Stock Annex: Sole (*Solea solea*) in divisions 7.b and 7.c (West of Ireland)

Stock specific documentation of standard assessment procedures used by ICES.

Stock: Sole

Working Group: Working Group for the Celtic Seas Ecoregion (WGCSE)

Created:

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A. General

A.1. Stock definition

In 7.b there are two distinct areas where sole are caught: an area to the west of the Aran Islands and an area in the north of 7.b which extends into 6.a (the Stags and Broadhaven Ground). It is not known how much exchange there is between sole on the Aran Grounds and those on the Stags Ground.

A.2. Fishery

Sole in 7.b are mainly caught by Irish vessels on sandy grounds in coastal areas. Sole catches in 7.c are negligible. The landings and lpue of sole in 7.b,c appear to have been more or less stable since the start of the logbooks' time-series in 1995 (WD1, WGCSE 2009 and Figure 7.12.2).

A.3. Ecosystem aspects

B. Data

B.1. Commercial catch

Landings data are available.

B.2. Biological

Due to the low volume of landings, no sampling of this stock takes place.

B.3. Surveys

The IGFS-WIBTS-Q4 covers 7.b but the gear is not particularly suited for flatfish and catchability is very variable.

B.4. Commercial cpue

The commercial lpue time-series may not be reflective of overall stock abundance due to changing fishing practices.

B.5. Other relevant data

C. Assessment: data and method

Model used: Depletion-Corrected Average Catch (DCAC; MacCall, 2009)

Software used: NOAA Fisheries Toolbox: DCAC.exe

Model Options chosen:

Because the value of the depletion delta parameter is unknown, a range of values were used (10%, 50% and 90%; delta is the difference in biomass in the first year and biomass in the last year as a proportion of the virgin biomass (unfished vulnerable abundance). All other settings are based on default values and recommendations from MacCall (2009).

Land CV	M	StDev	Fmsy/M	StDev	Bmsy/B0	StDev	Delta	StDev
0.2	0.1	0.5	0.8	0.2 lognormal	0.25	0.1 bounded 0-1 beta	0.1, 0.5, 0.9	0.1 bounded 0-1 beta

Input data types and characteristics:

Because average catch is analysed, the year-range chosen can have a large influence on the results. Two year ranges were tested: 1950–present (the time period after WWII when the stock was heavily exploited) and 1995–present (the time period when the landings showed a declining trend).

D. Short-term projection

E. Medium-term projections

F. Long-term projections

G. Biological reference points

H. Other issues

I. References

MacCall, AD. 2009. Depletion-corrected average catch: a simple formula for estimating sustainable yields in data-poor situations. ICES J Mar Sci 66:10 p. 2267–2271.