

## Sustainable Crab fisheries in Devon? Interview with Professor Paul Hart, University of Leicester

**“We have a different partnership from others in GAP1. In our group we have the comfort of 10 years experience in working together.” Professor Paul Hart is confident and has already hired a person for 6 months to collect preliminary data on spatial distribution of catches of crabs in Devon, UK. The recording of data will take place on fishing vessels gathering information on the catches to show who is catching what and where are they catching it?**

“We are using GAP1 as launching platform for further studies.” Professor Hart explains. Further money for extension of the study would give data required by methods to managing stocks sustainably. The funding body applied to is the UK Sea Fish Industry Authority. If granted it would fund a 3 year project. The planned research project would focus on how estimation of sustainable stocks can be made using data that fishermen themselves collect. The aim is to produce a different way of doing fisheries management, providing methods for fishermen to handle their own stock assessment.

This is innovative Small Scale Fisheries (SSF) management in a nutshell: "If fishermen can develop a sense of ownership of the exploited stock it gives them a bigger incentive to fish more sustainably" thinks Professor Hart. The resentment fishermen have of scientists comes from the notion that scientists should serve fishermen rather than act on behalf of governments. There have been similar approaches to management elsewhere; for example black cod fishermen in Canada have assisted scientists to gather data that is then used for assessments. It will be valuable to explore further this methodology within the EU management system. One possibility for control could be by auditing and certification. The cost of certification creates a drawback; it makes it prohibitive for the fisher to have to demonstrate sustainability. There is a need for a stronger case to be made for certification.



*ITQs are usually imposed by outside bodies.*

Professor Hart will use a simple model of the exploited crab biomass to direct the gathering of data that will lead to stock evaluation. Fishermen will be able to assess the long-term sustainability of the stock using methods developed by fishery science but gathering the required data themselves.



*Ultimately the fishermen would drive the management system, motivated by the possibility of increasing stock and product values.*

The researchers are building a simple biomass input-output model including immigration and emigration of adult crabs, the arrival rate of their larvae, and the weight of crabs caught. The function of the model is to allow fishers to assess the sustainable biomass available for harvesting. The biomass of the catch should advisably be less than net immigration to support a continuous supply of crabs from the fishing area. This is a time - dependent model. The model will be used to simulate biomass variation in stocks to find the optimal fishing rate. The critical point of the model's accuracy in making a prognosis for fishing pressure is the supporting data. CEFAS are currently collecting data by tagging crabs in the English Channel and this will supply rates of migration to the model. More data will be collected during the proposed project.

If funded, the data-gathering project will start in April-May 2009 and go on until March 2010. An analysis of the data will then be carried out to determine if more data is required. If stocks are sustained by migration, then an expectation is that catches on the edges of the fishing area will be high, but with variation over time and crab sex.

Paul Hart also mentioned an experiment that will have to be done, to determine the survival rate of the crabs that are thrown back as being either too small or having shells that are soft.

Early discussions with the fishers reviewed topics where crab fishers would be interested in learning more:

1. Movements and migrations: e.g. why do crabs move into deeper water during the winter – is it due to deteriorating weather conditions, or because the temperature drops?
2. Size at first reproduction
3. Reproductive characteristics: e.g. how many male crabs mate with the same female?

Other questions interesting but not critical to evaluating the stocks:

- Interference between crab and whelk fisheries
- Lobsters are considered non-migratory, however fishermen report evidence of migration, so this needs further investigation
- Aspects of spider crab biology



*“What happens in the next phase now depends on whether funding is obtained”, says Professor Paul Hart. The response is possibly to be expected in April 2009. The group will also look for funding sources elsewhere across disciplines.*

Links:

<http://www.le.ac.uk/biology/staff/blpbh.htm>

'Fish and Fisheries' website:

<http://www3.interscience.wiley.com/journal/117970776/home>

'Handbook of Fish Biology and Fisheries' (2002)

<http://www3.interscience.wiley.com/cgi-bin/bookhome/117929328>

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