



## Proposal for management of the fishery in Kattegat Real Time Closures.

The Swedish Government has proposed to establish a permanent closure of an area in South Eastern Kattegat. The purpose of the proposed closure is allegedly to protect the cod stock, which, according to some biologists, is in a critical situation. The proposal is met with considerable mistrust and scepticism by the affected fishermen.

The resistance of the industry to the Swedish proposal is not solely based on the disagreement with the biological assessment of the cod stock. Although there is in deed considerable difference in the perception of cod abundance, the fishers are not claiming that cod is abundant everywhere and they are not opposed to the concept of further protection of the stock – on the contrary. The problem for the fishing industry is more the fact that the area covered by the proposed closures are important fishing grounds for *Nephrops* and sole. There is consequently a mismatch between the aspiration to protect a particular segment of the environment and the price that will to be paid for that protection. The fishing industry is convinced that an increased protection of cod in Kattegat is far better achieved through an alternative strategy, with temporal closures of areas where the occurrence of spawning or juvenile cod is high – a real time closure – or RTC – system.

This brief describes how such a system can be set up in Kattegat.

Two different closures are envisaged – one that aims to protect the cod during spawning (in order to increase recruitment) – and one that aims at protection of cod below minimum landing size (in order to reduce discard). The combined effect will be an enhanced exploitation of the stock – regardless of whether the fishers agree or disagree with the scientists in their ominous assessment of the state of the stock.

### **Closure to protect spawning cod.**

Fishermen have identified an important spawning area for cod in Kattegat. This area is shown in the figure in appendix I. For practical reasons the area is described by straight lines along latitudes and longitudes.

56°20'00 N	12°15'00 E
56°45'00 N	12°15'00 E
56°45'00 N	12°30'00 E
56°20'00 N	12°30'00 E

More areas can possibly be defined as data are collected.

The normal spawning period for this stock is from early February to mid April – with some variation within that period – *inter alia* depending on temperature. As it does not make sense to protect spawning cod by preventing fishery in periods when cod are not spawning, the area should remain open until spawning is observed/documentated.

When spawning cod are observed in the catches, the whole area is closed for a period of six weeks, after which the area is reopened automatically. If spawning cod are still found in the catches when the area is reopened, the area is closed for another period – until the 15<sup>th</sup> of April.

### **Closures to protect juveniles.**

Juvenile cod (for the purpose of this discussion defined as cod which are below the MLS of 30 cm) occur in large quantities in particular periods of the year, but the occurrence is characterized by being limited to particular areas with a high level of annual variation.

Juvenile cod occur on a regular basis in the two bays on the Swedish West coast – Laholmsbukten and Skälderviken. In these areas there is no Danish fishery with trawl.

In order avoid closing important fishing fields for *Nephrops* and sole only to protect a small school of young cod, it is necessary to establish a system that takes account of the fact that most fishery in Kattegat is not targeting cod. Further, the relatively limited fishing grounds as well as the rather small geographical scale, does not call for a system where whole ICES rectangles are closed when young cod are encountered.

A map where each ICES rectangle is divided into nine smaller rectangles of each 10 by 5 geographical minutes – approximately 5 nautical miles on each side (9,26 x 10,19 km) – has consequently been prepared as shown in annex 2. The rectangles are numbered as indicated on the map.

When a particular number of cod is caught per hour trawled – e.g. more than 50 cod below minimum landing size – the relevant rectangle is closed for all fishing activity targeting demersal species – defined as all fishery using mesh sizes larger than 70 mm. The closure will be in effect for a period of two weeks counting from the day of its announcement (see later – under procedure). After two weeks the area is opened automatically.

### **Procedure**

An RTC committee for Kattegat under the Kattegat/Skagerrak Working Group in the North Sea RAC is established. The committee consist of one member from each of the commercial fisheries organisations represented in the RAC from Germany, Sweden and Denmark, plus a secretary.

A fisherman that observe one of the aforementioned events shall, as soon as possible, contact one of the members of the RTC committee or the secretary and report the situation to that person. The remainder of the committee members shall be contacted by the first contact immediately thereafter.

The committee decides within 24 hours upon receiving the report either by consensus or by a simple majority whether:

1. the rectangle shall be closed based on existing information
2. further information shall be collected
3. no action shall be taken

If the conclusion is to close the rectangle this decision is communicated to the authorities, who issues a ban on fishing as proposed above.

## **Control**

The control problem has two aspects. First of all whether fishers who encounter an event that could lead to closing of an area actually does report that observation to the committee and secondly, whether fishers actually respect the closure.

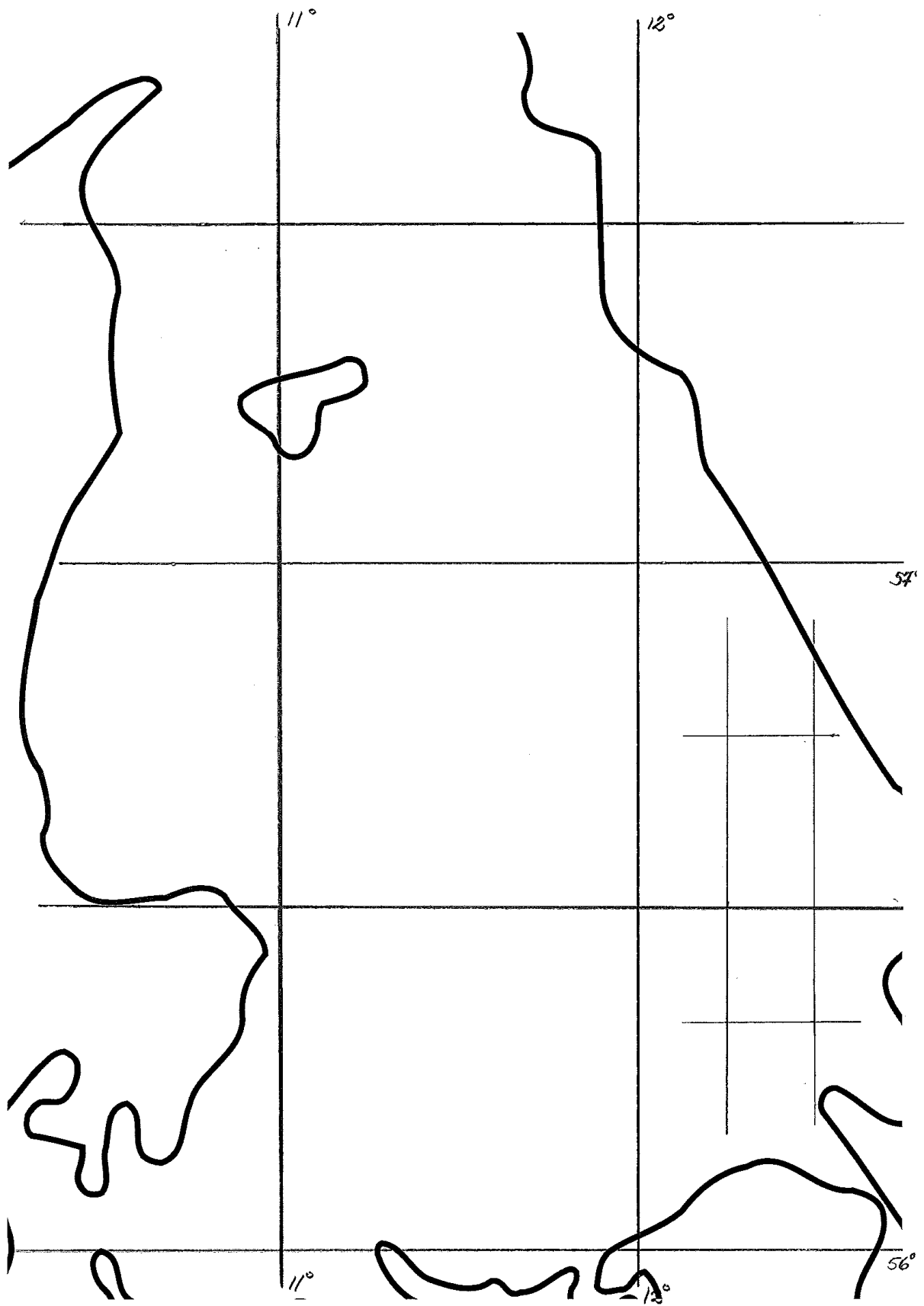
It is quite obvious to the fishers in the area, that the RTC system is proposed as an alternative to permanent closures. It is assumed that fishers will support a system that – even with the limits it imposes on their fishery – is not completely excluding them from traditional fishing grounds. There is therefore an incitement to report about catches that will lead to closures.

A number of vessels carries observers from scientific institutions such as DTU-Aqua, in order to collect data from the commercial fishery. These vessels are fishing on the same fishing grounds as the rest of the fleet and if a systematic nonreporting is in deed taking place then it will be quite obvious that there is a difference between vessels with observers and other vessels. Further, observations by the National fishery control vessels will give very good indications about the level of compliance.

As it is expected that there will be a very strong "peer pressure" this *per se* will be a very strong control measure – and no further control may be needed. On the other hand, the NS RAC finds that it would be helpful if national authorities would be helpful in the process by formally closing the areas on request from the RTC committee, so the closure would be compulsory.

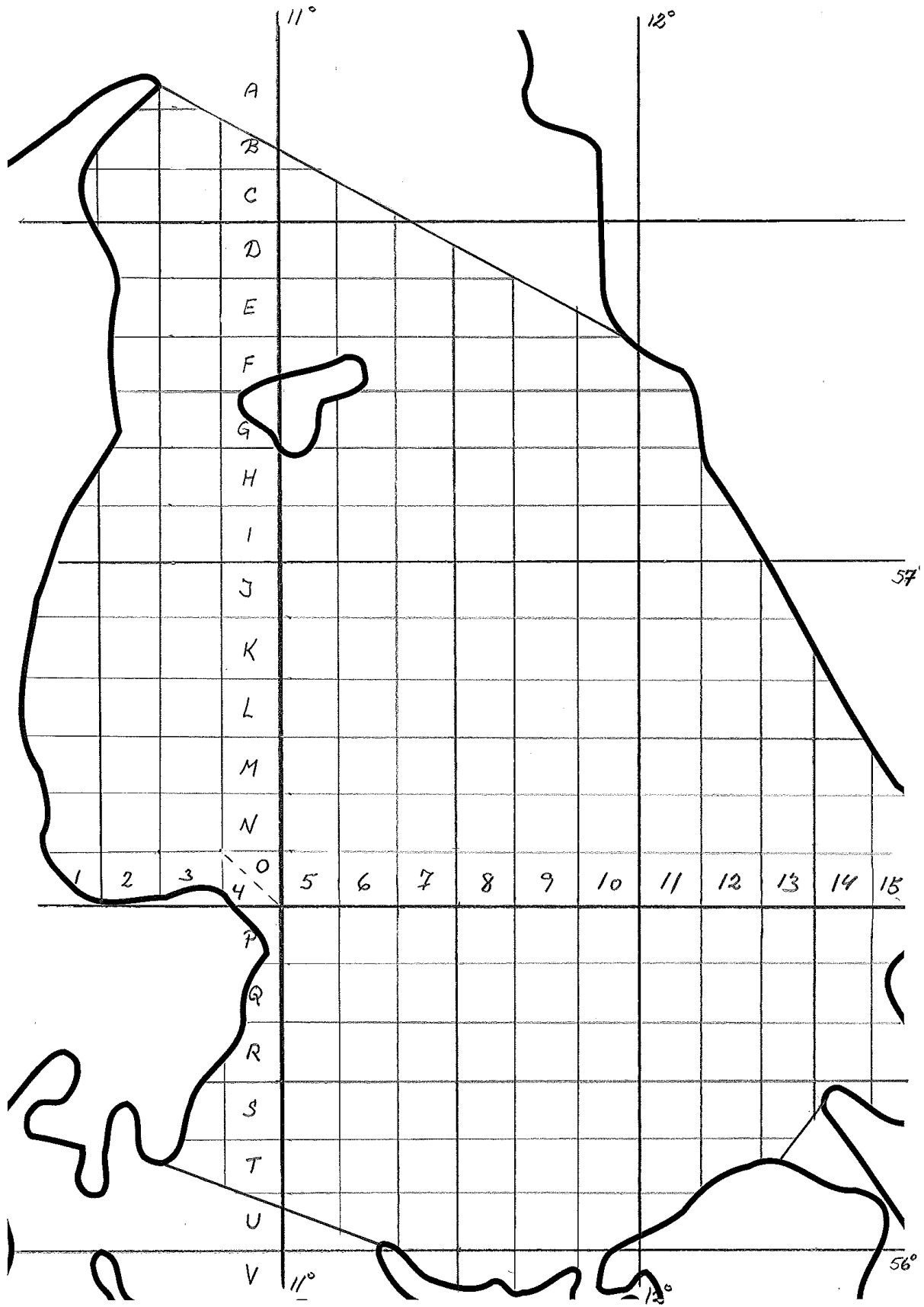
The size of the rectangles is sufficiently large to give a high possibility for a vessel towing a trawl with a speed of 2,5 knots (standard in sole and *Nephrops* fishery) to be "pinged" via satellite if it tows through an closed area.

Annex 1



Spawning area for cod in Kattegat

Annex 2



Proposal for RTC units in Kattegat