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SENSITIVITY ANALYSIS TO UPDATED JAPANESE CATCH DATA

by

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ABSTRACT

An updated estimate of the catch of bigeye tuna by the Japanese longline fleet in the eastern Pacific Ocean (EPO) in 2004 was received after the assessment of the status of bigeye tuna in the EPO in 2005 was completed. The estimate (18,500 t) was approximately 23% less than the value used in the assessment (24,000 t). The effort used for forward projections is also a function of the catch in 2004 and is therefore influenced by the updated catch. The assessment and projections were conducted with these revised estimates. The results were essentially the same as those obtained using the initial estimate. The inclusion of the updated Japanese longline catch data for 2004 does not affect the conclusions of the assessment.

1. INTRODUCTION

An updated estimate of the catch of bigeye tuna by the Japanese longline fleet in the eastern Pacific Ocean (EPO) in 2004 was received after the assessment of the status of bigeye tuna in the EPO in 2005 was completed. The estimate (18,500 t) was approximately 23% less than the value used in the assessment (24,000 t). Japanese longline catch for 2005 is based on monthly reporting and is therefore not affected by the updated data. The effort used for forward projections is also a function of the catch in 2004, and is therefore influenced by the updated catch. The assessment and projections were conducted with these revised estimates.

2. METHODS

The bigeye tuna stock assessment using A-SCALA was repeated using the updated Japanese longline catch data for 2004 and compared to the analysis using the initial catch estimates (base case; Maunder and Hoyle in prep). The catch used in the assessment is based on data provided to the IATTC on numbers of fish caught by 5° x 5° square rather than weight. Therefore, the catches used in Maunder and Hoyle (in prep.) for all quarters and for both northern and southern fisheries for 2004 were multiplied by 0.77.

The longline effort data for projections is based on 2004 because there is no standardized longline CPUE information for 2005 (Hoyle and Maunder). The effort is calculated as the total longline catch for all nations divided by the CPUE from the standardized CPUE index. The effort is recalculated using the updated catch data and the projections are compared to those using the initial effort (Maunder and Hoyle in prep.).

3. RESULTS

The estimates of biomass (Figure 1), recruitment (Figure 2), spawning biomass ratio (Figure 3), and management quantities (Table 1) from the assessment with the updated Japanese longline catch for 2004 are very similar to those from the base case. There is a greater difference for the projected quantities (Figure 4 and Table 2), but the effect is only slight, except for the longline catch (Table 2).

4. DISCUSSION

The Japanese longline fleet accounts for about half of the longline catch of bigeye in the EPO, and the longline catch is about 40% of the total catch of bigeye tuna. A 23% reduction in Japanese longline catch corresponds to about a 5% reduction in the total catch for 2004. The inclusion of the updated Japanese longline catch data for 2004 does not affect the conclusions of the assessment.

References

- Hoyle, S.D. and Maunder, M.N. (2006) Standardization of yellowfin and bigeye CPUE data from Japanese longliners, 1975 to 2004. Document SAR-7-07c ii for the Working group to Review Stock Assessments. (<http://www.iattc.org/IATTCandAIDCPMeetingMay06ENG.htm>)
- Maunder, M.N. and Hoyle, S.D. (in prep.). Status of bigeye tuna in the eastern Pacific Ocean in 2005 and outlook for 2006. Inter-Amer. Trop. Tuna Comm., Stock Assessment Report 7.

TABLE 1. Estimated management quantities from the base case assessment and the assessment with the updated Japanese longline catch for 2004.

	MSY	106722	105575
B_0		1080073	1077213
S_0		2413	2407
B_{MSY}		326329	324629
S_{MSY}		541	539
B_{CUR}		358408	360472
S_{CUR}		475	480
C_{CUR}		106720	106891
B_{MSY}/B_0		0.30	0.30
S_{MSY}/S_0		0.22	0.22
C_{CUR}/MSY		1.00	1.01
B_{CUR}/B_{MSY}		1.10	1.11
S_{CUR}/S_{MSY}		0.88	0.89
Fscale		0.68	0.69

TABLE 2. Estimated and projected spawning biomass ratio (SBR) and catch (kg) from the base case assessment and the assessment with the updated Japanese longline catch for 2004 and corresponding revised effort for 2006-2010.

	Base case			Updated Japanese catch			% change		
	End-of-year SBR	Purse seine	Longline	End-of-year SBR	Purse seine	Longline	End-of-year SBR	Purse seine	Longline
2004	0.15	68,074	43,534	0.15	68,072	38,426	0.02	0.00	-0.13
2005	0.20	71,370	34,213	0.20	71,370	34,384	0.01	0.00	0.00
2006	0.21	95,863	60,049	0.22	96,871	54,218	0.04	0.01	-0.11
2007	0.22	85,470	60,149	0.23	86,695	57,349	0.04	0.01	-0.05
2008	0.19	66,136	54,371	0.20	66,968	52,519	0.05	0.01	-0.04
2009	0.16	57,862	46,317	0.17	58,466	45,013	0.05	0.01	-0.03
2010	0.14	57,179	40,837	0.15	57,727	39,578	0.05	0.01	-0.03

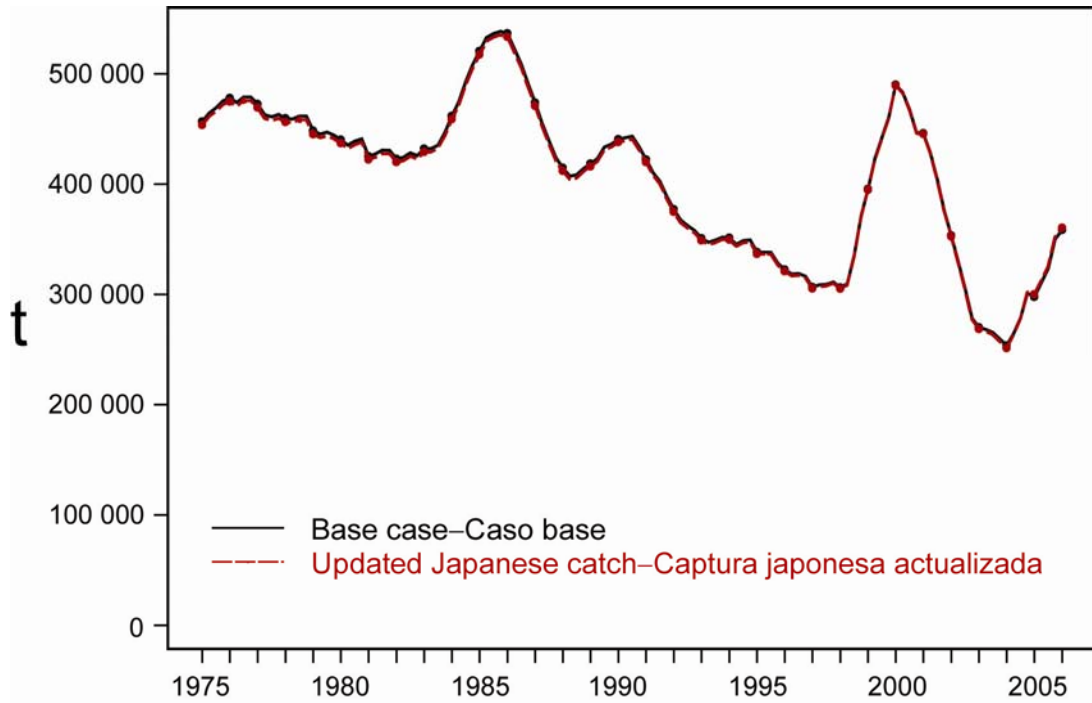


FIGURE 1. Estimated total biomass from the base case assessment and the assessment with the updated Japanese longline catch for 2004.

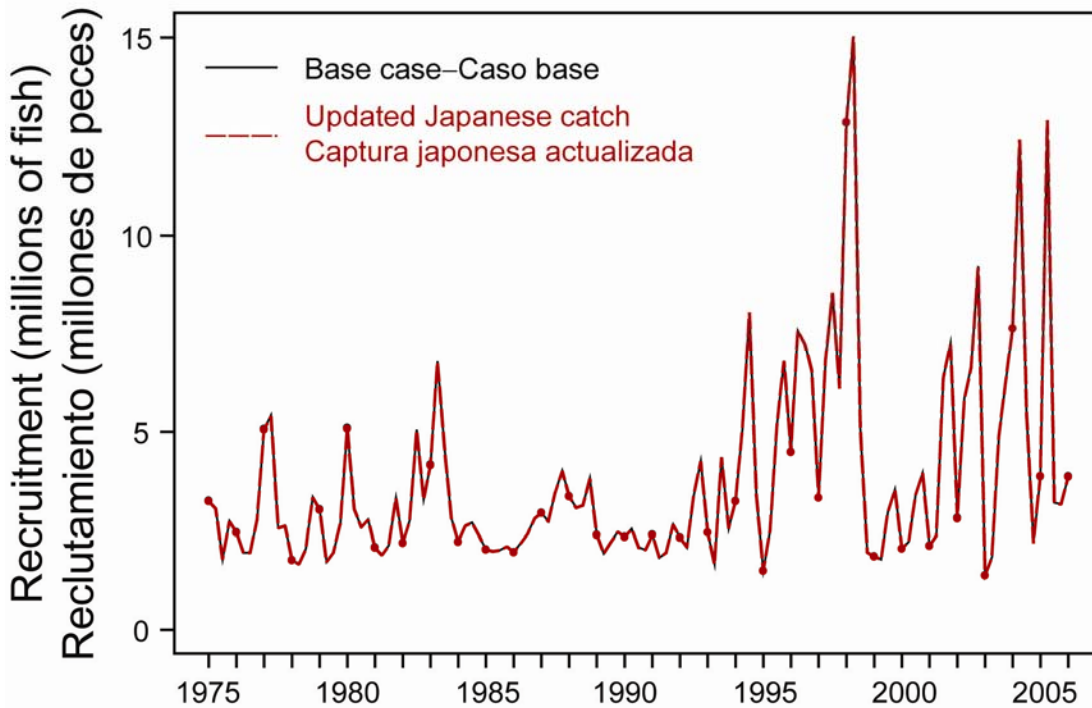


FIGURE 2. Estimated recruitment from the base case assessment and the assessment with the updated Japanese longline catch for 2004.

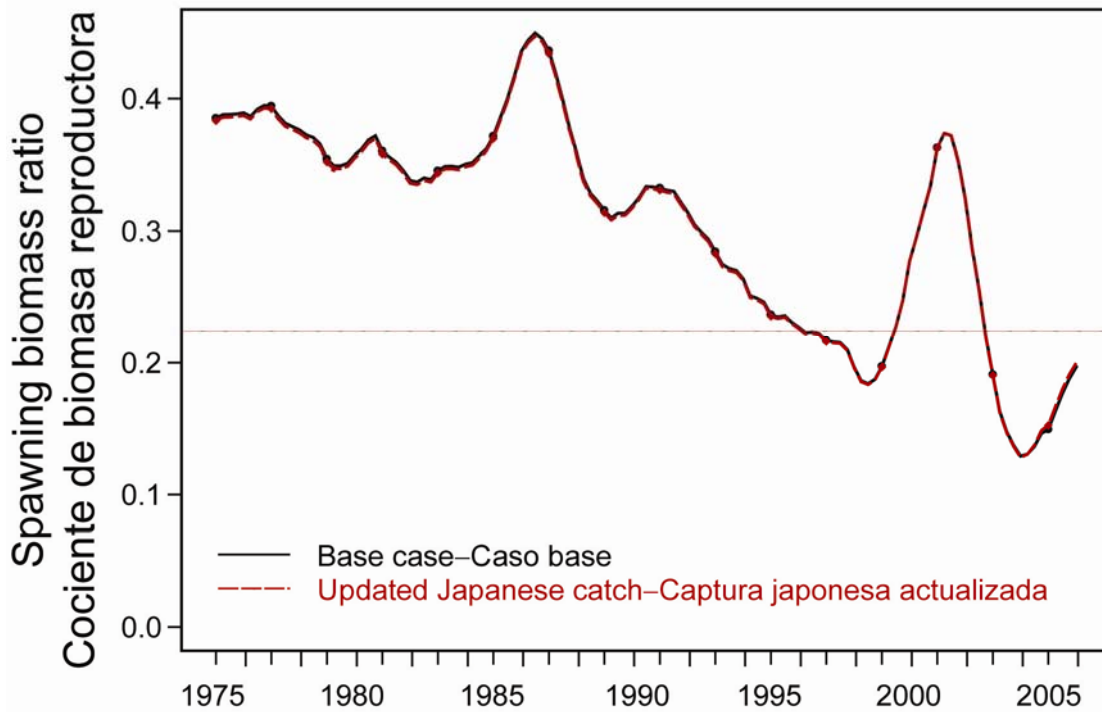


FIGURE 3. Estimated spawning biomass ratio (SBR) from the base case assessment and the assessment with the updated Japanese longline catch for 2004.

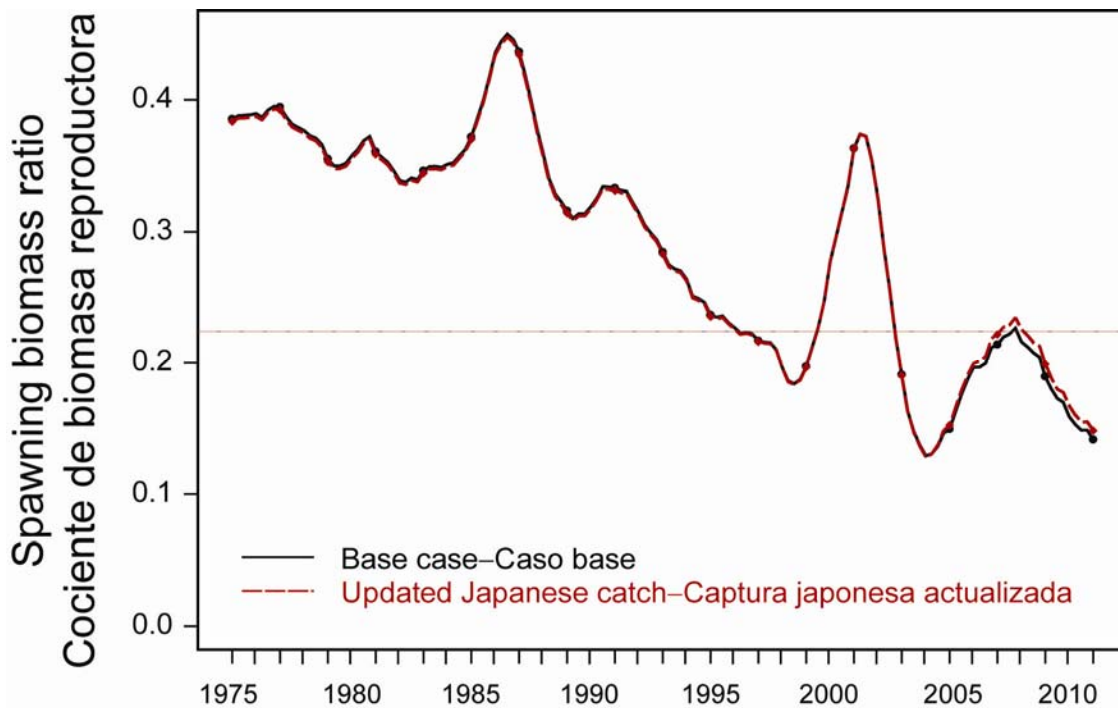


FIGURE 4. Estimated and projected spawning biomass ratio from the base case assessment and the assessment with the updated Japanese longline catch for 2004 and corresponding revised effort for 2006-2010.