

# Report on applicability of the SACFOR scale for recording relative abundances of colonial organisms in beam trawl samples

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## Methods

Three long-term monitoring sites in the North Sea were sampled with a 2-metre beam trawl. The trawl was towed over a nominal distance of 100 metres at ~1 knot. The samples were processed on board, following standard Cefas procedures. This includes the identification and enumeration of all individual organisms (i.e. those that can be counted). Colonial organism were identified and recorded as 'Present'.



2-metre beam trawl and example of catch

Tests were made to see if the 'presence/absence' record for colonial organisms could be improved by applying a scale of relative abundance (SACFOR – Superabundant, Abundant, Common, Frequent, Occasional, Rare) widely used in quadrat-style sampling in littoral surveys.

After identification the colonial taxa were placed into separate piles on a white tray so that their relative abundance could be estimated. This was achieved by comparing the quantity of each colonial animal with the quantity of the rest of the current and previous beam trawl samples.

## Results

The table below presents the result recorded when applying the SACFOR scale of the

Station Replicate	NMMP 466			NMMP 484			NMMP 536		
	A	B	C	A	B	A	B	C	
<b>Taxon</b>									
<i>Flustra foliacea</i>	F	R	-	-	-	-	R	-	
<i>Hydrallmania falcata</i>	O	R	R	R	R	R	R	R	
<i>Abietinaria abietina</i>	R	R	-	-	R	R	-	-	
<i>Vesicularia spinosa</i>	F	R	-	R	R	R	-	R	
<i>Obelia</i> sp.	O	R	R	O	R	O	F	F	
<i>Sertularia</i> sp.	F	O	R	R	-	R	-	-	
<i>Bougainvillia</i> sp	R	R	R	-	-	-	-	-	
<i>Alcyonidium diaphinum</i>	-	-	-	R	-	-	-	-	

Key: Superabundant, Abundant, Common, Frequent, Occasional, Rare

Sample volumes were low (generally <10 litres) and variable. This made it difficult to apply the scale uniformly (equitably) across different samples. For example, the assessment of *Obela* sp. across all the catches ranged from Rare to Frequent. However, it was considered that the initial assessment of rarity in samples B & C from site NMMP 466 was greatly influence by the very low sample volume. Had the trawl been towed for twice as long, the catch might have been bigger and the subjective assessment may have been given as 'Frequent'.

## Conclusion

The application of the SACFOR scale requires that the observer has quite some considerable prior experience processing trawl catches, through which they have developed a personal (subjective) appreciation of the two extremes of the scale (Superabundant and Rare). The scale can not easily be applied in an equitable manner by inexperienced personnel.

As the scale is subjective, it is likely that different observers would relative abundance categories to taxa from the same catch (i.e. observer A will assign the category 'Rare' where observer B would assign the category 'Occasional').

It is concluded that the SACFOR scale is not suitable for the assessment of relative abundance for colonial taxa sampled by beam trawls.

## Recommendations

We consider that the recording of biomass would be one solution to assessing relative abundance, as this can be compared directly with biomass of taxa that can be properly enumerated.

An alternative would be to assess relative abundance using a log scale, which may be far easier for inexperience personnel to apply. We suggest the following: if there are <=10 colonies then record the actual number of colonies, otherwise estimate the number of colonies using a log scale ( $10^1$ ,  $10^2$ ,  $10^3$ ) and note the results on the log-sheet using words (tens, hundreds, thousands) to avoid confusion with truly numeric data.