2016	0	0.02	0.16	0.46	0.69	0.87	0.91	0.96	1
2017	0	0.02	0.16	0.46	0.69	0.87	0.91	0.96	1

Table 2.14. Norwegian Coastal Cod. Diagnostic output from XSA trial run based on commercial catch-at-age and survey index at age (ages 2–8 in Table 2.6). Proportions of F and M before time of spawning has been set to 0 for all years and ages.

Lowestoft VPA Version 3.1

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 Extended Survivors Analysis

 Norwegian Coastal Cod   COMBSEX   PLUSGROUP

 CPUE data from file coast-9.txt

 Catch data for 34 years. 1984 to 2017. Ages 2 to 10.

Fleet	First	Last	First	Last	Alpha	Beta
	year	year	age	age		
Norw. Coast. survey	1995	2017	0	8	0.75	0.85

 Time-series weights :

    Tapered time weighting applied

    Power =   3 over 20 years

 Catchability analysis :

    Catchability dependent on stock size for ages <   4

      Regression type = C

      Minimum of   5 points used for regression

      Survivor estimates shrunk to the population mean for ages < 4

    Catchability independent of age for ages >=   7

 Terminal population estimation :

    Survivor estimates shrunk towards the mean F

    of the final   2 years or the   4 oldest ages.

    S.E. of the mean to which the estimates are shrunk = 1.000

    Minimum standard error for population

    estimates derived from each fleet =   .300

Prior weighting not applied

Tuning had not converged after 250 iterations

Total absolute residual between iterations

249 and 250 =   .00109

Final year F values

Age	2	3	4	5	6	7	8	9
Iteration **	0.0133	0.1063	0.1967	0.3067	0.4952	0.8296	0.7772	0.5591
Iteration **	0.0133	0.1062	0.1967	0.3066	0.4951	0.8292	0.7768	0.559

Regression weights

0.751	0.82	0.877	0.921	0.954	0.976	0.99	0.997	1	1

Fishing mortalities

Age	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2	0.005	0	0.001	0.001	0.001	0.004	0.001	0.01	0.014	0.013
3	0.039	0.015	0.045	0.039	0.023	0.037	0.049	0.055	0.09	0.106
4	0.156	0.08	0.131	0.165	0.086	0.111	0.111	0.141	0.14	0.197
5	0.241	0.204	0.203	0.208	0.186	0.135	0.158	0.243	0.247	0.307
6	0.275	0.332	0.254	0.251	0.322	0.216	0.155	0.311	0.396	0.495
7	0.249	0.407	0.28	0.485	0.341	0.198	0.187	0.345	0.497	0.829
8	0.257	0.246	0.277	0.319	0.502	0.22	0.186	0.333	0.397	0.777
9	0.14	0.151	0.132	0.24	0.383	0.404	0.246	0.333	0.416	0.559

XSA population numbers (Thousands)

AGE

YEAR	2	3	4	5	6	7	8	9
2008	2.22E+04	1.91E+04	1.10E+04	8.43E+03	5.66E+03	4.32E+03	2.15E+03	1.82E+03
2009	2.17E+04	1.81E+04	1.51E+04	7.68E+03	5.42E+03	3.52E+03	2.76E+03	1.36E+03
2010	2.23E+04	1.78E+04	1.46E+04	1.14E+04	5.13E+03	3.18E+03	1.92E+03	1.76E+03
2011	2.59E+04	1.83E+04	1.39E+04	1.05E+04	7.60E+03	3.26E+03	1.97E+03	1.19E+03
2012	2.00E+04	2.12E+04	1.44E+04	9.65E+03	6.96E+03	4.84E+03	1.64E+03	1.17E+03
2013	2.32E+04	1.64E+04	1.70E+04	1.08E+04	6.56E+03	4.13E+03	2.82E+03	8.15E+02
2014	2.38E+04	1.89E+04	1.29E+04	1.24E+04	7.74E+03	4.33E+03	2.78E+03	1.85E+03
2015	2.54E+04	1.95E+04	1.47E+04	9.46E+03	8.69E+03	5.42E+03	2.94E+03	1.89E+03
2016	2.44E+04	2.06E+04	1.51E+04	1.05E+04	6.08E+03	5.21E+03	3.15E+03	1.72E+03
2017	2.29E+04	1.97E+04	1.54E+04	1.07E+04	6.70E+03	3.35E+03	2.59E+03	1.73E+03