MESH SIZE REGULATION

Dr. P. SANTHANAM
Assistant Professor
Marine Planktonology & Aquaculture Lab.,
Department of Marine Science, School of Marine Sciences
Bharathidasan University, Tiruchirappalli-620 024, Tamil Nadu.
E-mail: santhanam@bdu.ac.in
Website: www.mpalbdu.weebly.com

MESH SIZE REGULATION

The mesh size regulation is based on the concept of an “optimum harvesting strategy”, i.e. the fact that, for many commercially important fish species, recruitment is unrelated to spawning stock size over a wide range of stock sizes. This makes it possible to conceive of an optimum exploitation pattern for exploiting each year class throughout its life, irrespective of its absolute magnitude.

Within this context, theoretical considerations are concerned with the probable age at which a fish is likely to be captured. If, for example, fish are caught when they are very young, the catch will typically consist of large numbers of very small individuals.

This will provide a numerically very large catch but not necessarily a large weight of fish. Conversely, if fish are not caught until they are very old, the catch will tend to consist of a relatively small number of relatively large fish.

Again the aggregate weight of catch may not necessarily be large. The theoretical approach is to determine the best average age or size at which to capture so as to maximise the sustainable yield in weight per year class entering the fishery.

MESH SIZE REGULATION

There are various ways of achieving this, and one of these is by regulating the age (or size) of first capture directly. This may be done by regulating the mesh size, in a demersal drag-net fishery, or the hook size as in a hook and line fishery.

One object of mesh regulations therefore is to influence the sustainable yield in the long-term.

Other objectives are to protect juvenile fish from capture, and to try to ensure that sufficient fish survive to maturity.

This may be especially important for stocks which are exploited at so high a level that there is a danger of recruitment failure due to diminished stock size.

MESH SIZE REGULATION

Difficulties

How to persuade industry to accept regulatory measures if different sectors of the industry are likely to be affected to different extents (for example, fisheries for fish meal frequently require smaller-meshed nets than fisheries for fish for human consumption?

How to determine the best mesh size for a multispecies fishery such as a demersal trawl fishery?

How to ensure enforcement in situations where it may be possible to corrupt the enforcement officers?

How to prevent evasion of regulations as might be done, for example, by fitting one codend inside another as to reduce the effective mesh size when in use?

How to compromise between the spirit and the letter of the law; for example, to comply with the intention of a regulation, it may be appropriate to require the average mesh size to be of a certain size, but for legal purposes it may be necessary to require that no meshes are below a certain size?

OBJECTIVES OF MESH SIZE REGULATION

Conservation of the spawning stock

In situations where fishing effort is unregulated, there is the possibility that effort may become so high that there is a danger of a stock collapse, due to a depleted spawning stock and a resultant recruitment failure.

If this danger exists, and it is not practical to regulate fishing effort directly, an increase in mesh size may be a useful alternative means of conserving the spawning stock.

A suitable choice of mesh size should reduce the rate of capture of juveniles, and make it more likely that an individual will survive to the size of first maturity and have an opportunity of spawning at least once.

OBJECTIVES OF MESH SIZE REGULATION

Regulation of long-term yield

A change of mesh size can usually be regarded as beneficial if it causes catches, in the long-term, to be greater than they otherwise would have been.

A mesh regulation does not necessarily lead to an increase in the absolute level of catches, however, since these will continue to be influenced largely by natural variations in the level of recruitment.

PRACTICAL DIFFICULTIES AND MANAGEMENT PROBLEMS

Determining the best mesh size for a fishery

Determining the best mesh size for any one species can be a straightforward business. Determining the best mesh size for a fishery in which more than one species is caught by the same gear, however, is likely to be much less straightforward.

In the North Atlantic, where demersal fisheries are based on a relatively small number of species of value, this problem is not too difficult. In tropical demersal trawl fisheries, however, where there may be several hundred commercially valuable species, the mesh size has to be a compromise between the best mesh sizes for the individual species. Some species (e.g. Trichiurus) are long and thin, whereas others (e.g.Apogon) are short and fat. Others may be small-bodied when fully grown, so that the best compromise mesh size for a tropical fishery may be anything but the best mesh size for many of the species individually.

PRACTICAL DIFFICULTIES AND MANAGEMENT PROBLEMS

Meshing

A problem that can occur if a mesh size is too large is that of “meshing”, i.e. the occurrence of fish that have become lodged in the meshes of a net while trying to escape. Meshing, if it occurs on a large scale, is a nuisance to fishermen because of the time needed to remove meshed fish individually from a net.

PRACTICAL DIFFICULTIES AND MANAGEMENT PROBLEMS

Socio-economic problems

An increase in mesh size is less likely to be accepted if benefits are not experienced by all sections of the industry. Thus, if an increase in mesh size favours one section of the industry at the possible expense of another, there is likely to be a conflict of interests.

Possible sources of conflict involve inshore subsistence fishermen who may want to use relatively small mesh nets, and offshore fishermen who may be prepared to use larger nets with larger mesh sizes.

Alternatively, there may be a conflict between fishermen who wish to use small meshes to catch large quantities of small-bodied fish for processing into fish meal, and fishermen who are prepared to use large meshes to catch larger fish for human consumption. So long as there are conflicting aims, enforcement is likely to be difficult to achieve in practice.

PRACTICAL DIFFICULTIES AND MANAGEMENT PROBLEMS

Exemptions from mesh regulations

When a mesh size is to be increased, there may be pressure, if only for a transition period, to permit exemptions to mesh regulations for certain types of gear or for certain regions.

A problem with exemptions is that legal loopholes tend to be created and these may enable people to escape conviction.

PRACTICAL DIFFICULTIES AND MANAGEMENT PROBLEMS

Mesh differentials

Codends made of different materials can have different selective properties even if the mesh size is the same.

To allow for this, it may be necessary to:

Frame a mesh size regulation with reference to a particular cod-end material.

Specify “differentials” (i.e. conversion factors) so that the mesh size for one material can be converted to an equivalent in terms of the mesh size for some other material.

Specify whether a net is to be measured wet or dry.