

Maturity-at-age

Maturity-at-age is based on measurements obtained from spring survey. The survey time is close to the spawning time making visual detection of maturity stages optimal. Maturity-at-age data from surveys are considered to give better estimates of maturity-at-age in the stock than those from landings data, in particular because of limited ungutted samples in the landings.

Since the spring survey only commenced in 1985, maturity values prior to that were obtained from a relationship between maturity-at-age in the landings and the survey from 1985–2004.

Natural mortality

A fixed natural mortality of 0.2 is used both in the assessment and the forecast. The proportion of natural mortality before spawning (pM) and the proportion of fishing mortality before spawning (pF) are also set as constants:

	AGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	pM	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
2	pF	0.00	0.00	0.09	0.18	0.25	0.30	0.38	0.44	0.48	0.48	0.48	0.48	0.48	0.48

Survey indices

Two groundfish surveys, conducted by the Marine Research Institute (MRI) in Iceland, are used directly in assessment of cod, the Icelandic Groundfish Survey conducted annually in March since 1985 (here referred as the March survey or SMB) and the Autumn Groundfish Survey conducted annually in October since 1996 (here referred as the Autumn survey or SMH). Both are bottom-trawl surveys. The March survey is conducted on the continental shelf at depths shallower than 500 m and has a relatively dense station-net (approximately 600 stations towed annually). The Autumn Survey on the other hand has around 380 stations towed annually and covers larger area at depths down to 1500 m, so the density of stations is lower.

Large part of the following text is taken from citation. Where applicable the emphasis has been put on cod. The manual on how the surveys in 2009 were conducted is available in English at MRI website (citation) but the survey protocol has not changed much since 2009 and for cod things related to index have not changed much since 1989, except for weighting of all cod sampled for otoliths since 1993. The weighting has some effect on estimated mean weight-at-age. Still variability of condition only explains 10–20% of variability of mean weight-at-age while variability of length-at-age explains 80–90%.

The spring survey

Timing, area covered and tow location

The optimal time of the year to conduct the survey was considered to be in March, or just before and during the spawning of cod in Icelandic waters. During this time of the year, cod is most easily available to survey gear as diurnal vertical migrations are at minimum (citation).

The total number of stations was decided to be 600. The reason of having so many stations was to decrease variance in indices but was within the constraints of what was feasible in terms of survey vessels and workforce available. With 500–600 tow-stations