

recent removals are in excess of the stock's ability to maintain its current population size. If an analysis of biomass levels leads to the determination of overexploitation, the Council would adopt measures to eliminate overfishing via either a framework adjustment or an amendment to the FMP.

The thresholds for F are based on annual percentage declines of the three-year average of the NEFSC trawl survey (spring or autumn, depending on the species). The percentages are specified for each species individually, based on historical variation within the survey. The F thresholds also include a precautionary "backstop" that indicates that overfishing is occurring if the trawl survey mean weight per tow declines for three consecutive years. The reference points and selected time series could be re-specified through a peer-review process and/or as updated stock assessments are completed.

#### **Winter and thorny skates**

Winter and thorny skates would be considered to be in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing would be considered to be occurring when the three-year moving average of the autumn survey mean weight per tow declines by 20 percent or more, or when the autumn survey mean weight per tow declines for three consecutive years.

#### **Smooth and clearnose skates**

Smooth and clearnose skates would be considered to be in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing would be considered to be occurring when the three-year moving average of the autumn survey mean weight per tow declines by 30 percent or more, or when the autumn survey mean weight per tow declines for three consecutive years.

#### **Barndoor skate**

Barndoor skate would be considered to be in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the mean weight per tow observed in the autumn trawl survey from 1963–1966 (currently 0.81 kg/tow). Overfishing would be

considered to be occurring when the three-year moving average of the autumn survey mean weight per tow declines by 30 percent or more, or when the autumn survey mean weight per tow declines for three consecutive years.

#### **Little skate**

Little skate would be considered to be in an overfished condition when the three-year moving average of the spring survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the spring trawl survey from the selected reference time series. Overfishing would be considered to be occurring when the three-year moving average of the spring survey mean weight per tow declines by 20 percent or more, or when the spring survey mean weight per tow declines for three consecutive years.

#### **Rosette skate**

Rosette skate would be considered to be in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series. Overfishing would be considered to be occurring when the three-year moving average of the autumn survey mean weight per tow declines by 60 percent or more, or when the autumn survey mean weight per tow declines for three consecutive years.

These proposed overfishing definitions incorporate the biomass targets and thresholds that were developed at SAW 30. The FMP contains additional discussion of the rationale for the biomass reference points for each skate species.

#### **Optimum Yield (OY)**

The SAW 30 Working Group determined that the traditional approaches that are used to estimate MSY are not appropriate in the case of skates for two principal reasons: There is no reliable time series of commercial fishery landings or discards for any of the individual species, and the time series for the complex as a whole is considered to be incomplete; and, very little reliable and current growth and maturity information is available for any of the species in the complex and very little information is available on the length composition of the landings and discards. Together, these factors preclude the estimation of MSY from sequential population (e.g., age- or length-based virtual population analysis), biomass dynamics (e.g., surplus production models), or dynamic

pool models (e.g., yield-per-recruit analysis). Therefore, MSY for the individual skate species and/or the complex as a whole cannot be estimated at this time. A discussion of the alternative methodologies that were considered to estimate MSY (e.g., sequential population analysis, dynamic pool models, catch history models, etc.) and the conclusions that were drawn are provided in the FMP.

The National Standard Guidelines (NSGs) allow the specification of a fishery-wide OY for a mixed-stock fishery, where management measures for separate target harvest levels for individual stocks may be specified, but are not required. For the same reasons discussed relative to MSY, these approaches cannot be adopted to estimate OY at this time.

The following OY specifications for each species in the NE skate complex are based on the management measures that the Council included in the FMP. Consistent with the NSGs, the Council intends that OY cannot exceed MSY or the allowable portion of MSY necessary to be consistent with the MSY-based control rule. As better fishery information becomes available, these OY specifications may be revised and/or refined.

#### **Winter skate**

Because fishery data are lacking, there is currently no time series of catch or landings of winter skate on which to base an absolute specification of OY. The OY for winter skate would therefore be defined as the amount of winter skates that are harvested legally under the provisions of the FMP and the yield that results from the management measures in other fisheries, to the extent that these measures further impact (and likely reduce) the harvest of winter skates.

#### **Little skate**

Since abundance of the little skate resource has increased considerably over a time period that coincides with the operation of the bait fishery, it can be assumed that the resource is being harvested at an F that is below FMSY. The OY for little skate would therefore be defined as the amount of little skates that are harvested for bait legally under the provisions of the FMP.

#### **Smooth, thorny, and barndoor skates**

The interaction of skate fishing and multispecies fishing suggests that even more benefits will be afforded to smooth, thorny, and barndoor skates as fishing effort is reduced further in the NE multispecies fishery. Moreover, the year-round groundfish closed areas in