Commercial length composition weighting for U.S. Blueline Tilefish (*Caulolatilus microps*)

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Introduction

The fishery-dependent data collection for lengths may be biased due to sampling protocols, state-specific sampling effort, or other non-random methods. One technique to overcome bias in the length sampling is to weight samples by the associated landings at a spatial and temporal scale at which the bias is expected. Usually this is unknown and samples are weighted at the finest scale available without losing data (e.g. length samples with no associated landings). In this document we describe how the length data were weighted These methods have been used in previous SEDAR assessments and completed between the data and assessment workshops.

Data Description

Commercial – general

Biological sample data were obtained from the NMFS/SEFSC Trip Interview Program (TIP). Data were filtered to eliminate those records: 1) that included a size or effort bias, 2) where lengths were collected using a non-random method, 3) were not from commercial trips, 4) were selected by quota sampling, or 5) the data was not collected shore-side. These data were further limited to those that could be assigned a year, gear, and state. Length samples were assigned a state based on landing location or sample location if there was no landing location assigned.

Commercial-Lengths

The number of fish sampled had a high of 2783 for longline gear in 1993 from areas north of Cape Canaveral and 553 for handline gear in 1985 from areas north of Cape Canaveral (Table 1).

All blueline tilefish lengths were converted to FL in mm using the formula provided by Life History Group and binned into one centimeter intervals (e.g. 25cm interval = 24.5cm to 25.4cm). The length data and landings data were grouped into two categories; 1) handlines and 2) longlines.

Weighting methods

The finest scale to weight the SEFSC-TIP length data was by year and state for each of the gear groupings (handline and longline). For each year, the state-specific length composition was

multiplied by the proportion of landings from that state. The weighted state-specific length compositions were then combined and scaled to sum to one.

Results

Commercial Lengths

The commercial handline and longline length compositions were similar in size spatially for most years (Figure 1 & Figure 2). The weighting of the length composition for the handline and longline fishery had almost no influence.

The commercial longline length compositions were very similar when compared across regions (Figure 1 & Figure 2). Therefore, the weighting of the length composition for the longline fishery had almost no influence.

Discussion

There is minimal influence when weighting the commercial length or age composition for blueline tilefish. However, the weighted compositions are recommended for use as a matter of protocol and to remove whatever minimal bias may be present.

Tables

Table 1. Number of fish sampled for lengths for blueline tilefish by year and gear for the combined commercial handline and longline gears.

	Handline			Longline		
year	gom	canaveralN	canaveralS	gom	canaveralN	canaveralS
1983	-	22	-	-	-	-
1984	-	44	-	19	638	-
1985	1	553	5	1	48	17
1986	8	244	34	1	63	41
1987	3	2	-	1	24	-
1988	-	126	7	6	12	-
1989	-	136	-	-	73	-
1990	3	262	1	8	35	-
1991	47	157	6	543	326	28
1992	86	153	34	47	1113	38
1993	29	217	122	136	2783	88
1994	8	24	77	499	212	134
1995	31	346	29	264	25	34
1996	275	13	16	251	349	34
1997	6	25	37	488	113	24
1998	73	142	14	1346	8	115
1999	142	229	113	1192	56	16
2000	83	38	82	2448	9	28
2001	7	28	126	117	343	57
2002	6	16	15	691	386	123
2003	26	329	8	931	188	6
2004	13	6	24	548	271	19
2005	7	431	32	334	58	29
2006	14	89	19	146	569	2
2007	13	35	24	79	35	-
2008	64	189	22	168	341	1
2009	8	333	28	77	843	47
2010	1	172	38	15	92	4
2011	1	128	8	36	596	-
2012	38	143	33	68	975	-
2013	25	172	92	31	637	-
2014	41	159	73	252	19	15
2015	31	43	27	98	116	24

Figures

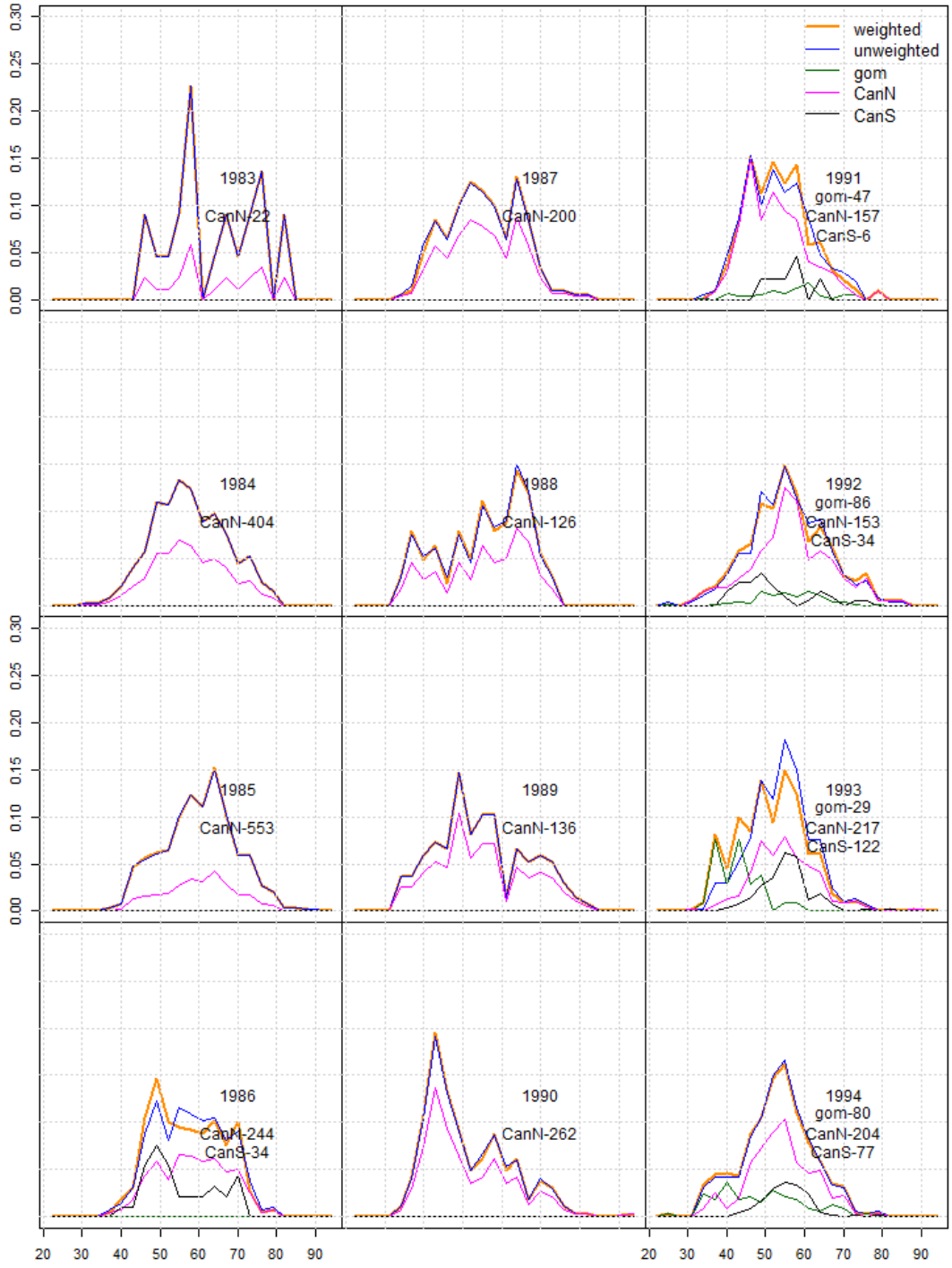

Figure 1. Weighted and un-weighted blueline tilefish length composition for handline gear by region by year.

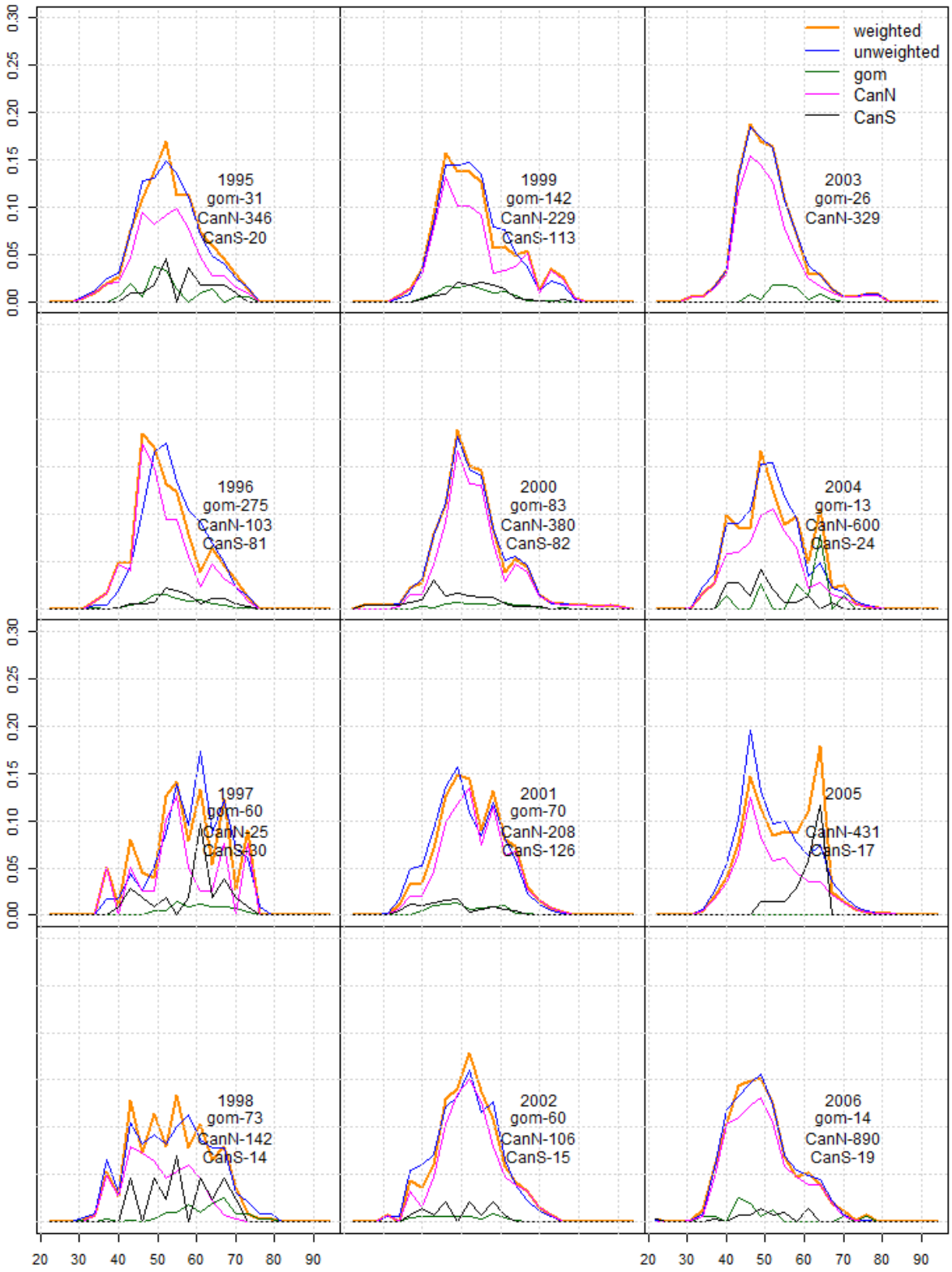

Figure 1 (continued).

Figure 1 (continued).

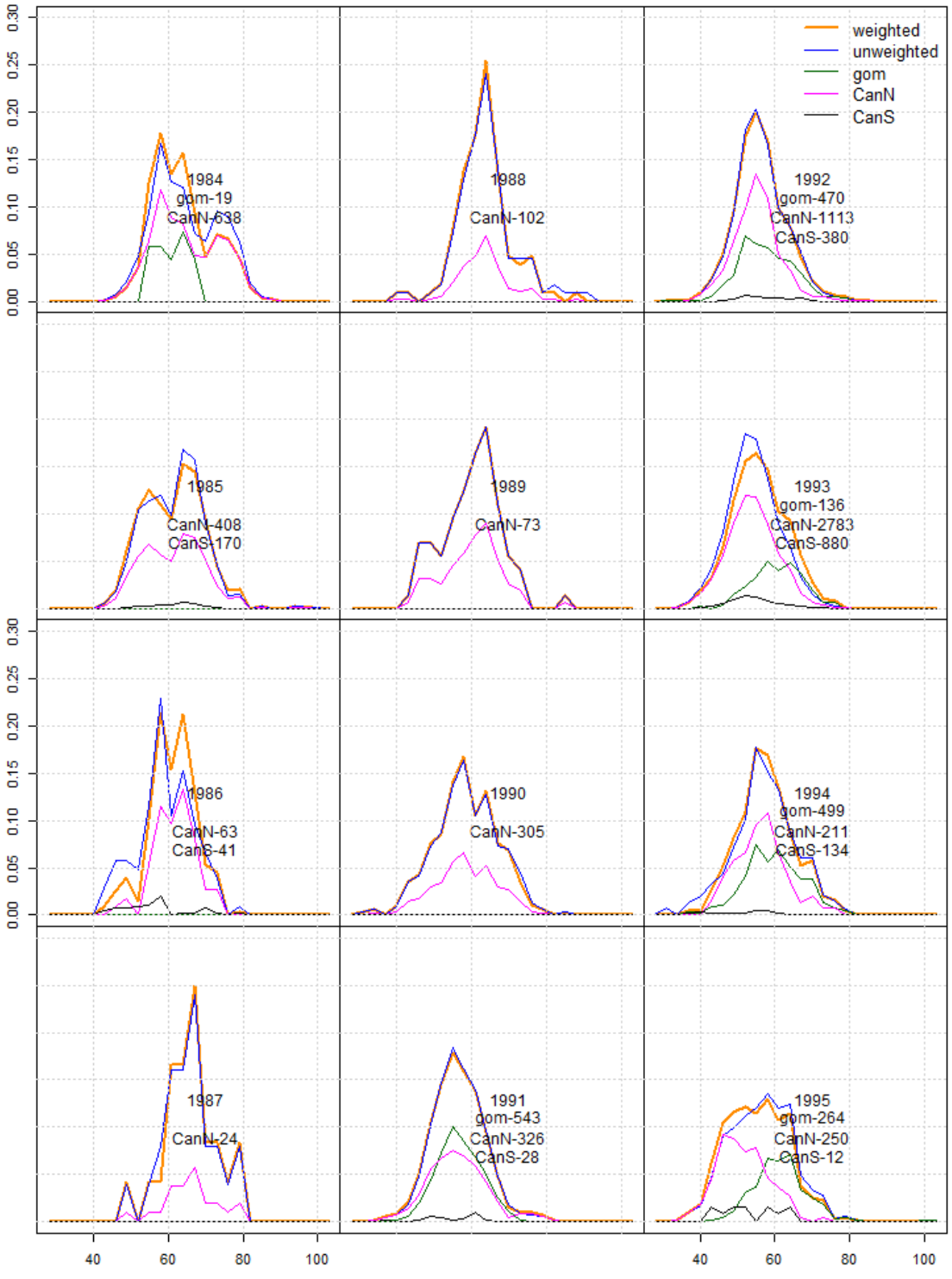

Figure 2. Weighted and un-weighted blueline tilefish length composition for longline gear by region by year.

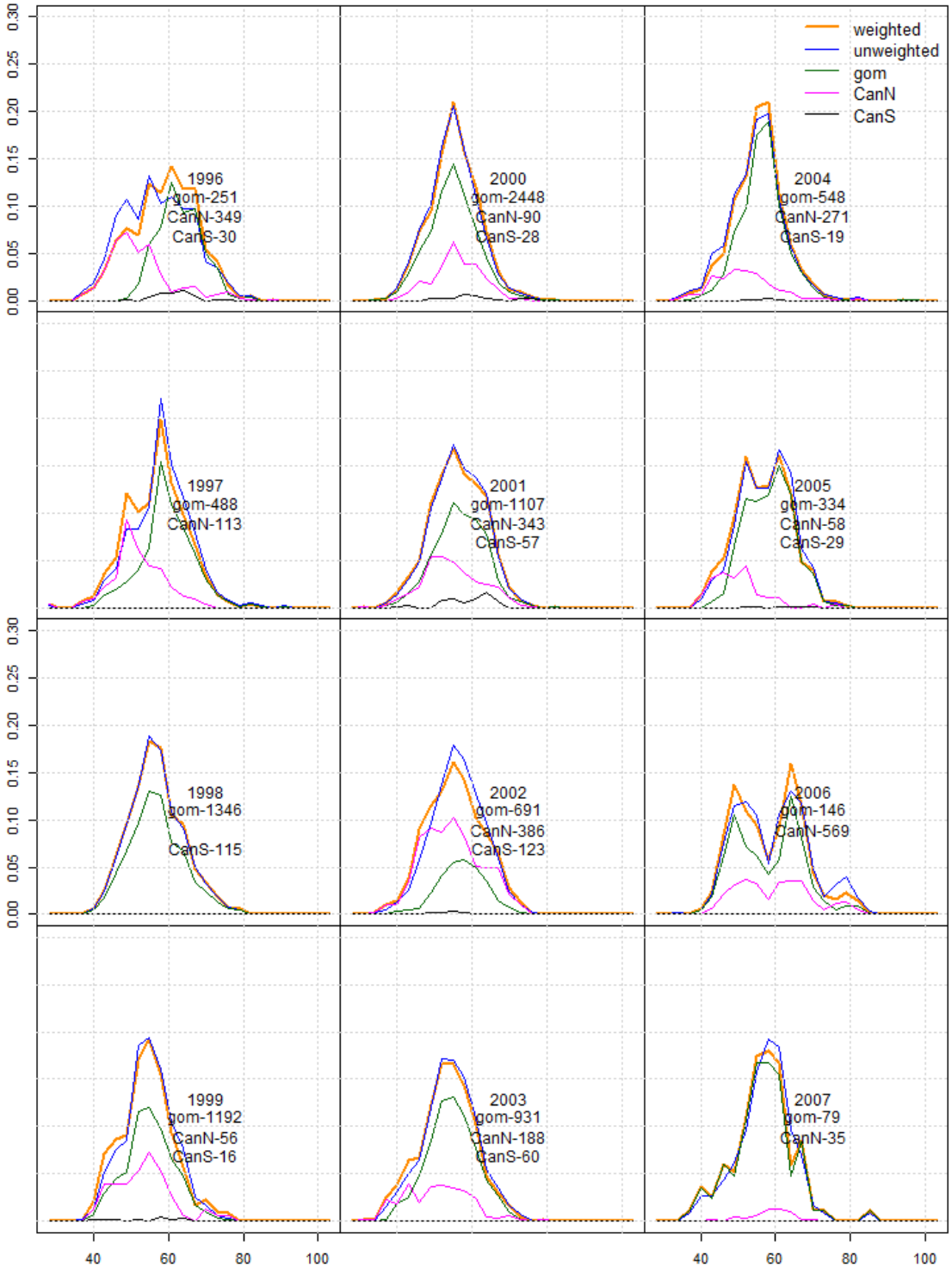

Figure 2. (continued).

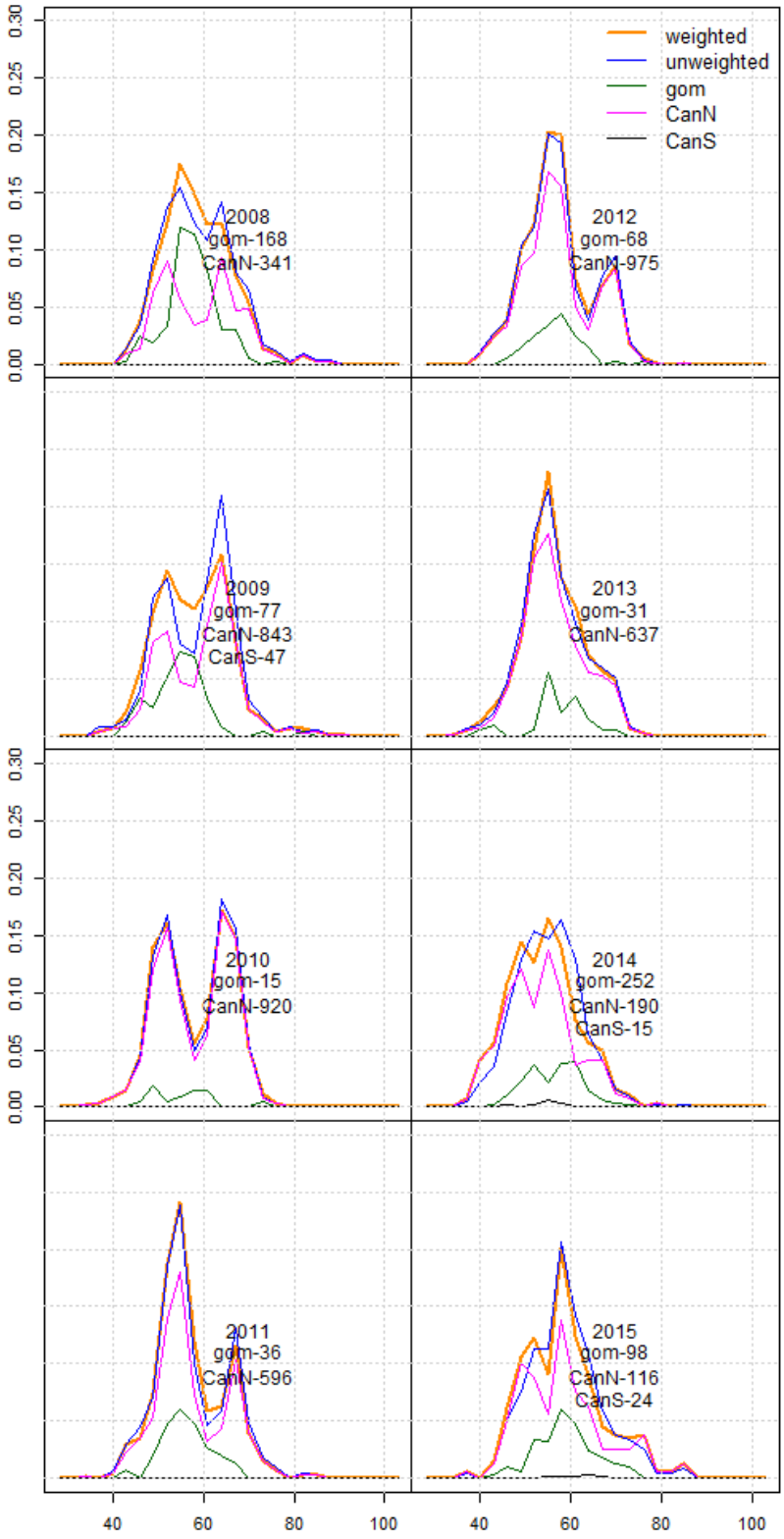

Figure 2. (continued).