Annex 9

REPORT OF THE ALBACORE WORKING GROUP WORKSHOP

International Scientific Committee for Tuna and Tuna-like Species
in the North Pacific Ocean

8-9 July 2009
Kaohsiung, Taiwan

1.0 INTRODUCTION

1.1 Welcome and Introduction

A two-day meeting of the International Scientific Committee – Albacore Working Group (ISC-ALBWG) was held on July 8-9, 2009, in conjunction with the 9th Meeting of the ISC Plenary in Kaohsiung, Taiwan.

Nineteen (19) participants from Canada, Chinese-Taipei, Japan, Korea, the United States, the IATTC, and an observer from the WCPFC attended the meeting (Appendix 1).

The objectives of this meeting were to:

1. Update fisheries statistics (through 2008);
2. Provide a qualitative update on stock status since the last assessment; and
3. Plan for the next North Pacific albacore stock assessment.

1.2 Election of Chairperson

The previous chairperson, Ray Conser, stepped down as Chair of the ALBWG at the end of the last intersessional workshop, 14-21 April 2009, in Shimizu, Japan. The Chair of the ISC, Gary Sakagawa, served as interim chair of the ALBWG to open the meeting and hold an election for the new chair. John Holmes was elected Chair and conducted the rest of the meeting.

1.3 Approval of agenda

A provisional agenda was circulated prior to the meeting for comments. One additional item was added and the revised agenda was adopted for the meeting (Appendix 2).

1.4 Distribution of Documents

Four working documents were presented and two information papers were distributed to the working group (Appendix 3).

1.5 Appointment of Rapporteurs

John Childers, Hui Hua Lee, Alex da Silva, Hideki Nakano, John Holmes, Kevin Piner, Yukio Takeuchi, and Chiee-Young Chen served as rapporteurs.

2.0 ADVICE FOR ISC9

2.1 Review and update of fisheries statistics

2.1.1 Catch by county and gear

The total annual catch table (Table 1) of the ISC-ALBWG database (Category I data) was discussed. Catch data by country and gear from 2006 to 2008 were verified by the data correspondent from each country during the meeting. Preliminary catch data are available for 2008 from most fisheries. Catches in the USA sport fishery and other gear categories were combined in 2007 only due to confidentiality policies of U.S. government. It was confirmed that the data reported from Mexico do not duplicate the U.S. sport fishery catches made in Mexican waters. The Working Group noted that longline catches in the Other Countries category have not been updated since 2003 due to the difficulty in separating North and South Pacific data from Vanuatu. This issue will be addressed by cooperating with the Secretariat of the Pacific Community (SPC). Chinese-Taipei and Korea presented revisions of their recent catch data. The catch data in Table 1 are now verified through 2007 and estimates for 2008 are preliminary.

2.1.2 Size composition by county and gear

Size composition by country and gear is discussed under Agenda item 2.2.

2.1.3 CPUE indices

Nominal CPUE indices of some fisheries are discussed under Agenda item 2.2 where each county presented a review of their fisheries in 2008.

2.1.4 Other Data

No other data updates were provided.

2.2 Review of Data for Current Stock Status

The ALBWG reviewed recent fisheries information since 2005 – the terminal year from the last stock assessment. Total catch in 2006 (63,601t) was slightly greater than in 2005 and catch increased substantially to 91,644 t in 2007 (Table 1). The 2007 catch is typical of the catches occurring during the 1996-2004 period. Preliminary catch for 2008 (66,138 t) decreased substantially, returning to a level more typical of the years after 2004.

Three papers were distributed and provide the descriptions of the most recent data from albacore fisheries in Japan, the USA, and Canada. These data were used by the working group to qualitatively assess the trends in biomass, recruitment, and stock status in the 2006-2008 period.

The Japanese albacore fisheries for 2007 were described (ISC/09/ALBWG-02/01). Japanese albacore catch and effort data in the north Pacific are compiled from the "Annual Report of Catch Statistics on Fishery and Aquaculture" published by the Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries (SID report) and logbook data. Albacore is mainly caught by the pole-and-line and longline fisheries. Total Japanese catch in 2007 was 66,655 t, which was the highest in the past five years. The majority of this increase was recorded by the pole-and-line fishery, which had the highest catch of all Japanese gears in 2007 (37,768 t). This increase is related to the development of good pole-and-line fishing grounds at 37-38 °N, 143-148 °E and 32-35 °N, 142-145 °E from May through June. Albacore catch by the pole-and-line fishery has fluctuated in recent years while longline catch has been comparatively stable over the same period. During the last decade, fishing effort by mid-sized pole-and-line vessels (20-119 GRT) has fluctuated between 400 and 2,400 days, with no apparent trend, although the preliminary 2007 estimate (2,374 days) is the highest in the last two decades and is probably related to increases in the length of the fishing season and vessels targeting albacore. Effort by large pole-and-line vessels (>120 GRT) has fluctuated over the last four decades, although preliminary estimated effort for 2007 decreased. Longline catch n 2007 (22,386 t) was similar to the catch in 2006 (21,027 t). Fishing effort reported by the distant water (vessels over 200 GRT) and the coastal (10-19 GRT) longline fleets have remained relatively stable, whereas fishing effort by offshore longline fleet (20-199 GRT) is decreasing. Trends in nominal longline CPUE from the main fishing areas differs depending on area and season within an area. The most striking feature is a sharp decline in nominal CPUE during the first quarter between 2001 and 2004 in the fishing grounds north of Hawaii.

The 2008 USA albacore troll fishery was briefly reviewed (ISC/09/ALBWG-02/02). U.S. fishermen target 2-5-year old albacore in the North Pacific using troll and pole-and-line gears during the summer when these fish are most susceptible to surface fishing gear. In recent years fishing effort in the mid Pacific by U.S. troll vessels has been reduced. Reduced availability of albacore in mid Pacific waters and increased operating costs have resulted in more fishing effort being expended in productive areas off the coasts of Oregon state, Washington state, and Vancouver Island, Canada, and less effort in high seas areas of the mid Pacific. An estimated 466 U.S. troll vessels participated in the U.S. albacore troll fishery in 2008, a 26% decrease from the 2007 troll fishery. Total catch in 2008 is estimated to be 10,254 metric tons (t), which is a 14% decrease from the 2007 catch. Most of the fishing effort is concentrated off the coasts of Washington and Oregon. The size composition of catch from the 2008 US albacore troll fishery shows two modes, one centered at approximately 65 cm fork length (FL) and the other centered at approximately 74 cm FL. This size range is consistent with the size composition of previous years as this fishery harvests a narrow range of sizes from the North Pacific albacore stock.

The 2008 Canadian North Pacific Albacore troll fishery was briefly discussed by John Holmes (ISC/09/ALBWG-02/04). Preliminary total catch of albacore by the Canadian troll fishery was 5,478 t in 2008, which is a 10% reduction relative to 2007. All of the 2008 catch occurred in FAO Statistical Area 67 and was distributed in the Canadian EEZ (4%), the United States EEZ

(87%), and the highseas (9%). The fleet of 134 vessels in 2008 was the smallest on record (range 134-292 vessels) and fishing effort was estimated to be 5,881 vessel-days in 2008, which is a 17% reduction in effort relative to 2007. However, nominal CPUE for 2008 is 931 kg/v-d, the second highest estimate on record. The increasing trend in nominal CPUE since 1995 appears to be the result of less experience fishers leaving the fishery and the use of satellite technology to better target high value fishing locations. Since vessel and captain identifiers are recorded in the logbooks, it may be possible to examine these hypotheses through the use of GLM or other CPUE standardization methods. Fishers voluntarily reported 736 fork length measurements of the catch in 2008 and three modes appear to be present in these data at 57 cm (3.89 kg), 64 cm (5.50 kg) and 74-75 cm (8.67 kg), corresponding to 2-, 3- and 4-yr old fish, respectively. As in past years, 3-year old fish are the largest proportion of albacore tuna caught by the Canadian troll fleet. Albacore were captured in sea surface temperatures ranging from 11 to 20 °C, but the majority of catch occurred at temperatures between 14 and 19 °C in 2008.

2.2.1 Catch, effort and CPUE trends as indicators to validate recent high SSB

The Working Group reviewed catch, effort and CPUE data in the working papers to qualitatively determine if these new data supported the high estimated spawning biomass in 2005. In addition, the Working Group looked for evidence of projected changes in biomass at the current level of F (estimated by the 2006 stock assessment). It was noted that the Japanese distant water longline fishery takes age-classes corresponding to spawning biomass while the surface fisheries catch juveniles. However there was little easily interpretable information from the new Japanese longline nominal CPUE on recent trends in spawning biomass. Recent changes in the distribution of the fishery will need to be appropriately standardized before it can accurately reflect relative abundance. Both the US and Canadian troll fisheries predominately catch juvenile albacore and are therefore uninformative concerning trends in spawning biomass.

2.2.2 Strengths of recent year-classes

The Working Group reviewed recent catch, effort and CPUE data to qualitatively assess the estimates of relatively strong recruitment from 2001 and 2003 year classes estimated by the 2006 stock assessment. It was noted that the increasing catch from the Japanese pole and line fishery in recent years may be indicative of a stronger than average 2003 year class. However, the US troll fleet did not show similar increases in catch or CPUE that should have corresponded to the 2003 year-class. The Canadian troll fishery data was not informative about abundance as the adoption of satellite technology and the increasing experience of captains remaining in the fishery make interpretation of the reported nominal CPUE misleading. It was also noted that the 2003 year class would have exited the US and Canadian fisheries in the most recent years.

Conclusions

1. The working group agreed that a new stock assessment will be necessary to fully understand the implications of the new data available since the last stock assessment. The following conclusions are based on data after 2005 that were presented at this meeting.

2. The 2006 stock assessment (ISC/07/Plenary/Annex 5) estimated that albacore spawning biomass reached an historical high in 2005. The working group's qualitative interpretation of new data neither supported nor refuted this estimate
3. The working group's qualitative interpretation of new data neither supported nor refuted a decline in spawning biomass after 2005 that was projected in the 2006 stock assessment;
4. The working group's qualitative interpretation of new data neither supported nor refuted the relatively strong recruitment from the 2001 and 2003 year-classes estimated in the 2006 stock assessment.
5. Nominal effort in most fisheries appears to have declined since 2005 and catches since 2004 (with the exception of 2007) have been substantially lower than in the previous decade. This could mean that F_{2008} is now less than the F (0.75 yr^{-1}) used in the 2006 stock assessment projections. Alternatively, F may be as high as the value used in the stock assessment projections since the level of recruitment after 2005 is not known.

2.3 New developments for the biological research plan

The Biological Research Task Force (BRTF)meeting was held in Busan, Korea, at the end of May 2009. The Chair BRTF requested that the ALBWG nominate a coordinator for albacore sampling and preparation activities. John Holmes agreed to serve in the coordinator's role.

2.4 Progress with estimating Fs associated with minimum SSB reference point

At the WCPFC Northern Committee (NC) meeting in September 2008 (NC4), the NC proposed an interim management objective for the North Pacific albacore stock to maintain the spawning stock biomass (SSB) above the average level of its ten historically lowest points (ATHL) with a probability greater than 50%. The associated F-based reference point ($F_{SSB\text{-}ATHL}$) was not estimated in the last (2006) stock assessment. At the April 2009 ISC-ALBWG workshop preliminary estimates of Fs associated with the minimum SSB reference point were provided using two different algorithms and data from the last stock assessment (1965-2005). The Working Group agreed that a re-analysis of $F_{SSB\text{-}AHTL}$ using available data through 2008 was needed in order to provide an estimate to the ISC Plenary in July 2009. One working paper on this topic (ISC/09/ALBWG-02/03) was briefly presented by Yukio Takeuchi.

Discussion

Based upon the newest analysis described in ISC/09/ALBWG-02/03 the estimated reference point value for $F_{SSB\text{-}ATHL}$ using a 25-yr projection period beyond 2005 is 0.75 yr^{-1}. The Working Group discussed the appropriateness of estimating the $F_{SSB\text{-}ATHL}$ from this kind of analysis. The 2006 stock assessment estimated current F ($F_{2002\text{-}2004}$) to be 0.75 yr^{-1}. The Working Group acknowledges that further refinement of the algorithm to calculate $F_{SSB\text{-}ATHL}$ may be needed prior to the next stock assessment. The Working Group, however, recommended that an estimate of $F_{SSB\text{-}ATHL}$ = 0.75 yr^{-1} be provided to the Northern Committee and noted that it will plan to provide the information needed to implement the interim management objective in future stock assessments.

The Working Group appreciates the guidance provided by the Northern Committee (NC4 2008) on the interim management objective for North Pacific albacore. The Working Group has generally interpreted $F_{SSB\text{-}ATHL}$ as a limit reference point, however, it requests that the Northern Committee clarify whether $F_{SSB\text{-}ATHL}$ is considered a target or limit reference point. If $F_{SSB\text{-}ATHL}$ is intended to be a limit reference point, further consideration about the probability of falling below the threshold may be needed.

3.0 REVIEW OF PLANS FOR THE NEXT STOCK ASSESSMENT

3.1 Stock Synthesis-3 Data Protocol and Specifications

Agenda Items 3.1 (Stock Synthesis-3 data protocol and specifications), 3.2 (VPA data protocol and specifications), and 3.4 (Schedule and due dates) were discussed jointly.

Hui-Hua Lee presented the model specifications and fishery-related data protocols for the next stock assessment. The analysis of Pacific albacore fisheries at the April 2009 ALBWG workshop resulted in the 14 fisheries defined for the last stock assessment being condensed to 11 fisheries shown in Table 2. The needs with respect to time series data, in particular quarterly catch, annual standardized CPUE, annual catch-at-age matrix, and quarterly size composition by fishery are specified for the next stock assessment. The next stock assessment will be conducted using both Stock Synthesis 3 (SS) and VPA, although most of the effort and analysis will focus on the SS platform. The data model protocol was based on decisions made at the April 2009 ALBWG workshop (ISC/09/ALBWG-01). Baseline model configurations for both SS and VPA are also specified (Table 3). It was also noted that data protocol associated with changes in fishery characteristics could be revised before the next stock assessment. A work plan for the next stock assessment meeting was presented (Table 4).

The group discussed scheduling and planning of the work plan. The current reclassification of fisheries is still preliminary and further analysis is needed on the Japanese longline fisheries to determine if further reclassification is needed. The Working Group agreed that at its next meeting the reclassification of fisheries will be reviewed and finalized. The Working Group will also review longline CPUE indices (including USA, Japan, and Taiwan longliners) to identify which indices best characterize spawning stock biomass (SSB) and use these indices as a stock status indicator for reporting to the ISC Plenary. The longline fisheries time series should be updated through 2008 for the next meeting. The Working Group confirmed that age-aggregated CPUE indices would be used instead of age-specific indices for the next stock assessment. Since Japanese longline data were previously used as a proxy for size composition of Taiwanese longline catch, the Working Group needs to identify which of the new fisheries classifications will be most appropriate for representing the Taiwan longline size composition. Chinese-Taipei will review its longline data and revised fishery categories to determine the most appropriate proxies to be used at the next Working Group meeting.

Several work items were identified for assessment in the reclassification of fisheries:

1. Spatial/temporal patterns need to be further scrutinized,
2. Inclusion of zero catches need to be verified,

3. The covariance associated with standardized CPUEs should be investigated, and
4. A decision needs to be made on whether to continue to use annual CPUEs or stratify them by area and season.

Though data preparation will be done for both SS and VPA models, no VPA analysis will be conducted prior to ISC10.

The Working Group agreed to submit all data by 1 July 2010. All SS input data (quarterly catch and size data by fishery; annual CPUE indices and their standard errors) should be emailed to Hui-Hua Lee prior to this deadline. She will prepare an SS data file and distribute to all working group members for verification. Once finalized, this data file will then serve as a common baseline for the SS runs that will be made prior to the data preparation meeting. Similarly, all VPA input data (annual catch-at-age by fishery; annual CPUE indices and their standard errors) should be emailed to Takayuki Matsumoto prior to the deadline. He will prepare a VPA data file and distribute to all working group members for verification. Once finalized, this data file will be the common baseline for the VPA runs that will be made prior to the data preparation meeting.

The Working Group discussed the schedule of meetings leading up to the next albacore stock assessment. Owing to recent staffing challenges, Japan is unable to participate in the data preparation and modelling analyses for the next stock assessment as originally scheduled for March 2010. Given the critical nature of the Japanese fishery data and Japanese scientists to the stock assessment process, the Working Group concluded that it would not be possible to produce a credible stock assessment in 2010 without the participation of Japan. The Working Group agreed to delay the next stock assessment for one year to 2011 and established the following schedule of meetings and venues, noting that the dates shown are subject to change:

1. 16-23 March 2010; Shimizu, Japan – Final characterization of fisheries completed and review CPUE for longline fisheries. Time series data need to be updated through 2008.
2. July 1 2010 – Catch-at-age and all other data submitted.
3. ISC10 – A two-day meeting in conjunction with the ISC10 plenary to assess indices for characterizing SSB will be held. Preliminary catch data for 2009 should be available and final data through 2008 made available.
4. 19-26 October 2010; La Jolla, USA – data preparation meeting in conjunction with the IATTC Science Workshop meeting.
5. 22-29 March 2011; venue to be determined – stock assessment workshop. The modeling subgroup may meet 18-21 March at the same location. Final data are available through 2009.

The Working Group noted that it will be five years from the last stock assessment and strongly recommended no further delays beyond 2011. A new stock assessment is needed soon because qualitative updates based on recent fisheries data are not providing clear evidence of North Pacific albacore stock status. It was noted that this revised schedule could be in conflict with the Pacific bluefin tuna stock assessment schedule and that this would be a matter for the ISC plenary session to resolve, should it arise.

In addition, the Working Group took note of the need to include outside experts in a peer review function either as an ongoing process throughout the series of meetings required for stock assessments or through some other mechanism.

3.3. Other software needed for projections, reference points, etc.

Kevin Piner will assess the use of other software to supplement for $F_{SSB\text{-}min}$ estimations. Further details and documentation are needed to describe the algorithm that was used by Ray Conser (who was not present at the meeting) to estimate $F_{SSB\text{-}ATHL}$ and describe the additional uncertainties that he identified and included in the model. The ALBWG Chair was requested to consult with Ray on these matters by the next meeting in March 2010.

4.0 COLLABORATION WITH THE WCPFC-SC

SungKwon Soh presented a summary of issues identified at SC4 (SC4 Summary Report, paragraph 167) for consideration by the ISC-ALBWG. Three issues were briefly described: (1) collaboration between the ISC-ALBWG and WCPFC scientists on albacore stock assessments and research activities (see ISC/09/ALBWG-02/Info-01 and ISC/09/ALBWG-02/Info-02 for information); (2) data gaps and data access problems for ISC stock assessments; and (3) aligning data standards and processes with those of the WCPFC.

The ISC-ALBWG expresses its appreciation to IATTC and WCPFC for sending Drs. da Silva and Soh to participate in the ALBWG meeting. On the WCPFC issues, the ALBWG discussed the possibility of participating in WCPFC albacore stock assessments, though some constraints were noted concerning the schedule of the ISC-ALBWG meetings required to complete the next stock assessment in 2011. The ALBWG also noted that there is an open invitation to WCPFC scientists and encouraged the WCPFC to designate qualified scientists to participate in the ISC ALBWG workshops, especially for the next series of meetings for stock assessments. Regarding the data gaps, ISC-ALBWG noted that this issue in general needs to be discussed at the ISC Plenary but would like to note that the structure and processes of data acquisition for ISC stock assessments are different from those of WCPFC. The ISC also has data gap issues with respect to parameters for natural mortality, age and growth, maturity, selectivity, etc. Further discussions on these matters were noted under the Plenary agenda for ISC9.

5.0 ADMINISTRATIVE MATTERS

5.1 Clearing of the Report

A draft of the report was reviewed by the ALBWG prior to adjournment of the WG meeting. After the WG meeting, the Chair distributed a second draft of the report via email for review, comment, and approval by the participants. Subsequently, the Chair evaluated suggested revisions, made final decisions on content and style, and provided the report for the ISC9 Plenary to review.

5.2 Time, Place, and Plans for Next Meetings

1. 16-23 March 2010; Shimizu, Japan.
2. ISC10 – A two-day meeting in conjunction with the ISC10 plenary
3. 19-26 October 2010; La Jolla, USA, in conjunction with the IATTC Science workshop. Exact dates to be determined.
4. 22-29 March 2011; venue to be determined – stock assessment workshop meeting.

5.3 Other Matters

No other matters were brought to the attention of the ALBWG.

6. ADJOURNMENT

The Chair expressed his appreciation to participants for their efforts, which ensured a successful meeting. ALBWG participants collectively thanked the hosts (Chinese-Taipei delegates and staff) for their hospitality and overall meeting arrangements.

The meeting of the ISC-ALBWG was adjourned at 17:00 on July 9, 2009.

Table 1. [1] North Pacific albacore catches (in metric tons) by fisheries, 1952-2008. Blank indicates no effort. -- indicates data not available. 0 indicates less than 1 metric ton. Provisional estimates in ().

Year	Japan							Korea		Chinese-Taipei		
	Purse Seine	Gill Net	Set Net	Pole and Line	Troll	Longline	Other	Gill Net	Longline	Gill Net	Distant Water Longline	Offshore Longline
1952	154		55	41,787	--	26,687	182					
1953	38		88	32,921	--	27,777	44					
1954	23		6	28,069	--	20,958	32					
1955	8		28	24,236	--	16,277	108					
1956			23	42,810	--	14,341	34					
1957	83		13	49,500	--	21,053	138					
1958	8		38	22,175	--	18,432	86					
1959			48	14,252	--	15,802	19					
1960			23	25,156	--	17,369	53					
1961	7		111	18,639	--	17,437	157					
1962	53		20	8,729	--	15,764	171					
1963	59		4	26,420	--	13,464	214					
1964	128		50	23,858	--	15,458	269					
1965	11		70	41,491	--	13,701	51					
1966	111		64	22,830	--	25,050	521					
1967	89		43	30,481	--	28,869	477				330	
1968	267		58	16,597	--	23,961	1,051				216	
1969	521		34	31,912	--	18,006	925				65	
1970	317		19	24,263	--	16,222	498				34	
1971	902		5	52,957	--	11,473	354		0		20	
1972	277	1	6	60,569	--	13,022	638		0		187	
1973	1,353	39	44	68,767	--	16,760	486		3		--	
1974	161	224	13	73,564	--	13,384	891		114		486	
1975	159	166	13	52,152	--	10,303	230		9,575		1,240	
1976	1,109	1,070	15	85,336	--	15,812	270		2,576		686	
1977	669	688	5	31,934	--	15,681	365		459		572	
1978	1,115	4,029	21	59,877	--	13,007	2,073		1,006		6	
1979	125	2,856	16	44,662	--	14,186	1,139	0			81	
1980	329	2,986	10	46,742	--	14,681	1,177	6	402	--	249	
1981	252	10,348	8	27,426	--	17,878	699	16		--	143	
1982	561	12,511	11	29,614	--	16,714	482	113	5,462	--	38	
1983	350	6,852	22	21,098	--	15,094	99	233	911	--	8	
1984	3,380	8,988	24	26,013	--	15,053	494	516	2,490	--	--	
1985	1,533	11,204	68	20,714	--	14,249	339	576	1,188	--	--	
1986	1,542	7,813	15	16,096	--	12,899	640	726	923	--	--	
1987	1,205	6,698	16	19,082	--	14,668	173	817	607	2,514	--	
1988	1,208	9,074	7	6,216	--	14,688	170	1,016	175	7,389	--	
1989	2,521	7,437	33	8,629	--	13,031	433	1,023	27	8,350	40	
1990	1,995	6,064	5	8,532	--	15,785	248	1,016	1	16,701	4	
1991	2,652	3,401	4	7,103	--	17,039	395	852	0	3,398	12	
1992	4,104	2,721	12	13,888	--	19,042	1,522	271	1	7,866	--	
1993	2,889	287	3	12,797	--	29,933	897		21		5	
1994	2,026	263	11	26,389	--	29,565	823		54		83	
1995	1,177	282	28	20,981	856	29,050	78		14		4,280	
1996	581	116	43	20,272	815	32,440	127		158		7,596	
1997	1,068	359	40	32,238	1,585	38,899	135		404		9,119	337
1998	1,554	206	41	22,926	1,190	35,755	104		226		8,617	193
1999	6,872	289	90	50,369	891	33,339	62		99		8,186	207
2000	2,408	67	136	21,550	645	29,995	86		15		7,898	944
2001	974	117	78	29,430	416	28,801	35		64		7,852	832
2002	3,303	332	109	48,454	787	23,585	85		112		7,055	910
2003	627	126	69	36,114	922	20,907	85		146		6,454	712
2004	7,200	61	30	32,255	772	17,341	54		78		4,061	927
2005	850	154	97	16,133	665	20,420	234		420		3,990	483
2006	364	221	55	15,400	460	21,027	42		138		3,848	469
2007	5,682	226	30	37,768	519	22,386	42		56		2,465	451
2008	(1,033)	(226)	(30)	(19,577)	(519)	(22,386)	(42)		(365)		(2,490)	(579)

1 Data are from the ISC albacore working group, July 15 2008 except as noted
Values carried down from 2007 are highlighted in yellow

Table 1. (Continued)

Year	United States								Mexico		Canada	Other		Grand Total
	Purse Seine	Gill Net	Pole and Line	Albacore Troll [2]	Tropical Troll & Handline	Sport[3]	Longline	Other	Purse Seine	Pole and Line [4]	Troll [5]	Troll [6]	Longline [7]	
1952				23,843		1,373	46				71			94,198
1953				15,740		171	23				5			76,807
1954				12,246		147	13							61,494
1955				13,264		577	9							54,507
1956				18,751		482	6				17			76,464
1957				21,165		304	4				8			92,268
1958				14,855		48	7				74			55,723
1959				20,990		0	5				212			51,328
1960				20,100		557	4				141			63,403
1961			2,837	12,055		1,355	5	1	2	39	4			52,649
1962			1,085	19,752		1,681	7	1	0	0	1			47,264
1963			2,432	25,140		1,161	7		31	0	5			68,937
1964			3,411	18,388		824	4		0		3			62,393
1965			417	16,542		731	3	1	0		15			73,033
1966			1,600	15,333		588	8		0		44			66,149
1967			4,113	17,814		707	12				161			83,096
1968			4,906	20,434		951	11				1,028			69,480
1969			2,996	18,827		358	14		0		1,365			75,023
1970			4,416	21,032		822	9		0		390			68,022
1971			2,071	20,526		1,175	11		0		1,746			91,240
1972			3,750	23,600		637	8		100	0	3,921			106,716
1973			2,236	15,653		84	14		0		1,400			106,839
1974			4,777	20,178		94	9		1	0	1,331			115,227
1975			3,243	18,932		640	33	10	1	0	111			96,808
1976			2,700	15,905		713	23	4	36	5	278			126,538
1977			1,497	9,969		537	37		3	0	53			62,469
1978			950	16,613		810	54	15	1	0	23			99,600
1979			303	6,781		74	–		1	0	521			70,745
1980			382	7,556		168	–		31	0	212			74,931
1981			748	12,637		195	25		8	0	200			70,583
1982			425	6,609		257	105	21	0	0	104			73,027
1983			607	9,359		87	6		0	0	225			54,951
1984	3,728		1,030	9,304		1,427	2		107	6	50			72,612
1985	26	2	1,498	6,415	7	1,176	0		14	35	56			59,100
1986	47	3	432	4,708	5	196			3	0	30			46,078
1987	1	5	158	2,766	6	74	150		7	0	104			49,051
1988	17	15	598	4,212	9	64	307	10	15	0	155			45,345
1989	1	4	54	1,860	36	160	248	23	2	0	140			44,052
1990	71	29	115	2,603	15	24	177	4	2	0	302			53,693
1991	0	17	0	1,845	72	6	312	71	2	0	139			37,320
1992	0	0	0	4,572	54	2	334	72	10	0	363			54,833
1993		0	0	6,254	71	25	438		11	0	494			54,125
1994		38	0	10,978	90	106	544	213	6	0	1,998	158		73,345
1995		52	80	8,045	177	102	882	1	5	0	1,763	94		67,947
1996	11	83	24	16,938	188	88	1,185		21	0	3,316	469	1,735	86,207
1997	2	60	73	14,252	133	1,018	1,653	1	53	0	2,168	336	2,824	106,756
1998	33	80	79	14,410	88	1,208	1,120	2	8	0	4,177	341	5,871	98,229
1999	48	149	60	10,060	331	3,621	1,542	1	0	57	2,734	228	6,307	125,542
2000	4	55	69	9,645	120	1,798	940	3	70	33	4,531	386	3,654	85,052
2001	51	94	139	11,210	194	1,635	1,295		5	18	5,248	230	1,471	90,189
2002	4	30	381	10,387	235	2,357	525		28	0	5,379	466	700	105,224
2003	44	16	59	14,102	85	2,214	524		28	0	6,861	378	(2,400)	92,804
2004	1	12	126	13,346	157	1,506	361		104	0	7,856	–	(2,400)	88,619
2005		20	66	8,413	175	1,719	296		0	0	4,845	–	(2,400)	61,284
2006		3	23	12,524	86	385	270		109	0	5,832	–	(2,400)	63,601
2007		4	21	11,887	98	1,244	250		40	0	6,075	–	(2,400)	91,644
2008		(1)	(6)	(10,254)	(1)	(381)	(359)	(1)	(10)		(5,478)		(2,400)	(66,138)

2 Albacore troll catches contain an unknown proportion of pole and line catch.
3 Sport and Other catches combined for 2007 due to confidentiality policies
4 Mexico Pole and line catches for 1999 and 2000 include 34 and 4 metric tons, respectively from longline.
5 1960 Canada troll catches include 136 metric tons caught by purse seine.
6 Other troll catches are from vessels registered in Belize, Cook Islands, Tonga, and Ecuador.
7 Updates for Other Longline not available.

Table 2. Data specification for Stock Synthesis 3 (SS) and virtual population analysis (VPA) by fishery defined in the April ALBWG meeting.

			STOCK SYNTHESIS 3				VPA	
FISHERY	**FISHERY DESCRIPTIONS**	**SEASONALITY**	**CATCH quarterly 1966-2008**	**CPUE indices annual indices 1966-2008**	assigned season	**Size composition data quarterly 1966-2008**	**Catch-at-age annual CAA 1966-2008**	**CPUE indices**
1	USA/Canada troll	Q2-Q4 mainly Q3	in mt or 1,000 of number	age-aggregated standardized CPUE w/ SE (No. fish/day)	Q3	No. fish using / 1cm binning 26-90cm / 2cm binning 90-100cm / 4cm bining >100cm	age slicing from C@S (in No.)	Same as SS input
2	USA longline	Q1-Q4	in 1,000 of number	age-aggregated standardized CPUE w/ SE (No. fish/1,000 hooks)	Q3**	ditto	convert C@S to C@A using Suda growth curve (in No.)	Same as SS input
3	EPO miscellaneous	Q2-Q4 mainly Q3	in mt	N.A.	N.A.	N.A.	N.A.	N.A.
4	Japan pole-and-line	Q2	in mt	age-aggregated standardized CPUE w/ SE (No. fish/pole/day)	Q2	No. fish using / 1cm binning 26-90cm / 2cm binning 90-100cm / 4cm bining >100cm	age slicing from C@S (in No.)	Same as SS input
5	Japan pole-and-line	Q2-Q3	in mt	ditto	Q3	ditto	age slicing from C@S (in No.)	Same as SS input
6	Japan longline-large (distant-water/offshore)	Varied with strata	in 1,000 of number	age-aggregated standardized CPUE w/ SE (No. fish/1,000 hooks)	Q4	ditto	convert C@S to C@A using Suda growth curve (in No.)	Same as SS input
7	Japan longline-large (distant-water/offshore)	Q1-Q2	in 1,000 of number	ditto	Q1	ditto	convert C@S to C@A using Suda growth	Same as SS input
8	Japan longline -small (coastal)	Q1-Q2	in 1,000 of number	ditto	Q1	ditto	convert C@S to C@A using Suda growth	Same as SS input
9	Japan longline -small (coastal)	Varied with strata	in 1,000 of number	ditto	Q4	ditto	convert C@S to C@A using Suda growth	Same as SS input
10	Taiwan, Korea, others (TKO) LL	Q1-Q4	in mt	ditto	Q1**	N.A.	N.A.	Same as SS input
11	WPO gill net and miscellaneous	Q1-Q4	in mt	N.A.	N.A.	N.A.	N.A.	N.A.

* depending on the natural reported units

** based on the largest portion among seasonal catch

Table 3. Model specification for Stock Synthesis 3 (SS) and virtual population analysis (VPA). Baseline model was based on the consensus from the April ALBWG meeting.

	SS Model Configuration	VPA Model Configuration
DATA		
N. fleets	11	11
N. CPUE	9	9
stderr of log(catch)	small (known without error)	N.A.
catch at age	N.A.	assume know withoue error
initial equil catch	1 surface (fishery 1) & 1 LL (fishery 7) using avg catch (1966-70) from F1 and F5 for surface and avg catch from F6 and F7 for LL	N.A.
variance associated with CPUE	input as SE	input as SE
binning structure	Pop binning: 1cm 10-140cm Data binning: 1cm 26-90cm / 2cm 90-100cm / 4cm >100cm	N.A.
effective sample size	max = 10	N.A.
PARAMETER CONTROL		
Natural mortality	fix at 0.3	fix at 0.3
Maturity at age	fixed	fixed
Growth parameters	fix at Suda's with higher CV for LAA on large fish (CV=0.1) than small fish (CV=0.08)	follow Suda growth
Spawner-Recruitment	h=1 (correspond with the 2006 assessment); sigmaR=0.6 estimate Rdev (1962-2002) assuming non-equil init age comp	steepness=1; sigmaR=0.6
Initial equil F	estimate F1 & F7	N.A.
Terminal-year F	N.A.	estimated and fix F ratio at 1 (ratio of the plus-group to the next younger age)
Catchability	constant	constant
Selectivity patterns	Size selex: asymptotic for LL F2 & F6; dome-shape for others For all dome-shaped LL, estimate largest size	N.A.
Variance adjestment	none	none

Table 4. Workplan leading up to the next North Pacific albacore stock assessment.

	Before Data Preparation Meeting	Data Preparation Meeting
1. Provide data -- one month prior to the meeting -- updated to 2008 -- based on the revised fishery def	a. Quarterly catch b. Quarterly size comp c. Develop standardized CPUE indices d. Annual catch at age	
2. Preliminary model run	a. Baseline model for SS3 and VPA b. Model diagnosis - change phase - model fit to CPUE and size comp - likelihood profile on R0 - biological comparsion - unexplained catch - high correlation - large CV on Rdev - selex vs. obs size comp	
3. Review data		a. review seasonal catch & size samples by fishery b. summarize abundance indices for each fishery (target, zero catch, diagnostics, spatial and temporal coverage, size range, data quality etc.) c. correlation analysis among indices
4. Sensitivity analyses -- compare model trajectory (B, SSB, R, SPR, YPR, exploitation rates, selex etc.)		a. more aggregate binning / 2cm 26-100cm / 4cm >100cm b. eff sample size & variance adjustment c. weighting on CPUE and size comp d. on M e. on growth parameters (K, Linf, CV for LAA) f. on maturity parameters g. on steepneess & sigmaR h. on initial age comp i. on equil catch

Appendix 1

List of Meeting Participants

Canada
John Holmes
Fisheries and Oceans Canada
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo, British Columbia, Canada, V9T 6N7
1-250-756-7303, (fax) 1-250-756-7053
John.Holmes@dfo-mpo.gc.ca

Chinese-Taipei
Shui-Kai Chang
National Sun Yat-sen University
No. 70, Lianhai Rd.
Gushan District, Kaohsiung City
804, Taipei, Taiwan
+886-7-525005
skchang@faculty.nsysu.edu.tw

Chiee-Young Chen
National Kaohsiung Marine University
Department of Marine Environ. Engineering
No. 142, Hai-Chuan Road
Kaohsiung, Taiwan
886-07-365-1481, (fax) 886-07-368-1210
chency@mail.nkmu.edu.tw

Shean-Ya Yeh
sheanya@ntu.edu.tw

Laing-Kang Lee
leelk@mail.nkmu.edu.tw

Wu Ren-Fen
fan@ofdc.org.tw

Shyh-Bin Wang
sbwang@mail.ntou.edu.tw

Japan
Takayuki Matsumoto
National Res. Inst. of Far Seas Fisheries
5-7-1 Orido, Shimizu
Shizuoka, Japan, 424-8633
81-54-336-6037, (fax) 81-54-335-9642
matumot@affrc.go.jp

Makoto Miyake
National Res. Inst. of Far Seas Fisheries
3-3-4 Shimorenjaku, Mitaka-shi
Tokyo, Japan 181-0013
+81 422-46-3917
p.m.miyake@gamma.ocn.ne.jp

Hideki Nakano
National Res. Inst. of Far Seas Fisheries
5-7-1 Orido, Shimizu
Shizuoka, Japan, 424-8633
81-54-336-6032, (fax) 81-54-335-9642
hnakano@fra.affrc.go.jp

Yukio Takeuchi
National Res. Inst. of Far Seas Fisheries
5-7-1 Orido, Shimizu
Shizuoka, Japan, 424-8633
81-54-336-6039, (fax) 81-54-335-9642
yukiot@fra.affrc.go.jp

Korea
Joon-Taek Yoo
Fisheries Resources Research Division
National Fish.Res. and Develop. Inst.
152-1, Haean-ro, Gijang-up, Gijang-gun
Busan, 619-705, Korea
82-51-720-2334, (fax) 82-51-720-2337
yoojt@nfrdi.go.kr

Sukyung Kang
Fisheries Resources Research Division
National Fisheries Res. and Develop. Inst.
152-1, Haean-ro, Gijang-up, Gijang-gun
Busan, 619-705, Korea
Tel: 82-51-720-2287, (fax) 82-51-720-2277
kangsk@nfrdi.go.kr

United States
Hui-Hua Lee
NOAA/NMFS SWFSC
8604 La Jolla Shores Dr.
La Jolla, CA, 92037, USA
1-858-546-5688, (fax) 1-858-546-7003
huihua.lee@noaa.gov

John Childers
NOAA/NMFS SWFSC
8604 La Jolla Shores Dr.
La Jolla, CA, 92037, USA
1-858-546-7192, (fax)1-858-546-7003
John.Childers@noaa.gov

Kevin Piner
NOAA/NMFS SWFSC
8604 La Jolla Shores Dr.
La Jolla, CA, 92037, USA
1-858-546-5613, (fax)1-858-546-7003
Kevin.Piner@noaa.gov

Gary Sakagawa
NOAA/NMFS SWFSC
8604 La Jolla Shores Dr.
La Jolla, CA, 92037, USA
1-858-546-7177, (fax)1-858-546-7003
Gary.Sakagawa@noaa.gov

IATTC
Alexandre Aires-da-Silva
Inter-American Tropical Tuna Commission
8604 La Jolla Shores Drive
La Jolla, CA, 92037-1508, USA
1-858-546-7022, (fax) 1-858-546-7133
alexdasilva@iattc.org

WCPFC
SungKwon Soh
Western and Central Pacific Fisheries Commission
Kaselehlie Street (P.O. Box 2356)
Kolonia, 96941
Federated States of Micronesia
sungkwons@mail.fm

Appendix 2

Revised Agenda

ALBACORE WORKING GROUP WORKSHOP

8-9 July 2009
Kaohsiung, Taiwan

1. Introduction
    - 1.1 Welcome and introduction
    - 1.2 Election of Chairperson
    - 1.3 Approval of agenda
    - 1.4 Appointment of rapporteurs

2. Advice for ISC9
    - 2.1 Review and update of fisheries statistic, 1965-prelim 2008.
        - 2.1.1 Catch by country and gear (Table 1)
        - 2.1.2 Size composition by country and gear
        - 2.1.3 CPUE indices
        - 2.1.4 Others
    - 2.2 Review of data for current stock status (qualitative)
        - 2.2.1. Catch, effort and CPUE trends
        - 2.2.2. Strength of recent year-classes and indicators to validate recent high SSB
        - 2.2.3. Others
    - 2.3 New developments for the biological research plan
    - 2.4 Progress with estimating Fs associated with minimum SSB reference point.

3. Review of plans for the next stock assessment.
    - 3.1 Stock Synthesis-3 data protocol and specifications
      (check list to be prepared and to include, e.g., Catch Period—1965-2008(?), M—by age, CPUE—by index fishery, Catch at age matrix (for VPA only)—2006 report matrices + 2006-2008, etc)
    - 3.2 VPA data protocol and specifications
      (check list to be prepared*)
    - 3.3 Assignments
    - 3.4 Schedule and due dates

4. Collaboration with the WCPFC

5. Administrative matters
    - 5.1 Clearing of report.
    - 5.2 Time, place and plans for next meetings.
    - 5.3 Other Matters
6. Adjournment.

Appendix 3

List of Documents

Working Papers

ISC/09/ALBWG-02/01	Review of the US Albacore troll fishery in the North Pacific in 2008
ISC/09/ALBWG-02/02	A review of Japanese Albacore fisheries in the North Pacific as of June 2009
ISC/09/ALBWG-02/03	Revision of minimum SSB reference points in response to new management objective for the North Pacific albacore
ISC/09/ALBWG-02/04	The 2008 Canadian North Pacific albacore troll fishery

Information Papers

ISC/09/ALBWG-02/Info-01	Adjusted biological parameters and spawning biomass calculations for albacore tuna in the South Pacific and their implications for stock assessments
ISC/09/ALBWG-02/Info-02	Stock Assessment of Albacore tuna in the South Pacific Ocean