

squid trip limit per single calendar day until the end of the respective quarter. The directed fishery would close when 95 percent of the total annual DAH has been harvested, with vessels restricted to a 2,500-lb (1,134-kg) *Loligo* squid trip limit per single calendar day for the remainder of the year. Quota overages from Quarter I would be deducted from the allocation in Quarter III, and any overages from Quarter II would be deducted from Quarter IV. By default, quarterly underages from Quarters II and III carry over into Quarter IV, because Quarter IV does not close until 95 percent of the total annual quota has been harvested. Additionally, if the Quarter I landings for *Loligo* squid are less than 80 percent of the Quarter I allocation, the underage below 80 percent is applied to Quarter III.

#### *Illex*

The overfishing definition for *Illex* squid states that overfishing for *Illex* squid occurs when the catch associated with a threshold fishing mortality rate of  $F_{MSY}$  is exceeded. Max OY is specified as the catch associated with a fishing mortality rate of  $F_{MSY}$ , while DAH is specified as the level of harvest that corresponds to a target fishing mortality rate of 75 percent  $F_{msy}$ . The biomass target is specified as  $B_{MSY}$ . The minimum biomass threshold is specified as  $\frac{1}{2} B_{MSY}$ .

The Council recommended annual measures for the *Illex* fishery at its June 2003 meeting. At that time, the most recent stock assessment information dated from 1999 (the 29th Stock Assessment Workshop; SAW 29). SAW 29 concluded that the stock was not in an overfished condition and that overfishing was not occurring. Due to the lack of adequate data, the estimate of yield at  $F_{msy}$  was not updated in the assessment so there were no yield estimates corresponding to the target fishing mortality rate. However, an upper bound on annual fishing mortality was computed for the US EEZ portion of the stock based on a model which incorporated weekly landings, relative fishing effort, and mean squid weights during 1994–1998. These estimates of the fishing mortality rate were well below the biological reference points. Therefore, the Council recommended that DAH should continue to be specified at 24,000 mt.

In September 2003, subsequent to the Council action, the results of an updated assessment of the *Illex* squid stock (the 37th Northeast Regional Stock Assessment Workshop; SAW–37) were released. SAW–37 concluded that overfishing was not likely to have occurred during the period 1992–2002.

SAW–37 found that it was not possible to evaluate the current biomass status for *Illex* squid relative to  $B_{msy}$  because the size of the stock could not be reliably estimated. SAW 37 noted that since 1999, NEFSC autumn survey abundance indices have been below the 1982–2002 average, but that it could not determine whether this trend is due to low abundance, low availability or both. The assessment noted that surface and bottom water temperatures in the mid-Atlantic Bight have been warmer than average during recent years, and that *Illex* abundance and biomass indices from the autumn surveys were significantly negatively correlated with bottom water temperature anomalies from the autumn surveys. SAW 37 concluded that this likely indicates an environmental effect on productivity. While landings have been below the 1982–2002 average since 1998, SAW 37 found that this could be due to the reduced effort observed during the time period, low biomass or both factors.

SAW 37 cautioned that, under current stock conditions, a DAH of 24,000 mt, which assumes a stock at  $B_{msy}$ , may not be sufficient to prevent overfishing. It also cautioned that the existing overfishing definition, which is based on  $F_{msy}$ , is not only difficult to estimate given the available information, but may also perform poorly given the stock's production dynamics. In addition, SAW 37 recommended that, given uncertainties in the stock distribution and population biology, the fishery should be managed in relation to the proportion of the stock on the continental shelf and available to U.S. fisheries. However, SAW 37 did not recommend specific action, and the assessment also noted that more knowledge of *Illex* is necessary to respond to these concerns. While cooperative research efforts are underway, there is currently no information to use to construct an alternative recommendation.

Despite the cautions within SAW 37, the assessment also concluded that it was unlikely that overfishing occurred during 1999–2002 for several reasons. Many of these reasons remain applicable to the proposal to maintain DAH at 24,000 mt for 2004. The reasons are: (1) The current small fleet size and effort levels make it unlikely that the fishery could exert the very high fishing mortality rate required to exceed the level recommended in the assessment ( $F_{50\%}$ ), (2) the short fishing season makes high annual average fishing mortality rates unlikely, (3) the restricted geographical distribution of the fishery makes high annual average fishing mortality rates for the entire

stock unlikely, (4) relative exploitation indices have declined considerably since 1999 and have been below the 1982–2002 median since then, and (5) preliminary model results indicate that fishing mortality rates as high as  $F_{50\%}$  are unlikely to have occurred even during 1999, when relative fishing mortality was the highest in recent years.

Therefore, NMFS proposes that the annual specifications for *Illex* squid should remain unchanged for 2004, agreeing with the Council that there is no basis for concluding that the specification are likely to result in overfishing. The specification of Max OY, ABC and DAH would remain unchanged from 2003 at 24,000 mt. As the Council noted, the management program for *Illex* requires the directed fishery to be closed when 95 percent of the quota is harvested (22,800 mt). While incidental landings are allowed following this closure, the amount of *Illex* caught incidentally by vessels targeting other species is limited due to the specialized nature of the *Illex* fishery. *Illex* is harvested offshore near the edge of the continental shelf during the summer. The species spoils quickly, so freezing or refrigerated seawater equipment must be utilized to prevent spoilage. Similar to *Loligo* squid, when a trip limit is in effect, vessels are prohibited from possessing or landing more than the specified amount in a single calendar day. Few vessels are expected to invest in the necessary equipment to pursue *Illex* under the incidental catch allowance.

The FMP does not authorize the specification of JVP and TALFF for the *Illex* squid fishery because of the domestic fishing industry's capacity to harvest and to process the OY from this fishery.

#### **Increase in the *Illex* Squid Catch Limit for Squid/Butterfish Incidental Catch Permit Holders**

The Council has also recommended, and NMFS proposes, to increase the *Illex* squid catch limit for squid/butterfish incidental catch permit holders from 5,000 lb (2.27 mt) to 10,000 lb (4.54 mt). This also represents the trip limit in effect when the directed fishery is closed. *Illex* squid is a high volume, low value species, which is taken offshore near the edge of the continental shelf during the summer. The species also spoils rapidly, so either freezing or refrigerated seawater equipment is necessary to hold the catch and deliver it shoreside in a marketable condition. Given the substantial capital investment required to prosecute this fishery, the Council