A brief description of the Japanese Data(size and drift net) for the NPALB stock assessment in 2017 [1]

Kiyofuji,H., Ijima,H., and Ochi,D

National Research Institute of Far Seas Fisheries, Fisheries Research Agency
Shimizu, Shizuoka, Japan.

[1]This working paper was submitted to the ISC Albacore Working Group Stock Assessment Workship, 11-19, April 2017, held at the NMFS/SWFSC, La Jolla, CA, USA. Document not to be cited without authors permission.

A brief description of the Japanese Data(size and drift net) for the NPALB stock assessment in 2017

Kiyofuji,H., Ijima,H., and Ochi,D

Abstract
In this document, Japanese size sampled method and drift net data were described for the 2017 NPALB stock assessment. Following are contents of this document. 1.Overview of port sampling for size data, 2.Difficulties of merging size data and logbook data, 3.Drift net data (1972-1992).

Key words: size data, port sampling, gillnet data

Overview of port sampling for size data

The NRIFSF has collected size data for tuna and tuna like species to use for biological study and to provide to stock assessments as input data. There are several kinds of data source for the size data such as at-sea sampling and port sampling for the fish caught by commercial fisheries and onboard sampling by training and research vessels. In this doument, only the port sampling by the longline and pole-and-line fisheries was focused because these fisheries mainly target to catch and unload albacore (*i.e.* description of port sampling by the PS are not included but those description can be found in recent National Report Annual Report submitted to the WCPFC-SC).

Port sampling is an important way to collect size data and occupies the large percentage of size sampling which the NRIFSF has been conducting. Measurement is done at a timing between unloading from fishing vessels and starting of auction. Samplers randomly conduct measurement in general but conduct measurement for all individuals in some cases. In general, size data collected by port sampling is compiled on a monthly basis as temporal resolution and by specific blocks of $1^\circ \times 1^\circ$, $5^\circ \times 5^\circ$, $5^\circ \times 10^\circ$ or $10^\circ \times 20^\circ$ as geographical resolutions, depending on the width of the range of fishing position at the cruise. The temporal and geographical resolution is determined by the range of each cruise in which size sampling is done based on the information in the interview with the captain or fishing master of the fishing vessel at unloading sites and/or logbook data reported by fishermen. As a special case, skipjack unloaded as unfrozen fish is recorded in a different way from the above even in measurements by port sampling. In most cases of measurement of such skipjack, information of the fishing dates on a daily basis and fishing positions on a minute basis (finer than $1^\circ \times 1^\circ$ block) are recorded on the size database for skipjack, since fishing dates and fine positions can be specified by the interview. An example of albacore size measurements at the one of landing port and measurement sheet (**Fig.1**).

Although weight data measurements from longline increased from the late 1990's to 2000' and there are still substantial measurements in recent years(**Fig.2**), no weight data was included and proceeded for the NPALB stock assessment in 2017.

Difficulties of merging size data and logbook data

As described above, operated date, position and catch from port sampling were derived from interview. While to link information between size data (Table 1) and logbook data (Table 2) is only ID, those in size data from previous is usually missing and/or mixed the era name. Additionaly, there are no ship name in size data. Although both data were designed to be associated, no such procedure has been done. There have been no chance to reconsider both data format especially for the size data. This should be solved to keep quarity control of data set for the stock assessment purpose in near future.

Driftnet data

There are two kinds of driftnet fisheries which fishes albacore; large-mesh and squid driftnet fisheries which fish tunas and tuna-like species and flying squid, respectively. The large-mesh driftnet fishery, which commenced in 1972, primarily fished marlins and swordfish in the coastal waters. In the 1980's the main target species of this fishery was changed from marlins to albacore and then to skipjack tuna, as the fishing ground expanded towards offshore, whereas squid driftnet fishery commenced in 1978, and fished albacore as a bycatch in the high seas of the north Pacific. Those fisheries stopped operations in the high seas of the North Pacific in January 1993. This was a result of the General Assembly of the United Nations adopting Resolution 44/225 which placed a moratorium of the use of large-scale driftnets in the high seas. Hereafter the large-mesh driftnet fishery has targeted billfishes within the Japanese Economic Exclusive Zone (EEZ), mostly in Tohoku region (north of Tokyo).

Logbook for the large-mesh driftnet is available only for 1977-1992. Catch in number for each operation was recorded. Logbook coverage for the large-mesh driftnet was low (20-30%) in the 1980's, and it increased to more than 80% in the later period (Uozumi, 1993). Based on logbook data for large-mesh driftnet fishery, albacore was caught all year and main albacore fishing season seemed to be first to second quarter.

The total albacore catch of the driftnet fisheries rapidly increased from approximately 1,000 t in the late 1970's to approximately 12,000 t in the early 1980's (**Fig.2**) as expanding their fishing ground. The catch was between about 6,000 to 12,000 t for 1981-1990. The catch, however, declined to about 300mt or less since 1993 as a result of the moratorium. The catch ranged from about 100 to 300 t after 1993, except for 1,531 t in 2008.

Reference

Ijima,H., Ochi,D. and Satoh,K. (2016) Japanese catch statistics of North Pacific albacore tuna (*Thunnus alalunga*) for stock synthesis 3. *ISC/16/ALBWG-02/02-rev*.

Uozumi, U. (1993) The standardization of Japanese large-mesh driftnet albacore CPUE using the GLM model. *NPALBWS/93/27*. 9pp.

Table 1. Japanese Size data format.

No.	variables	Num. of digit	Description
1	species	2	0-19. Albacore:3
2	year	2	last 2 digits
3	quater	1	1-4
4	month	2	1-12
5	day	2	only high resolution data
6	ocaen	1	1=Pacific Ocean, 2=Indian Ocean, 3=Atlantic Ocean
7	level	1	1-6, spatial resolution
8	lat	2	latitude
9	latcode	1	1=North, 2=South
10	lon	3	longitude
11	loncode	1	1=East, 2=West
12	gear	1	1-12
13	vessel	1	1=fisheries, 2=R/V
14	unit	1	unit of measurement
15	site	2	place of measurement
16	gender	1	1=female, 2=male, 0=unknown
17	class1 - 12	3	length or weight
18	number1 - 12	3	number of individuals
19	ID	7	year(last 2 digits) + logbook registration No.

Table 2. Japanese logbook data format.

No.	variables	Num. of digit	Description
1	ID	9	year(YYYY) + registration No.
2	ship name	16	ship name in Japanese
3	vessel	1	fisheries (offshore, distant, R/V)
4	perm. num.	4	permission number
5	call sign	6	call sign of vessel
6	size	6	GRT of vessel
7	reg. No.	9	registration No. of vessel
8	date	8	operation date (yyyymmdd)
9	ocaen	1	1=Pacific Ocean, 2=Indian Ocean, 3=Atlantic Ocean
10	lat	4	latitude (ddmm)
11	latcode	1	1=North, 2=South
12	lon	3	longitude (dddmm)
13	loncode	1	1=East, 2=West
14	hpb	4	number of hooks per basket
15	hooks	5	total number of hooks
16	catch	3	total number of catch by species
17	catch	3	total weight of catch by species

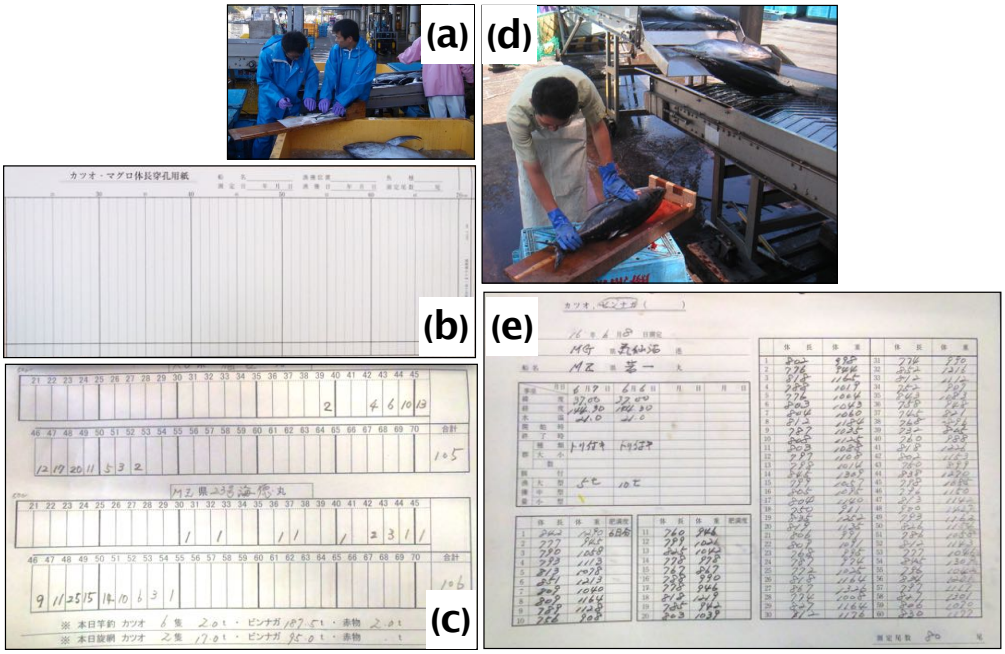

Figure 1. Albacore size measurement at one of landing port (a and b), and an example of size sheet (c).

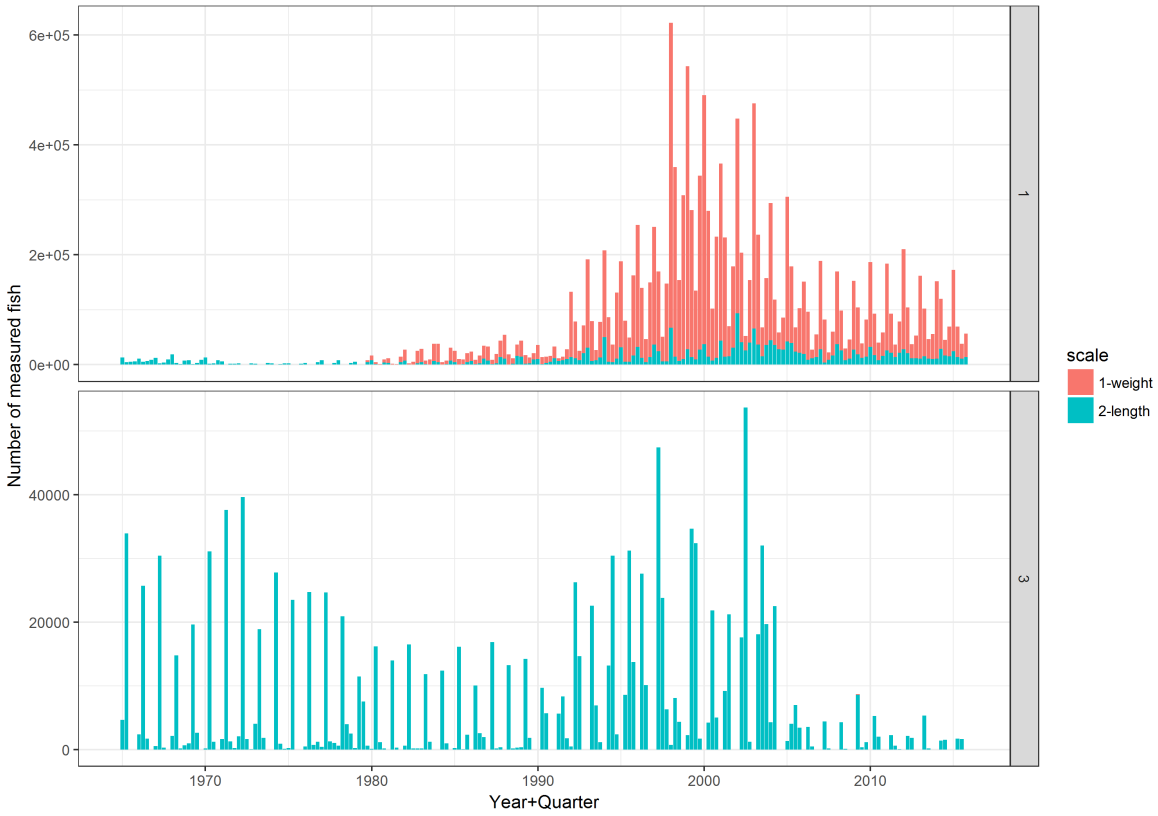

Figure 2. Number of measured albacore by fisheries (upper:LL, lower:PL) Red and blue represent measured unit, weight and length, respectively).

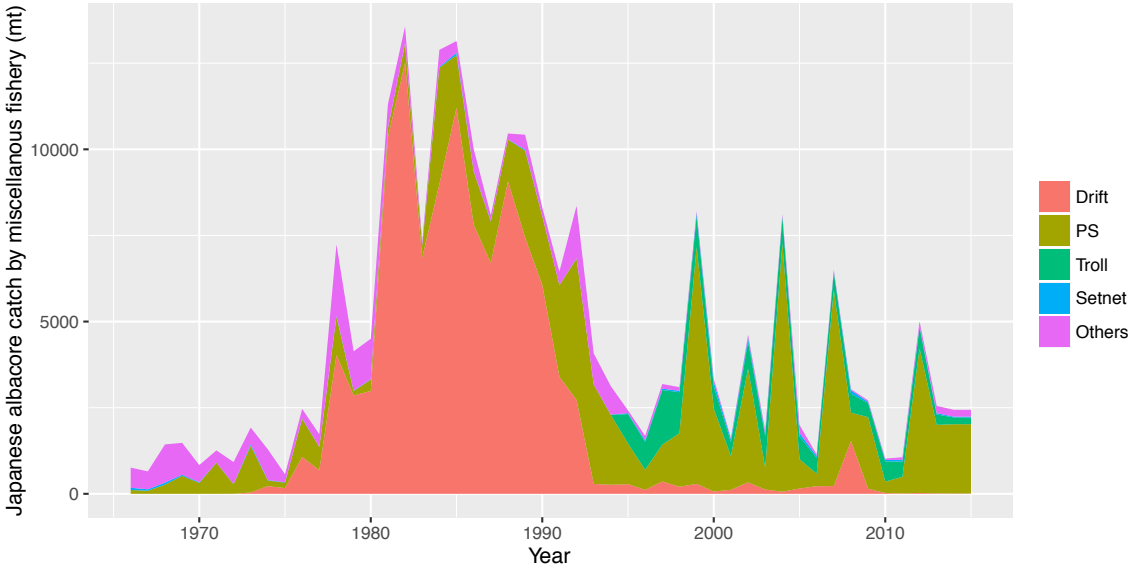

Figure 3. Albacore catch by Japanese miscellaneous fishery (Ijima et al.,2016).