

In 2016, the estimated discards formed about 46 percent of the catch weight and the proportion of discards in catch has decreased the last year compared to the previous years (Figure 2.2.1). In numbers, the available data indicates that close to 92% of the cod caught in the Kattegat is discarded. Discarding has in previous years mostly affected ages 1–2 but in 2015 and 2016 it also included both age 3 and 4. The year class of 2016 was a higher than the previous years (although below average) and is now constituting to 66% of the total numbers of cod in Kattegat 2018 (Figure 2.2.4). The large amount of 1 year cod 2017, increased the discard in numbers as the discard was constituting of mainly one year old fish (Figure 2.2.2, 2.2.4)

2.2.1.4 Unallocated removals

Unreported catches have historically been considered to be an issue for this stock, estimated as part of unallocated removals within the assessment model. Last benchmark (WKBALT 2017) concluded the catch data to be of reasonable quality from 2011 onwards. Major issues identified at WKBALT (2017) that could explain the unallocated removals estimated in the model include inflow of recruits from the North Sea cod and their return migration when they become mature, as well as possibly increased natural mortality due to seal predation.

2.2.2 Biological composition of the landings

2.2.2.1 Age composition

Historical total landings in numbers by age and year are given in Table 2.2.6.

2.2.2.2 Maturity at age

The historical time series of visual based maturity estimations used in the assessment are presented in Table 2.2.9. The estimates are based on IBTS 1st quarter survey. Due to low number of cod in the survey, the maturities in recent years are based on a running mean of 3 years.

2.2.2.3 Natural mortality

A constant natural mortality of 0.2 was assumed for all ages for the entire time series.

2.2.2.4 Quality of the biological data

Both Danish and Swedish sampling data were available from the commercial fishery in 2017. Danish and Swedish commercial sample sizes are shown in Table 2.2.3. and Table 2.2.4. Landings were allocated to age groups using the Danish and Swedish age information as shown in Table 2.2.5. The catch numbers followed the same procedure as the landings and catch in numbers by age is presented in Table 2.2.6)

Mean weight at age in the landings in 2017, presented in Table 2.2.7, and was provided by Sweden and Denmark. Historical weight-at-age in the landings is given in Table 2.2.7 for all years included in the assessment.

Mean weight at age in the stock is based on the IBTS 1st quarter survey for age-groups 1–3. Due to low number of cod in the survey, the weights in the stock in recent years are based on a running mean of 3 years. The weight of ages 4–6+ were set equal to the mean weights in the landings. The historical time series of mean weight-at-age in the stock is given in Table 2.2.8.