



Pacific
Community
Communauté
du Pacifique

STATUS OF TROPICAL TUNA STOCKS

OFP SPC

TT CMM meeting, Honolulu, August 2017

Structure

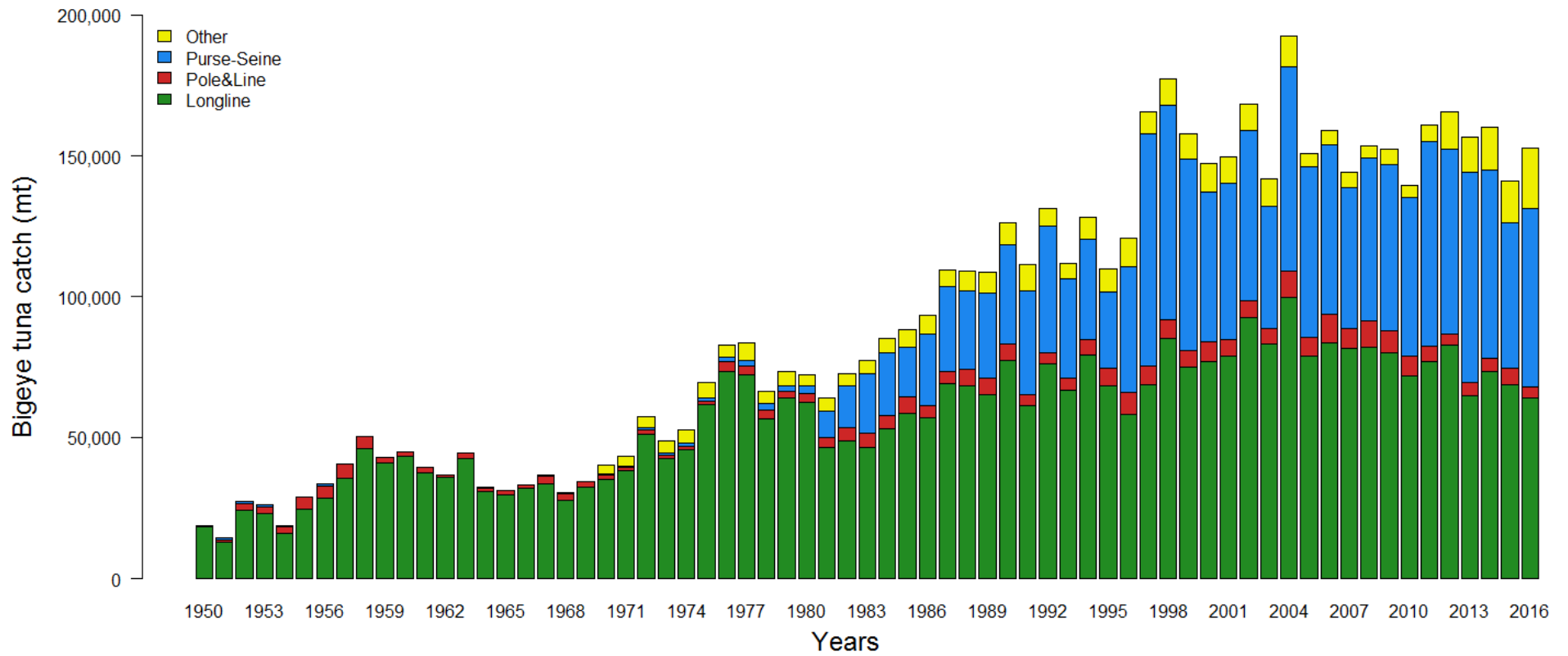
- Presenting by tropical tuna stock
 - Time series of catches
 - Status and uncertainty in:
 - Recent assessed status from latest assessment grid
 - Future projected status under ‘status quo’ conditions

Projections



- Assuming 'status quo' fishery conditions
- Across the grid of model runs selected by SC
- Constant catchability at recent levels
- 200 stochastic projections per model
 - Future recruitments from specified periods
- Evaluate average future depletion levels
- Evaluate risk of $SB < LRP$

Bigeye

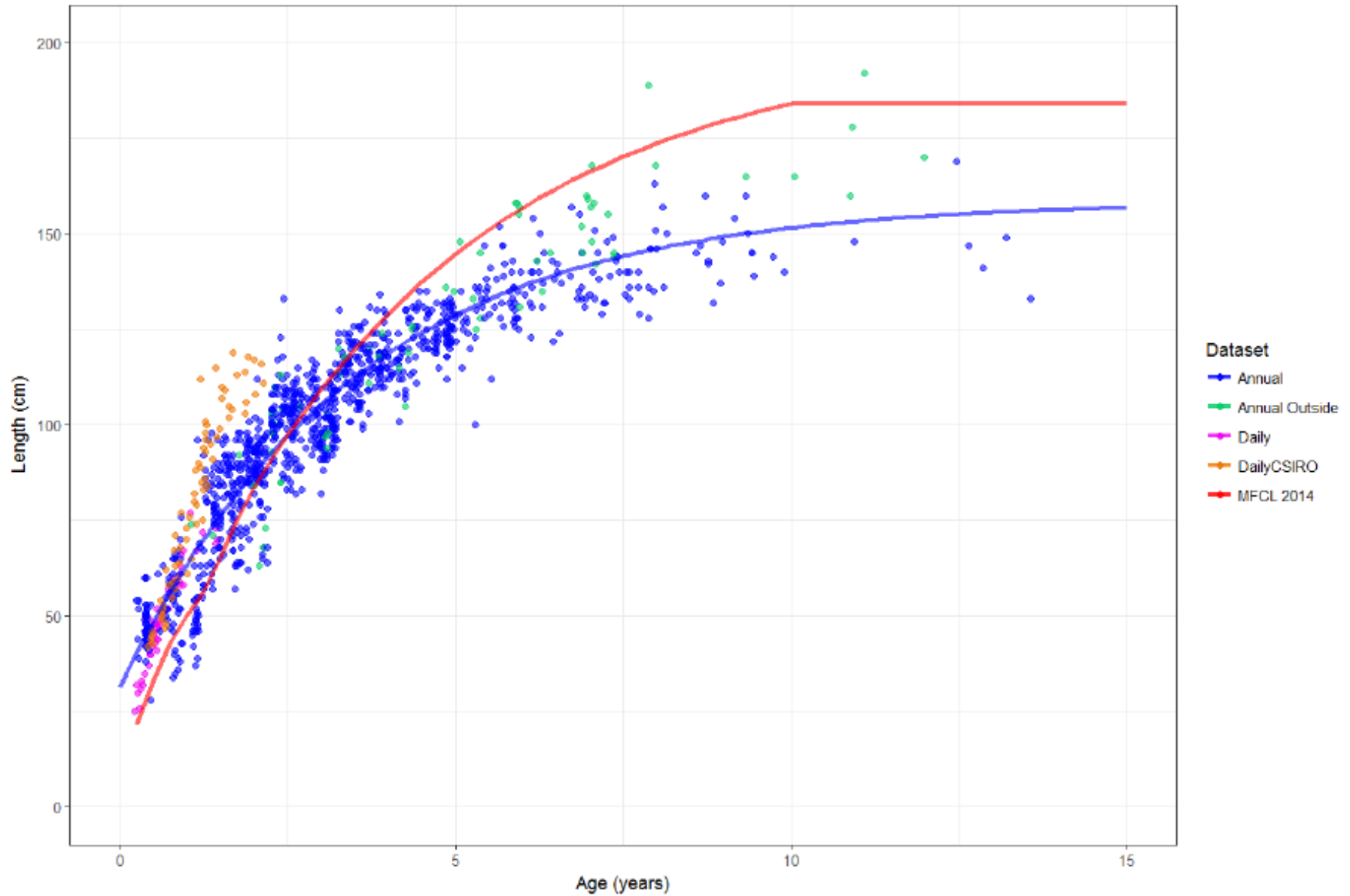


2017 developments

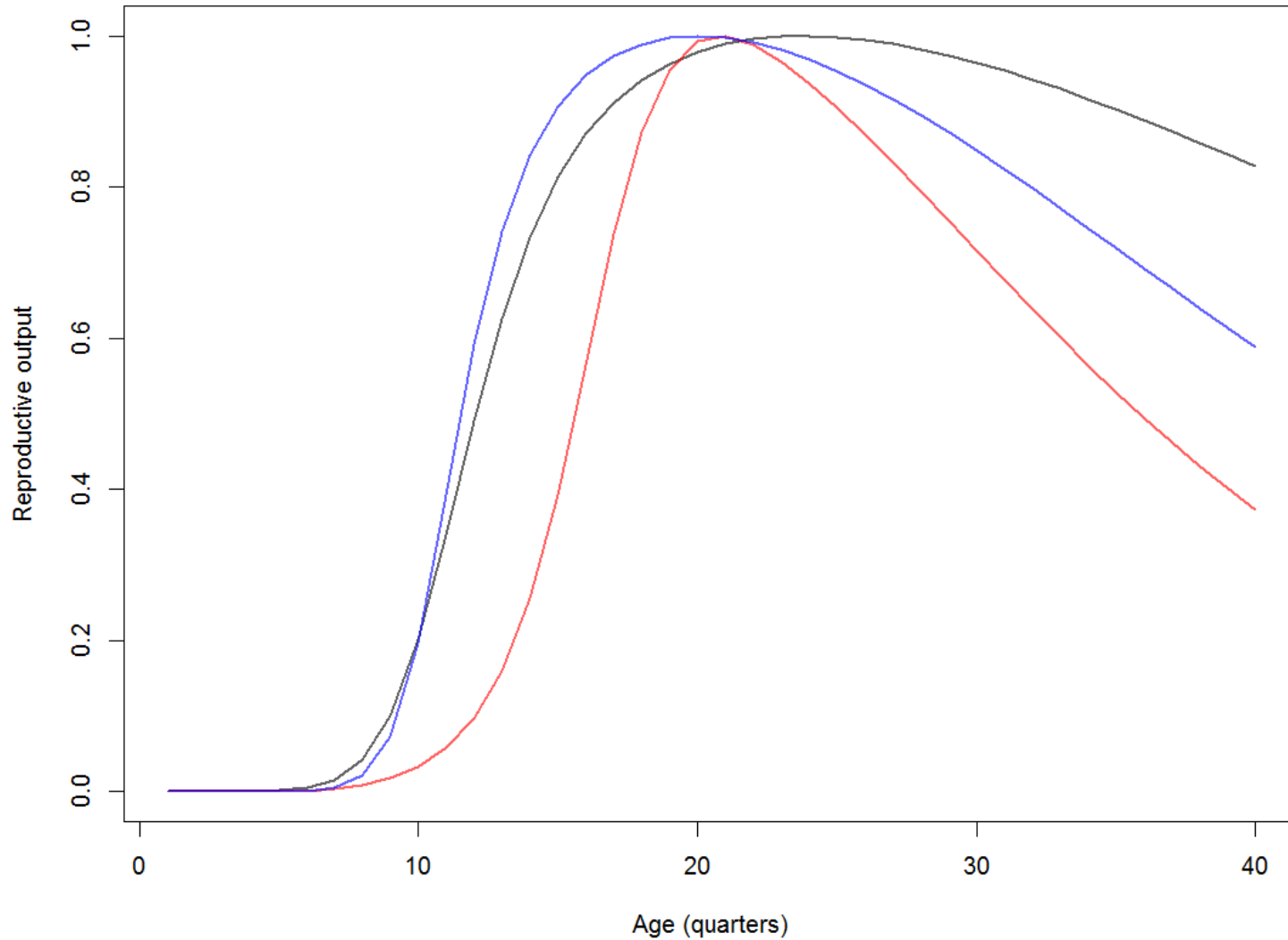


- Update all data – catch/effort, tagging, sizes – includes re-estimated PS catch
- Include new biological information from Farley *et al.* (2017)
- Consideration of alternative regional structure
- Investigated structural uncertainty – 72 separate model runs
- Two key influential uncertainties:
 - BET growth/maturity
 - Regional structure

BET growth



Maturity-at-age

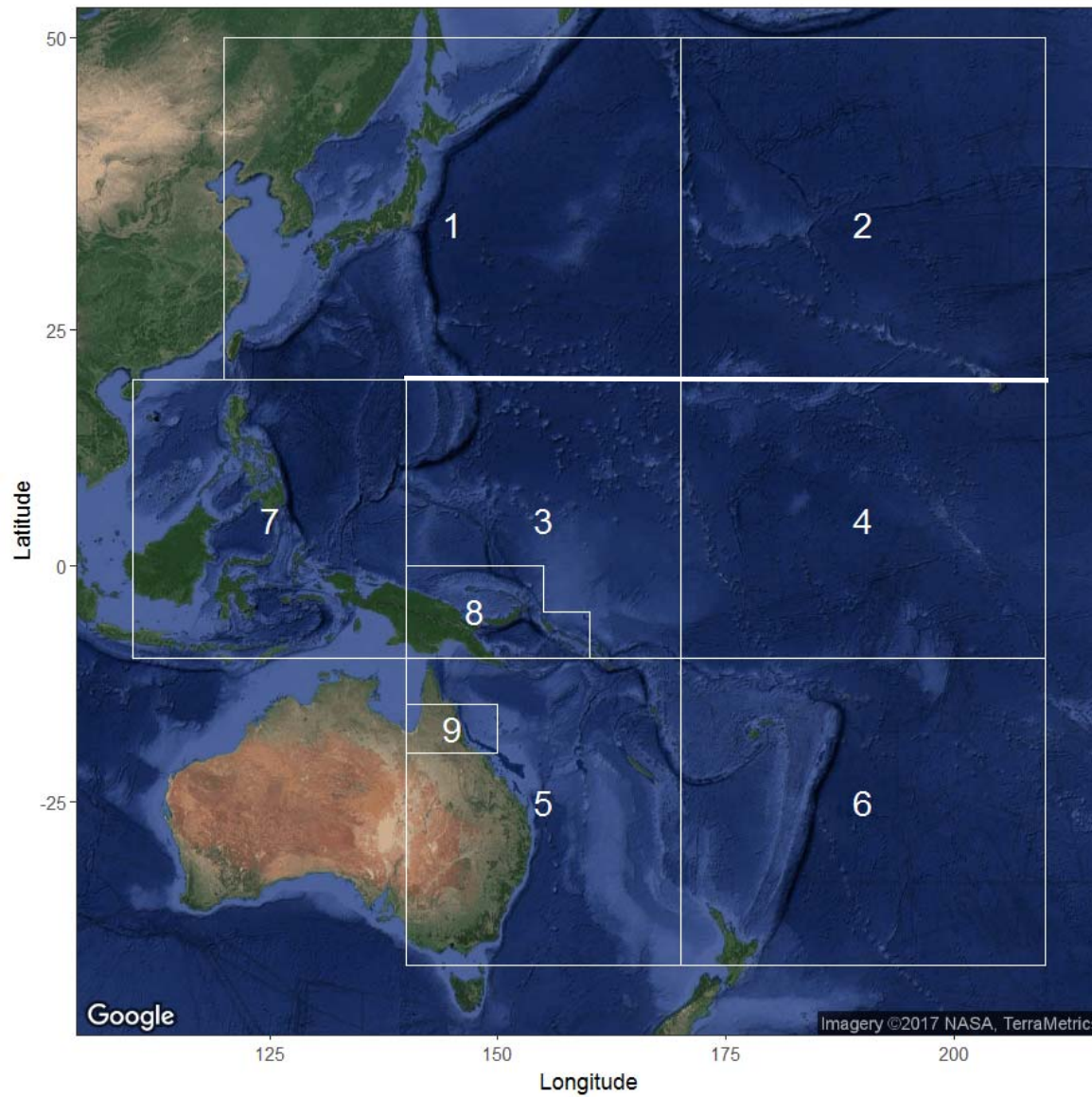


Red: 2014

Blue: 2014 growth + new maturity

Black 2017 growth + new maturity

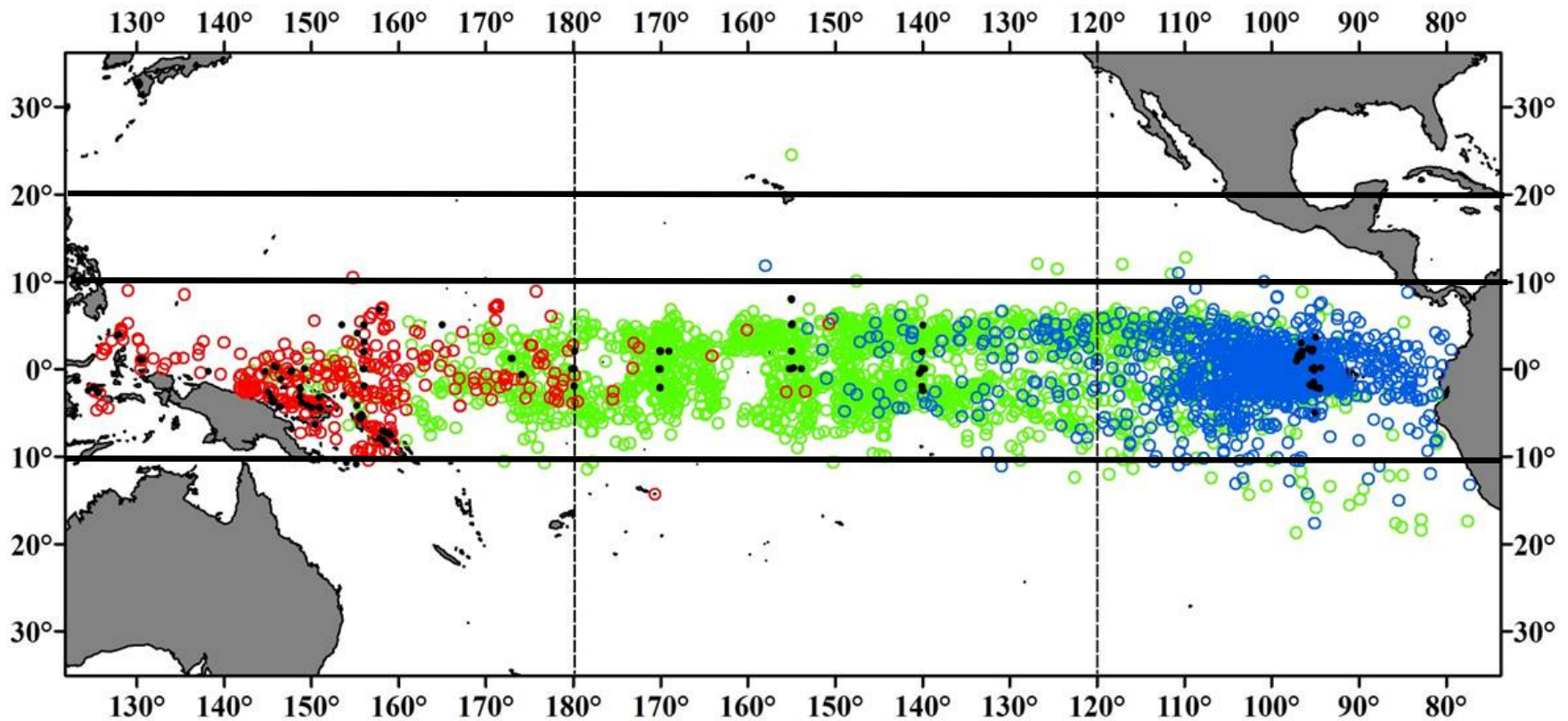
Regional structure - 2014



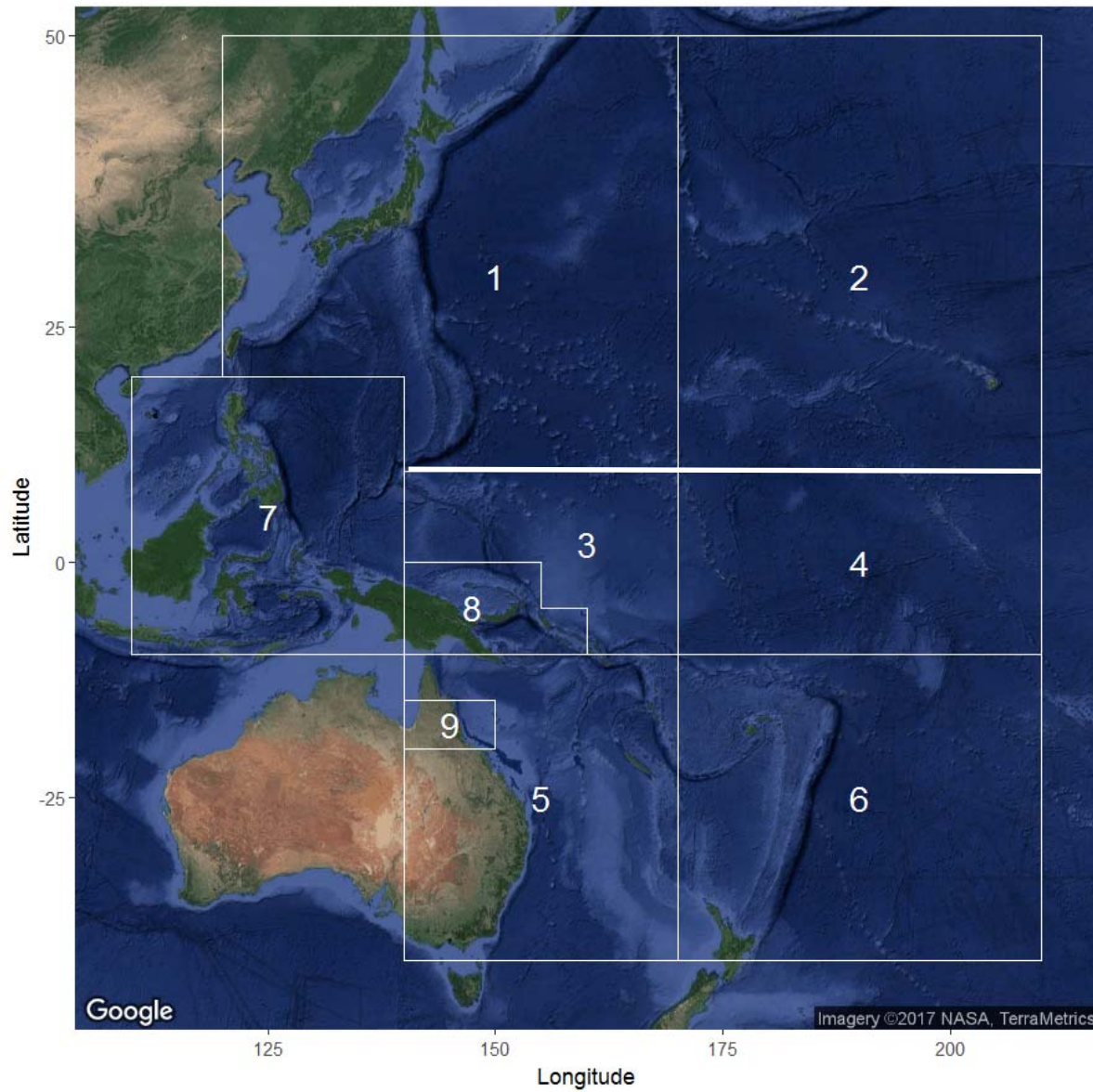
New information



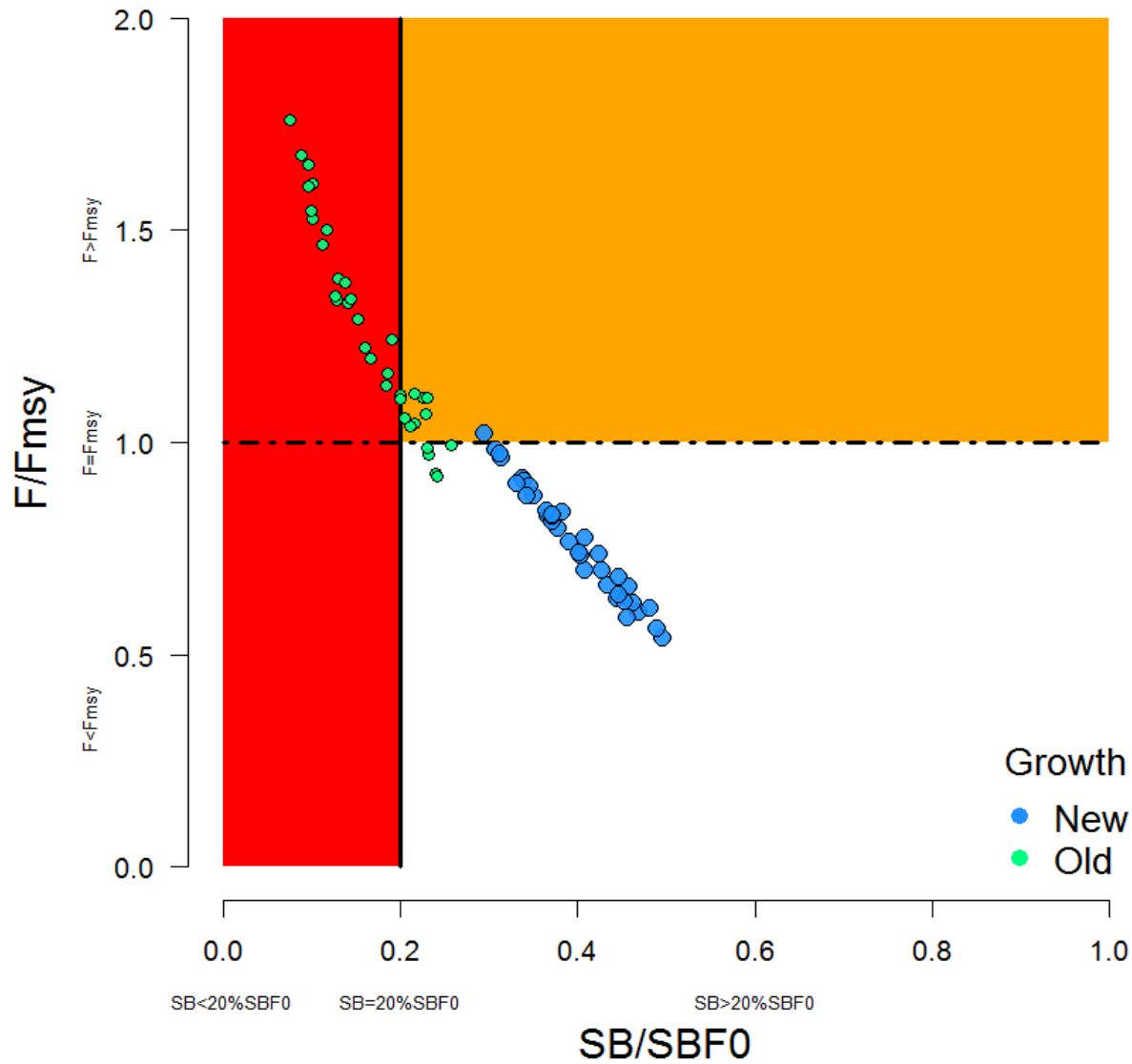
- PAW recommended investigating alternative spatial structure based on recent analysis of tagging data from across the Pacific



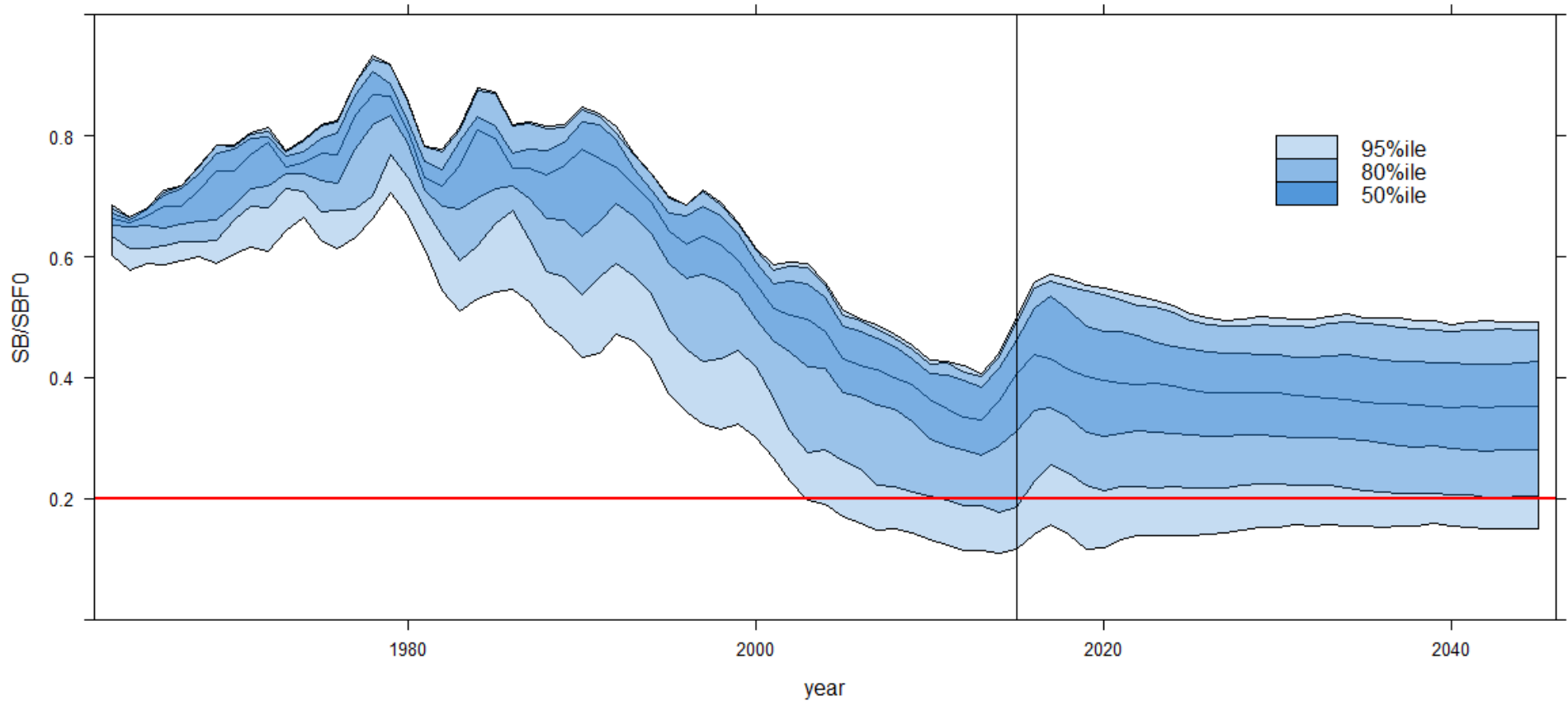
Regional structure 2017



2017 assessment



Bigeye – weighted models



NOTE: work in progress

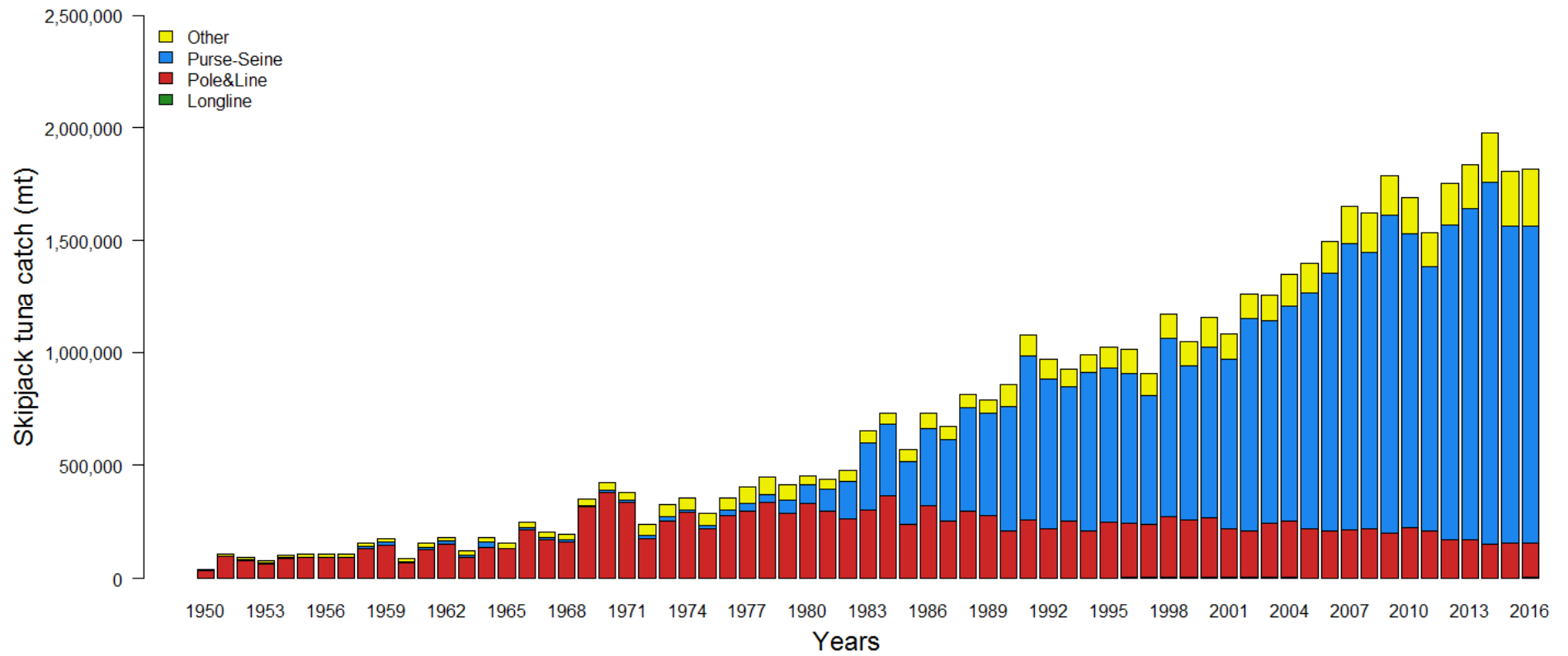
NOTE 2: relatively optimistic – 2015 conditions, recent positive recruitments

2015 and 2045 status

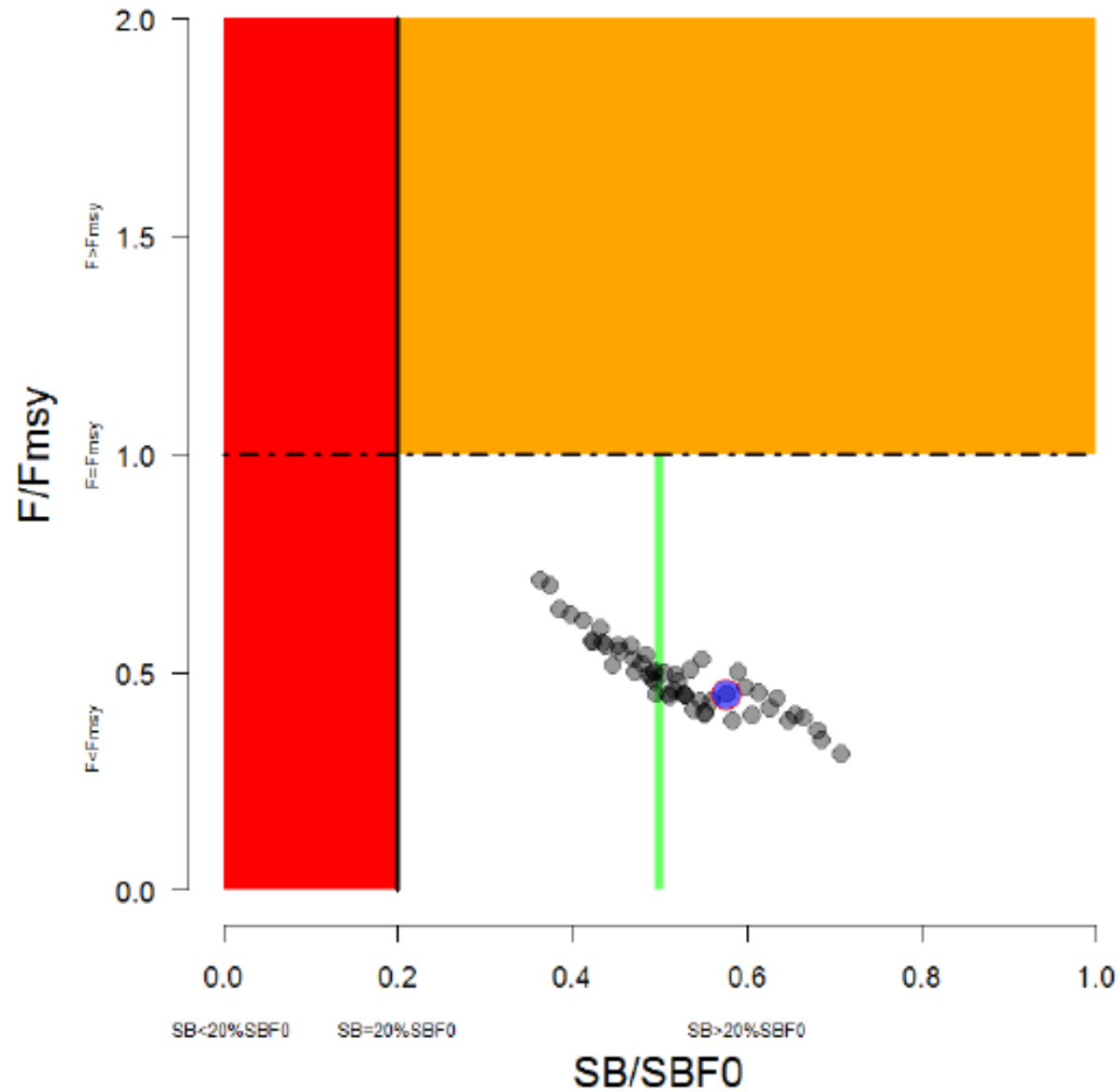


Indicator	Bigeye
Assessment	
$SB_{2015}/SB_{F=0}$	0.37
Prob. $SB_{2015}/SB_{F=0} < 0.2$	0.15
$SB_{2012-2015}/SB_{F=0}$	0.32
Prob. $SB_{2012-2015}/SB_{F=0} < 0.2$	0.16
$F_{2011-2014}/F_{MSY}$	0.83
Prob. $F_{2011-2014}/F_{MSY} > 1.0$	0.23
Projections	
$SB_{2045}/SB_{F=0}$	0.35
Prob. $SB_{2045}/SB_{F=0} < 0.2$	0.10

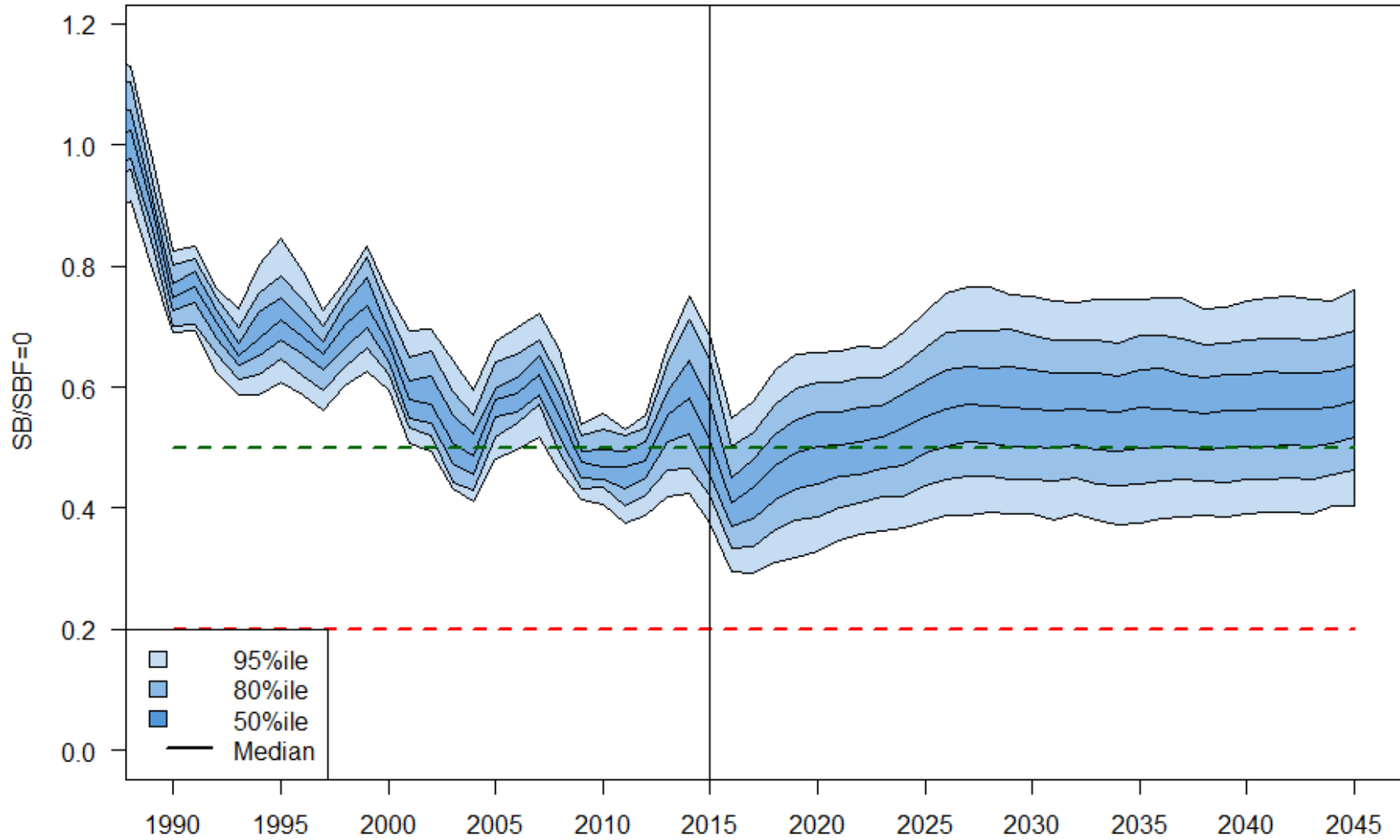
Skipjack



2016 assessment



Skipjack

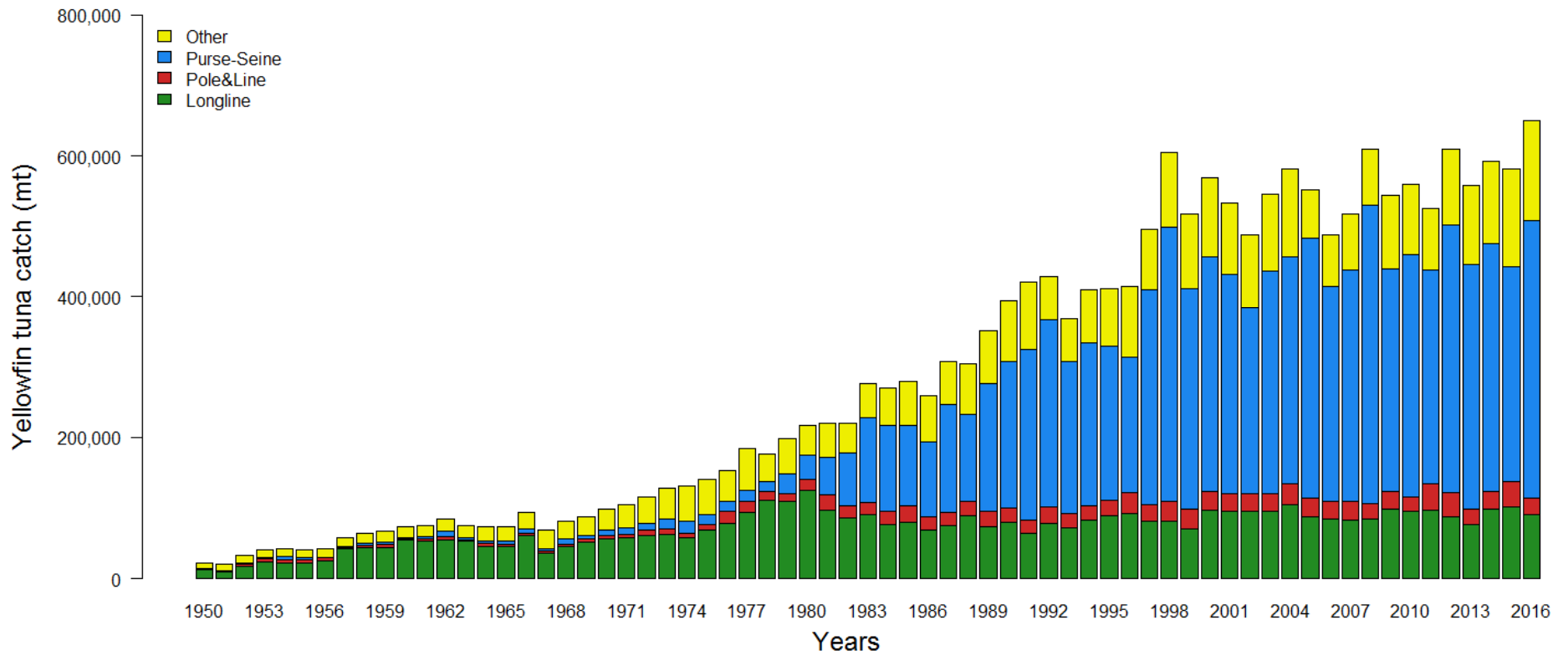


2015 and 2045 status

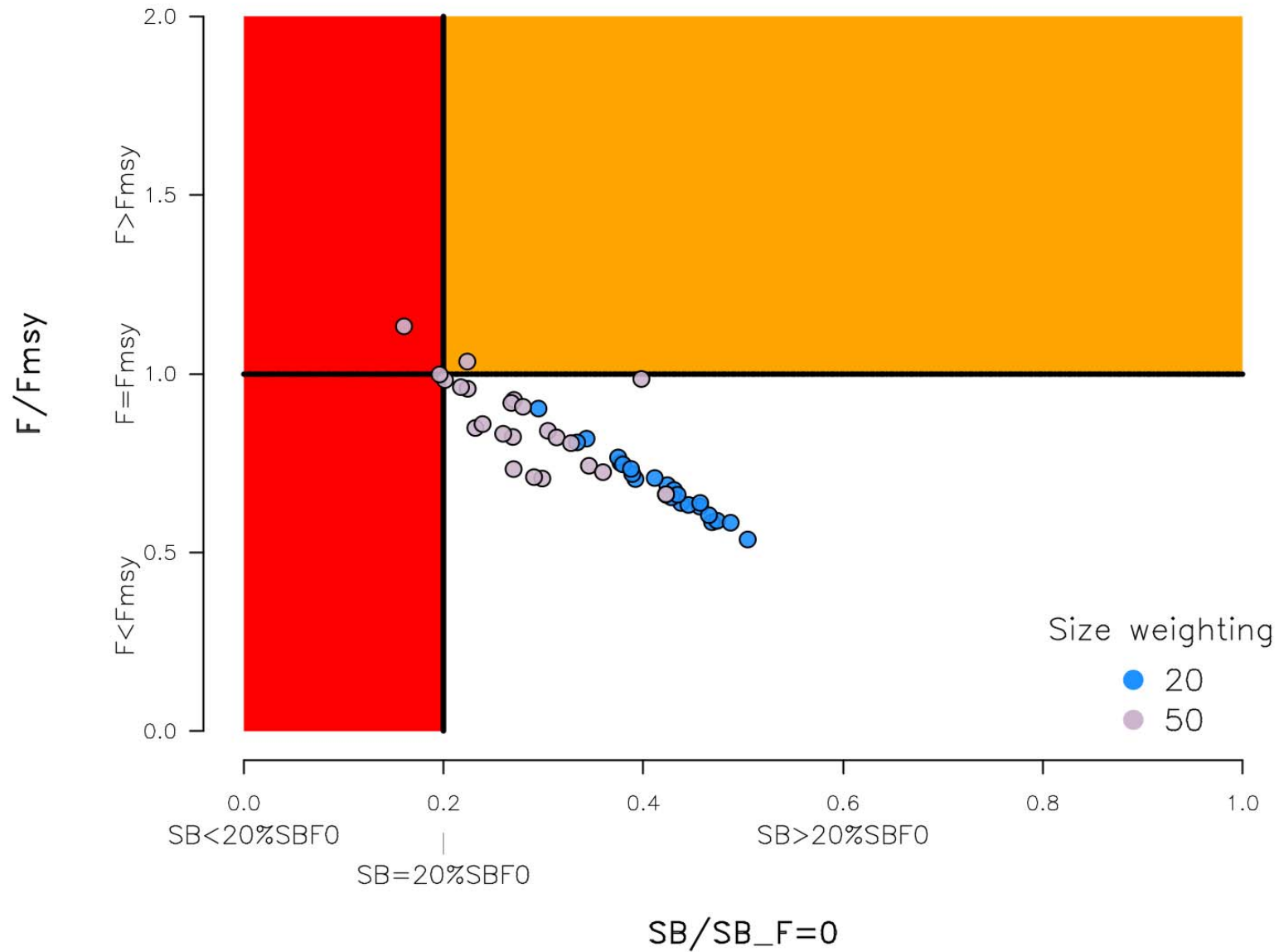


Indicator	Skipjack
Assessment	
$SB_{2015}/SB_{F=0}$	0.51
Prob. $SB_{2015}/SB_{F=0} < 0.2$	0.00
$SB_{2012-2015}/SB_{F=0}$	0.49
Prob. $SB_{2012-2015}/SB_{F=0} < 0.2$	0.00
$F_{2011-2014}/F_{MSY}$	0.48
Prob. $F_{2011-2014}/F_{MSY} > 1.0$	0.00
Projections	
$SB_{2045}/SB_{F=0}$	0.58
Prob. $SB_{2045}/SB_{F=0} < 0.2$	0.00

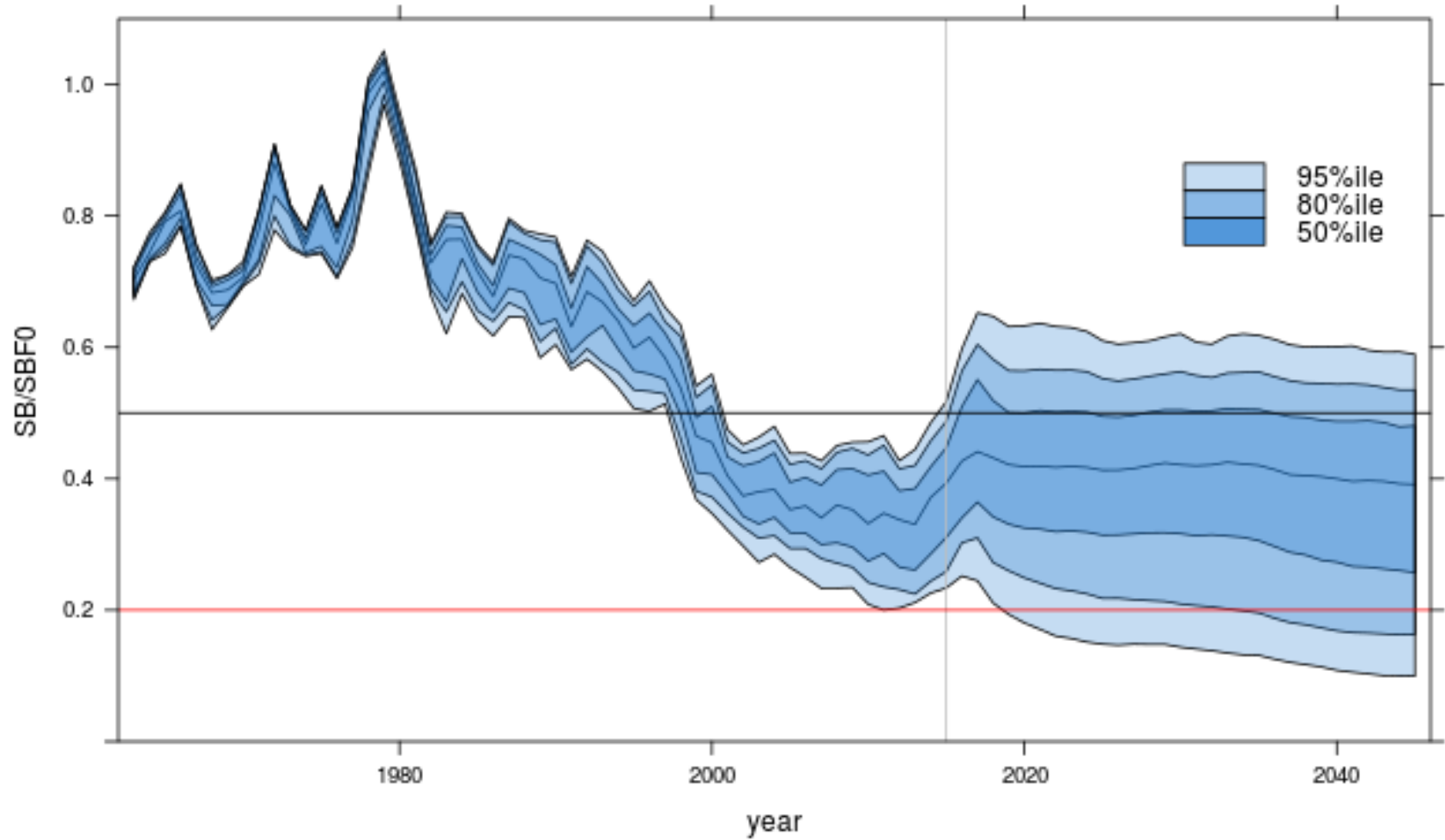
Yellowfin



2017 assessment



Yellowfin



2015 and 2045 status

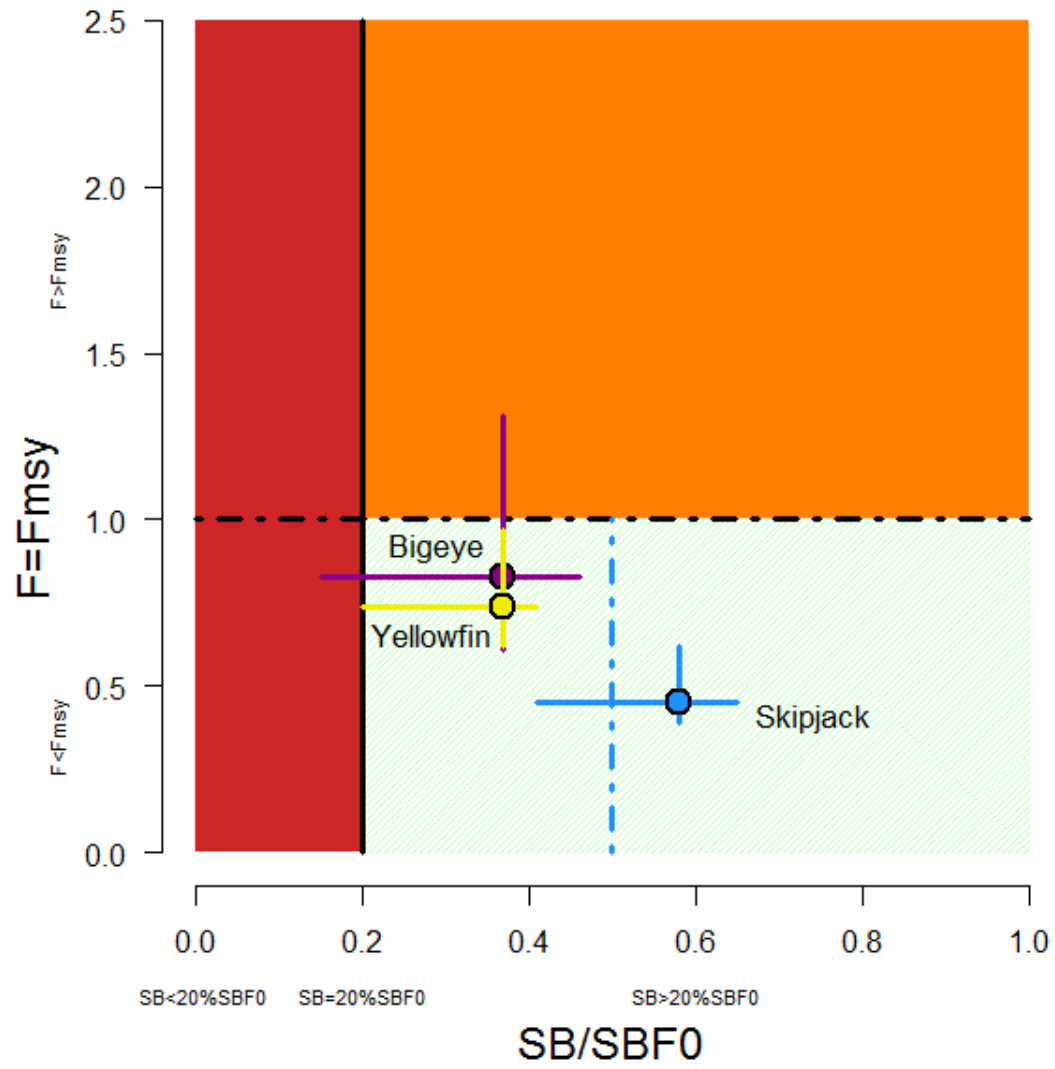


Indicator	Yellowfin
Assessment	
$SB_{2015}/SB_{F=0}$	0.37
Prob. $SB_{2015}/SB_{F=0} < 0.2$	0.04
$SB_{2012-2015}/SB_{F=0}$	0.33
Prob. $SB_{2012-2015}/SB_{F=0} < 0.2$	0.08
$F_{2011-2014}/F_{MSY}$	0.74
Prob. $F_{2011-2014}/F_{MSY} > 1.0$	0.04
Projections	
$SB_{2045}/SB_{F=0}$	0.39
Prob. $SB_{2045}/SB_{F=0} < 0.2$	0.16

Summary Table



Indicator	Bigeye	Skipjack	Yellowfin
Assessment			
$SB_{2015}/SB_{F=0}$	0.37	0.51	0.37
Prob. $SB_{2015}/SB_{F=0} < 0.2$	0.15	0.00	0.04
$SB_{2012-2015}/SB_{F=0}$	0.32	0.49	0.33
Prob. $SB_{2012-2015}/SB_{F=0} < 0.2$	0.16	0.00	0.08
$F_{2011-2014}/F_{MSY}$	0.83	0.48	0.74
Prob. $F_{2011-2014}/F_{MSY} > 1.0$	0.23	0.00	0.04
Projections			
$SB_{2045}/SB_{F=0}$	0.35	0.58	0.39
Prob. $SB_{2045}/SB_{F=0} < 0.2$	0.10	0.00	0.16



Hotspots Analysis

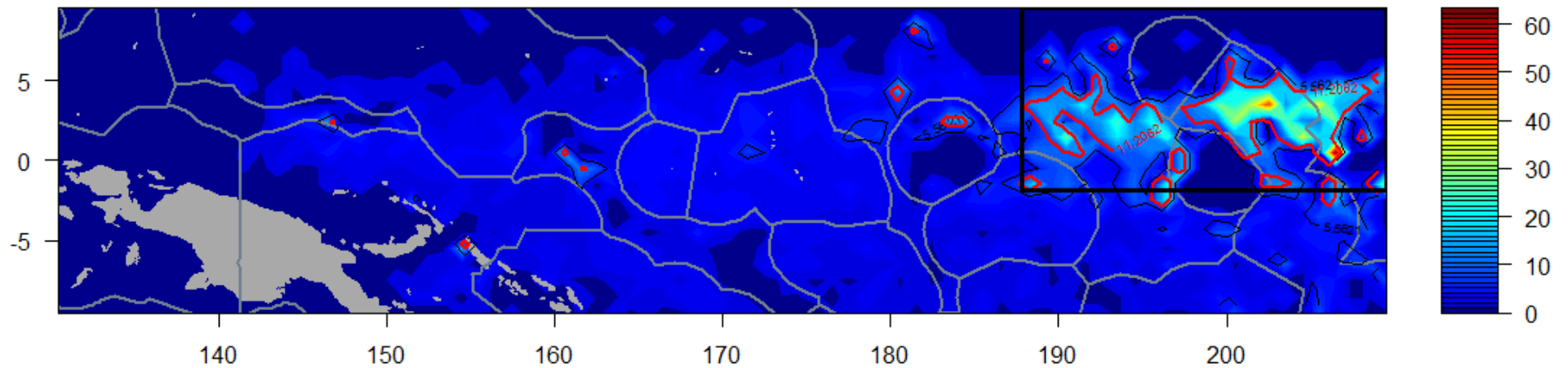


Table 7. Percentage of tuna catch within the ‘CPUE hotspot’ area per year.

Year	% BET catch hotspot	% SKJ catch hotspot	% YFT catch hotspot	% total catch hotspot	% ass. set hotspot
2011	5.90	1.72	1.89	2.05	1.07
2012	8.11	1.72	2.85	2.20	1.26
2013	13.90	2.74	3.91	3.72	2.45
2014	12.70	2.15	2.57	2.80	1.96
2015	12.77	10.32	7.70	10.16	6.64
2016	2.85	1.09	1.58	1.25	1.08