



Recovery in the Population Abundance of Sensitive Fish Species



MSFD Descriptor: 1 - Biological diversity
MSFD Criterion: 1.2 -Population size

Key Message The decline in abundance of sensitive fish species has been halted in the Celtic Seas and Greater North Sea. However, significant recovery of populations is only apparent in the Celtic Seas

Background

OSPAR's strategic objective with respect to biodiversity and ecosystems is to halt and prevent further loss in biodiversity, protect and conserve ecosystems and to restore, where practicable, ecosystems, which have been adversely impacted by human activities.

There are three fish indicators assessed in the Intermediate Assessment 2017. This indicator addresses the extent of population recovery among sensitive species. Fish species with life history traits such as large ultimate body size, slow growth rate, large length and late-age-at-maturity, are particularly sensitive to additional sources of mortality, for example fishing mortality. Populations of such species are known to have declined markedly in abundance through the 20th century, a period of marked expansion in fishing activity across the area assessed. Recovery in population abundance among a significant fraction of these species is therefore needed.

This assessment is calculated using catch data from scientific groundfish surveys. These are standardized monitoring programmes that occur each year in the same period taking representative samples according to specific guidelines.

Results

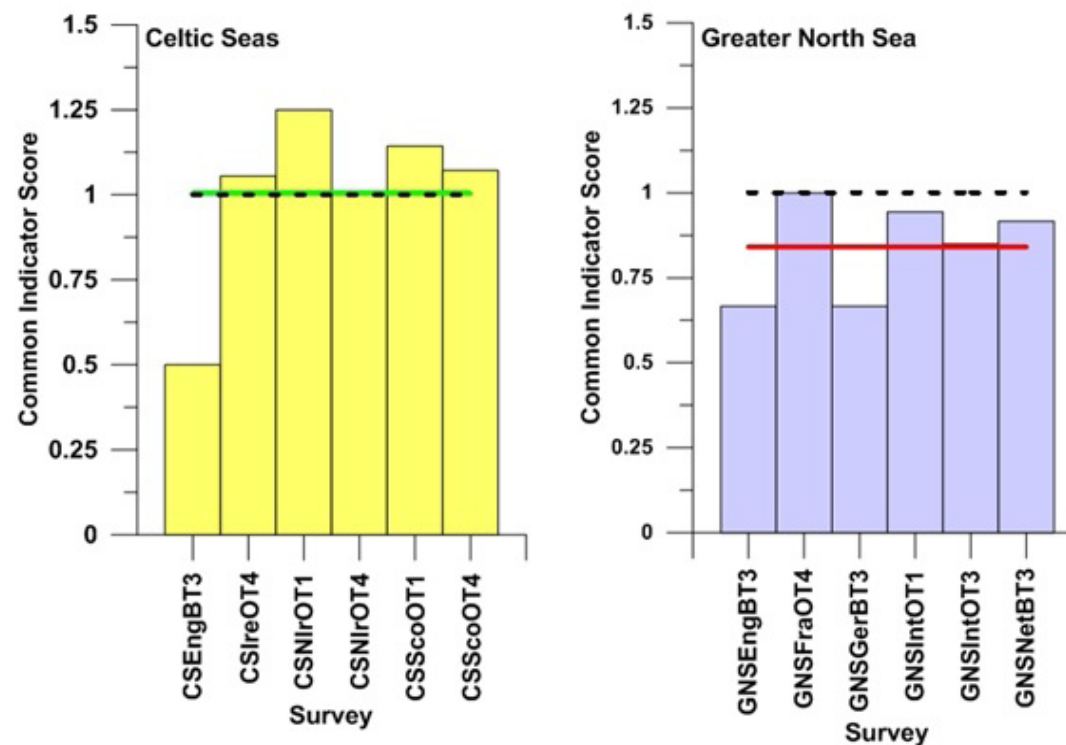
The abundance of sensitive fish species is assessed against two different sets of assessment values. The first assessment examines whether population recovery is underway and the secondary assessment examines whether population decline has been halted. For the purposes of the Intermediate Assessment (IA) 2017, the assessment year was the last year in each survey time series for which data were available. Both assessments use two sensitivity metrics to define suites of sensitive species (Average Life-history Trait (ALHT) and Proportion Failing to Spawn (PFS)). Both metrics rely on species' life trait information. Generally consistent results using either metric demonstrate that assessment outcomes were robust to choice of metric. However, the principal assessment outcome should be based on the more recently developed PFS metric.

Results were integrated across surveys within OSPAR regions to determine if the assessment values for recovery or halting decline were met using both

'averaging' and 'probabilistic' integrating procedures. Choice of integration procedure had minimal effect on assessment outcomes. Here results for the assessments based on the PFS metric using the 'averaging' integration method are presented. Population recovery among a significant number of sensitive fish species was evident in the Celtic Seas, but not in the North Sea (Figure 1).

Figure 1: Outcomes against the 'population recovery' assessment for suites of sensitive species defined by the PFS sensitivity metric sampled by surveys carried out in the Celtic Seas and Greater North Sea
Outcomes for regional scale integrated assessments, using an "averaging" integration procedure are indicated by horizontal green (meets or exceeds assessment value, r represented by black dashed line) or red (does not meet assessment value) horizontal lines. The Common Indicators Score is determined as indicator value / assessment value

Population Recovery PFS sensitivity metric



Results cont...

However in both regions, recent trends in the number of sensitive species increasing in abundance suggest an improving situation (Figure 2).

Further decline in the population abundance of sensitive fish species has been halted in both regions (Figure 3).

For this assessment the confidence in the methodology is moderate and the confidence in the data is high.

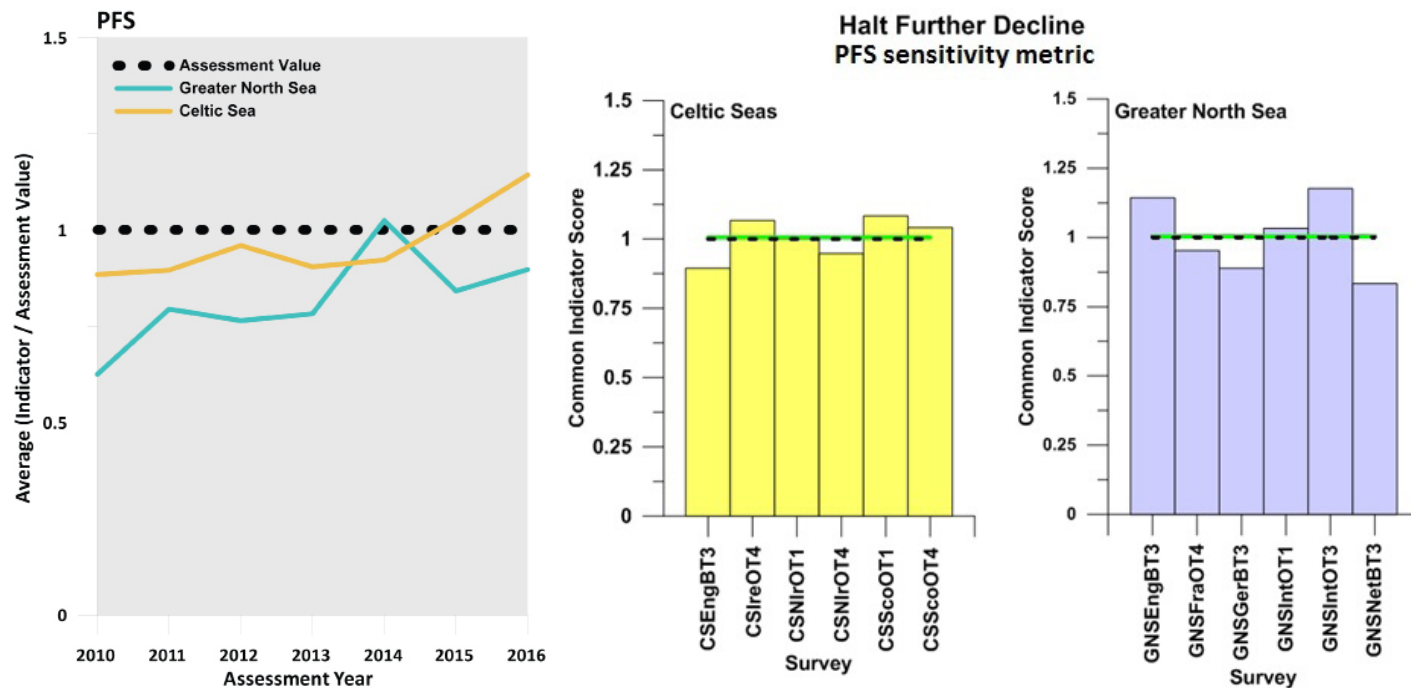


Figure 2 (left): Integrated assessment outcomes for population abundance recovery (where a value above 1 means the assessment value is being met or exceeded) derived using an averaging integration approach

Figure 3 (right): Outcomes against the 'halt further population decline' assessment for suites of sensitive species defined by the PFS sensitivity metric sampled by surveys carried out in the Celtic Seas and Greater North Sea.

Outcomes for regional scale integrated assessments, using an "averaging" integration procedure are indicated by horizontal green (meets or exceeds assessment value, represented by black dashed line) or red (does not meet assessment value) horizontal lines. The Common Indicators Score is determined as indicator value / assessment value

Conclusion

When considering OSPAR regions individually, evidence of recovery was compelling in the Celtic Seas, but in the Greater North Sea the number of sensitive species increasing in abundance was insufficient to meet the assessment value.

Evidence to support a halt in decline of the abundance of fish species sensitive to fishing mortality is clear. Assessment outcomes suggested that decline has been halted since 2010. These conclusions are robust regardless of which sensitivity metric is used to define suites of sensitive species and the choice of integration method.

When considering all areas assessed (the Greater North Sea and the Celtic Seas), evidence to support the case that significant recovery had been achieved in the population abundance of sensitive species, was unclear. The assessment outcomes were influenced by which sensitivity metric was used to identify the suites of sensitive species in each survey, and also by the type of integration method applied to derive integrated assessment outcomes from the individual survey assessments.

Knowledge Gaps

The key knowledge gaps for the assessment are: the availability of suitable population dynamics models to support the setting of absolute abundance targets for sensitive fish species, the effects of warming seas on the scope for population growth and potential for population recovery among large-bodied sensitive fish species.

This document was published as part of OSPAR's Intermediate Assessment 2017. The full assessment can be found at www.ospar.org/assessments