

Pacific Ocean Stocks

v4.25 (Dec-14-2017)

1. Albacore tuna South Pacific Ocean [ALBASPAC]
2. Bigeye tuna Central Western Pacific [BIGEYECWPAC]
3. Bigeye tuna Eastern Pacific [BIGEYEPPAC]
4. Bigeye tuna Western Pacific Ocean [BIGEYEWPO]
5. Blue shark North Pacific [BLSHARNPAC]
6. Blue marlin Pacific Ocean [BMARLINPAC]
7. Pacific bluefin tuna Pacific Ocean [PACBTUNA]
8. Shortfin mako Northwest Pacific Ocean [SFMAKONWPAC]
9. Skipjack tuna Central Western Pacific [SKJCWPAC]
10. Striped marlin Northeast Pacific [STMARLINNEPAC]
11. Striped marlin Southwestern Pacific Ocean [STMARLINSWPO]
12. Striped marlin Western and Central North Pacific [STMARLINWCNPAC]
13. Swordfish Eastern Pacific [SWORDEPAC]
14. Swordfish North Pacific [SWORDNPAC]
15. Yellowfin tuna Central Western Pacific [YFINCWPAC]
16. Yellowfin tuna Eastern Pacific [YFINEPAC]

Albacore tuna South Pacific Ocean [ALBASPAC]

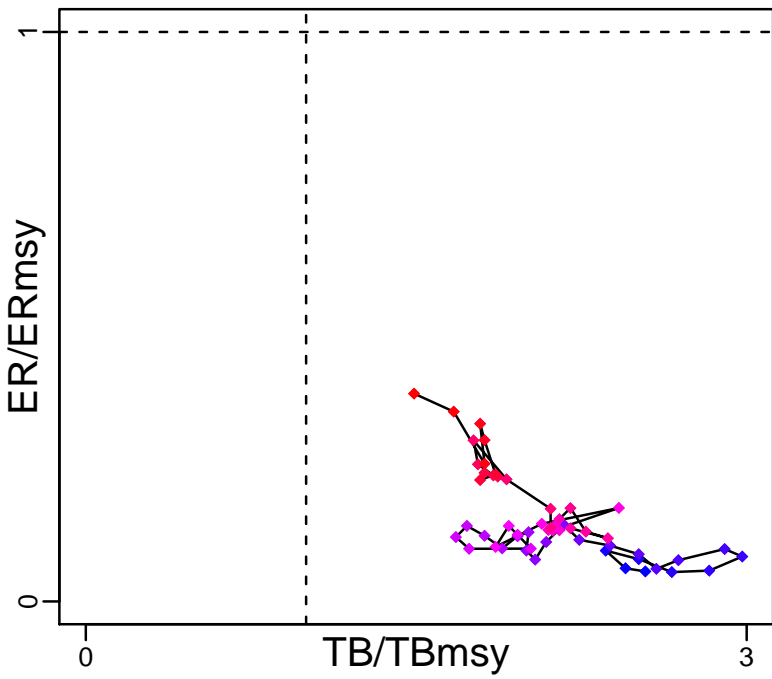
Metadata	
Scientific Name	Thunnus alalunga
Current Assess ID	SPC-ALBASPAC-1952-2015-PONS
Area	South Pacific Ocean
Management Authority	Western and Central Pacific Fisheries Commission
Assessor	Secretariat of the Pacific Community
Asmts in RAM	2015, 2010

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-MT	2010	835,200
SSBmsy	SSBmsy-extr-MT	2015	58,130
Fmsy	Fmsy-extr-1/yr	2015	1.32
ERmsy	ERmsy-calc-ratio	2010	0.12
TBmgt	TBmgt-MT	2010	835,200
SSBmgt	-	-	-
Fmgt	Fmgt-1/yr	2010	0.16
ERmgt	-	-	-
TB0	TB0-MT	2010	1,629,000
SSB0	SSB0-MT	2010	721,400
MSY	MSY-MT	2015	76,800
M	M-1/yr	2010	0.4
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

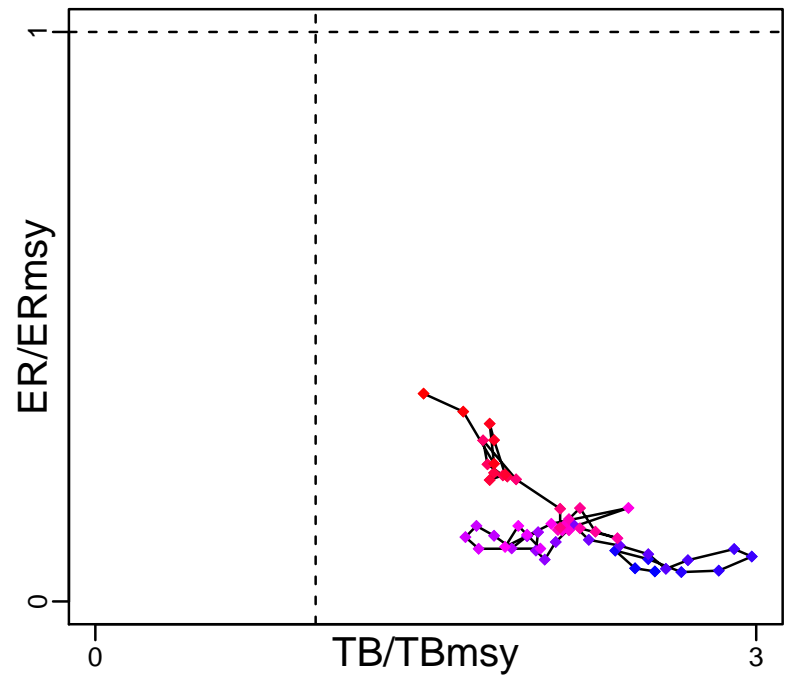
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	-	-	-	-	-
SSB	SSB-MT	2015	176,000	-	-
TN	-	-	-	-	-
R	R-E00	2015	6,410,000	-	-
F	F-1/yr	2015	1	-	-
ER	ER-calc-ratio	2015	0	-	-
TC	TC-MT	2010	88,500		
TL	TL-MT	2015	68,300		
TB/TBmsy	TBdivTBmsy-dimensionless	2015	1.49		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2015	2.86		
F/Fmsy	FdivFmsy-dimensionless	2015	0.47		
ER/ERmsy	ER-calc-ratio/ERmsy-conv-ratio	2015	0.36		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Albacore tuna South Pacific Ocean [ALBASPAC]

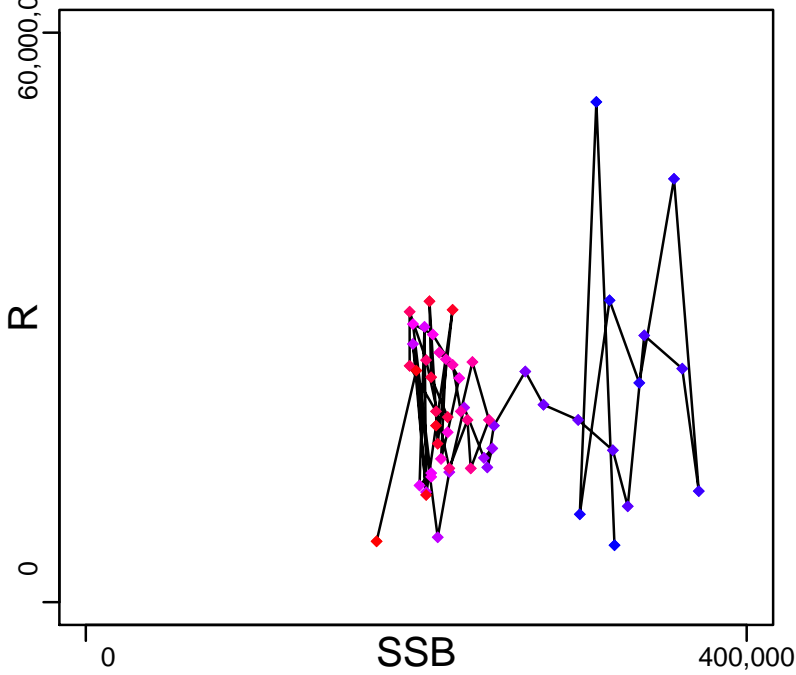
Kobe MSYpref (1952–2015–PONS)



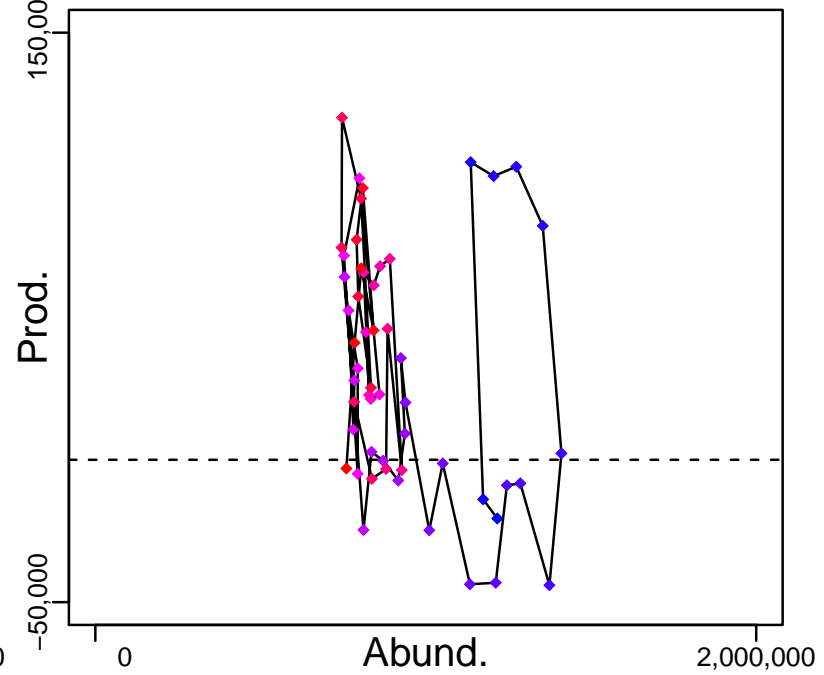
Kobe MGTpref (1952–2015–PONS)



Spawner Recruit (1952–2015–PONS)



Production (1952–2015–PONS)



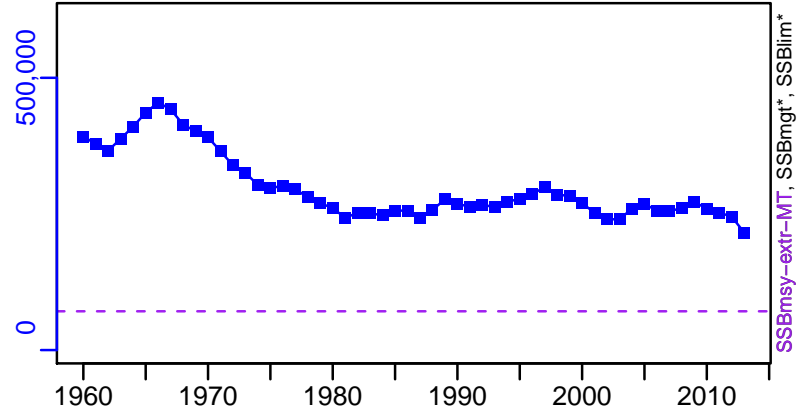
◆ Start Year ◆ End Year * No Data

Albacore tuna South Pacific Ocean [ALBASPAC]

TB*



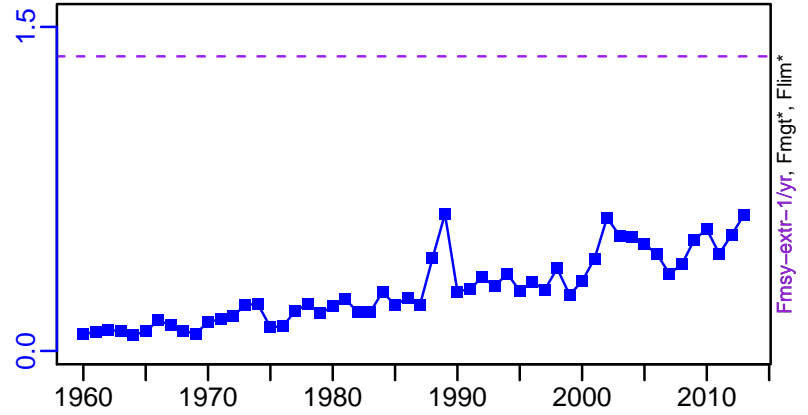
SSB-MT (1952-2015-PONS)



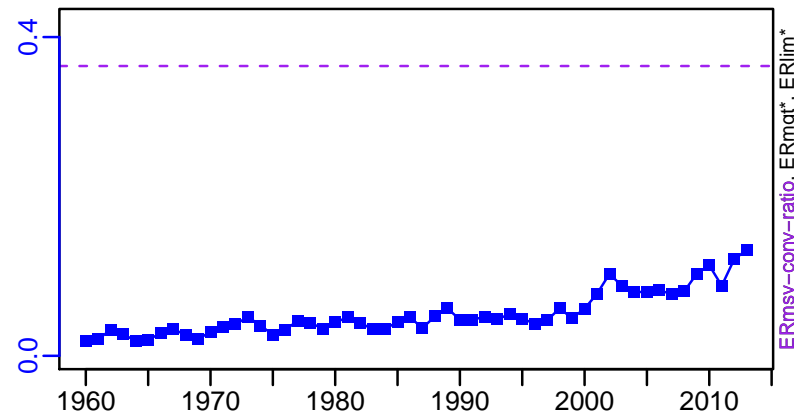
TN *



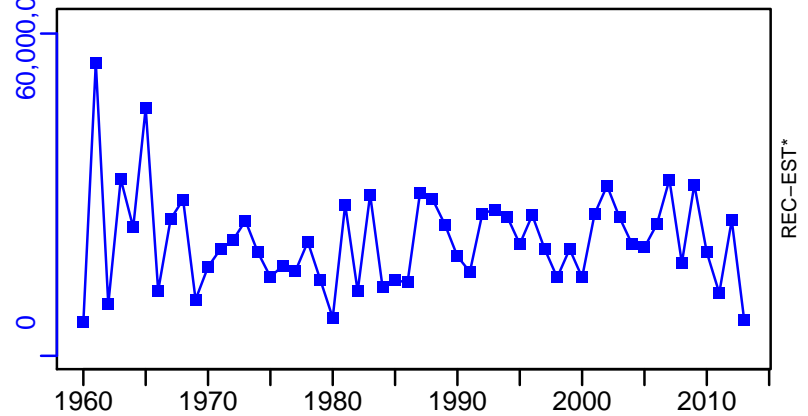
F-1/yr (1952-2015-PONS)



ER-calc-ratio (1952-2015-PONS)



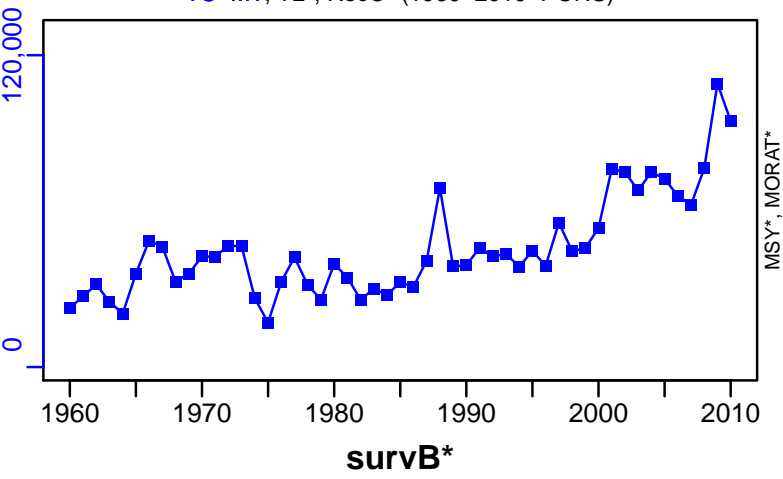
R-E00 (1952-2015-PONS)



Albacore tuna South Pacific Ocean [ALBASPAC]

TC-MT, TL*, RecC* (1960-2010-PONS)

TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



■ 1st listed time series ▲ 3rd listed time series — MORAT
● 2nd listed time series - - - MSY * No Data

Bigeye tuna Central Western Pacific [BIGEYECWPAC]

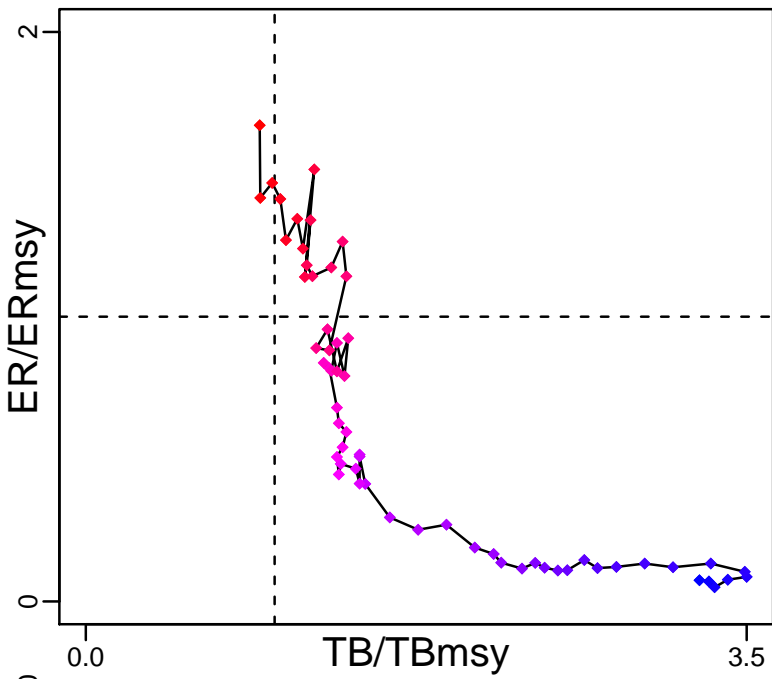
Metadata	
Scientific Name	Thunnus obesus
Current Assess ID	SPC-BIGEYECWPAC-1950-2015-PONS
Area	Central Western Pacific Ocean
Management Authority	Western and Central Pacific Fisheries Commission
Assessor	Secretariat of the Pacific Community
Asmts in RAM	2015, 2012

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-extr-MT	2015	803,646
SSBmsy	SSBmsy-extr-MT	2015	331,126
Fmsy	Fmsy-extr-1/yr	2015	0.44
ERmsy	ERmsy-calc-ratio	2015	0.14
TBmgt	-	-	-
SSBmgt	SSBmgt-MT	2012	345,400
Fmgt	Fmgt-1/yr	2012	0.04
ERmgt	-	-	-
TB0	TB0-MT	2012	2,286,000
SSB0	SSB0-MT	2012	1,207,000
MSY	MSY-MT	2015	108,520
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

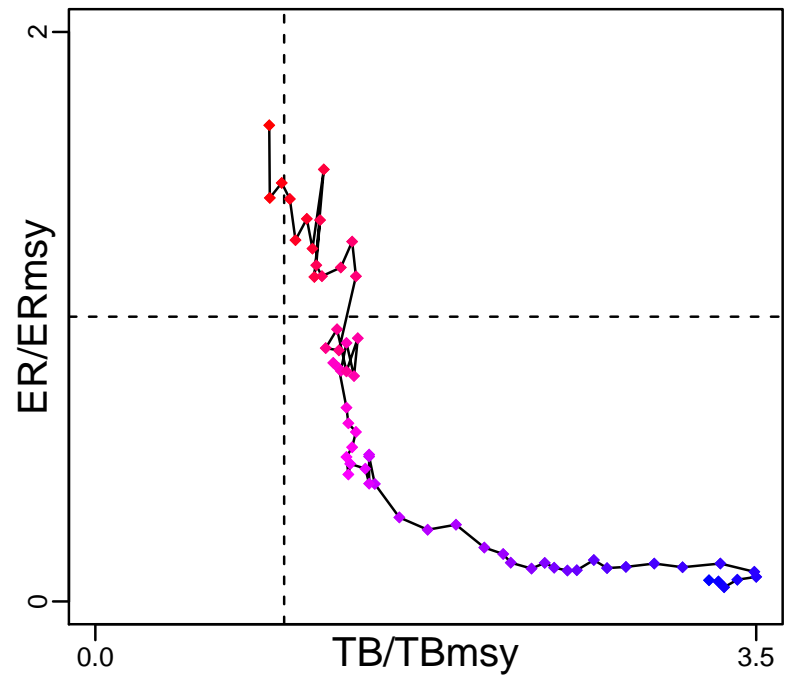
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2015	707,000	-	-
SSB	SSB-MT	2015	288,000	-	-
TN	-	-	-	-	-
R	R-E00	2015	49,100,000	-	-
F	F-1/yr	2015	1	-	-
ER	ER-calc-ratio	2015	0	-	-
TC	TC-MT	2012	162,000		
TL	TL-MT	2015	135,000		
TB/TBmsy	TBdivTBmsy-dimensionless	2015	0.92		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2015	0.86		
F/Fmsy	FdivFmsy-dimensionless	2015	1.61		
ER/ERmsy	ER-calc-ratio/ERmsy-calc-ratio	2015	1.67		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Bigeye tuna Central Western Pacific [BIGEYECWPAC]

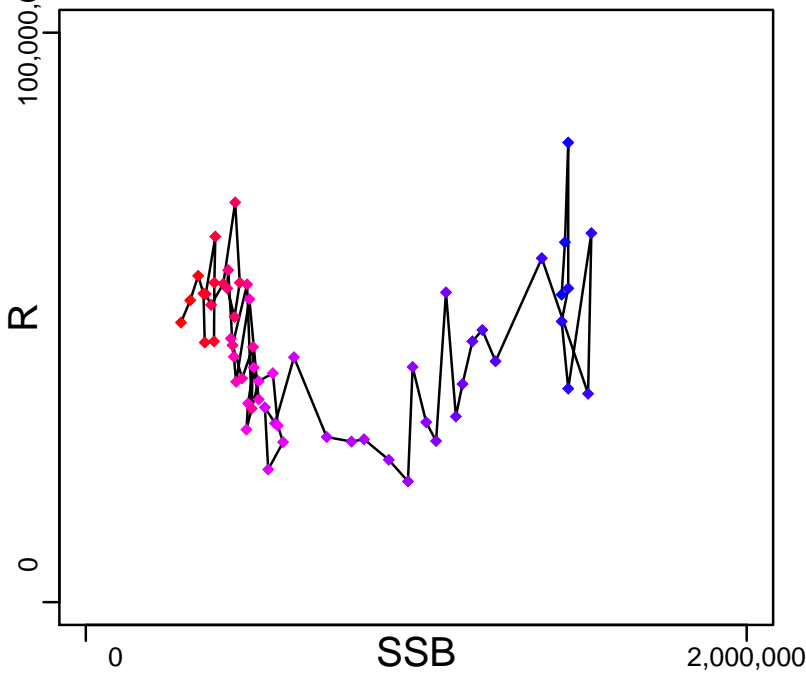
Kobe MSYpref (1950–2015–PONS)



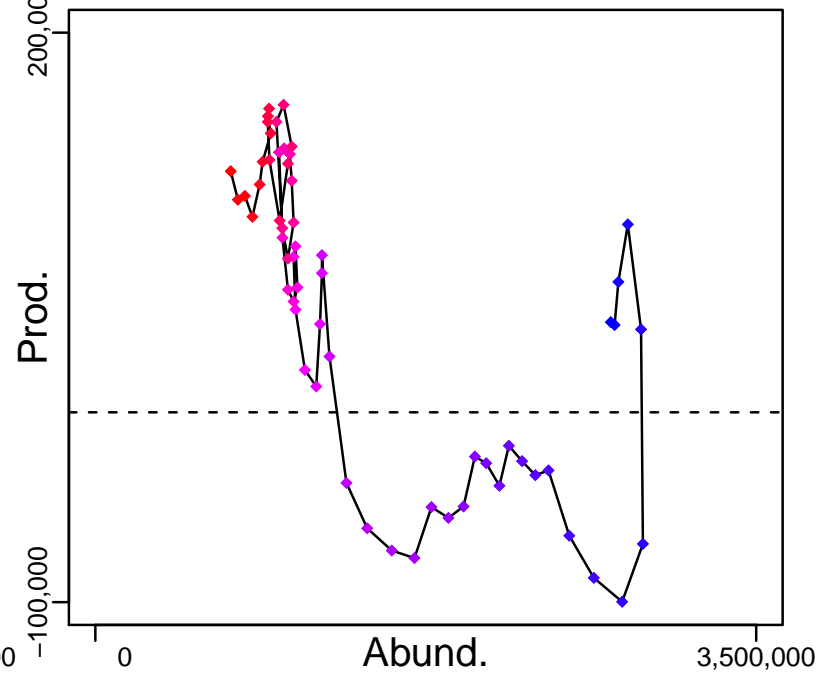
Kobe MGTpref (1950–2015–PONS)



Spawner Recruit (1950–2015–PONS)



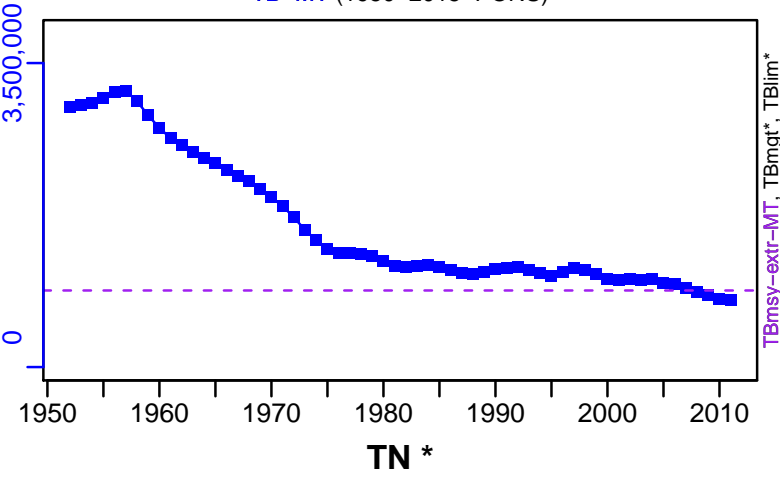
Production (1950–2015–PONS)



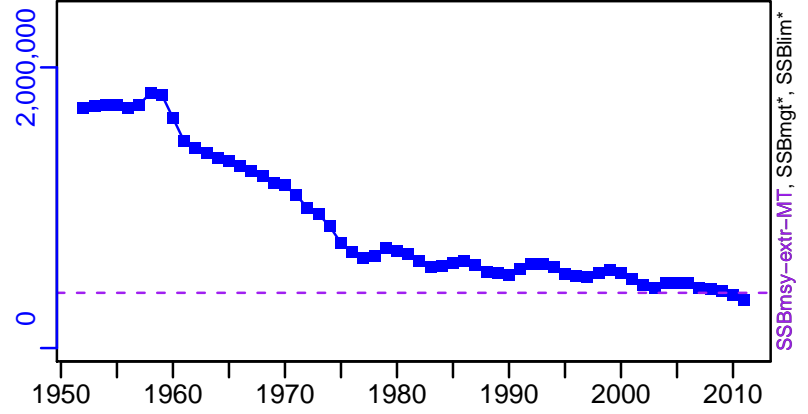
◆ Start Year ◆ End Year * No Data

Bigeye tuna Central Western Pacific [BIGEYECWPAC]

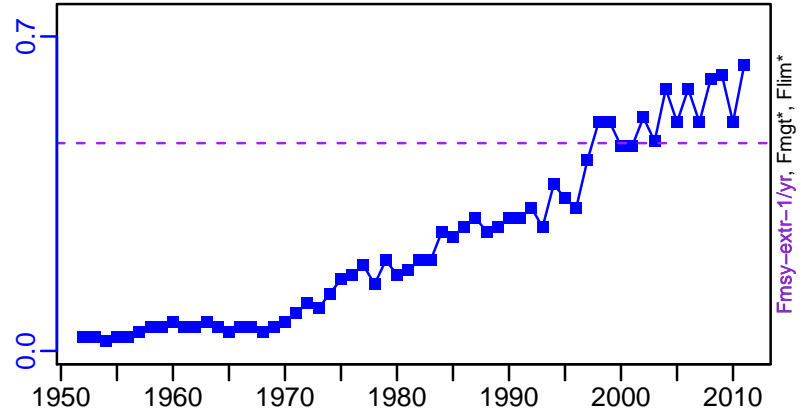
TB-MT (1950–2015–PONS)



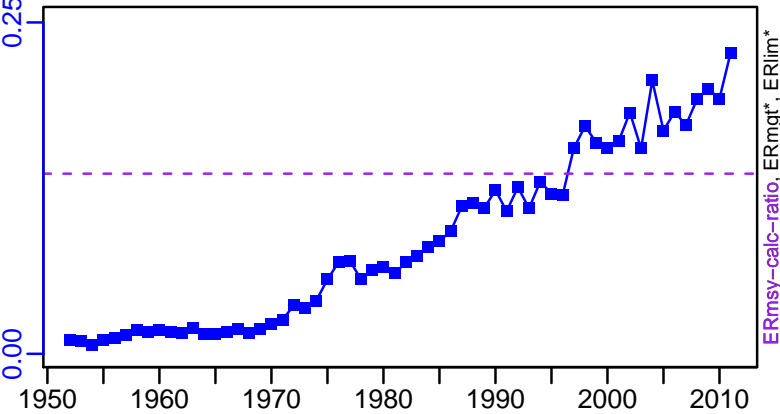
SSB-MT (1950–2015–PONS)



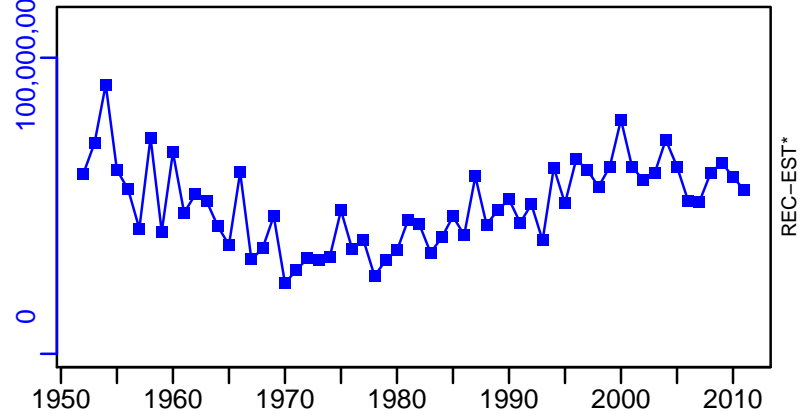
F-1/yr (1950–2015–PONS)



ER-calc-ratio (1950–2015–PONS)

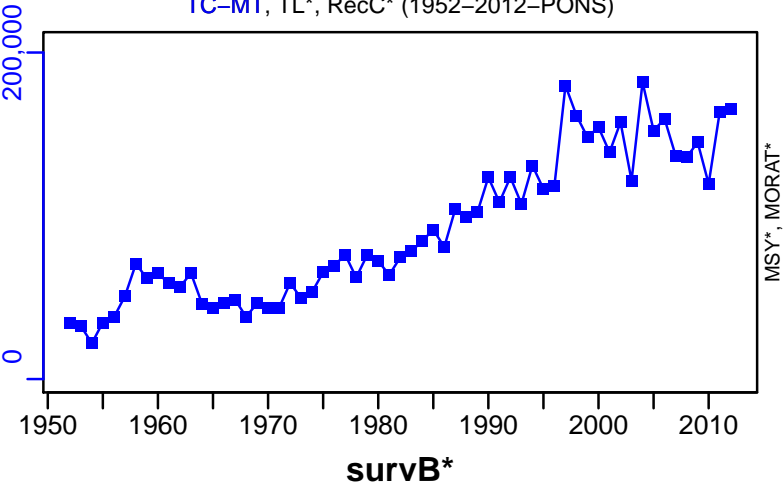


R-E00 (1950–2015–PONS)



Bigeye tuna Central Western Pacific [BIGEYECWPAC]

TC-MT, TL*, RecC* (1952-2012-PONS)



TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Bigeye tuna Eastern Pacific [BIGEYEEPAC]

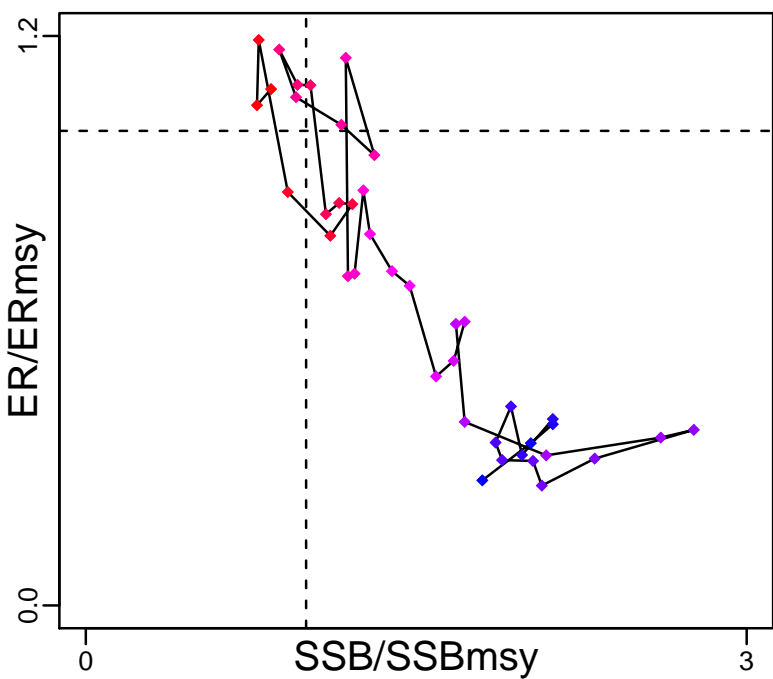
Metadata	
Scientific Name	Thunnus obesus
Current Assess ID	IATTC-BIGEYEEPAC-1954-2016-PONS
Area	Eastern Pacific
Management Authority	Inter-American Tropical Tuna Commission
Assessor	Inter-American Tropical Tuna Commission
Asmts in RAM	2012, 2016

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-MT	2012	420,280
SSBmsy	SSBmsy-extr-MT	2016	96,555
Fmsy	Fmsy-extr-1/yr	2016	0.99
ERmsy	ERmsy-calc-ratio	2012	0.26
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	MSY-MT	2016	106,201
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

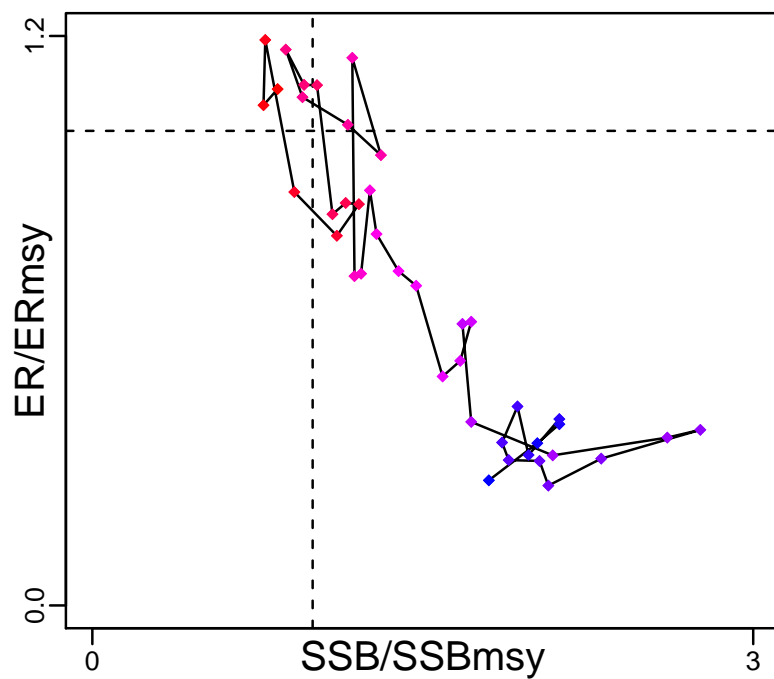
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	-	-	-	-	-
SSB	SSB-MT	2016	110,000	-	-
TN	-	-	-	-	-
R	R-E00	2016	6900	-	-
F	F-1/yr	2016	1	-	-
ER	ER-calc-ratio	2016	0	-	-
TC	TC-MT	2012	88,000		
TL	TL-MT	2016	94,700		
TB/TBmsy	TBdivTBmsy-dimensionless	2012	0.94		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2016	1.19		
F/Fmsy	FdivFmsy-dimensionless	2016	0.83		
ER/ERmsy	ER-calc-ratio/ERmsy-conv-ratio	2016	1.09		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Bigeye tuna Eastern Pacific [BIGEYEEPAC]

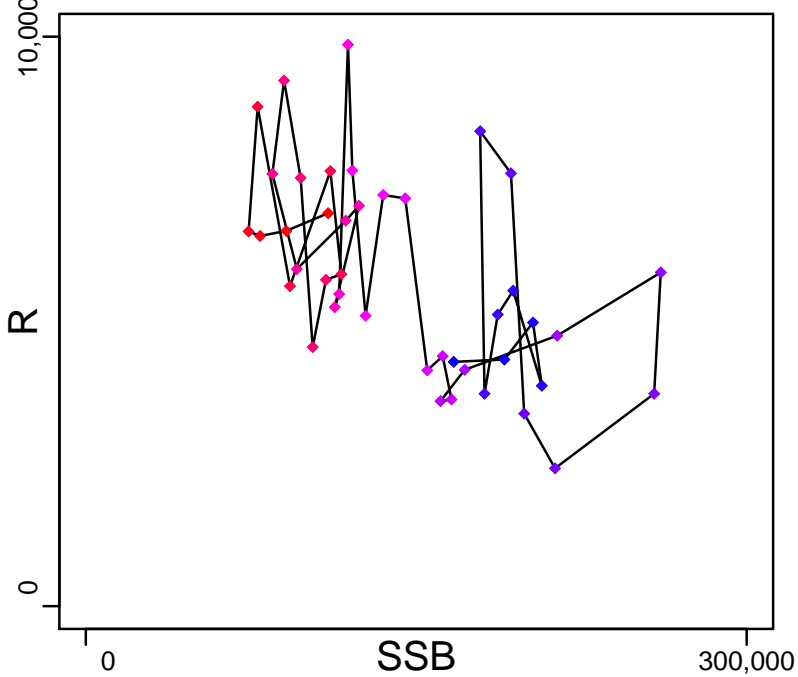
Kobe MSYpref (1954–2016–PONS)



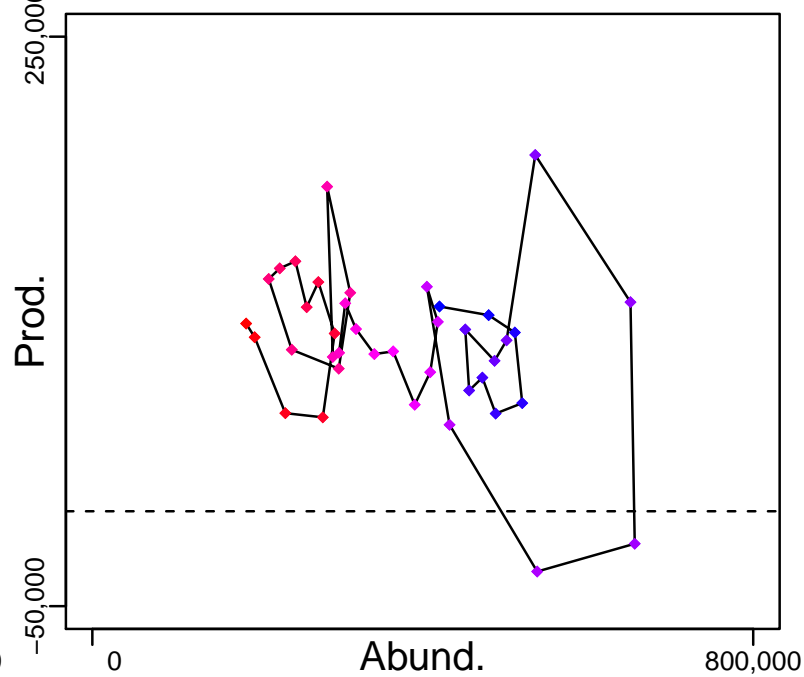
Kobe MGTpref (1954–2016–PONS)



Spawner Recruit (1954–2016–PONS)



Production (1954–2016–PONS)



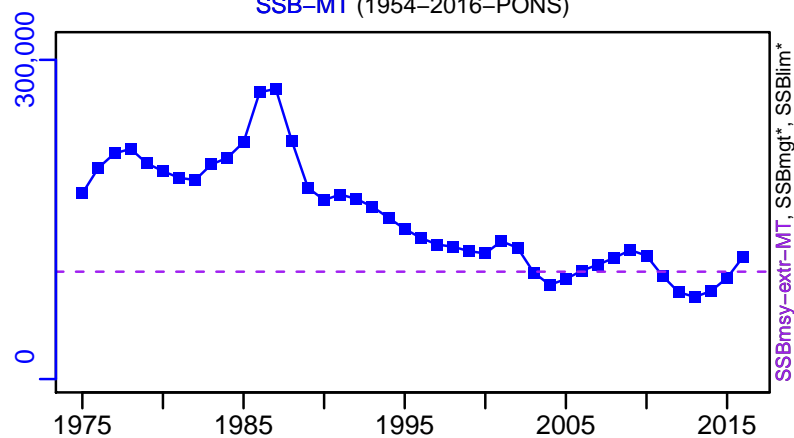
◆ Start Year ◆ End Year * No Data

Bigeye tuna Eastern Pacific [BIGEYEEPAC]

TB*



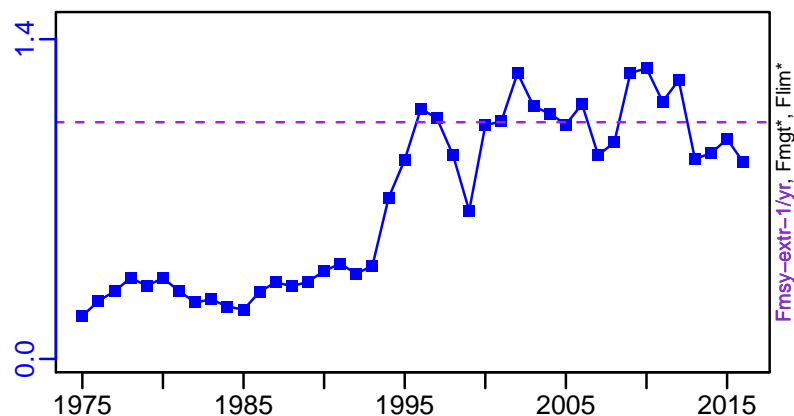
SSB-MT (1954–2016–PONS)



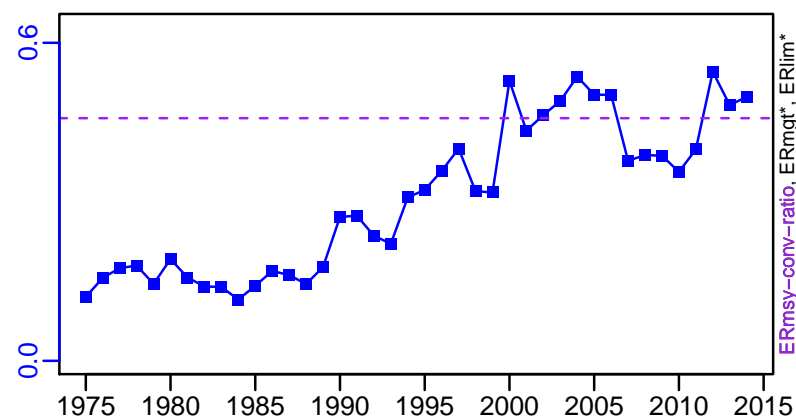
TN *



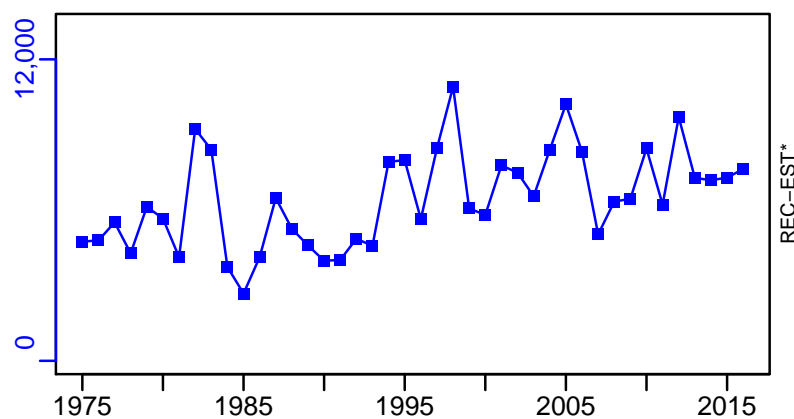
F-1/yr (1954–2016–PONS)



ER-calc-ratio (1954–2016–PONS)



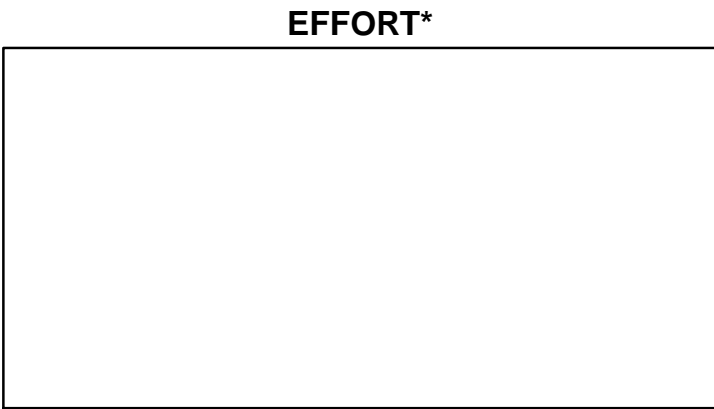
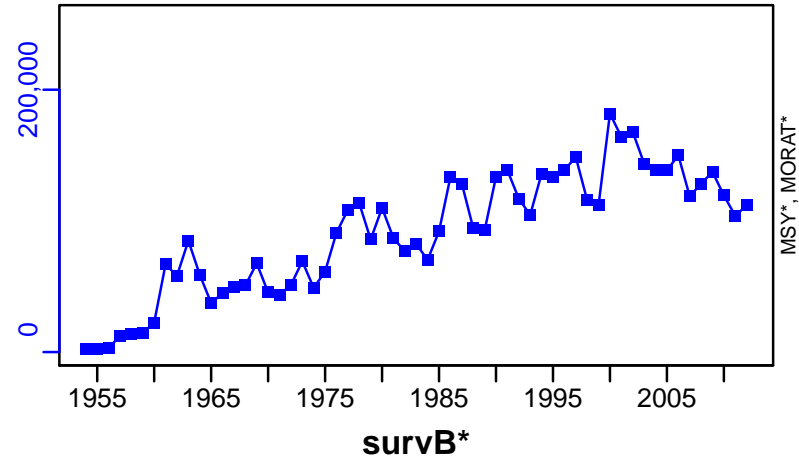
R-E00 (1954–2016–PONS)



Bigeye tuna Eastern Pacific [BIGEYEEPAC]

TC-MT, TL*, RecC* (1954-2012-PONS)

TAC*, Cpair*, Cadv*



EFFORT*



Bigeye tuna Western Pacific Ocean [BIGEYEWPO]

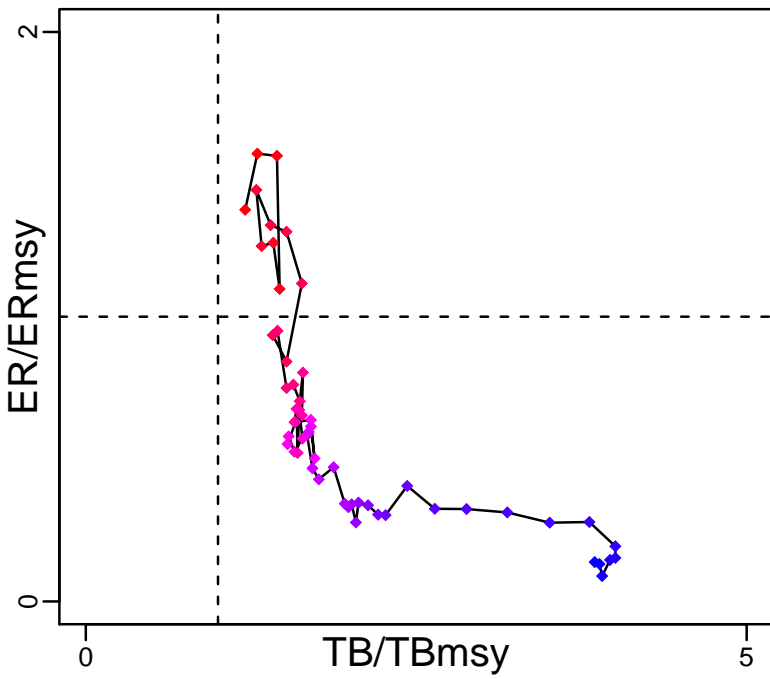
Metadata	
Scientific Name	Thunnus obesus
Current Assess ID	SPC-BIGEYEWPO-1952-2006-JENSEN
Area	Western Pacific Ocean
Management Authority	Western and Central Pacific Fisheries Commission
Assessor	Secretariat of the Pacific Community
Asmts in RAM	2006

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-MT	2006	249,600
SSBmsy	SSBmsy-MT	2006	102,200
Fmsy	-	-	-
ERmsy	ERmsy-ratio	2006	0.26
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	MSY-MT	2006	64,600
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

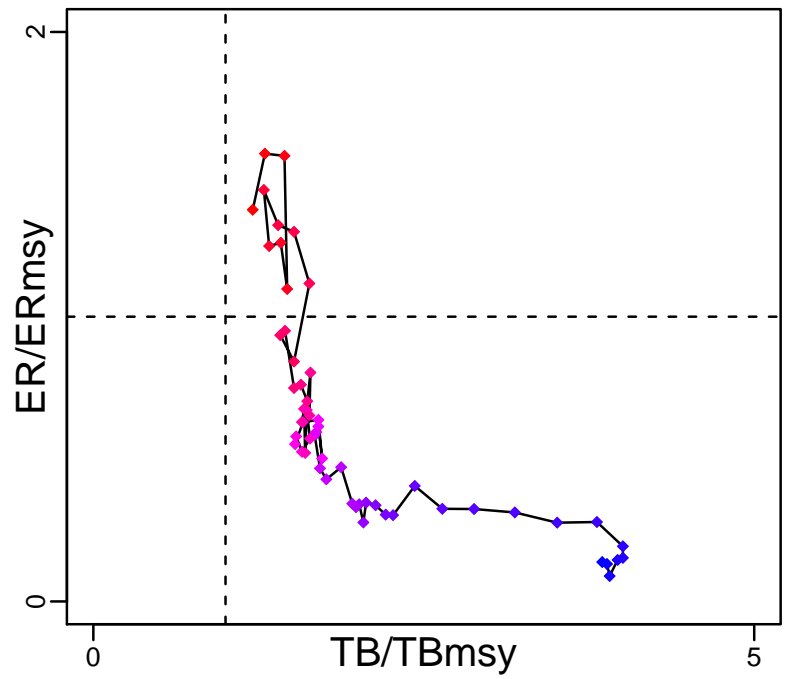
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2006	301,000	-	-
SSB	SSB-MT	2006	108,000	Both	-
TN	-	-	-	-	-
R	R-E00	2006	17,600,000	-	-
F	-	-	-	-	-
ER	ER-ratio	2006	0	-	-
TC	TC-MT	2006	107,000		
TL	-	-	-		
TB/TBmsy	TB-MT/TBmsy-MT	2006	1.21		
SSB/SSBmsy	SSB-MT/SSBmsy-MT	2006	1.06		
F/Fmsy	-	-	-		
ER/ERmsy	ER-ratio/ERmsy-ratio	2006	1.38		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Bigeye tuna Western Pacific Ocean [BIGEYEWPO]

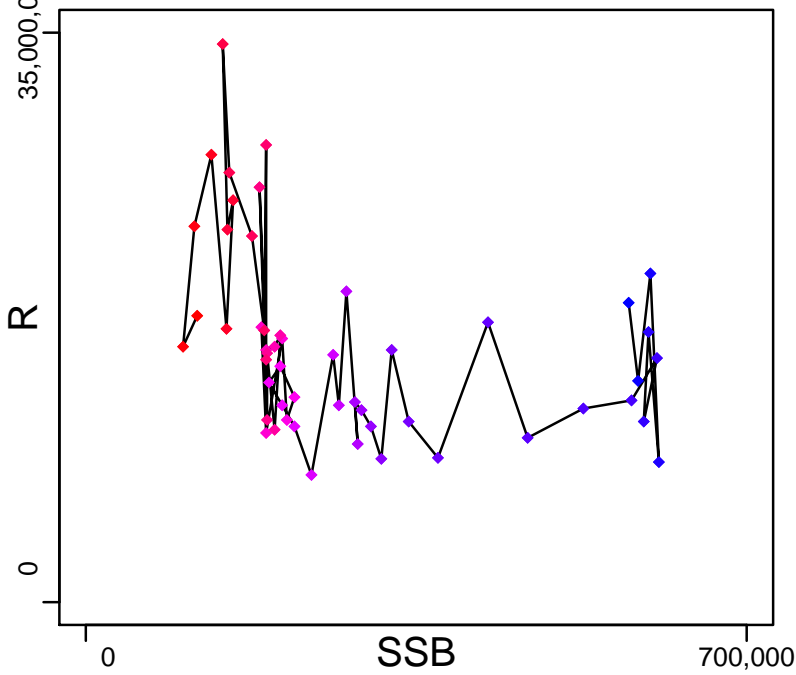
Kobe MSYpref (1952–2006–JENSEN)



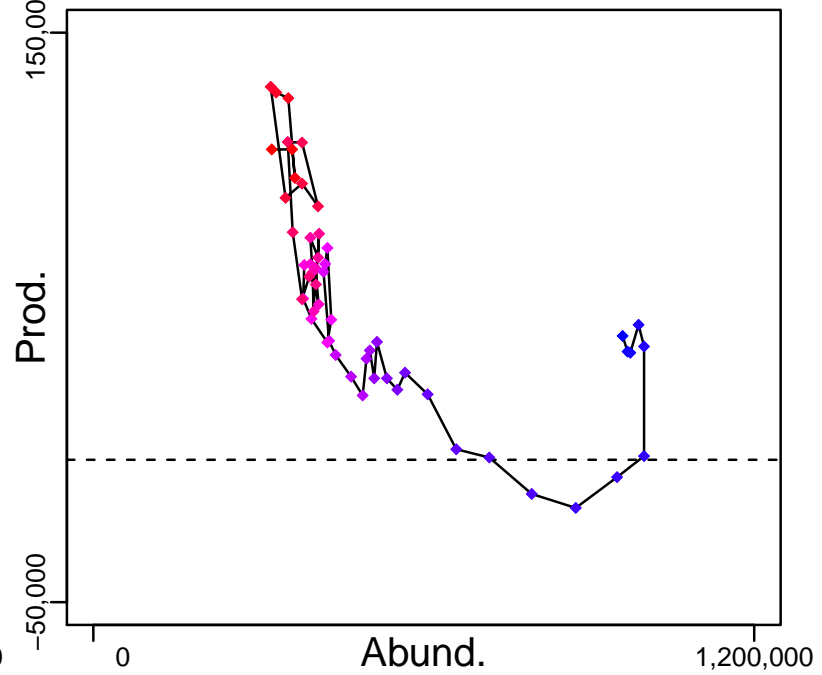
Kobe MGTpref (1952–2006–JENSEN)



Spawner Recruit (1952–2006–JENSEN)



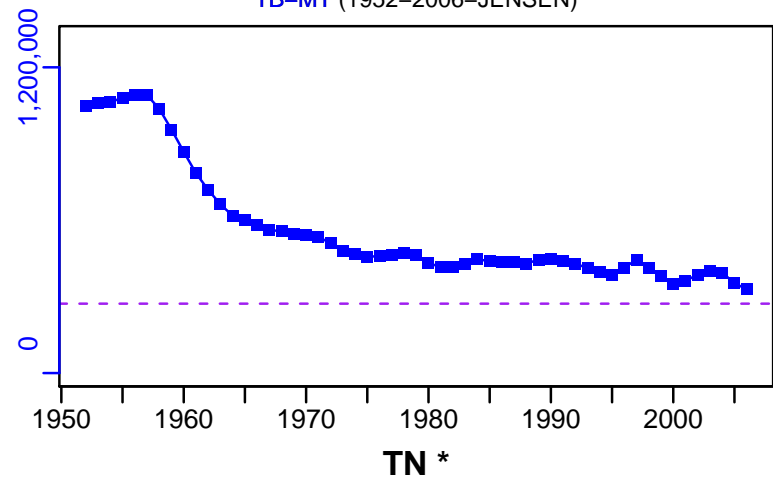
Production (1952–2006–JENSEN)



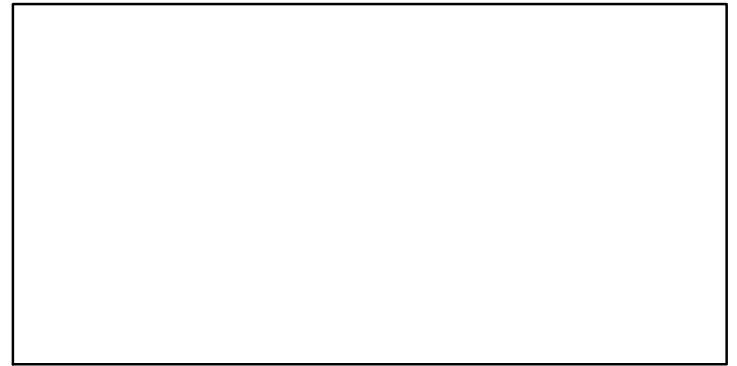
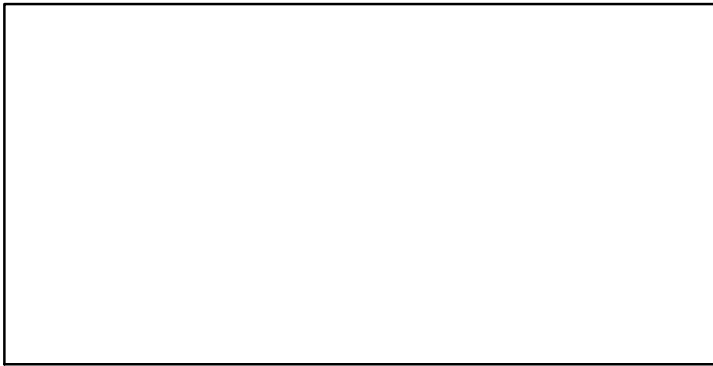
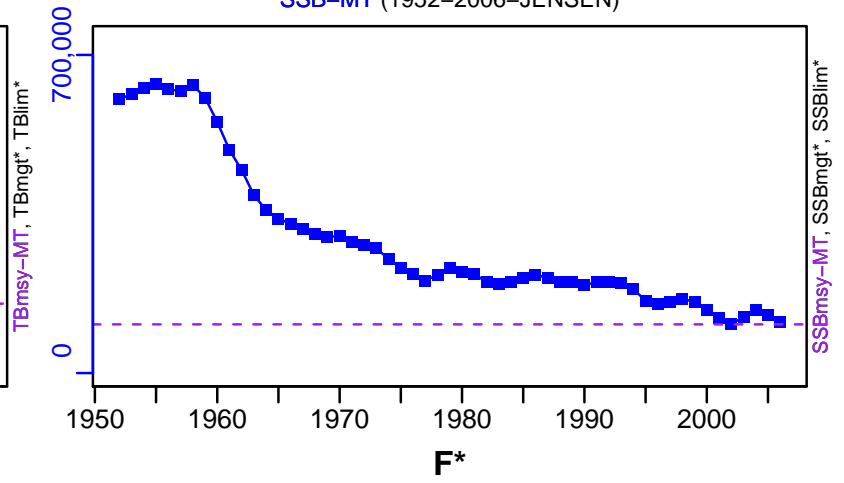
◆ Start Year ◆ End Year * No Data

Bigeye tuna Western Pacific Ocean [BIGEYEWPO]

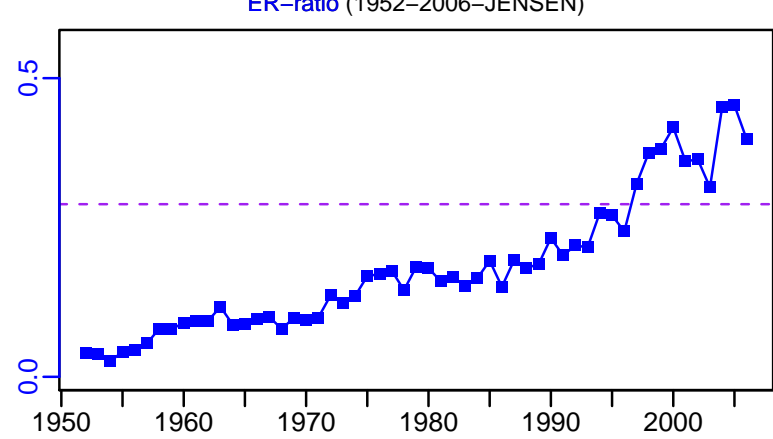
TB-MT (1952-2006-JENSEN)



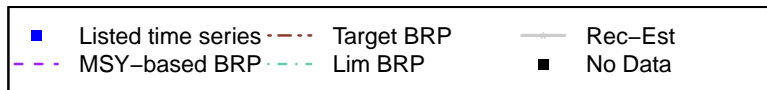
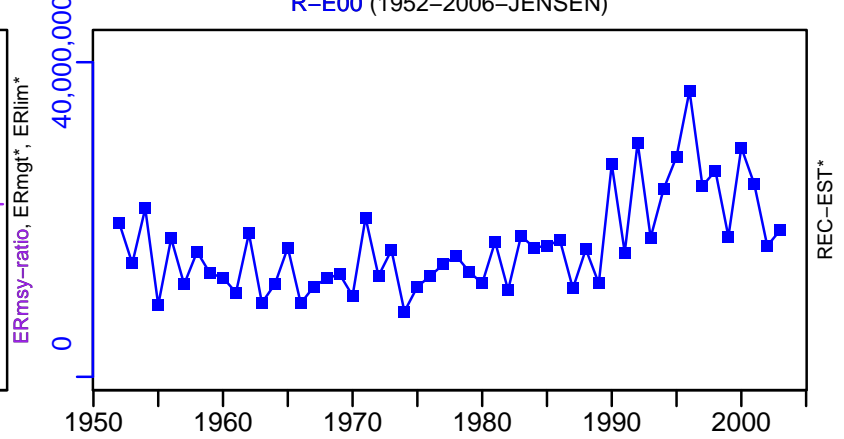
SSB-MT (1952-2006-JENSEN)



ER-ratio (1952-2006-JENSEN)

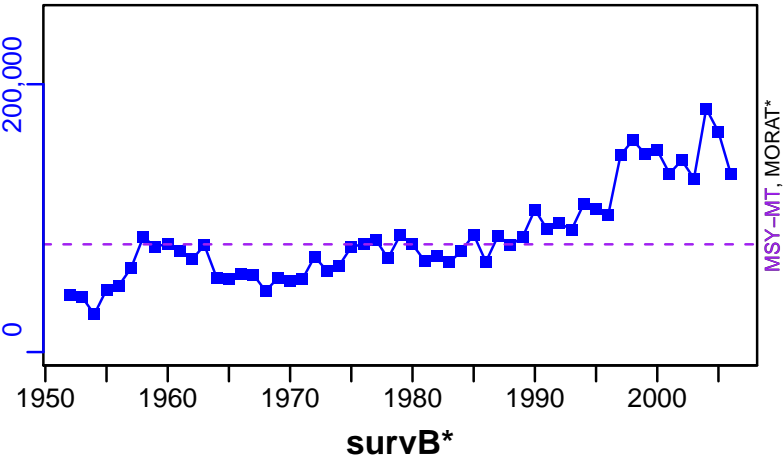


R-E00 (1952-2006-JENSEN)



Bigeye tuna Western Pacific Ocean [BIGEYEWPO]

TC-MT, TL*, RecC* (1952-2006-JENSEN)



TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Blue shark North Pacific [BLSHARNPAC]

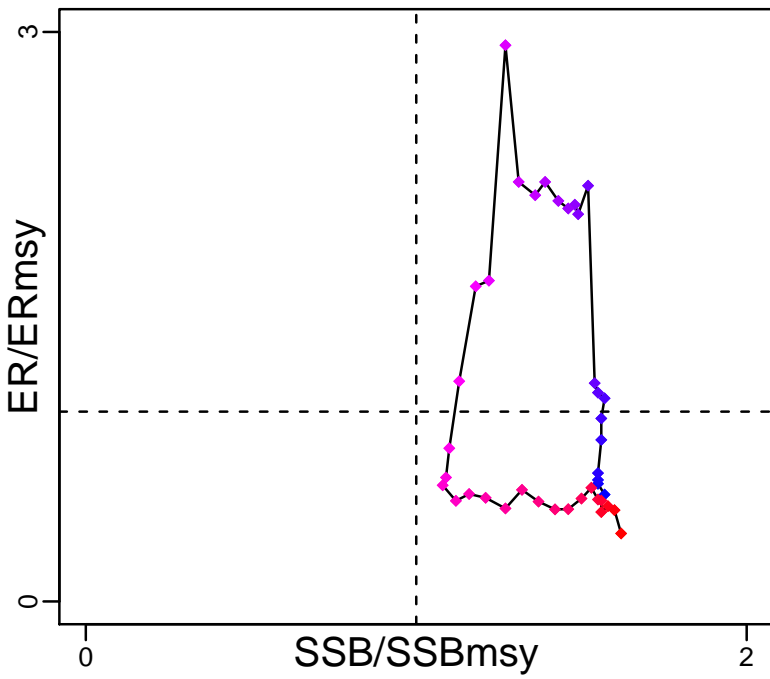
Metadata	
Scientific Name	Prionace glauca
Current Assess ID	ISC-BLSHARNPAC-1971-2012-ASHBROOK
Area	North Pacific Ocean
Management Authority	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Assessor	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Asmts in RAM	2012

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	-	-	-
SSBmsy	SSBmsy-MT	2012	277,565
Fmsy	-	-	-
ERmsy	ERmsy-ratio	2012	0.22
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	SSB0-MT	2012	593,707
MSY	MSY-MT	2012	72,123
M	M-1/yr	2012	0.14
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

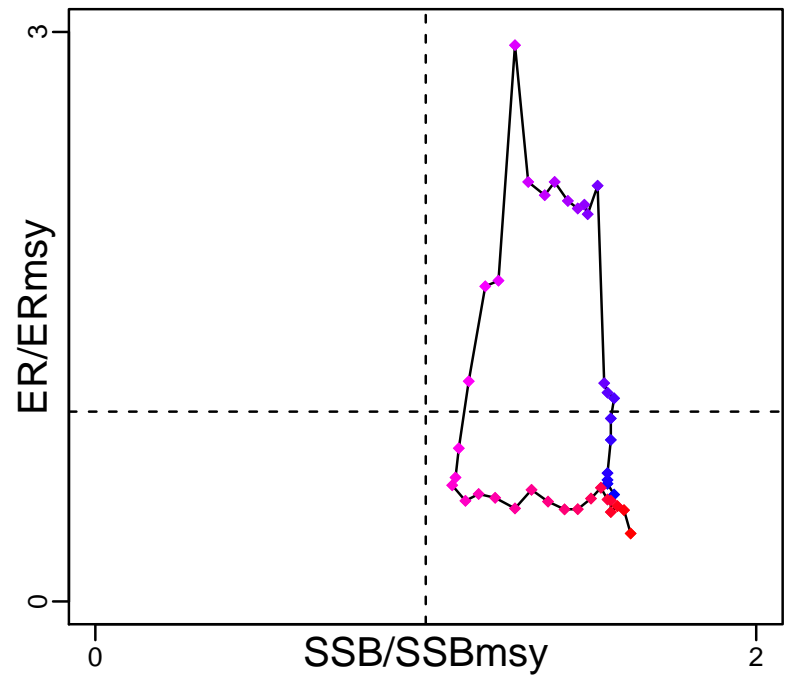
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	-	-	-	-	-
SSB	SSB-MT	2012	443,000	Females	5+
TN	-	-	-	-	-
R	R-E00	2012	30,100,000	Both	0
F	-	-	-	-	-
ER	ER-calc-ratio	2012	0	-	-
TC	TC-MT	2012	37,300	-	-
TL	-	-	-	-	-
TB/TBmsy	-	-	-	-	-
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2012	1.62	-	-
F/Fmsy	-	-	-	-	-
ER/ERmsy	ERdivERmsy-dimensionless	2012	0.36	-	-
TB/TBmgt	-	-	-	-	-
SSB/SSBmgt	-	-	-	-	-
F/Fmgt	-	-	-	-	-
ER/ERmgt	-	-	-	-	-

Blue shark North Pacific [BLSHARNPAC]

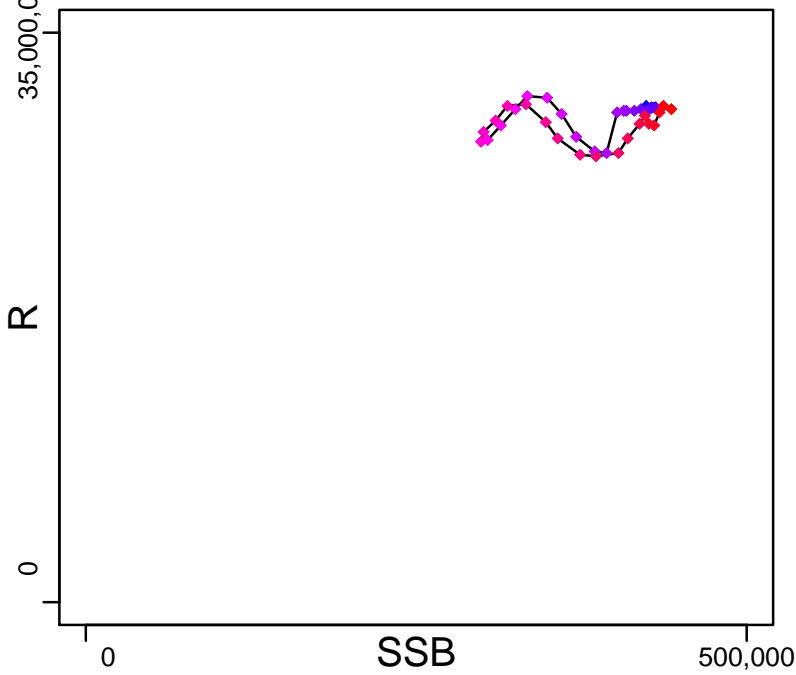
Kobe MSY_{pref} (1971–2012–ASHBROOK)



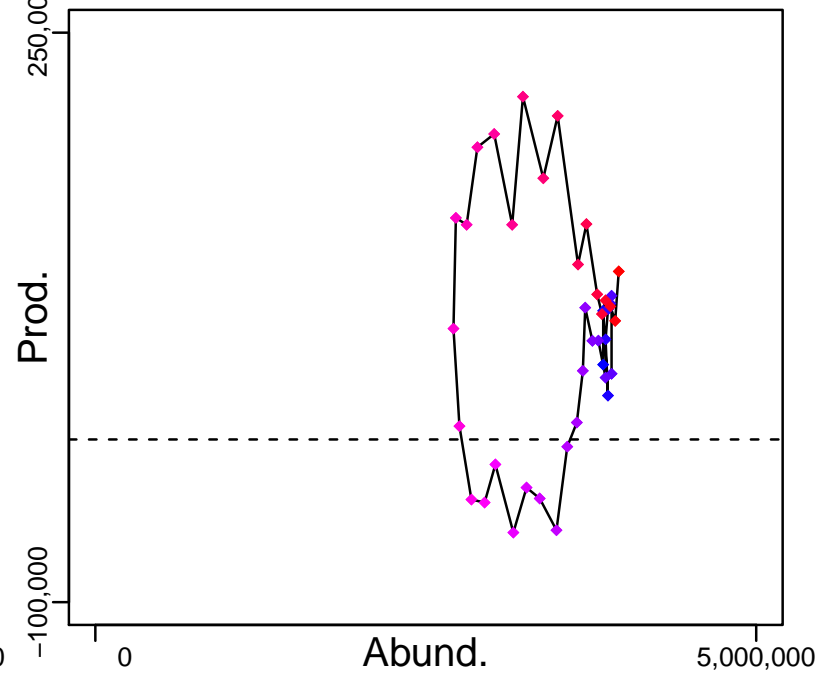
Kobe MGT_{pref} (1971–2012–ASHBROOK)



Spawner Recruit (1971–2012–ASHBROOK)



Production (1971–2012–ASHBROOK)



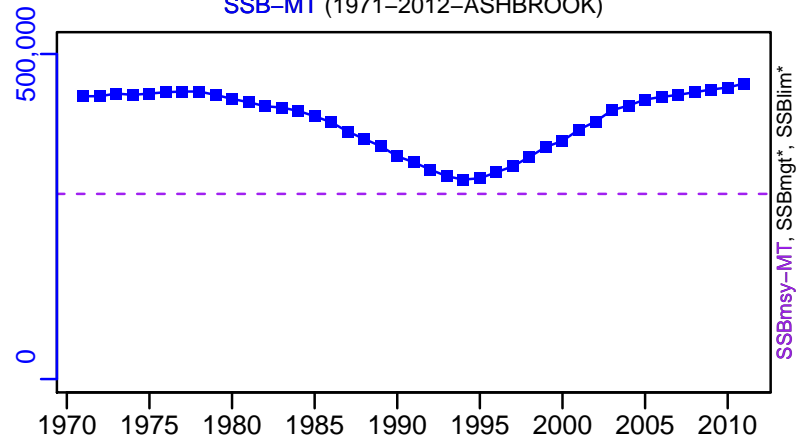
◆ Start Year ◆ End Year * No Data

Blue shark North Pacific [BLSHARNPAC]

TB*



SSB-MT (1971-2012-ASHBROOK)



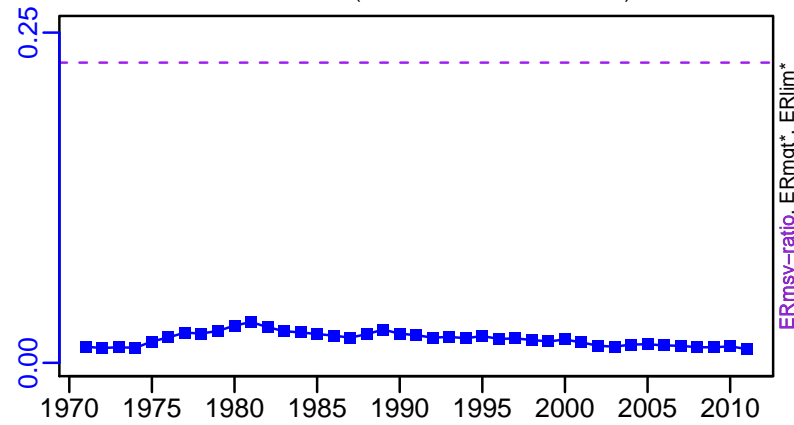
TN *



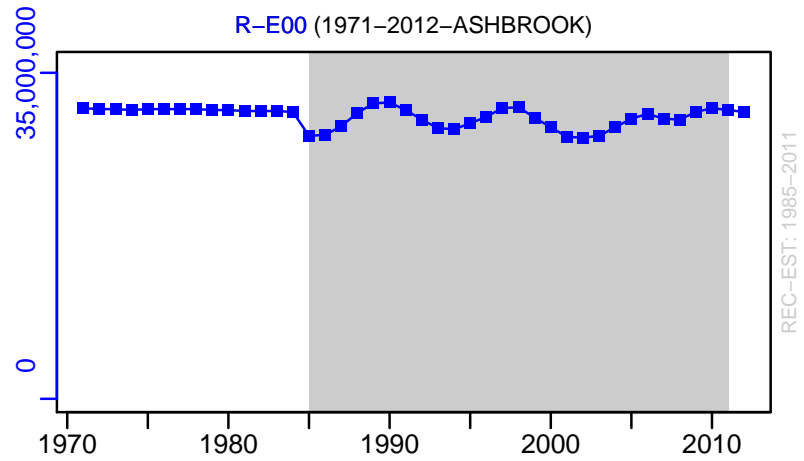
F*



ER-calc-ratio (1971-2012-ASHBROOK)



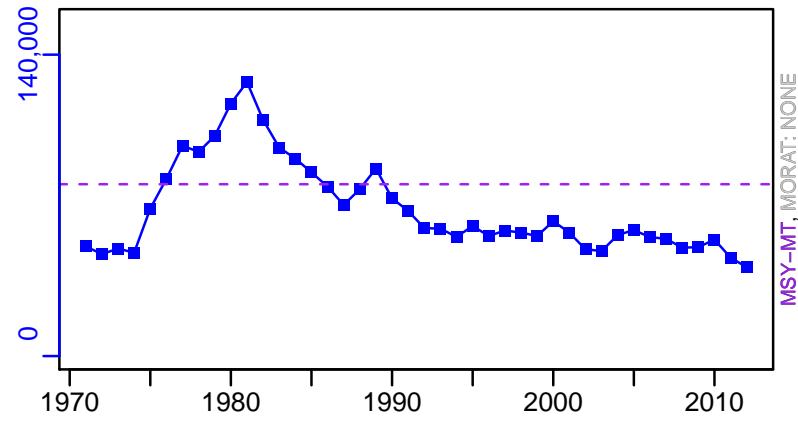
R-E00 (1971-2012-ASHBROOK)



Blue shark North Pacific [BLSHARNPAC]

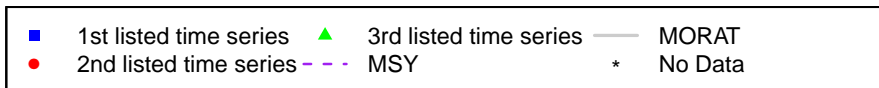
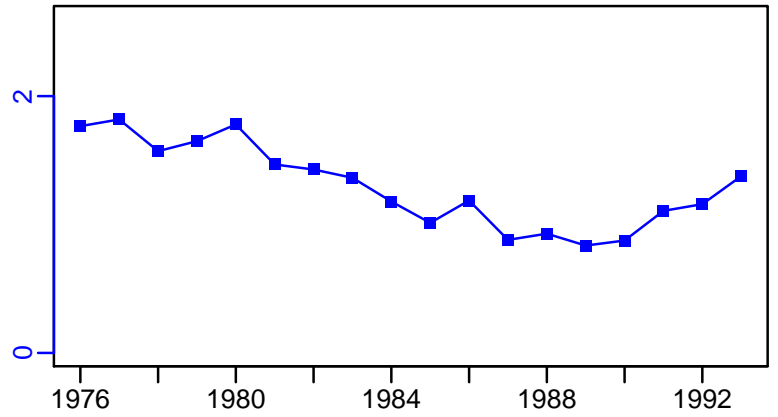
TC-MT, TL*, RecC* (1971-2012-ASHBROOK)

TAC*, Cpair*, Cadv*



EFFORT*

CPUE-1-index (1971-2012-ASHBROOK)



Blue marlin Pacific Ocean [BMARLINPAC]

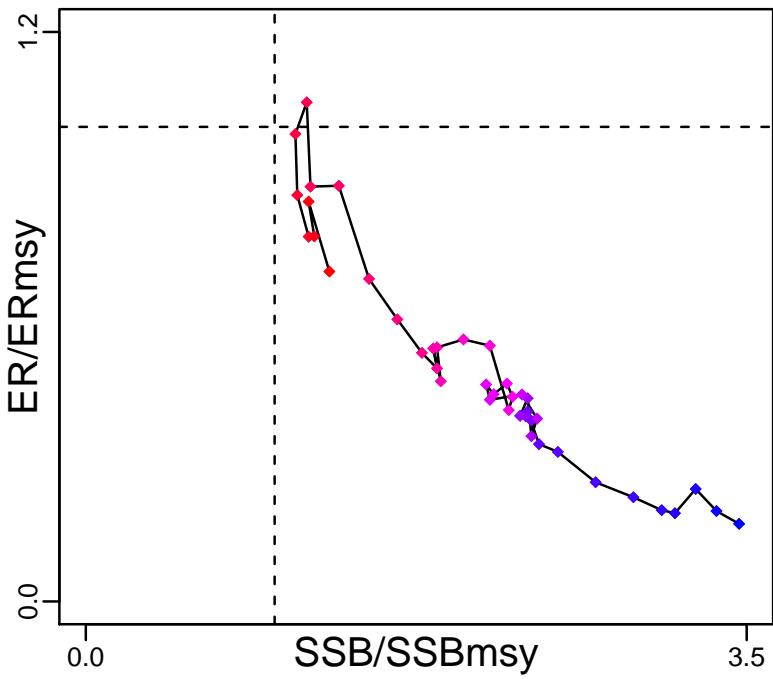
Metadata	
Scientific Name	Makaira nigricans
Current Assess ID	ISC-BMARLINPAC-1952-2011-PONS
Area	Pacific Ocean
Management Authority	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Assessor	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Asmts in RAM	2011

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	-	-	-
SSBmsy	SSBmsy-MT	2011	19,437
Fmsy	Fmsy-1/yr	2011	0.32
ERmsy	ERmsy-conv-ratio	2011	0.3
TBmgt	-	-	-
SSBmgt	SSBmgt-MT	2011	19,437
Fmgt	Fmgt-1/yr	2011	0.32
ERMgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	MSY-MT	2011	19,459
M	M-1/yr	2011	0.42
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

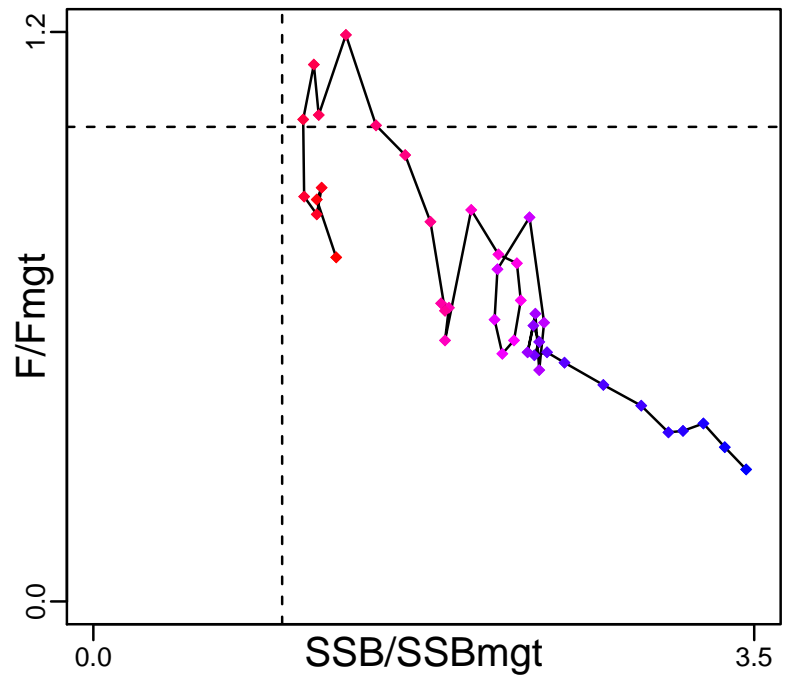
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	-	-	-	-	-
SSB	SSB-MT	2011	25,000	Females	4+
TN	-	-	-	-	-
R	R-E00	2011	825,000	-	-
F	F-1/yr	2011	0	-	-
ER	ER-calc-ratio	2011	0	-	-
TC	TC-MT	2011	17,400	-	-
TL	-	-	-	-	-
TB/TBmsy	-	-	-	-	-
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2011	1.29	-	-
F/Fmsy	FdivFmsy-dimensionless	2011	0.72	-	-
ER/ERmsy	ER-calc-ratio/ERmsy-conv-ratio	2011	0.7	-	-
TB/TBmgt	-	-	-	-	-
SSB/SSBmgt	SSB-MT/SSBmgt-MT	2011	1.29	-	-
F/Fmgt	F-1/yr/Fmgt-1/yr	2011	0.72	-	-
ER/ERMgt	-	-	-	-	-

Blue marlin Pacific Ocean [BMARLINPAC]

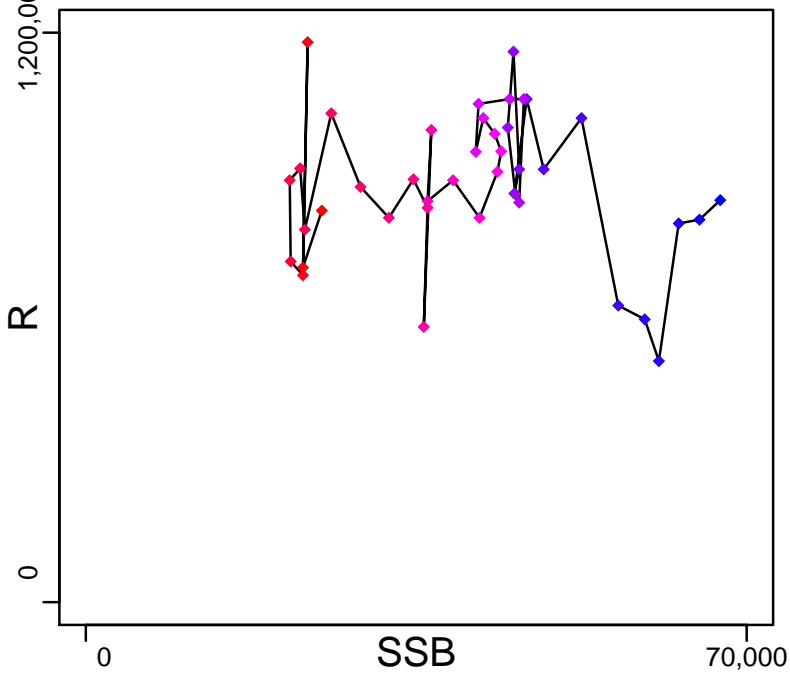
Kobe MSYpref (1952–2011–PONS)



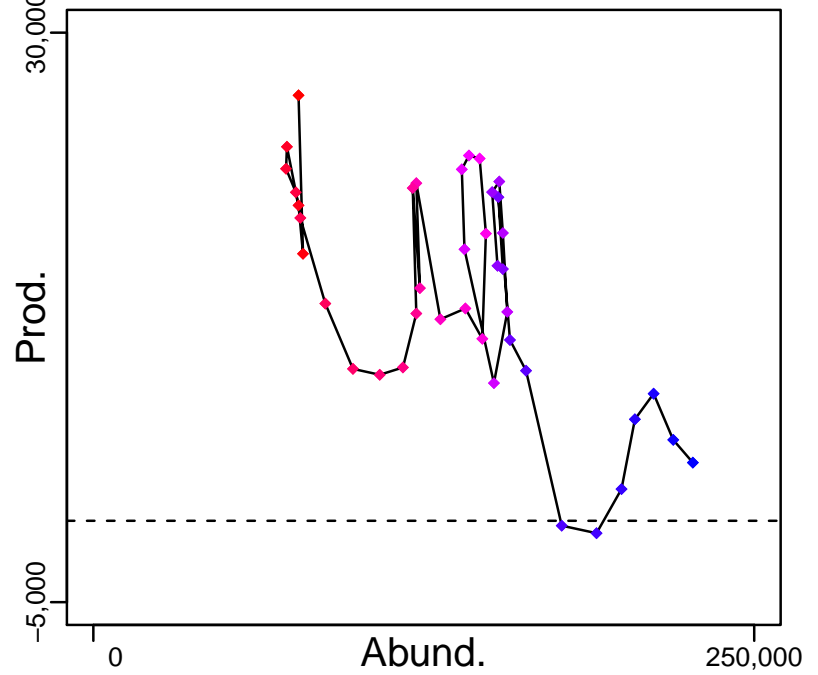
Kobe MGTpref (1952–2011–PONS)



Spawner Recruit (1952–2011–PONS)



Production (1952–2011–PONS)



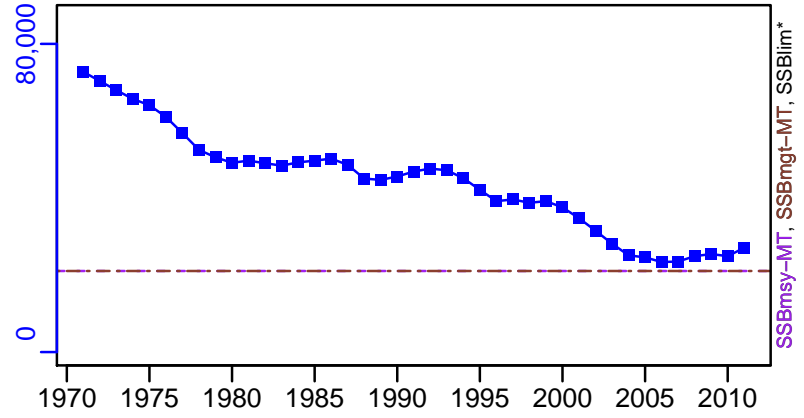
◆ Start Year ◆ End Year * No Data

Blue marlin Pacific Ocean [BMARLINPAC]

TB*



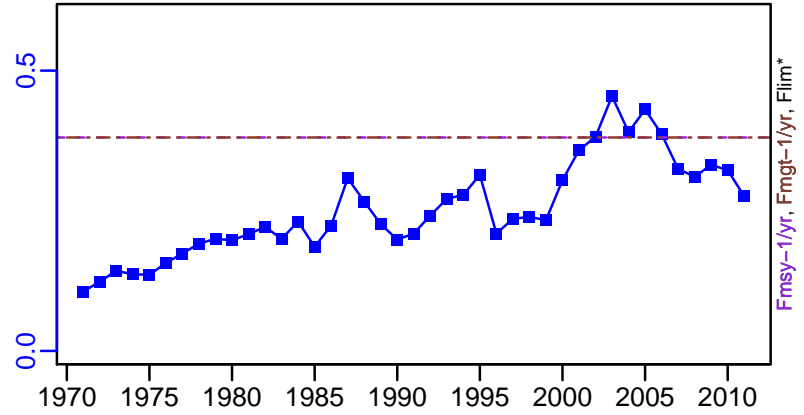
SSB-MT (1952-2011-PONS)



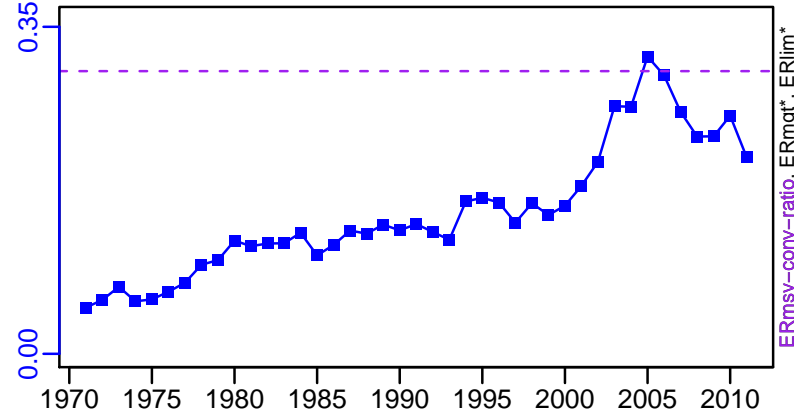
TN *



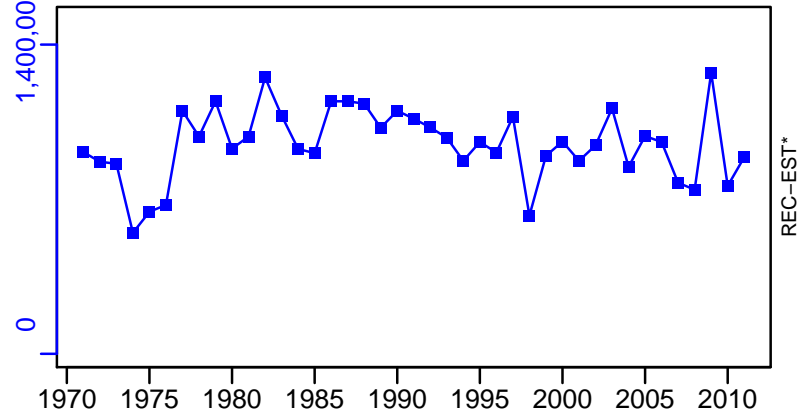
F-1/yr (1952-2011-PONS)



ER-calc-ratio (1952-2011-PONS)

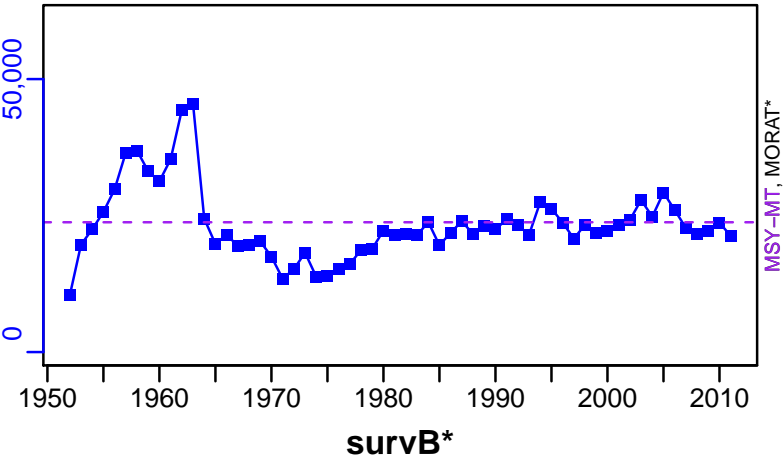


R-E00 (1952-2011-PONS)



Blue marlin Pacific Ocean [BMARLINPAC]

TC-MT, TL*, RecC* (1952-2011-PONS)



TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Pacific bluefin tuna Pacific Ocean [PACBTUNA]

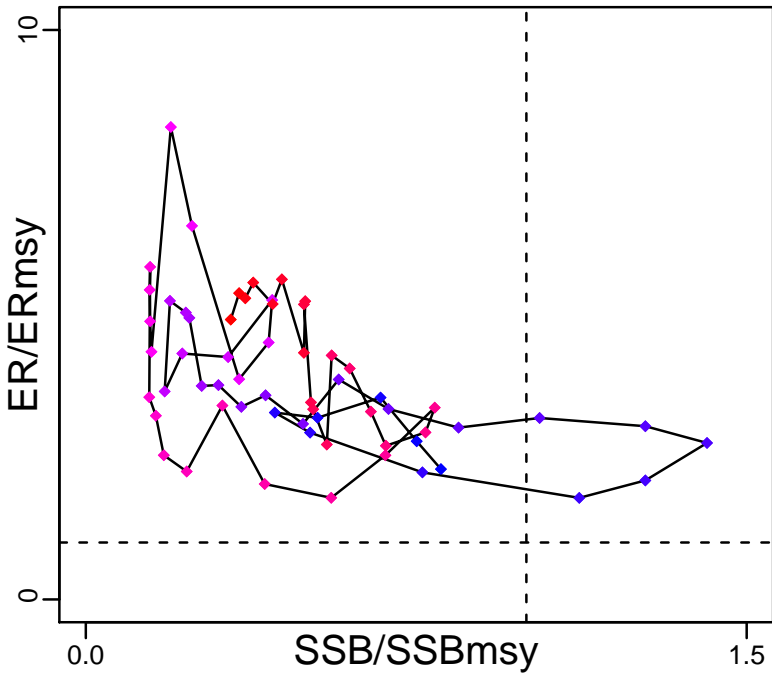
Metadata	
Scientific Name	Thunnus orientalis
Current Assess ID	ISC-PACBTUNA-1952-2012-PONS
Area	Pacific Ocean
Management Authority	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Assessor	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Asmts in RAM	2012

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	-	-	-
SSBmsy	SSBmsy-MT	2012	105,960
Fmsy	Fmsy-1/yr	2012	0.12
ERmsy	ERmsy-ratio	2012	0.07
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	MSY-MT	2012	17,345
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

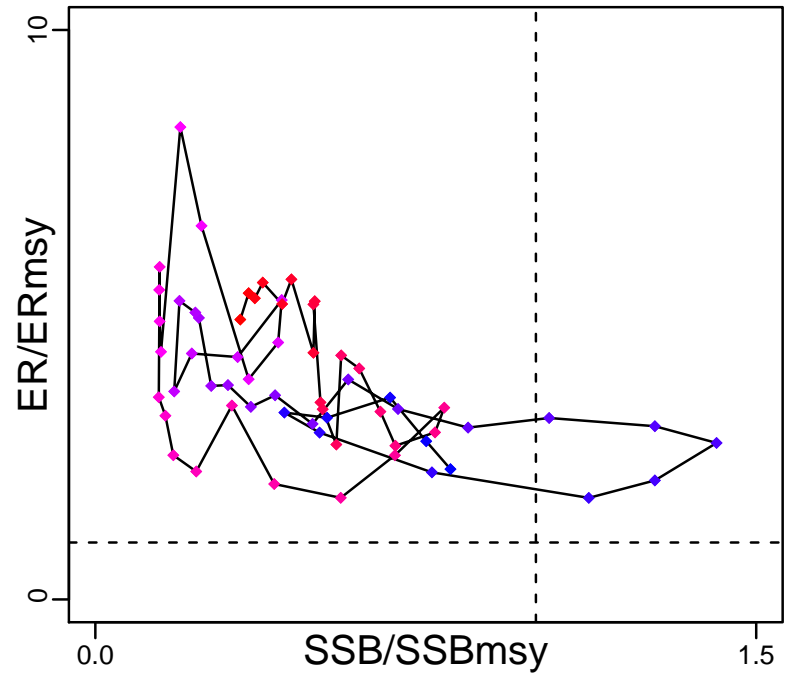
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2012	44,800	-	-
SSB	SSB-MT	2012	26,300	-	-
TN	-	-	-	-	-
R	R-E00	2012	7,010,000	-	-
F	-	-	-	-	-
ER	ER-calc-ratio	2012	0	-	-
TC	TC-MT	2012	15,200	-	-
TL	-	-	-	-	-
TB/TBmsy	-	-	-	-	-
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2012	0.33	-	-
F/Fmsy	FdivFmsy-dimensionless	2012	1.79	-	-
ER/ERmsy	ER-calc-ratio/ERmsy-ratio	2012	4.91	-	-
TB/TBmgt	-	-	-	-	-
SSB/SSBmgt	-	-	-	-	-
F/Fmgt	-	-	-	-	-
ER/ERmgt	-	-	-	-	-

Pacific bluefin tuna Pacific Ocean [PACBTUNA]

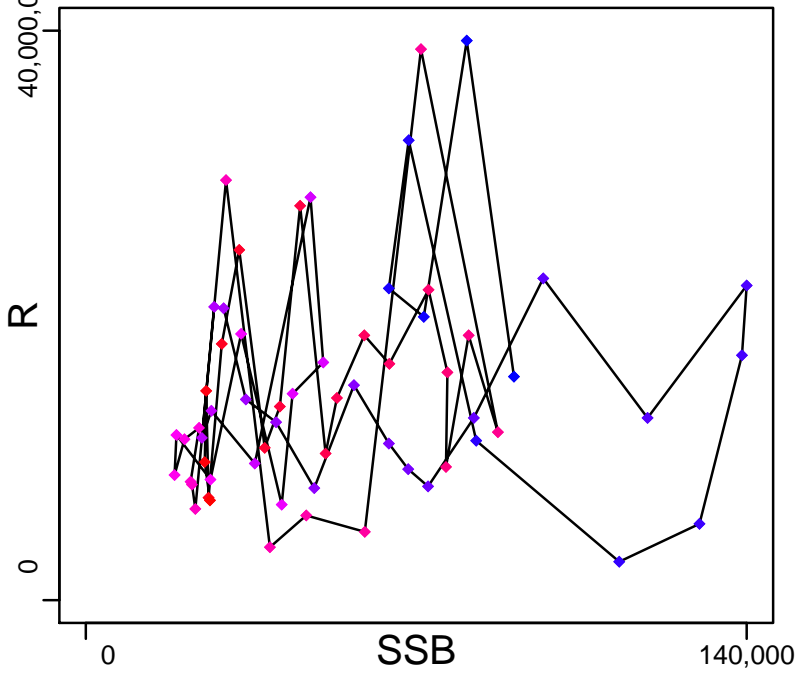
Kobe MSYpref (1952–2012–PONS)



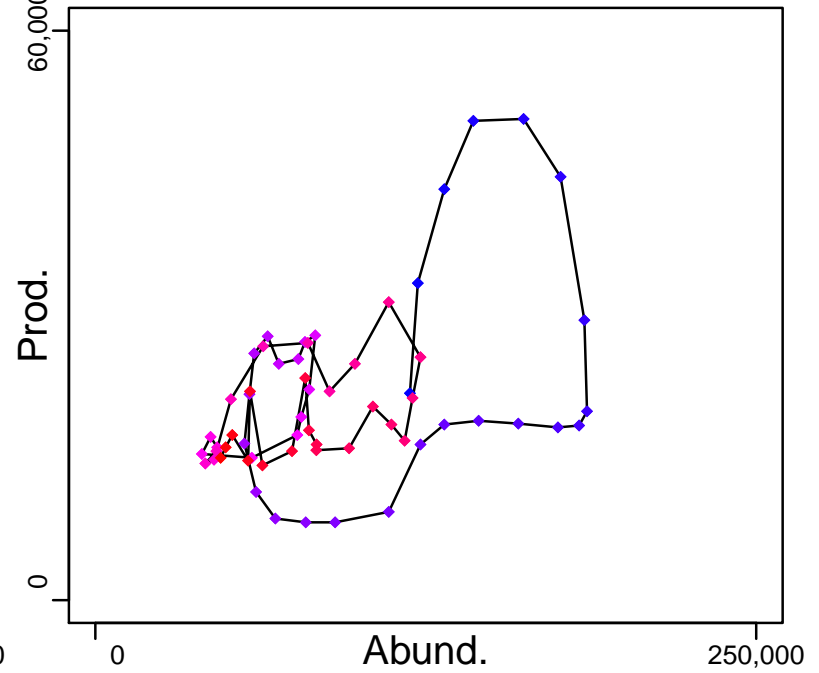
Kobe MGTpref (1952–2012–PONS)



Spawner Recruit (1952–2012–PONS)



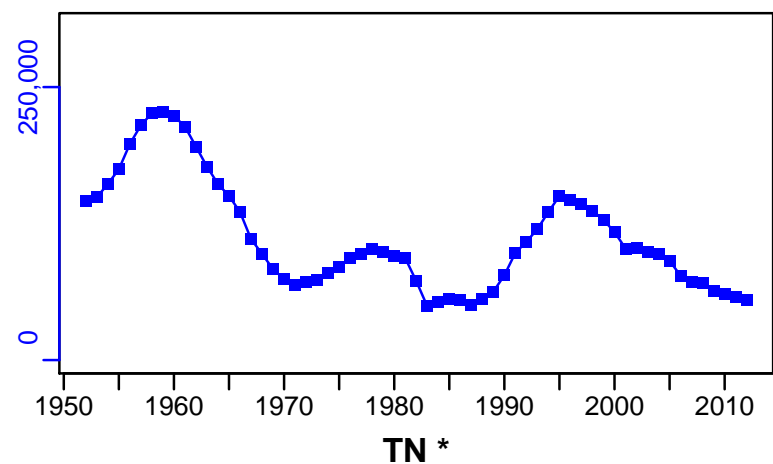
Production (1952–2012–PONS)



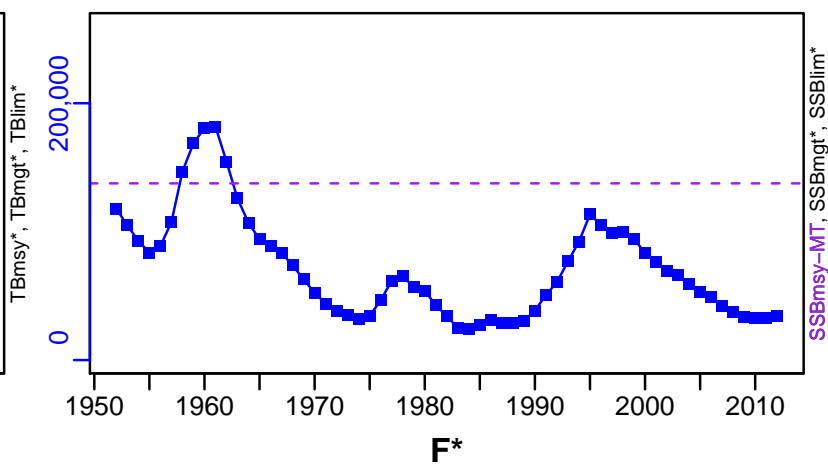
◆ Start Year ◆ End Year * No Data

Pacific bluefin tuna Pacific Ocean [PACBTUNA]

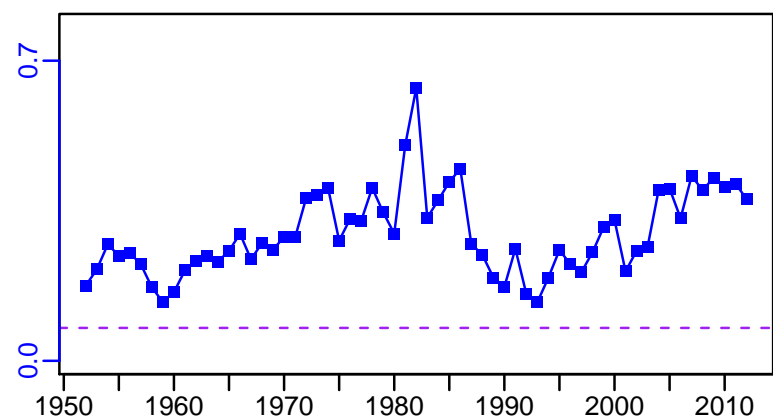
TB-MT (1952-2012-PONS)



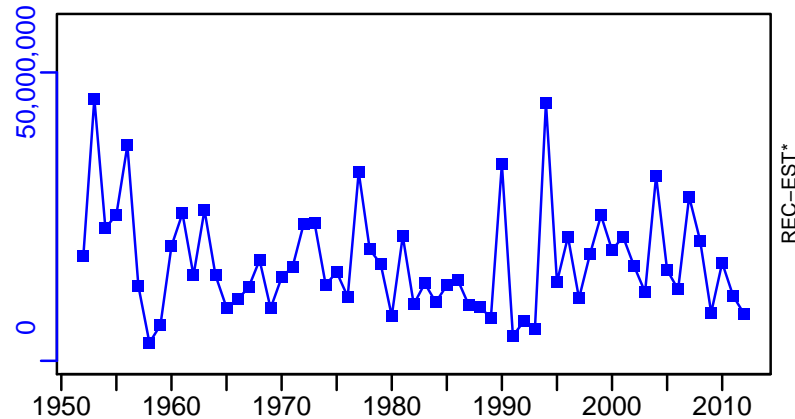
SSB-MT (1952-2012-PONS)



ER-calc-ratio (1952-2012-PONS)

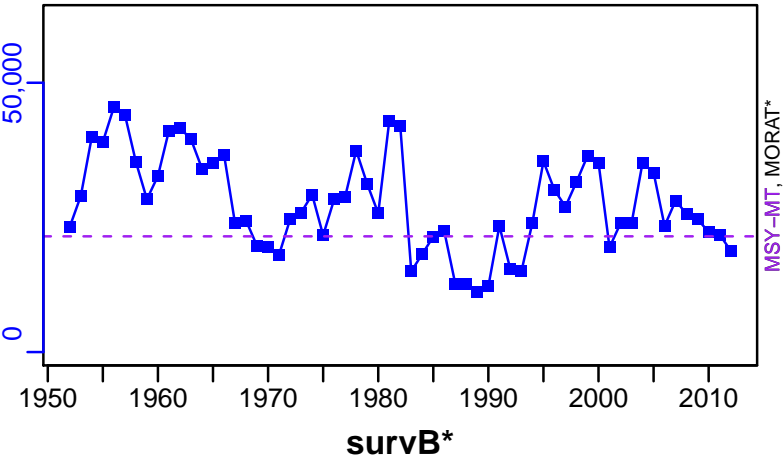


R-E00 (1952-2012-PONS)



Pacific bluefin tuna Pacific Ocean [PACBTUNA]

TC-MT, TL*, RecC* (1952-2012-PONS)



TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Shortfin mako Northwest Pacific Ocean [SFMAKONWPAC]

Metadata	
Scientific Name	Isurus oxyrinchus
Current Assess ID	IMARM-SFMAKONWPAC-1990-2003-FAUCONNET
Area	Nothwest Pacific Ocean
Management Authority	Unknown management body
Assessor	Institute of Marine Affairs and Resource Management - National Taiwan Ocean University, 2 Pei-Ning Road, Keelung 20224, Taiwan
Asmts in RAM	2003

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	-	-	-
SSBmsy	-	-	-
Fmsy	-	-	-
ERmsy	-	-	-
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	-	-	-
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	-	-	-	-	-
SSB	-	-	-	-	-
TN	-	-	-	-	-
R	-	-	-	-	-
F	F-female-1/yr	2003	0	-	0 to 22
ER	-	-	-	-	-
TC	TC-E00	2003	13,000		
TL	TL-MT	2003	754		
TB/TBmsy	-	-	-		
SSB/SSBmsy	-	-	-		
F/Fmsy	-	-	-		
ER/ERmsy	-	-	-		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Kobe MSY*



Kobe MGT*



Spawner Recruit*



Production*



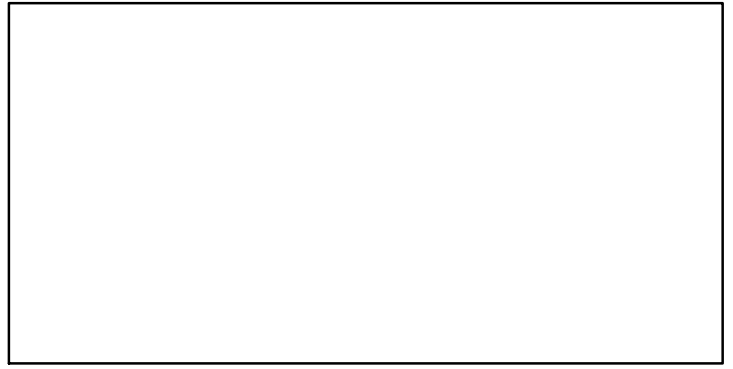
◆ Start Year ◆ End Year * No Data

Shortfin mako Northwest Pacific Ocean [SFMAKONWPAC]

TB*



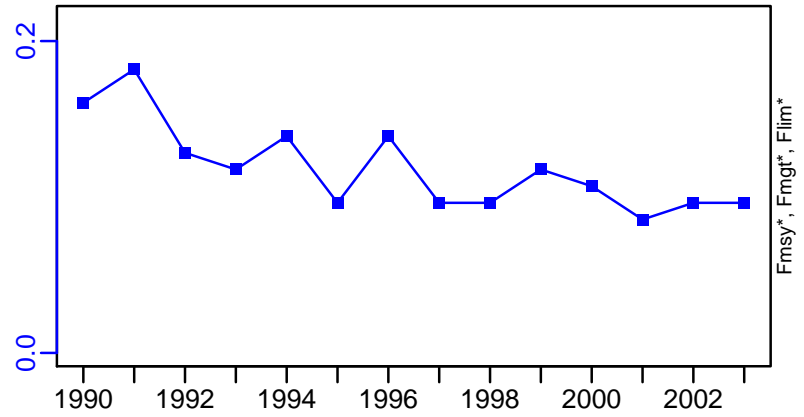
SSB*



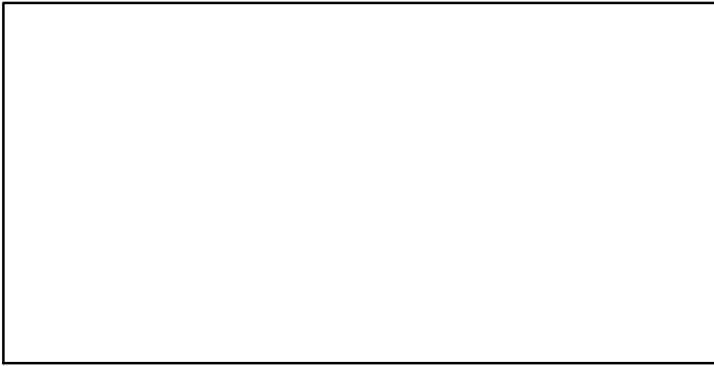
TN *



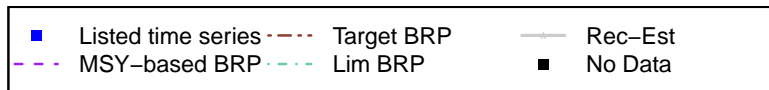
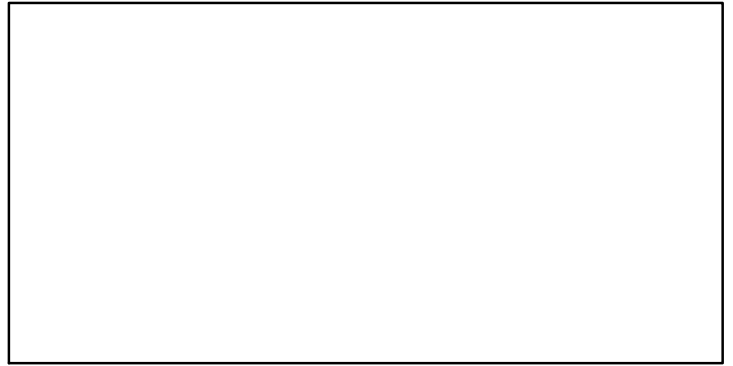
F-female-1/yr (1990–2003–FAUCONNET)



ER*



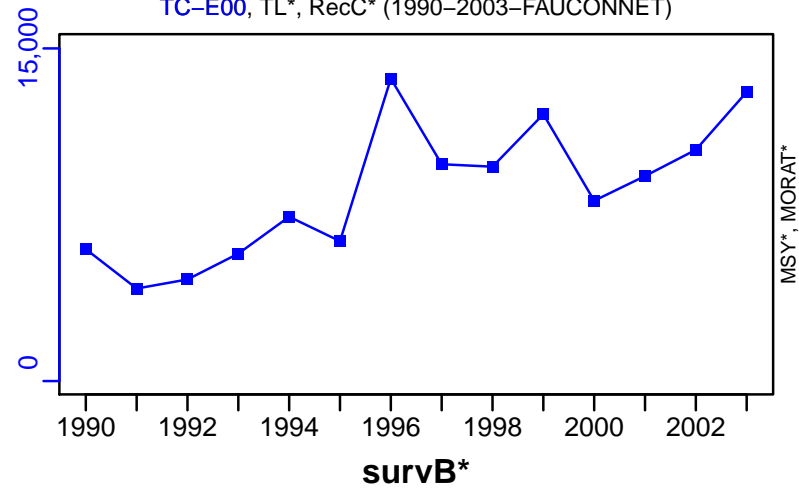
Recruits*



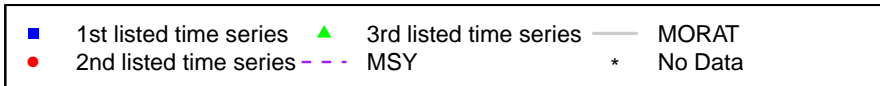
Shortfin mako Northwest Pacific Ocean [SFMAKONWPAC]

TC-E00, TL*, RecC* (1990–2003–FAUCONNET)

TAC*, Cpair*, Cadv*



EFFORT*



Skipjack tuna Central Western Pacific [SKJCWPAC]

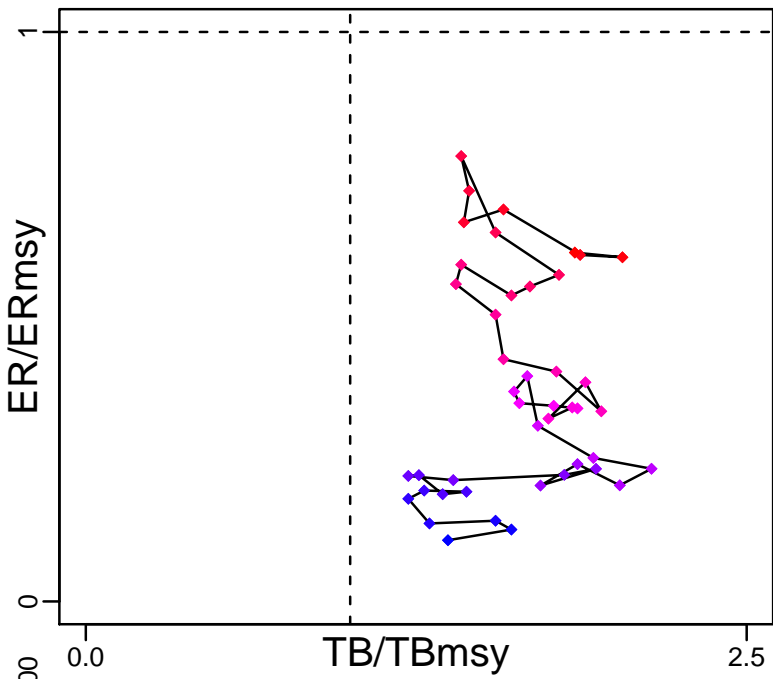
Metadata	
Scientific Name	Katsuwonus pelamis
Current Assess ID	SPC-SKJCWPAC-1950-2015-PONS
Area	Central Western Pacific Ocean
Management Authority	Western and Central Pacific Fisheries Commission
Assessor	Secretariat of the Pacific Community
Asmts in RAM	2012, 2015

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-extr-MT	2015	2,388,801
SSBmsy	SSBmsy-MT	2012	1,753,000
Fmsy	Fmsy-extr-1/yr	2015	3.09
ERmsy	ERmsy-calc-ratio	2015	0.68
TBmgt	-	-	-
SSBmgt	SSBmgt-MT	2012	1,753,000
Fmgt	-	-	-
ERmgt	-	-	-
TB0	TB0-MT	2012	6,587,000
SSB0	SSB0-MT	2012	6,229,000
MSY	MSY-MT	2015	1,618,800
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

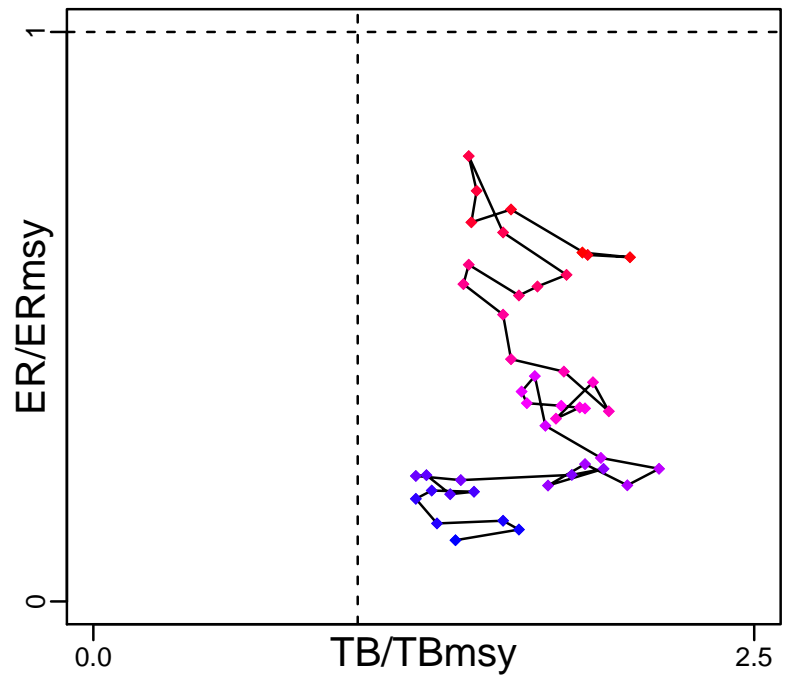
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2015	4,410,000	-	-
SSB	SSB-MT	2015	4,170,000	-	-
TN	-	-	-	-	-
R	R-E00	2015	5×10^9	-	-
F	F-1/yr	2015	1	-	-
ER	ER-calc-ratio	2015	0	-	-
TC	TC-MT	2012	1,650,000		
TL	TL-MT	2015	1,830,000		
TB/TBmsy	TBdivTBmsy-dimensionless	2015	1.85		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2012	1.82		
F/Fmsy	FdivFmsy-dimensionless	2015	0.48		
ER/ERmsy	ER-calc-ratio/ERmsy-calc-ratio	2015	0.61		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Skipjack tuna Central Western Pacific [SKJCWPAC]

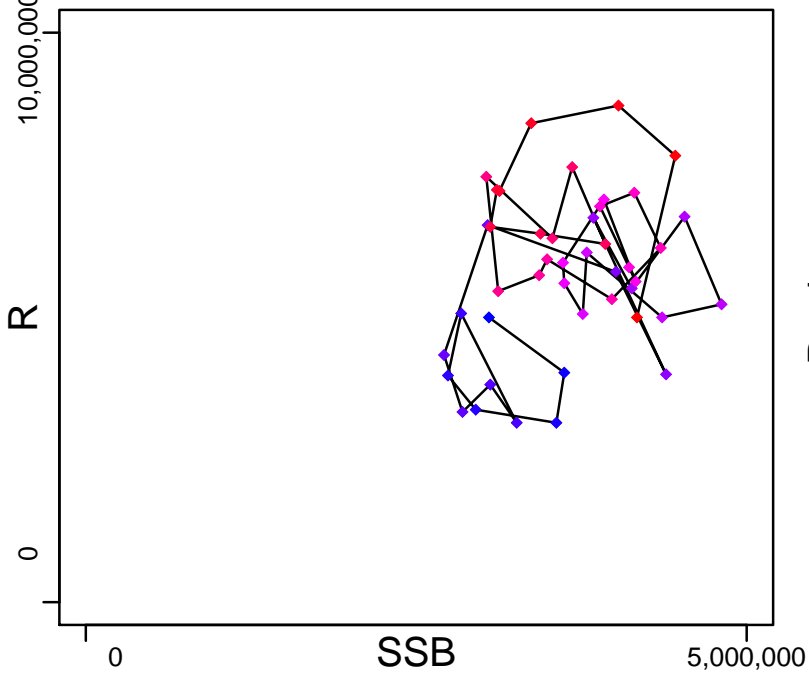
Kobe MSY_{pref} (1950–2015–PONS)



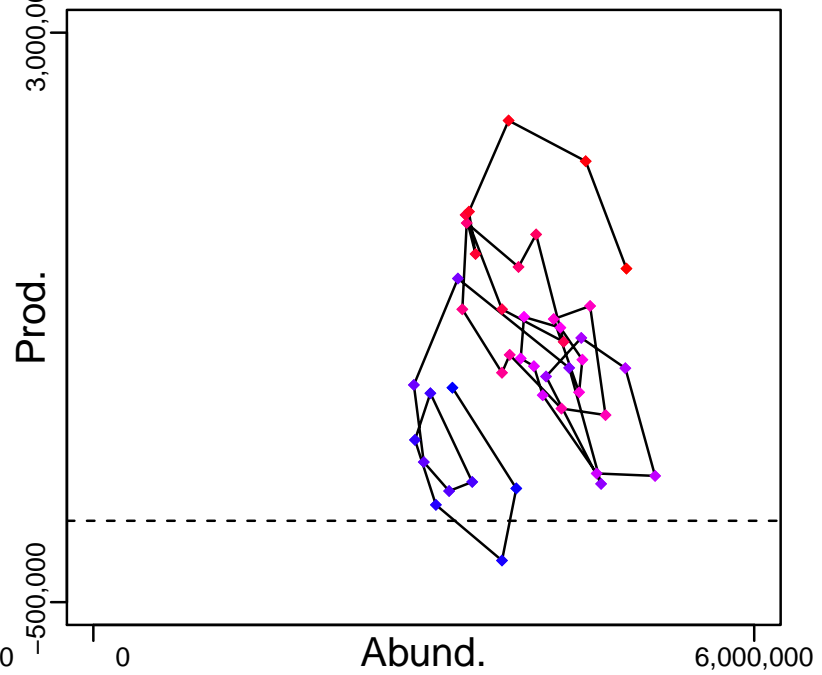
Kobe MGT_{pref} (1950–2015–PONS)



Spawner Recruit (1950–2015–PONS)

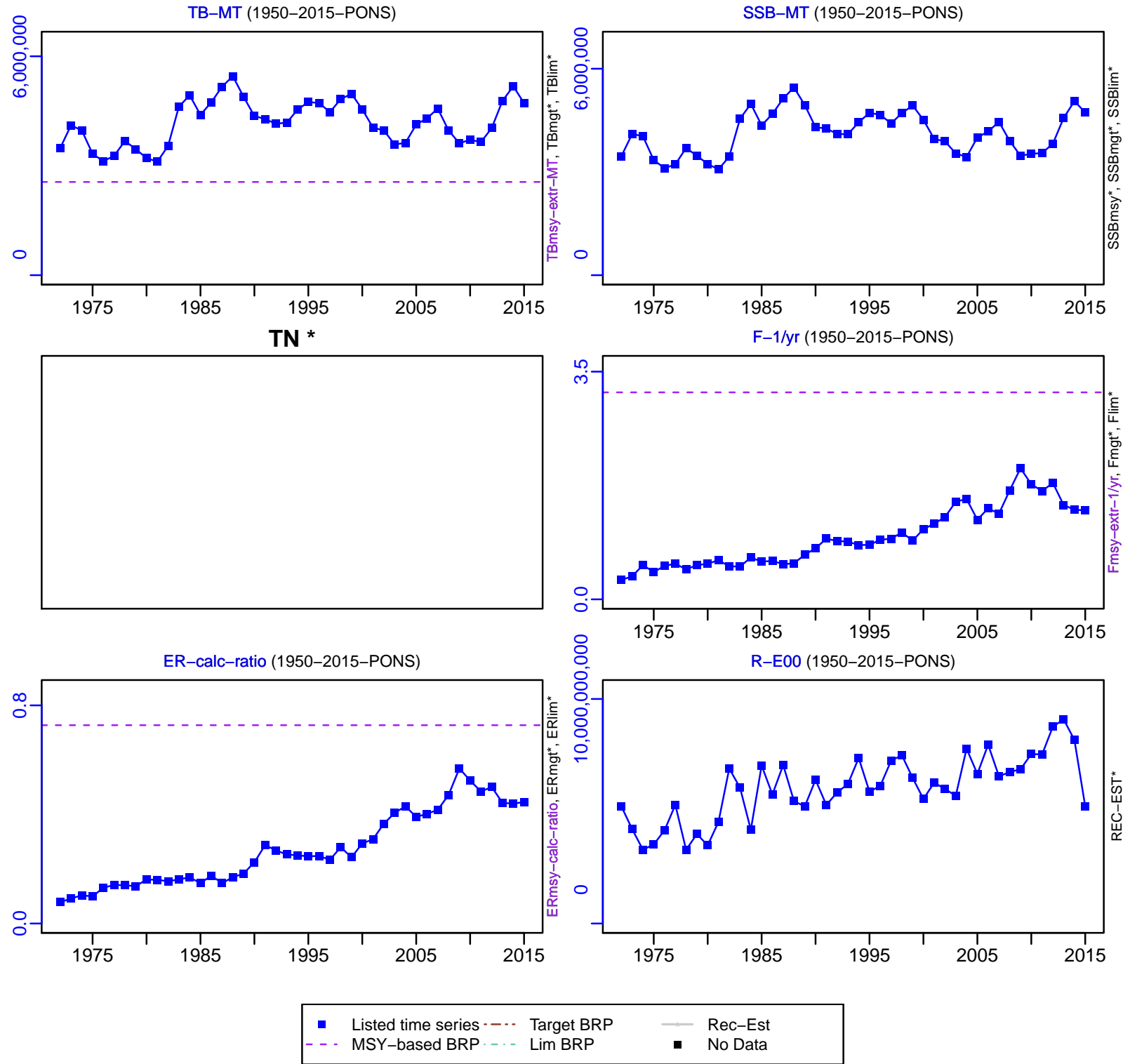


Production (1950–2015–PONS)



◆ Start Year ◆ End Year * No Data

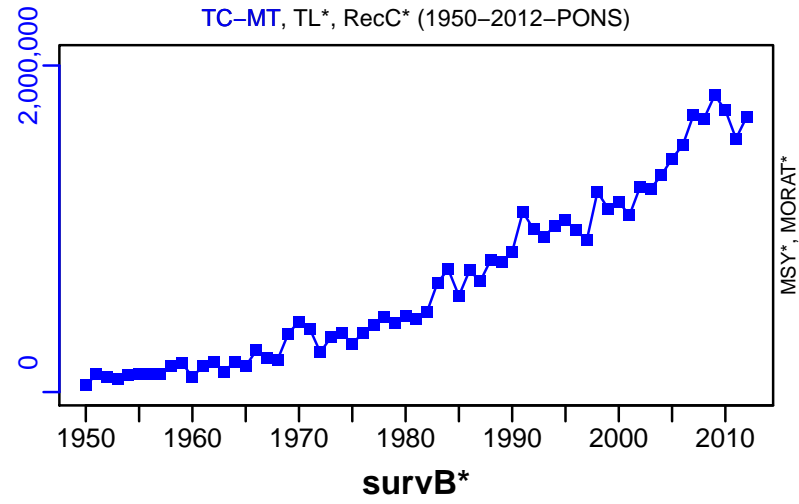
Skipjack tuna Central Western Pacific [SKJCWPAC]



Skipjack tuna Central Western Pacific [SKJCWPAC]

TC-MT, TL*, RecC* (1950-2012-PONS)

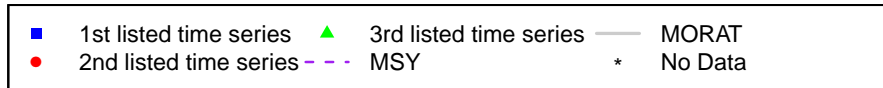
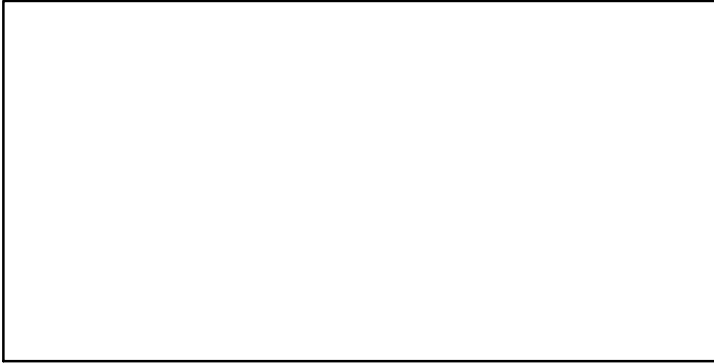
TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Striped marlin Northeast Pacific [STMARLINNEPAC]

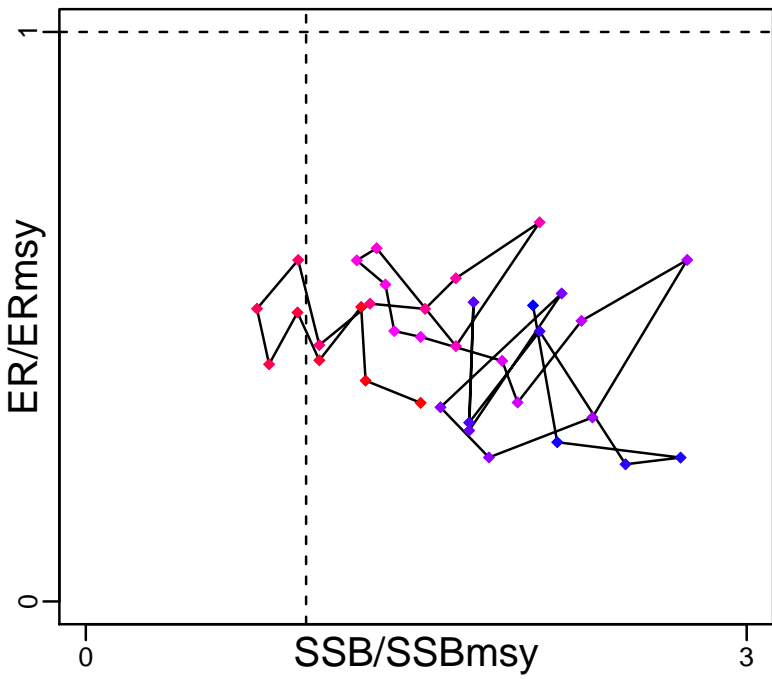
Metadata	
Scientific Name	Kajikia audax
Current Assess ID	IATTC-STMARLINNEPAC-1954-2009-BRANCH
Area	Northeast Pacific
Management Authority	Inter-American Tropical Tuna Commission
Assessor	Inter-American Tropical Tuna Commission
Asmts in RAM	2009

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	-	-	-
SSBmsy	SSBmsy-MT	2009	1370
Fmsy	-	-	-
ERmsy	ERmsy-conv-ratio	2009	0.77
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	SSB0-MT	2009	5556
MSY	MSY-MT	2009	2596
M	M-1/yr	2009	0.5
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

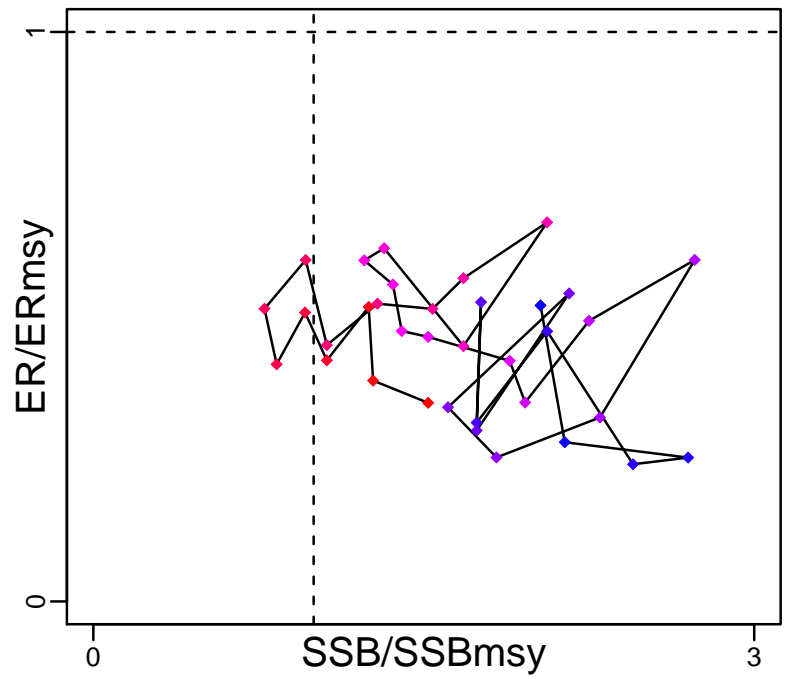
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2009	5060	-	1+
SSB	SSB-MT	2009	2090	Females	2+
TN	-	-	-	-	-
R	R-MT	2009	239	-	0
F	-	-	-	-	-
ER	ER-calc-ratio	2009	0	-	-
TC	TC-MT	2009	1360		
TL	-	-	-		
TB/TBmsy	-	-	-		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2009	1.52		
F/Fmsy	FdivFmsy-dimensionless	2009	0.08		
ER/ERmsy	ER-calc-ratio/ERmsy-conv-ratio	2009	0.35		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Striped marlin Northeast Pacific [STMARLINNEPAC]

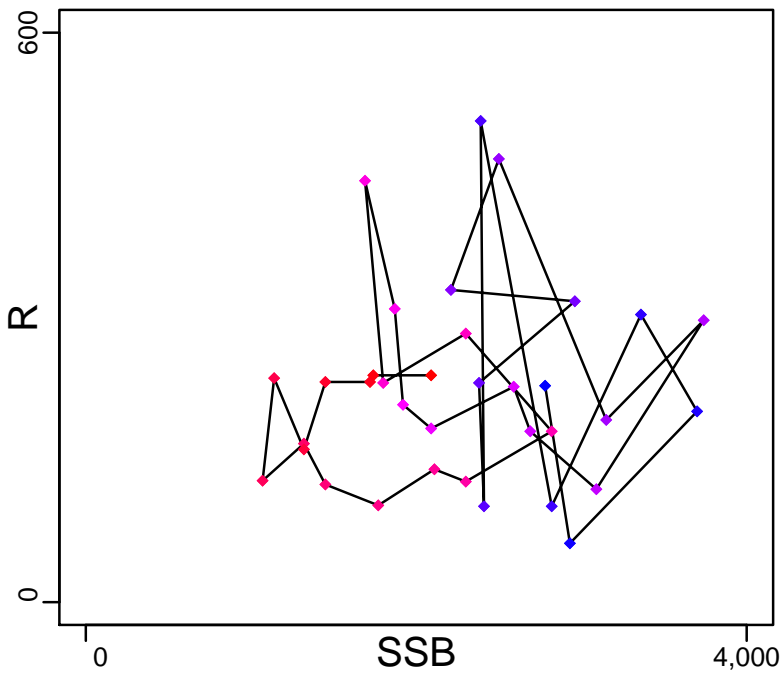
Kobe MSYpref (1954–2009–BRANCH)



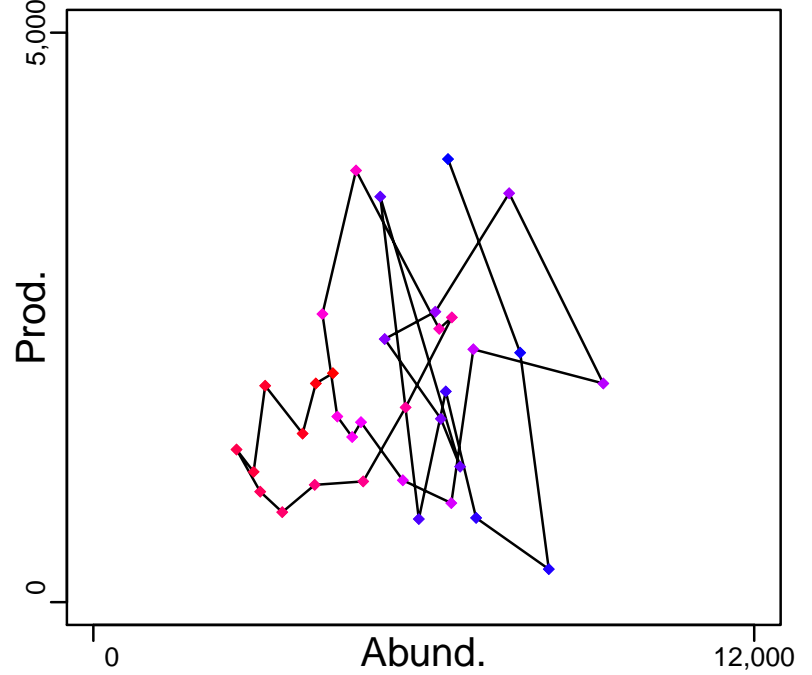
Kobe MGTpref (1954–2009–BRANCH)



Spawner Recruit (1954–2009–BRANCH)



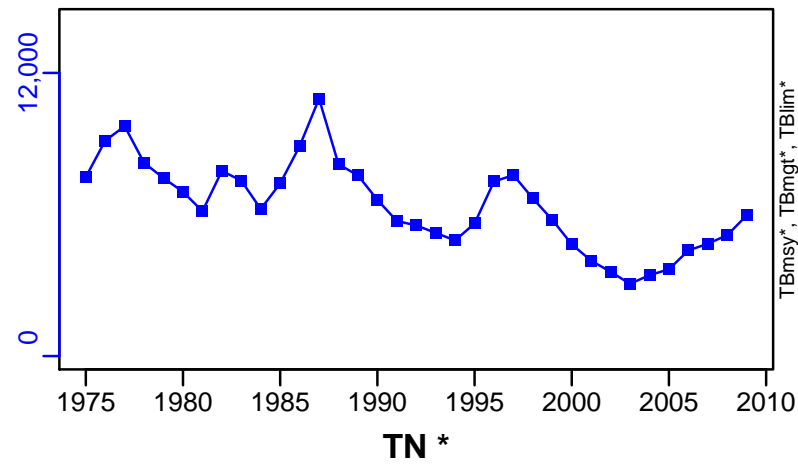
Production (1954–2009–BRANCH)



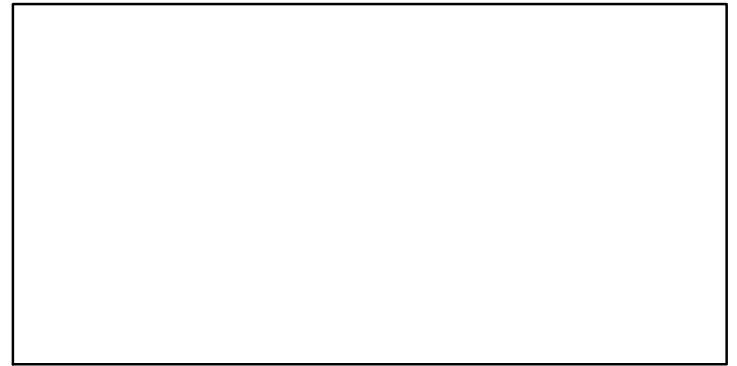
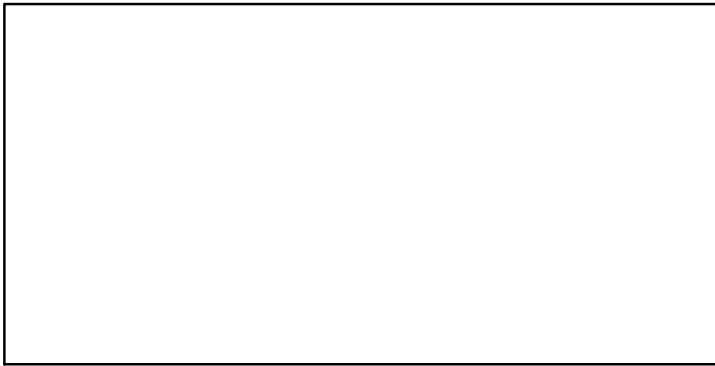
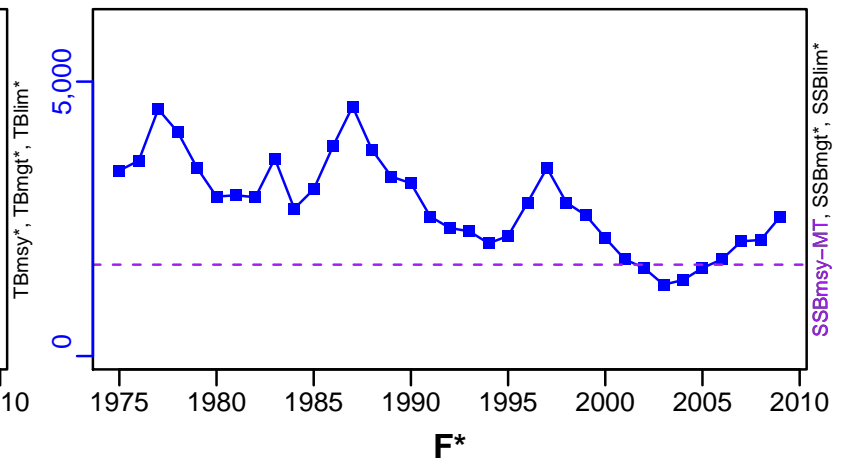
◆ Start Year ◆ End Year * No Data

Striped marlin Northeast Pacific [STMARLINNEPAC]

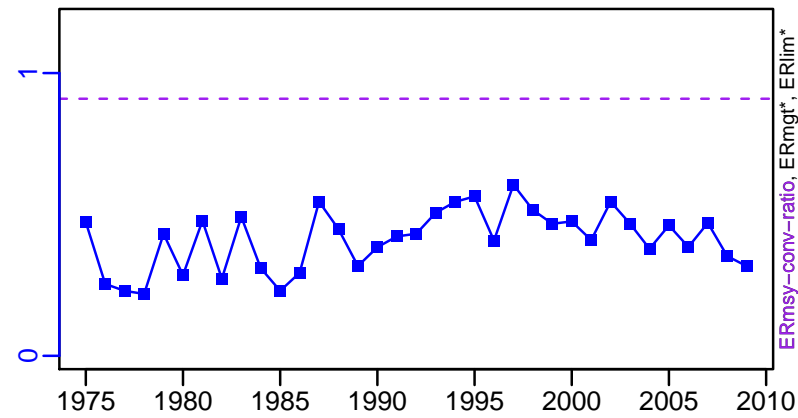
TB-MT (1954-2009-BRANCH)



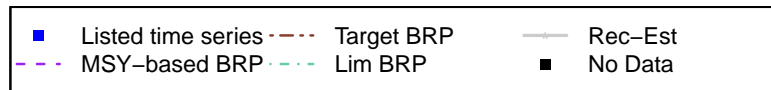
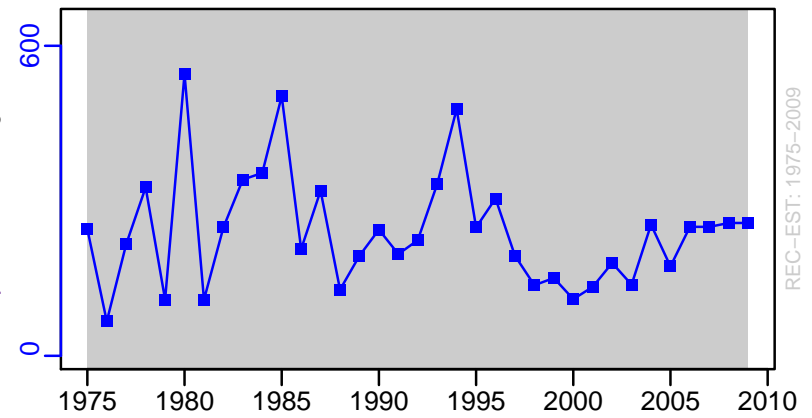
SSB-MT (1954-2009-BRANCH)



ER-calc-ratio (1954-2009-BRANCH)



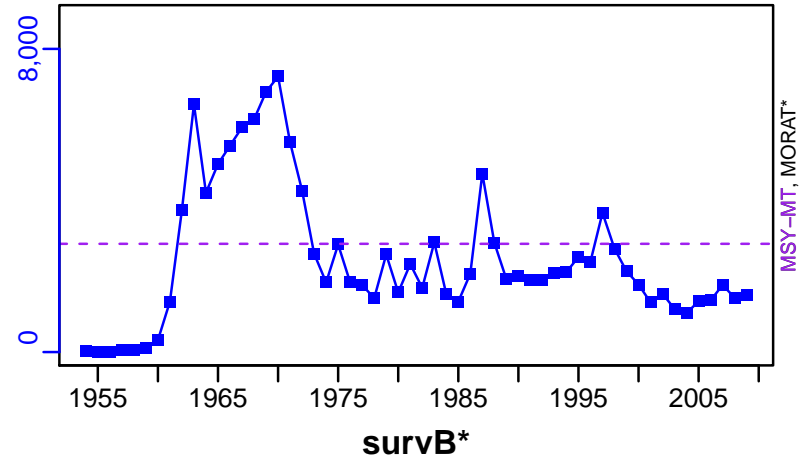
R-MT (1954-2009-BRANCH)



Striped marlin Northeast Pacific [STMARLINNEPAC]

TC-MT, TL*, RecC* (1954-2009-BRANCH)

TAC*, Cpair*, Cadv*



EFFORT*



Striped marlin Southwestern Pacific Ocean [STMARLINSWPO]

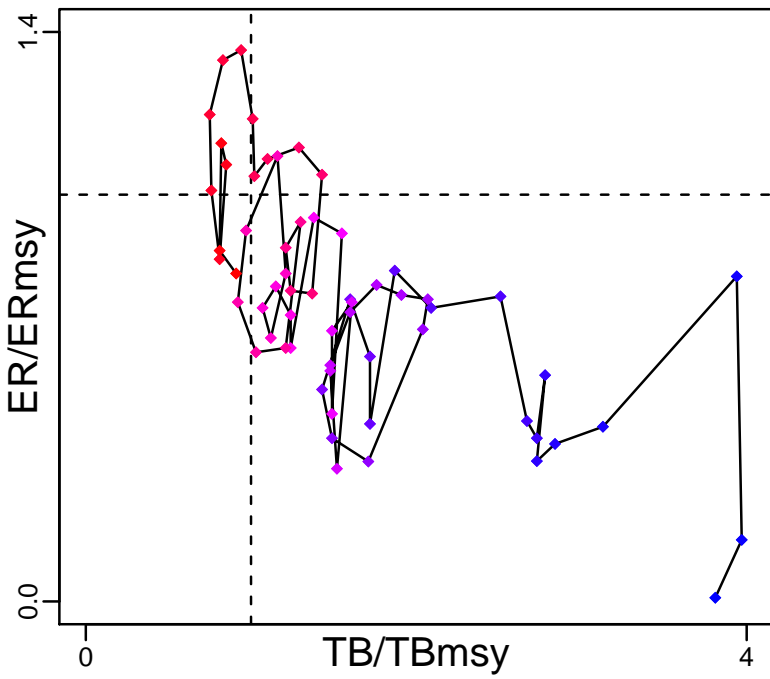
Metadata	
Scientific Name	Kajikia audax
Current Assess ID	SPC-STMARLINSWPO-1952-2011-CHING
Area	Western Pacific Ocean
Management Authority	Western and Central Pacific Fisheries Commission
Assessor	Secretariat of the Pacific Community
Asmts in RAM	2011

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-extr-MT	2011	7326
SSBmsy	-	-	-
Fmsy	Fmsy-1/yr	2011	0.23
ERmsy	ERmsy-calc-ratio	2011	0.28
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	MSY-MT	2011	2081
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

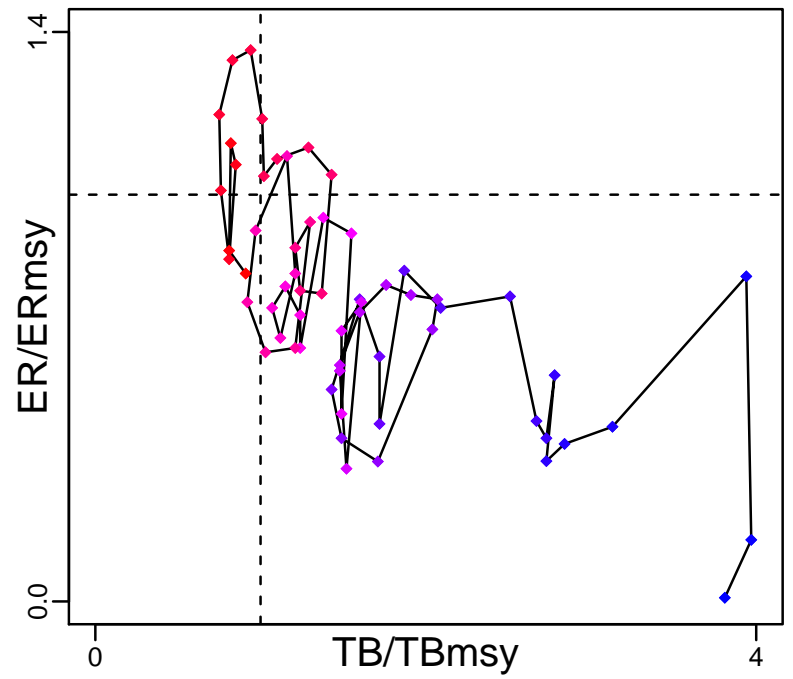
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2011	6640	-	-
SSB	-	-	-	-	-
TN	-	-	-	-	-
R	-	-	-	-	-
F	-	-	-	-	-
ER	ER-ratio	2011	0	-	-
TC	TC-MT	2011	1520		
TL	-	-	-		
TB/TBmsy	TBdivTBmsy-dimensionless	2011	0.91		
SSB/SSBmsy	-	-	-		
F/Fmsy	FdivFmsy-dimensionless	2011	0.81		
ER/ERmsy	ER-ratio/ERmsy-calc-ratio	2011	0.81		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Striped marlin Southwestern Pacific Ocean [STMARLINSWPO]

Kobe MSYpref (1952–2011–CHING)



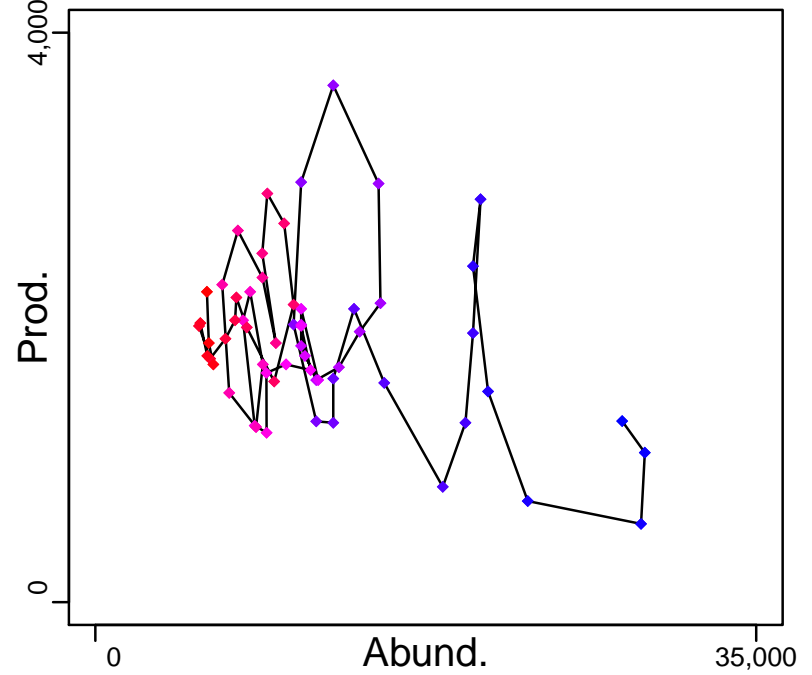
Kobe MGTpref (1952–2011–CHING)



Spawner Recruit*



Production (1952–2011–CHING)

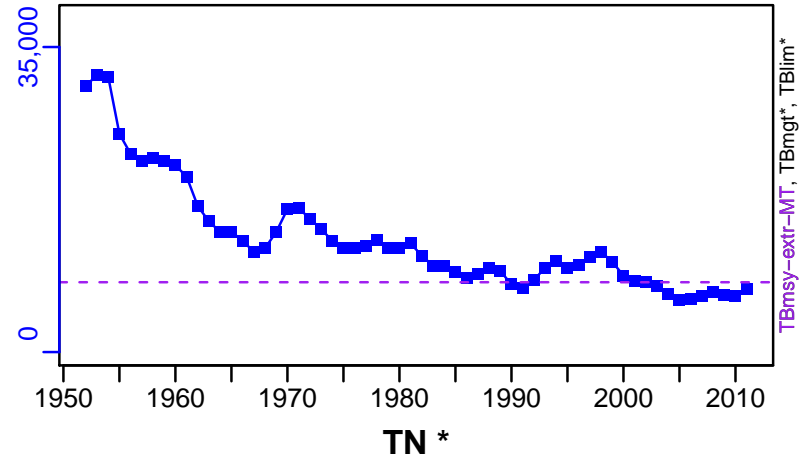


◆ Start Year ◆ End Year * No Data

Striped marlin Southwestern Pacific Ocean [STMARLINSWPO]

TB-MT (1952-2011-CHING)

SSB*



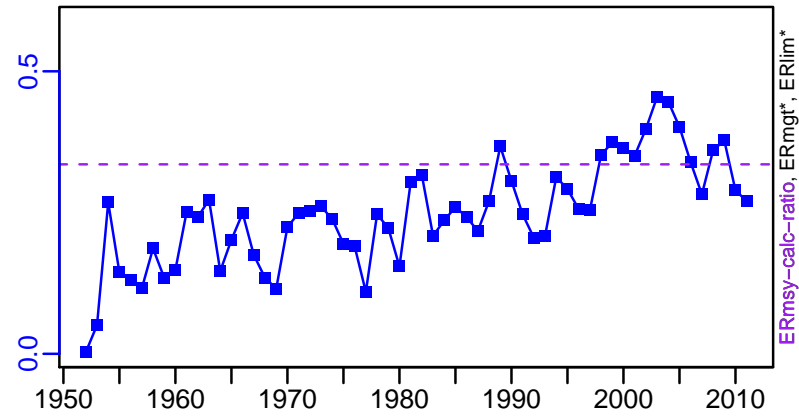
TN *

F*



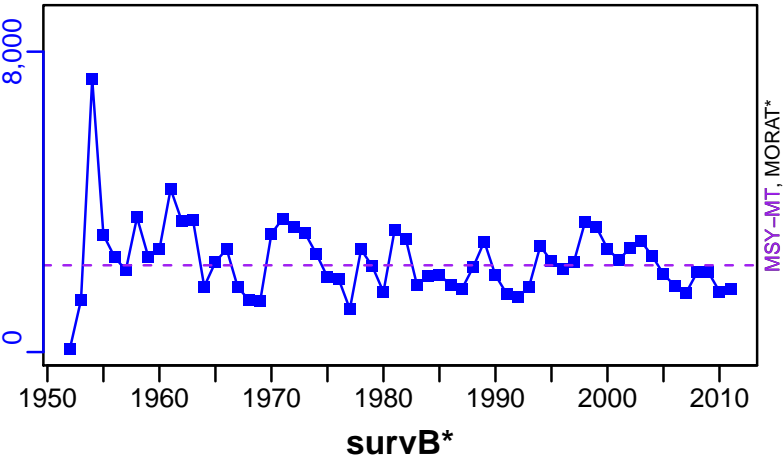
ER-ratio (1952-2011-CHING)

Recruits*



Striped marlin Southwestern Pacific Ocean [STMARLINSWPO]

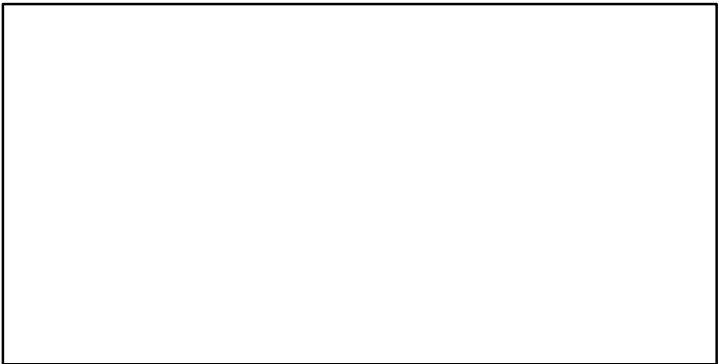
TC-MT, TL*, RecC* (1952-2011-CHING)



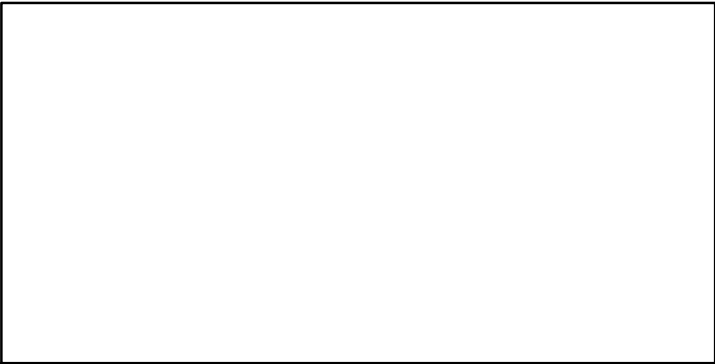
TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Striped marlin Western and Central North Pacific [STMARLINWCNPAC]

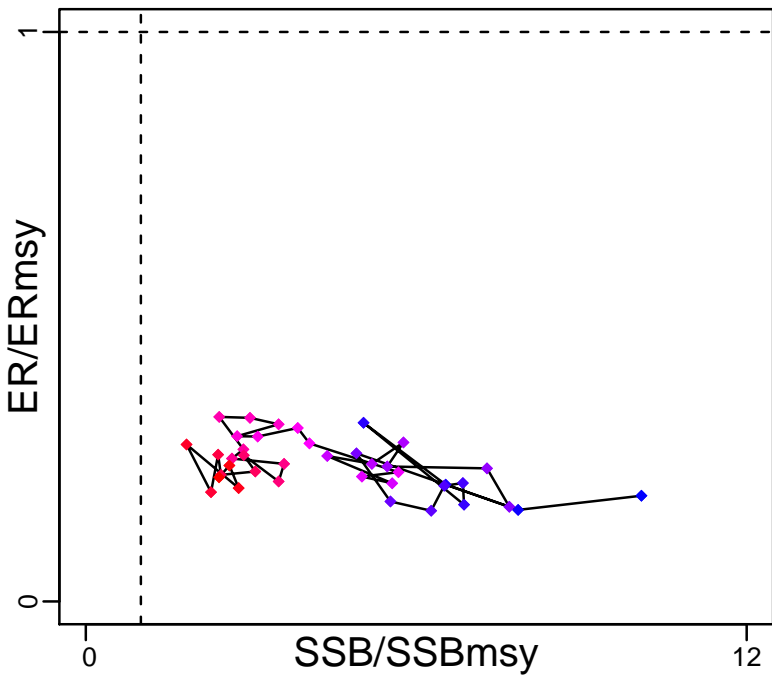
Metadata	
Scientific Name	Kajikia audax
Current Assess ID	ISC-STMARLINWCNPAC-1974-2013-SISIMP2016
Area	Western and Central North Pacific
Management Authority	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Assessor	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Asmts in RAM	2010, 2013

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-extr-MT	2010	16,721
SSBmsy	SSBmsy-MT	2013	2819
Fmsy	Fmsy-1/yr	2010	0.61
ERmsy	ERmsy-ratio	2010	0.39
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	TB0-MT	2010	43,468
SSB0	SSB0-MT	2010	18,507
MSY	MSY-MT	2013	5657
M	-	-	-
TBlim	-	-	-
SSBlim	SSBlim-MT	2013	2819
Flim	-	-	-
ERlim	-	-	-

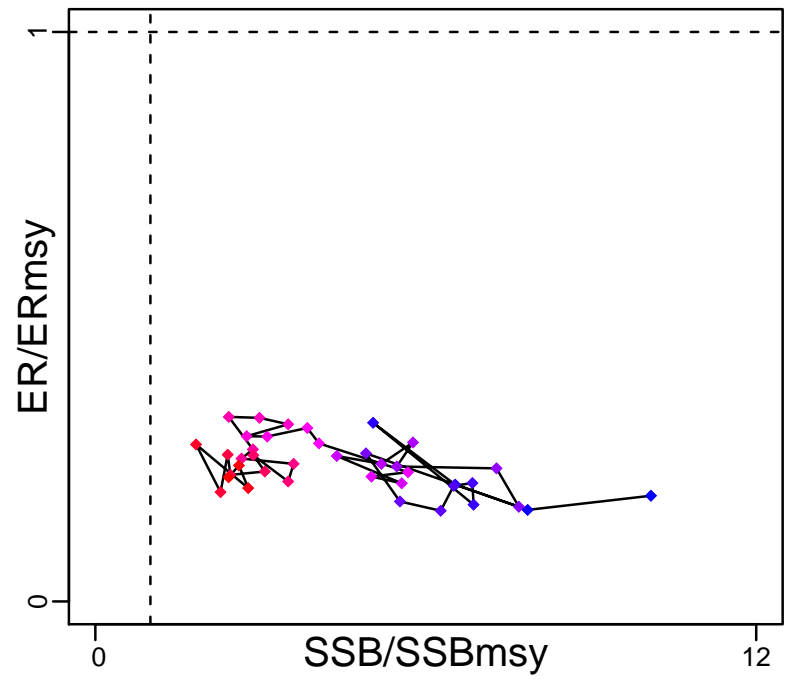
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2010	6630	-	-
SSB	SSB-MT	2013	6820	Females	1+
TN	-	-	-	-	-
R	R-E00	2010	326,000	-	-
F	F-1/yr	2010	1	-	-
ER	ER-calc-ratio	2013	0	-	-
TC	TC-MT	2013	2980	-	-
TL	-	-	-	-	-
TB/TBmsy	TBdivTBmsy-dimensionless	2010	0.35	-	-
SSB/SSBmsy	SSB-MT/SSBmsy-MT	2013	2.42	-	-
F/Fmsy	FdivFmsy-dimensionless	2010	1.22	-	-
ER/ERmsy	ER-ratio/ERmsy-ratio	2010	1.24	-	-
TB/TBmgt	-	-	-	-	-
SSB/SSBmgt	-	-	-	-	-
F/Fmgt	-	-	-	-	-
ER/ERmgt	-	-	-	-	-

Striped marlin Western and Central North Pacific [STMARLINWCPAC]

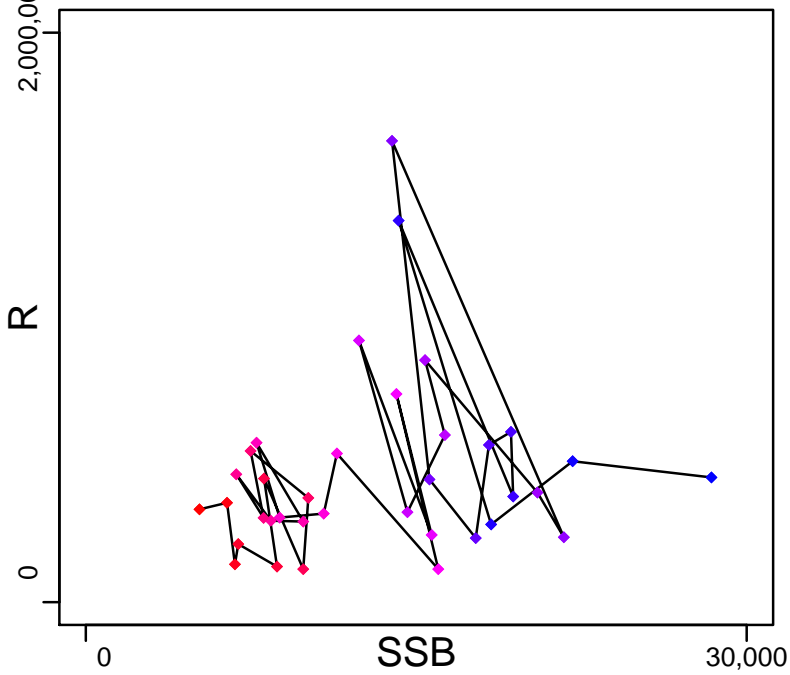
Kobe MSYpref (1974–2013–SISIMP2016)



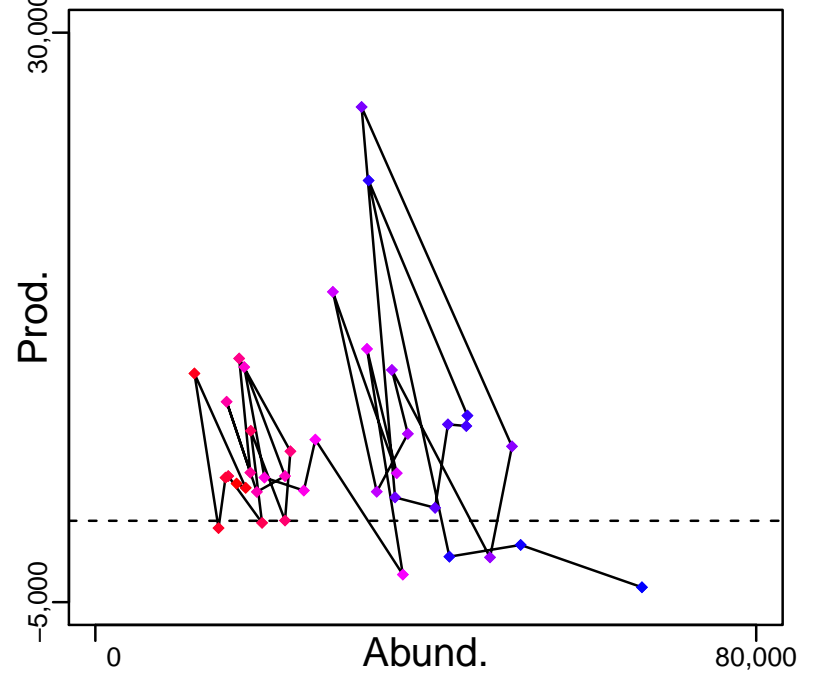
Kobe MGTpref (1974–2013–SISIMP2016)



Spawner Recruit (1951–2010–CHING)



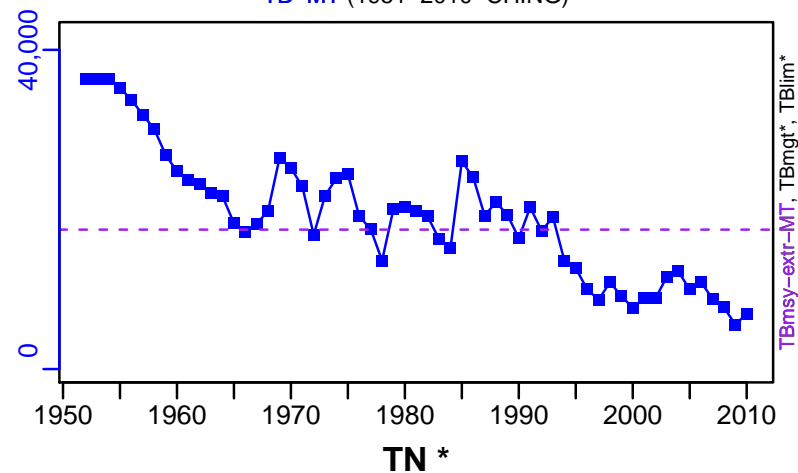
Production (1974–2013–SISIMP2016)



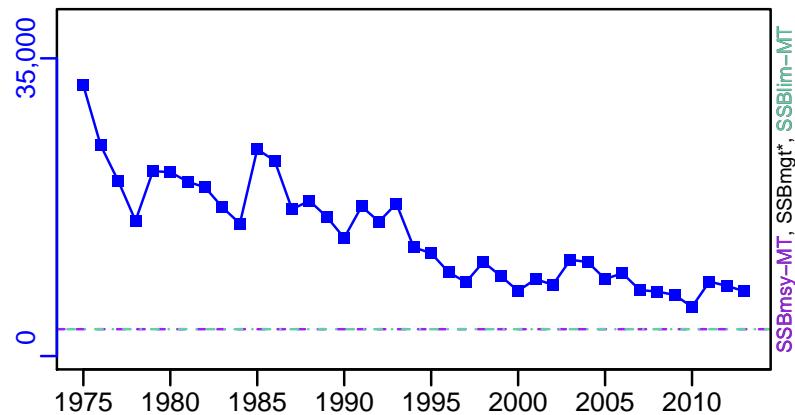
◆ Start Year ◆ End Year * No Data

Striped marlin Western and Central North Pacific [STMARLINWCNPAC]

TB-MT (1951-2010-CHING)



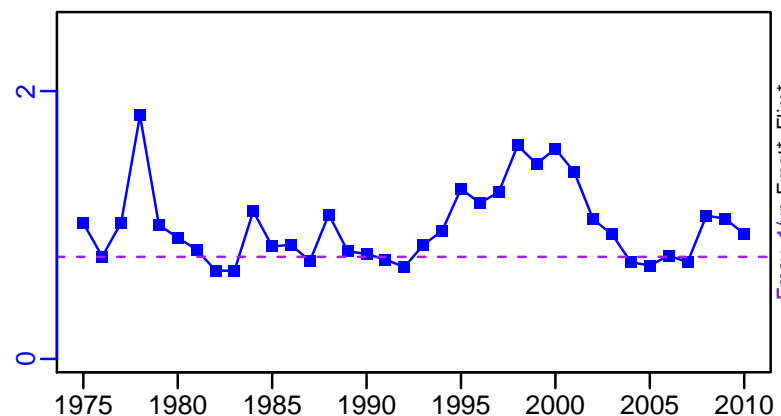
SSB-MT (1974-2013-SISIMP2016)



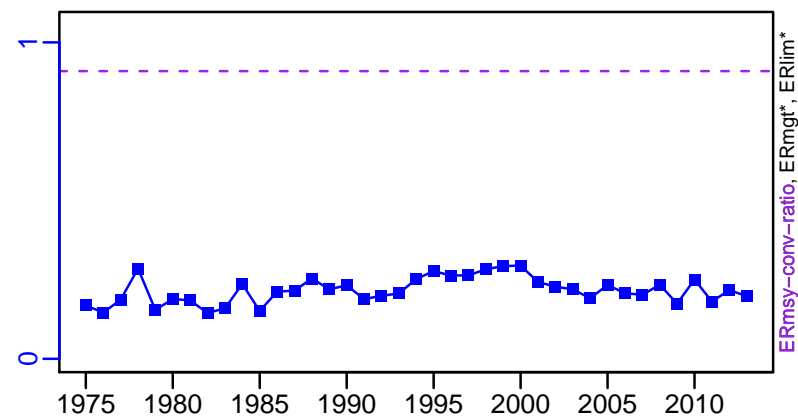
TN *



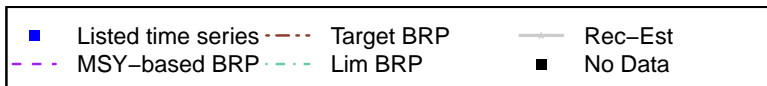
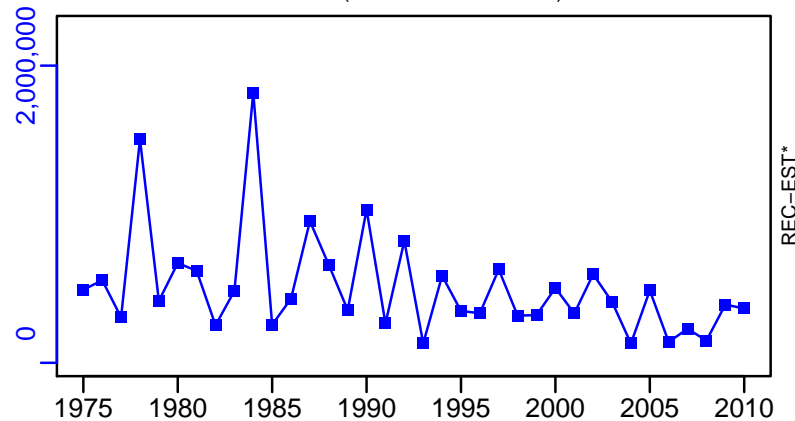
F-1/yr (1951-2010-CHING)



ER-calc-ratio (1974-2013-SISIMP2016)

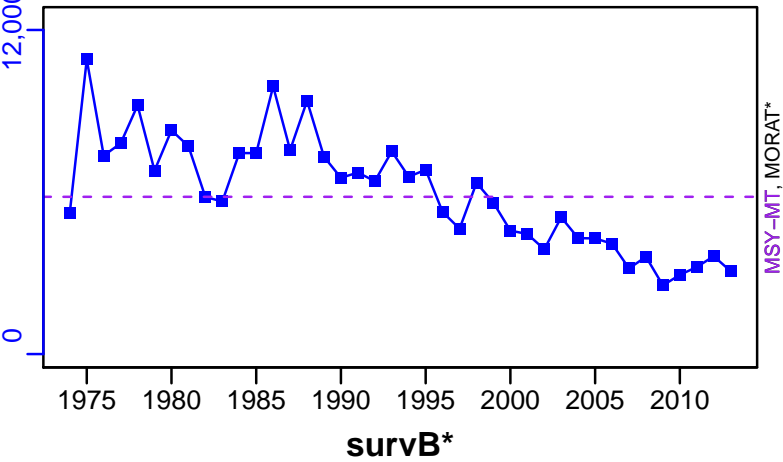


R-E00 (1951-2010-CHING)



Striped marlin Western and Central North Pacific [STMARLINWCNPAC]

TC-MT, TL*, RecC* (1974-2013-SISIMP2016)



TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Swordfish Eastern Pacific [SWORDEPAC]

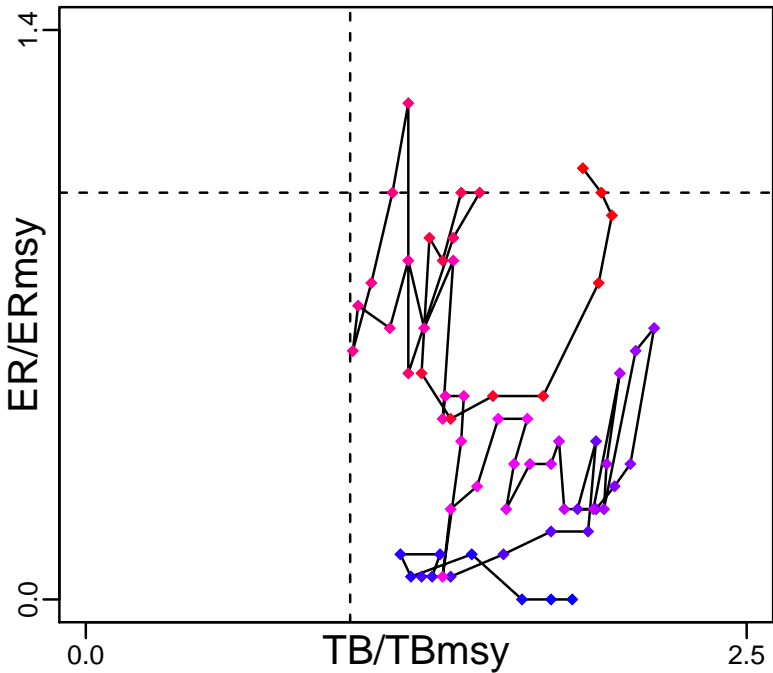
Metadata	
Scientific Name	Xiphias gladius
Current Assess ID	IATTC-SWORDEPAC-1951-2012-PONS
Area	Eastern Pacific
Management Authority	Inter-American Tropical Tuna Commission
Assessor	Inter-American Tropical Tuna Commission
Asmts in RAM	2012

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-MT	2012	31,170
SSBmsy	-	-	-
Fmsy	-	-	-
ERmsy	ERmsy-ratio	2012	0.18
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	TB0-MT	2012	57,210
SSB0	-	-	-
MSY	MSY-MT	2012	54,900
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

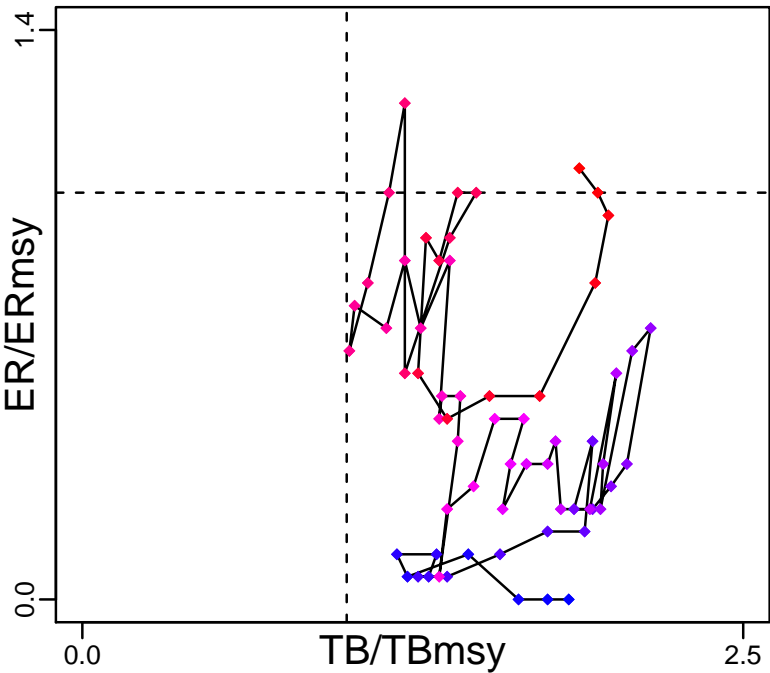
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2012	58,600	-	-
SSB	-	-	-	-	-
TN	-	-	-	-	-
R	-	-	-	-	-
F	-	-	-	-	-
ER	ER-ratio	2012	0	-	-
TC	TC-MT	2012	9910		
TL	-	-	-		
TB/TBmsy	TBdivTBmsy-dimensionless	2012	1.88		
SSB/SSBmsy	-	-	-		
F/Fmsy	-	-	-		
ER/ERmsy	ERdivERmsy-dimensionless	2012	1.06		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Swordfish Eastern Pacific [SWORDEPAC]

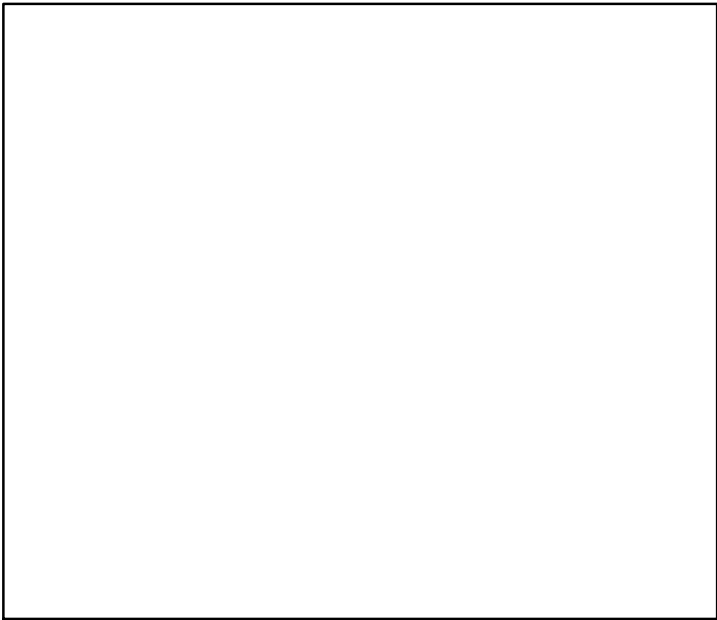
Kobe MSYpref (1951–2012–PONS)



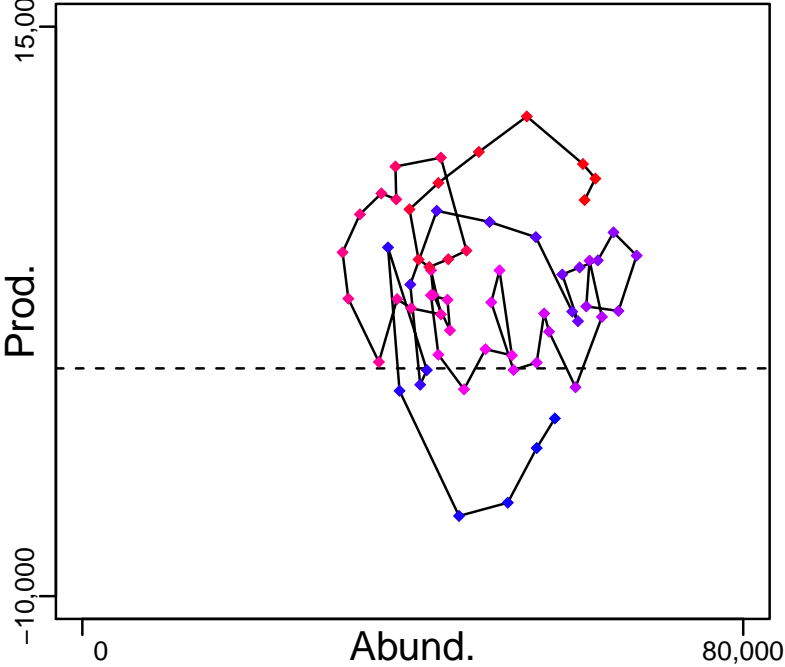
Kobe MGTpref (1951–2012–PONS)



Spawner Recruit*



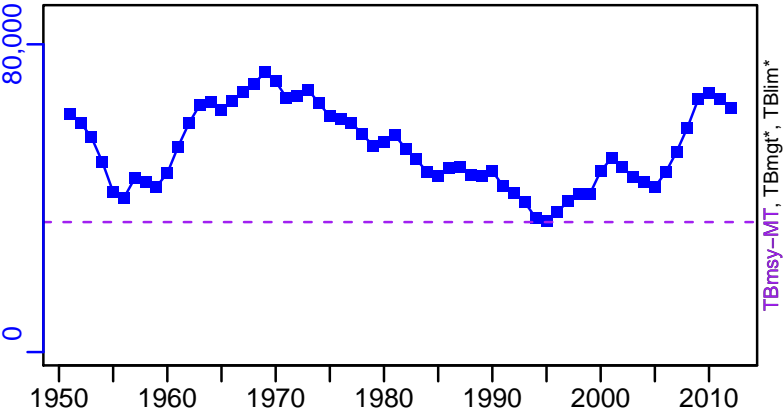
Production (1951–2012–PONS)



◆ Start Year ◆ End Year * No Data

Swordfish Eastern Pacific [SWORDEPAC]

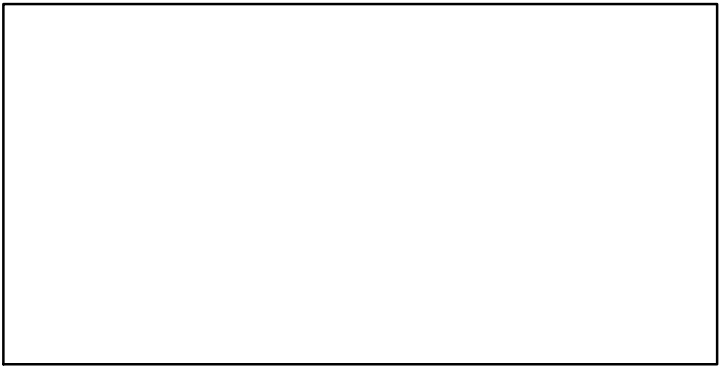
TB-MT (1951-2012-PONS)



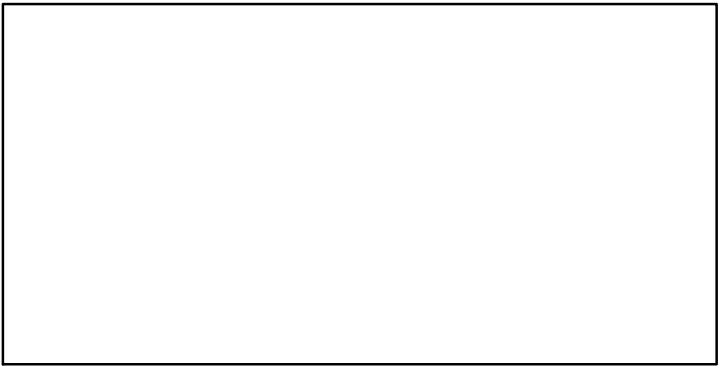
SSB*



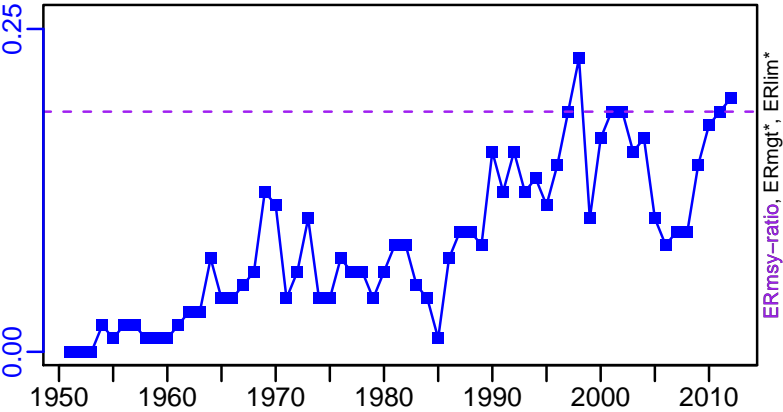
TN *



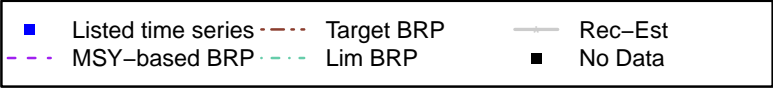
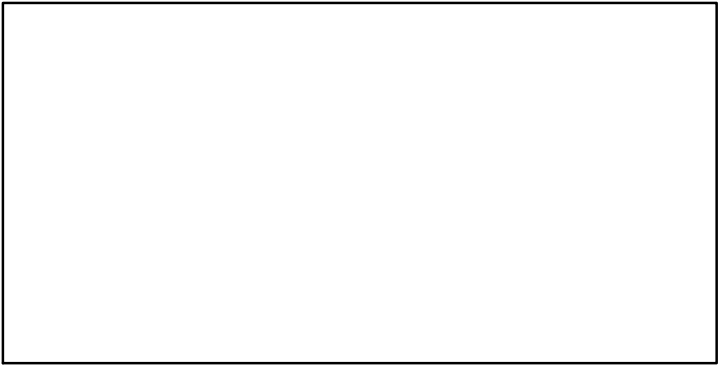
F*



ER-ratio (1951-2012-PONS)

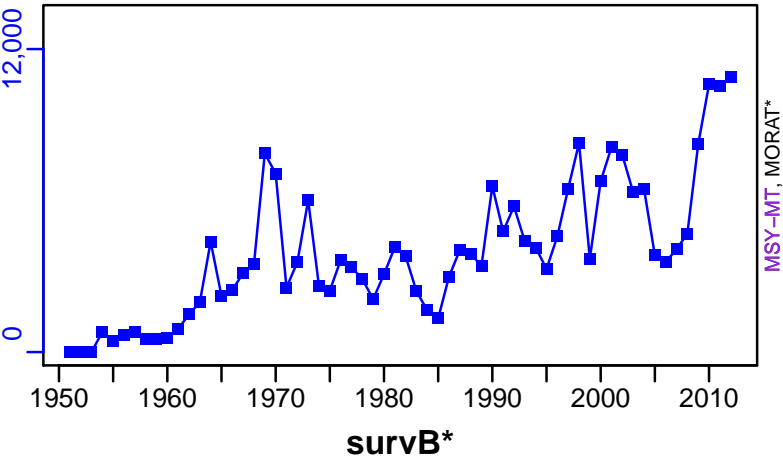


Recruits*



Swordfish Eastern Pacific [SWORDEPAC]

TC-MT, TL*, RecC* (1951-2012-PONS)



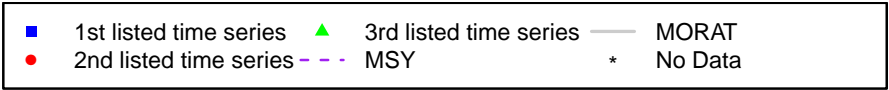
TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



Swordfish North Pacific [SWORDNPAC]

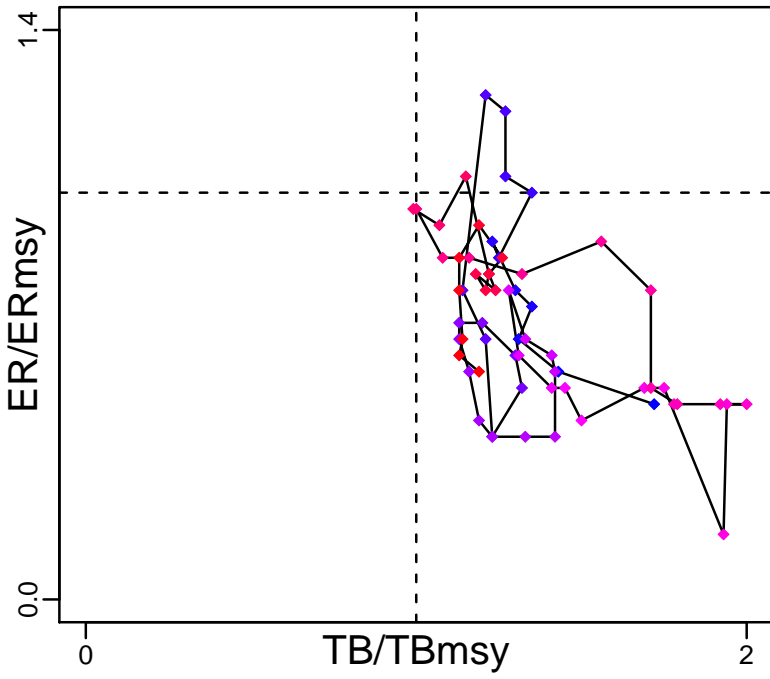
Metadata	
Scientific Name	Xiphias gladius
Current Assess ID	ISC-SWORDNPAC-1951-2012-PONS
Area	North Pacific Ocean
Management Authority	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Assessor	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean
Asmts in RAM	2012

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-MT	2012	60,720
SSBmsy	-	-	-
Fmsy	-	-	-
ERmsy	ERmsy-ratio	2012	0.25
TBmgt	TBmgt-MT	2012	60,720
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	ERmgt-ratio	2012	0.25
TB0	TB0-MT	2012	104,600
SSB0	-	-	-
MSY	MSY-MT	2012	14,920
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

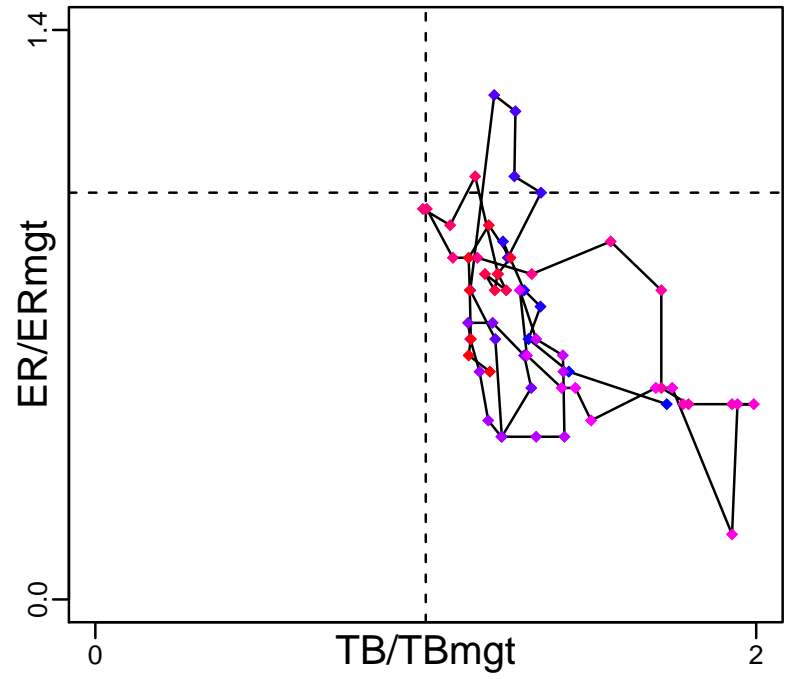
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2012	72,500	-	-
SSB	-	-	-	-	-
TN	-	-	-	-	-
R	-	-	-	-	-
F	-	-	-	-	-
ER	ER-ratio	2012	0	-	-
TC	TC-MT	2012	9860		
TL	-	-	-		
TB/TBmsy	TBdivTBmsy-dimensionless	2012	1.19		
SSB/SSBmsy	-	-	-		
F/Fmsy	-	-	-		
ER/ERmsy	ERdivERmsy-dimensionless	2012	0.56		
TB/TBmgt	TB-MT/TBmgt-MT	2012	1.19		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Swordfish North Pacific [SWORDNPAC]

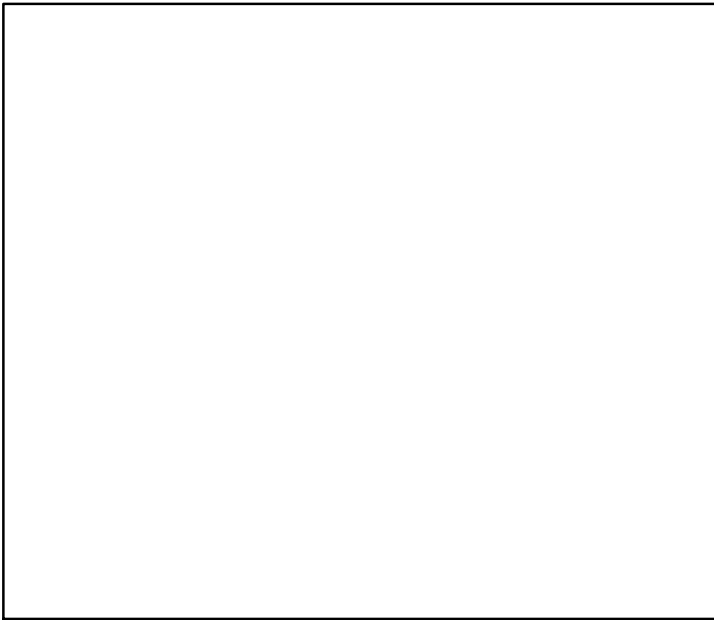
Kobe MSY_{pref} (1951–2012–PONS)



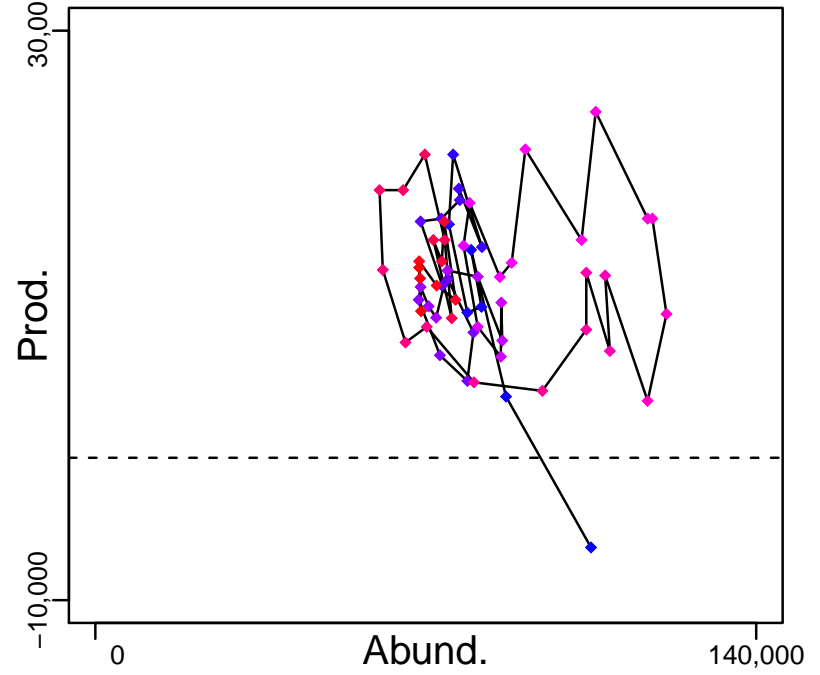
Kobe MGT_{pref} (1951–2012–PONS)



Spawner Recruit*



Production (1951–2012–PONS)

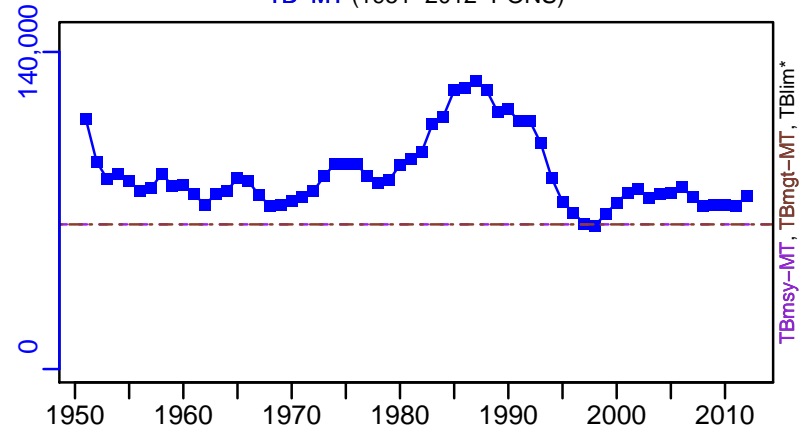


◆ Start Year ◆ End Year * No Data

Swordfish North Pacific [SWORDNPAC]

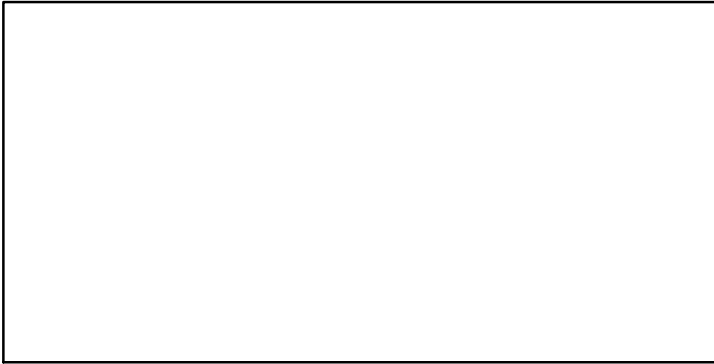
TB-MT (1951-2012-PONS)

SSB*



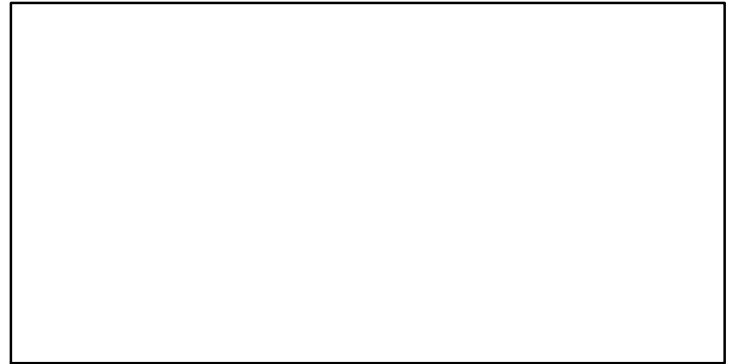
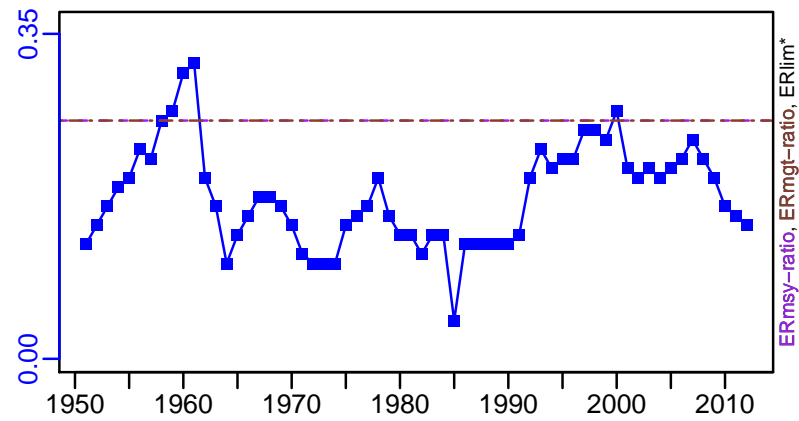
TN *

F*



ER-ratio (1951-2012-PONS)

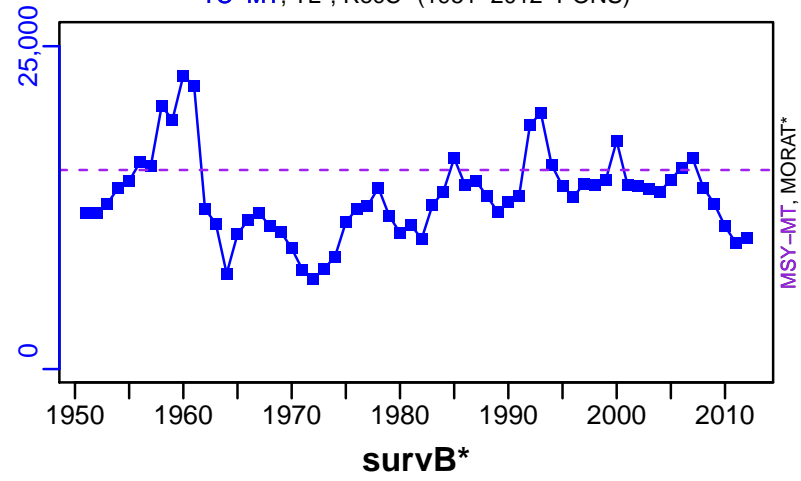
Recruits*



Swordfish North Pacific [SWORDNPAC]

TC-MT, TL*, RecC* (1951-2012-PONS)

TAC*, Cpair*, Cadv*



EFFORT*



Yellowfin tuna Central Western Pacific [YFINCWPAC]

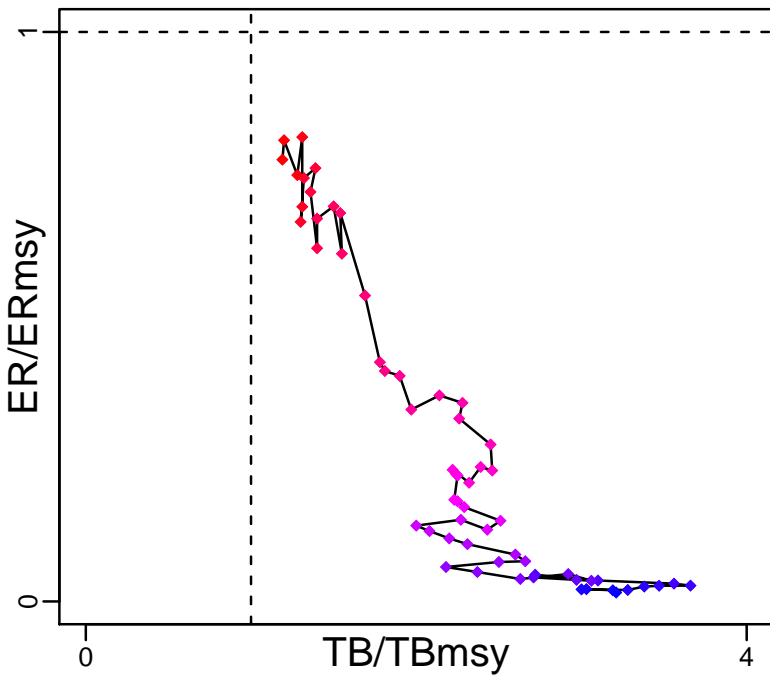
Metadata	
Scientific Name	Thunnus albacares
Current Assess ID	SPC-YFINCWPAC-1950-2015-PONS
Area	Central Western Pacific Ocean
Management Authority	Western and Central Pacific Fisheries Commission
Assessor	Secretariat of the Pacific Community
Asmts in RAM	2015, 2012

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-extr-MT	2015	2,249,402
SSBmsy	SSBmsy-MT	2012	728,300
Fmsy	Fmsy-extr-1/yr	2015	1.96
ERmsy	ERmsy-calc-ratio	2015	0.26
TBmgt	-	-	-
SSBmgt	SSBmgt-MT	2012	728,300
Fmgt	Fmgt-1/yr	2012	0.09
ERmgt	-	-	-
TB0	TB0-MT	2012	4,319,000
SSB0	SSB0-MT	2012	2,467,000
MSY	MSY-MT	2015	586,400
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

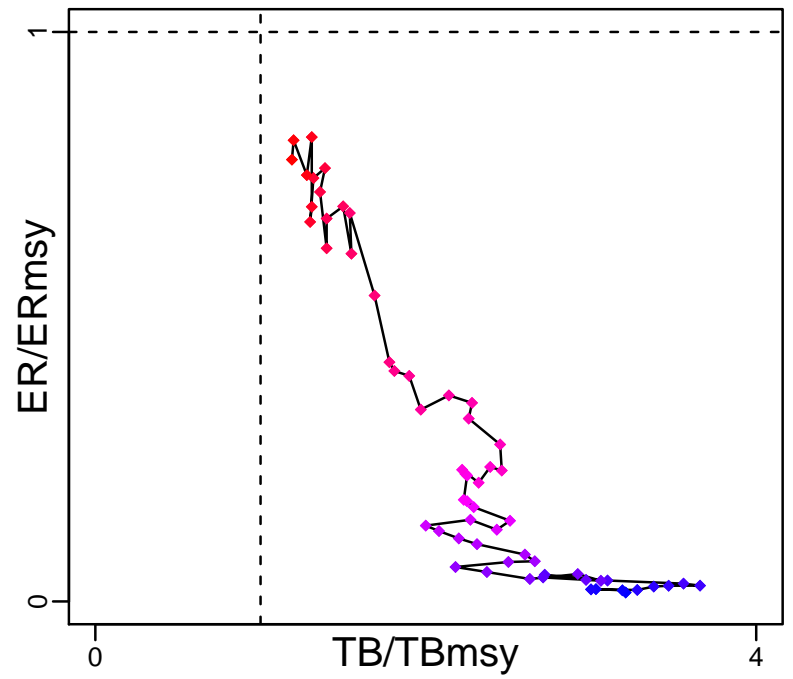
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	TB-MT	2015	2,580,000	-	-
SSB	-	-	-	-	-
TN	-	-	-	-	-
R	R-E00	2015	5.65×10^8	-	-
F	F-1/yr	2015	1	-	-
ER	ER-calc-ratio	2015	0	-	-
TC	TC-MT	2012	646,000		
TL	TL-MT	2015	576,000		
TB/TBmsy	TBdivTBmsy-dimensionless	2015	1.19		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2015	1.29		
F/Fmsy	FdivFmsy-dimensionless	2015	0.72		
ER/ERmsy	ER-calc-ratio/ERmsy-calc-ratio	2015	0.78		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	F-1/yr/Fmgt-1/yr	2012	7.99		
ER/ERmgt	-	-	-		

Yellowfin tuna Central Western Pacific [YFINCWPAC]

Kobe MSYpref (1950–2015–PONS)



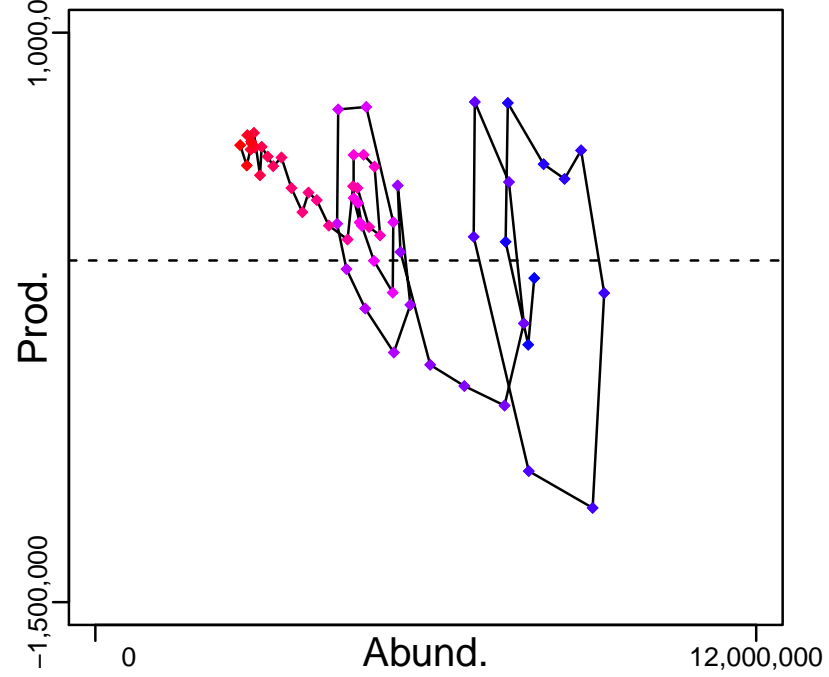
Kobe MGTpref (1950–2015–PONS)



Spawner Recruit*



Production (1950–2015–PONS)

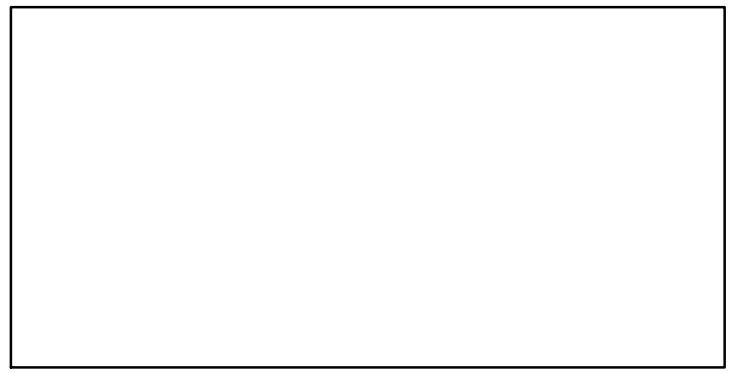
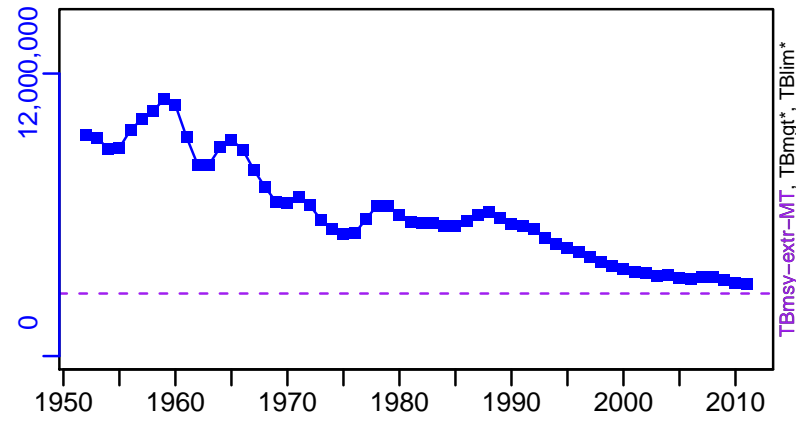


◆ Start Year ◆ End Year * No Data

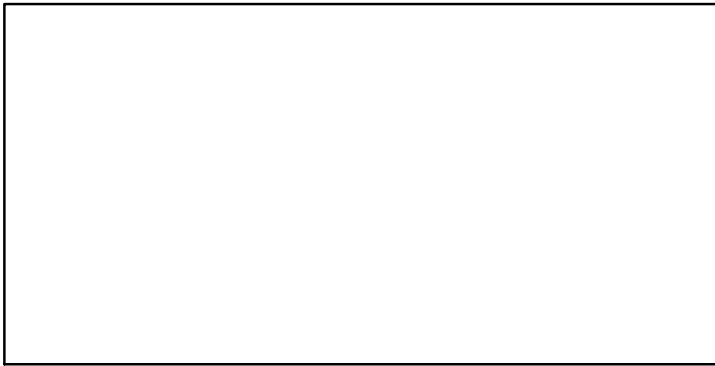
Yellowfin tuna Central Western Pacific [YFNCWPAC]

TB-MT (1950–2015–PONS)

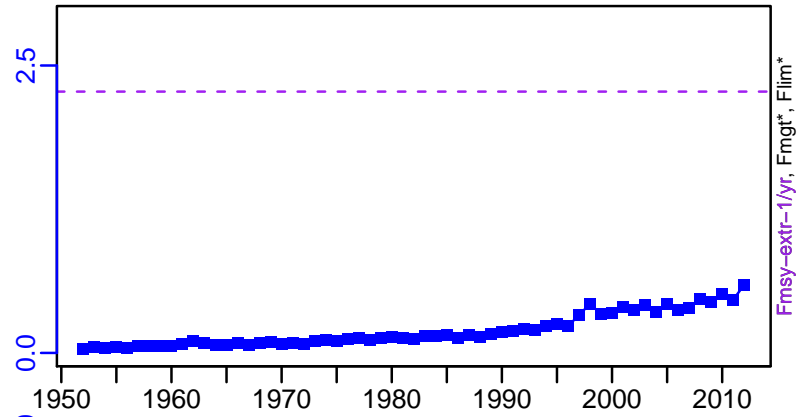
SSB*



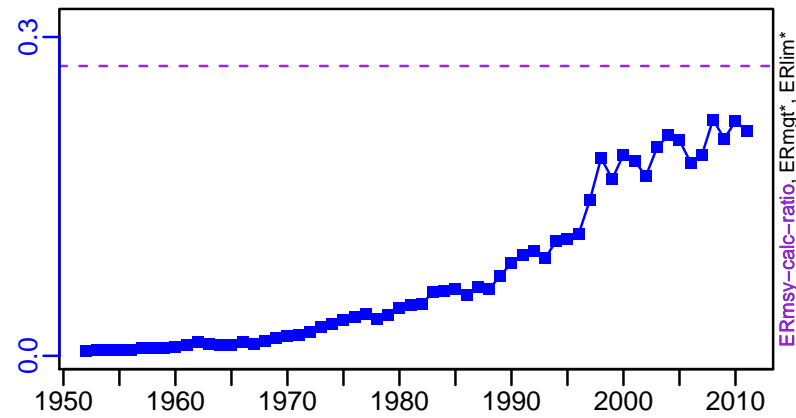
TN *



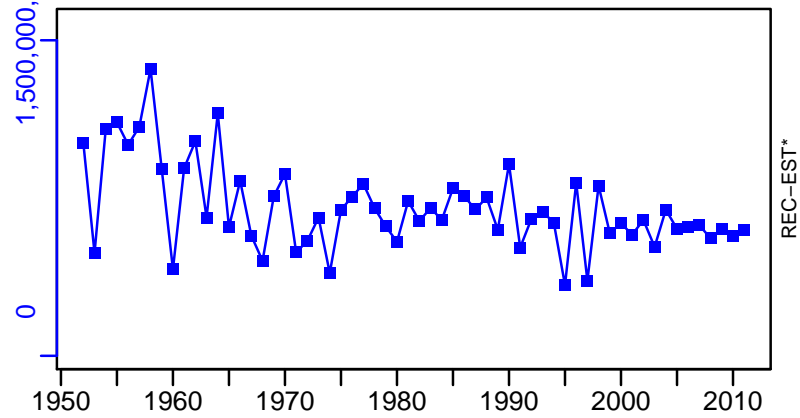
F-1/yr (1950–2015–PONS)



ER-calc-ratio (1950–2015–PONS)

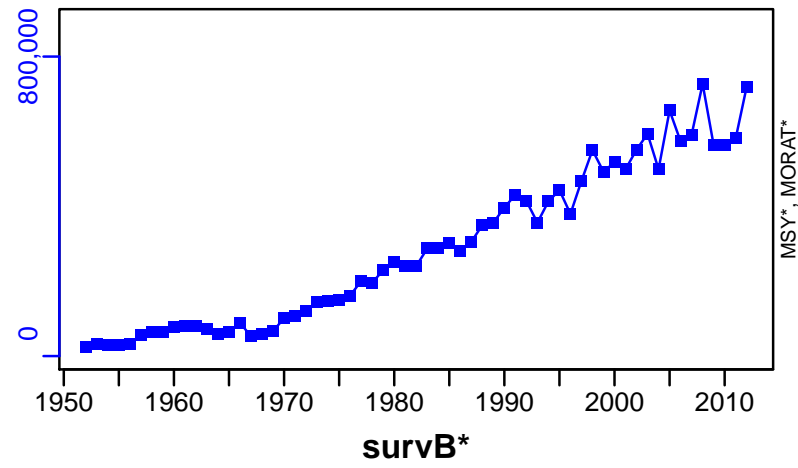


R-E00 (1950–2015–PONS)



Yellowfin tuna Central Western Pacific [YFNCWPAC]

TC-MT, TL*, RecC* (1952-2012-PONS)



TAC*, Cpair*, Cadv*



CPUE*



EFFORT*



■ 1st listed time series ▲ 3rd listed time series — MORAT
● 2nd listed time series - - MSY * No Data

Yellowfin tuna Eastern Pacific [YFINEPAC]

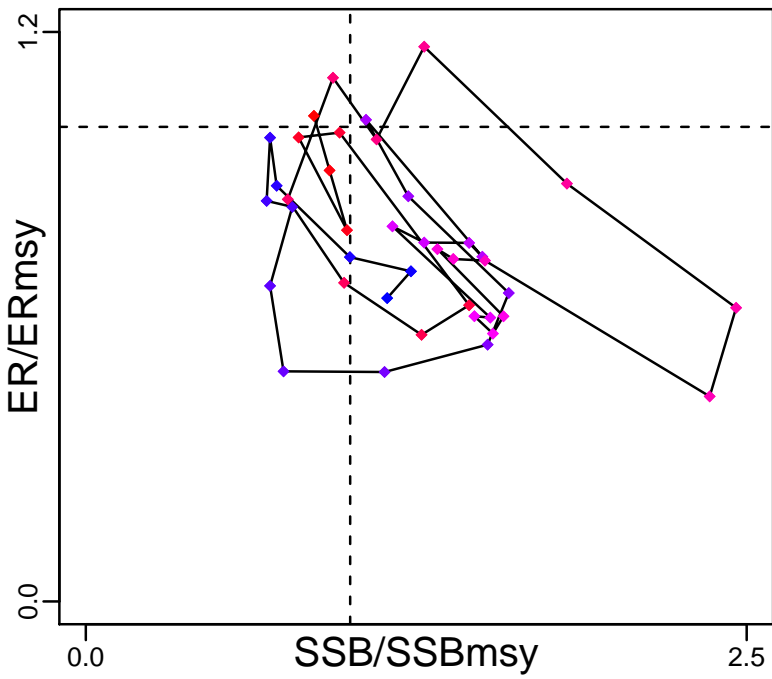
Metadata	
Scientific Name	Thunnus albacares
Current Assess ID	IATTC-YFINEPAC-1950-2016-PONS
Area	Northeast Pacific
Management Authority	Inter-American Tropical Tuna Commission
Assessor	Inter-American Tropical Tuna Commission
Asmts in RAM	2012, 2016

Reference Points			
Type	ID	Asmt Year	Value
TBmsy	TBmsy-MT	2012	362,582
SSBmsy	SSBmsy-extr-MT	2016	3,624,300
Fmsy	Fmsy-extr-1/yr	2016	1
ERmsy	ERmsy-calc-ratio	2012	0.73
TBmgt	-	-	-
SSBmgt	-	-	-
Fmgt	-	-	-
ERmgt	-	-	-
TB0	-	-	-
SSB0	-	-	-
MSY	MSY-MT	2016	274,960
M	-	-	-
TBlim	-	-	-
SSBlim	-	-	-
Flim	-	-	-
ERlim	-	-	-

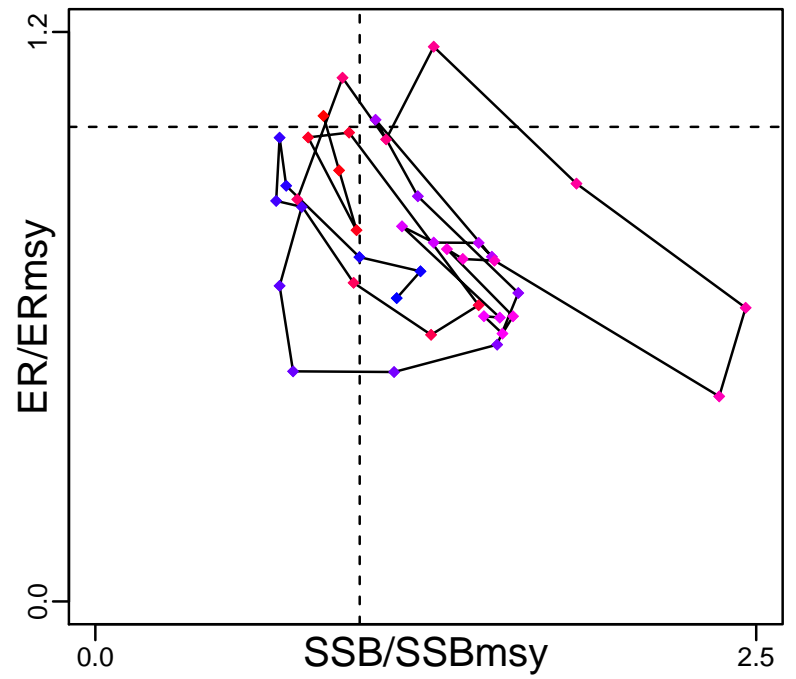
Time Series					
Type	ID	Asmt Year	Curr Value	Sex	Age
TB	-	-	-	-	-
SSB	SSB-MT	2016	3,360,000	-	-
TN	-	-	-	-	-
R	R-E00	2016	303,000	-	-
F	F-1/yr	2016	1	-	-
ER	ER-calc-ratio	2016	0	-	-
TC	TC-MT	2012	191,000		
TL	TL-MT	2016	243,000		
TB/TBmsy	TBdivTBmsy-dimensionless	2012	1.07		
SSB/SSBmsy	SSBdivSSBmsy-dimensionless	2016	0.93		
F/Fmsy	FdivFmsy-dimensionless	2016	0.92		
ER/ERmsy	ER-calc-ratio/ERmsy-conv-ratio	2016	1.02		
TB/TBmgt	-	-	-		
SSB/SSBmgt	-	-	-		
F/Fmgt	-	-	-		
ER/ERmgt	-	-	-		

Yellowfin tuna Eastern Pacific [YFINEPAC]

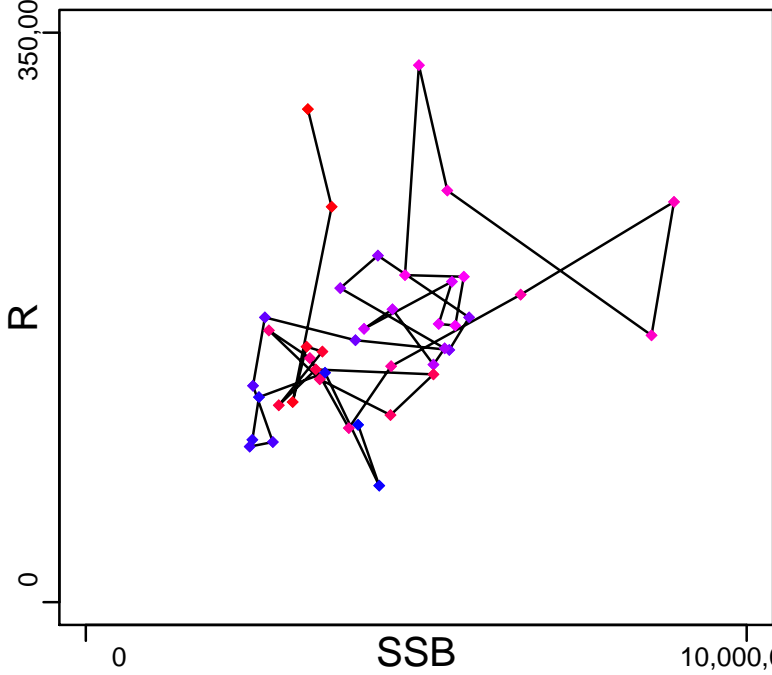
Kobe MSYpref (1950–2016–PONS)



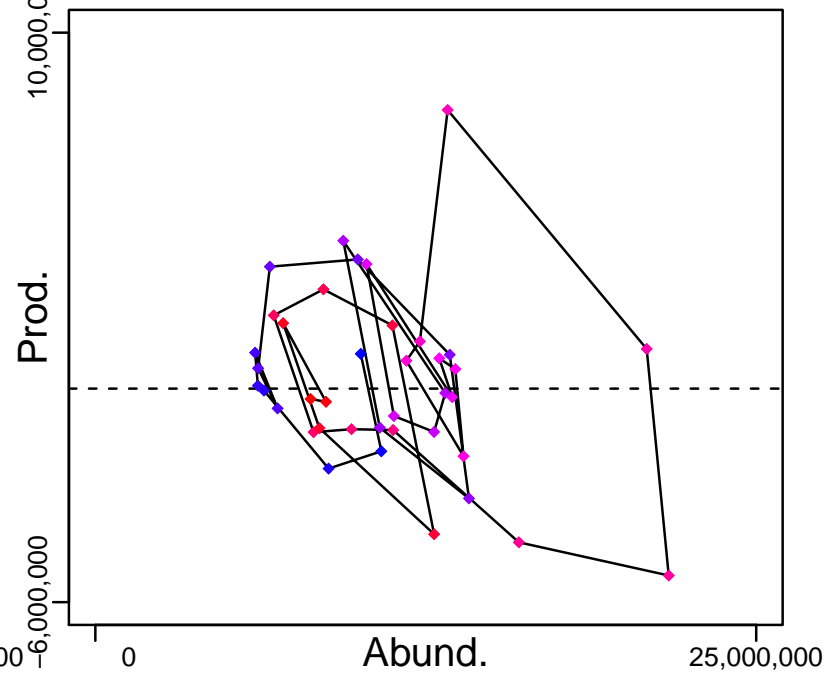
Kobe MGTpref (1950–2016–PONS)



Spawner Recruit (1950–2016–PONS)



Production (1950–2016–PONS)



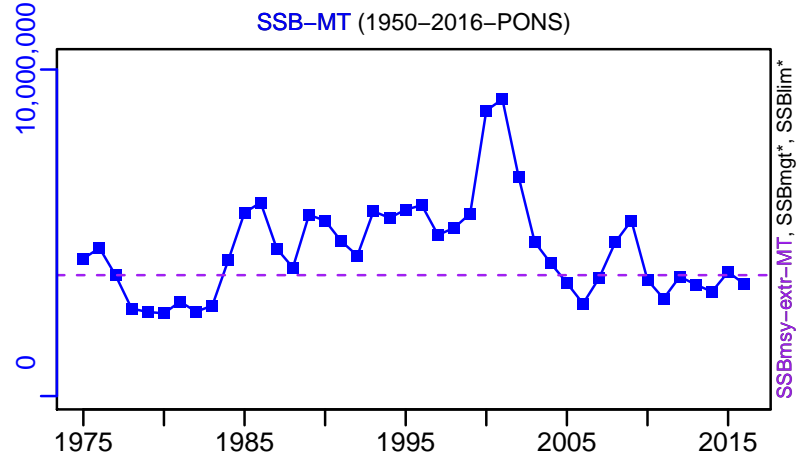
◆ Start Year ◆ End Year * No Data

Yellowfin tuna Eastern Pacific [YFINEPAC]

TB*



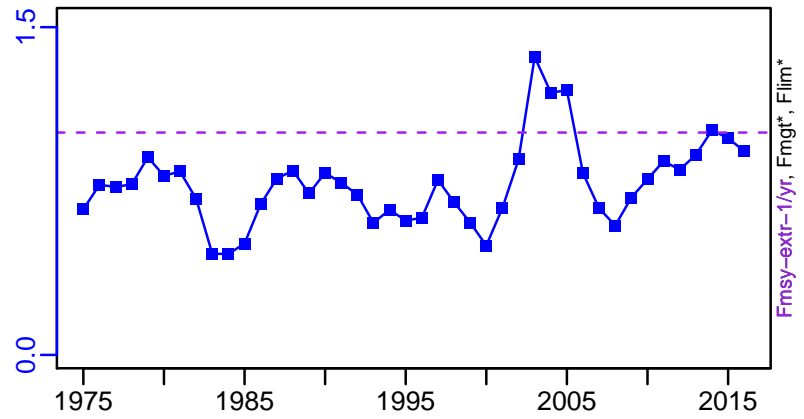
SSB-MT (1950–2016–PONS)



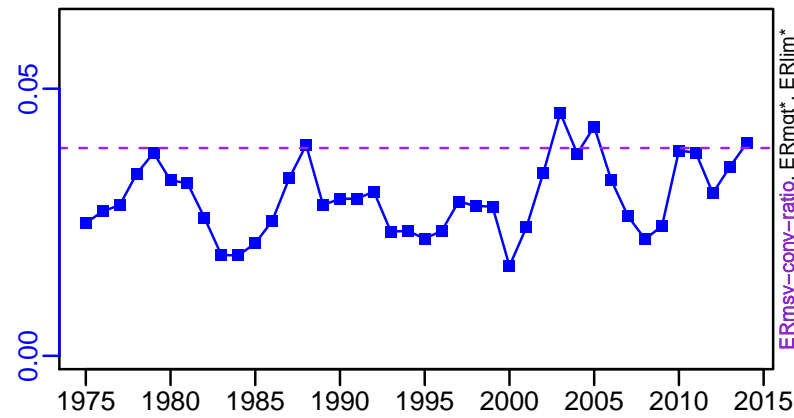
TN *



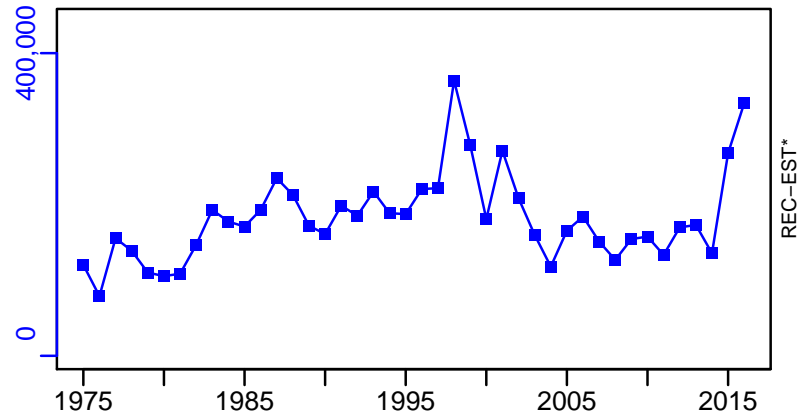
F-1/yr (1950–2016–PONS)



ER-calc-ratio (1950–2016–PONS)



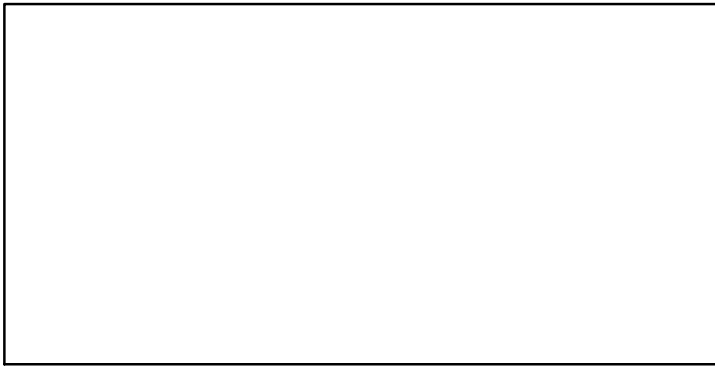
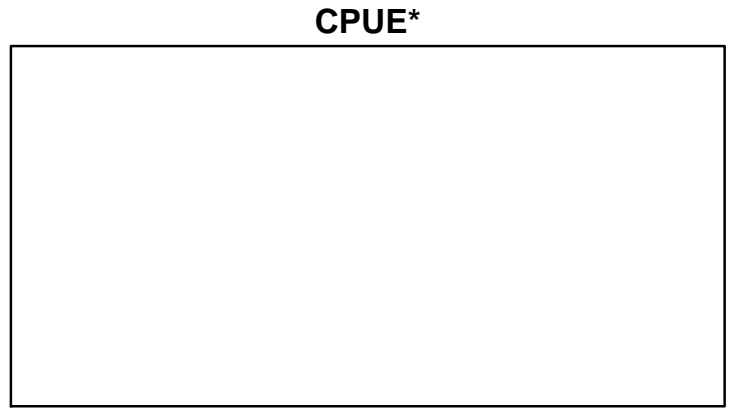
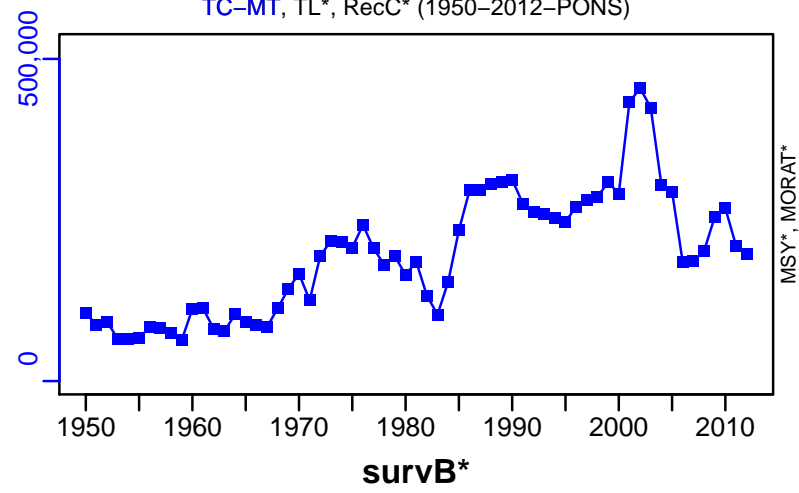
R-E00 (1950–2016–PONS)



Yellowfin tuna Eastern Pacific [YFINEPAC]

TC-MT, TL*, RecC* (1950-2012-PONS)

TAC*, Cpair*, Cadv*



EFFORT*

