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Assessment of Faroe Saithe 2001

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Table Overview of sampling intensity of length, otoliths and individual weights in 2001.

Fleet	Samples	Lengths	Otoliths	Weights
Jiggers	8	1608	180	180
Single trawlers 1000 – 1499 HP	2	374	60	60
Single trawlers 1500 - 1999 HP	8	1430	300	300
Single trawlers > 2000 HP	10	2134	90	60
Pair trawlers 400 – 699 HP	2	396	60	60
Pair trawlers 700 – 999 HP	21	4737	420	360
Pair trawlers 1000 – 1499 HP	128	27104	3237	3177
Total	179	37783	4347	4197

Table 2.5.1. Saithe in the Faroes (Division Vb). Nominal catches (tonnes) by countries, 1988-2001, as officially reported to ICES.

<i>Country</i>	1988	1989	1990	1991	1992	1993	1994
Denmark	94	-	2	-	-	-	-
Faroe Islands	44,402	43,624	59,821	53,321	35,979	32,719	32,406
France ³	313	-	-	-	120	75	19
German Dem.Rep.	-	9	-	-	5	2	1
German Fed. Rep.	74	20	15	32	-	-	-
Netherlands	-	22	67	65	-	32	156
Norway	52	51	46	103	85	279	151
UK (Eng. & W.)	-	-	-	5	74	425	438
UK (Scotland)	92	9	33	79	98	-	-
USSR/Russia ²	-	-	30	-	12	-	-
<i>Total</i>	45,027	43,735	60,014	53,605	36,373	33,532	33,171
<i>Working Group estimate</i> ^{4,5}	45,285	44,477	61,628	54,858	36,487	33,543	33,182

<i>Country</i>	1995	1996	1997	1998	1999	2000 ¹	2001 ¹
Estonia	-	-	16	-	-	-	-
Faroe Islands	26,918	19,297	21,721	25,995	32,439	38,073	49,395
France	10	12	9	17	-	58	840
Germany	41	3	5	-	100	230	677
Greenland	-	-	-	-	-	1	7
Norway	10	16	67	53	160	97	80
UK (Eng. & W.)	21	53	-	19	67	32	...
UK (Scotland)	200	580	460	337	441	534	...
United Kingdom	-	-	-	-	-	-	790
Russia	-	18	28	-	-	20	1
Ireland	-	-	-	-	-	-	5
<i>Total</i>	27,200	19,979	22,306	26,421	33,207	39,045	51,795
<i>Working Group estimate</i> ^{4,5}	27,209	20,029	22,306	26,421	33,207	39,045	51,795

¹ Preliminary.

² As from 1991.

³ Quantity unknown 1989-91.

⁴ Includes catches from Sub-division Vb2 and Division IIa in Faroese waters.

⁵ Includes French, Greenlandic, Russian catches from Division Vb, as reported to the Faroese coastal guard service.

Table 2.5.2. Saithe in the Faroes (Division Vb). Total faroese landings (round weight) (rightmost column) and the contribution (%) by each fleet category. Averages for 1985-2001 are given at the bottom.

Year	Open boats	Long-liners <100 GRT	Single trawl <400 HP	Gill-nets	Jiggers	Single trawl 400-1000 HP	Single trawl >1000 HP	Pair trawl <1000 HP	Pair trawl >1000HP	Long-liners >100 GRT	Industrial trawlers	Others	Total ungutted catch (tonnes)
1985	0.2	0.1	0.1	0.0	2.6	6.6	33.7	28.2	28.2	0.1	0.2	0.2	42598
1986	0.3	0.2	0.1	0.1	3.6	2.8	27.3	27.5	36.5	0.1	0.7	0.9	40107
1987	0.7	0.1	0.3	0.4	5.6	4.1	20.4	22.8	44.2	0.1	1.1	0.0	39627
1988	0.4	0.3	0.1	0.3	6.5	6.8	20.8	19.6	43.6	0.1	1.3	0.1	43940
1989	0.9	0.1	0.3	0.2	9.3	5.4	17.7	23.5	41.1	0.1	1.3	0.0	44547
1990	0.6	0.2	0.2	0.2	7.4	3.9	19.6	24.0	42.8	0.2	0.9	0.0	60740
1991	0.6	0.1	0.1	0.6	9.8	1.3	13.9	26.5	46.2	0.1	0.8	0.0	54290
1992	0.4	0.4	0.0	0.0	10.5	0.5	7.1	24.4	55.6	0.1	1.0	0.0	34934
1993	0.6	0.2	0.1	0.0	9.3	0.6	6.5	21.4	60.6	0.1	0.7	0.0	32313
1994	0.4	0.4	0.1	0.0	12.6	1.1	6.8	18.5	59.1	0.2	0.7	0.0	32405
1995	0.2	0.1	0.4	0.0	9.6	0.9	9.9	17.7	60.9	0.3	0.0	0.0	26915
1996	0.0	0.0	0.1	0.0	9.2	1.2	6.8	23.7	58.6	0.2	0.0	0.0	19262
1997	0.0	0.1	0.1	0.0	8.9	2.5	10.7	17.8	58.9	0.4	0.4	0.0	21713
1998	0.1	0.4	0.1	0.0	8.1	2.8	13.8	16.5	57.6	0.3	0.4	0.0	25993
1999	0.0	0.1	0.1	0.0	5.7	1.2	12.6	18.5	60.0	0.2	1.6	0.0	33057
2000	0.1	0.1	0.2	0.0	3.7	0.3	15.0	17.5	62.3	0.1	0.7	0.0	37450
2001	0.1	0.1	0.1	0.0	2.5	0.2	18.2	14.8	53.0	0.2	0.7	0.1	49395
Average	0.3	0.2	0.1	0.1	7.3	2.5	15.3	21.3	51.1	0.2	0.7	0.1	37605

Table 2.5.3. Saithe in the Faroes (Division Vb). Catch in number at age by fleet categories are calculated from gutted weights.

Age	Jiggers	ST>1000 Hk	PT<1000 Hk	PT>1000Hk	Others	Tot. Faroe	Foreign	Total
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
2	0	4	0	14	0	20	1	21
3	25	123	253	611	16	1094	32	1125
4	52	243	479	1438	35	2390	62	2452
5	181	848	1633	4946	121	8221	217	8438
6	51	355	339	1165	30	2064	91	2155
7	93	751	530	1855	52	3488	192	3681
8	44	369	176	748	21	1445	95	1539
9	44	353	136	618	18	1244	90	1334
10	9	93	20	127	4	269	24	293
11	6	35	5	29	1	81	9	90
12	1	5	1	15	0	23	1	24
13	1	7	1	8	0	18	2	19
14	0	4	1	6	0	12	1	13
15	0	0	0	0	0	0	0	0
Total No.	506	3189	3573	11579	301	20367	816	21183
Catch, t.	1355	9375	7660	27320	729	49395	2400	51795

Notes: Numbers in 1000'
Catch, ungutted weight in tonnes
Others includes longliners, small single trawlers, industrial trawlers and catches not otherwise accounted for

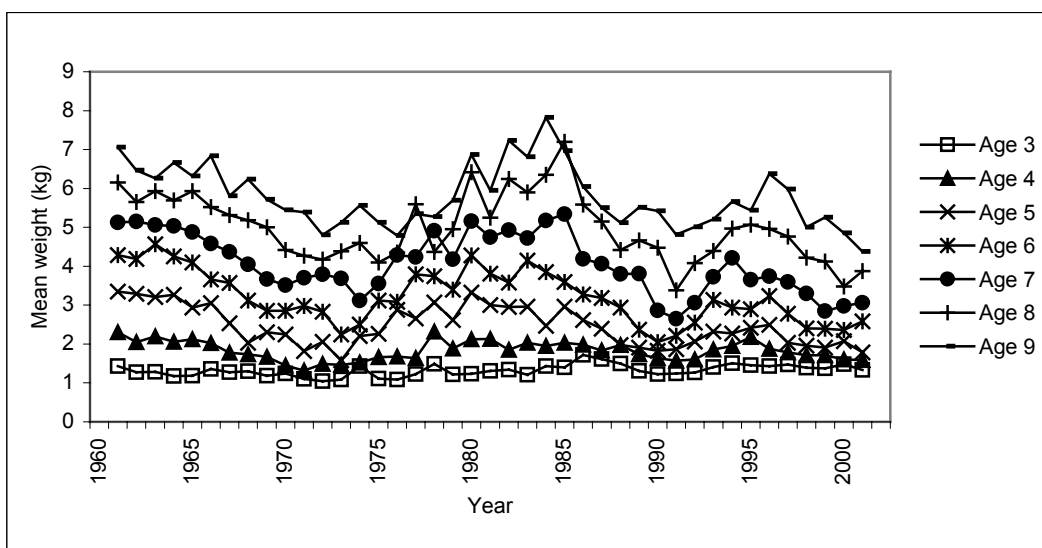


Figure Mean weight at age

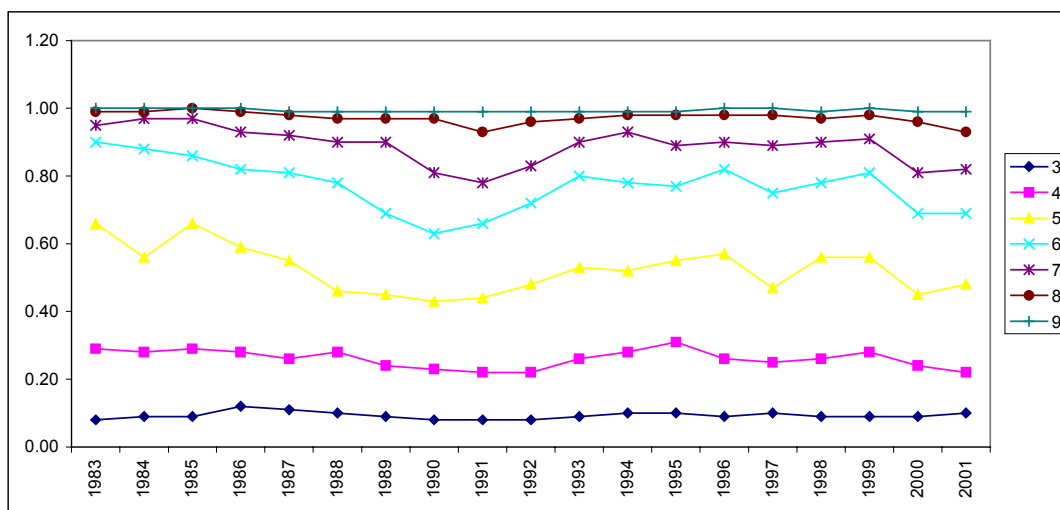


Figure Fitted values proportion maturity at age for the period 1983-2001.

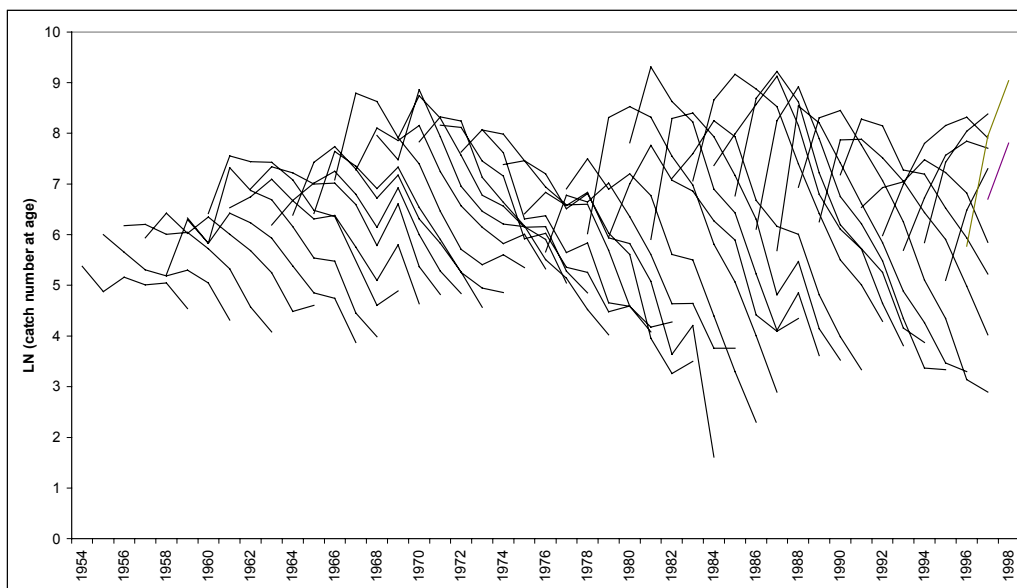


Figure ln(catch curve) of yearclasses 1951-1998

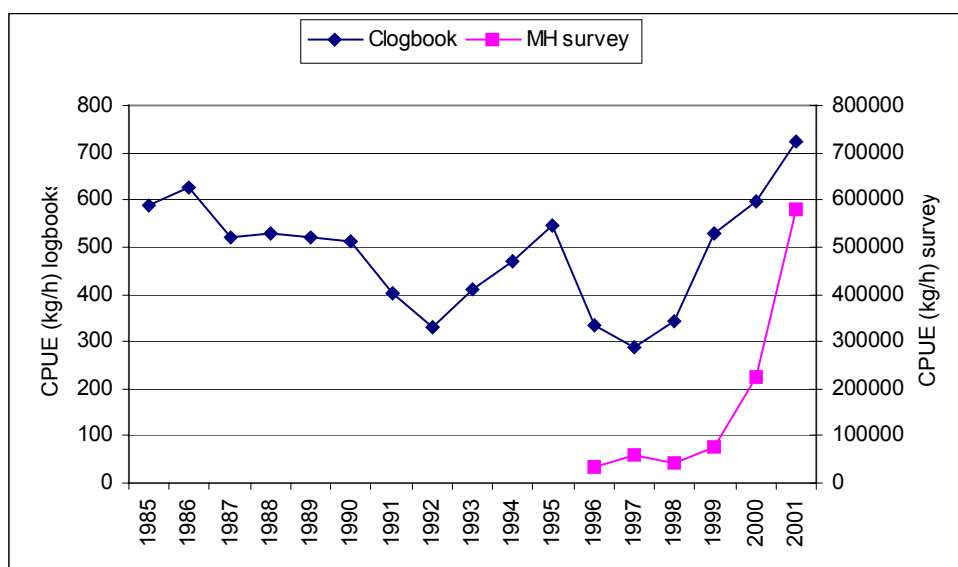


Figure CPUE comparison

Cuba logbook (same settings as last year)

Lowestoft VPA Version 3.1

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Extended Survivors Analysis

FAROE SAITHE (ICES Division Vb) SAI_IND

CPUE data from file C:\Stovnsmeting\Ices2002\Koyringar\XsainnL\CUBALOG3_11.DAT

Catch data for 41 years. 1961 to 2001. Ages 3 to 12.

Fleet, First, Last, First, Last, Alpha, Beta
, year, year, age, age
Cuba Logbook series, 1985, 2001, 3, 3, .000, 1.000
Faroe Saithe (ICES D, 1985, 2001, 5, 11, .000, 1.000

Time series weights :

Tapered time weighting applied
Power = 3 over 20 years

Catchability analysis :

Catchability dependent on stock size for ages < 5

Regression type = C
Minimum of 5 points used for regression
Survivor estimates shrunk to the population mean for ages < 5

Catchability independent of age for ages >= 9

Terminal population estimation :

Survivor estimates shrunk towards the mean F
of the final 5 years or the 3 oldest ages.

S.E. of the mean to which the estimates are shrunk = .500

Minimum standard error for population
estimates derived from each fleet = .300

Prior weighting not applied

Tuning converged after 15 iterations

Regression weights

, .751, .820, .877, .921, .954, .976, .990, .997, 1.000, 1.000

Fishing mortalities

Age, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001

3, .030, .063, .044, .011, .013, .010, .010, .004, .018, .019
 4, .263, .204, .272, .085, .036, .047, .061, .052, .048, .071
 5, .597, .551, .331, .406, .131, .107, .146, .151, .161, .197
 6, .713, .602, .604, .400, .296, .305, .220, .293, .331, .370
 7, .580, .522, .602, .701, .476, .489, .415, .439, .451, .518
 8, .486, .421, .670, .628, .798, .514, .502, .539, .592, .655
 9, .577, .484, .509, .824, .524, .639, .661, .585, .404, .659
 10, .601, .479, .721, .708, .692, .603, .712, .606, .644, .716
 11, .666, .583, .616, .585, .544, .614, .608, .476, .494, .764

XSA population numbers (Thousands)

	AGE									
YEAR,	3,	4,	5,	6,	7,	8,	9,	10,	11,	
1992,	1.97E+04,	1.94E+04,	9.02E+03,	5.81E+03,	3.45E+03,	2.57E+03,	1.55E+03,	3.01E+02,	1.43E+02,	
1993,	2.39E+04,	1.57E+04,	1.22E+04,	4.07E+03,	2.33E+03,	1.58E+03,	1.29E+03,	7.11E+02,	1.35E+02,	
1994,	1.76E+04,	1.84E+04,	1.05E+04,	5.77E+03,	1.82E+03,	1.13E+03,	8.50E+02,	6.52E+02,	3.60E+02,	
1995,	4.14E+04,	1.38E+04,	1.15E+04,	6.15E+03,	2.58E+03,	8.18E+02,	4.75E+02,	4.18E+02,	2.60E+02,	
1996,	2.49E+04,	3.35E+04,	1.03E+04,	6.26E+03,	3.37E+03,	1.05E+03,	3.57E+02,	1.70E+02,	1.69E+02,	
1997,	3.90E+04,	2.01E+04,	2.65E+04,	7.43E+03,	3.81E+03,	1.72E+03,	3.86E+02,	1.73E+02,	6.99E+01,	
1998,	1.75E+04,	3.16E+04,	1.57E+04,	1.95E+04,	4.49E+03,	1.91E+03,	8.41E+02,	1.67E+02,	7.76E+01,	
1999,	8.19E+04,	1.42E+04,	2.43E+04,	1.11E+04,	1.28E+04,	2.43E+03,	9.49E+02,	3.55E+02,	6.71E+01,	
2000,	4.93E+04,	6.68E+04,	1.10E+04,	1.71E+04,	6.78E+03,	6.75E+03,	1.16E+03,	4.33E+02,	1.59E+02,	
2001,	6.47E+04,	3.96E+04,	5.21E+04,	7.70E+03,	1.01E+04,	3.54E+03,	3.06E+03,	6.33E+02,	1.86E+02,	

Estimated population abundance at 1st Jan 2002

, 0.00E+00, 5.19E+04, 3.02E+04, 3.50E+04, 4.35E+03, 4.91E+03, 1.51E+03, 1.29E+03, 2.54E+02,

Taper weighted geometric mean of the VPA populations:

, 3.30E+04, 2.48E+04, 1.68E+04, 8.85E+03, 4.46E+03, 1.93E+03, 8.31E+02, 3.37E+02, 1.39E+02,

Standard error of the weighted Log(VPA populations) :

, .5192, .4974, .5397, .5177, .6194, .5948, .6037, .5229, .5410,

1

Log catchability residuals.

Fleet : Cuba Logbook series

Age , 1985, 1986, 1987, 1988, 1989, 1990, 1991

3 , .85, .61, .96, .27, .44, -.42, -.08

4 , No data for this fleet at this age

5 , No data for this fleet at this age

6 , No data for this fleet at this age

7 , No data for this fleet at this age

8 , No data for this fleet at this age

9 , No data for this fleet at this age

10 , No data for this fleet at this age

11 , No data for this fleet at this age

Age , 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001

3 , -1.33, .99, 1.13, -.07, -.32, .03, -.86, -1.32, .45, .75

4 , No data for this fleet at this age

5 , No data for this fleet at this age

6 , No data for this fleet at this age

7 , No data for this fleet at this age

8 , No data for this fleet at this age

9 , No data for this fleet at this age

10 , No data for this fleet at this age

11 , No data for this fleet at this age

Regression statistics :

Ages with q dependent on year class strength

Age, Slope , t-value , Intercept, RSquare, No Pts, Reg s.e, Mean Log q

3, 1.24, -.484, 16.67, .29, 17, .85, -15.46,

1

Fleet : Faroe Saithe (ICES D

Age , 1985, 1986, 1987, 1988, 1989, 1990, 1991

3 , No data for this fleet at this age

4 , No data for this fleet at this age

5 , .91, .81, .53, .18, -.20, .42, .52

6 , -.05, .70, .44, .49, .03, .21, .28

7 , .06, .00, .05, .03, -.44, -.01, -.07

8 , -.48, .38, -.05, -.18, -.35, -.79, -.32

9 , -.70, .63, .02, .18, -.71, -1.30, -.83

10 , -1.67, .08, .24, -.58, -.49, -1.58, -.23

11 , -.19, .04, .21, -.66, -.22, -.67, .07

Age , 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001

3 , No data for this fleet at this age

4 , No data for this fleet at this age

5 , .34, .65, .26, .91, -.55, -.90, -.58, -.44, -.32, -.09

6 , .18, .27, .43, .16, -.42, -.32, -.69, -.17, -.06, -.02

7 , -.29, -.07, .20, .44, .24, -.08, -.23, .00, .01, .00

8 , -.70, -.37, .23, .35, 1.16, -.18, -.16, .18, .17, .08

9 , -.25, -.41, .06, .32, 1.43, -.05, .20, .34, -.21, .08

10 , -.29, -.34, .33, .12, .88, .01, .20, .23, .28, .09

11 , -.12, -.10, .12, .23, .21, -.18, -.11, .05, .02, -.16

Mean log catchability and standard error of ages with catchability independent of year class strength and constant w.r.t. time

Age	5	6	7	8	9	10	11
Mean Log q	-12.5081	-12.0288	-11.7869	-11.6707	-11.7077	-11.7077	-11.7077
S.E(Log q)	.5722	.3526	.2115	.4860	.6224	.5446	.2462

Regression statistics :

Ages with q independent of year class strength and constant w.r.t. time.

Age, Slope , t-value , Intercept, RSquare, No Pts, Reg s.e, Mean Q

5	1.47	-1.004	13.82	.31	17	.84	-12.51
6	1.40	-1.454	13.20	.57	17	.47	-12.03
7	1.07	-.585	12.01	.89	17	.23	-11.79
8	1.23	-.740	12.61	.51	17	.61	-11.67
9	1.43	-.972	13.87	.33	17	.90	-11.71
10	1.23	-.583	13.09	.39	17	.69	-11.71
11	.85	1.378	10.74	.89	17	.20	-11.77

1

Terminal year survivor and F summaries :

Age 3 Catchability dependent on age and year class strength

Year class = 1998

Fleet	Estimated	Int	Ext	Var	N	Scaled	Estimated
	Survivors	s.e	s.e	Ratio		Weights	F
Cuba Logbook series			109776.	.963	.000	.00	1, .116, .009
Faroe Saithe (ICES D,		1.	.000	.000	.00	0, .000	.000

P shrinkage mean , 24785., .50,,,, .444, .040

F shrinkage mean , 90003., .50,,,, .440, .011

Weighted prediction :

Survivors	Int	Ext	N	Var	F
at end of year	s.e	s.e		Ratio	
51946.,	.33,	.71,	3,	2.137,	.019

Age 4 Catchability dependent on age and year class strength

Year class = 1997

Fleet	Estimated	Int	Ext	Var	N	Scaled	Estimated
	Survivors	s.e	s.e	Ratio		Weights	F
Cuba Logbook series			47479.	.914	.000	.00	1, .128, .046
Faroe Saithe (ICES D,		1.	.000	.000	.00	0, .000	.000

P shrinkage mean , 16797., .54,,,, .403, .124

F shrinkage mean , 44165., .50,,,, .469, .049

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
30206.,	.34,	.47,	3,	1.373,	.071

Age 5 Catchability constant w.r.t. time and dependent on age

Year class = 1996

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F	
Cuba Logbook series	, 9350.,	.893,	.000,	.00,	1,	.134, .597
Faroe Saithe (ICES D,	32122.,	.596,	.000,	.00,	1,	.317, .213
F shrinkage mean , 50860., .50,,,.549, .140						

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
35037.,	.35,	.51,	3,	1.437,	.197

Age 6 Catchability constant w.r.t. time and dependent on age

Year class = 1995

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F	
Cuba Logbook series	, 1846.,	.975,	.000,	.00,	1,	.051, .721
Faroe Saithe (ICES D,	3963.,	.313,	.129,	.41,	2,	.597, .400
F shrinkage mean , 5785., .50,,,.352, .290						

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
4354.,	.26,	.19,	4,	.715,	.370

Age 7 Catchability constant w.r.t. time and dependent on age

Year class = 1994

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F	
Cuba Logbook series	, 5044.,	.897,	.000,	.00,	1,	.028, .507
Faroe Saithe (ICES D,	4633.,	.220,	.091,	.41,	3,	.710, .542
F shrinkage mean , 5743., .50,,,.262, .457						

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
4913.,	.21,	.08,	5,	.374,	.518

Age 8 Catchability constant w.r.t. time and dependent on age

Year class = 1993

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F		
Cuba Logbook series	, 1096.,	.921,	.000,	.00,	1,	.019,	.820
Faroe Saithe (ICES D,	1424.,	.208,	.100,	.48,	4,	.657,	.682
F shrinkage mean , 1717., .50,,,, .323, .594							

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
1505.,	.21,	.08,	6,	.383,	.655

Age 9 Catchability constant w.r.t. time and dependent on age

Year class = 1992

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F		
Cuba Logbook series	, 1210.,	.923,	.000,	.00,	1,	.015,	.692
Faroe Saithe (ICES D,	1131.,	.213,	.179,	.84,	5,	.585,	.726
F shrinkage mean , 1581., .50,,,, .400, .567							

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
1295.,	.24,	.14,	7,	.597,	.659

Age 10 Catchability constant w.r.t. time and age (fixed at the value for age) 9

Year class = 1991

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F		
Cuba Logbook series	, 781.,	.956,	.000,	.00,	1,	.008,	.292
Faroe Saithe (ICES D,	228.,	.222,	.091,	.41,	6,	.566,	.771
F shrinkage mean , 285., .50,,,, .426, .657							

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	, Ratio,		
254.,	.25,	.09,	8,	.355,	.716

Age 11 Catchability constant w.r.t. time and age (fixed at the value for age) 9

Year class = 1990

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
, Survivors,	s.e,	s.e,	Ratio,	, Weights,	F		

Cuba Logbook series , 191., .997, .000, .00, 1, .002, .355
 Faroe Saithe (ICES D, 65., .221, .080, .36, 7, .650, .812

F shrinkage mean , 83., .50,,, .349, .683

Weighted prediction :

Survivors, Int, Ext, N, Var, F
 at end of year, s.e, s.e, , Ratio,
 71., .23, .08, 9, .342, .764

Tabel Effort (hours) and catch in number at age for commercial Cuba Logbook trawlers.

Faroe	Saithe	(ICES	Div.	Vb)			
102							
Cuba	Logbook	series					
1985	2001						
1	1	0	1				
3	3						
3864	31						
4175	65						
7126	120						
7314	66						
7167	52						
8177	23						
8082	34						
8600	11						
8622	83						
9601	81						
11326	74						
11594	41						
15185	102						
12747	22						
14271	59						
12542	143						
13143	237						
Faroe	Saithe	(ICES	Div.	Vb)			
1985	2001						
1	1	0	1				
5	11						
3864	396	83	103	13	5	1	2
4175	342	245	68	72	18	6	3
7126	401	319	119	63	33	7	5
7314	876	308	125	52	35	8	1
7167	507	641	73	43	14	8	5
8177	741	717	394	36	10	4	4
8082	495	400	252	124	15	14	10
8600	277	234	117	68	59	11	6
8622	525	189	101	60	44	26	6
9601	372	349	112	78	51	47	22
11326	898	368	227	76	38	29	21
11594	217	224	274	210	101	26	14
15185	522	383	294	133	31	15	5
12747	349	606	257	128	72	14	5
14271	694	632	1026	249	109	36	6
12542	312	939	480	592	73	40	12
13143	1916	451	719	290	240	49	11

1 Run title : FAROE SAI THE (ICES Division Vb) SAI_IND

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At 30/04/2002 20:47

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Table 1		Catch numbers at age	Numbers*10***-3
YEAR,	1961,		
AGE			
	3,	183,	
	4,	379,	
	5,	483,	
	6,	403,	
	7,	216,	
	8,	129,	
	9,	116,	
	10,	82,	
	11,	45,	
	+gp,	82,	
0	TOTALNUM,	2118,	
	TONSLAND,	9592,	
	SOPCOF %,	108,	

Table 1		Catch numbers at age	Numbers*10***-3								
YEAR,	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,	
AGE											
	3,	562,	614,	684,	996,	488,	595,	614,	1191,	1445,	2857,
	4,	542,	340,	1908,	850,	1540,	796,	1689,	2086,	6577,	3316,
	5,	617,	340,	1506,	1708,	1201,	1364,	1116,	2294,	1558,	5585,
	6,	495,	415,	617,	965,	1686,	792,	1095,	1414,	1478,	1005,
	7,	286,	406,	572,	510,	806,	1192,	548,	1118,	899,	828,
	8,	131,	202,	424,	407,	377,	473,	655,	589,	730,	469,
	9,	129,	174,	179,	306,	294,	217,	254,	580,	316,	326,
	10,	113,	158,	150,	201,	205,	190,	128,	239,	241,	164,
	11,	71,	94,	100,	156,	156,	97,	89,	115,	86,	100,
	+gp,	105,	274,	174,	285,	225,	140,	187,	190,	132,	100,
0	TOTALNUM,	3051,	3017,	6314,	6384,	6978,	5856,	6375,	9816,	13462,	14750,
	TONSLAND,	10454,	12693,	21893,	22181,	25563,	21319,	20387,	27437,	29110,	32706,
	SOPCOF %,	93,	96,	99,	92,	98,	104,	102,	97,	96,	109,

Table 1		Catch numbers at age			Numbers*10***-3						
	YEAR,	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
AGE											
	3,	2714,	2515,	3504,	2062,	3178,	1609,	611,	287,	996,	411,
	4,	1774,	6253,	4126,	3361,	3217,	2937,	1743,	933,	877,	1804,
	5,	2588,	7075,	4011,	3801,	1720,	2034,	1736,	1341,	720,	769,
	6,	2742,	3478,	2784,	1939,	1250,	1288,	548,	1033,	673,	932,
	7,	1529,	1634,	1401,	1045,	877,	767,	373,	584,	726,	908,
	8,	1305,	693,	640,	714,	641,	708,	479,	414,	284,	734,
	9,	1017,	550,	368,	302,	468,	498,	466,	247,	212,	343,
	10,	743,	403,	340,	192,	223,	338,	473,	473,	171,	192,
	11,	330,	215,	197,	193,	141,	272,	407,	368,	196,	92,
	+gp,	210,	186,	265,	298,	287,	330,	535,	691,	786,	1021,
0	TOTALNUM,	14952,	23002,	17636,	13907,	12002,	10781,	7371,	6371,	5641,	7206,
	TONSLAND,	42663,	57431,	47188,	41576,	33065,	34835,	28138,	27246,	25230,	30103,
	SOPCOF %,	100,	120,	113,	116,	107,	104,	100,	102,	99,	96,

Table 1		Catch numbers at age	Numbers*10***-3								
YEAR,	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,	
AGE											
	3,	387,	2483,	368,	1224,	1167,	1581,	866,	451,	294,	1030,
	4,	4076,	1103,	11067,	3990,	1997,	5793,	2950,	5981,	3833,	5125,
	5,	994,	5052,	2359,	5583,	4473,	3827,	9555,	5300,	10120,	7452,
	6,	1114,	1343,	4093,	1182,	3730,	2785,	2784,	7136,	9219,	5544,
	7,	380,	575,	875,	1898,	953,	990,	1300,	793,	5070,	3487,
	8,	417,	339,	273,	273,	1077,	532,	621,	546,	477,	1630,
	9,	296,	273,	161,	103,	245,	333,	363,	185,	123,	405,
	10,	105,	98,	52,	38,	104,	81,	159,	83,	61,	238,
	11,	88,	98,	65,	26,	67,	43,	27,	55,	60,	128,
	+gp,	902,	540,	253,	275,	158,	97,	60,	39,	79,	118,
0	TOTALNUM,	8759,	11904,	19566,	14592,	13971,	16062,	18685,	20569,	29336,	25157,
	TONSLAND,	30964,	39176,	54665,	44605,	41716,	40020,	45285,	44477,	61628,	54858,
	SOPCOF %,	96,	100,	100,	94,	94,	96,	99,	97,	98,	99,

Table 1		Catch numbers at age	Numbers*10***-3								
YEAR,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,	
AGE											
	3,	521,	1316,	690,	398,	297,	344,	163,	321,	812,	1125,
	4,	4067,	2611,	3961,	1019,	1087,	832,	1689,	655,	2832,	2452,
	5,	3667,	4689,	2663,	3468,	1146,	2440,	1934,	3096,	1485,	8438,
	6,	2679,	1665,	2368,	1836,	1449,	1767,	3475,	2550,	4372,	2155,
	7,	1373,	858,	746,	1177,	1156,	1335,	1379,	4113,	2227,	3681,
	8,	894,	492,	500,	345,	521,	624,	683,	915,	2727,	1539,
	9,	613,	448,	307,	241,	132,	165,	368,	380,	348,	1334,
	10,	123,	245,	303,	192,	77,	71,	146,	186,	293,	90,
	11,	63,	54,	150,	104,	64,	29,	32,	23,	56,	90,
	+gp,	108,	52,	49,	117,	82,	100,	73,	69,	25,	56,
0	TOTALNUM,	14108,	12430,	11737,	8897,	6011,	7707,	9873,	12268,	15070,	21163,
	TONSLAND,	36487,	33543,	33182,	27209,	20029,	22306,	26421,	33207,	39045,	51795,
	SOPCOF %,	105,	102,	102,	102,	103,	100,	102,	102,	102,	100,

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Run title : FAROE SAI THE (ICES Division Vb)

SAI_IND

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Table 2		Catch weights at age (kg)									
YEAR,		1961,									
AGE											
	3,	1.4300,									
	4,	2.3020,									
	5,	3.3480,									
	6,	4.2870,									
	7,	5.1280,									
	8,	6.1550,									
	9,	7.0600,									
	10,	7.2650,									
	11,	7.4970,									
	+gp,	9.3399,									
0	SOPCOFAC,	1.0779,									

Table 2		Catch weights at age (kg)									
YEAR,		1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,
AGE											
	3,	1.2730,	1.2800,	1.1750,	1.1810,	1.3610,	1.2730,	1.3020,	1.1880,	1.2440,	1.1010,
	4,	2.0450,	2.1970,	2.0550,	2.1250,	2.0260,	1.7800,	1.7370,	1.6670,	1.4450,	1.3160,
	5,	3.2930,	3.2120,	3.2660,	2.9410,	3.0550,	2.5340,	2.0360,	2.3020,	2.2490,	1.8180,
	6,	4.1910,	4.5680,	4.2550,	4.0960,	3.6580,	3.5720,	3.1200,	2.8530,	2.8530,	2.9780,
	7,	5.1460,	5.0560,	5.0380,	4.8780,	4.5850,	4.3680,	4.0490,	3.6730,	3.5150,	3.7020,
	8,	5.6550,	5.9320,	5.6940,	5.9320,	5.5200,	5.3130,	5.1830,	5.0020,	4.4180,	4.2710,
	9,	6.4690,	6.2590,	6.6620,	6.3210,	6.8370,	5.8120,	6.2380,	5.7140,	5.4440,	5.3880,
	10,	6.7060,	8.0000,	6.8370,	7.2880,	7.2650,	6.5540,	7.5200,	6.4050,	5.7330,	5.9720,
	11,	7.1500,	7.2650,	7.6860,	8.0740,	7.6620,	7.8060,	8.0490,	6.5540,	6.6620,	6.4900,
	+gp,	9.0237,	8.8589,	8.5591,	8.9035,	9.2233,	8.1494,	9.0925,	8.0870,	8.5844,	8.0047,
0	SOPCOFAC,	.9342,	.9590,	.9933,	.9220,	.9769,	1.0357,	1.0194,	.9663,	.9634,	1.0935,

Table 2		Catch weights at age (kg)									
YEAR,		1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
AGE											
	3,	1.0430,	1.0880,	1.4300,	1.1140,	1.0880,	1.2230,	1.4930,	1.2200,	1.2300,	1.3100,
	4,	1.4850,	1.4610,	1.5250,	1.6580,	1.6760,	1.6410,	2.3240,	1.8800,	2.1200,	2.1300,
	5,	2.0550,	1.5820,	2.2070,	2.2600,	2.8780,	2.6600,	3.0680,	2.6200,	3.3200,	3.0000,
	6,	2.8290,	2.2490,	2.5000,	3.1200,	3.0810,	3.7900,	3.7460,	3.4000,	4.2800,	3.8100,
	7,	3.7910,	3.6870,	3.1200,	3.5570,	4.2870,	4.2390,	4.9130,	4.1800,	5.1600,	4.7500,
	8,	4.1750,	4.3850,	4.6010,	4.0960,	4.3520,	5.5970,	4.3680,	4.9500,	6.4200,	5.2500,
	9,	4.8080,	5.1280,	5.5590,	5.1280,	4.7900,	5.3500,	5.2760,	5.6900,	6.8700,	5.9500,
	10,	5.2940,	5.2760,	5.7140,	6.0940,	5.9120,	5.9120,	5.8320,	6.3800,	7.0900,	6.4300,
	11,	6.9480,	6.7270,	6.2590,	7.1960,	6.6190,	6.8370,	6.0530,	7.0200,	7.9300,	7.0000,
	+gp,	7.5146,	8.0307,	8.0104,	8.5982,	7.8941,	7.7085,	7.5756,	8.6262,	9.2153,	8.9618,
0	SOPCOFAC,	1.0043,	1.2006,	1.1296,	1.1607,	1.0680,	1.0442,	1.0049,	1.0248,	.9937,	.9564,

Table 2		Catch weights at age (kg)									
YEAR,		1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,
AGE											
	3,	1.3370,	1.2080,	1.4310,	1.4010,	1.7180,	1.6090,	1.5000,	1.3090,	1.2230,	1.2400,
	4,	1.8510,	2.0290,	1.9530,	2.0320,	1.9860,	1.8350,	1.9750,	1.7350,	1.6330,	1.5680,
	5,	2.9510,	2.9650,	2.4700,	2.9650,	2.6180,	2.3950,	1.9780,	1.9070,	1.8300,	1.8640,
	6,	3.5770,	4.1430,	3.8500,	3.5960,	3.2770,	3.1820,	2.9370,	2.3730,	2.0520,	2.2110,
	7,	4.9270,	4.7240,	5.1770,	5.3360,	4.1860,	4.0670,	3.7980,	3.8100,	2.8660,	2.6480,
	8,	6.2430,	5.9010,	6.3470,	7.2020,	5.5890,	5.1490,	4.4190,	4.6670,	4.4740,	3.3800,
	9,	7.2320,	6.8110,	7.8250,	6.9660,	6.0500,	5.5010,	5.1150,	5.5090,	5.4240,	4.8160,
	10,	7.2390,	7.0510,	6.7460,	9.8620,	6.1500,	6.6260,	6.7120,	5.9720,	6.4690,	5.5160,
	11,	8.3460,	7.2480,	8.6360,	10.6700,	9.5360,	6.3430,	9.0400,	6.9390,	6.3430,	6.4070,
	+gp,	10.0411,	10.0547,	10.0976,	11.9501,	10.2181,	10.2439,	9.3369,	9.9364,	8.2869,	7.7285,
0	SOPCOFAC,	.9632,	.9997,	.9991,	.9415,	.9419,	.9620,	.9928,	.9698,	.9811,	.9938,

Table 2		Catch weights at age (kg)									
YEAR,		1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,
AGE											
	3,	1.2640,	1.4080,	1.5030,	1.4560,	1.4320,	1.4760,	1.3880,	1.3740,	1.4770,	1.3300,
	4,	1.6020,	1.8600,	1.9510,	2.1770,	1.8750,	1.7830,	1.7110,	1.7120,	1.6060,	1.5900,
	5,	2.0690,	2.3230,	2.2670,	2.4200,	2.4960,	2.0320,	1.9540,	1.9050,	2.0770,	1.7850,
	6,	2.5540,	3.1310,	2.9360,	2.8950,	3.2290,	2.7780,	2.4050,	2.3960,	2.3600,	2.5860,
	7,	3.0570,	3.7300,	4.2140,	3.6510,	3.7440,	3.5980,	3.3000,	2.8450,	2.9770,	3.0590,
	8,	4.0780,	4.3940,	4.9710,	5.0640,	4.9640,	4.7660,	4.2200,	4.1240,	3.4800,	3.8710,
	9,	5.0120,	5.2090,	5.6570,	5.4400,	6.3750,	5.9820,	4.9990,	5.2560,	4.8510,	4.3740,
	10,	6.7680,	6.5400,	5.9500,	6.1670,	6.7450,	7.6580,	6.3910,	5.5260,	5.2680,	5.5650,
	11,	7.7540,	8.4030,	6.8910,	7.0800,	7.4660,	7.8820,	6.6650,	6.9560,	6.5230,	6.7030,
	+gp,	8.2297,	8.0501,	9.1086,	7.5392,	7.9806,	9.2453,	8.4847,	8.5237,	5.9024,	6.9076,
0	SOPCOFAC,	1.0506,	1.0169,	1.0240,	1.0205,	1.0319,	.9994,	1.0221,	1.0187,	1.0155,	1.0018,

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Run title : FAROE SAITHE (ICES Division Vb)

SAI_IND

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Table 5		Proportion mature at age									
YEAR,		1961,									
AGE	3,	.0400,									
	4,	.2600,									
	5,	.5700,									
	6,	.8200,									
	7,	.9100,									
	8,	.9800,									
	9,	1.0000,									
	10,	1.0000,									
	11,	1.0000,									
	+gp,	1.0000,									
Table 5		Proportion mature at age									
YEAR,		1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,
AGE	3,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,
	4,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,
	5,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,
	6,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,
	7,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,
	8,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,
	9,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	10,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	11,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	+gp,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
Table 5		Proportion mature at age									
YEAR,		1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
AGE	3,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,	.0400,
	4,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,	.2600,
	5,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,	.5700,
	6,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,	.8200,
	7,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,	.9100,
	8,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,	.9800,
	9,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	10,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	11,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	+gp,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
Table 5		Proportion mature at age									
YEAR,		1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,
AGE	3,	.0400,	.0800,	.0900,	.0900,	.1200,	.1100,	.1000,	.0900,	.0800,	.0800,
	4,	.2600,	.2900,	.2800,	.2900,	.2800,	.2600,	.2800,	.2400,	.2300,	.2200,
	5,	.5700,	.6600,	.5600,	.6600,	.5900,	.5500,	.4600,	.4500,	.4300,	.4400,
	6,	.8200,	.9000,	.8800,	.8600,	.8200,	.8100,	.7800,	.6900,	.6300,	.6600,
	7,	.9100,	.9500,	.9700,	.9700,	.9300,	.9200,	.9000,	.9000,	.8100,	.7800,
	8,	.9800,	.9900,	.9900,	1.0000,	.9900,	.9800,	.9700,	.9700,	.9700,	.9300,
	9,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	.9900,	.9900,	.9900,	.9900,	.9900,
	10,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	11,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	+gp,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
Table 5		Proportion mature at age									
YEAR,		1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,
AGE	3,	.0800,	.0900,	.1000,	.1000,	.0900,	.1000,	.0900,	.0900,	.0900,	.1000,
	4,	.2200,	.2600,	.2800,	.3100,	.2600,	.2500,	.2600,	.2800,	.2400,	.2200,
	5,	.4800,	.5300,	.5200,	.5500,	.5700,	.4700,	.5600,	.5600,	.4500,	.4800,
	6,	.7200,	.8000,	.7800,	.7700,	.8200,	.7500,	.7800,	.8100,	.6900,	.6900,
	7,	.8300,	.9000,	.9300,	.8900,	.9000,	.8900,	.9000,	.9100,	.8100,	.8200,
	8,	.9600,	.9700,	.9800,	.9800,	.9800,	.9800,	.9700,	.9800,	.9600,	.9300,
	9,	.9900,	.9900,	.9900,	.9900,	1.0000,	1.0000,	.9900,	1.0000,	.9900,	.9900,
	10,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	11,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,
	+gp,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,	1.0000,

Run title : FAROE SAI THE (ICES Division Vb)

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Terminal Fs derived using XSA (With F shrinkage)

Table 8 Fishing mortality (F) at age		
YEAR,	1961,	
AGE		
3,	.0226,	
4,	.0556,	
5,	.0994,	
6,	.1219,	
7,	.0933,	
8,	.0852,	
9,	.0972,	
10,	.0916,	
11,	.0916,	
+gp,	.0916,	
0 FBAR 4- 8,	.0911,	

Table 8 Fishing mortality (F) at age										
YEAR,	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,
AGE										
3,	.0465,	.0307,	.0478,	.0495,	.0250,	.0248,	.0321,	.0328,	.0479,	.0885,
4,	.0864,	.0358,	.1260,	.0773,	.1007,	.0518,	.0910,	.1453,	.2548,	.1481,
5,	.1208,	.0716,	.2198,	.1588,	.1492,	.1217,	.0955,	.1720,	.1539,	.3582,
6,	.1402,	.1115,	.1798,	.2137,	.2326,	.1388,	.1358,	.1684,	.1598,	.1405,
7,	.1192,	.1634,	.2213,	.2217,	.2785,	.2564,	.1345,	.2001,	.1537,	.1262,
8,	.0752,	.1157,	.2567,	.2424,	.2537,	.2616,	.2184,	.2095,	.1944,	.1119,
9,	.1150,	.1355,	.1424,	.2983,	.2771,	.2269,	.2183,	.3065,	.1657,	.1245,
10,	.1295,	.2012,	.1658,	.2356,	.3347,	.2904,	.2027,	.3290,	.2009,	.1213,
11,	.1069,	.1514,	.1891,	.2601,	.2901,	.2610,	.2141,	.2832,	.1878,	.1196,
+gp,	.1069,	.1514,	.1891,	.2601,	.2901,	.2610,	.2141,	.2832,	.1878,	.1196,
0 FBAR 4- 8,	.1083,	.0996,	.2007,	.1828,	.2029,	.1661,	.1350,	.1791,	.1833,	.1770,

Table 8 Fishing mortality (F) at age										
YEAR,	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
AGE										
3,	.0935,	.1272,	.2295,	.1508,	.2058,	.1482,	.0841,	.0376,	.0932,	.0138,
4,	.0728,	.3229,	.3171,	.3599,	.3712,	.2983,	.2375,	.1787,	.1543,	.2434,
5,	.1650,	.4586,	.3546,	.5445,	.3158,	.4264,	.2889,	.2903,	.2038,	.1969,
6,	.2988,	.3489,	.3280,	.2895,	.3435,	.4150,	.1923,	.2790,	.2312,	.4423,
7,	.3289,	.2923,	.2300,	.1960,	.2051,	.3670,	.2008,	.3230,	.3234,	.5599,
8,	.2998,	.2428,	.1772,	.1755,	.1770,	.2543,	.4129,	.3588,	.2568,	.6376,
9,	.3762,	.1984,	.1963,	.1185,	.1667,	.2030,	.2649,	.3885,	.3147,	.5654,
10,	.4604,	.2498,	.1811,	.1487,	.1204,	.1744,	.3026,	.4717,	.5133,	.5260,
11,	.3813,	.2315,	.1857,	.1481,	.1553,	.2115,	.3288,	.4092,	.3639,	.5812,
+gp,	.3813,	.2315,	.1857,	.1481,	.1553,	.2115,	.3288,	.4092,	.3639,	.5812,
0 FBAR 4- 8,	.2331,	.3331,	.2814,	.3131,	.2825,	.3522,	.2665,	.2860,	.2339,	.4160,

Table 8 Fishing mortality (F) at age										
YEAR,	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,
AGE										
3,	.0296,	.0696,	.0159,	.0633,	.0211,	.0366,	.0217,	.0176,	.0158,	.0469,
4,	.1846,	.1107,	.4983,	.2380,	.1395,	.1385,	.0889,	.2048,	.2040,	.4148,
5,	.2052,	.3665,	.3648,	.5075,	.4586,	.4314,	.3558,	.2280,	.6342,	.7706,
6,	.4862,	.4713,	.5763,	.3139,	.7754,	.5844,	.6526,	.4939,	.7857,	.8978,
7,	.3244,	.5021,	.6521,	.5825,	.4512,	.4777,	.6026,	.3861,	.8080,	.8020,
8,	.5464,	.5406,	.4751,	.4315,	.7938,	.4923,	.6333,	.5519,	.4249,	.6700,
9,	.5786,	.8707,	.5377,	.3288,	.8950,	.6118,	.7551,	.3880,	.2265,	.7964,
10,	.3344,	.3810,	.3901,	.2298,	.6542,	.8781,	.6774,	.3783,	.2118,	.9180,
11,	.4902,	.6026,	.4712,	.3445,	.8126,	.6282,	.8500,	.5264,	.5209,	.9280,
+gp,	.4902,	.6026,	.4712,	.3445,	.8126,	.6282,	.8500,	.5264,	.5209,	.9280,
0 FBAR 4- 8,	.3493,	.3982,	.5133,	.4147,	.5237,	.4249,	.4666,	.3729,	.5714,	.7110,

Table 8 Fishing mortality (F) at age											FBAR
YEAR,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,	
99-***											
AGE											
3,	.0297,	.0627,	.0444,	.0107,	.0133,	.0098,	.0103,	.0043,	.0184,	.0194,	.0140,
4,	.2631,	.2037,	.2718,	.0854,	.0365,	.0468,	.0609,	.0523,	.0480,	.0709,	.0570,
5,	.5965,	.5513,	.3306,	.4064,	.1306,	.1075,	.1463,	.1515,	.1609,	.1971,	.1698,
6,	.7129,	.6022,	.6045,	.4004,	.2956,	.3048,	.2199,	.2928,	.3314,	.3701,	.3314,
7,	.5796,	.5222,	.6017,	.7013,	.4759,	.4893,	.4150,	.4393,	.4507,	.5175,	.4692,
8,	.4864,	.4212,	.6695,	.6277,	.7975,	.5139,	.5016,	.5393,	.5920,	.6550,	.5954,
9,	.5768,	.4836,	.5094,	.8238,	.5244,	.6385,	.6614,	.5846,	.4035,	.6587,	.5490,
10,	.6008,	.4795,	.7210,	.7082,	.6916,	.6032,	.7121,	.6057,	.6441,	.7158,	.6552,
11,	.6662,	.5827,	.6163,	.5850,	.5438,	.6135,	.6085,	.4760,	.4943,	.7644,	.5783,
+gp,	.6662,	.5827,	.6163,	.5850,	.5438,	.6135,	.6085,	.4760,	.4943,	.7644,	
0 FBAR 4- 8,	.5277,	.4601,	.4956,	.4442,	.3472,	.2925,	.2687,	.2950,	.3166,	.3621,	

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Run title : FAROE SAI THE (ICES Division Vb)

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Terminal Fs derived using XSA (With F shrinkage)

Table 10		Stock number at age (start of year)				Numbers*10**-3									
AGE	YEAR,	1961,													
	3,	9046,													
	4,	7738,													
	5,	5643,													
	6,	3880,													
	7,	2680,													
	8,	1746,													
	9,	1384,													
	10,	1036,													
	11,	568,													
	+gp,	1032,													
0	TOTAL,	34754,													
Table 10		Stock number at age (start of year)				Numbers*10**-3									
AGE	YEAR,	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,				
	3,	13662,	22428,	16188,	22798,	21823,	26868,	21506,	40783,	34118,	37265,				
	4,	7241,	10677,	17807,	12635,	17764,	17425,	21459,	17052,	32312,	26626,				
	5,	5993,	5438,	8434,	12853,	9575,	13151,	13546,	16041,	12073,	20504,				
	6,	4183,	4348,	4144,	5543,	8977,	6753,	9533,	10081,	11058,	8475,				
	7,	2812,	2977,	3185,	2835,	3665,	5824,	4812,	6814,	6974,	7716,				
	8,	1998,	2044,	2070,	2090,	1860,	2271,	3690,	3444,	4567,	4897,				
	9,	1313,	1518,	1491,	1311,	1343,	1181,	1431,	2429,	2287,	3079,				
	10,	1028,	958,	1085,	1058,	797,	833,	771,	942,	1463,	1586,				
	11,	774,	740,	641,	753,	685,	467,	510,	515,	555,	980,				
	+gp,	1141,	2147,	1111,	1367,	981,	670,	1067,	846,	848,	977,				
0	TOTAL,	40145,	53274,	56156,	63241,	67469,	75443,	78325,	98946,	106256,	112104,				
Table 10		Stock number at age (start of year)				Numbers*10**-3									
AGE	YEAR,	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,				
	3,	33589,	23274,	18882,	16282,	18882,	12906,	8372,	8595,	12372,	33102,				
	4,	27925,	25044,	16779,	12288,	11465,	12584,	9111,	6302,	6778,	9228,				
	5,	18799,	21258,	14847,	10004,	7020,	6476,	7645,	5882,	4315,	4755,				
	6,	11734,	13050,	11003,	8526,	4752,	4191,	3462,	4689,	3603,	2881,				
	7,	6029,	7126,	7537,	6489,	5226,	2759,	2266,	2338,	2904,	2341,				
	8,	5568,	3553,	4356,	4903,	4367,	3485,	1565,	1518,	1386,	1721,				
	9,	3585,	3378,	2282,	2987,	3368,	2996,	2213,	848,	868,	878,				
	10,	2226,	2015,	2268,	1535,	2172,	2334,	2002,	1390,	471,	519,				
	11,	1150,	1150,	1285,	1549,	1083,	1577,	1605,	1211,	710,	231,				
	+gp,	726,	989,	1720,	2382,	2196,	1903,	2095,	2255,	2826,	2531,				
0	TOTAL,	111331,	100836,	80957,	66947,	60531,	51211,	40336,	35028,	36231,	58186,				
Table 10		Stock number at age (start of year)				Numbers*10**-3									
AGE	YEAR,	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,				
	3,	14641,	40811,	25841,	22054,	61732,	48582,	44557,	28542,	20700,	24871,				
	4,	26730,	11637,	31166,	20823,	16949,	49486,	38345,	35697,	22960,	16682,				
	5,	5923,	18196,	8530,	15503,	13438,	12070,	35274,	28725,	23814,	15330,				
	6,	3198,	3950,	10327,	4849,	7641,	6955,	6419,	20234,	18722,	10340,				
	7,	1516,	1610,	2019,	4751,	2900,	2881,	3174,	2736,	10109,	6987,				
	8,	1095,	897,	798,	861,	2173,	1512,	1463,	1423,	1523,	3689,				
	9,	745,	519,	428,	406,	458,	804,	757,	636,	671,	815,				
	10,	408,	342,	178,	205,	239,	153,	357,	291,	353,	438,				
	11,	251,	239,	191,	99,	133,	102,	52,	149,	163,	234,				
	+gp,	2548,	1303,	737,	1035,	309,	227,	114,	104,	213,	212,				
0	TOTAL,	57053,	79504,	80213,	70586,	105973,	122772,	130513,	118536,	99228,	79598,				
Table 10		Stock number at age (start of year)				Numbers*10**-3									
AGE	YEAR,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,	2002,	GMST 61-99	AMST 61-	
	3,	19697,	23922,	17572,	41382,	24873,	38978,	17542,	81931,	49270,	64690,	0,	23632,	26948,	
	4,	19430,	15655,	18395,	13762,	33520,	20096,	31601,	14215,	66789,	39604,	51946,	17323,	19574,	
	5,	9020,	12228,	10455,	11476,	10346,	26461,	15700,	24345,	11046,	52119,	30206,	11659,	13361,	
	6,	5808,	4067,	5769,	6150,	6258,	7433,	19456,	11104,	17130,	7700,	35037,	6806,	7783,	
	7,	3450,	2331,	1823,	2581,	3374,	3813,	4487,	12785,	6784,	10069,	4354,	3763,	4324,	
	8,	2565,	1582,	1132,	818,	1048,	1716,	1914,	2426,	6746,	3539,	4913,	2036,	2352,	
	9,	1546,	1291,	850,	475,	357,	386,	841,	949,	1158,	3056,	1505,	1136,	1413,	
	10,	301,	711,	652,	418,	170,	173,	167,	355,	433,	633,	1295,	636,	882,	
	11,	143,	135,	360,	260,	169,	70,	78,	67,	159,	186,	254,	360,	555,	
	+gp,	242,	129,	116,	289,	214,	238,	175,	199,	70,	114,	114,			
0	TOTAL,	62202,	62051,	57125,	77610,	80329,	99364,	91961,	148376,	159584,	181710,	129624,			
99															
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Run title : FAROE SAITHE (ICES Division Vb)

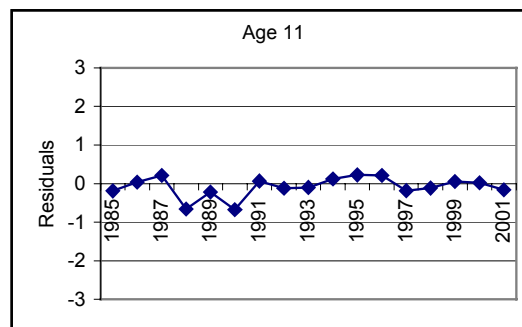
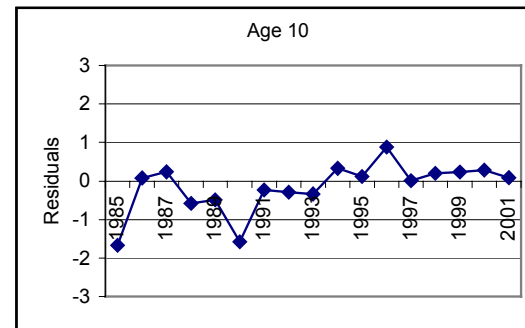
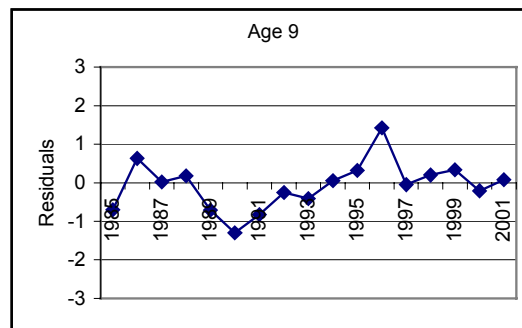
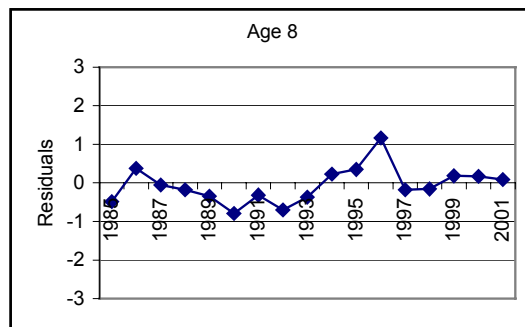
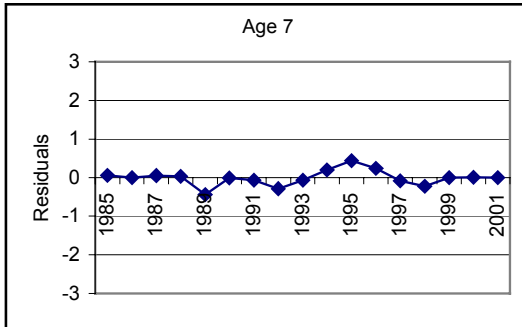
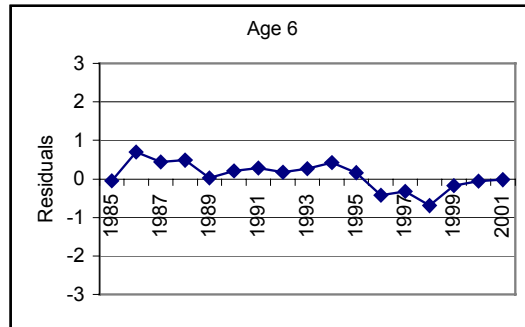
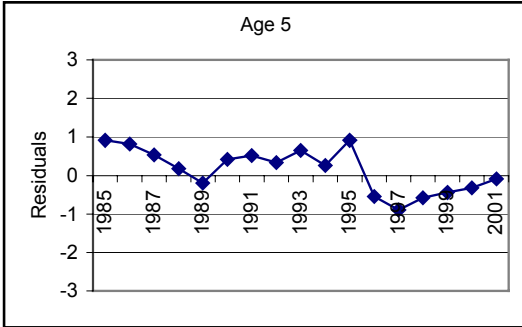
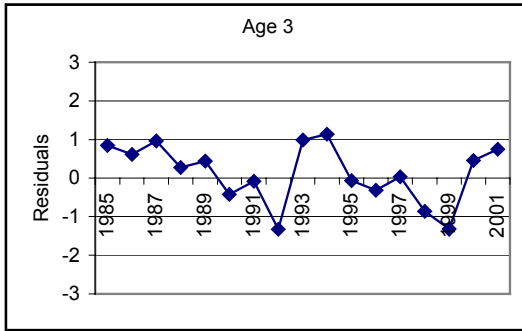
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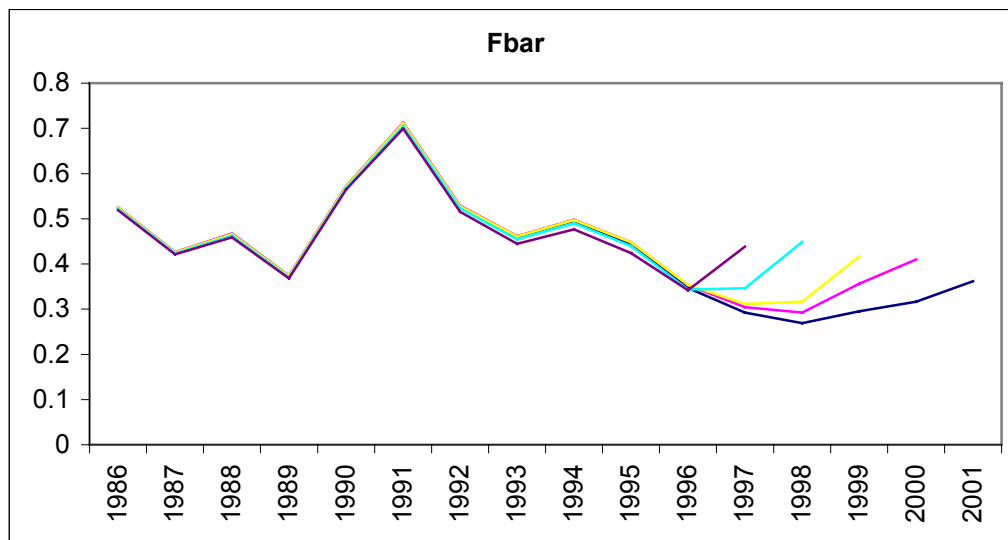
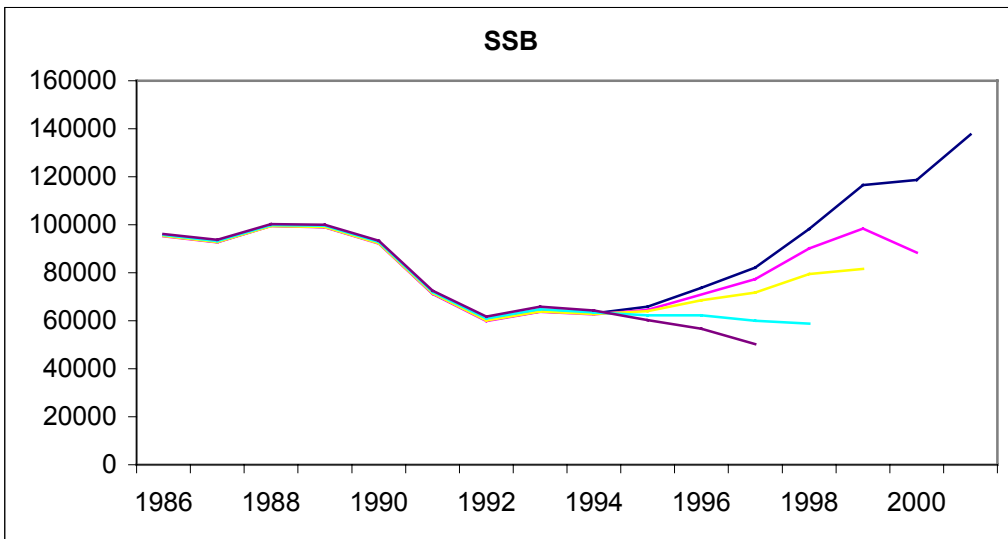
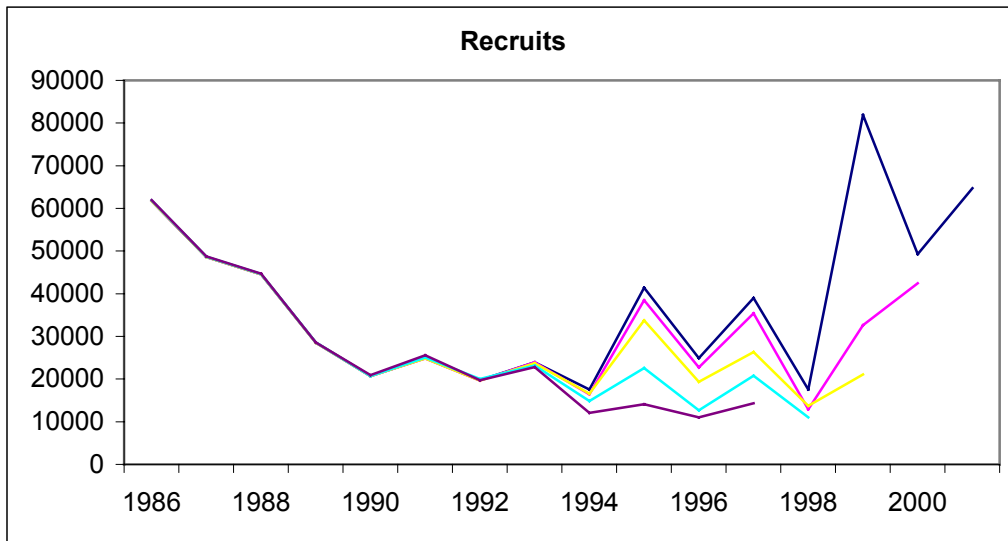
Table 16 Summary (without SOP correction)

Terminal Fs derived using XSA (With F shrinkage)

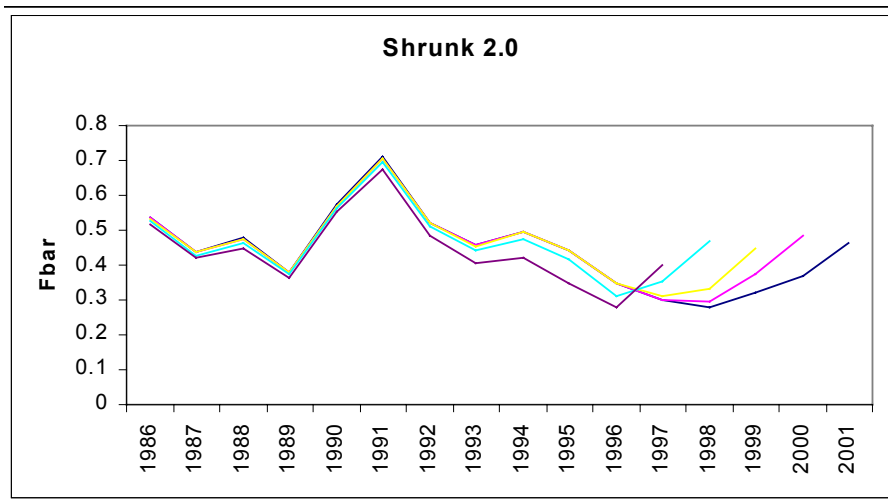
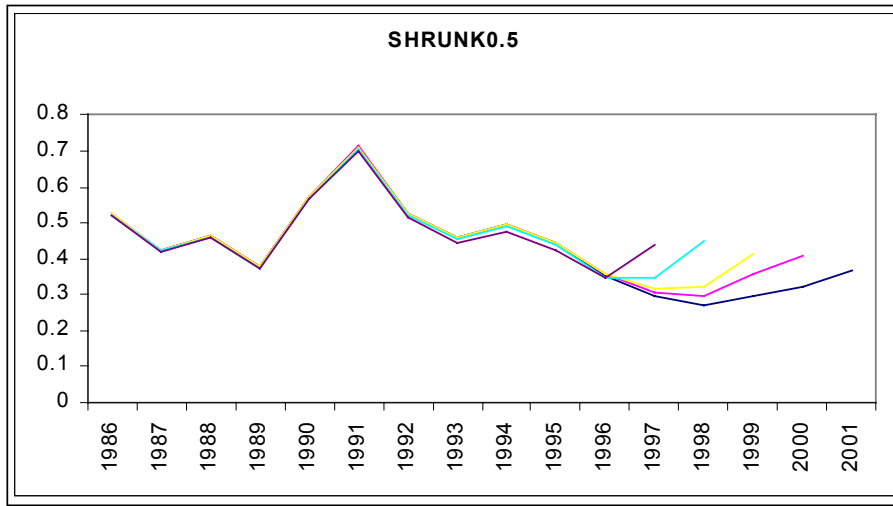
	RECRUITS,	TOTALBIO,	TOTSPBIO,	LANDINGS,	YIELD/SSB,	FBAR	4- 8,
	Age 3						
1961,	9046,	121962,	83791,	9592,	.1145,		.0911,
1962,	13662,	126451,	85628,	10454,	.1221,		.1083,
1963,	22428,	158223,	100622,	12693,	.1261,		.0996,
1964,	16188,	160410,	98372,	21893,	.2226,		.2007,
1965,	22798,	174748,	107200,	22181,	.2069,		.1828,
1966,	21823,	184111,	108759,	25563,	.2350,		.2029,
1967,	26868,	181598,	104609,	21319,	.2038,		.1661,
1968,	21506,	189738,	115925,	20387,	.1759,		.1350,
1969,	40783,	214946,	123747,	27437,	.2217,		.1791,
1970,	34118,	224342,	129081,	29110,	.2255,		.1833,
1971,	37265,	228301,	139423,	32706,	.2346,		.1770,
1972,	33589,	236900,	147472,	42663,	.2893,		.2331,
1973,	23274,	210374,	136569,	57431,	.4205,		.3331,
1974,	18882,	203881,	137467,	47188,	.3433,		.2814,
1975,	16282,	187192,	137713,	41576,	.3019,		.3131,
1976,	18882,	169491,	121831,	33065,	.2714,		.2825,
1977,	12906,	156024,	113881,	34835,	.3059,		.3522,
1978,	8372,	137004,	95777,	28138,	.2938,		.2665,
1979,	8595,	112621,	83261,	27246,	.3272,		.2860,
1980,	12372,	124185,	88482,	25230,	.2851,		.2339,
1981,	33102,	141271,	75806,	30103,	.3971,		.4160,
1982,	14641,	148286,	82498,	30964,	.3753,		.3493,
1983,	40811,	176909,	94377,	39176,	.4151,		.3982,
1984,	25841,	187827,	95948,	54665,	.5697,		.5133,
1985,	22054,	186437,	109447,	44605,	.4075,		.4147,
1986,	61732,	232893,	95425,	41716,	.4372,		.5237,
1987,	48582,	247929,	92811,	40020,	.4312,		.4249,
1988,	44557,	257517,	99575,	45285,	.4548,		.4666,
1989,	28542,	226463,	99105,	44477,	.4488,		.3729,
1990,	20700,	189317,	92356,	61628,	.6673,		.5714,
1991,	24871,	148884,	71352,	54858,	.7688,		.7110,
1992,	19697,	123416,	60085,	36487,	.6073,		.5277,
1993,	23922,	133134,	63892,	33543,	.5250,		.4601,
1994,	17572,	128479,	63068,	33182,	.5261,		.4956,
1995,	41382,	158526,	65889,	27209,	.4130,		.4442,
1996,	24873,	168725,	73695,	20029,	.2718,		.3472,
1997,	38978,	196068,	82085,	22306,	.2717,		.2925,
1998,	17542,	186042,	98316,	26421,	.2687,		.2687,
1999,	81931,	265385,	116487,	33207,	.2851,		.2950,
2000,	49270,	296424,	118699,	39045,	.3289,		.3166,
2001,	64690,	325381,	137644,	51795,	.3763,		.3621,
Arith.							
Mean	28413,	186044,	101175,	33693,	.3457,		.3239,
0 Units,	(Thousands),	(Tonnes),	(Tonnes),	(Tonnes),			
1							



RETROSPECTIVE ANALYSIS (SHRUNK 0.5)



SHRUNK 2.0 AND 0.5



Cubalogbook with age 3-11 (same tuning as in 1999)

Lowestoft VPA Version 3.1

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Extended Survivors Analysis

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CPUE data from file D:\Stovnsmeting\Ices2002\Koyringar\Xsainn\cubalog3_11.DAT

Catch data for 41 years. 1961 to 2001. Ages 3 to 12.

Fleet,	First,	Last,	First,	Last,	Alpha,	Beta
	year,	year,	age,	age		
Cuba Logbook series ,	1985,	2001,	3,	11,	.000,	1.000

Time series weights :

Tapered time weighting applied
Power = 3 over 20 years

Catchability analysis :

Catchability dependent on stock size for ages < 5

Regression type = C
Minimum of 5 points used for regression
Survivor estimates shrunk to the population mean for ages < 5

Catchability independent of age for ages >= 9

Terminal population estimation :

Survivor estimates shrunk towards the mean F
of the final 5 years or the 3 oldest ages.

S.E. of the mean to which the estimates are shrunk = .500

Minimum standard error for population
estimates derived from each fleet = .300

Prior weighting not applied

Tuning converged after 15 iterations

Regression weights

, .751, .820, .877, .921, .954, .976, .990, .997, 1.000, 1.000

Fishing mortalities

Age,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001
3,	.030,	.063,	.044,	.011,	.013,	.010,	.010,	.004,	.018,	.019
4,	.263,	.204,	.272,	.085,	.037,	.047,	.061,	.053,	.048,	.070
5,	.597,	.551,	.331,	.406,	.131,	.108,	.147,	.152,	.163,	.197
6,	.713,	.602,	.605,	.400,	.296,	.305,	.220,	.293,	.332,	.376
7,	.580,	.522,	.602,	.701,	.476,	.489,	.415,	.440,	.452,	.519

8,	.486,	.421,	.670,	.628,	.798,	.514,	.502,	.539,	.594,	.659
9,	.577,	.484,	.510,	.824,	.525,	.639,	.662,	.585,	.404,	.664
10,	.601,	.480,	.721,	.708,	.692,	.603,	.712,	.606,	.645,	.716
11,	.666,	.583,	.617,	.585,	.544,	.614,	.609,	.476,	.495,	.766

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XSA population numbers (Thousands)

	AGE									
YEAR ,	3,	4,	5,	6,	7,	8,	9,	10,	11,	
1992 ,	1.97E+04,	1.94E+04,	9.02E+03,	5.81E+03,	3.45E+03,	2.56E+03,	1.55E+03,	3.01E+02,	1.43E+02,	
1993 ,	2.39E+04,	1.57E+04,	1.22E+04,	4.07E+03,	2.33E+03,	1.58E+03,	1.29E+03,	7.11E+02,	1.35E+02,	
1994 ,	1.76E+04,	1.84E+04,	1.05E+04,	5.77E+03,	1.82E+03,	1.13E+03,	8.50E+02,	6.52E+02,	3.60E+02,	
1995 ,	4.13E+04,	1.38E+04,	1.15E+04,	6.15E+03,	2.58E+03,	8.18E+02,	4.75E+02,	4.18E+02,	2.59E+02,	
1996 ,	2.48E+04,	3.35E+04,	1.03E+04,	6.26E+03,	3.37E+03,	1.05E+03,	3.57E+02,	1.70E+02,	1.69E+02,	
1997 ,	3.89E+04,	2.01E+04,	2.64E+04,	7.43E+03,	3.81E+03,	1.72E+03,	3.86E+02,	1.73E+02,	6.99E+01,	
1998 ,	1.74E+04,	3.16E+04,	1.57E+04,	1.94E+04,	4.49E+03,	1.91E+03,	8.40E+02,	1.67E+02,	7.75E+01,	
1999 ,	8.21E+04,	1.41E+04,	2.43E+04,	1.11E+04,	1.28E+04,	2.43E+03,	9.48E+02,	3.55E+02,	6.71E+01,	
2000 ,	4.98E+04,	6.69E+04,	1.09E+04,	1.71E+04,	6.77E+03,	6.73E+03,	1.16E+03,	4.33E+02,	1.59E+02,	
2001 ,	6.49E+04,	4.01E+04,	5.22E+04,	7.60E+03,	1.00E+04,	3.52E+03,	3.04E+03,	6.33E+02,	1.86E+02,	

Estimated population abundance at 1st Jan 2002

,	0.00E+00,	5.22E+04,	3.06E+04,	3.51E+04,	4.28E+03,	4.89E+03,	1.49E+03,	1.28E+03,	2.53E+02,
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Taper weighted geometric mean of the VPA populations:

,	3.30E+04,	2.48E+04,	1.68E+04,	8.84E+03,	4.46E+03,	1.93E+03,	8.30E+02,	3.37E+02,	1.39E+02,
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Standard error of the weighted Log(VPA populations) :

,	.5219,	.4998,	.5407,	.5175,	.6186,	.5939,	.6027,	.5229,	.5410,
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Log catchability residuals.

Fleet : Cuba Logbook series

Age ,	1985,	1986,	1987,	1988,	1989,	1990,	1991
3 ,	.85,	.62,	.96,	.27,	.44,	-.42,	-.08
4 ,	2.27,	.82,	2.72,	.80,	3.98,	.66,	1.92
5 ,	.91,	.81,	.53,	.18,	-.20,	.42,	.52
6 ,	-.05,	.70,	.44,	.49,	.02,	.21,	.28
7 ,	.06,	.00,	.05,	.03,	-.44,	-.01,	-.07
8 ,	-.48,	.38,	-.05,	-.18,	-.35,	-.79,	-.32
9 ,	-.70,	.63,	.02,	.18,	-.71,	-1.30,	-.83
10 ,	-1.67,	.08,	.24,	-.58,	-.49,	-1.58,	-.23
11 ,	-.19,	.04,	.21,	-.66,	-.22,	-.67,	.07

Age ,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001
3 ,	-1.33,	.99,	1.13,	-.07,	-.32,	.03,	-.85,	-1.32,	.44,	.75
4 ,	1.00,	1.88,	3.72,	.27,	-6.40,	-2.52,	-.90,	-3.11,	.52,	1.15
5 ,	.34,	.65,	.26,	.91,	-.55,	-.90,	-.58,	-.44,	-.31,	-.09
6 ,	.18,	.27,	.43,	.16,	-.42,	-.32,	-.69,	-.17,	-.06,	-.01
7 ,	-.29,	-.08,	.20,	.44,	.24,	-.08,	-.23,	.00,	.01,	.00
8 ,	-.70,	-.37,	.23,	.34,	1.16,	-.18,	-.16,	.17,	.17,	.09
9 ,	-.25,	-.41,	.06,	.32,	1.43,	-.05,	.20,	.34,	-.21,	.09
10 ,	-.29,	-.34,	.33,	.12,	.88,	.01,	.20,	.23,	.28,	.09
11 ,	-.12,	-.10,	.12,	.23,	.21,	-.18,	-.11,	.05,	.02,	-.16

Mean log catchability and standard error of ages with catchability independent of year class strength and constant w.r.t. time

Age ,	5,	6,	7,	8,	9,	10,	11
Mean Log q,	-12.5069,	-12.0269,	-11.7860,	-11.6698,	-11.7068,	-11.7068,	-11.7068,
S.E(Log q),	.5712,	.3521,	.2115,	.4862,	.6225,	.5447,	.2462,

Regression statistics :

Ages with q dependent on year class strength

Age, Slope , t-value , Intercept, RSquare, No Pts, Reg s.e, Mean Log q

3,	1.24,	-.488,	16.67,	.29,	17,	.85,	-15.46,
4,	3.67,	-1.507,	22.87,	.03,	17,	2.94,	-13.59,

Ages with q independent of year class strength and constant w.r.t. time.

Age, Slope , t-value , Intercept, RSquare, No Pts, Reg s.e, Mean Q

5,	1.47,	-1.004,	13.81,	.31,	17,	.84,	-12.51,
6,	1.40,	-1.451,	13.19,	.57,	17,	.47,	-12.03,
7,	1.06,	-.570,	12.01,	.89,	17,	.23,	-11.79,
8,	1.23,	-.733,	12.60,	.51,	17,	.61,	-11.67,
9,	1.43,	-.965,	13.86,	.33,	17,	.89,	-11.71,
10,	1.23,	-.583,	13.09,	.39,	17,	.69,	-11.71,
11,	.85,	1.379,	10.74,	.89,	17,	.20,	-11.77,

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Terminal year survivor and F summaries :

Age 3 Catchability dependent on age and year class strength

Year class = 1998

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	, Weights,	F
Cuba Logbook series ,	109885.,	.961,	.000,	.00,	1, .117,	.009
P shrinkage mean ,	24783.,	.50,,,,			.442,	.040
F shrinkage mean ,	90133.,	.50,,,,			.441,	.011

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
52157.,	.33,	.71,	3,	2.128,	.019

□

Age 4 Catchability dependent on age and year class strength

□

□

Year class = 1997

□

□

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	, Weights,	F
Cuba Logbook series ,	50345.,	.876,	.192,	.22,	2, .139,	.043
P shrinkage mean ,	16779.,	.54,,,,			.397,	.124
F shrinkage mean ,	44042.,	.50,,,,			.464,	.049

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
30589.,	.34,	.41,	4,	1.196,	.070

□

□

Age 5 Catchability constant w.r.t. time and dependent on age

□

□

Year class = 1996

□

□

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	,	Weights,	F
Cuba Logbook series ,	22796.,	.489,	.407,	.83,	3,	.458,	.289
F shrinkage mean ,	50658.,	.50,,,,				.542,	.140

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
35131.,	.35,	.41,	4,	1.159,	.197

□

Age 6 Catchability constant w.r.t. time and dependent on age

Year class = 1995

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	,	Weights,	F
Cuba Logbook series ,	3634.,	.297,	.199,	.67,	4,	.649,	.430
F shrinkage mean ,	5776.,	.50,,,,				.351,	.291

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
4276.,	.26,	.20,	5,	.749,	.376

□

Age 7 Catchability constant w.r.t. time and dependent on age

□

□

Year class = 1994

□

□

Fleet,	Estimated,	Int,	Ext,	Var,	N,	Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	,	Weights,	F
Cuba Logbook series ,	4622.,	.214,	.068,	.32,	5,	.738,	.543
F shrinkage mean ,	5734.,	.50,,,,				.262,	.458

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	

4891., .21, .07, 6, .350, .519

□

Age 8 Catchability constant w.r.t. time and dependent on age

Year class = 1993

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Cuba Logbook series ,	1397.,	.203,	.095,	.47,	6, .676,	.691
F shrinkage mean ,	1715.,	.50,,,,			.324,	.595

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
1493.,	.21,	.09,	7,	.404,	.659

Age 9 Catchability constant w.r.t. time and dependent on age

Year class = 1992

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Cuba Logbook series ,	1113.,	.208,	.177,	.85,	7, .599,	.735
F shrinkage mean ,	1580.,	.50,,,,			.401,	.567

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
1281.,	.24,	.15,	8,	.642,	.664

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Age 10 Catchability constant w.r.t. time and age (fixed at the value for age) 9

Year class = 1991

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Cuba Logbook series ,	232.,	.219,	.095,	.43,	8, .574,	.762
F shrinkage mean ,	285.,	.50,,,,			.426,	.658

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
253.,	.25,	.08,	9,	.333,	.716

Age 11 Catchability constant w.r.t. time and age (fixed at the value for age) 9

Year class = 1990

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Cuba Logbook series ,	65.,	.220,	.074,	.34,	9, .651,	.812
F shrinkage mean ,	83.,	.50,,,,			.349,	.686

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
71.,	.23,	.07,	10,	.326,	.766

Faroe Saithe (ICES Div. Vb)

101

Cuba Logbook series

1985 2001

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3864	31	172	396	83	103	13	5	1	2
4175	65	124	342	245	68	72	18	6	3
7126	120	475	401	319	119	63	33	7	5
7314	66	276	876	308	125	52	35	8	1
7167	52	597	507	641	73	43	14	8	5
8177	23	245	741	717	394	36	10	4	4
8082	34	284	495	400	252	124	15	14	10
8600	11	263	277	234	117	68	59	11	6
8622	83	324	525	189	101	60	44	26	6
9601	81	603	372	349	112	78	51	47	22
11326	74	281	898	368	227	76	38	29	21
11594	41	61	217	224	274	210	101	26	14
15185	102	199	522	383	294	133	31	15	5
12747	22	291	349	606	257	128	72	14	5
14271	59	144	694	632	1026	249	109	36	6
12542	143	521	312	939	480	592	73	40	12
13143	237	557	1916	451	719	290	240	49	11

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Run title : FAROE SAITHE (ICES Division Vb)

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Terminal Fs derived using XSA (With F shrinkage)

Table 8		Fishing mortality (F) at age										
YEAR,	8	1961,										
AGE												
3,		.0226,										
4,		.0556,										
5,		.0994,										
6,		.1219,										
7,		.0933,										
8,		.0852,										
9,		.0972,										
10,		.0916,										
11,		.0916,										
+gp,		.0916,										
0 FBAR 4- 8,		.0911,										
Table 8		Fishing mortality (F) at age										
YEAR,	8	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,	
AGE												
3,		.0465,	.0307,	.0478,	.0495,	.0250,	.0248,	.0321,	.0328,	.0479,	.0885,	
4,		.0864,	.0358,	.1260,	.0773,	.1007,	.0518,	.0910,	.1453,	.2548,	.1481,	
5,		.1208,	.0716,	.2198,	.1588,	.1492,	.1217,	.0955,	.1720,	.1539,	.3582,	
6,		.1402,	.1115,	.1798,	.2137,	.2326,	.1388,	.1358,	.1684,	.1598,	.1405,	
7,		.1192,	.1634,	.2213,	.2217,	.2785,	.2564,	.1345,	.2001,	.1537,	.1262,	
8,		.0752,	.1157,	.2567,	.2424,	.2537,	.2616,	.2184,	.2095,	.1944,	.1119,	
9,		.1150,	.1355,	.1424,	.2983,	.2771,	.2269,	.2183,	.3065,	.1657,	.1245,	
10,		.1295,	.2012,	.1658,	.2356,	.3347,	.2904,	.2027,	.3290,	.2009,	.1213,	
11,		.1069,	.1514,	.1891,	.2601,	.2901,	.2610,	.2141,	.2832,	.1878,	.1196,	
+gp,		.1069,	.1514,	.1891,	.2601,	.2901,	.2610,	.2141,	.2832,	.1878,	.1196,	
0 FBAR 4- 8,		.1083,	.0996,	.2007,	.1828,	.2029,	.1661,	.1350,	.1791,	.1833,	.1770,	
Table 8		Fishing mortality (F) at age										
YEAR,	8	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,	
AGE												
3,		.0935,	.1272,	.2295,	.1508,	.2058,	.1482,	.0841,	.0376,	.0932,	.0138,	
4,		.0728,	.3229,	.3171,	.3599,	.3712,	.2983,	.2375,	.1787,	.1543,	.2434,	
5,		.1650,	.4586,	.3546,	.5445,	.3158,	.4264,	.2890,	.2903,	.2038,	.1969,	
6,		.2988,	.3489,	.3280,	.2895,	.3435,	.4150,	.1923,	.2790,	.2312,	.4424,	
7,		.3289,	.2923,	.2300,	.1960,	.2051,	.3670,	.2008,	.3230,	.3234,	.5599,	
8,		.2998,	.2428,	.1772,	.1755,	.1770,	.2543,	.4129,	.3588,	.2568,	.6376,	
9,		.3762,	.1984,	.1963,	.1185,	.1667,	.2030,	.2649,	.3885,	.3147,	.5654,	
10,		.4604,	.2498,	.1811,	.1487,	.1204,	.1744,	.3026,	.4717,	.5133,	.5260,	
11,		.3813,	.2315,	.1857,	.1481,	.1553,	.2115,	.3288,	.4092,	.3639,	.5813,	
+gp,		.3813,	.2315,	.1857,	.1481,	.1553,	.2115,	.3288,	.4092,	.3639,	.5813,	
0 FBAR 4- 8,		.2331,	.3331,	.2814,	.3131,	.2825,	.3522,	.2665,	.2860,	.2339,	.4160,	
Table 8		Fishing mortality (F) at age										
YEAR,	8	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,	
AGE												
3,		.0296,	.0696,	.0159,	.0633,	.0211,	.0366,	.0217,	.0176,	.0158,	.0469,	
4,		.1846,	.1107,	.4983,	.2380,	.1395,	.1385,	.0889,	.2048,	.2040,	.4148,	
5,		.2052,	.3665,	.3648,	.5075,	.4586,	.4314,	.3558,	.2281,	.6342,	.7706,	
6,		.4862,	.4713,	.5763,	.3139,	.7755,	.5844,	.6526,	.4939,	.7857,	.8978,	
7,		.3244,	.5021,	.6521,	.5825,	.4512,	.4777,	.6026,	.3861,	.8080,	.8021,	
8,		.5464,	.5406,	.4751,	.4315,	.7938,	.4923,	.6333,	.5519,	.4249,	.6700,	
9,		.5786,	.8708,	.5378,	.3289,	.8950,	.6119,	.7552,	.3880,	.2265,	.7965,	
10,		.3344,	.3811,	.3902,	.2298,	.6544,	.8783,	.6775,	.3784,	.2119,	.9182,	
11,		.4902,	.6027,	.4712,	.3446,	.8128,	.6284,	.8503,	.5266,	.5211,	.9284,	
+gp,		.4902,	.6027,	.4712,	.3446,	.8128,	.6284,	.8503,	.5266,	.5211,	.9284,	
0 FBAR 4- 8,		.3494,	.3982,	.5133,	.4147,	.5237,	.4249,	.4666,	.3730,	.5714,	.7111,	
Table 8		Fishing mortality (F) at age										
YEAR,	8	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,	FBAR
AGE												
3,		.0297,	.0627,	.0444,	.0107,	.0133,	.0098,	.0104,	.0043,	.0182,	.0193,	.0139,
4,		.2631,	.2038,	.2718,	.0854,	.0365,	.0469,	.0610,	.0528,	.0479,	.0700,	.0569,
5,		.5965,	.5513,	.3306,	.4065,	.1306,	.1076,	.1466,	.1517,	.1627,	.1967,	.1704,
6,		.7129,	.6023,	.6045,	.4004,	.2956,	.3048,	.2203,	.2934,	.3321,	.3757,	.3338,
7,		.5796,	.5222,	.6018,	.7014,	.4760,	.4895,	.4151,	.4404,	.4522,	.5194,	.4707,
8,		.4865,	.4212,	.6696,	.6278,	.7976,	.5140,	.5018,	.5395,	.5944,	.6589,	.5976,
9,		.5769,	.4837,	.5095,	.8240,	.5245,	.6387,	.6617,	.5850,	.4037,	.6638,	.5508,
10,		.6010,	.4796,	.7213,	.7084,	.6918,	.6035,	.7124,	.6061,	.6448,	.7164,	.6558,
11,		.6665,	.5831,	.6167,	.5854,	.5441,	.6140,	.6089,	.4765,	.4950,	.7662,	.5792,
+gp,		.6665,	.5831,	.6167,	.5854,	.5441,	.6140,	.6089,	.4765,	.4950,	.7662,	
0 FBAR 4- 8,		.5277,	.4601,	.4957,	.4443,	.3473,	.2926,	.2689,	.2956,	.3179,	.3641,	

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Run title : FAROE SAITHE (ICES Division Vb)

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At 30/04/2002 16:23

Terminal Fs derived using XSA (With F shrinkage)

Table 10	Stock number at age (start of year)		Numbers*10**-3
YEAR,	1961,		
AGE			
3,	9046,		
4,	7738,		
5,	5643,		
6,	3880,		
7,	2680,		
8,	1746,		
9,	1384,		
10,	1036,		
11,	568,		
+gp,	1032,		
0	TOTAL,	34754,	

Table 10	Stock number at age (start of year)					Numbers*10**-3				
YEAR,	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,
AGE										
3,	13662,	22428,	16188,	22798,	21823,	26868,	21506,	40783,	34118,	37265,
4,	7241,	10677,	17807,	12635,	17764,	17425,	21459,	17052,	32312,	26626,
5,	5993,	5438,	8434,	12853,	9575,	13151,	13546,	16041,	12073,	20504,
6,	4183,	4348,	4144,	5543,	8977,	6753,	9533,	10081,	11058,	8475,
7,	2812,	2977,	3185,	2835,	3665,	5824,	4812,	6814,	6974,	7716,
8,	1998,	2044,	2070,	2090,	1860,	2271,	3690,	3444,	4567,	4897,
9,	1313,	1518,	1491,	1311,	1343,	1181,	1431,	2429,	2287,	3079,
10,	1028,	958,	1085,	1058,	797,	833,	771,	942,	1463,	1586,
11,	774,	740,	641,	753,	685,	467,	510,	515,	555,	980,
+gp,	1141,	2147,	1111,	1367,	981,	670,	1067,	846,	848,	977,
0	TOTAL,	40145,	53274,	56156,	63241,	67468,	75443,	78325,	98946,	106256,

Table 10	Stock number at age (start of year)					Numbers*10**-3				
YEAR,	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
AGE										
3,	33589,	23274,	18882,	16282,	18882,	12906,	8372,	8595,	12372,	33102,
4,	27925,	25044,	16779,	12288,	11465,	12584,	9111,	6301,	6777,	9228,
5,	18799,	21258,	14847,	10004,	7020,	6476,	7645,	5882,	4315,	4755,
6,	11734,	13050,	11003,	8526,	4752,	4191,	3462,	4689,	3603,	2881,
7,	6029,	7126,	7537,	6489,	5226,	2759,	2266,	2338,	2904,	2341,
8,	5568,	3553,	4356,	4903,	4367,	3485,	1565,	1518,	1386,	1721,
9,	3585,	3378,	2282,	2987,	3368,	2996,	2213,	848,	868,	878,
10,	2226,	2015,	2268,	1535,	2172,	2334,	2002,	1390,	471,	519,
11,	1150,	1150,	1285,	1549,	1083,	1577,	1605,	1211,	710,	231,
+gp,	726,	989,	1720,	2382,	2196,	1903,	2095,	2255,	2826,	2531,
0	TOTAL,	111331,	100836,	80957,	66947,	60531,	51211,	40336,	35027,	36231,

Table 10	Stock number at age (start of year)					Numbers*10**-3				
YEAR,	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,
AGE										
3,	14641,	40810,	25840,	22054,	61731,	48581,	44557,	28541,	20700,	24870,
4,	26729,	11637,	31166,	20823,	16949,	49485,	38344,	35696,	22960,	16681,
5,	5923,	18196,	8529,	15503,	13438,	12070,	35274,	28724,	23814,	15330,
6,	3198,	3950,	10326,	4849,	7641,	6955,	6419,	20234,	18722,	10340,
7,	1516,	1610,	2019,	4751,	2900,	2881,	3174,	2736,	10109,	6987,
8,	1095,	897,	798,	861,	2172,	1512,	1463,	1423,	1523,	3689,
9,	745,	519,	428,	406,	458,	804,	757,	636,	671,	815,
10,	408,	342,	178,	205,	239,	153,	357,	291,	353,	438,
11,	251,	239,	191,	99,	133,	102,	52,	148,	163,	234,
+gp,	2547,	1303,	737,	1035,	309,	227,	114,	104,	213,	212,
0	TOTAL,	57052,	79503,	80212,	70585,	105972,	122771,	130511,	118535,	99227,

Table 10	Stock number at age (start of year)					Numbers*10**-3						
YEAR,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,	2002,	GMST 61-99
AGE												AMST 61-
3,	19696,	23921,	17571,	41326,	24833,	38916,	17369,	82101,	49840,	64948,	0,	23624,
4,	19430,	15654,	18394,	13761,	33475,	20063,	31551,	14073,	66928,	40071,	52157,	17317,
5,	9020,	12228,	10454,	11476,	10345,	26424,	15673,	24303,	10929,	52234,	30589,	11658,
6,	5808,	4067,	5769,	6149,	6257,	7433,	19426,	11082,	17097,	7605,	35131,	6805,
7,	3449,	2331,	1823,	2580,	3373,	3812,	4486,	12760,	6766,	10042,	4276,	3763,
8,	2565,	1582,	1132,	818,	1048,	1716,	1913,	2425,	6726,	3524,	4891,	2036,
9,	1546,	1291,	850,	475,	357,	386,	840,	948,	1158,	3039,	1493,	1136,
10,	301,	711,	652,	418,	170,	173,	167,	355,	433,	633,	1281,	636,
11,	143,	135,	360,	259,	169,	70,	78,	67,	159,	186,	253,	360,
+gp,	242,	129,	116,	289,	214,	238,	175,	199,	70,	114,	114,	555,
0	TOTAL,	62200,	62048,	57121,	77551,	80241,	99231,	91678,	148315,	160105,	182395,	130185,
1												

Run title : FAROE SAITHE (ICES Division Vb)

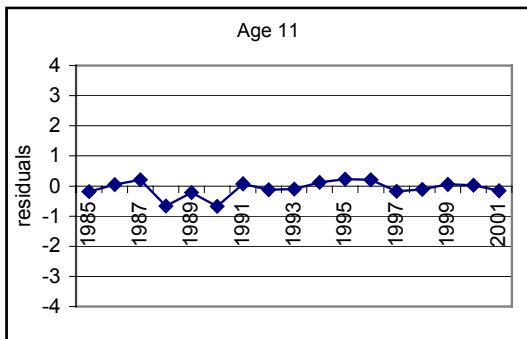
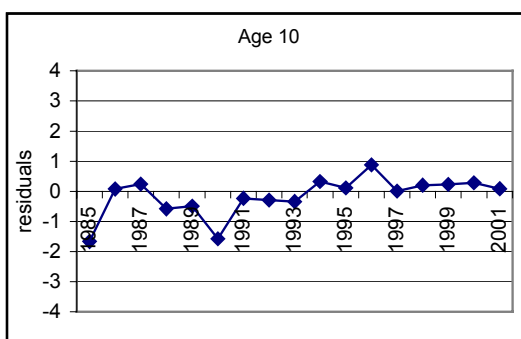
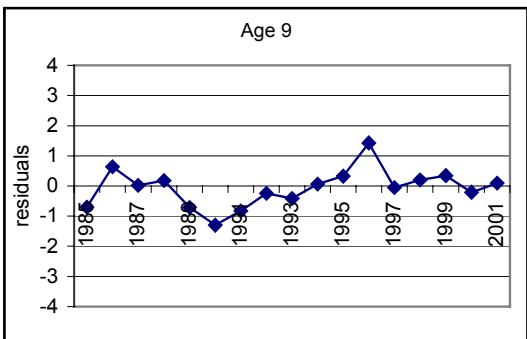
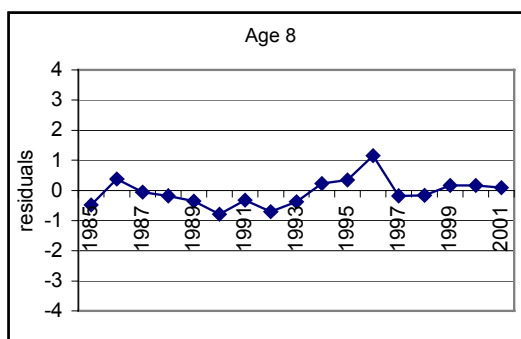
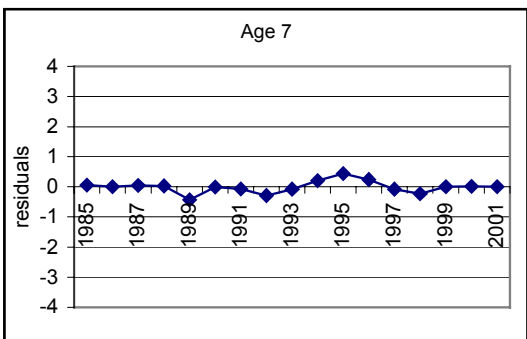
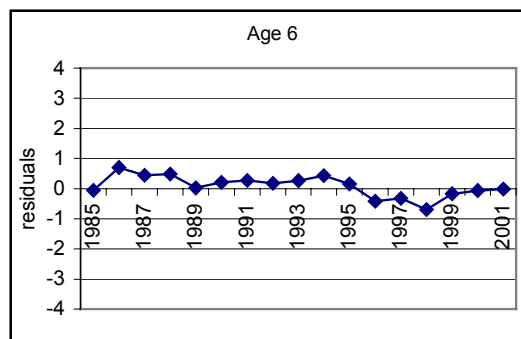
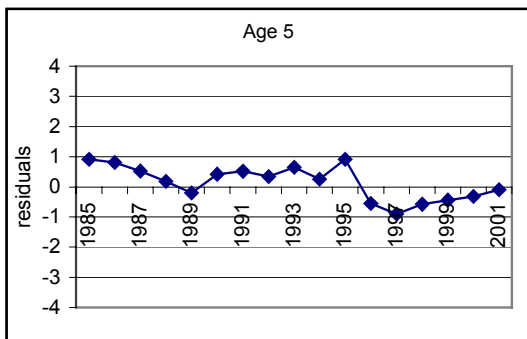
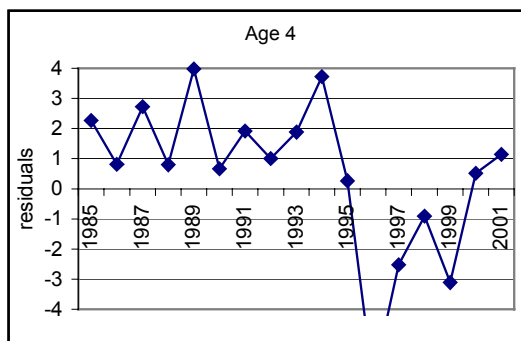
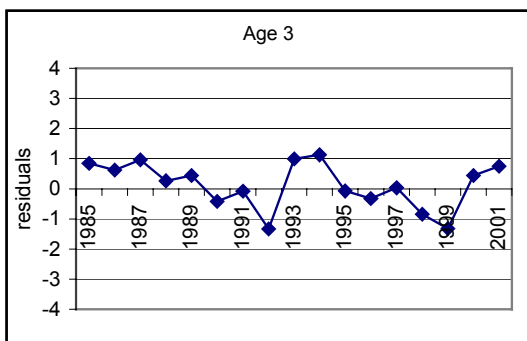
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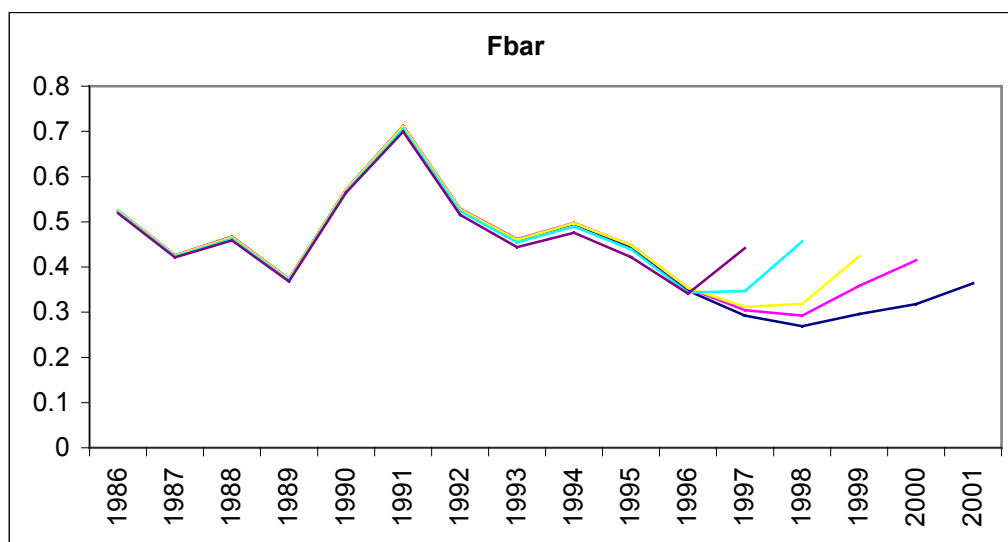
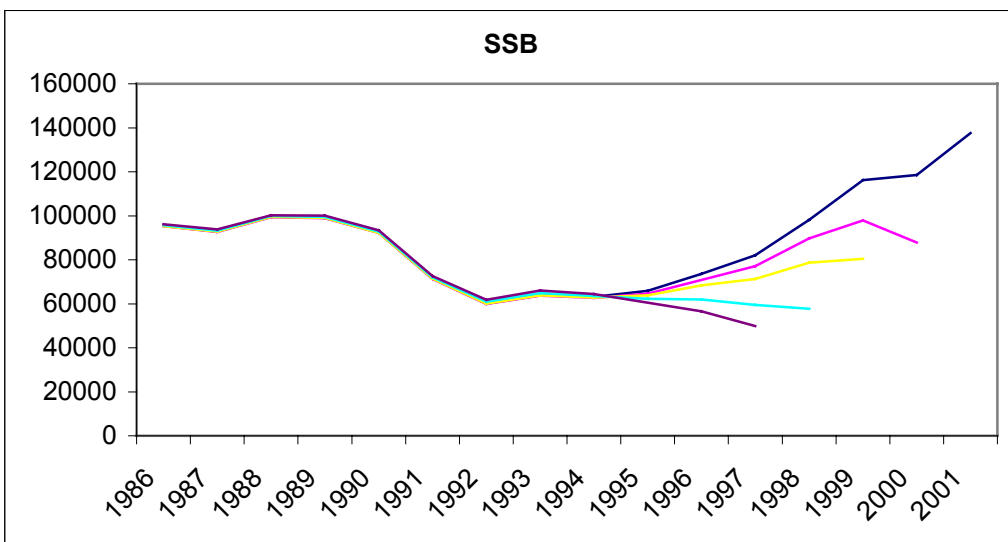
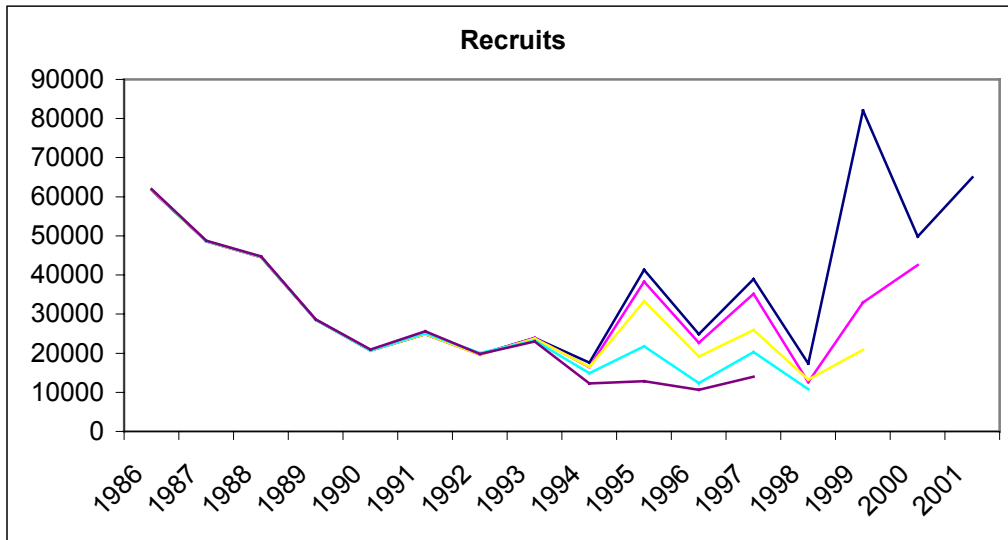
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Table 16 Summary (without SOP correction)

Terminal Fs derived using XSA (With F shrinkage)

	RECRUITS, Age 3	TOTALBIO,	TOTSPBIO,	LANDINGS,	YIELD/SSB,	FBAR 4- 8,
1961,	9046,	121962,	83791,	9592,	.1145,	.0911,
1962,	13662,	126451,	85628,	10454,	.1221,	.1083,
1963,	22428,	158222,	100622,	12693,	.1261,	.0996,
1964,	16188,	160410,	98372,	21893,	.2226,	.2007,
1965,	22798,	174748,	107200,	22181,	.2069,	.1828,
1966,	21823,	184111,	108758,	25563,	.2350,	.2029,
1967,	26868,	181598,	104609,	21319,	.2038,	.1661,
1968,	21506,	189738,	115925,	20387,	.1759,	.1350,
1969,	40783,	214946,	123747,	27437,	.2217,	.1791,
1970,	34118,	224342,	129081,	29110,	.2255,	.1833,
1971,	37265,	228300,	139422,	32706,	.2346,	.1770,
1972,	33589,	236900,	147472,	42663,	.2893,	.2331,
1973,	23274,	210373,	136568,	57431,	.4205,	.3331,
1974,	18882,	203881,	137467,	47188,	.3433,	.2814,
1975,	16282,	187192,	137712,	41576,	.3019,	.3131,
1976,	18882,	169490,	121830,	33065,	.2714,	.2825,
1977,	12906,	156023,	113880,	34835,	.3059,	.3522,
1978,	8372,	137003,	95777,	28138,	.2938,	.2665,
1979,	8595,	112620,	83260,	27246,	.3272,	.2860,
1980,	12372,	124183,	88480,	25230,	.2851,	.2339,
1981,	33102,	141269,	75805,	30103,	.3971,	.4160,
1982,	14641,	148283,	82496,	30964,	.3753,	.3494,
1983,	40810,	176907,	94375,	39176,	.4151,	.3982,
1984,	25840,	187824,	95945,	54665,	.5698,	.5133,
1985,	22054,	186432,	109443,	44605,	.4076,	.4147,
1986,	61731,	232889,	95422,	41716,	.4372,	.5237,
1987,	48581,	247924,	92808,	40020,	.4312,	.4249,
1988,	44557,	257512,	99572,	45285,	.4548,	.4666,
1989,	28541,	226458,	99101,	44477,	.4488,	.3730,
1990,	20700,	189312,	92352,	61628,	.6673,	.5714,
1991,	24870,	148880,	71349,	54858,	.7689,	.7111,
1992,	19696,	123410,	60080,	36487,	.6073,	.5277,
1993,	23921,	133126,	63888,	33543,	.5250,	.4601,
1994,	17571,	128469,	63063,	33182,	.5262,	.4957,
1995,	41326,	158436,	65874,	27209,	.4130,	.4443,
1996,	24833,	168574,	73660,	20029,	.2719,	.3473,
1997,	38916,	195835,	82019,	22306,	.2720,	.2926,
1998,	17369,	185583,	98178,	26421,	.2691,	.2689,
1999,	82101,	265167,	116282,	33207,	.2856,	.2956,
2000,	49840,	297039,	118548,	39045,	.3294,	.3179,
2001,	64948,	326204,	137569,	51795,	.3765,	.3641,
Arith.						
Mean	28429,	186049,	101157,	33693,	.3458,	.3240,
0 Units,	(Thousands),	(Tonnes),	(Tonnes),	(Tonnes),		
1						





Summer survey (new)

Lowestoft VPA Version 3.1

30/04/2002 15:55

Extended Survivors Analysis

FAROE SAITHE (ICES Division Vb)

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Catch data for 41 years. 1961 to 2001. Ages 3 to 12.

Fleet,	First,	Last,	First,	Last,	Alpha,	Beta
	year,	year,	age,	age		
Survey series	, 1996,	2001,	3,	9,	.600,	.700

Time series weights :

Tapered time weighting applied
Power = 3 over 20 years

Catchability analysis :

Catchability dependent on stock size for ages < 5

Regression type = C
Minimum of 5 points used for regression
Survivor estimates shrunk to the population mean for ages < 5

Catchability independent of age for ages >= 9

Terminal population estimation :

Survivor estimates shrunk towards the mean F
of the final 5 years or the 3 oldest ages.

S.E. of the mean to which the estimates are shrunk = .500

Minimum standard error for population
estimates derived from each fleet = .300

Prior weighting not applied

Tuning converged after 24 iterations

Regression weights

, .954, .976, .990, .997, 1.000, 1.000

Fishing mortalities

Age,	1996,	1997,	1998,	1999,	2000,	2001
3,	.012,	.007,	.005,	.002,	.011,	.012
4,	.035,	.042,	.044,	.027,	.022,	.040
5,	.131,	.101,	.129,	.105,	.078,	.086
6,	.292,	.305,	.205,	.252,	.213,	.156
7,	.480,	.481,	.416,	.400,	.364,	.280
8,	.810,	.521,	.488,	.542,	.508,	.464
9,	.538,	.659,	.678,	.558,	.407,	.503
10,	.689,	.631,	.759,	.634,	.592,	.725
11,	.685,	.609,	.661,	.536,	.536,	.649

XSA population numbers (Thousands)

□

□

□

AGE

YEAR ,	3,	4,	5,	6,	7,	8,
1996 ,	2.77E+04,	3.53E+04,	1.03E+04,	6.32E+03,	3.35E+03,	1.04E+03,
1997 ,	5.37E+04,	2.24E+04,	2.80E+04,	7.42E+03,	3.86E+03,	1.70E+03,
1998 ,	3.35E+04,	4.36E+04,	1.76E+04,	2.07E+04,	4.48E+03,	1.95E+03,
1999 ,	1.74E+05,	2.73E+04,	3.42E+04,	1.27E+04,	1.38E+04,	2.42E+03,
2000 ,	8.51E+04,	1.42E+05,	2.18E+04,	2.52E+04,	8.06E+03,	7.57E+03,
2001 ,	1.07E+05,	6.89E+04,	1.14E+05,	1.65E+04,	1.67E+04,	4.59E+03,

Estimated population abundance at 1st Jan 2002

, 0.00E+00,	8.66E+04,	5.42E+04,	8.54E+04,	1.15E+04,	1.03E+04,	2.36E+03,	1.85E+03,	2.49E+02,
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Taper weighted geometric mean of the VPA populations:

, 4.20E+04,	3.03E+04,	1.98E+04,	9.89E+03,	4.75E+03,	2.00E+03,	8.49E+02,	3.43E+02,	1.44E+02,
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Standard error of the weighted Log(VPA populations) :

, .7152,	.6784,	.7099,	.6012,	.7107,	.6418,	.6416,	.5179,	.5551,
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Log catchability residuals.

Fleet : Survey series

Age ,	1996,	1997,	1998,	1999,	2000,	2001
3 ,	-.37,	.42,	-.75,	-2.10,	.15,	2.62
4 ,	-.21,	.38,	-.39,	-.44,	-.42,	1.07
5 ,	-.40,	-.04,	-.26,	-.57,	-.17,	1.41
6 ,	-.23,	.21,	-.33,	-.17,	.18,	.32
7 ,	-.36,	.39,	-.54,	-.09,	.20,	.39
8 ,	.08,	.27,	-.62,	-.25,	.21,	.31
9 ,	-.15,	.60,	-.44,	-.40,	.03,	.36

Mean log catchability and standard error of ages with catchability independent of year class strength and constant w.r.t. time

Age ,	5,	6,	7,	8,	9
Mean Log q,	-7.9186,	-7.6670,	-7.4678,	-7.1873,	-7.0364,
S.E(Log q),	.7205,	.2718,	.3964,	.3668,	.4148,

Regression statistics :

Ages with q dependent on year class strength

Age, Slope ,	t-value ,	Intercept,	RSquare,	No Pts,	Reg s.e,	Mean Log q
3,	.95,	.049,	9.42,	.17,	6,	1.76,
4,	.67,	.724,	9.22,	.55,	6,	.69,

Ages with q independent of year class strength and constant w.r.t. time.

Age, Slope ,	t-value ,	Intercept,	RSquare,	No Pts,	Reg s.e,	Mean Q
5,	.57,	2.991,	8.90,	.93,	6,	.26,
6,	.94,	.246,	7.77,	.83,	6,	.29,
7,	.80,	.956,	7.75,	.85,	6,	.32,
8,	.86,	.671,	7.28,	.85,	6,	.33,
9,	.96,	.168,	7.03,	.83,	6,	.45,

Terminal year survivor and F summaries :

Age 3 Catchability dependent on age and year class strength

Year class = 1998

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 1189943.,	2.380,	.000,	.00,	1, .028,	.001
P shrinkage mean	, 30323.,	.68,,,,			.342,	.033
F shrinkage mean	, 136624.,	.50,,,,			.630,	.007

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
86612.,	.40,	1.94,	3,	4.900,	.012

Age 4 Catchability dependent on age and year class strength

Year class = 1997

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 134337.,	.811,	.354,	.44,	2, .196,	.016
P shrinkage mean	, 19765.,	.71,,,,			.267,	.106
F shrinkage mean	, 64274.,	.50,,,,			.537,	.034

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
54231.,	.37,	.66,	4,	1.800,	.040

Age 5 Catchability constant w.r.t. time and dependent on age

Year class = 1996

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 117789.,	.531,	.782,	1.47,	3, .446,	.063
F shrinkage mean	, 66011.,	.50,,,,			.554,	.109

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
85440.,	.36,	.49,	4,	1.354,	.086

Age 6 Catchability constant w.r.t. time and dependent on age

Year class = 1995

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 13789.,	.263,	.162,	.61,	4, .752,	.132
F shrinkage mean	, 6718.,	.50,,,,			.248,	.255

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
11540.,	.23,	.22,	5,	.927,	.156

Age 7 Catchability constant w.r.t. time and dependent on age

Year class = 1994

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
, Survivors,	s.e,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 12119.,	.224,	.139,	.62,	5, .763,	.243

F shrinkage mean , 6175., .50,,,, .237, .431

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
10327.,	.21,	.18,	6,	.878,	.280

Age 8 Catchability constant w.r.t. time and dependent on age

Year class = 1993

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 2614.,	.203,	.103,	.51,	6, .737,	.427

F shrinkage mean , 1777., .50,,,, .263, .579

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
2361.,	.20,	.11,	7,	.573,	.464

Age 9 Catchability constant w.r.t. time and dependent on age

Year class = 1992

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 1981.,	.199,	.123,	.62,	6, .701,	.476

F shrinkage mean , 1562., .50,,,, .299, .573

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
1845.,	.20,	.11,	7,	.527,	.503

Age 10 Catchability constant w.r.t. time and age (fixed at the value for age) 9

Year class = 1991

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 225.,	.210,	.126,	.60,	5, .533,	.779

F shrinkage mean , 279., .50,,,, .467, .667

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
249.,	.26,	.11,	6,	.410,	.725

Age 11 Catchability constant w.r.t. time and age (fixed at the value for age) 9

Year class = 1990

Fleet,	Estimated,	Int,	Ext,	Var,	N, Scaled,	Estimated
,	Survivors,	s.e,	s.e,	Ratio,	, Weights,	F
Survey series	, 66.,	.216,	.184,	.85,	4, .364,	.807

F shrinkage mean , 106., .50,,,, .636, .569

Weighted prediction :

Survivors,	Int,	Ext,	N,	Var,	F
at end of year,	s.e,	s.e,	,	Ratio,	
89.,	.33,	.22,	5,	.656,	.649

Run title : FAROE SAITHE (ICES Division Vb)

SAI_IND

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Terminal Fs derived using XSA (With F shrinkage)

Table 8	Fishing mortality (F) at age									
YEAR,	1961,									
AGE										
3,	.0226,									
4,	.0556,									
5,	.0994,									
6,	.1219,									
7,	.0933,									
8,	.0852,									
9,	.0972,									
10,	.0915,									
11,	.0916,									
+gp,	.0916,									
0 FBAR 4- 8,	.0911,									
1										

Table 8	Fishing mortality (F) at age									
YEAR,	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,
AGE										
3,	.0465,	.0307,	.0478,	.0495,	.0250,	.0248,	.0320,	.0328,	.0479,	.0885,
4,	.0863,	.0358,	.1260,	.0772,	.1007,	.0518,	.0910,	.1452,	.2547,	.1480,
5,	.1208,	.0716,	.2198,	.1588,	.1492,	.1217,	.0954,	.1719,	.1538,	.3579,
6,	.1401,	.1115,	.1797,	.2137,	.2326,	.1388,	.1357,	.1684,	.1598,	.1404,
7,	.1192,	.1634,	.2213,	.2216,	.2784,	.2564,	.1345,	.2000,	.1536,	.1262,
8,	.0752,	.1157,	.2566,	.2424,	.2536,	.2615,	.2183,	.2094,	.1943,	.1118,
9,	.1150,	.1355,	.1424,	.2983,	.2770,	.2269,	.2182,	.3063,	.1656,	.1244,
10,	.1295,	.2012,	.1658,	.2355,	.3346,	.2903,	.2027,	.3289,	.2008,	.1213,
11,	.1069,	.1514,	.1891,	.2601,	.2900,	.2609,	.2141,	.2831,	.1877,	.1196,
+gp,	.1069,	.1514,	.1891,	.2601,	.2900,	.2609,	.2141,	.2831,	.1877,	.1196,
0 FBAR 4- 8,	.1083,	.0996,	.2007,	.1827,	.2029,	.1660,	.1350,	.1790,	.1832,	.1769,
1										

Run title : FAROE SAITHE (ICES Division Vb)

SAI_IND

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Terminal Fs derived using XSA (With F shrinkage)

	Table 8	Fishing mortality (F) at age									
	YEAR,	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
	AGE										
	3,	.0935,	.1271,	.2293,	.1505,	.2055,	.1478,	.0837,	.0374,	.0926,	.0137,
	4,	.0728,	.3227,	.3170,	.3595,	.3705,	.2977,	.2367,	.1776,	.1536,	.2415,
	5,	.1649,	.4582,	.3543,	.5442,	.3153,	.4251,	.2881,	.2890,	.2024,	.1958,
	6,	.2985,	.3486,	.3276,	.2891,	.3432,	.4140,	.1915,	.2780,	.2299,	.4380,
	7,	.3286,	.2919,	.2297,	.1957,	.2048,	.3665,	.2002,	.3213,	.3217,	.5552,
	8,	.2995,	.2425,	.1770,	.1752,	.1767,	.2537,	.4119,	.3573,	.2550,	.6323,
	9,	.3759,	.1982,	.1960,	.1183,	.1664,	.2026,	.2642,	.3872,	.3128,	.5594,
	10,	.4600,	.2496,	.1809,	.1485,	.1202,	.1740,	.3018,	.4698,	.5105,	.5212,
	11,	.3810,	.2312,	.1854,	.1479,	.1550,	.2111,	.3279,	.4076,	.3617,	.5758,
0	+gp,	.3810,	.2312,	.1854,	.1479,	.1550,	.2111,	.3279,	.4076,	.3617,	.5758,
FBAR	4- 8,	.2329,	.3328,	.2811,	.3127,	.2821,	.3514,	.2657,	.2846,	.2325,	.4126,
	Table 8	Fishing mortality (F) at age									
	YEAR,	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,
	AGE										
	3,	.0285,	.0693,	.0158,	.0630,	.0212,	.0368,	.0218,	.0176,	.0158,	.0469,
	4,	.1832,	.1062,	.4958,	.2369,	.1388,	.1389,	.0893,	.2055,	.2039,	.4154,
	5,	.2032,	.3630,	.3464,	.5033,	.4557,	.4287,	.3568,	.2293,	.6374,	.7705,
	6,	.4824,	.4649,	.5674,	.2922,	.7631,	.5780,	.6454,	.4961,	.7933,	.9079,
	7,	.3198,	.4957,	.6367,	.5667,	.4067,	.4638,	.5909,	.3791,	.8150,	.8194,
	8,	.5385,	.5286,	.4653,	.4144,	.7516,	.4188,	.6018,	.5331,	.4134,	.6821,
	9,	.5699,	.8449,	.5177,	.3189,	.8273,	.5501,	.5682,	.3571,	.2154,	.7570,
	10,	.3289,	.3720,	.3695,	.2175,	.6221,	.7335,	.5581,	.2404,	.1898,	.8395,
	11,	.4827,	.5868,	.4541,	.3188,	.7408,	.5722,	.5809,	.3794,	.2744,	.7671,
0	+gp,	.4827,	.5868,	.4541,	.3188,	.7408,	.5722,	.5809,	.3794,	.2744,	.7671,
FBAR	4- 8,	.3454,	.3917,	.5023,	.4027,	.5032,	.4056,	.4568,	.3686,	.5726,	.7191,
	Table 8	Fishing mortality (F) at age									
99-*	YEAR,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,
	AGE										
	3,	.0297,	.0624,	.0444,	.0101,	.0119,	.0071,	.0054,	.0020,	.0106,	.0117,
	4,	.2635,	.2043,	.2703,	.0855,	.0346,	.0419,	.0437,	.0269,	.0223,	.0401,
	5,	.5979,	.5524,	.3318,	.4032,	.1308,	.1014,	.1294,	.1054,	.0784,	.0856,
	6,	.7127,	.6047,	.6068,	.4025,	.2923,	.3054,	.2054,	.2517,	.2128,	.1561,
	7,	.5931,	.5219,	.6063,	.7065,	.4798,	.4813,	.4162,	.4000,	.3643,	.2795,
	8,	.5066,	.4375,	.6689,	.6365,	.8101,	.5207,	.4882,	.5418,	.5080,	.4636,
	9,	.5965,	.5170,	.5417,	.8223,	.5376,	.6593,	.6776,	.5581,	.4066,	.5033,
	10,	.5445,	.5079,	.8193,	.7967,	.6888,	.6305,	.7595,	.6342,	.5920,	.7254,

99--**

11, .5538, .4912, .6830, .7593, .6852, .6088, .6610, .5359, .5358, .6488, .5735,
+gp, .5538, .4912, .6830, .7593, .6852, .6088, .6610, .5359, .5358, .6488,
0 FBAR 4- 8, .5347, .4642, .4968, .4468, .3495, .2901, .2566, .2652, .2371, .2050,
Run title : FAROE SAI THE (ICES Division Vb) SAI_IND

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Terminal Fs derived using XSA (With F shrinkage)

Table 10	Stock number at age (start of year)				Numbers*10**-3					
YEAR,	1961,									
AGE										
3,	9047,									
4,	7739,									
5,	5643,									
6,	3881,									
7,	2680,									
8,	1746,									
9,	1384,									
10,	1036,									
11,	568,									
+gp,	1032,									
0 TOTAL,	34757,									

Table 10	Stock number at age (start of year)				Numbers*10**-3					
YEAR,	1962,	1963,	1964,	1965,	1966,	1967,	1968,	1969,	1970,	1971,
AGE										
3,	13663,	22430,	16192,	22803,	21830,	26879,	21514,	40797,	34135,	37284,
4,	7241,	10678,	17809,	12638,	17768,	17431,	21468,	17059,	32324,	26640,
5,	5993,	5438,	8435,	12854,	9578,	13154,	13551,	16048,	12079,	20514,
6,	4183,	4349,	4145,	5543,	8979,	6755,	9535,	10085,	11063,	8480,
7,	2813,	2977,	3185,	2835,	3665,	5826,	4814,	6816,	6978,	7721,
8,	1999,	2044,	2070,	2090,	1860,	2272,	3691,	3445,	4569,	4899,
9,	1313,	1518,	1491,	1311,	1343,	1182,	1432,	2429,	2288,	3080,
10,	1028,	958,	1085,	1059,	797,	833,	771,	942,	1464,	1587,
11,	774,	740,	641,	753,	685,	467,	510,	515,	555,	981,
+gp,	1141,	2147,	1111,	1367,	981,	670,	1067,	846,	848,	977,
0 TOTAL,	40149,	53279,	56164,	63253,	67486,	75468,	78354,	98985,	106304,	112163,

Run title : FAROE SAI THE (ICES Division Vb) SAI_IND

At 30/04/2002 15:56

Terminal Fs derived using XSA (With F shrinkage)

Table 10	Stock number at age (start of year)				Numbers*10**-3					
YEAR,	1972,	1973,	1974,	1975,	1976,	1977,	1978,	1979,	1980,	1981,
AGE										
3,	33606,	23282,	18896,	16306,	18910,	12939,	8414,	8631,	12449,	33320,
4,	27941,	25059,	16786,	12301,	11484,	12607,	9138,	6336,	6807,	9291,
5,	18811,	21271,	14858,	10010,	7030,	6492,	7664,	5904,	4343,	4779,
6,	11742,	13059,	11013,	8536,	4756,	4199,	3474,	4704,	3621,	2904,
7,	6033,	7132,	7545,	6498,	5234,	2763,	2273,	2349,	2917,	2355,
8,	5572,	3556,	4361,	4910,	4374,	3492,	1568,	1523,	1395,	1731,
9,	3587,	3381,	2284,	2991,	3374,	3001,	2218,	850,	872,	885,
10,	2227,	2016,	2271,	1537,	2176,	2339,	2007,	1394,	473,	522,
11,	1151,	1151,	1286,	1551,	1085,	1580,	1609,	1215,	714,	232,
+gp,	727,	990,	1722,	2385,	2199,	1907,	2100,	2262,	2840,	2549,
0 TOTAL,	111396,	100898,	81023,	67024,	60622,	51317,	40464,	35169,	36429,	58569,

Table 10	Stock number at age (start of year)				Numbers*10**-3					
YEAR,	1982,	1983,	1984,	1985,	1986,	1987,	1988,	1989,	1990,	1991,
AGE										
3,	15201,	40960,	25942,	22147,	61607,	48367,	44428,	28543,	20678,	24842,
4,	26908,	12095,	31289,	20907,	17025,	49383,	38169,	35591,	22961,	16663,
5,	5975,	18342,	8905,	15603,	13507,	12132,	35190,	28581,	23728,	15331,
6,	3217,	3992,	10446,	5156,	7723,	7011,	6470,	20165,	18604,	10270,
7,	1534,	1626,	2053,	4849,	3152,	2948,	3220,	2778,	10053,	6890,
8,	1107,	912,	811,	889,	2253,	1718,	1518,	1460,	1557,	3643,
9,	753,	529,	440,	417,	481,	870,	926,	681,	701,	843,
10,	414,	349,	186,	215,	248,	172,	411,	429,	390,	463,
11,	254,	244,	197,	105,	142,	109,	68,	193,	276,	264,
+gp,	2578,	1329,	759,	1106,	329,	243,	149,	135,	362,	240,
0 TOTAL,	57942,	80379,	81028,	71394,	106466,	122953,	130547,	118557,	99310,	79449,

Table 10	Stock number at age (start of year)				Numbers*10**-3								
YEAR,	1992,	1993,	1994,	1995,	1996,	1997,	1998,	1999,	2000,	2001,	2002,	GMST 61-99	AMST 61-
AGE													
3,	19650,	24032,	17549,	43614,	27716,	53694,	33536,	173767,	85109,	107029,	0,	24845,	30246,
4,	19407,	15616,	18485,	13743,	35348,	22423,	43650,	27309,	141978,	68947,	86612,	17871,	20347,
5,	9006,	12209,	10423,	11550,	10330,	27957,	17606,	34209,	21766,	113679,	54231,	11840,	13719,
6,	5809,	4055,	5753,	6124,	6319,	7421,	20681,	12664,	25207,	16477,	85440,	6862,	7869,
7,	3392,	2332,	1814,	2568,	3353,	3862,	4477,	13788,	8061,	16682,	11540,	3788,	4361,
8,	2486,	1535,	1133,	810,	1037,	1699,	1954,	2417,	7567,	4585,	10327,	2050,	2362,
9,	1508,	1226,	811,	475,	351,	378,	826,	982,	1151,	3728,	2361,	1149,	1421,
10,	324,	680,	599,	386,	171,	168,	160,	344,	460,	628,	1845,	648,	888,
11,	164,	154,	335,	216,	143,	70,	73,	61,	149,	208,	249,	371,	560,
+gp,	278,	147,	108,	240,	180,	240,	165,	182,	66,	128,	144,		
0 TOTAL,	62022,	61986,	57009,	79726,	84947,	117911,	123127,	265724,	291515,	332090,	252751,		

□

Run title : FAROE SAITHE (ICES Division Vb)

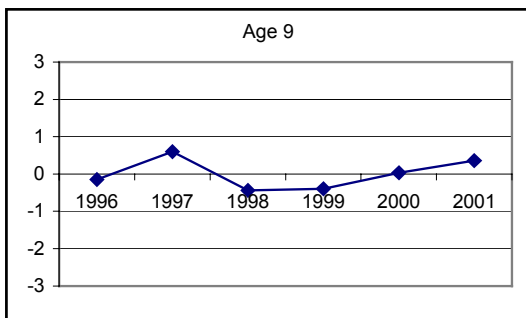
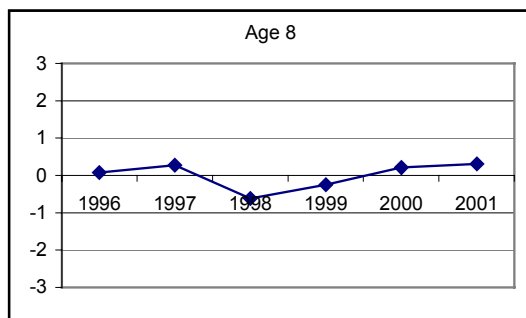
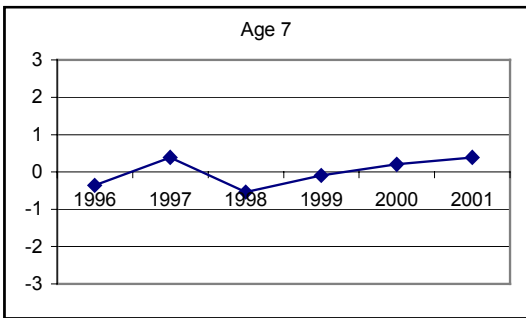
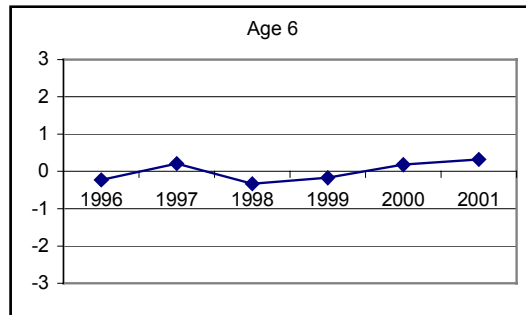
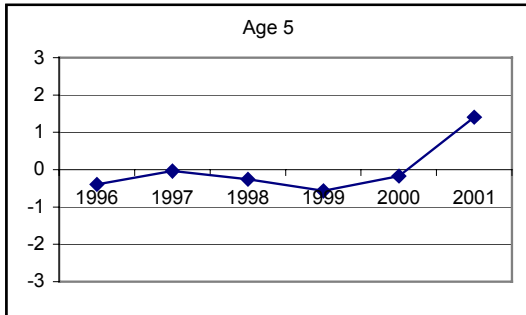
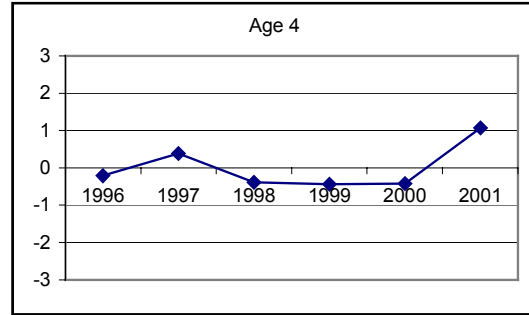
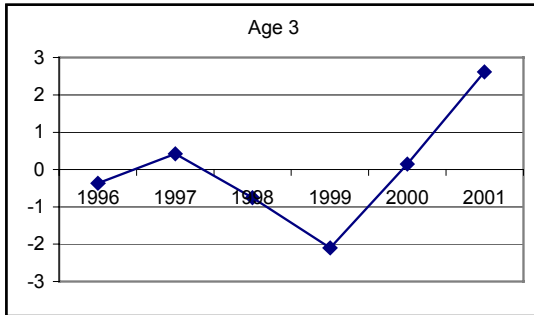
SAI_IND

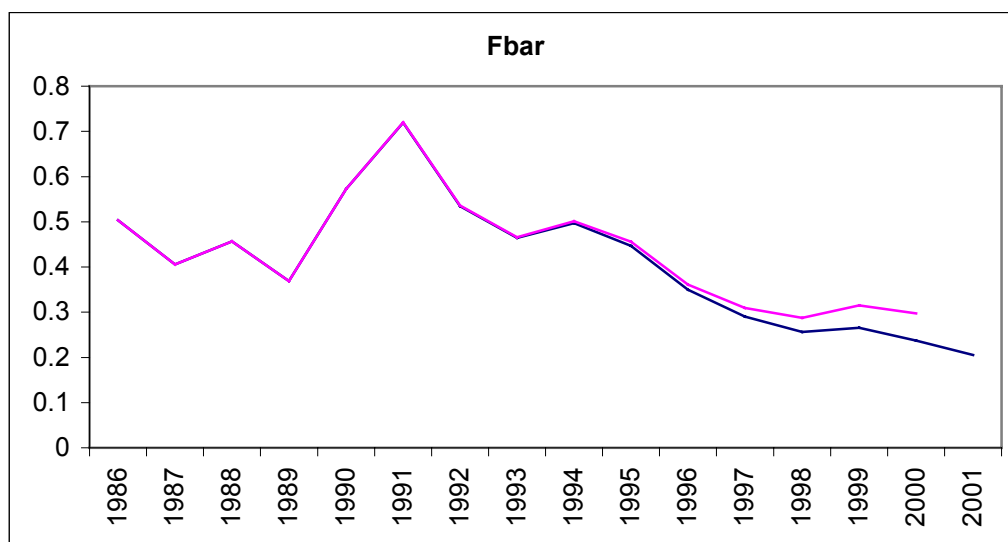
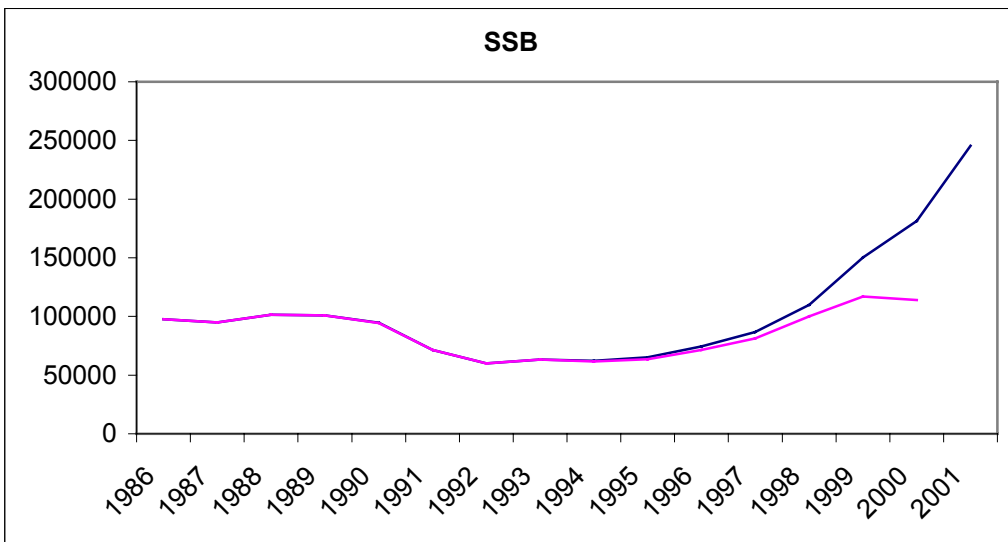
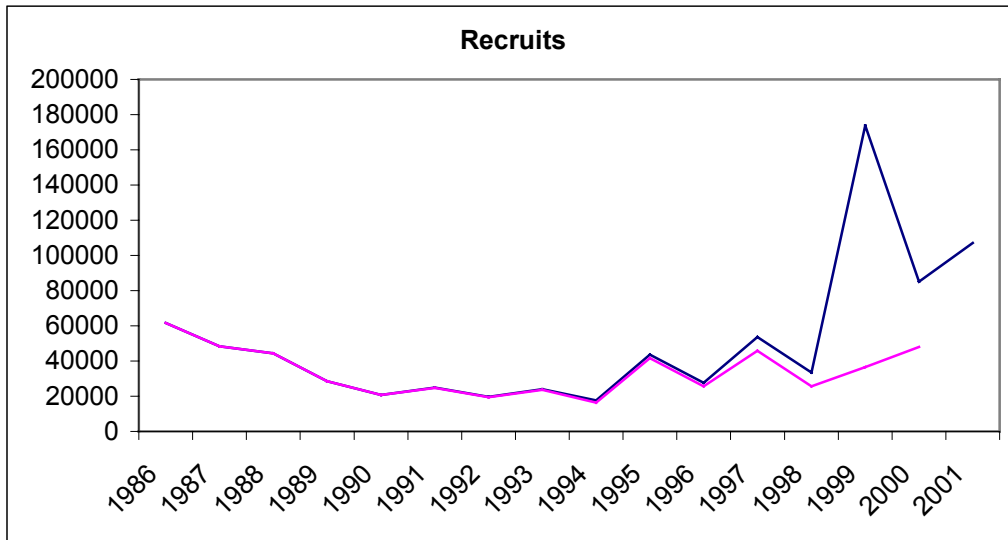
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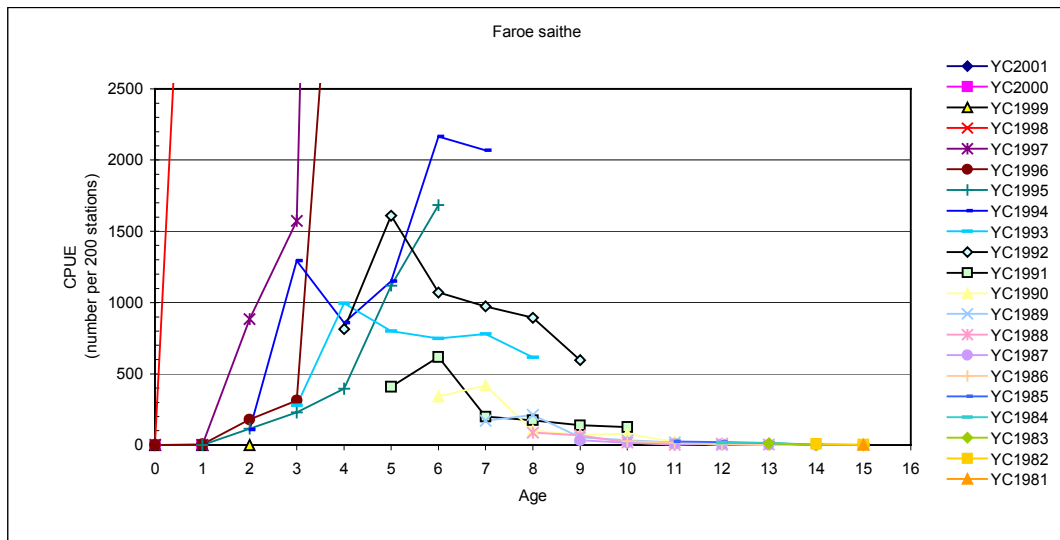
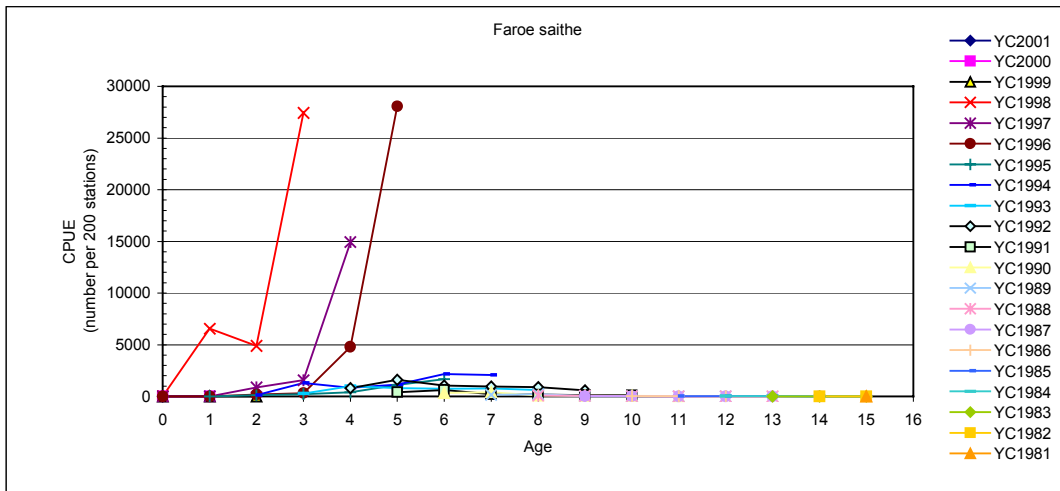
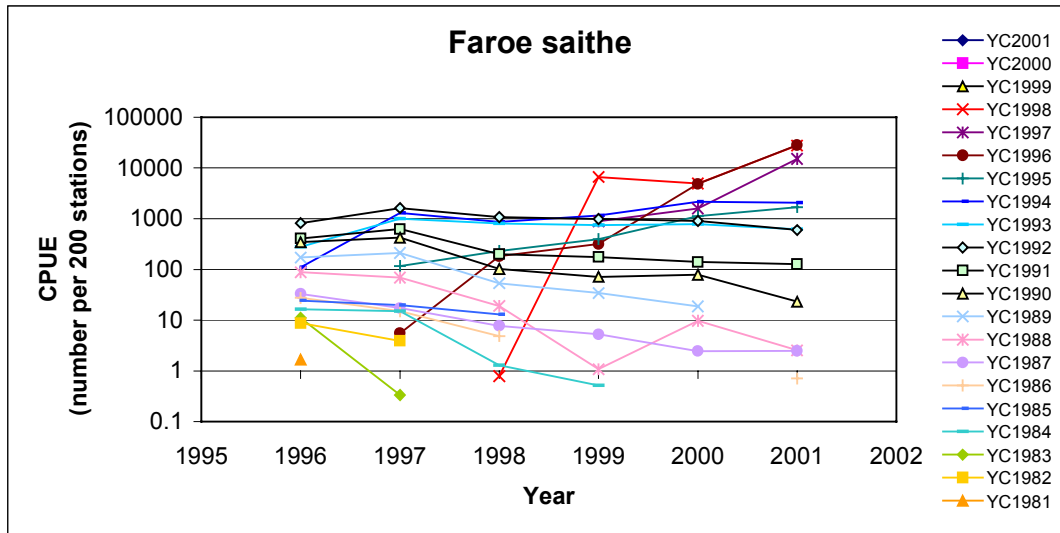
Table 16 Summary (without SOP correction)

Terminal Fs derived using XSA (With F shrinkage)

	RECRUITS,	TOTALBIO,	TOTSPBIO,	LANDINGS,	YIELD/SSB,	FBAR 4- 8,
	Age 3					
1961,	9047,	121972,	83798,	9592,	.1145,	.0911,
1962,	13663,	126462,	85635,	10454,	.1221,	.1083,
1963,	22430,	158238,	100631,	12693,	.1261,	.0996,
1964,	16192,	160429,	98383,	21893,	.2225,	.2007,
1965,	22803,	174776,	107215,	22181,	.2069,	.1827,
1966,	21830,	184151,	108778,	25563,	.2350,	.2029,
1967,	26879,	181651,	104635,	21319,	.2037,	.1660,
1968,	21514,	189803,	115961,	20387,	.1758,	.1350,
1969,	40797,	215029,	123794,	27437,	.2216,	.1790,
1970,	34135,	224446,	129142,	29110,	.2254,	.1832,
1971,	37284,	228423,	139499,	32706,	.2345,	.1769,
1972,	33606,	237045,	147567,	42663,	.2891,	.2329,
1973,	23282,	210524,	136680,	57431,	.4202,	.3328,
1974,	18896,	204069,	137609,	47188,	.3429,	.2811,
1975,	16306,	187417,	137884,	41576,	.3015,	.3127,
1976,	18910,	169746,	122015,	33065,	.2710,	.2821,
1977,	12939,	156329,	114094,	34835,	.3053,	.3514,
1978,	8414,	137391,	96022,	28138,	.2930,	.2657,
1979,	8631,	113040,	83552,	27246,	.3261,	.2846,
1980,	12449,	124835,	88935,	25230,	.2837,	.2325,
1981,	33320,	142211,	76318,	30103,	.3944,	.4126,
1982,	15201,	150192,	83353,	30964,	.3715,	.3454,
1983,	40960,	179206,	95677,	39176,	.4095,	.3917,
1984,	25942,	190284,	97631,	54665,	.5599,	.5023,
1985,	22147,	189953,	112454,	44605,	.3967,	.4027,
1986,	61607,	235254,	97668,	41716,	.4271,	.5032,
1987,	48367,	249753,	94936,	40020,	.4215,	.4056,
1988,	44428,	259064,	101571,	45285,	.4458,	.4568,
1989,	28543,	227864,	100821,	44477,	.4411,	.3686,
1990,	20678,	191237,	94502,	61628,	.6521,	.5726,
1991,	24842,	148935,	71576,	54858,	.7664,	.7191,
1992,	19650,	123205,	60019,	36487,	.6079,	.5347,
1993,	24032,	132690,	63399,	33543,	.5291,	.4642,
1994,	17549,	127678,	62222,	33182,	.5333,	.4968,
1995,	43614,	160880,	65290,	27209,	.4167,	.4468,
1996,	27716,	175747,	74467,	20029,	.2690,	.3495,
1997,	53694,	224961,	86696,	22306,	.2573,	.2901,
1998,	33536,	235429,	109959,	26421,	.2403,	.2566,
1999,	173767,	439254,	150154,	33207,	.2212,	.2652,
2000,	85109,	518121,	181462,	39045,	.2152,	.2371,
2001,	107029,	588358,	245420,	51795,	.2110,	.2050,
Arith.						
Mean	33457,	204782,	107010,	33693,	.3343,	.3153,
0 Units,	(Thousands),	(Tonnes),	(Tonnes),	(Tonnes),		
1						







Upper figure Catch per unit effort in the summer series segregated into year classes by year.
 Next figures Catch per unit effort in the summer series segregated into year classes by age.

Number of fish per 200 stations (all stations)

	1996	1997	1998	1999	2000	2001
Age 0	0	0	1	0	0	0
Age 1	0	6	0	6555	0	0
Age 2	109	116	180	884	4905	0
Age 3	279	1293	229	314	1574	27438
Age 4	814	996	857	396	4814	14949
Age 5	408	1611	800	1150	1120	28069
Age 6	342	618	1071	748	2167	1684
Age 7	171	419	199	974	780	2070
Age 8	88	211	102	175	893	616
Age 9	33	69	53	71	140	596
Age 10	27	17	19	34	78	126
Age 11	24	15	8	1	18	23
Age 12	16	20	5	5	10	0
Age 13	11	15	13	0	2	3
Age 14	9	0	1	0	0	2
Age 15	2	4	0	1	0	1

	1996' to '1997'	1997' to '1998'	1998' to '1999'	1999' to '2000'	2000' to '2001'
2+/3+	-0.819	0.476	-0.090	-0.892	-1.522
3+/4+	-0.587	0.525	-0.057	-0.952	-1.423
4+/5+	-0.434	0.564	-0.010	-0.382	-1.198
5+/6+	-0.206	0.712	0.122	-0.258	0.017
6+/7+	-0.065	1.243	0.154	0.045	0.173
7+/8+	0.078	1.341	0.331	0.100	0.340

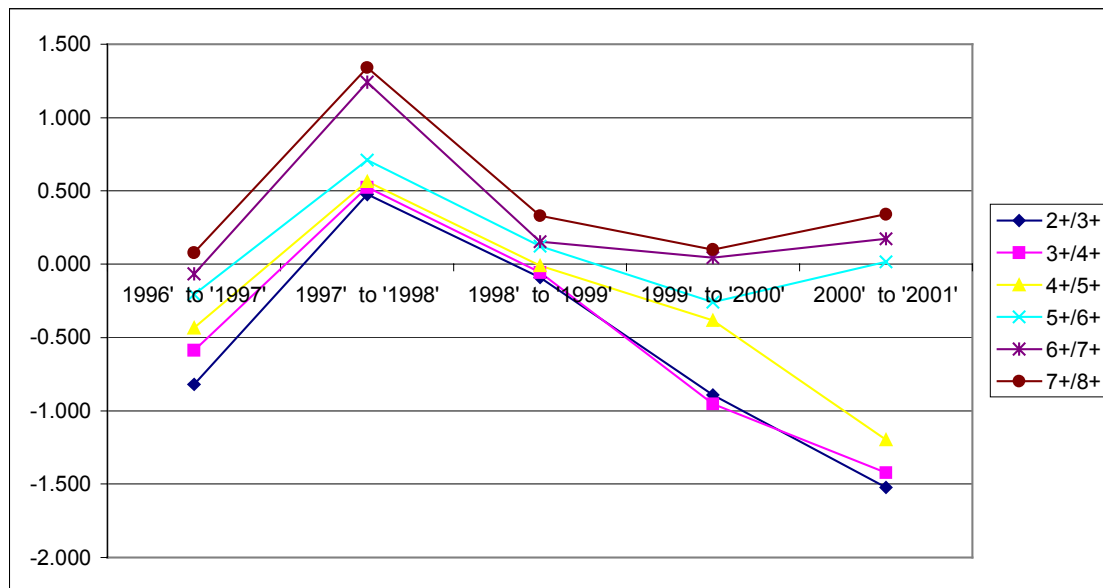
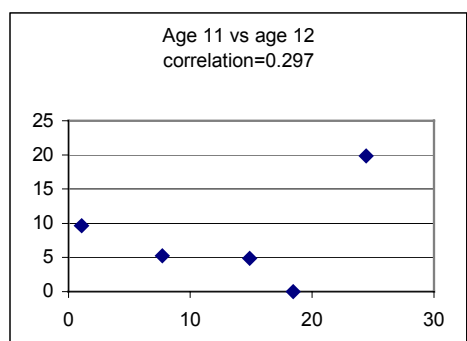
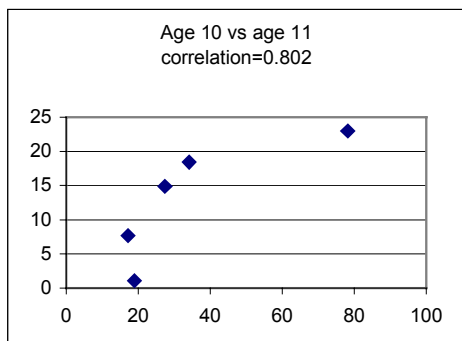
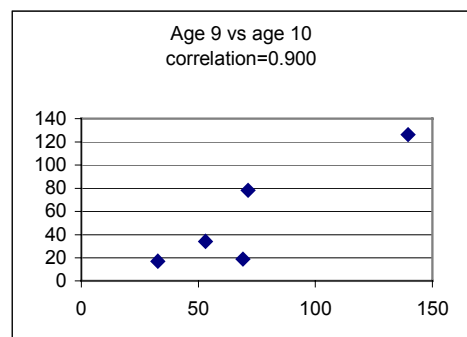
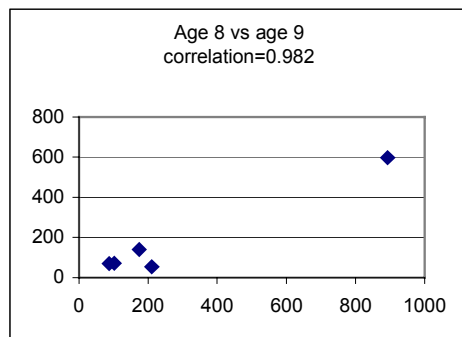
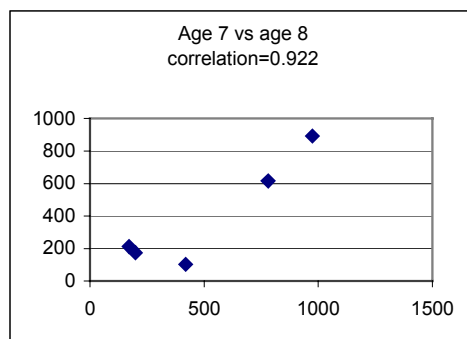
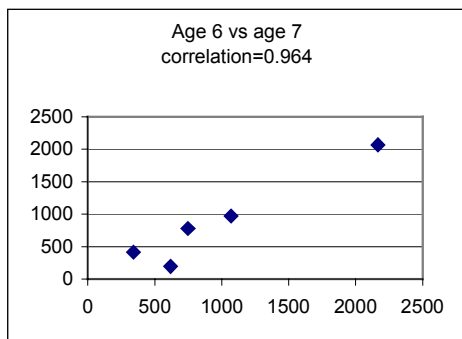
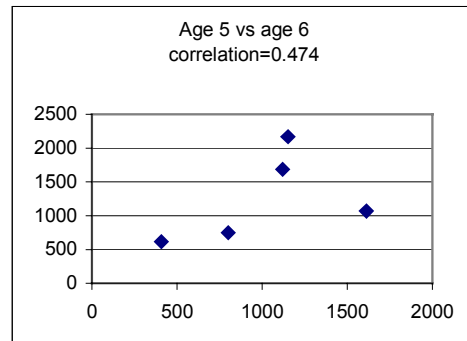
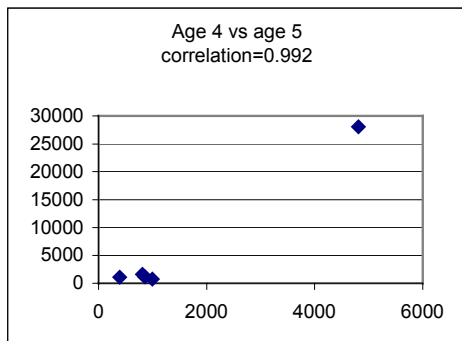
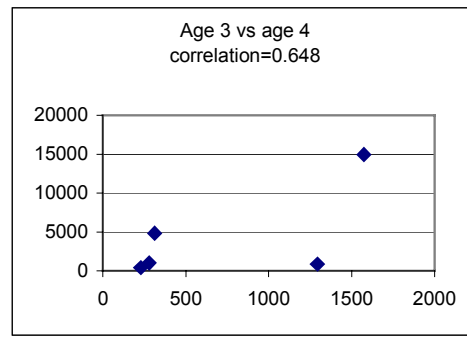
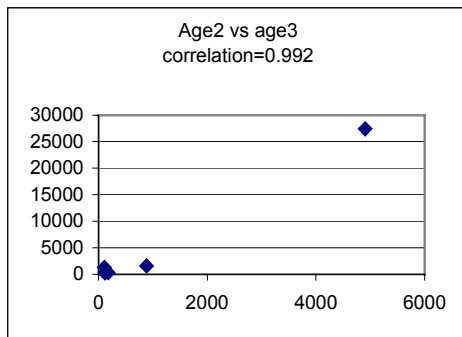


Figure Z- total mortality

Survey data. Correlation between ages



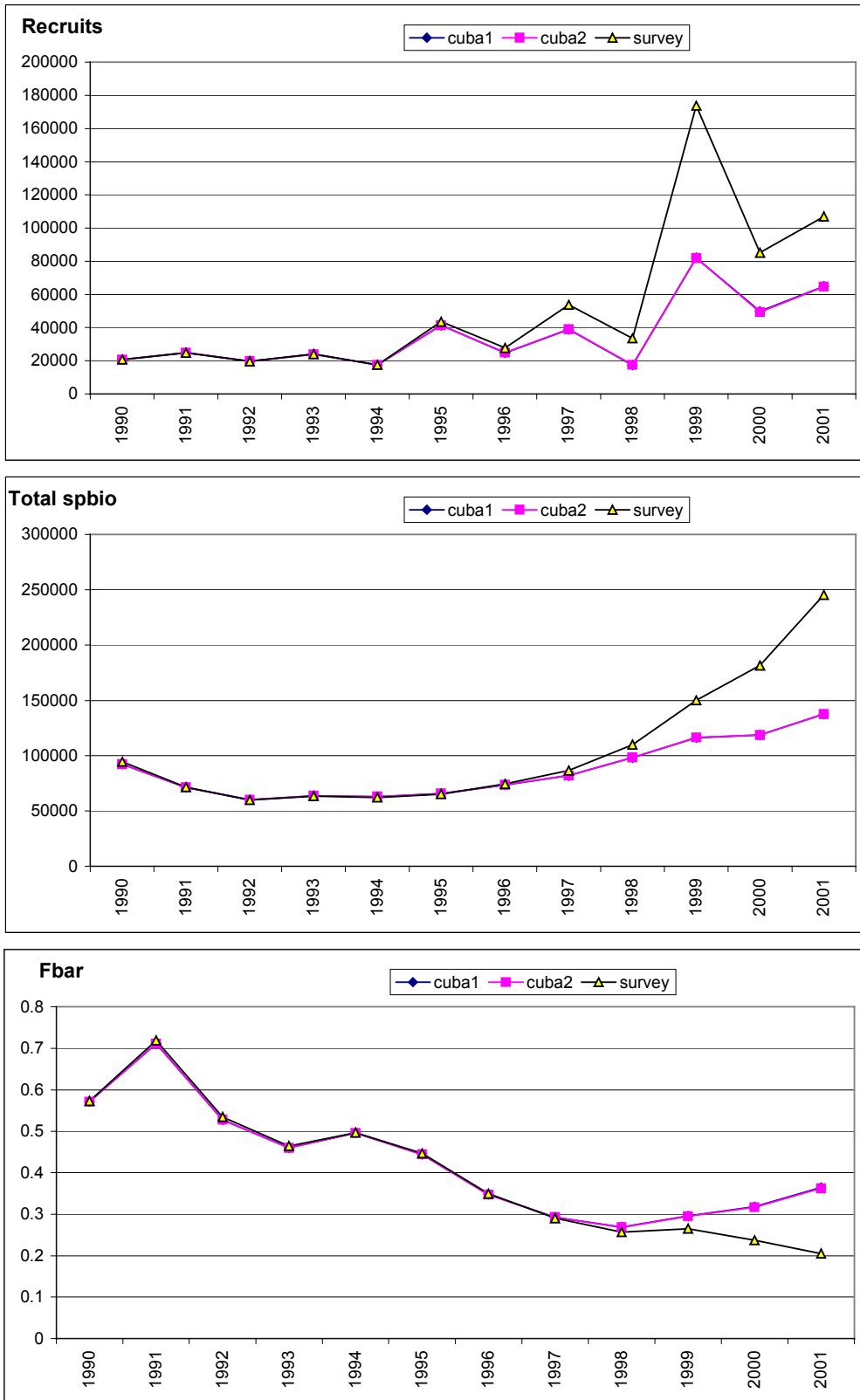


Figure Comparison of assesments using different tuning series. Cuba1- same setting as last year, Cuba2- same settings as in 1999, Survey- from tuning of summer survey.