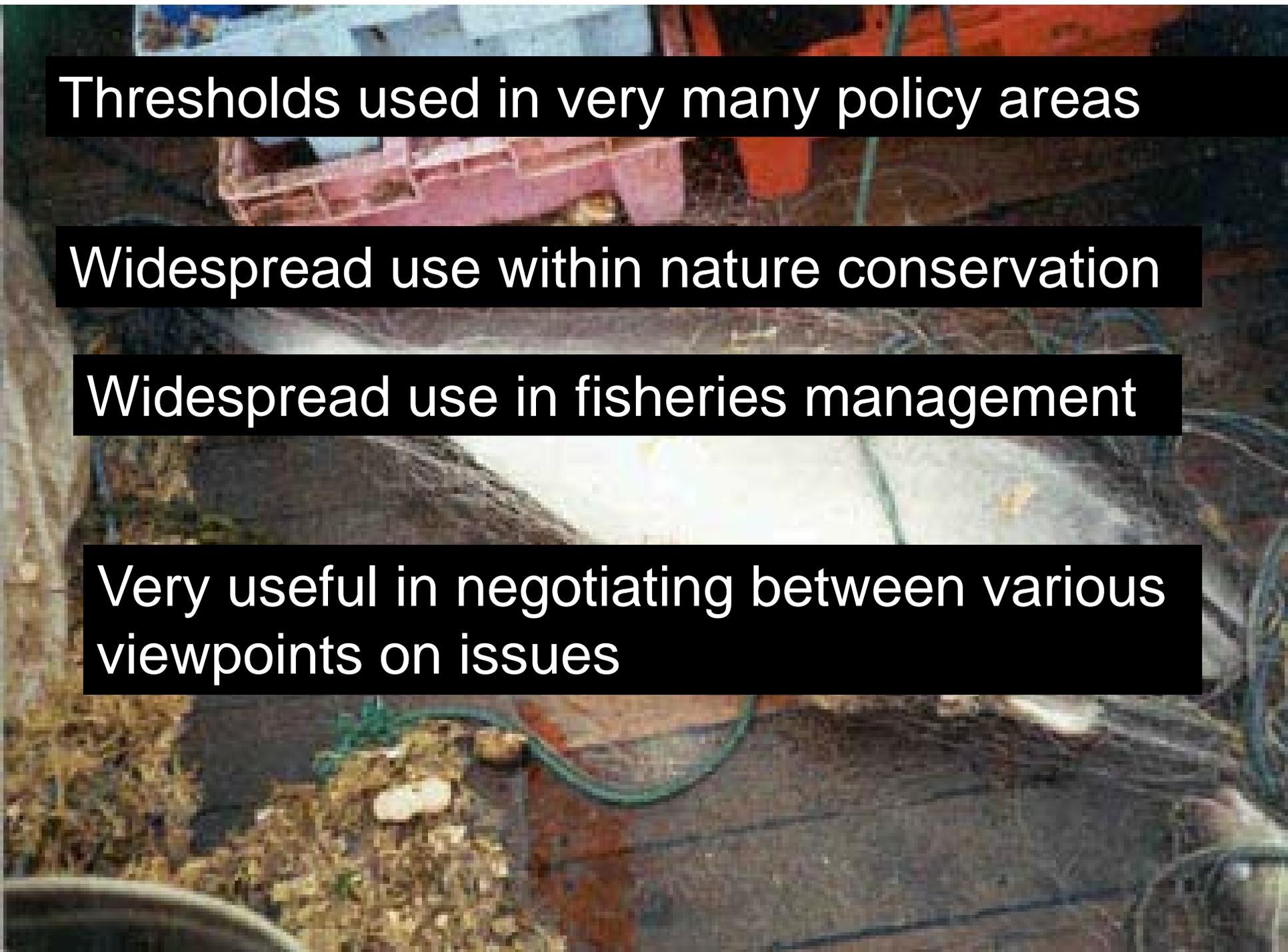




# Thresholds of unacceptable interactions

A few thoughts from Mark Tasker



Thresholds used in very many policy areas

Widespread use within nature conservation

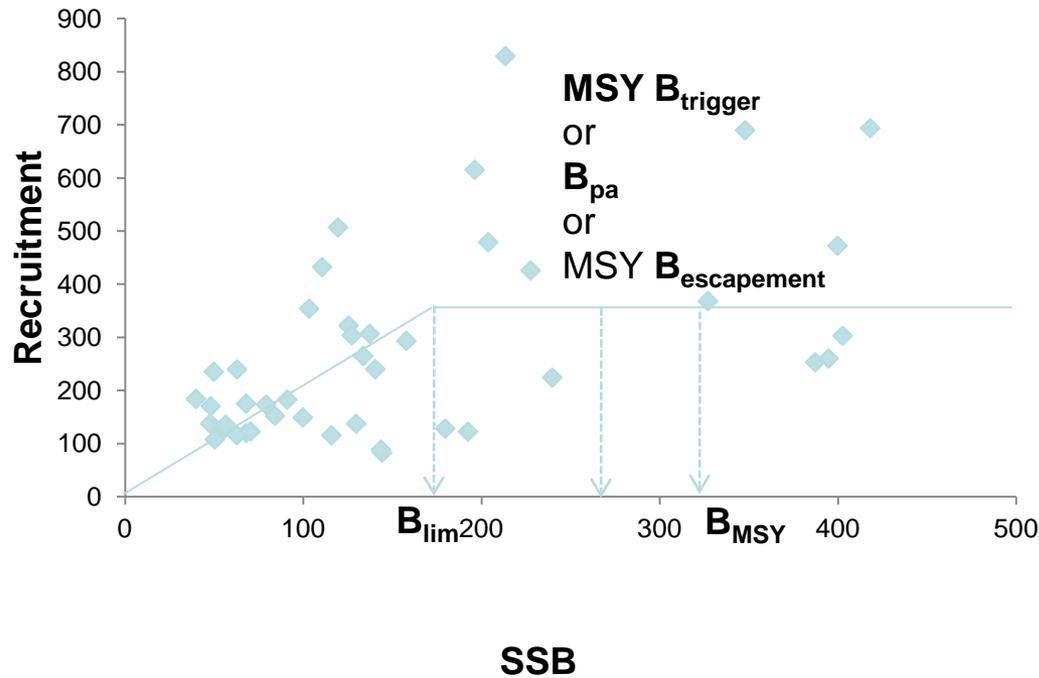
Widespread use in fisheries management

Very useful in negotiating between various viewpoints on issues

**SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).<sup>1</sup>**

<b>A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4</b>			
	<b>Critically Endangered</b>	<b>Endangered</b>	<b>Vulnerable</b>
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3 &amp; A4</b>	≥ 80%	≥ 50%	≥ 30%
<p><b>A1</b> Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.</p> <p><b>A2</b> Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p><b>A3</b> Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3].</p> <p><b>A4</b> An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p>		<p><i>based on any of the following:</i></p> <p>(a) direct observation (<i>except A3</i>)</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.</p>	
<b>B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)</b>			
	<b>Critically Endangered</b>	<b>Endangered</b>	<b>Vulnerable</b>
<b>B1. Extent of occurrence (EOO)</b>	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
<b>B2. Area of occupancy (AOO)</b>	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
<b>AND at least 2 of the following 3 conditions:</b>			
<b>(a) Severely fragmented OR Number of locations</b>	= 1	≤ 5	≤ 10
<b>(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals</b>			
<b>(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals</b>			

# Biomass Reference Points



Current ICES fisheries advice system

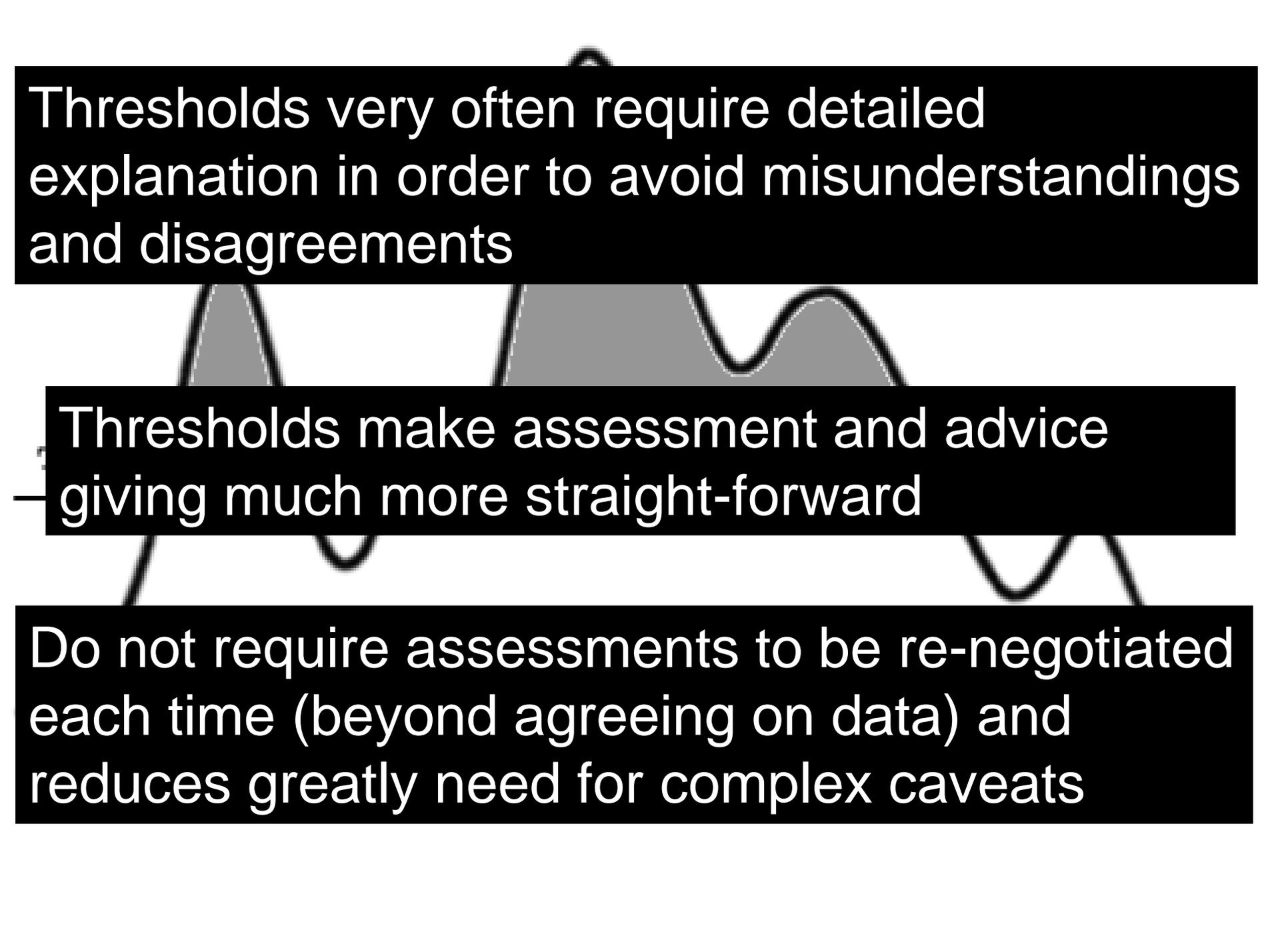
**Table 1.2.3** Symbols and text for status of stocks fished under management plans.

Management plan reference points	Explanation	Sign	Text
Fishing mortality ( $F_{MP}$ )	$F < F$ mgt target / limit	✓	Below
	$F$ within defined range	✓	At or Within range
	$F > F$ mgt target / limit	✗	Above
Biomass ( $SSB_{MP}$ )	$SSB >$ target, limit or trigger biomass	✓	Above
	$SSB$ within defined range	✓	At or Within range
	$SSB <$ target, limit or trigger biomass	✗	Below

Thresholds can be calculated scientifically, but nearly all need some form of societal choice

“Societal” choice may be a bureaucratic or political decision, but in democracies usually involves some sort of consultation and negotiation process. There needs to be at least representation of diversity of views

ICES fisheries examples derive from choices made under Convention on Biological Diversity



Thresholds very often require detailed explanation in order to avoid misunderstandings and disagreements

Thresholds make assessment and advice giving much more straight-forward

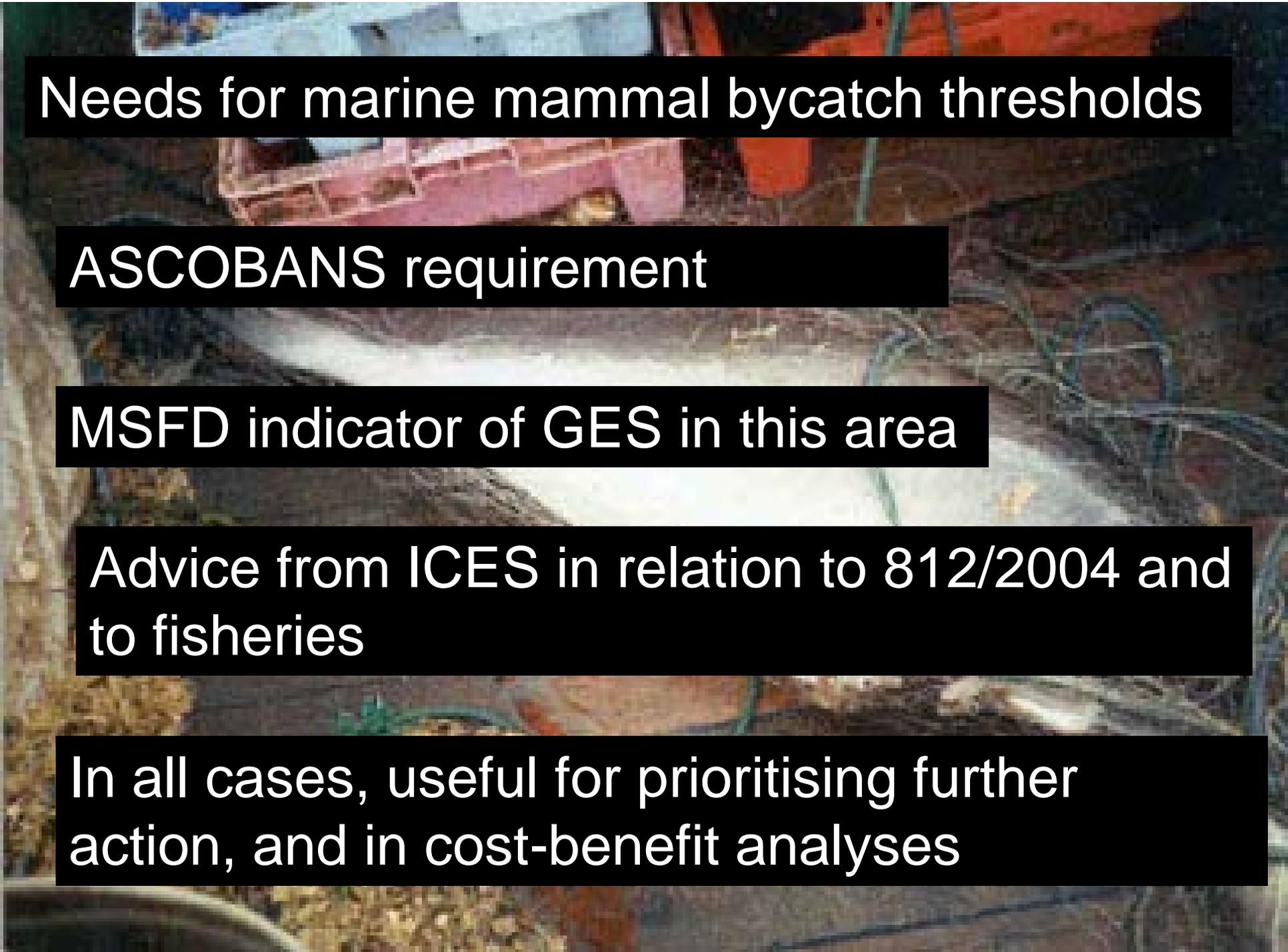
Do not require assessments to be re-negotiated each time (beyond agreeing on data) and reduces greatly need for complex caveats

Thresholds very often require detailed explanation in order to avoid misunderstandings and disagreements



Threshold

Often that means further adaptive (in the light of experience) modifications



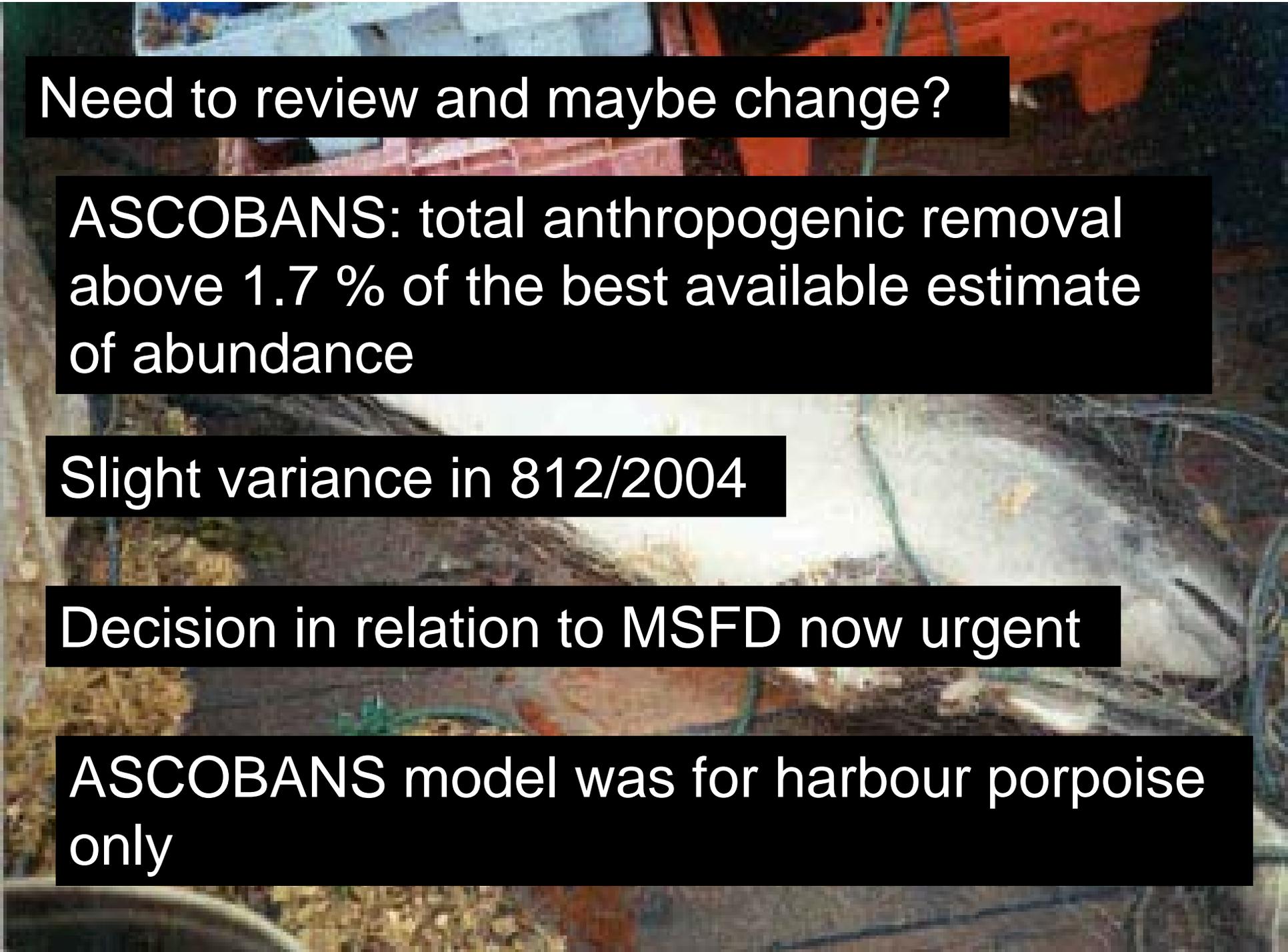
Needs for marine mammal bycatch thresholds

ASCOBANS requirement

MSFD indicator of GES in this area

Advice from ICES in relation to 812/2004 and to fisheries

In all cases, useful for prioritising further action, and in cost-benefit analyses

The background of the slide is a photograph of a harbor. In the foreground, there is a boat with a white cabin and a red stripe. In the background, there are buildings and a red structure, possibly a crane or part of a ship. The water is dark and the sky is overcast.

Need to review and maybe change?

ASCOBANS: total anthropogenic removal above 1.7 % of the best available estimate of abundance

Slight variance in 812/2004

Decision in relation to MSFD now urgent

ASCOBANS model was for harbour porpoise only

## Issues

What does 'in the long term' mean? (as in 80% of carrying capacity in the long term)

Various examples exist

SCANS II and CODA used 200 years

IWC uses 100 years

IUCN uses 100 years or 3 generations

USA's MMPA uses 100 years

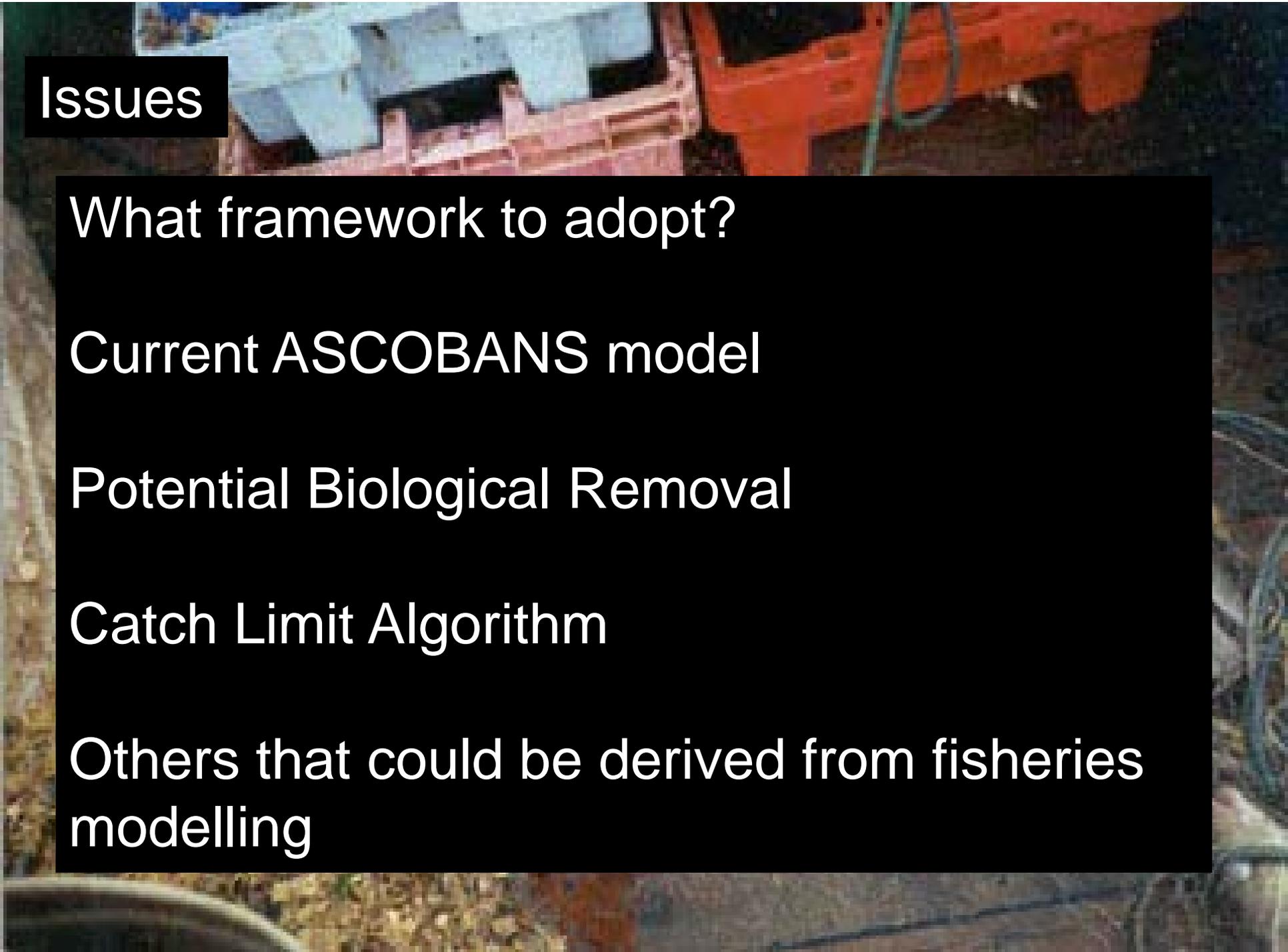
## Issues

What precision is required?

IWC aim for 72% carrying capacity on average (50% of the time);

Canada's seal objective is 70% of maximum recorded abundance for 80% of the time;

MMPA aims for 50% of carrying capacity at least 95% of the time



## Issues

What framework to adopt?

Current ASCOBANS model

Potential Biological Removal

Catch Limit Algorithm

Others that could be derived from fisheries modelling