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FAO Meeting on Fish Behaviour in relation to Fishing Techniques and Tactics

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fishery resources and exploitation in
relation to behaviour, FAO.*

In view of the way that "Fish Behaviour" has recently been singled out as a problem requiring concentrated attention, the Fisheries Resources and Exploitation Division of the Fisheries Department of FAO plans to devote a special meeting to it. It is suggested that the FAO Meeting be held in September 1967 in Bergen, Norway. The time is opportune because a number of countries have for the last few years been mounting a real effort to the understanding of fish behaviour with a view to improving their fishing techniques and tactics.

During the FAO Fishing Gear Congress of 1957 and more particularly that of 1963 much attention was devoted to this topic and the importance of expanding research in the field of fish behaviour in its relation to fishing techniques and tactics was emphasised. Similar conclusions were drawn during the FAO Symposium on Fish Behaviour held in 1958 under the auspices of the Indo-Pacific Fisheries Council. The FAO Advisory Committee on Marine Resources Research (ACMRR) at its Third Session in March 1965 "agreed that such an experts meeting should be held and recommends that FAO should seek the views of prospective contributors before deciding on its timing". With this encouragement, FAO made budgetary provision for such a meeting.

The scope and planning of this FAO meeting were also discussed during the International Council for the Exploration of the Sea (ICES) annual meeting in October 1965 and resolutions were adopted to proceed with preparations for such a meeting.

The objectives of this meeting are not only to provide a coordinated background on fish behaviour in relation to fishing gear and to fishing operations in general, but also to stimulate further studies in this field by creating the opportunity for exchange of information between workers in various professions and disciplines. While no strict limitation is intended on the papers sought, it is generally expected that these should be primarily directed towards those actively engaged in fisheries research and the development of fishing methods.

One of the main objectives will be to review and evaluate the known facts and the prevailing theories on the ways fish react to their environment, to each other and when confronted with various means of capture. It is realized that the complexity of the problems involved, requires consultation among workers engaged in various disciplines, not only of applied character, such as gear technology and fishery biology but also those who pursue more theoretical studies.

The term "behaviour" will be interpreted in its broadest sense. However, it is not the intention to deal with environmental influences of more general character affecting the global distribution of fish, their yearly migrations, natural mortality, stock magnitude, etc., which all have more bearing on the strategy of fishing than on tactics.

Having these objectives in mind, it is expected that the Meeting will endeavour:

- (a) To summarize the present knowledge of the relationship between fish behaviour and fishing technique.
- (b) To pin-point the gaps in our knowledge and to identify the most urgent needs for future studies.
- (c) To exchange research experience and ideas between specialists engaged in various fields of science and technology.
- (d) To advance the possible application of accumulated scientific data towards the practical development of efficient fishing methods.
- (e) To review critically the prevailing methods and devices used in investigations of fish behaviour in relation to systems of capture.
- (f) To encourage national action by dissemination of information, recommendations and working schemes under the prestige of an international forum.

A broad outline is given of subjects which are expected to be comprehensively covered by the content of the submitted papers and by discussions convened during the Meeting. The cited list does not pretend

to exhaust every aspect of enquiries which might be of direct or indirect interest to the meeting, and it should be assumed that additional grouping can be introduced if necessary.

- (i) Information on important fisheries related to the present knowledge of species behaviour
 - (a) Clupeoids (herring, anchovy, sardine, etc.)
 - (b) Tuna and related species
 - (c) Gadoids (cod, hake, etc.)
 - (d) Flatfish (sole, plaice, halibut, etc.)
 - (e) Salmonids (salmon, trout, smelt, etc.)
 - (f) Commercial invertebrates (shrimp, lobster, squid, etc.)
 - (g) Others.

- (ii) Methods and techniques for studying behaviour of fish in their natural environment (with emphasis on what has been found rather than on instrumentation).
 - (a) Direct and indirect underwater observations
(aqualung, diving chambers, manned towed bodies, submarines, cameras, T.V. etc.)
 - (b) Sonic devices (echo sounder, netszonde, sonar, sector scanner etc.)
 - (c) Comparative and experimental fishing.

- (iii) Experimental studies of fish reactions to physical and biological stimuli both in their natural and in a controlled environment.
 - (a) Reaction of fish to a single stimulus.
(Temperature, light, sound, electricity, chemicals, currents)
 - (b) Reactions of fish to fixed or moving objects under various circumstances, in order to clarify escape reactions, feeding behaviour, avoidance, sheltering, etc.
 - (c) Learning capacity of aquatic animals.
 - (d) Schooling behaviour.
 - (e) Behaviour of marked fish and fish with experimentally induced abnormalities.
 - (f) Measurements of fish locomotion, maximum or cruising speed of individuals and schools.

