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Update of progress towards a stock assessment for swordfish in the southern WCPO

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Update of progress towards a stock assessment for swordfish in the southern WCPO

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Update on progress towards a stock assessment for swordfish in the southern WCPO

The purpose of this paper is to provide an update on progress towards an assessment for swordfish in the South Pacific Ocean region of the WCPF-Convention area. This paper summarizes the progress reached at SC8 (documented in SC8-SA-WP-08) and more recent progress since August. This paper does not include detailed data or analysis descriptions – these will be provided in the working paper(s) for the full assessment provided to SC9.

By SC8, analyses of electronic tagging data had provided the basis for a new spatial structure for the assessment (Figure 1 and 2), and we had received important data from Australia (weight frequency and CPUE series), New Zealand (weight frequency), and the European Community (size frequency and CPUE data for the Spanish fleet). Region wide catch statistics were also compiled.

Since SC8 we have finalized the structure of the model in terms of the spatial structure and the fleet groupings (Table 1) and have also been able to summarize all the of the length and weight data into the right strata. The longline CPUE data for Japanese and Chinese Taipei longline vessels have been analyzed and some of these CPUE series will be important indices of abundance for the stock assessment. Refinements to the biological parameters have included the calculation of new length/weight parameters and converting all input size frequency data sets into common units.

The analysis of the catch and effort data from the Spanish longline fleet was more problematic than initially expected due to a range of reasons outlined in the SC8 working paper. Clarification was sought from the EC and while this has been useful, we see considerable value in a collaborative analysis of the Spanish longline data between SPC scientists and EC scientists who may be more familiar with these data and the fishing patterns of these fleets.

Starting with the MULTIFAN-CL model used in 2008, progress has been made towards constructing a potential reference case model for the updated stock assessment. Numerous model runs have been undertaken using both the original and updated data sets and, as often occurs in the early model development phases, there is considerable variation in the estimated biomass trajectories across model runs. It is expected that this variation will decline and we further develop the assessment.

Key tasks to be considered in the remaining stock assessment work are:

- Incorporation of the updated CPUE indices for the Australian longline fleet
- Finalization of a CPUE series for the Spanish longline fleet (in collaboration with EC scientists if possible)
- Examine the agreement or conflict between the different CPUE series and establish a reference case model, and set of plausible alternative models that reflect any

conflict between different data sources.

Table 1: Summary of the fleet and area groupings used in the swordfish assessment.

Fishery	Label	Flags	Area
1	JP_DW_1N	CN, CNOS, JPDW, JP, JPOS, KRDW, KR, TWDW, TW, TWOD, TWOS	1N
2	JP_DW_1C	CN, CNOS, JPDW, JP, JPOS, KRDW, KR, TWDW, TW, TWOD, TWOS	1C
3	JP_DW_1S	CN, CNOS, JPDW, JP, JPOS, KRDW, KR, TWDW, TW, TWOD, TWOS	1S
4	AU_1	AU	1N, 1C, 1S
5	SP_1	ES	1N, 1C, 1S
6	Other_1	AS, BZ, CK,FM,FJ,PF, GE,GU, IN, ID, KI, MH, NC, NZ, NU, PW, PG, PH, WS, SB, SU, TO, TV, USAS, USMC, USHW, US, VU, VN	1N, 1C, 1S
7	JP_DW_2N	CN, CNOS, JPDW, JP, JPOS, KRDW, KR, TWDW, TW, TWOD, TWOS	2N
8	JP_DW_2C	CN, CNOS, JPDW, JP, JPOS, KRDW, KR, TWDW, TW, TWOD, TWOS	2C
9	JP_DW_2S	CN, CNOS, JPDW, JP, JPOS, KRDW, KR, TWDW, TW, TWOD, TWOS	2S
10	NZ_2	NZ	2C, 2S
11	SP_2	ES	2N, 2C, 2S
12	Other_2N	AS, AU,BZ, CK,FM,FJ,PF, GE,GU, IN, ID, KI, MH, NC, NU, PW, PG, PH, WS, SB, SU, TO, TV, USAS, USMC, USHW, US, VU, VN	2N
13	Other_2C	AS, AU,BZ, CK,FM,FJ,PF, GE,GU, IN, ID, KI, MH, NC, NU, PW, PG, PH, WS, SB, SU, TO, TV, USAS, USMC, USHW, US, VU, VN	2C

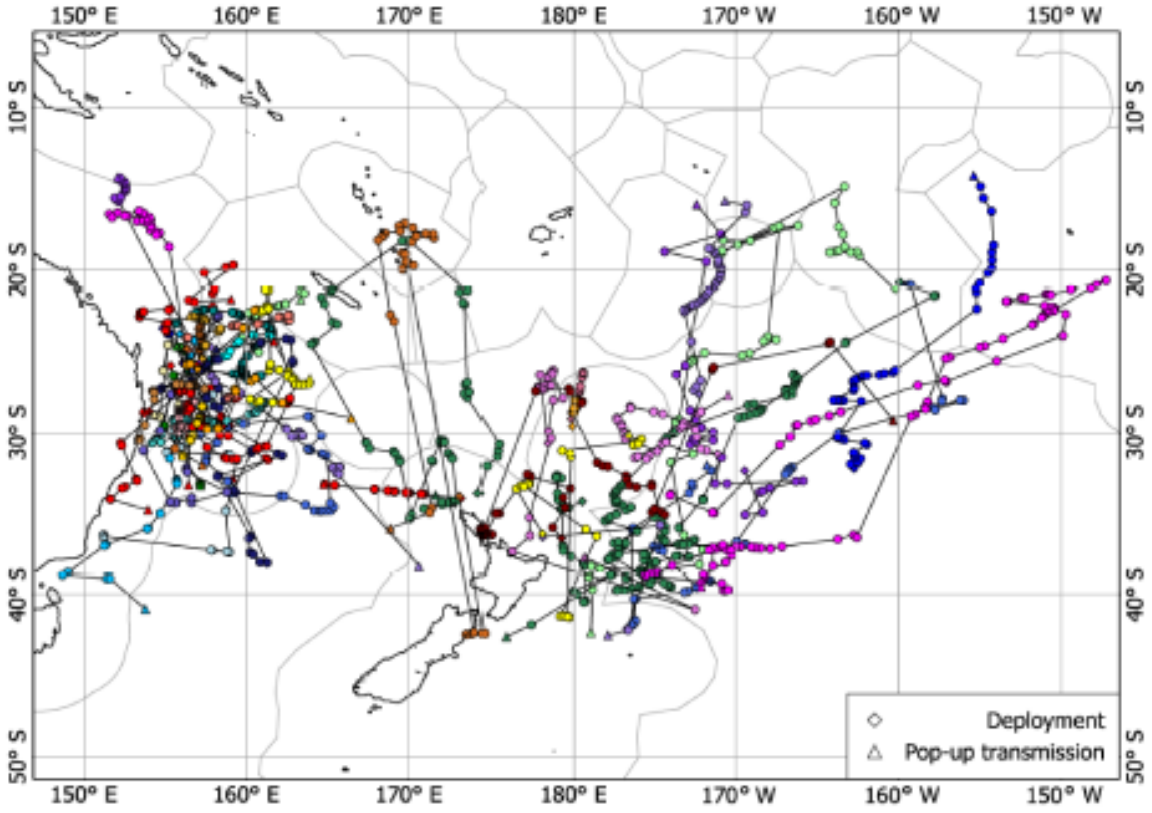

Figure 1: Position estimates of swordfish from pop-up satellite archival tags at liberty > 30 days in the south Pacific Ocean between 2006 and 2010 (reproduced from Evans et al. (2012)).

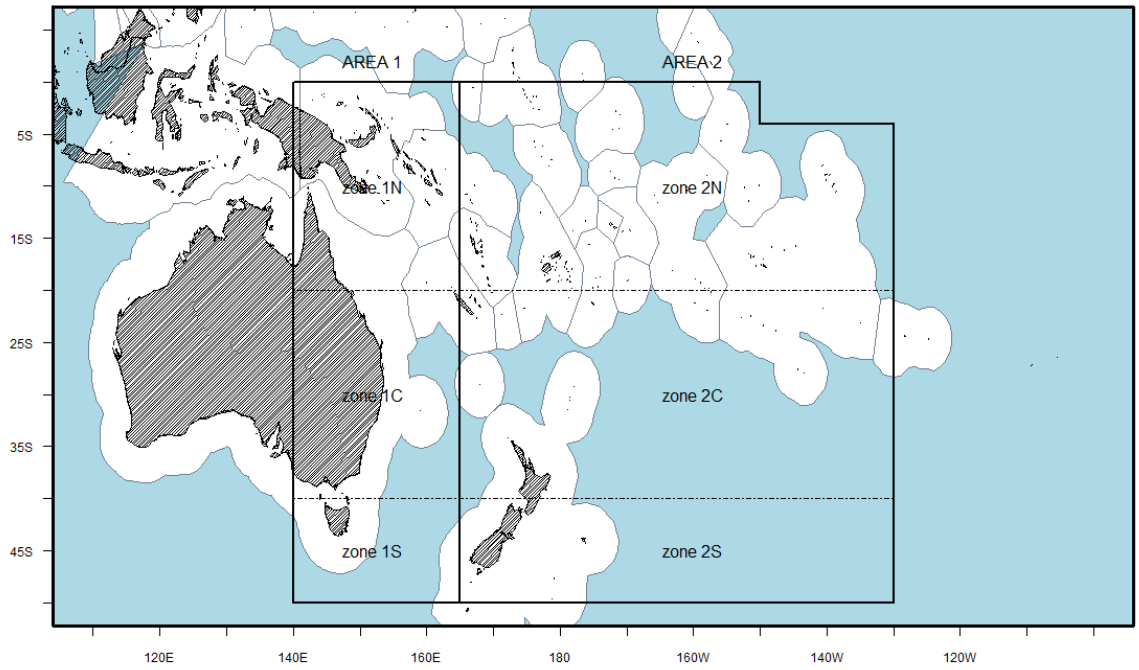

Figure 2: Spatial strata to be used in the swordfish stock assessment.

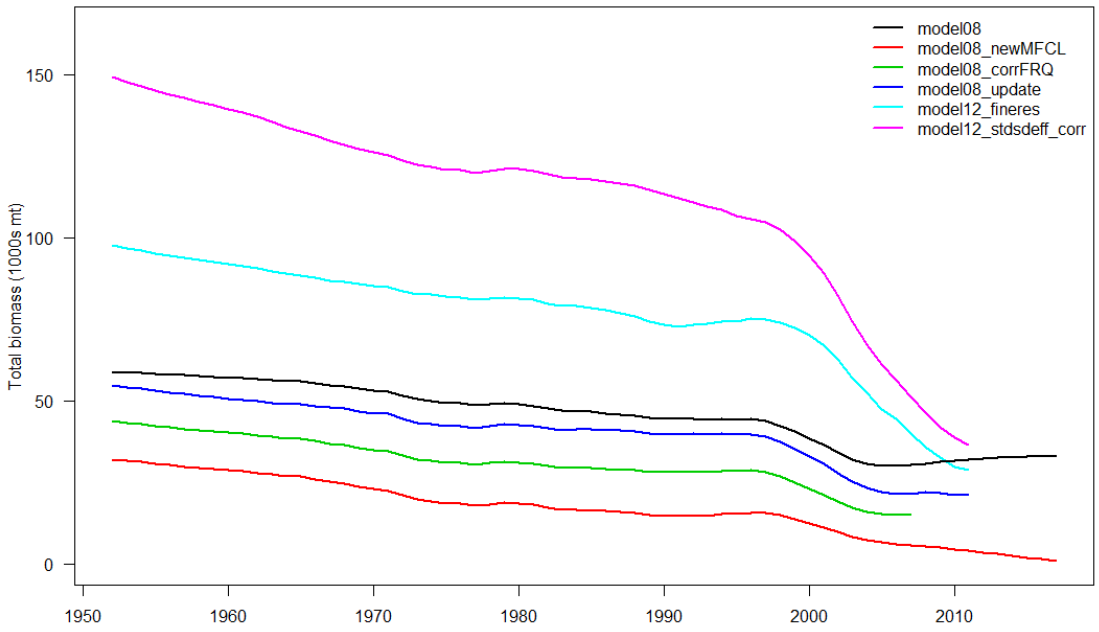

Figure 3: Estimated biomass trajectories from several model runs undertaken in the development of an updated stock assessment.