

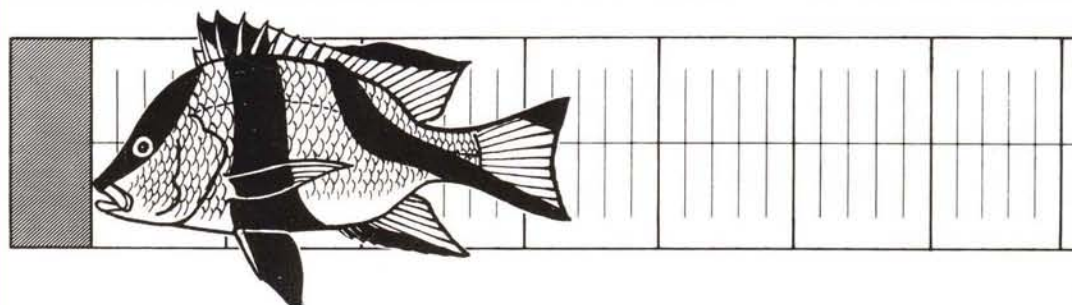
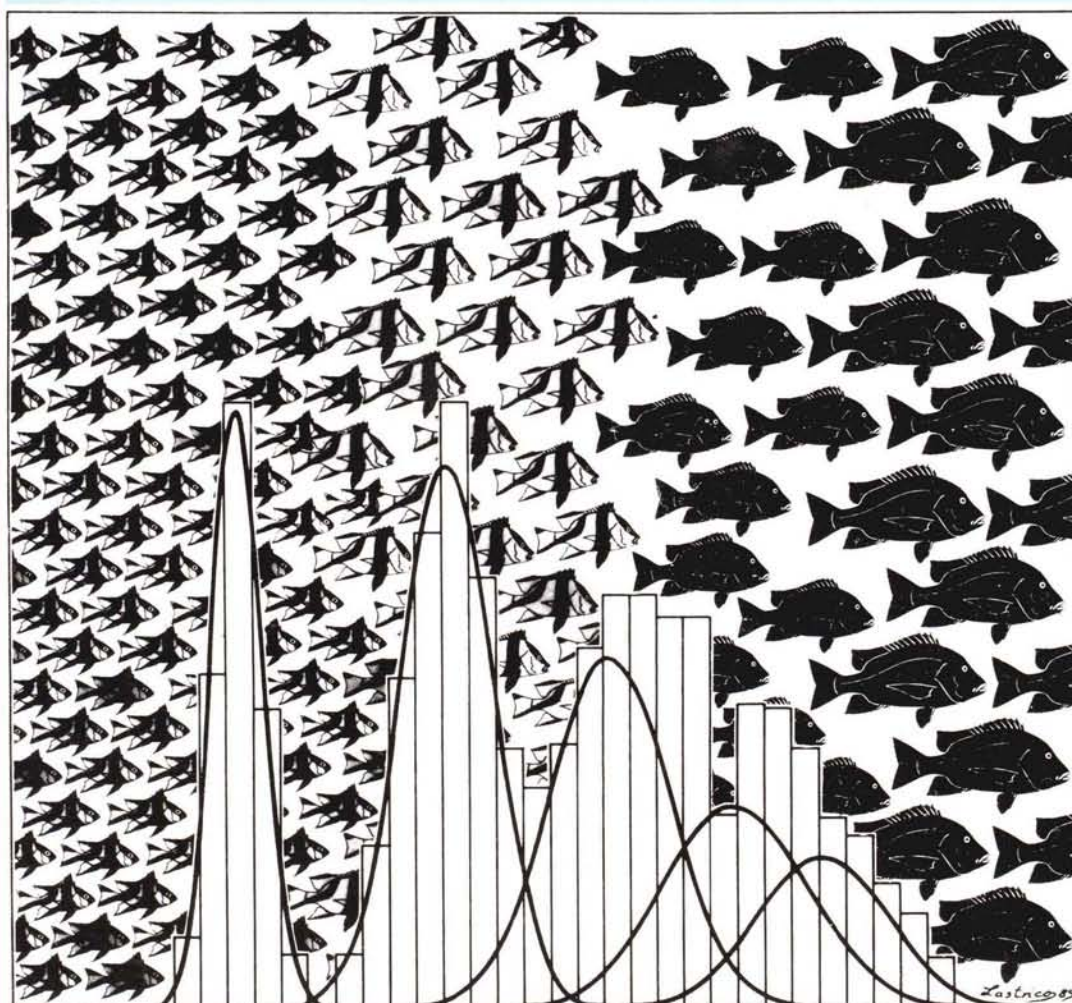
Introduction to tropical fish stock assessment

Part 1: Manual

FAO
FISHERIES
TECHNICAL
PAPER

306/1

Rev. 2



INTERNATIONAL YEAR OF THE OCEAN
98

DANIDA

Food
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the
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Nations



Introduction to tropical fish stock assessment

Part I: Manual

by

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PREPARATION OF THIS DOCUMENT

The first edition of the manual "Introduction to tropical fish stock assessment" was prepared by the FAO/DANIDA project "Training in fish stock assessment and fisheries research planning" (GCP/INT/392/DEN) for use in a series of regional and national training courses on fish stock assessment.

In 1984 the author, Per Sparre, was asked to write it on the basis of lecture notes and case studies prepared by the team of lecturers engaged in the courses. The first edition was printed in July 1985 in Manila, the Philippines, and distributed by the project through the Network of Tropical Fisheries Scientists of the International Center for Living Aquatic Resources Management (ICLARM) and training courses.

In 1989 the manual underwent a thorough revision by Mr. P. Sparre, Dr. E. Ursin, former Director of the Danish Institute for Fisheries and Marine Research, and Mr. S.C. Venema. This version was published in 1989 as FAO Fisheries Technical Paper 306.1 (Manual) and 306.2 (Exercises).

In 1991, when the stock was nearly exhausted, it was decided to undertake another thorough revision, placing emphasis on didactical aspects, correction of errors and at the same time, cross referencing with the computer program FiSAT (FAO/ICLARM Stock Assessment Tools) that had been developed in the meantime.

In 1994 Dr. Ursin prepared new texts to replace sections that had proven to be inadequate and partly to add new examples and some extensions to the methods contained in the manual. These new texts can be found in Section 2.6: Bhattacharya method, Section 3.4: Comparison of growth curves, phi prime, Section 5.2: Cohort analysis with several fleets, Section 6.2: Estimation of gill net selection, Section 8.3: Mean age and size in the yield, Section 8.6: Short and long-term prediction and parts of Section 8.7: Length-based Thompson and Bell model.

The opportunity was used to revise the documents again, at the same time correcting errors pointed out by translators and users, whose contributions are gratefully acknowledged.

It should be noted that new figures, tables and formulas have been assigned new unique numbers, which do not overlap with any of the deleted numbers used in previous versions. The figures were partly revised in Chile by Messrs. P. Arana and A. Nuñez. Typing and word processing was taken care of by Ms. Jane Ugilt in Denmark.

Similar versions have already appeared in Portuguese and Spanish and will appear in Indonesian and Thai.

Earlier versions have been translated into Chinese, French and Vietnamese.

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Rome, FAO. 1998. 407p.

ABSTRACT

In Part 1, Manual, a selection of methods on fish stock assessment is described in detail, with examples of calculations. Special emphasis is placed on methods based on the analysis of length-frequencies. After a short introduction to statistics, it covers the estimation of growth parameters and mortality rates, virtual population methods, including age-based and length-based cohort analysis, gear selectivity, sampling, prediction models, including Beverton and Holt's yield per recruit model and Thompson and Bell's model, surplus production models, multispecies and multifleet problems, the assessment of migratory stocks, a discussion on stock/recruitment relationships and demersal trawl surveys, including the swept-area method. The manual is completed with a review of stock assessment, where an indication is given of methods to be applied at different levels of availability of input data, a review of relevant computer programs produced by or in cooperation with FAO, and a list of references, including material for further reading.

In Part 2, Exercises, a number of exercises is given with solutions. The exercises are directly related to the various chapters and sections of the manual.

Distribution:

DANIDA

Participants at courses on Fish Stock Assessment organized by projects GCP/INT/392/DEN and GCP/INT/575/DEN

New members of ICLARM's Network of Tropical Fisheries Scientists

Institutes specialised in Tropical Fish Stock Assessment

Institutes of Fisheries Education

Marine and Inland Selectors

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