

## Redfish in Division 3M










Advice June 2015

**Recommendation for 2016 and 2017**

Recent decline in proportion of *S. mentella* and *S. fasciatus* allows a marginal increase in TAC in 2016-17 to 7000t, without changing the exploitation rate on these species and having the stock remain at a relatively high level.

**Management objectives**

No explicit management plan or management objectives defined by Fisheries Commission. General convention objectives (NAFO/GC Doc. 08/3) are applied.

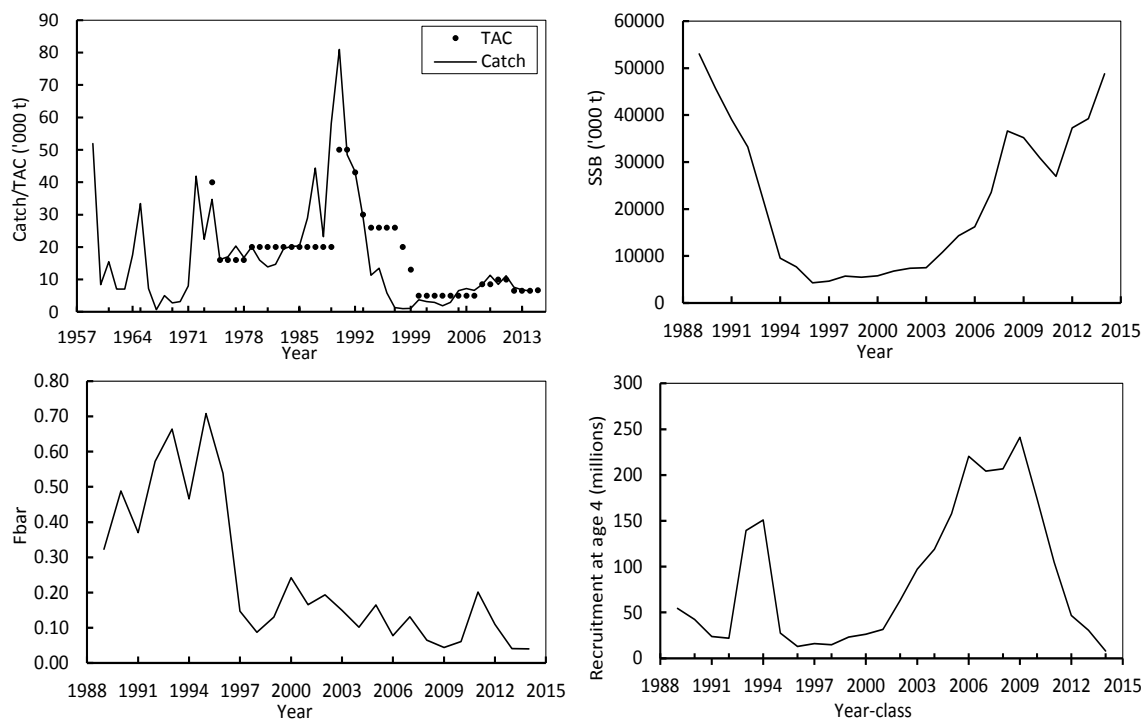
Convention objectives	Status	Comment/consideration		
Restore to or maintain at $B_{msy}$		$B_{msy}$ unknown. Stock above historical average level		OK
Eliminate overfishing		$F_{msy}$ unknown, catch at low level over past 19 years		Intermediate
Apply Precautionary Approach		Reference points not defined.		Not accomplished
Minimise harmful impacts on living marine resources and ecosystems		VME closures in effect, no specific measures, low bycatch reported.		Unknown
Preserve marine biodiversity		Cannot be evaluated		

**Management unit**

Catches of redfish in Div. 3M includes three species of the genus *Sebastes*; *S. mentella*, *S. marinus* and *S. fasciatus*. For management purposes they are considered as one stock (STACFIS 2015). Advice is based on data only for two species (*S. mentella* & *S. fasciatus*), labeled as Beaked redfish.

**Stock status**

The stock has increased since 1996 and has remained at a relatively high level in recent years. Fishing mortality has remained stable at low level since the late 1990s. Recruitment has declined in the past five years.

**Reference points**

No updated information on biological reference points was available.

### Assessment

Input data comes from EU Flemish Cap bottom trawl survey and the fishery (STACFIS 2015) and is considered good quality. A quantitative model (XSA) introduced in 2003 was used (STACFIS 2013). Model settings were in general kept unchanged from last assessment, with a natural mortality at 0.4 through 2006-2010, declining on 2011 and 2012 to 0.125. The magnitude of beaked redfish natural mortality ( $M$ ) between 2013 and 2014 has been analysed on the sensitivity analysis of the present assessment, pointing out to a marginal increase of  $M$  to 0.14.

The next full assessment of this stock will be in 2017.

### Projections

Given the uncertainty about the actual level of current natural mortality (see STACFIS, 2015) and its impact on short term model projections, Scientific Council decided not to use model predictions as a basis for the recommendation.

### Human impact

Mainly fishery related mortality. Other sources (e.g. pollution, shipping, oil-industry) are undocumented.

### Biology and Environmental Interactions

Since 2004 a rapid increase was observed on survey biomass both of golden (*Sebastes marinus*) and Acadian (*Sebastes fasciatus*) redfish stocks. Due to their shallower depth distributions these two redfish species overlap with cod to an extent greater than deep sea redfish (*Sebastes mentella*). Since 2006, the cod stock started to recover, while those two redfish stocks declined sharply. Redfish is an important component in the diet of cod, especially on those years when successful recruitment events were observed in redfish stocks.

### Fishery

Redfish is caught primarily in bottom trawl fisheries, but some landings are reported from fisheries with mid-water trawl. Cod is the main bycatch species in shallower waters, and Greenland halibut in deeper waters. In turn, redfish are also caught as bycatch in fisheries directed for cod and Greenland halibut. The fishery in NAFO Div. 3M is regulated by minimum mesh size and quota.

Recent catch estimates and TACs (000 t) are as follows:

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
TAC	5	5	5	8.5	10.0	10.0	6.5	6.5	6.5	6.7
STATLANT 21	6.3	5.6	7.9	8.7	8.5	9.7	6.7	6.8	6.5	
STACFIS	7.2	6.7	8.5	11.3	8.5	11.1	7.6	7.8	7.5	

### Effects of the fishery on the ecosystem

No specific information is available. General impacts of fishing gears on the ecosystem should be considered. A large area of Div. 3M has been closed to protect sponge, seapens and coral.

### Special comments

Recent variability in levels of natural mortality undermine the general principle of using an  $F$  reference point for this stock.

In line with the precautionary approach, female spawning stock biomass should remain above the range of SSBs which generated the good year classes of the 2000's.

**Sources of information:** SCR Docs. 15/017, 028; SCS Docs. 15/04, 05, 06, 07