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## A NOTE ON POPULATION ASSESSMENTS OF SHELLFISH STOCKS

by

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### Introduction

Consideration of appropriate measures of conservation to be taken in the Nephrops and lobster fisheries has indicated the need for an appraisal of the methods available for assessing individual stocks of shellfish from the point of view of their fisheries potential. The application of the principles of population dynamics to crustaceans and molluscs frequently presents problems not generally encountered in similar studies on the main commercial white fish species. In consequence, population assessments of shellfish stocks are often imprecise. Possibly assessments can be improved by adapting the generally accepted methods to deal with the particular problems associated with individual shellfish stocks.

### Age determination

There is, at present, no reliable method of age determination in Crustacea or squid although in some forms, e.g. Crangon and Loligo year classes can be identified as modes in the length frequency distribution.

### Annual growth

While the increase at the moult in Crustacea can be determined measures of annual growth are often unreliable owing to lack of information on moult-frequency.

### Recruitment

In the case of most Crustacea, for example lobsters, Norway lobsters, spiny lobsters and crabs, estimates of the relative abundance of prerecruits to the commercially fished stocks are unreliable.

### Catch/effort

Many shellfish species, both molluscan and crustacean, move little, with the result that the stocks are effectively comprised of a number of discrete populations, each dependent initially on the local density of larval settlement. In some cases these are so localised and different, for example scallops and queens, that it is difficult to obtain separate data for the populations whilst aggregated data are difficult to interpret. Similar problems arise owing to differential survival such as in the case of lobsters on exposed coasts where, in consequence, there are wide differences in the levels of exploitation between the exposed and the adjacent sheltered areas.

For several species, for example lobster, spiny lobster, crab and squid, there is a marked seasonal variation in catchability. In several crustacea, for example Norway lobster, this is associated with a considerable difference in catchability between the sexes.

### Miscellaneous

As with many white fish species there are difficulties in obtaining sufficiently detailed catch statistics; in establishing a suitable measure of effort, especially in mixed fisheries; and in undertaking tagging experiments, including the release of tagged individuals roughly in proportion to the density of stocks on the ground in species which move little, and consequently in assessing mortalities.

### General consideration

It would seem desirable that each commercially important shellfish species should be reviewed separately and the most workable basic data defined. Appropriate population assessments should be devised, based on the methods used for white fish species, having regard to the particular problems posed by each species. This could be approached either theoretically or practically in the light of specific assessments, made by workers on shellfish stocks, with special emphasis on the methods adopted.

A suitable forum for such a review may be a Special Meeting convened under the auspices of I.C.E.S.