

BOOK REVIEW

Genetics and Fish Breeding

By C. E. PURDOM; Chapman and Hall, London, 1993; 277 pages; £ 39.95

Fish are a rich source of nutritious and delicious food to man. With the increasing demand for fish and fish products nearly every country with aquatic resources is making serious efforts to boost fish production. This is not surprising considering the fact that two-thirds of our planet is covered with water and most of it supports fish life. Therefore the breeding of fish for food, for recreation and aesthetic needs, or in the context of conservation of natural species against environmental harm is of global importance.

Genetic analysis of fish species is an old practice. Yet, not many books are available, even for a basic course in fish genetics at the undergraduate level. Therefore, *Genetics and Fish Breeding*, by the well-known fish geneticist C. E. Purdom, is indeed a timely and much-needed publication. The book is an outcome of Purdom's lifetime work in fish genetics at the famous Lowestoft Fisheries Laboratory in the UK. In this compact book, he has neatly provided a precise and comprehensive account of the wide spectrum of research currently being carried out both for gaining an understanding of the principles of fish genetics and for their ultimate application(s) for higher productivity and disease resistance.

The book is divided into 15 chapters. These chapters are written in a lucid and logical manner and can be followed even by beginners. Chapters 1 and 2 deal with the scope of applied fish genetics, and sexuality and reproduction, respectively. Chapters 3 and 4 describe the principles of genetics and Mendelian inheritance of colour and other characteristics in fish. Two chapters (chapters 5 and 6) have been devoted to quantitative genetics, including commercially important characters. In chapter 6 the author has included the use of molecular approaches to ascertain genetic relatedness within and between species. He has very briefly touched upon the use of DNA fingerprinting (two paragraphs on pages 100 and 101), a technique that is now being used extensively not only for analysis of population structure, but also for behavioural, ecological, conservational and phylogenetic studies in a number of organisms, including fishes. Therefore, in my view, the statement 'In general, however, this wealth of information reflects the uniqueness of individuals and is of little help in population work, though it could be relevant in the study of highly inbred or clonal material' (pages 100, 101) is difficult to justify. I believe that a slightly more detailed coverage of this powerful technique, with special relevance to fish breeding and population studies, would have substantially added to the value of this otherwise thorough book.

Chapter 7 gives a brief description of cytogenetic studies in fishes, including methods for calculation of recombinational distance between genetic loci and the centromere by using the principle of gynogenesis. Sex determination, hybridization, sexuality and control of sex ratios are included in chapters 8–11. In each of these chapters the author

has provided insights into one or more intriguing problems of fish biology and shown how one can use the results of experimentation in understanding fundamental questions in fish genetics and breeding. Substantial space in the book has been devoted to these two aspects. Chromosome engineering is indeed the speciality of Purdom, and he has elegantly explained this topic in chapter 12. Recent developments in molecular-biological methods of gene manipulation in fishes are discussed in chapter 13. The last two chapters (14 and 15) deal with important aquarium and commercial fish species.

Considering the total length of the book—only 277 pages—Purdom has done an admirable job in covering a wide range, from principles of Mendelian inheritance to production of transgenic fish. The book is written mainly for the beginner in the field of fish breeding, but I am sure that it will also be of great value to specialists.

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