

**From:** Barbara Muhling - NOAA Affiliate [barbara.muhling@noaa.gov](mailto:barbara.muhling@noaa.gov)  
**Subject:** Re: Albacore age/sizes for review  
**Date:** November 15, 2019 at 2:27 PM  
**To:** Natasha Hardy [nahardy@ualberta.ca](mailto:nahardy@ualberta.ca)



Excellent!

On Fri, Nov 15, 2019 at 11:16 AM Natasha Hardy <[nahardy@ualberta.ca](mailto:nahardy@ualberta.ca)> wrote:

This is really helpful, just by the way, and the Clemens paper is great! This also complements their diet paper.

On Tue, Nov 5, 2019 at 12:36 PM Barbara Muhling - NOAA Affiliate <[barbara.muhling@noaa.gov](mailto:barbara.muhling@noaa.gov)> wrote:

Morning,

It was pretty easy to get binned length records by year/state, so here they are. It's for all years, but I think this might give you a good idea of the variability we generally see year to year. I just dropped out year/state/size bin combinations where the measured fish came from <3 vessels. This was mostly just the occasional very large or very small fish.

I've also attached an old paper which talks a bit about catches and size ranges in the early 20th century off CA (it's a large file as it's a scan of the original paper, let me know if you can't access it). They show some simple length histograms by year, and you can see that although there's interannual variability, you see about the same year classes as you do today: it's pretty much always age-2 and/or age-3 dominating, with some age-1s and age-4/5s in some years. There are also some maps, so you can see the general areas fished.

From what I've seen, we tend to get a few more age 4-5 fish off Baja California, but other than that, you don't usually see strong changes in the age classes present off CA, and off OR/WA. So I think it would be reasonable to assume that the 1940s - 1960s information from CA would approximate what was seen off OR/WA in those years.

Hope that helps!

Barb

 **Clemens 1965 ALB California Historical.pdf**

On Tue, Nov 5, 2019 at 10:07 AM Natasha Hardy <[nahardy@ualberta.ca](mailto:nahardy@ualberta.ca)> wrote:

Hi Barb,

I'm definitely interested in the multi-model distribution of albacore tuna sizes across years, but for now I'm mostly using this information to estimate a size-based cut-off for prey items based on the Menard et al. (2006) paper's formula for prey to predator size relationships. So perhaps don't go to too much trouble for this. Just trying to bound the upper prey size at least.

Within the 1959 to 2014 range, I only need data for CA/OR/WA (separate as you suggest) for 1959-1961. Other than that, I need to probably get a range to use a proxy for 1941-1949? What do you think?

Thank you!  
Tash

On Mon, Nov 4, 2019 at 4:01 PM Barbara Muhling - NOAA Affiliate <[barbara.muhling@noaa.gov](mailto:barbara.muhling@noaa.gov)> wrote:

I don't see why not, as long as they're sufficiently aggregated (because there's a vessel identified for each record, they're technically confidential, just like CPUE data).

I have data from 1959 through 2014, although sampling effort is very uneven. Let me know what years you're interested in, and I will put something together. So we lose as few data as possible, I think it would be best to have them aggregated by state landed (CA/OR/WA). The lat/long locations provided with each record are patchy, and probably very inaccurate anyway.

The data are always multi-modal with the different year classes, so e.g. mean length won't tell you much. Maybe I could summarize them by ~5cm size class...

Let me know what you think,

Barb

On Mon, Nov 4, 2019 at 2:36 PM Natasha Hardy <[nahardy@ualberta.ca](mailto:nahardy@ualberta.ca)> wrote:

Just wondering if the non-statistically collated size estimates for albacore from historical catch data are at all available? Even if it's a dirty table, it would be cool to use that data as a proxy for knowing the actual lengths of the fish whose stomach contents I am analysing...

On Thu, Oct 31, 2019 at 11:42 AM Barbara Muhling - NOAA Affiliate <[barbara.muhling@noaa.gov](mailto:barbara.muhling@noaa.gov)> wrote:

Hi Tash,

Glad you enjoyed PICES, I thought it was a good meeting. Happy I went home on Sunday though, taking the little plane from Victoria to Seattle on the Friday would have been pretty puketastic.

I think the best source of growth information for the Atlantic is from the ICCAT manual, I've included a link to that in the Google sheet. It's a few years out of date though, there's at least one newer study which I've also linked to.

Xu et al. 2014 is the most up to date reference that I know of for the North Pacific, and that's the one used in the stock assessment too. However, there were a lot of very large adult albacore reported from Japanese longliners in the 1980s which were larger than the L-inf in the current growth model, so it's entirely possible that growth rates can change quite a bit through time.

For the old studies in the California Current, it's going to be tough to say much if they didn't report age, weight, or length. In general, fish here are juveniles, but especially off Baja they can be 5-6 years old, or very close to maturity. We have some length sampling data from landed fish going back to the late 1950s. It's in no way collected in a statistical manner, but the vast majority of measured fish are between 50 and 95cm FL. Most years the fishery has very clear peaks of two year olds and three year olds, but it gets muddier for older fish.

Hope that helps,

Barb

On Thu, Oct 31, 2019 at 9:51 AM Natasha Hardy <[nahardy@ualberta.ca](mailto:nahardy@ualberta.ca)> wrote:

Hey Barb,

I hope PICES wrapped up nicely for you! I had a bit of an eventful departure from Vancouver Island with the wind storm on Friday, but thoroughly enjoyed exploring the city this past weekend.

I'm back working on aspects of the albacore diet review, at the moment, and could really use a little help checking the values I have for their life stage, age and reported sizes across the world. In the dataframe linked to this email, I coloured in green where a value was directly measured for the publication, and in red I've coloured the values (typically for life stage category and age) where they were estimated, typically by myself but occasionally by the paper. For example, whether the albacore were juveniles or adults based on their reported size.

As you have time, would you mind having a look over the attached data table for the reported life stage/age/size of albacore and letting me know what you think? Mainly, I'm trying to fill in information that would be in the red boxes, and would appreciate your help if you know those values or where to find out - such as your recommendation for albacore growth curves from across the world. I've got something for the N Pacific, but not much for anywhere else.

This is very much appreciated!

Tash

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