

**NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
(NOAA) UNITED STATES**

**FISHERIES AND OCEANS
CANADA (DFO)**

Canada-United States Albacore Treaty DATA WORKING GROUP (DWG)

MEETING

Teleconference.

NOAA Southwest Fisheries Science Center, La Jolla, San Diego, CA

04 May 2016

MINUTES OF THE MEETING

ATTENDEES:

Canadian Phone:

DFO: John Holmes (Vice-Chair)

U.S. Phone:

NOAA: Steve Teo (Chair), John Childers, Yuhong Gu, Stephen Stohs, Craig D'Angelo, Heidi Taylor

AAFA: Natalie Webster, Nicole Ricci, Carl Nish

AFRF: Peter Flournoy

WFOA: Wayne Heikkila, Rodney McVicker

WCSPA: Rod Moore, Lori Steele

Opening of meeting 10:00 AM

The Chair, Steven Teo, opened the meeting by presenting the proposed agenda. The agenda was accepted by the DWG (Appendix A).

Review of minutes/actions/progress arising from previous DWG meeting in May 2015 (Agenda Item 1).

Steven Teo briefly summarized the minutes of the previous DWG meeting in May 2015. Stephen Stohs asked the Chair to clarify if the data exchange spreadsheet will be publicly available this year. Steve Teo clarified that the heads of the treaty negotiation teams have previously decided to public release the data exchange spreadsheet, and that decision will remain in force until they explicitly reverse that decision. Therefore, the data exchange spreadsheet for 2015 will be publicly available, likely as part of the U.S. Pacific Fishery Management Council's (PFMC) Highly Migratory Species Stock Assessment and Fishery Evaluation Report (HMS SAFE Report; <http://www.pcouncil.org/highly-migratory-species/stock-assessment-and-fishery-evaluation-safe-documents/current-hms-safe-document/u-s-canada-albacore-treaty-data-exchange/>).

Update of data exchange spreadsheet for 2014 (Agenda Item 2)

Table 1 - Catch.

John Holmes presented the Canadian catches in Table 1. Canadian catches for 2014 were

considered finalized. 2015 catches for Canada were still considered preliminary but substantial changes are not expected. Steve Teo presented the U.S. catches. The U.S. catches for 2014 were considered finalized. 2015 catches for the U.S. were still considered preliminary but substantial changes are not expected. John Holmes mentioned that Canadian vessels caught a higher than usual number of small albacore (“peanuts”) in 2015 and asked whether U.S. scientists observed the same for U.S. vessels. John Childers indicated that U.S. vessels have been catching more small fish as well, and U.S. industry representatives concurred, adding that most of these small fish were released and U.S. vessels typically move away from the areas with small fish because small fish have substantially lower economic value.

Table 2 – Landing Ports.

John Holmes presented the Canadian landing ports data in Table 2. Canadian data for 2014 were considered finalized but 2015 data were still considered preliminary but substantial changes are not expected. John Holmes noted that the DFO-estimates of number of landing vessels and total landings by Canadian vessels in US ports were higher than the NOAA-estimates in 2015. In contrast, the DFO-estimates of number of landings by Canadian vessels in U.S. ports was lower than the NOAA-estimates. As discussed in previous DWG meeting, the DFO-estimates of total landings, number of landings, and number of landing vessels for Canadian vessels in U.S. ports are typically lower than the NOAA-estimates. After some discussion, Craig D’Angelo (NOAA) and Wellsley Hamilton (DFO) were tasked to further investigate the 2015 estimated landings, and report their findings to the DWG.

John Childers presented the U.S. landing ports data. The U.S. data for 2014 were considered finalized but 2015 data were still considered preliminary but substantial changes are not expected. The DWG noted that the albacore landings at Alaskan ports are included as a footnote in previous years but do not appear to have been updated for 2015. Craig D’Angelo (NOAA) agreed to contact Cathy Tide for an update of landings at Alaskan ports, which will be included in a footnote of the final data exchange spreadsheet if NOAA’s confidentiality restrictions are not violated.

After the meeting, Craig D’Angelo updated the footnotes on the landings at Alaskan ports. As stated in previous DWG meetings, actual annual landings in Alaskan ports cannot be included in the data exchange spreadsheet due to confidentiality restrictions.

Table 3 – Effort.

John Holmes and Steve Teo presented the Canadian and U.S. effort data, respectively, in Table 3. Both Canadian and U.S. effort data were finalized for 2014 but 2015 data were still considered preliminary, although substantial changes are not expected. John Holmes noted that there were 43 Canadian vessels that fished in the U.S. EEZ in 2015 but the data exchange spreadsheet only listed 42 vessels because one vessel was known to have fished in the U.S. EEZ through hailing records and other data sources but have not yet submitted its’ logbook. This will be updated when the logbook data is submitted in the near future.

It was also noted that several of the footnotes in the data exchange spreadsheet appear to be outdated. Steve Teo will check that these footnotes are updated when the spreadsheet is finalized.

Any other business (Agenda Item 3)

There were 3 main discussions in this agenda item.

1. Procedure for additional data requests

Several US industry representatives indicated that they would be interested in requesting specific data from the DWG to help understand the fishery operations of both countries' fleets in each other's EEZs. While the DWG decided such requests were within the purview of the DWG, the DWG also decided that a procedure needed to be developed for the DWG to receive, evaluate, and prioritize such data requests so that the DWG would remain efficient and not overburdened with secondary objectives.

After much discussion, the DWG decided on the following procedure for future data requests:

- 1) The DWG should provide a draft data exchange spreadsheet and meeting agenda to meeting participants when the DWG meeting is announced, ideally about 3 – 4 weeks in advance of the meeting date;
- 2) Data requests should be submitted in writing to the Chair of the DWG, at least one week before the scheduled meeting, detailing the data request and the reasons for the request;
- 3) Data requests may be submitted verbally during the meeting but the DWG may give lower priority to such requests;
- 4) Data requests by the treaty negotiating teams will be given higher priority;
- 5) Data requests will be evaluated and prioritized by the DWG;
- 6) The DWG may be able to provide the data requested during the meeting, if the data request is received early, relatively simple, high priority, and approved by the DWG. Otherwise, if the data requests are approved by the DWG, the data requested may be provided at subsequent meetings or in the meeting minutes.

2. Catch in territorial waters

Peter Flournoy informed the DWG that the Highly Migratory Species Advisory Subpanel (HMSAS) of the U.S. PFMC had submitted a data request for the catches of Canadian vessels in Canadian territorial waters (i.e., <12 nmi of the coast). However, Peter Flournoy stated that he was not making the data request, just reporting what occurred at the HMSAS. The U.S. scientists responded that they were unaware of this request and would investigate further. It was unclear during the meeting if there was actually such a request from either the participants in the meeting, the negotiating teams, or the PFMC.

John Holmes noted that this kind of data request is complex and would require substantial work to complete. The purpose of this request was also unclear.

After the meeting, Stephen Stohs clarified that the HMSAS had made such a request in their March report to the PFMC on international issues (http://www.pcouncil.org/wp-content/uploads/2016/03/F4c_Sup_HMSAS_Rpt_MAR2016BB.pdf). However, the

request was not included by the PFMC in the Recommendations for International Management Activities in their March 2016 Council Meeting Decision Summary Document (<http://www.pcouncil.org/wp-content/uploads/2016/03/0316decisions.pdf>). Therefore, the DWG considered that there was no pending data request before this DWG meeting but did discuss the idea for information purposes.

3. Distribution of vessel catch in the counterparties' EEZ

Nicole Ricci made a request for the number of U.S. vessels that fished in the Canadian EEZ but did not catch any albacore in 2013 - 2015. The idea was to provide a simple measure of success (or lack thereof) of vessels that fished within the other country's EEZ. The DWG discussed this request and approved this request because the request was relatively simple to perform and directly relevant to the negotiating teams. After some discussion, the DWG decided to provide a table with this information, while also noting that the contents would have to abide by the confidentiality restrictions of DFO and NOAA. A suggestion was made to exclude 2 US vessels that are not able to fish in U.S. waters because of U.S. regulations on foreign hulls. However, the DWG noted that these vessels cannot be excluded because doing so would reveal the catches of these two vessels by subtraction and would therefore contravene NOAA's confidentiality restrictions.

After the meeting, the DWG developed the following table of the catches of Canadian and US vessels in each other's EEZs (Table A).

Table A. Number of Canadian and US vessels fishing in the US and Canadian EEZs, respectively, with various amounts of total catch in 2013 – 2015. For US vessels, <3 indicates where revealing the number of vessels would contravene confidentiality restrictions and indicates 0 – 2 vessels. Total number of vessels can be found in Table 3 of the data exchange spreadsheet.

Year	Number of Canadian vessels in the US EEZ with various amounts of catch (t)				Number of US vessels in the Canadian EEZ with various amounts of catch (t)			
	0	>0-25	>25-50	>50	0	>0-25	>25-50	>50
2013	0	5	19	19	<3	20	<3	<3
2014	0	7	18	19	<3	26	7	<3
2015	0	11	22	9	<3	37	<3	<3

The Chair noted that the next meeting of the DWG will likely be in late May 2017 unless there are new requests and/or tasks from the respective delegations. There was no other business.

Next Steps: The meeting was closed with the following actions summarized by the Chair:

- Craig D'Angelo (NOAA) will work with Wellsley Hamilton (DFO) to further investigate the 2015 estimated landings, and report their findings to the DWG;
- Craig D'Angelo (NOAA) will provide an update of landings at Alaskan ports (completed);
- Steve Teo (Chair) will update the footnotes of the data exchange spreadsheet (completed);
- The DWG will develop a table of the catches of Canadian and US vessels in each other's EEZs (completed; see Table A).
- The next DWG meeting will likely be a conference call in late May 2017 to review and adopt data for 2016.

Chair adjourns meeting at 11:30 AM

Appendix A

Agenda of the Meeting of the US-Canada Albacore Treaty
Data Working Group
May 4th, 2016, 10:00 AM (Pacific time)

Teleconference
1-866-692-3582; Passcode: xxx xxx x #

Web Conference
<http://www.webex.com>; Meeting Number: 747 936 802; Password: xxxxxx

Objective of the Working Group: *Develop an optimum reporting and monitoring system for the U.S. Canada Albacore Treaty, Troll and Pole-and-Line Fisheries*

- Review of minutes/actions/progress arising from previous meeting in May 2015 (Steve Teo);
- Update data exchange spreadsheet for 2015 (Steve Teo and John Holmes);
- Any other business.

Table 1. Catch of Albacore by Canadian and U.S. Albacore Troll and Pole-and-Line Vessels in the North Pacific Ocean ¹

Year	Canadian Fleet ^{2,3}					U.S. Fleet ^{5,9}				
	Canadian EEZ (%)	U.S. EEZ (%)	High Seas (%)	Total catch (metric tons)	Logbook coverage (%) ⁴	U.S. EEZ (%)	Canadian EEZ (%)	High Seas (%)	Total catch (metric tons) ⁶	Logbook coverage (%) ⁷
1995	88	2.2	9.8	1,761	18	5.4	5.7	88.9	8,125	63
1996	16.9	45.8	37.3	3,321	24	13.5	0.1	86.4	16,962	42
1997	7.2	30.5	62.3	2,166	30	16.5	3.5	80.0	14,325	38
1998	7.3	43.6	49.1	4,177	50	14.8	0.1	85.1	14,489	35
1999	16.6	66.8	16.6	2,734	71	65.3	0.8	33.9	10,120	35
2000	9.6	73.1	17.4	4,531	68	69.6	0.2	30.2	9,714	41
2001	13.5	72.7	13.9	5,248	81	57.0	0.3	42.7	11,349	49
2002	7.8	86.2	5.9	5,379	74	63.9	2.0	34.0	10,768	38
2003	8.0	85.3	6.6	6,847	96	86.0	0.6	13.3	14,161	36
2004	16.9	80.7	2.4	7,857	92	92.9	1.2	5.9	13,473	47
2005	33.1	62.6	4.3	4,829	94	92.0	2.3	5.8	8,479	73
2006	18.5	70.1	11.3	5,833	95	82.5	1.0	16.5	12,547	93
2007	21.5	78.5	0.1	6,041	92	98.8	0.7	0.5	11,908	86
2008	4.5	86.4	9.1	5,464	93	78.5	6.0	15.5	11,761	79
2009	7.1	91.3	1.5	5,693	97	93.1	2.5	4.4	12,340	86
2010	35.9	51.2	12.9	6,526	96	72.1	2.1	25.9	11,689	76
2011	12.4	85.7	2.0	5,415	98	94.9	0.4	4.7	10,143	84
2012	83.0	0.0	17.0	2,484	100	99.2	0.0	0.8	14,149	81
2013	59.6	37.9	2.5	5,088	99	96.4	1.5	2.1	12,310	76
2014	55.3	44.6	0.1	4,780	100	94.8	4.9	0.3	13,369	81
2015 ⁸	66.5	33.4	0.1	4,324	99	96.1	3.7	0.2	11,571	83

Data Sources and Notes:

¹ Locations are based on logbook records, which are self-reported by vessels.

² Canadian data during 1995-2011 are taken from Canadian Tuna Database version 13.02.11.

³ Percentage of Canadian catch in various zones is based catch locations recorded in logbook. Total Canadian catch data reported in this table are expected to account for non-reporting vessels based on logbook coverage (cf. Table 2).

⁴ Canadian logbook coverage rates are calculated by dividing the number of logbook reporting vessels with the total number of vessels.

⁵ USA catch in various zones are based on the percentage of catch recorded by logbooks in each zone.

⁶ USA total catch is the sum of landings in the USA west coast ports (from PacFIN) and landings in foreign ports. Since these data sources are considered to be complete, total catch is not expanded based on logbook coverage.

⁷ USA logbook coverage rates are based on the ratio of trip landings weights recorded in logbooks to the sum of landings from PacFIN and foreign ports (see Footnote 6).

⁸ Preliminary data subject to change. Canadian data from Canadian tuna database version 16.04.27

⁹ Proportion of US catch in high seas zone was estimated from logbook data, and includes catches in U.S. EEZ off Alaska due to shapefile used. Catches in waters off Alaska were limited and do not affect the estimates substantially.

Table 2. Landings of Albacore (by country of landing port) by Canadian and U.S. Albacore Troll and Pole-and-Line Vessels in the North Pacific Ocean

Year	Canadian Fleet ¹											US fleet ¹³										
	Landings (metric tons) ²					Number of Landings			Number of Landing Vessels			Landings (metric tons)				Number of Landings			Number of Vessels that landed fish ⁷			
	U.S. Ports (DFO estimates)		U.S. Ports (NOAA estimates)		Other Ports ⁵	Total ¹⁰	Canadian Port ³	U.S. Ports (DFO estimates) ³	U.S. Ports (NOAA estimates) ⁴	U.S. Ports (DFO estimates) ⁹	U.S. Ports (NOAA estimates) ⁹	Canadian Ports (DFO estimates) ⁶	Canadian Ports (NOAA estimates) ⁶	U.S. Ports ⁹	Other Ports ¹¹	Total ¹⁰	Canadian Ports (DFO estimates) ⁶	Canadian Ports (NOAA estimates) ⁶	U.S. Ports ⁹	Canadian Ports (DFO estimates) ⁶	Canadian Ports (NOAA estimates) ⁶	U.S. Ports ⁹
	Canadian Port ³	estimates) ⁴	estimates) ⁴	estimates) ⁴																		
1995	230	67	67	104	401	76	4	7	53	3	4			6,407	1,753	8,160			1,000			472
1996	662	311	868	106	1,636	93	33	102	62	20	66			13,209	2,188	15,397			1,710			658
1997	563	294	399	147	1,109	67	25	54	51	14	32			10,831	3,009	13,840			3,674			1,160
1998	1,892	281	961	82	2,935	173	30	67	104	16	29			12,628	1,135	13,763			2,470			838
1999	1,574	484	713	193	2,480	274	69	106	158	35	52			8,809	1,422	10,231			2,619			772
2000	2,432	537	889	424	3,745	346	79	110	160	44	57			8,086	1,574	9,660			2,230			707
2001	3,474	617	806	364	4,644	520	51	92	193	31	52			10,263	972	11,235			3,453			929
2002	3,866	181	702	347	4,915	465	29	71	169	17	38		^	9,298	163	9,461		<3	2,432		<3	696
2003	3,781	2,132	3,118	655	7,554	464	241	285	177	87	105		^	13,491	487	13,978		<3	2,821		<3	782
2004	2,586	977	1,130	3,590	7,306	659	141	89	198	67	52		444	13,367	24	13,835		10	2,727		<3	727
2005	3,473	745	811	286	4,570	513	88	85	195	49	45		83	8,217	9	8,309		4	1,761		3	552
2006	5,281	327	397	300	5,978	495	35	31	161	18	19		^	12,374		12,374		<3	2,163		<3	615
2007	5,596	283	357	73	6,025	559	29	35	191	20	22		674	11,143		11,817		13	2,471		9	651
2008	3,693	1,236	1,359	122	5,174	341	106	114	123	42	46	721	455	9,768		10,489	19	9	1,700	11	6	477
2009	4,662	642	650	298	5,610	434	53	47	134	30	26	721	664	11,621		12,342	16	12	2,596	11	8	655
2010	4,961	811	958	446	6,364	502	78	76	154	45	42	919	601	10,871		11,790	24	17	2,339	16	9	609
2011	4,059	1,094	1,179	170	5,408	453	89	93	174	47	47	611	282	9,840		10,451	21	12	2,560	13	8	640
2012	2,219	0	0	265	2,484	276	0	0	174	0	0	0	0	13,861		13,861	0	0	3,309	0	0	816
2013	4,301	609	650	168	5,119	278	39	41	177	19	22	514	289	12,019		12,533	16	9	2,559	12	6	684
2014	4,130	395	415	256	4,801	339	26	28	147	12	14	1459	1290	12,079		13,538	36	30	2,512	18	17	597
2015 ¹²	3,812	244	246	241	4,299	357	16	19	154	11	11	756	522	11,027		11,783	30	19	2,385	19	12	562

Data Sources and Notes:

¹ Canadian landings data prior to 2012 are from Canadian Tuna Database version 13.02.11

² Landings for Canadian fleet are based on salesslip weights (where available) or estimated weights in logbooks and are not expanded to account for non-reporting vessels (cf. Table 1).

³ DFO estimates of Canadian landings in US ports are based on estimated weights in logbooks and are not expanded.

⁴ NOAA estimates of landings data by Canadian fleet are derived from PacFIN and are not expanded.

⁵ Other ports category is used for landings in non-US and non-Canada ports or where the landing port was unknown due to missing data. Occasional landings in American Samoa (Pago pago) are included early in the time series.

⁶ DFO estimates of US landings in Canadian ports are from a survey of Canadian buyers/processors and are not expanded.

⁷ Number of landing vessels may be slightly inaccurate due to landing slips with invalid or missing vessel IDs (0.15 to 3.9%)

⁸ The majority of Canadian landings in 2004 did not include information on landing port but the majority of these landings were likely made in Canadian ports.

⁹ U.S. DATA Source: Pacific Fisheries Information Network (PacFIN) retrieval dated , 3/15/2016, using the 'Boston method'. Number of landings estimated from unique vessel ID and Fish Ticket Dates

¹⁰ Where both DFO and NOAA estimates exist, total is calculated by adding the greater of the two values

¹¹ USA landings in Other Ports (non-US West Coast & non-Canadian ports) include American Samoa and Hawaii

¹² Preliminary data subject to change. Canadian data from Canadian tuna database version 16.04.27

¹³ U.S. landings data do not include <200 mt of albacore landings in Alaskan ports made by U.S. vessels during 1994-2015.

* = no data, 0 = more than 0 mt but less than 1, ^ = confidential data (less than 3 vessels)

Table 3. Distribution of Canadian and U.S. Albacore Troll and Pole-and-Line Fleet Fishing Effort in the North Pacific Ocean ¹

Year	Canadian Fleet ¹							U.S. Fleet ¹¹					
	Number of vessels/months allowed to fish in US EEZ	Number of vessels that fished in US EEZ ³	Number of vessels that fished in Canadian EEZ ⁵	Vessel Months Used ⁴	Fishing Effort in US EEZ (boat fishing days) ²	Fishing Effort in Canadian EEZ (boat fishing days) ²	Fishing Effort on high seas (boat fishing days) ²	Number of vessels allowed to fish in Canadian EEZ ⁶	Number of vessels that fished in US EEZ ^{7,8}	Number of vessels that fished in Canadian EEZ ^{8,11}	Fishing Effort in US EEZ (boat fishing days) ⁷	Fishing Effort in Canadian EEZ (boat fishing days) ¹⁰	Fishing Effort on high seas (boat fishing days) ⁷
1995	Unlimited	9	175	N/A	191	5,535	197	Unlimited	472	71	4,222	2,727	19,064
1996	Unlimited	83	90	N/A	4,222	2,813	1,130	Unlimited	658	6	8,950	39	23,705
1997	Unlimited	59	67	N/A	1,972	1,010	1,339	Unlimited	1160	46	13,840	1,687	29,950
1998	Unlimited	91	92	N/A	3,234	1,274	1,507	Unlimited	838	3	5,490	47	15,716
1999	Unlimited	176	162	N/A	4,316	1,689	965	Unlimited	772	19	22,033	469	12,952
2000	Unlimited	184	131	N/A	6,738	1,189	842	Unlimited	707	12	24,910	181	11,020
2001	Unlimited	207	176	N/A	7,697	1,754	570	Unlimited	929	15	16,879	127	8,252
2002	Unlimited	200	124	N/A	7,207	686	431	Unlimited	696	31	18,730	452	6,383
2003	Unlimited	177	119	N/A	7,111	892	425	Unlimited	782	9	18,848	131	2,670
2004	170 vessels or 680 vessel fishing months	202	172	627	7,551	2,125	266	170 vessels or 680 vessel fishing months	727	21	21,287	417	2,258
2005	140 vessels or 560 vessel fishing months	154	196	410	5,309	2,940	315	140 vessels or 560 vessel fishing months	552	31	19,603	631	1,738
2006	125 vessels or 500 vessel fishing months	139	148	396	4,500	1,401	342	125 vessels or 500 vessel fishing months	615	32	19,021	189	1,959
2007	94 vessels or 376 vessel fishing months	119	191	368	4,809	2,081	12	94 vessels or 376 vessel fishing months	651	14	21,717	297	340
2008	94 vessels or 376 vessel fishing months	122	79	338	4,993	360	420	94 vessels or 376 vessel fishing months	477	39	21,462	884	2,648
2009	110	107	116	N/A	5,722	675	143	Historical level	655	27	23,568	531	1,330
2010	110	109	153	N/A	3,848	2,887	559	Historical level	609	51	21,403	683	3,793
2011	110	108	146	N/A	6,549	1,771	285	Historical level	640	30	25,325	236	1,935
2012	0	0	174	N/A	0	5,084	890	0	816	0	33,970	0	893
2013	45 vessels	43	181	N/A	1,870	4,299	296	Historical level	703	21	21,608	187	737
2014	45 vessels	44	156	N/A	1,774	2,944	27	Historical level	625	36	27,216	549	351
2015 ⁹	45 vessels	42	161	N/A	1,380	3,797	17	Historical level	587	39	26,437	481	385

Data Sources and Notes:

¹ Effort in different zones are based on logbook records, where locations are self-reported by vessels.

² Estimates of Canadian effort in boat fishing days are expanded using the methodology described in Stocker et al. (2007: CTRFAS 2701). 1995-2011 data from Canadian Tuna Database version 13.02.11

³ Number of vessels that fished in US EEZ: 1995-2008 data from Canadian Tuna Database version 13.02.11, 2009-2011 data from DFO Pacific Licensing System

⁴ Vessel Months during 1995-2011 used data from Canadian tuna database v. 13.02.11

⁵ Number of vessels that fished in Canadian EEZ: 1995-2011 data from Tuna Database version 13.02.11

⁶ Although the historical level of fishing effort for the US fleet was permitted in the Canadian EEZ during 2009-2011, the historical level of fishing effort is not presently quantified.

⁷ Estimates of US effort in US EEZ in number of vessels and boat fishing days are expanded. Annual effort is calculated as annual catch divided by annual CPUE multiplied by average weight (Childers and Pease, 2012)

⁸ Number of US vessels that fished in US or Canadian EEZs refers to vessels that recorded fishing days in those zones in their logbooks and do not include vessels that only had transit days. Where logbook coverage rate is less than 100%, it is assumed

⁹ Preliminary data subject to change. Canadian data from Canadian tuna database version 16.04.27

¹⁰ Estimates of US effort in Canadian EEZ in number of vessels and boat fishing days are not expanded.

¹¹ Proportion of US effort in high seas zone was estimated from logbook data, and includes effort in U.S. EEZ off Alaska due to shapefile used. Effort in waters off Alaska were limited and do not affect the estimates substantially.