0.79 0.73 0.75 | 1.28 1.16 0.89 0.8 | 1.44 1.31 1.14 0.94 | 1.65 1.39 1.2 | (|
| 620.75570.69560.65650.69 | 0.89 0.79 0.73 0.75 | 1.16 0.89 0.8 | 1.31 1.14 0.94 | 1.39 1.2 | (|
| 570.69560.65650.69 | 0.79 0.73 0.75 | 0.89 0.8 | 1.14 0.94 | 1.2 | |
| 56 0.65 65 0.69 | 0.73 | 0.8 | 0.94 | 1.04 | |
| 65 0.69 | 0.75 | | | 1.04 | (|
| | | 0.83 | 0.89 | 0.91 | (|
| 57 0.73 | 0.81 | 0.85 | 0.91 | 1.04 | (|
| 64 0.76 | 0.88 | 0.96 | 1.01 | 1.06 | (|
| 63 0.72 | 0.8 | 0.96 | 1.01 | 1.04 | |
| 57 0.69 | 0.76 | 0.84 | 1.01 | 1.13 | (|
| 57 0.72 | 0.84 | 0.88 | 0.98 | 0.97 | |
| 52 0.61 | 0.8 | 0.92 | 0.96 | 1.05 | (|
| | | | | | 1 |
| a se se | 53 0.72 57 0.69 57 0.72 52 0.61 | 53 0.72 0.8 57 0.69 0.76 57 0.72 0.84 52 0.61 0.8 | 53 0.72 0.8 0.96 57 0.69 0.76 0.84 57 0.72 0.84 0.88 52 0.61 0.8 0.92 | 53 0.72 0.8 0.96 1.01 57 0.69 0.76 0.84 1.01 57 0.72 0.84 0.88 0.98 52 0.61 0.8 0.92 0.96 | 53 0.72 0.8 0.96 1.01 1.04 57 0.69 0.76 0.84 1.01 1.13 57 0.72 0.84 0.88 0.98 0.97 52 0.61 0.8 0.92 0.96 1.05 |

0.41 0.58 0.64 0.76 0.89 0.92 1.04 1.18

| 0.28 | 0.52 | 0.6 | 0.75 | 0.89 | 0.93 | 1.12 | 1.03 |
|------|------|------|------|------|------|------|------|
| 0.23 | 0.39 | 0.54 | 0.7 | 0.86 | 0.93 | 0.99 | 1.22 |
| 0.18 | 0.46 | 0.6 | 0.68 | 0.79 | 0.87 | 1.06 | 1.17 |
| 0.29 | 0.49 | 0.64 | 0.81 | 0.93 | 1.06 | 1 | 1.31 |
| 0.22 | 0.49 | 0.6 | 0.73 | 0.86 | 0.95 | 0.99 | 1.15 |
| 0.24 | 0.51 | 0.69 | 0.81 | 1.01 | 1.07 | 1.12 | 1.36 |
| 0.24 | 0.5 | 0.66 | 0.8 | 4.1 | 1.14 | 1.26 | 1.38 |
| 0.22 | 0.51 | 0.65 | 0.79 | 0.91 | 1.07 | 1.16 | 1.25 |
| 0.28 | 0.41 | 0.59 | 0.74 | 0.87 | 1.01 | 1.35 | 1.2 |
| 0.23 | 0.52 | 0.58 | 0.72 | 0.97 | 1.17 | 1.27 | 1.46 |
| 0.39 | 0.45 | 0.57 | 0.69 | 0.74 | 0.98 | 1.14 | 1.34 |
| 5.35 | 0.44 | 0.57 | 0.68 | 0.74 | 0.86 | 1.06 | 1.27 |
| 0.28 | 0.52 | 0.57 | 0.69 | 0.76 | 0.79 | 0.88 | 0.92 |
| 0.24 | 0.49 | 0.62 | 0.65 | 0.74 | 0.78 | 0.89 | 0.92 |
| 0.21 | 0.44 | 0.58 | 0.66 | 0.76 | 0.75 | 0.85 | 0.89 |
| 0.29 | 0.51 | 0.64 | 0.71 | 0.82 | 0.9 | 0.9 | 0.99 |
| | - | | | | | | |
| 0.28 | 0.44 | 0.59 | 0.7 | 0.77 | 0.85 | 0.96 | 1.23 |
| 1.35 | 0.45 | 0.58 | 0.67 | 0.76 | 0.85 | 0.94 | 0.97 |
| 0.32 | 0.42 | 0.53 | 0.64 | 0.78 | 0.92 | 0.98 | 1.02 |
| 1,33 | 0.48 | 0.58 | 0.62 | 0.7 | 0.95 | 1.01 | 1.04 |
| | | | | | | | |
| | 4 | | 6 | | 8 | | 10 |

| 0.4 | 0.57 | 0.65 | 0.74 | 0.87 | 1 | 1.1 | 1.2 |
|------|------|------|------|------|------|------|------|
| 0.34 | 0.49 | 0.66 | 0.74 | 0.83 | 0.95 | 1.08 | 1.17 |
| 0.33 | 0.45 | 0.6 | 0.77 | 0.85 | 0.94 | 1.06 | 1.18 |
| 0.36 | 0.51 | 0.64 | 0.79 | 0.96 | 1.03 | 1.11 | 1.2 |
| 0.3 | 0.5 | 0.65 | 0.78 | 0.93 | 1.09 | 1.16 | 1.23 |
| 0.34 | 0.53 | 0.73 | 0.89 | 1.01 | 1.15 | 1.3 | 1.3 |
| 0.31 | 0.5 | 0.69 | 0.89 | 1.05 | 1.17 | 1.3 | 1.44 |
| 0.29 | 0.47 | 0.67 | 0.86 | 1.06 | 1.21 | 1.32 | 1.44 |
| 0.29 | 0.41 | 0.6 | 0.8 | 0.99 | 1.18 | 1.32 | 1.43 |
| 0.32 | 0.44 | 0.57 | 0.76 | 0.95 | 1.14 | 1.32 | 1.45 |
| 0.42 | 0.48 | 0.61 | 0.73 | 0.92 | 1.11 | 1.28 | 1.46 |
| 0.43 | 0.47 | 0.53 | 0.65 | 0.78 | 0.96 | 1.15 | 1.32 |
| 0.38 | 0.53 | 0.57 | 0.63 | 0.76 | 0.87 | 1.06 | 1.24 |
| 0.4 | 0.5 | 0.64 | 0.69 | 0.75 | 0.87 | 0.98 | 1.18 |
| 0.41 | 0.48 | 0.58 | 0.72 | 0.77 | 0.82 | 0.94 | 1.0 |
| 0.47 | 0.58 | 0.65 | 0.75 | 0.89 | 0.93 | 0.98 | 1.08 |
| 0.4 | 0.52 | 0.64 | 0.71 | 0.81 | 0.95 | 0.98 | 1.03 |
| 0.39 | 0.46 | 0.59 | 0.7 | 0.77 | 0.87 | 1 | 1.03 |
| 0.45 | 0.5 | 0.58 | 0.7 | 0.81 | 0.88 | 0.97 | 1.1 |
| 0.48 | 0.47 | 0.53 | 0.61 | 0.73 | 0.84 | 0.9 | 0.99 |
| 0.4 | 0.67 | 0.66 | 0.72 | 0.79 | 0.91 | 1.01 | 1.06 |
| 0.38 | 0.53 | 0.8 | 0.79 | 0.85 | 0.91 | 1.02 | 1.12 |
| 0.38 | 0.51 | 0.65 | 0.92 | 0.92 | 0.97 | 1.03 | 1.13 |
| | | | | | | | |

Age





Fishery weightat-age

| | Fishery | Survey | Predicted |
|------|---|---|---|
| | | | |
| 1970 | | | 0.38 0.49 0.61 0.72 0.83 0.94 1.05 1.14 |
| | | | 0.37 0.51 0.63 0.75 0.86 0.97 1.07 1.16 |
| | | | 0.4 0.49 0.64 0.76 0.87 0.98 1.08 1.17 |
| | | | |
| | | | 0.36 0.65 0.77 0.93 1.02 1.16 1.25 1.34 |
| | | | 0.41 0.5 0.8 0.92 1.07 1.16 1.29 1.38 |
| | | | 0.36 0.7 0.79 1.09 1.2 1.35 1.42 1.53 |
| | | | 0.41 0.5 0.84 0.94 1.23 1.34 1.48 1.55 |
| 1080 | | | 0.38 0.6 0.7 1.04 1.14 1.42 1.52 1.65 |
| 1500 | | | 0.36 0.55 0.76 0.99 1.08 1.41 1.49 1.75 |
| | | 0.18 0.34 0.41 0.78 1.05 1.19 1.4 1.57 | 0.35 0.48 0.67 0.89 1.11 1.2 1.53 1.6 |
| | | 0.21 0.34 0.54 0.77 1.02 1.45 1.41 1.51 | 0.41 0.52 0.66 0.85 1.06 1.28 1.36 1.67 |
| | | 0.22 0.31 0.43 0.6 0.93 1.81 1.27 1.47 | 0.42 0.5 0.62 0.75 0.94 1.15 1.36 1.43 |
| | | 0.23 0.37 0.48 0.72 0.91 1.21 1.72 1.44 | 0.45 0.54 0.63 0.74 0.88 1.06 1.26 1.47 |
| | | 0.17 0.31 0.41 0.01 0.77 1.02 1.3 1.10 | 0.42 0.47 0.6 0.7 0.78 0.89 1.02 1.19 |
| | | 0.28 0.33 0.45 0.49 0.59 0.81 0.91 1.04 | 0.38 0.49 0.54 0.68 0.77 0.85 0.96 1.08 |
| | | 0.17 0.28 0.37 0.55 0.66 0.84 1.03 1 | 0.33 0.46 0.57 0.63 0.76 0.85 0.93 1.03 |
| 1990 | | 0.19 0.36 0.48 0.54 0.61 0.73 1.03 0.98 | 0.34 0.47 0.61 0.72 0.77 0.9 0.98 1.05 |
| | 0.28 0.48 0.6 0.73 0.84 0.88 1.02 1.12 | 0.2 0.33 0.57 0.65 0.78 0.86 1.02 1.1 | 0.33 0.46 0.6 0.74 0.85 0.89 1.01 1.09 |
| | 0.4 0.46 0.65 0.71 0.82 0.99 1.03 1.2 | 0.25 0.4 0.46 0.57 0.76 0.77 0.93 1.01 | |
| | 0.4 0.65 0.73 0.75 0.73 1.07 1.38 1.32 | 0.21 0.4 0.54 0.67 0.65 1.05 1.17 1.11 | 0.41 0.61 0.74 0.77 0.9 1.03 1.16 1.24 |
| | 0.39 0.51 0.73 0.84 0.85 0.97 1.23 1.3 | 0.17 0.36 0.48 0.65 0.62 0.79 0.91 1.28 | 0.33 0.51 0.72 0.84 0.87 1 1.13 1.24 |
| | 0.34 0.45 0.68 0.8 0.95 0.96 1.03 1.1 | 0.15 0.3 0.49 0.58 0.76 0.82 0.98 1.02 | 0.38 0.42 0.6 0.81 0.93 0.96 1.08 1.2 |
| | 0.33 0.48 0.56 0.75 0.89 1.07 1.1 1.24 | 0.19 0.28 0.38 0.53 0.67 0.78 1 0.97 | 0.44 0.48 0.53 0.71 0.92 1.03 1.06 1.17 |
| | 0.37 0.59 0.62 0.62 0.78 1.04 1.17 1.28 | 0.21 0.33 0.45 0.52 0.81 0.89 1.08 1.29 | 0.41 0.53 0.58 0.63 0.81 1.01 1.12 1.14 |
| 2000 | 0.4 0.51 0.64 0.7 0.73 0.89 1.04 1.25 | 0.22 0.35 0.39 0.53 0.52 0.88 1.04 1.01 | |
| 2000 | 0.33 0.5 0.67 0.79 0.96 0.99 1.06 1.13 | 0.2 0.36 0.62 0.73 0.75 1 0.98 1.03 | 0.4 0.53 0.67 0.78 0.9 0.94 0.97 1.14 |
| | 0.38 0.51 0.67 0.8 0.91 1.03 1.11 1.1 | 0.27 0.4 0.54 0.68 0.71 0.9 1.01 1.05 | 0.43 0.52 0.65 0.79 0.9 1.02 1.05 1.08 |
| | 0.49 0.55 0.65 0.77 0.86 0.95 1.09 1.2 | 0.34 0.42 0.65 0.71 0.89 0.87 1.12 1.24 | 0.47 0.55 0.64 0.77 0.9 1.01 1.12 1.15 |
| | 0.41 0.58 0.64 0.76 0.89 0.92 1.04 1.18 | 0.26 0.52 0.6 0.75 0.89 0.93 1.12 1.03 | 0.4 0.57 0.65 0.74 0.87 1 1.1 1.21 |
| | 0.35 0.51 0.64 0.74 0.88 0.96 1.06 1.07 | | 0.34 0.49 0.66 0.74 0.83 0.95 1.08 1.17 |
| | 0.35 0.51 0.64 0.78 0.96 1.1 1.19 1.27 | 0.29 0.49 0.64 0.81 0.93 1.06 1 1.31 | 0.36 0.51 0.64 0.79 0.96 1.03 1.11 1.21 |
| | 0.33 0.52 0.65 0.77 0.9 1.05 1.12 1.29 | 0.22 0.49 0.6 0.73 0.86 0.95 0.99 1.15 | 0.3 0.5 0.65 0.78 0.93 1.09 1.16 1.23 |
| | 0.34 0.53 0.7 0.88 1 1.13 1.4 1.48 | 0.24 0.51 0.69 0.81 1.01 1.07 1.12 1.36 | 0.34 0.53 0.73 0.89 1.01 1.15 1.3 1.35 |
| 2010 | 0.38 0.49 0.67 0.91 1.11 1.28 1.37 1.59 | 0.24 0.5 0.66 0.8 1.1 1.14 1.26 1.38 | 0.31 0.5 0.69 0.89 1.05 1.17 1.3 1.44 |
| | 0.29 0.51 0.67 0.81 0.97 1.22 1.34 1.51 | 0.22 0.51 0.65 0.79 0.91 1.07 1.16 1.25 | 0.29 0.47 0.67 0.86 1.06 1.21 1.32 1.44 |
| | 0.27 0.41 0.64 0.82 0.97 1.17 1.3 1.51 | 0.28 0.41 0.59 0.74 0.87 1.01 1.35 1.2 | |
| | 0.32 0.45 0.62 0.75 0.89 1.16 1.31 1.39 | 0.39 0.45 0.57 0.69 0.74 0.98 1.14 1.34 | 0.42 0.48 0.61 0.73 0.92 1.11 1.28 1.46 |
| | 0.4 0.46 0.57 0.69 0.79 0.89 1.14 1.2 | 0 36 0.44 0.57 0.68 0.74 0.86 1.06 1.27 | 0.43 0.47 0.53 0.65 0.78 0.96 1.15 1.32 |
| | 0.41 0.53 0.56 0.65 0.73 0.8 0.94 1.04 | 0.28 0.52 0.57 0.69 0.76 0.79 0.88 0.92 | 0.38 0.53 0.57 0.63 0.76 0.87 1.06 1.24 |
| | 0.41 0.5 0.65 0.69 0.75 0.83 0.89 0.91 | 0.24 0.49 0.62 0.65 0.74 0.78 0.89 0.92 | 0.4 0.5 0.64 0.69 0.75 0.87 0.98 1.15 |
| | 0.38 0.47 0.57 0.73 0.81 0.85 0.91 1.04 | 0.21 0.44 0.58 0.66 0.76 0.75 0.85 0.89 | 0.41 0.48 0.58 0.72 0.77 0.82 0.94 1.05 |
| 2020 | | 0.24 0.51 0.64 0.71 0.82 0.9 0.9 0.99 | 0.4 0.52 0.64 0.71 0.81 0.95 0.98 1.08 |
| 2020 | 0.39 0.48 0.57 0.69 0.76 0.84 1.01 1.13 | 0.28 0.44 0.59 0.7 0.77 0.85 0.96 1.23 | 0.39 0.46 0.59 0.7 0.77 0.87 1 1.03 |
| | 0.44 0.51 0.57 0.72 0.84 0.88 0.98 0.97 | 0.55 0.45 0.58 0.67 0.76 0.85 0.94 0.97 | 0.45 0.5 0.58 0.7 0.81 0.88 0.97 1.1 |
| | 0.49 0.48 0.52 0.61 0.8 0.92 0.96 1.05 | 0.32 0.42 0.53 0.64 0.78 0.92 0.98 1.02 | 0.48 0.47 0.53 0.61 0.73 0.84 0.9 0.99 |
| | | 0 33 0.48 0.58 0.62 0.7 0.95 1.01 1.04 | 0.4 0.67 0.66 0.72 0.79 0.91 1.01 1.06 |
| | | | 0.38 0.53 0.8 0.79 0.85 0.91 1.02 1.12 |
| | | | 0.35 0.51 0.55 0.32 0.32 0.37 1.03 1.13 |
| | 4 6 0 10 | 1 0 0 10 | 4 0 0 10 |
| | 4 6 8 10 | 4 6 8 10 Age | 4 b 8 10 |

Anomaly

0.4 0.2

0.0 -0.2



Fishery weightat-age by season and area



Fishery catch-at-age





Survey work





FV Alaska Knight 2010-present 12th year FV Northwest Explorer 2023 1st year





Bottom-trawl survey

• Abundance at length



Survey abundance-at-age

• Eastern Bering Sea pollock

Vertical

Survey







E. Bering Sea bottom trawl survey



Acoustic survey-NOAA Ship





New survey this summer



Acoustic-trawl survey (ATS)

7,500 -

Acoustic trawl index ^{5'200}

0 -





Opportunistic acoustic survey results





Latitude

Longitude





Year



Modeling...



EBS Pollock



Year

EBS Pollock







Model fits











2010

Year

0-

2000





Bottom trawl survey biomass

2020

Retrospective patterns



Retrospective patterns by cohort













Stock status, -fitness level good!!



What about productivity estimates?

• Tier 1 versus Tier 3?



Shorter period model (SRR 1978-2021) compared to full time series



Model with and without temperature covariate





...and estimation period length



Female spawning biomass (kt)

...and estimation period length

Simulation test

Red: original curve estimated Dots: simulated random "data" used to fit blue curves



Negative log-likelihood profile of σ_R for the different components used to tune the model

SRR curves as estimated in the 2023 assessment for different fixed values of sigmaR.

SRR curves as estimated in the 2023 assessment for different fixed values of sigmaR.

Specified variability about the SRR

values from the 2023 assessment.

Figure 19: Model results comparing last year's selected model (SRR 1978-2021) with one where the SRR was conditioned such that F_{MSY} was equal to the SPR rate of F_{35} . The vertical bars represent the 95% confidence intervals for the age-1 recruitment.

Considerations of pollock and ecosystem role

Invert the question...what does a productivity curve look like if historical catches at F_{MSY} ?

SRR as estimated in the 2023 assessment 80000 2018 60000 2008 19922013989 40000 20000 Ū 2000 4000 6000 0 SRR condition to have MSY=1.75 Mil Recruits (age 1, millions) SRR condition to have MSY=1.3 Mt

Female spawning biomass (kt)

Evaluating the impact of selectivity assumptions on stock recruitment relationships (SRR)

Selectivity-at-age patterns for three models: last-year's, separable, and VPA.

VPA-like versus 2023 model

Separable versus 2023 model

Separable (constant fishery selectivity) indicates reduced uncertainty...

Summary

- Aspects of SRR suggest Tier 3 more appropriate
 - No fault of data extent, rather historical stock and recruitment estimates uninformative

| | As estimated | or specified | As estimated o | r recommended |
|---|----------------|--------------|----------------|---------------|
| | <i>last</i> ye | ar for: | this ye | ear for: |
| Quantity | 2024 | 2025 | 2025 | 2026 |
| M (natural mortality rate, ages 3+) | 0.3 | 0.3 | 0.3 | 0.3 |
| Tier | 1a | 1a | 1a | 1a |
| Projected total (age $3+$) biomass (t) | 10,184,000 t | 9,437,000 t | 8,526,000 t | 8,075,000 t |
| Projected female spawning biomass (t) | 3,518,000 t | 3,255,000 t | 3,118,000 t | 3,342,000 t |
| B_0 | 6,728,000 t | 6,728,000 t | 5,975,000 t | 5,975,000 t |
| B_{msu} | 2,689,000 t | 2,689,000 t | 2,310,000 t | 2,310,000 t |
| F _{OFL} | 0.422 | 0.422 | 0.523 | 0.523 |
| $maxF_{ABC}$ | 0.379 | 0.379 | 0.443 | 0.443 |
| F_{ABC} | 0.33 | 0.33 | 0.402 | 0.402 |
| OFL | 3,162,000 t | 3,449,000 t | 4,383,000 t | 3,785,000 t |
| maxABC | 2,837,000 t | 3,095,000 t | 3,715,000 t | 3,209,000 t |
| ABC | 2,313,000 t | 2,401,000 t | 2,417,000 t | 2,036,000 t |
| Status | 2022 | 2023 | 2023 | 2024 |
| Overfishing | No | n/a | No | n/a |
| Overfished | n/a | No | n/a | No |
| Approaching overfished | n/a | No | n/a | No |

Tier 1 version

Tier 3 version

| | As estimated | or specified | As estimated o | r recommended | |
|---|----------------|--------------|----------------|----------------|--|
| | <i>last</i> ye | ar for: | this ye | this year for: | |
| Quantity | 2024 | 2025 | 2025 | 2026 | |
| M (natural mortality rate, ages 3+) | 0.3 | 0.3 | 0.3 | 0.3 | |
| Tier | 1a | 1a | 3a | 3a | |
| Projected total (age $3+$) biomass (t) | 10,184,000 t | 9,437,000 t | 8,526,000 t | 8,075,000 t | |
| Projected female spawning biomass (t) | 3,518,000 t | 3,255,000 t | 3,118,000 t | 3,342,000 t | |
| B ₀ | 6,728,000 t | 6,728,000 t | 5,902,000 t | 5,902,000 t | |
| B_{msy} | 2,689,000 t | 2,689,000 t | 2,066,000 t | 2,066,000 t | |
| F _{OFL} | 0.422 | 0.422 | 0.513 | 0.513 | |
| $maxF_{ABC}$ | 0.379 | 0.379 | 0.394 | 0.394 | |
| F_{ABC} | 0.33 | 0.33 | 0.394 | 0.394 | |
| OFL | 3,162,000 t | 3,449,000 t | 2,957,000 t | 2,496,000 t | |
| maxABC | 2,837,000 t | 3,095,000 t | 2,417,000 t | 2,036,000 t | |
| ABC | 2,313,000 t | 2,401,000 t | 2,417,000 t | 2,036,000 t | |
| Status | 2022 | 2023 | 2023 | 2024 | |
| Overfishing | No | n/a | No | n/a | |
| Overfished | n/a | No | n/a | No | |
| Approaching overfished | n/a | No | n/a | No | |