



BOOK REVIEW

Kara M.H. & Quignard J.P. (Eds.) 2019.
FISHES IN LAGOONS AND ESTUARIES
IN THE MEDITERRANEAN: MIGRATORY
FISH. John Wiley & Sons. Vol. 3A (ISBN: 978-1-786-30246-5), Vol. 3B (ISBN: 978-1-786-30391-2)

The Mediterranean basin contains a wide range of coastal and marine ecosystems that are important for the human population of more than 20 countries. This basin is a biodiversity hotspot (RADKHAH & EAGDERI 2019), containing about 4 to 18% of the diversity of marine ecosystems in the world. According to Froese & Pauly (2019), about 700 fish species have been registered in the Mediterranean basin so far, a significant portion of which are present in lagoons and estuarine habitats. Migration is a behavior among fish that has attracted the attention of many researchers. Given that fish migration is related to their feeding and reproductive behaviors (Radkhah & Eagderi 2020), therefore, its study in fish that live in lagoons and estuaries of the Mediterranean basin is very useful and practical for fisheries managers.

Recently, volumes *Fishes in Lagoons and Estuaries in the Mediterranean* have been edited by Mohamed Hichem Kara and Jean-Pierre Quignard. The third volume of these books, published in 2019 by

John Wiley & Sons, Inc., examines migratory fish in the Mediterranean basin. The third volume includes two books (3A and 3B), which we review both here as a complete book.

The present book begins with an introduction to lagoonal and estuarine habitats and the phenology of fish migration. In addition, this section examines the role of migratory fish species in the development of fisheries and aquaculture industry. Following the introduction, the authors focus specifically on a family of migratory fish in the Mediterranean basin in each chapter (Table 1). In each chapter, first the family of migratory fish and then their genera and species are introduced. The authors try to express a wide range of biological and ecological characteristics of migratory species in each chapter. The most important of these characteristics are the systematic and phylogenetic status, morphological features, life cycle, habitat characteristics, geographical distribution, nutritional and reproductive behaviours. In addition, the economic importance of migratory species as well as their conservation status have been considered.

Some of the strengths and positive features of the present book are as follows:

- a) In each chapter, biological and ecological aspects of migratory fish are almost comprehensively examined.
- b) Concerning the conservation status of some species (such as *A. anguilla*), it is not mentioned only in terms of International Union for Conservation of Nature (IUCN) evaluation but also discussed in view of factors affecting the decline of their stocks. This is essential because understanding the factors influencing the decline of migratory fish populations can be used by fisheries experts and managers in future decision-making and management policies.
- c) Given that some species of migratory fish in the Mediterranean basin are of economic importance, the study of their biological characteristics and migratory behaviour can be used in the management and development of fisheries programs in the future.

Although the present book provides useful information on the biological and ecological characteristics of migratory fish in the Mediterranean basin, there are still shortcomings that should be noted in addition to the positive features. These include:

- a) Some of the illustrations are of poor quality. Instead of using painted illustrations, we would suggest us-

ing new and colourful images for fish species in future editions. Presenting real and natural images of fish species can definitely be very attractive for the reader.

b) The distribution maps for fish species are not suitable and interesting. Therefore, it is suggested that the authors use colour images to better illustrate the distribution pattern of fish species in the Mediterranean basin. They can provide maps of species distribution using their presence data. Examples of these maps are available in various databases such as those of the Global Biodiversity Information Facility (GBIF).

c) Although the present book is intended to introduce and study migratory fish in the Mediterranean basin, the authors do not specifically mention the migratory patterns of these fish. Therefore, authors are advised to dedicate a special section in each chapter to examine the migration behaviour of fish species.

d) Although the present book was published in 2019, the authors have mostly used old references. With this in mind, we suggest that the authors make greater use of the results of recent studies.

Although there are some shortcomings in the book, it can still be considered as a valid and comprehensive reference. Given the importance of migratory behaviour in fish, this book can be useful for understanding the biological and ecological characteristics of migratory fish in the Mediterranean basin. In addition, it can answer many of the questions raised on this subject. We recommend the present book to researchers as well as interested students who are engaged in research in the fields of biology, ecology, fisheries, ichthyology and wildlife.

Table 1. List of families, genera and species/subspecies of migratory fish in the estuaries and lagoons of the Mediterranean basin (LC: Least Concern, CR: Critically Endangered, NE: Not Evaluated)

Volume	Chapter No	Family	Genus	Species/Subspecies	Conservation status (IUCN)
3A	1	Anguillidae	<i>Anguilla</i>	<i>Anguilla anguilla</i>	CR
	2	Engraulidae	<i>Engraulis</i>	<i>Engraulis russoi</i>	NE
	3	Gobiidae	<i>Pomatoschistus</i>	<i>Pomatoschistus minutus</i>	LC
	4	Moronidae	<i>Dicentrarchus</i>	<i>Dicentrarchus labrax</i>	LC
	5	Mugilidae	<i>Chelon</i>	<i>Chelon labrosus</i>	LC
			<i>Liza</i>	<i>Liza saliens</i>	LC
			<i>Liza aurata</i>	LC	
<i>Liza ramada</i>			LC		
<i>Mugil</i>	<i>Mugil cephalus</i>	LC			
3B	1	Mullidae	<i>Mullus</i>	<i>Mullus barbatus barbatus</i> <i>Mullus surmuletus</i>	NE LC
	2	Pleuronectidae	<i>Platichthys</i>	<i>Platichthys flesus</i>	LC
	3	Soleidae	<i>Solea</i>	<i>Solea senegalensis</i>	NE
				<i>Solea aegyptiaca</i>	LC
				<i>Solea solea</i>	LC
	4	Sparidae	<i>Diplodus</i>	<i>Diplodus puntazzo</i>	NE
				<i>Diplodus vulgaris</i>	LC
				<i>Diplodus sargus sargus</i>	LC
<i>Diplodus annularis</i>				NE	
<i>Sparus</i>				<i>Sparus aurata</i>	LC
<i>Lithognathus</i>	<i>Lithognathus mormyrus</i>	LC			
<i>Sarpa</i>	<i>Sarpa salpa</i>	LC			

References

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Ali Reza Radkhah & Soheil Eagderi
Department of Fisheries, Faculty of Natural Resources, University of Tehran, Karaj, Iran;
E-mail: alirezaradkhah@ut.ac.ir