# Butterfish
# Fishery Performance Report and

# Addendum to the *Illex*
# Fishery Performance Report

**July 2022**

The Mid-Atlantic Fishery Management Council's (Council) Mackerel-Squid-Butterfish (MSB) Advisory Panel (AP) provided input via a webform and/or email in July 2022 regarding butterfish and *Illex*. The questions focused mostly on butterfish because the AP already developed a 2022 *Illex* Fishery Performance Report [1] earlier in 2022. A question was also added for early input on 2022 *Illex* fishing. The Council dealt with longfin squid, chub mackerel, and Atlantic mackerel earlier in the year.

Advisors who provided input included Eleanor Bochenek, Gus Lovgren, Meghan Lapp, Gerry O'Neill, Jeff Kaelin, Pam Lyons Gromen, Greg DiDomenico, and Katie Almeida (8 out of 16 advisors). The questions and a summary of responses follow. The summary captures the individual responses and does not indicate a consensus from the AP.

**1. What factors have influenced recent butterfish catch (general, markets, environment, regulations, other, etc.)?**

In 2021, longfin squid was a more attractive option than butterfish for vessels.

COVID is still problematic overall. The cargo company Ocean Alliance stopped shipping out of Boston for 4 months. Containers were hard to come by. Chinese ports were backed up/delayed because of a lack of port workers. China was also requiring that US exporters indemnify them if they couldn't receive the shipment once it reached China; they wanted to ship back to the US at no penalty to themselves.

In 2022 so far, high fuel prices and a "tremendous" longfin squid fishery have reduced effort toward butterfish.

[1] https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/62266e163deb785057c50968/1646685718710/d_2022+Illex-Mack_FPR.pdf

**2. Are the current butterfish fishery regulations appropriate? How could they be improved?**

No recommendations were provided regarding current regulations, but there remains concern that imprecise butterfish biomass estimates may cause shutdowns in the longfin squid fishery if a low butterfish acceptable biological catch (ABC), and then a low butterfish cap on the longfin squid fishery, cause shutdowns of the longfin squid fishery (as occurred in the past).

**3. What would you recommend as butterfish research priorities?**

Recommendations included:

-Windfarm impacts (on both butterfish and the fishery);
-More accurate biomass estimates; directed surveys to obtain biomass estimates of butterfish;
-More precise techniques (e.g. molecular) for identifying butterfish in fish stomach contents as even minor amounts of digestion can render small individuals difficult to identify macroscopically (see Brian Smith's "Consumption of butterfish at various life stages by fishes of the Northeast US continental shelf.");
-Re-evaluating natural mortality ("M"); and
-Re-evaluating survey catchability (as the assessment report recommends).

**4. What else is important for the Council to know about butterfish?**

Although the butterfish fishery is small, it does affect other major fisheries like longfin squid. Newer Council members should know that though NMFS declared the stock overfished (in 2005) and closed the directed fishery for a decade, it was later discovered that the stock had never been overfished in the first place and the fishery suffered for no reason.

A State of the Ecosystem Report product should be developed that provides ecosystem-level advice/information for Councils to consider as specifications and other management measures are established for individual stocks. For example, a state of the ecosystem report summary page for each managed species could be created. It is very concerning that the biomass (and availability to predators) of Atlantic herring and Atlantic mackerel is so low and that both stocks are in low recruitment regimes. A number of studies (for example, see Overholtz and Link 2000[2]) describe how consumption data track prey abundance closely. In the Northeast shelf, butterfish may be rising in importance to predators. The Council (SSC) has used the 1992 Patterson advice (F=2/3M) for the last 10 years to set the butterfish OFL. Since the M estimate for butterfish is much higher than for most other forage species, it is questionable whether this is the best strategy. Since it has been 10 years since this strategy was first employed, it would seem to warrant a re-evaluation, especially given uncertainties around estimating M.

[2] Overholtz, W. J., Link, J. S., and Suslowicz, L. E. 2000. Consumption of important pelagic fish and squid by predatory fish in the northeastern USA shelf ecosystem with some fishery comparisons. – ICES Journal of Marine Science, 57: 1147–1159.

**5. The Illex Fishery Performance Report for the 2021 fishery was completed earlier this year and can be found in the documents linked above** [on the original webform]**. This report will be provided to the SSC as it sets a preliminary 2023 *Illex* quota in July. We don't have much more information now compared to when the SSC set the 2022 ABC back in March 2022, but we will have the research track peer review summary and some information about the 2022 *Illex* fishery, which has started slowly. The plan is that in March 2023 the SSC will review an update of the various indirect methods developed through the assessment (and used to set the 2022 ABC at 40,000 MT), and then set a final 2023 *Illex* ABC at that time. If there's anything you'd like to add regarding the 2021 or 2022 *Illex* fisheries, or anything else for the SSC to consider as it sets a preliminary 2023 *Illex* ABC, please do so here.**

The 2022 landings to date are minimal because many *Illex* fisherman have been focused on longfin squid. The summer longfin fishery has been strong, and most fresh harvest ("wet boat") vessels with both *Illex* and longfin permits have been engaging in the longfin fishery, especially since the fish are abundant and available close to port (which is important given high fuel costs). *Illex* are further offshore which would entail higher fuel costs. Freezer vessels still target *Illex* all summer regardless of what longfin are doing because that's what they were designed for, and since they can hold product indefinitely, tend to stay out on longer trips, with less running back and forth to port. (They can only freeze so fast also.)

Water temperatures have been pretty cold until recently and could be why we have seen such a slow start to the 2022 *Illex* season. It would be good for the SSC to touch base with the Squid Squad out of Woods Hole (Anna Mercer can provide contact information for that group). They are looking into oceanographic conditions that might be affecting the movement of *Illex* onto and off the shelf. They noted the lack of warm core rings this year as compared to the past.

To put the *Illex* ABC discussion in context, skates have almost the same ABC as *Illex*. Skates are caught by every single fishery in the GARFO region, whether directed or as bycatch, by every kind of gear, and they live on the shelf year-round. Skates have an ABC of 37,236 MT. But for an *Illex* fishery that is seasonal, only caught by a relatively small number of vessels, with only one type of gear, and where the majority of the stock range is out of reach of the fishery, the ABC is 40,000 MT. Last year it was 33,000 MT - a smaller ABC than skates. The comparison of risk of overfishing from the skate fishery vs the *Illex* fishery is much higher regarding skates than *Illex*. Yet, this is not reflected in the quota. Understanding that the *Illex* stock does not have a defined OFL, neither do skates. At the March SSC meeting, the methodology used evaluated a range of *Illex* quotas from 24,000 MT to 64,000 MT. A value of 47,000 MT was found to be consistent with the Council's Risk Policy with an escapement threshold of 50%. All other squid species given as comparable fisheries manage to an escapement of 40%. As using an escapement threshold of 50% is even more conservative than that, it is recommended that the SSC consider a 2023 ABC of 47,000 mt.

The research goal of 'real-time management' should be removed as operationally unlikely and with the potential to reduce the fishery's productivity. For example, a pre-fishery survey may miss the body of fish that could become available later in the fishing season.