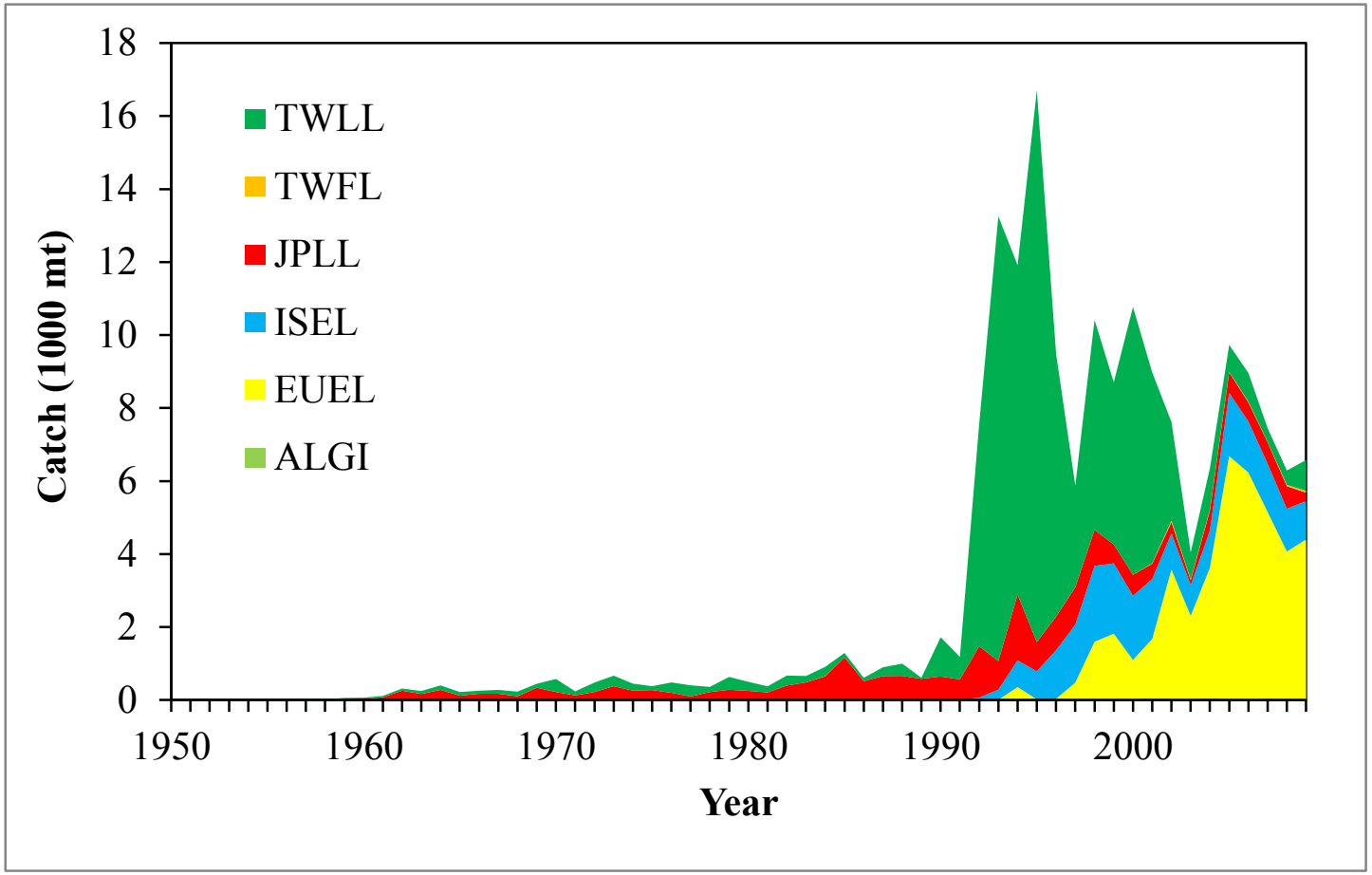
Stock assessment of SW SWO by Age-Structured Integrate Analysis (ASIA)

Data used for SW SWO assessment

Fleet	Fleet Code	Area	Catch data	Length data	CPUE
Gillnet, trolling and other minor artisanal fleets	ALGI	SW	✓	-	-
Longline fleets of EU (from Spain, Portugal and the UK)	EUEL	SW	✓	✓	✓
Semi-industrial longline fleets of France-Reunion, France-Mayotte, Madagascar, Mauritius and the Seychelles	ISEL	SW	✓	✓	✓
Longline fleets of Japan	JPLL	SW	✓	✓	✓
Fresh-tuna longline fleets of Taiwan and Indonesia, and sport and hand line fleets	TWFL	SW	✓	-	-
Longline fleet of Taiwan	TWLL	SW	✓	✓	✓

Catch data used for SW SWO assessment

Trend of catch in weight



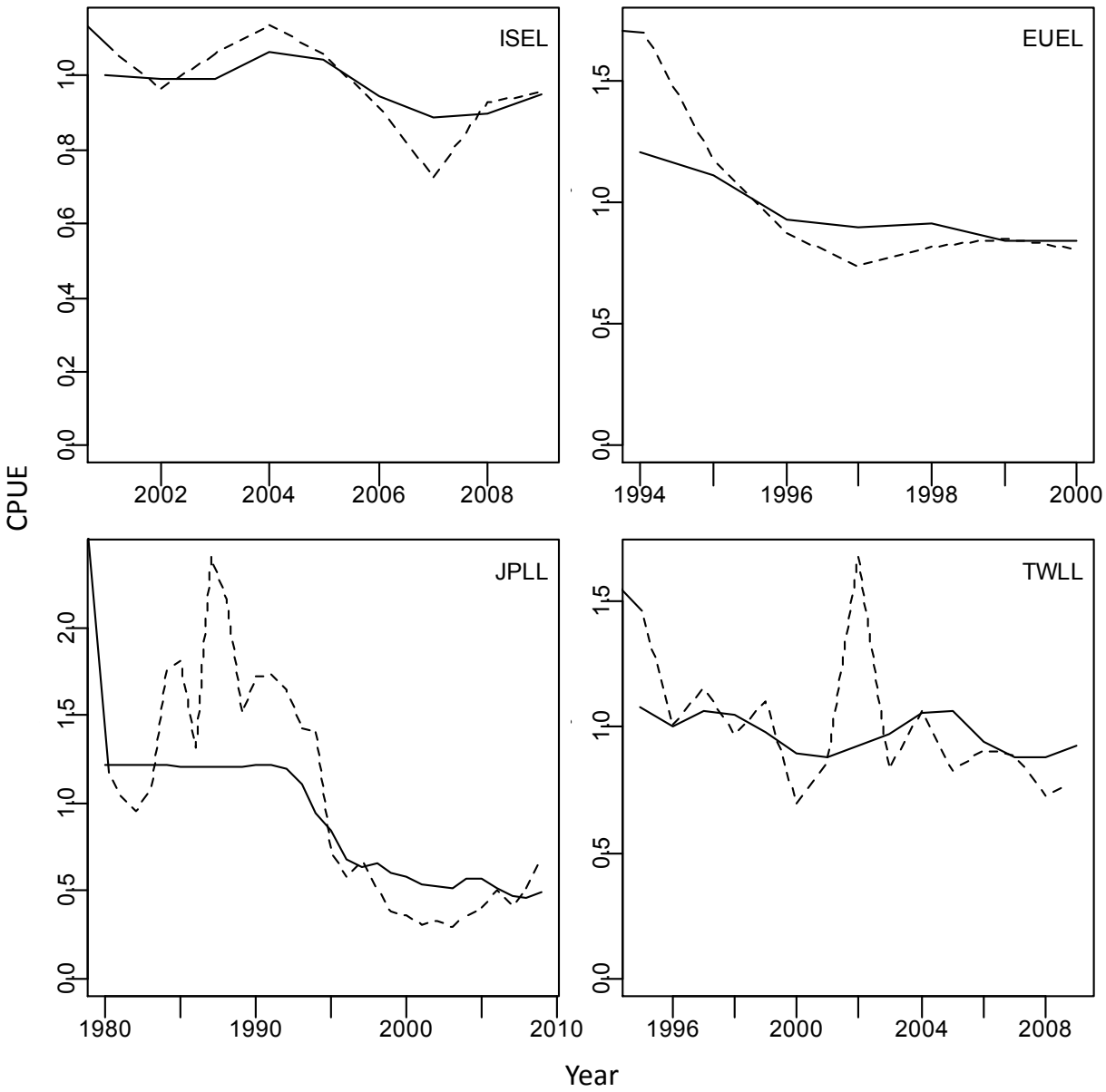
Biological parameters used/assumed for SW SWO

Parameter	Females	Males
Asymptotic size, L_∞ (cm)	274.86	234.00
Growth parameter, K (year^{-1})	0.1377	0.1694
Age-at-zero-length, t_0 (year)	-1.9975	-2.1809
Length-weight, A	9.133×10^{-6}	9.133×10^{-6}
Length-weight, B	3.012	3.012
Maturity slope, r_m	0.0953	-
Length-at-50%-maturity, L_m (cm)	170.4	-
Maximum age, λ (year)	10	10

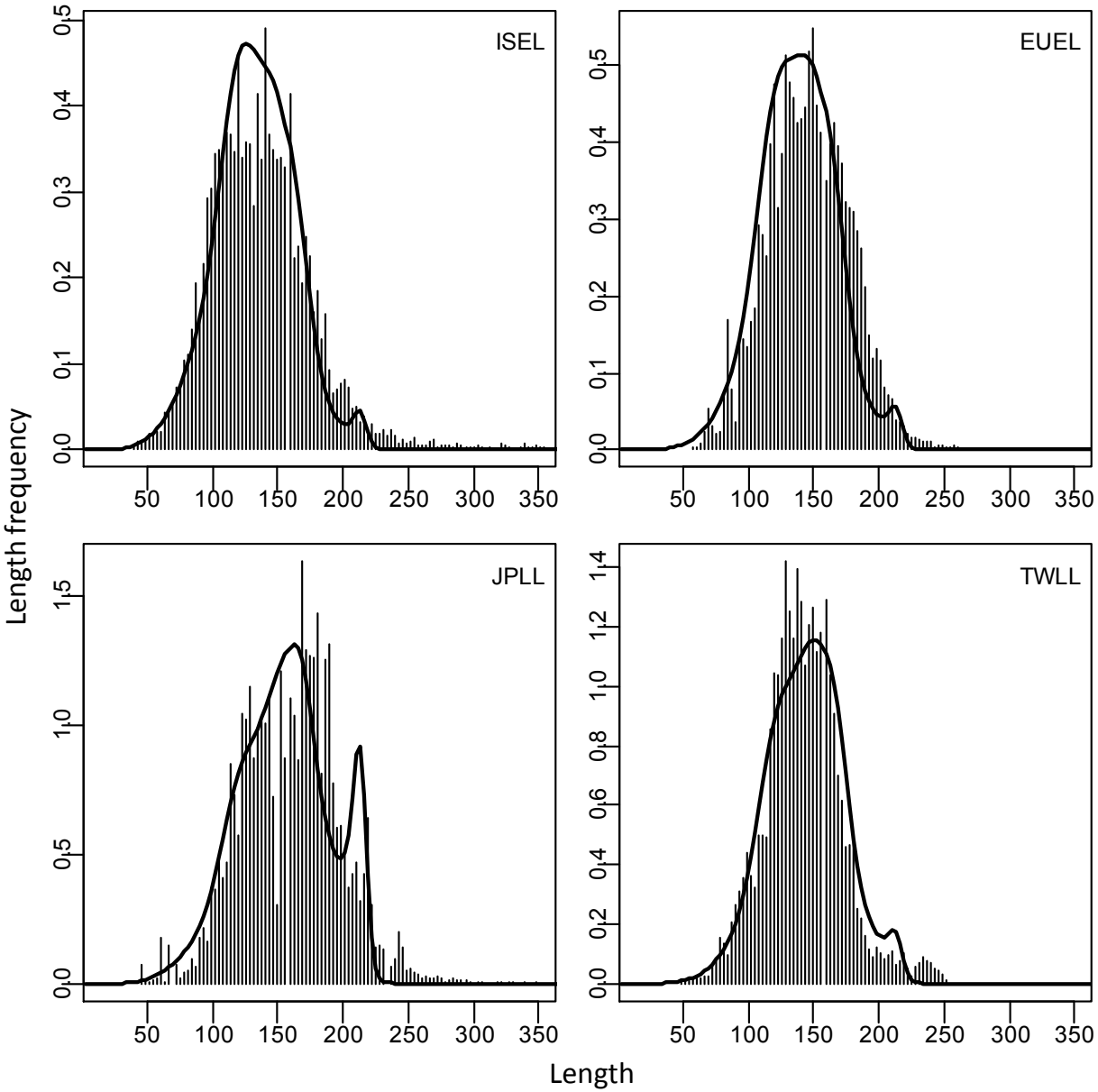
Pre-specified

Natural mortality, M	0.25
Steepness, h	0.90
Variation in recruitment, σ	0.40

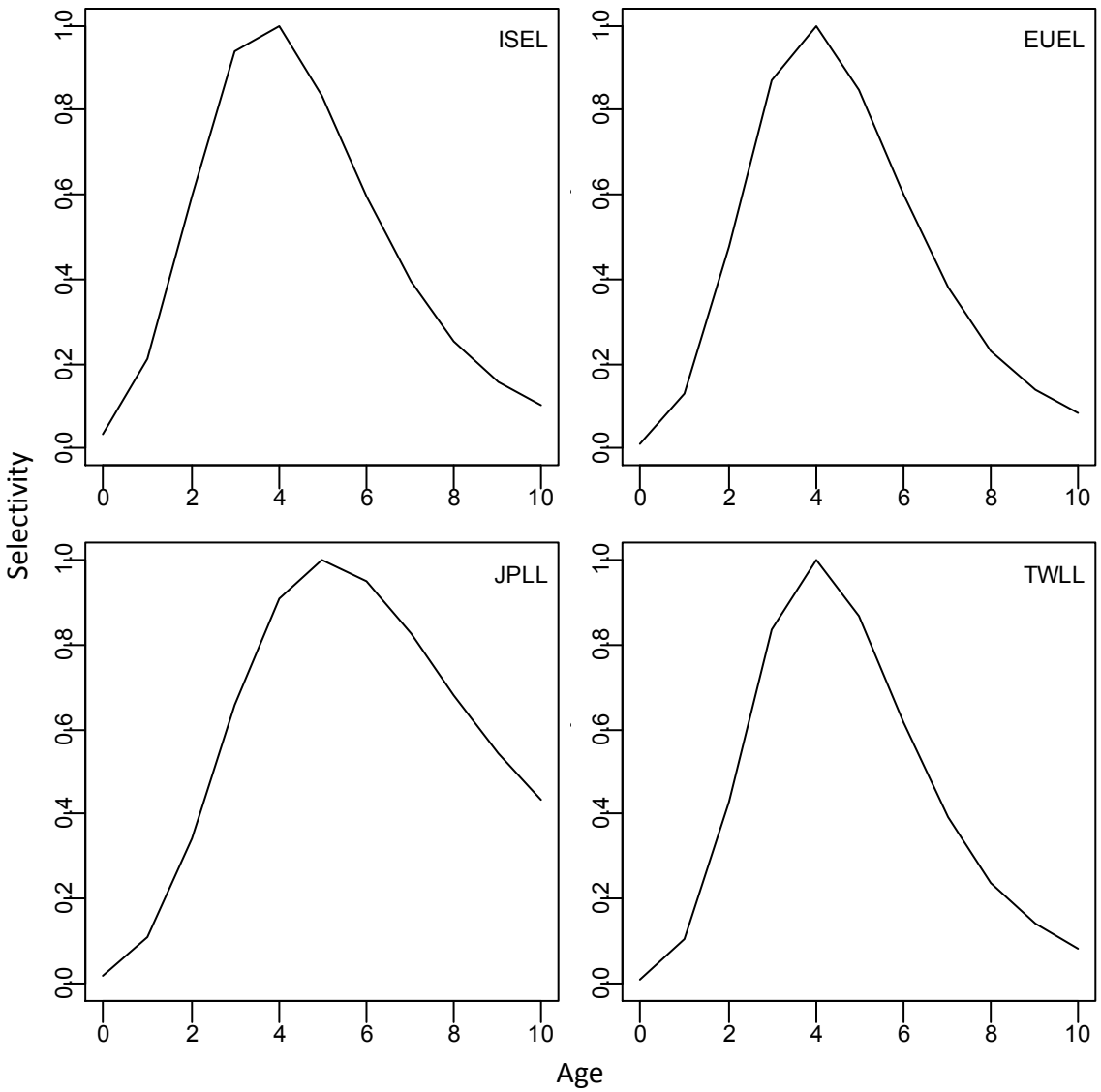
Fit of CPUE


ISEL
EUEL
JPLL
TWLL
CPUE
Year
0.0
0.2
0.4
0.6
0.8
1.0
0.5
1.5
2.0
2002
2004
2006
2008
1994
1996
1998
2000
1980
1990
2010

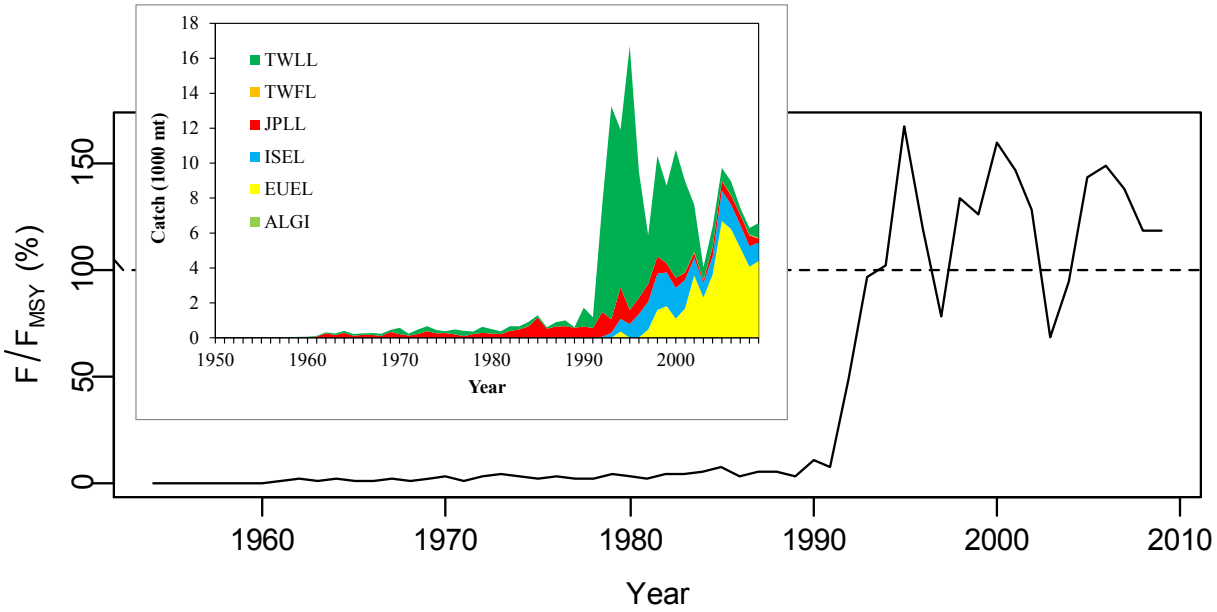
Fit of length frequency

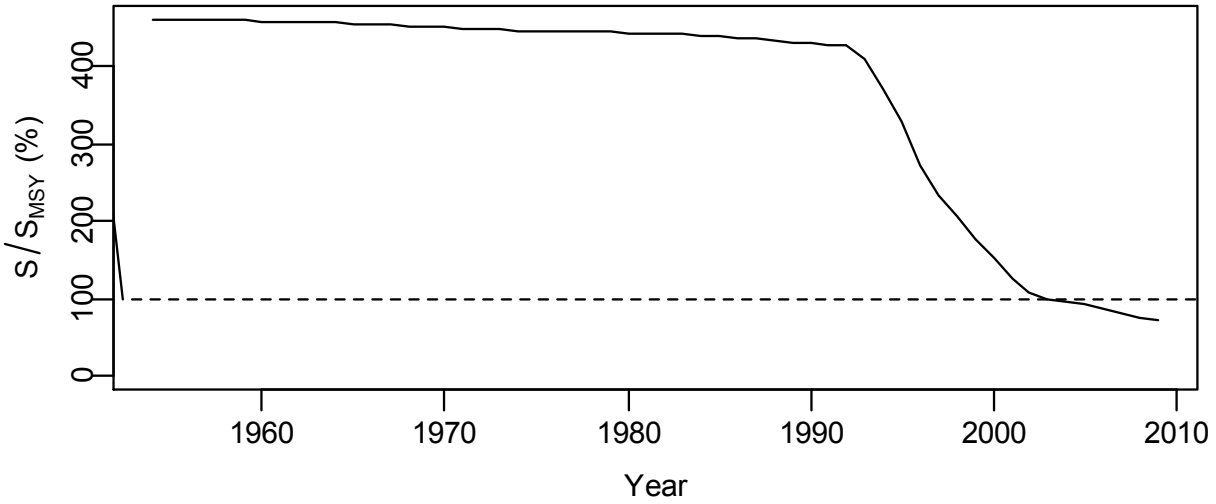


Estimated selectivity (assumed to be dome-shaped)



Estimated F and SB trends





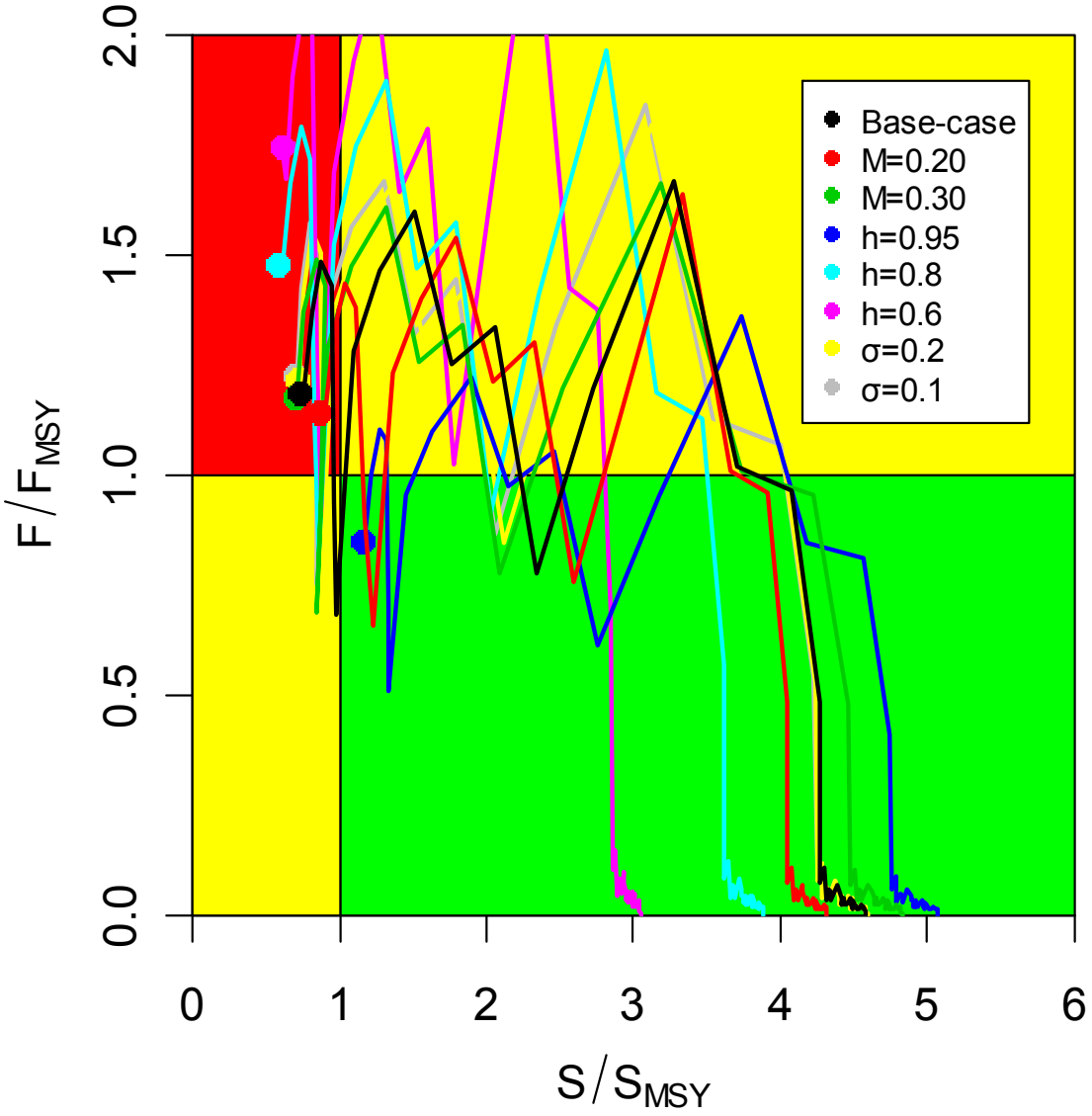
Sensitivity analysis

	MSY	$S_{current}/S_0$	$S_{current}/S_{MSY}$	$F_{current}/F_{MSY}$
Base-case	7058	0.159	0.727	1.187
M = 0.20	7018	0.198	0.856	1.146
M = 0.30	7124	0.144	0.694	1.180
h = 0.95	7805	0.226	1.147	0.851
h = 0.8	6645	0.149	0.577	1.483
h = 0.6	5966	0.197	0.599	1.751
σ = 0.2	6404	0.153	0.703	1.221
σ = 0.1	6249	0.151	0.696	1.228

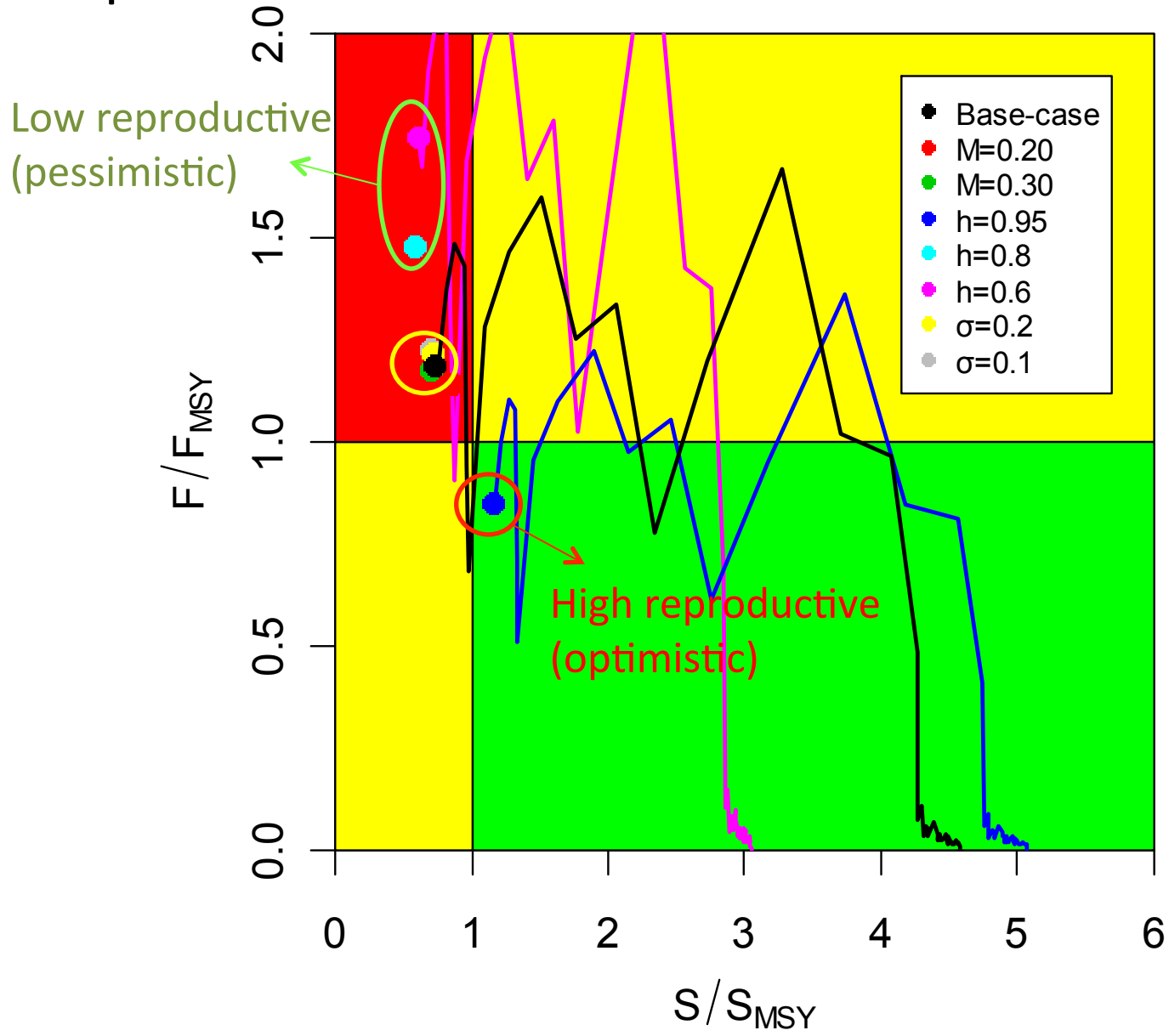
most optimistic

most pessimistic

Kobe plot


Base-case
M=0.20
M=0.30
h=0.95
h=0.8
h=0.6
σ=0.2
σ=0.1
F/F_MSY
S/S_MSY
0.0
0.5
1.0
1.5
2.0
0
1
2
3
4
5
6

Kobe plot


Low reproductive
(pessimistic)
High reproductive
(optimistic)
Base-case
M=0.20
M=0.30
h=0.95
h=0.8
h=0.6
σ=0.2
σ=0.1
F/F_MSY
S/S_MSY
0.0
0.5
1.0
1.5
2.0
0
1
2
3
4
5
6

Stock status summary table

Base-case
M=0.25, h=0.9, sigma=0.4

Management Quantity	SW Region Only
Most recent catch estimate (t)	7787
Mean catch over last 5 years (t)	9176
MSY (t)	7058
Current Data Period	1954-2009
F(Current)/F(MSY)	1.187
B(Current)/B(MSY)	0.823
SB(Current)/SB(MSY)	0.727
B(Current)/B(0)	0.299
SB(Current)/SB(0)	0.159
B(Current)/B(Current, F=0)	-
SB(Current)/SB(Current, F=0)	-