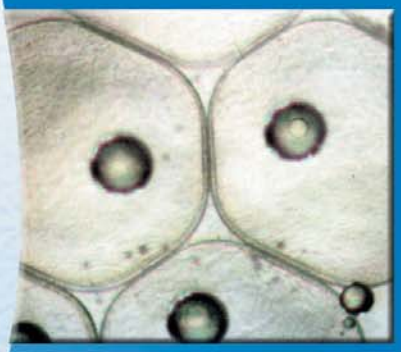
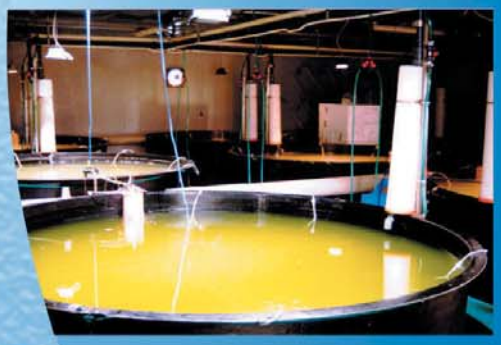
Manual on Hatchery Production of Seabass and Gilthead Seabream

Volume 1





Food and Agriculture Organization of the United Nations

Manual on Hatchery Production of Seabass and Gilthead Seabream

Volume 1

by

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Food and Agriculture Organization of the United Nations
Rome, 1999

PREPARATION OF THIS DOCUMENT

This is the first of two volumes of a Manual on hatchery production of seabass and gilthead seabream. It is part of the programme of publications of the Inland Water Resources and Aquaculture Service. The manual has been written based on the direct experience of technicians and managers of commercial hatcheries operating in the Mediterranean. It is intended to assist both technicians entering this field as well as investors interested in evaluating the complexity of hatchery production of seabass and gilthead seabream.

The manual has been prepared by the authors under the overall coordination of Mario Pedini, Senior Adviser (Aquaculture Development), and with the collaboration of numerous colleagues contributing comments to sections of the manual, ideas, and who assisted in its finalization. The contributions to this volume of Massimo Caggiano (Ittica Ugento Spa), Pepino Candreva (INVE Aquaculture), Béatrice Châtain (IFREMER), Licinio Corbari (Ittica Ugento Spa), Brigitte Loix (STM Aquaculture Srl) and Marlène Dehasque (INVE Technologies) are greatly appreciated. The assistance in the editorial work and final presentation and graphics given by André Coche, Rine Sola, Magda Morales, José Castilla and Emanuela D'Antoni has also been invaluable.

Moretti, A.; Pedini Fernandez-Criado, M.; Cittolin, G.; Guidastri, R.
Manual on hatchery production of seabass and gilthead seabream. Volume 1.
Rome, FAO. 1999. 194 p.

ABSTRACT

Seabass and gilthead seabream are the two marine fish species, which have characterized the development of marine aquaculture in the Mediterranean basin in the last two decades. The substantial increase in production levels of these two high value species has been possible thanks to the progressive improvement in the technologies involved in the production of fry in hatcheries. As a result of this technological progress more than one hundred hatcheries have been built in the Mediterranean basin, working on these and other similar species. At present the farmed production of these two species that is derived from hatchery produced fry is far greater than the supply coming from the wild.

The development of these techniques, based originally on Japanese hatchery techniques has followed its own evolution and has resulted in what could be called a Mediterranean hatchery technology that is still evolving to provide higher quality animals and to reduce cost of production. This is a dynamic sector but it can be judged that it has reached a level of maturity that merits the production of a manual for hatchery personnel. The preparation of the manual has taken several years, also due to the progress of the sector that led to substantial revisions of sections. This has lengthened its preparation beyond what was originally expected. The manual is not intended to be the final word on hatchery production but rather a publication on how the industry produces in the late nineties. We preferred to include proven procedures rather than orient this publication to research on hatchery produced fry, as there is plenty of academic literature on this subject.

The manual has been divided in two volumes, with this first one divided in three parts. The first part dealing with the historical background which has led to the present status of this practice, and a discussion of the main factors that affect fish seed production. The second main section of the first volume has been devoted to the life history and biology of the species that enter in the production cycle of seabass and gilthead seabream fry. This includes also a short section on microalgae, rotifers and brine shrimp. The third main section of the first volume, which is the longer one, deals with hatchery production procedures, from broodstock management to production of live feed, egg management, larval rearing weaning, fry transport, and diseases.

The second volume will include sections on architecture and design of the hatchery systems, engineering aspects, financial aspects of hatchery operation and will provide some example of real cases of different commercial hatcheries that in recent years have approached hatchery production of these two species.

Key words: marine aquaculture, fry production, Mediterranean aquaculture, seabass, gilthead seabream.

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SUMMARY & INTRODUCTION

By far and large only two fish species, the gilthead seabream (*Sparus aurata*) and the seabass (*Dicentrarchus labrax*), account for the bulk of marine aquaculture production in the Mediterranean Sea. As a direct consequence, the greatest share of the Mediterranean hatchery output is formed by these two species.

This manual deals with mass production of gilthead seabream and seabass fry for the aquaculture industry. It focuses only on well-established practices that have reached a standardised industrialisation and can be considered as reliable. In some cases, import difficulties, shortage of adequate funding and unavailability of technical assistance and maintenance services, could limit the adoption of the latest and more capital intensive techniques that are described in this manual. These constraints may be overcome by the adoption of less recent technologies in sections of the hatchery, that are simpler and more labour intensive. When available, these methods are also briefly described in this manual. New developments such as genetic manipulations and hybridization with other species are not covered because they have not yet reached a commercial level. The manual has attempted to provide information on what are current practices in commercial hatcheries and the case study section of the second volume is included to show that different commercial hatcheries may establish different protocols for production that suit better the conditions of their sites or the markets they are supplying. The case study section in particular is not supposed to be up to date as the preparation of the manual has taken considerable time, but is included to show different approaches to production organization.

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