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**A Draft Long Term Management Plan for  
North Sea *Nephrops***

This plan is intended to get away from micromanagement by the Commission, and the imposition of remote and bureaucratic management measures. It aims to provide a more stable basis for management of the fishery over the next 5 to 10 years.

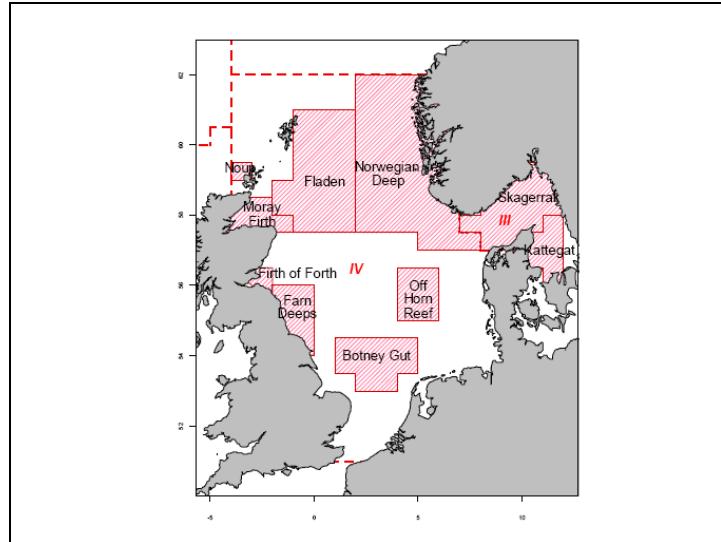
This draft is provisional and tentative and it is intended to stimulate discussion. We want the plan to reflect the wishes and interests of the fishing industry as well as the views of the North Sea Regional Advisory Council. It must also be wide in scope and consider economic and social objectives as well as biological ones.

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**Our aims**

- To take a long look at **where we are now**, and what problems the fishery faces
- To consider carefully **where we want to be**, by setting objectives for the fishery
- To decide **how we are going to get there** by deciding on future actions

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We will start off by looking at where we are now. What is the current state of North Sea *Nephrops* stocks?

In the North Sea the *Nephrops* stocks are separated into 8 functional units

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There are three sources of information on the state of *Nephrops* stocks:



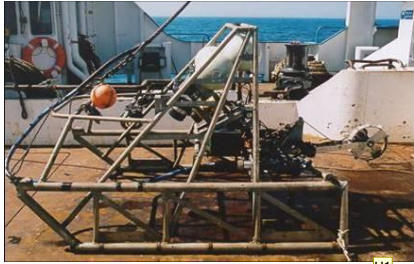
Stock assessments carried out by scientists

Looking at the landings of *Nephrops*

From the outcome of the annual Fisher' Survey, where fishers are asked whether stocks are poorer, the same , or better than in previous years

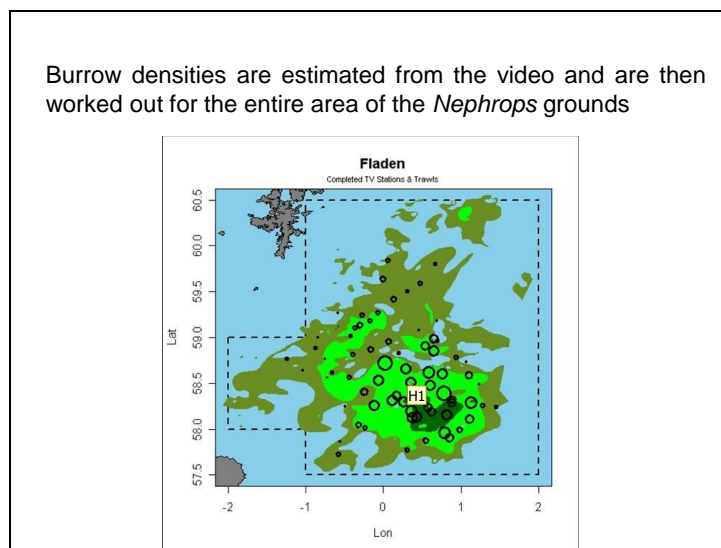
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*Nephrops* live in burrows in the sea bed



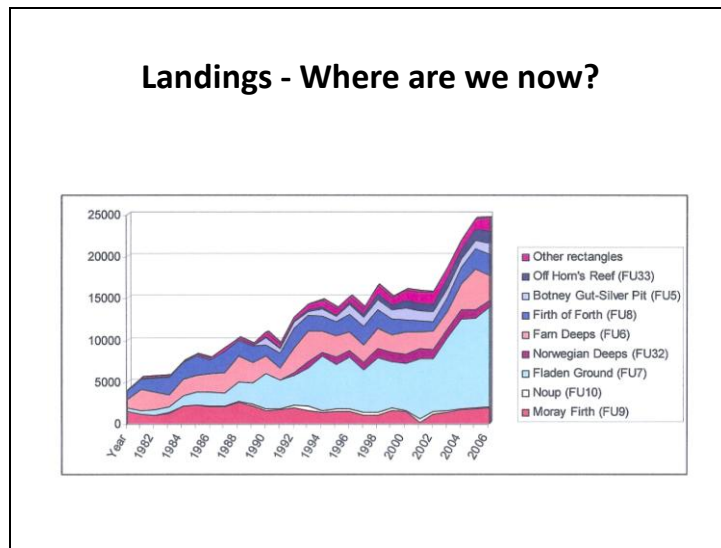
In the main method for assessing the state of *Nephrops* stocks a sledge is towed along the seabed and the number of burrows counted

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These stock assessments carried out by scientists are completely independent of the fishery

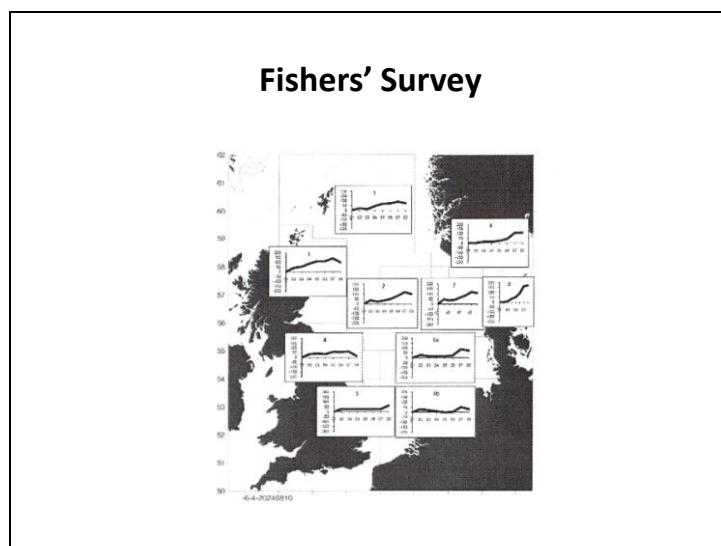
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Landings from most of the functional units have remained stable or increased over the years. Only the Farne Deeps have shown a recent reduction.

Some of the 'jumps' shown in recent years may have resulted from misreporting

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The fishers' survey gives similar results, but perhaps is rather more cautious about the current state of stocks

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### **To sum up - Where are we now?**

- Landings have increased in a series of steps since the 1950s
- Most stocks appear to be stable in terms of abundance and size composition
- For some of the Functional Units, like the Fladen ground, *Nephrops* has shown a marked increase in abundance over the years
- In others, like the Farne Deeps, the abundance has recently fallen

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### **Management Plan Objectives**

- **Biological objectives**
- **Ecological and Environmental Objectives**
- **Social and Economic Objectives**

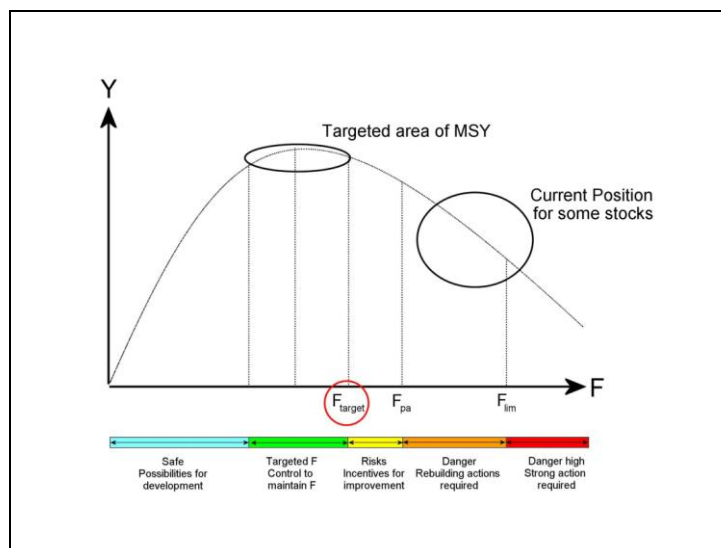
There are three sets of management objectives

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### Biological targets

- Management plans are based on **reference points** which specify the level of fishing that is necessary to keep the stock healthy
- The reference points are generally Fishing Mortality Rates or **F** rates
- $F_{MSY}$  for example is the fishing mortality rate that will keep a stock at a level that can produce the maximum sustainable yield

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Maximum Sustainable Yield (MSY) is an abstract target which is difficult to determine. The important thing is to judge whether stocks are at risk, and if they are, to decide how to move them in the right direction. This involves setting a target value for the Fishing Mortality (F), which provides a state where the fishery is sustainable. It is perhaps more important to move in the right direction than to set a precise target.

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### Setting a target Fishing Mortality (F)

- The Commission wishes to set **F** at a level which will produce the maximum sustainable yield; ie **F<sub>MSY</sub>**
- However, since no-one knows what **F<sub>MSY</sub>** is for *Nephrops* another choice of target must be made
- A target value of **F<sub>0.1</sub>** has been suggested. This value may be lower than current rate of F for the Farne Deeps but higher than the rate for the Fladen Ground

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### Where do we want to be?

#### The Viewpoint of Scientists

- Reference points have not yet been determined for *Nephrops*
- A fishing mortality between  $F_{0.1}$  and  $F_{MAX}$  could be used as a target for a sustainable fishery
- However, there are no safeguards to avoid depletion of resources in local Functional Units
- Currently there are no agreed management objectives for North Sea *Nephrops* stocks; perhaps more importantly no trigger point has been set for defining the biomass level at which recruitment might be impaired

As well as setting a target for fishing mortality, which is used for year to year management, there is also a need to define a trigger point for defining when stocks might have become really depleted – because of poor recruitment, heavy over-fishing, or environmental change. When this occurs the target value of F may need to change

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### Possible biological objectives?

- Exploit *Nephrops* at a rate that is sustainable by setting a target for  $F$
- A value of between  $F_{0.1}$  and  $F_{MAX}$  could be used as a precautionary target
- In the absence of immediate biological risk to any of the stocks then the target  $F$  could be reached gradually
- Should recruitment be significantly impaired then  $F$  should be reduced in line with the reduction in stock size indicated by the UWTV surveys
- Management should be at the Functional Unit level so that catch and effort are compatible and in line with the scale of the resources available in each of the stocks

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### Where do we want to be?

#### Wider Ecological Considerations

We have identified three objectives to minimise damage to the ecosystem:

- Reduce discards
- Minimise interactions with threatened, endangered and protected species
- Minimise impacts on sea bed habitats and associated communities.

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## Where do we want to be?

### Possible Economic Objectives

- Provide incentives for fishers to move the fishery in the direction of lower fishing mortality while enabling them to meet their own business aims and objectives
- Avoid regulation that makes fleets less efficient or provides perverse incentives which act to the detriment of the fishery and the *Nephrops* stock
- Any change imposed on the fishery to meet biological and ecological objectives must take place at a rate that can be absorbed by individual businesses and communities.

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## How do we get there?

In the absence of immediate biological risk to any of the stocks assessed by UWTV

- An  $F$  of between  $F_{0.1}$  and  $F_{MAX}$  could be used as a precautionary target fishing mortality
- This target can be reached gradually, through incremental annual reductions in fishing mortality

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### How do we get there?

If the stock falls to a level at which recruitment is likely to be significantly impaired, as indicated by the UWTV surveys

- The target F should be reduced in line with the reduction in stock size indicated by the UWTV surveys
- If recruitment improves and stock size increases, the target F should be increased in line with the survey results

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### How do we get there?

How do we achieve management at the functional unit level – the Options

- Set separate TACs for the different functional units. This preferred by scientists
- Should quota holders elect which area their quota could be attached to?
- Include '*of which no more than x tonnes*' provisions for functional units which are under threat
- Profile the TACs by quarter or time of year, to conform with the expected fishing pattern for particular functional units

One of the major issues within the plan is to decide what to do if one or more of the functional units is over-fished while the others remain in a sustainable state. What are the options in these circumstances?

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### More Options

- Base an overall North Sea TAC on the state of the weakest functional unit
- Apply days at sea (or 'of which' days at sea) restrictions within a functional unit
- Set a capacity cap in terms of setting out a list of permitted vessels (based on historic activity) allowed to fish within a functional unit. Restrictive licensing

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### Still More Options

- Set a cap on the size or type of vessel permitted to fish within a functional unit
- Introduce gear restrictions – for example restricting gears to single rig within a functional unit
- Impose seasonal closures within a functional unit (e.g. during 'green sac' periods).
- Agree real time closures in functional units which are depleted.

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**How do we get there?**

**Achieving wider ecosystem objectives –  
Reducing discards**

- Avoid the capture of fish for which a vessel has no quota, through various measures specific to the vessel and area
- Ensure that landings are within quota
- Demonstrate that discards have been reduced

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**How do we get there?**

**Achieving wider ecosystem objectives –  
Reduce the impact on threatened endangered and protected  
species and the effects of bottom disturbance by:**

- Maintaining a limit to the effort applied in the fishery
- Identifying and implementing Marine Protected Areas
- Restricting the range of gears to be used in vulnerable areas
- Developing environmentally friendly fishing practices

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### **How do we get there?**

#### **In Addition:**

- Monitor discarding and associated impacts, including those on discard-dependent seabird communities
- Improve data recording systems to monitor fishing interactions with endangered, threatened and protected species
- Assess impacts on habitat and associated species communities

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### **How do we get there?**

#### **Economic Considerations**

- Member states and fishing businesses must decide how to deal with economic pressures
- It is important to avoid regulation that makes fleets less efficient or provides perverse incentives
- Provide incentives for individual fishers to change to meet new business aims and objectives
- Any change imposed to meet biological and ecological objectives must take place at a rate that can be absorbed by individual businesses and communities

### **Monitoring of the management plan**

When a Management Plan has been adopted, progress can be assessed using performance indicators:

- Reductions in fishing mortality towards a target F
- Development of a trigger point for assessing deterioration in the stock
- Reductions in discarding
- The development of environmentally friendly fishing practices
- The designation of Marine Protected Areas

The End