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International Council for the
Exploration of the Sea

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**REPORT OF THE WORKING GROUP ON MASS REARING OF JUVENILE
MARINE FISH TO THE MARICULTURE COMMITTEE OF ICES**

This document is a report of a Working Group of the International Council for the Exploration of the Sea and does not necessarily represent the views of the Council. Therefore, it should not be quoted without consultation with the General Secretary.

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1. TERMS OF REFERENCE

Council Resolution 1989/2:32: The Working Group on Mass Rearing of Juvenile Marine Fish (Chairman Mr. I. Huse) will work by correspondence in 1990 and will meet in Oban in 1991 at a time to be decided at the 1990 Statutory Meeting to:

- a) prepare a report describing standardized procedures on mass production for turbot and sea bream fry as model species, including criteria, in addition to growth and survival, for the evaluation of the quality of eggs, larvae, and juveniles, as identified in the action list on p.13 of the Working Group report;
- b) describe nutritional requirements of marine fish larvae, primarily for fatty and amino acids and collect information on the function of individual compounds in the organism;
- c) advice on alternative strategies to the use of antibiotics in the control of microflora in culture systems.

The Working Group will report progress to the Mariculture Committee at the 1990 Statutory Meeting.

2. WORK IN THE PERIOD

As the Mariculture Committee did not support the W.G. recommendation for the W.G. to meet in 1990, the Group has worked by correspondence in this interim period. Accordingly, the progress has not been on the same level as in a year with a meeting, as the tasks lined out in the terms of reference (C.Res.1989/2:32) require a great deal of group discussion in order to be properly resolved.

Several of the W.G. members have, however, met during the WAS annual meeting in Halifax, Canada, and during the Marine Fish Larvae symposium in Bergen, Norway.

The first matter of discussion was the new terms of reference. The W.G. concluded that the wording of paragraph a) was unclear, and that the choice of model species seemed to be unfavourable. This will be further covered under Recommendations.

The intercalibration of methodologies for w3-HUFA analysis has been carried further, and is at the end of its second phase. In a first phase, through an interlaboratory exercise, it was concluded that the observed intralaboratory variation was acceptable, but that the interlaboratory variation was much larger. The latter was claimed to be due to the difference in methodologies applied. In a second phase we compared and combined various methodologies to come up with one selected protocol. This protocol was worked out by members of the W.G. and is now under final review by Prof. Colin Cowey, Univ. of Guelph, Canada. A third phase will consist of intercalibration of this protocol among a number of relevant laboratories using reference materials.

The study on the determination of w3-HUFA requirements is also carried further. Three standard enrichment emulsions have been prepared and sent out to several laboratories. Applying low, medium and high w3-HUFA emulsions for enrichment of *Artemia nauplii* and rotifers low, medium and high w3-HUFA levels are established in these live foods. Feeding these enriched live feeds to different marine larvae (e.g.: sea bass, sea bream, turbot) has produced preliminary results showing significant differences in growth, survival and deformities. This study will continue, and more labs have expressed an interest to participate.

The planning of next year's meeting is in progress. Details will be given in chapter 3. W.G. member Malcolm Gillespie (U.K.) has informed the W.G. that it will be difficult to arrange the meeting in Oban in late June/early July as most hotel rooms are booked the year in advance by tour operators. We therefore have looked for an alternative meeting place. We have also tried to tie it to other events where a number of the members will be present anyhow in order to save travel expenses and time according to the views expressed at the ICES C.M. 1989. Several alternatives were discussed, and a meeting in conjunction with LARVI-91 in Ghent, Belgium, August 27 to 30, 1991, gained most support from the W.G. This is of course a very late date

for a W.G. meeting in terms of reporting. The benefits of having the meetings in conjunction are, however, obvious, as many of the topics are identical, and the synthesis in the W.G. can benefit greatly from the presentations and discussions at LARVI-91. The W.G. therefore decided to put this proposal before the Mariculture Committee, and will, if this is accepted, produce the report in Ghent directly after the meeting and have it in Copenhagen and with the Chairman on September 2.

If this procedure is not acceptable to the Mariculture Committee or other ICES bodies, the W.G. meeting should be held June 23 to 25 in conjunction with the International Fish Nutrition Conference to be held in Biarritz, France.

3. DESCRIPTION OF THE FORM OF NEXT W.G.MEETING

The -91 W.G. meeting will in most respects follow the sketch made in the -89 W.G. report, with due consideration of the altered terms of reference. There will be four plenary sessions with one or two presentations in each session, and four subsequent parallel group discussions which also will produce draft recommendations. Finally there will be a plenary session to finalize and concentrate recommendations.

The four themes will be:

- 1) Standardized procedures and conditions for experimental fry production of model species (Convener: Josianne Støttrup, Denmark).
- 2) Nutrition (Convener: Patric Sorgeloos, Belgium).
- 3) Zootechnique including hygienic strategies (Conveners: Beatrice Chatain, France, Gidon Minkoff, Spain).
- 4) Egg, larvae and juvenile quality (Convener: Elin Kjørsvik, Norway).

The Conveners will be responsible for selecting speakers, for conducting the group discussions and for wording the group draft recommendations.

4. RECOMMENDATIONS

As mentioned above it was felt in the W.G. that paragraph a) of the terms of reference needed to be clarified. As it reads it seems to be aimed at producing a cook book for the industry while we finally interpreted the essence of the recommendation of the Mariculture Committee to be that the W.G. should produce advice on and standardization of how to carry out experimental fry production in order to obtain comparable results.

The reference to the "action list" on page 13 of the W.G. report is also omitted from the present W.G. recommendations as it is out of context and thus adds nothing but confusion.

As to model species, several views have been expressed within the W.G. It has e.g. been felt that the chosen species reflect a warmer water environment than what would be considered relevant for ICES. There are also bound to be difficulties in agreeing on procedures for both sea bream and turbot. Sea bass, however is a species where there is a fairly well defined fry production procedure. The W.G. will therefore recommend to exchange sea bream for sea bass as a model species.

Accordingly the W.G. recommendations read as follows:

The Mariculture Committee recommends that the Working Group on "Mass Rearing of Juvenile Marine Fish (Chairman Ingvar Huse) will meet at Ghent, Belgium in conjunction with the international symposium LARVI -91 on August 26 and 31 to:

- a) prepare a report describing standardized procedures and conditions for experimental fry production of turbot and sea bass as model species, including criteria in addition to growth and survival, for the evaluation of the quality of eggs , larvae, and juveniles;
- b) describe nutritional requirements of marine fish larvae, primarily for fatty acids and amino acids and collect information on the function of individual compounds in the organisms;
- c) advice on alternative strategies to the use of antibiotics in the control of microflora in culture systems.

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