ICM testing

The stocks chosen for testing were those with the most complete data.

Some catch information was missing for certain years. These years are marked with “?” in the plots that follow. The median annual catch was assumed for missing years.

Catch data for *Sprattus sprattus* (European sprat) were manually converted to be on the 1000s scale, in order to align with abundance data.

**Stocks chosen:**

"ICES-HAWG\_NS-IV 3a,7d\_Clupea\_harengus"

So this stock declines in abundance quickly, once it does that it does recreate the patterns observed in the Assessment model, so it does well in a ‘relative’ sense but not in an absolute sense.

"ICES-AFWG\_NEA1-2\_Melanogrammus\_aeglefinus"

Really good fit to the trend. Starts at age 3 so I suspect we’ll need to offset the fecundity time series to line up the moms that produced recruits with the actual recruits produced.

"ICES-HAWG\_CS 6a- 7b-7c\_Clupea\_harengus"

Much better fit than the NS Herring stock in absolute terms. Still underestimates due to divergences at the ‘end’ (our start) of the time series, absolute trend is really good.

"ICES-WGBFAS\_BS 22-32\_Sprattus\_sprattus"

Gets the relative trend right, but really wants there to be way more biomass than the model suggests. The mid 90s to early 2000’s is really where it goes off the rails and there is a decline in M during this period, so that could be a contributing factor here.

"ICES-WGNSSK\_NS4\_Scopthalmus\_maximus"

Odd one in that it has the absolute values pretty well estimated but shows trends that the VPA isn’t showing. Missing years of catch which is a problem, but isn’t really related to the odd behaviour.

"ICES-HAWG\_WBS 22-24\_Clupea\_harengus"

Does a decent job recreating the trend, it’s a lot like CS Herring, slightly underestimates things from the start (end), does get better over time and does a nice job at the end. Note M @ age 0 M is weird, it’s lower than the M @ age 1, though the Numbers in the time series seems to back this up…

Table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Stock | Ages & TS | Weight @ Age | Age @ Mat | Natural Mortality | Fishing Mort | Fit | Comment |
| NS Herring | 0-8  1947-2016 | Varies, fixed in middle of ts | Varies, knife edge @ 2 @ start of ts | Varies, high for age 0’s | Convex shape  ≈ 0.2-1.3, recent ≈0.2-0.4 | Relative good, underestimates numbers |  |
| NEA Haddock | 3-13  1950-2017 | Varies, fixed in early years | Varies, late maturing ≈7 | Varies 3-6, fixed for older. Not too high | Declining,  ≈ 0.2-0.9  <0.5 since 1990 | Relative and absolute trends excellent |  |
| CS Herring | 1-9  1957-2015 | Varies, fixed in early years | Varies, fixed early years, mat @ 2 | Fixed but varies by age | Convex shape  ≈ 0.05-0.7 recent < 0.1 | Relative trend good, slight underestimate |  |
| BS Sprat | 1-7  1974-2015 | Varies | Fixed, mat @ 2 | Varies, fixed in the last few years | Concave shape  ≈ 0.15-0.5  Recent ≈ 0.4 | Relative trend good, overestimates numbers |  |
| NS Turbot | 1-8  1981-2016 | Varies | Fixed, mat @ 3 | 0.2 for all years and ages | Slight decline  ≈ 0.07 – 0.3 | Relative trend poor, absolute good | no catch some years |
| WBS Herring | 0-8  1991-2015 | Varies | Fixed, mat between 1 & 2 | Fixed, first 2 age classes have higher M. | Declining,  ≈ 0.2-0.6 | Relative trend good, slight underestimate |  |















