Gag Update Assessment

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Update from benchmark 2013 (SEDAR 33)

Data: both new catches (2013-2015)

and revisions to older data estimates

(e.g. discards, recreational catches,…)

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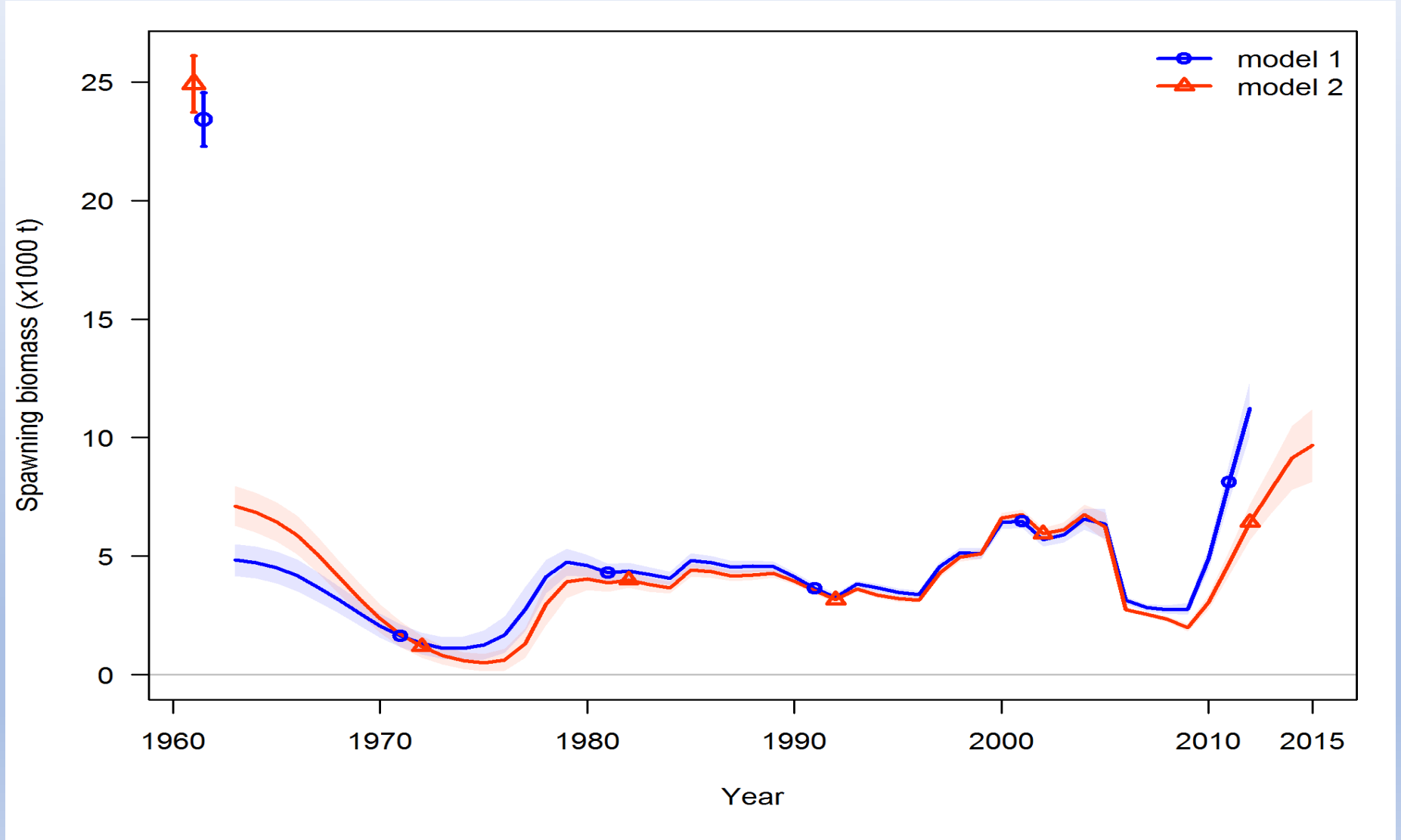
Gag are protogynous (change sexes from female to male); 50% female maturity at 3.5 years; 50% of fish transition from females to males at 10.7 years; maximum age ~ 31 years; natural mortality rate at maturity was about 12% a year; younger ages higher mortality

2005 Red tide event was modeled; effectively this event was an “additional” natural mortality

Gag Update Assessment

Blue line SEDAR 33; red line update assessment using "continuity model"



"continuity model" means using the same model as in SEDAR33 but with new data

Also a retrospective pattern

Gag Update Assessment

		Model
		Continuity
Criteria	Definition	
Base M		0.134
Steepness		0.855
Virgin Recruitment	1000s	5030.8
SSB unfished	Metric tons	24908
F_{MSY} or proxy	F_{MAX}	0.1964
MFMT	F_{MAX}	0.1964
$F_{CURRENT}$	F (nyr-3)-nyr (geometric mean)	0.0817
$F_{CURRENT}$/MFMT		0.416
	Biomass criteria	
SSB_{MSY}	SSB at F_{MAX}	7171
MSST	(1-M)*SSB_{MSY}	6210.1
$SSB_{CURRENT}$	SSB2015	9688.07
$SSB_{CURRENT}$/MSST	SSB2015	1.56

Not overfishing

Not Overfished

Gag Update Assessment

But still a lot of uncertainty

Table 2. Red tide sensitivity analysis

Model	Exploitation rate	Dead discards (1000s)
SEDAR 33	0.397	3405.69
Continuity	0.39	3216.48
Red tide 2005 and 2014	0.493, 0.564	5075.75, 4232.08
Red tide 2005 and 2015	0.425, 0.492	6718.35, 10366.1

Gag Update Assessment

But still a lot of uncertainty

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A lot of uncertainty

But SSC concluded that the continuity model (as prescribed by an update assessment) was still the best available science;

And

That the projected yields from that model for 2017-2019 be used for projected yield streams for determining OFL and ABC

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Table 4. Projected Gag OFL and two alternative ABC yield streams, 2017-2019

Year	OFL at F_{MAX}	ABC at P* = 0.30	ABC at 0.75*F_{MAX}
2017	4.68 mp gw	4.28 mp gw	3.59 mp gw
2018	4.34 mp gw	3.99 mp gw	3.50 mp gw
2019	4.18 mp gw	3.86 mp gw	3.52 mp gw
Equilibrium	4.05 mp gw	3.81 mp gw	4.10 mp gw

OFL in left column; but SSC still had to choose an appropriate ABC method (from two right hand columns)

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SSC felt uncertainties in update were not appropriately characterized by Tier 1 P* approach (middle column); Therefore, SSC chose rt-hand column where ABC set at 75% Fmax; both OFL and ABC for 2017 for the update are somewhat less than the 2017 OFL and ABC from before the update.

Council has maintained an ACL of 3.12 mp gw