

THE IMPACT OF THE CIESM ATLAS OF EXOTIC SPECIES (FISHES) IN THE MEDITERRANEAN

D. Golani ^{1*}, L. Orsi-Relini ², E. Massuti ³, J. Quignard ⁴, J. Dulcic ⁵ and E. Azzurro ⁶

¹ Department of Evolution, Systematics and Ecology, The Hebrew University of Jerusalem, 91904 Jerusalem, Israel - dgolani@cc.huji.ac.il

² Laboratorio di Biologia Marina e Ecologia Animale, DIPTERIS, University of Genova, Italy

³ IEO-Centre Oceanografic de les Balears, Palma de Mallorca, Spain

⁴ Laboratoire d'Ichthyologie méditerranéenne, Université Montpellier II, France

⁵ Institute of Oceanography and Fisheries, Split, Croatia

⁶ ISPRA, High Institute of Environmental Protection and Research, Laboratory of Milazzo, Italy

Abstract

In 2002 CIESM published the first in its series of Atlases of Exotic Species in the Mediterranean, first on Fishes and on Decapods, then two years later on Molluscs. The Atlases provide user-friendly access to detailed and authoritative information on Mediterranean biodiversity to both amateurs and experts and raise the level of awareness of these important issues. A survey of electronic databases has revealed that the CIESM Atlas of Exotic Species: Fishes has been cited by close to 200 scientific articles.

Keywords: Alien species, Fishes, Eastern Mediterranean, Western Mediterranean

In 2002 CIESM published the first in its series of Atlases of Exotic Species in the Mediterranean, first on Fishes and on Decapods, then two years later on Molluscs.

Whereas the original and main goal was to document the existing situation concerning the dynamics of biodiversity in the Mediterranean, in light of ongoing changes, the very fact of the publication of the Atlases, and of the online Atlases via the CIESM website in the Internet, raised the level of awareness of these issues to the public. The Atlas provides user-friendly access to detailed information on Mediterranean biodiversity to both amateurs and experts.

Since the publication of the CIESM Atlases, there has been a notable increase in the number of exotic species in the Mediterranean, in all three taxa, but especially in molluscs. This dramatic increase may be attributed to the significant augmentation of collection activity, both by scientists and by amateur naturalists. In addition, most molluscs have hard shells which remain after their death, thus allowing detection of abortive colonization attempts; this is not possible concerning other taxa.

However, concerning fishes, there are other means of detecting the presence of exotic fish species in the Mediterranean. The fishery industries and fishermen, both commercial and amateurs, assist in the recognition of the arrival of species previously unknown in their new distribution areas. Furthermore, the quantitative biology and ecology of many fish species are well known, which is conducive to monitoring of the number and distribution of exotic fish species.

The Atlas of Exotic Species: Fishes [1] has become a known and leading authoritative baseline for researchers and others searching for accurate and updated information on the dispersal and distribution of exotic fish species in the Mediterranean Sea. A survey of electronic databases has revealed that the Atlas of Fishes has been cited by no less than 197 scientific articles. We the authors and members of the CIESM Fish Group estimate that the actual number of citations is much higher, since many important journals of regional or local interest and distribution may not necessarily be indexed by the standard databases and most popular online search engines.

The number of known citations of the Atlas has risen from 3 in the first year of its publication, 2002, to at least 45 in 2009. The citing publications have first authors from many nationalities, from no less than 23 different countries; the country with the most citations of the Atlas is Italy (with 38), then Greece (31), Israel (28), Tunisia (20) and Turkey (17).

In the future, the CIESM Atlas of Exotic Species, in its online format on the CIESM website, can continue to inform the scientific and general community of the presence of new exotic species that may constitute a threat to the health and safety of the public. For example, there are exotic fish species that are poisonous, such as *Lagocephalus sceleratus*, the Elongated Pufferfish [2, 3] or venomous, such as *Plotosus lineatus*, the Eel Catfish [4]. It is hereby suggested that the CIESM website add a page of recent scientific publications, including grey literature, on invasive species in the Mediterranean.

References

- 1 - Golani, D., Orsi-Relini, L., Massuti, E. and Quignard J -P., 2002. CIESM Atlas of Exotic Species in the Mediterranean. Vol.1. Fishes. (F. Briand, ed.), Monaco: CIESM Publications. 254 pp.
- 2 - Eisenman, A., Rusetski, V., Sharivker, D., Yona, Z. and Golani, D., 2008. An odd pilgrim in the Holyland. *Amer. J. Emerg. Med.* (electronic), 26: 383.e3-e6.
- 3 - Bentur, Y., Ashkar, J., Lurie, Y., Levy, Y., Azzam, Z., Litmanovich, M., Gurevych, B., Golani, D. and Eisenman, A. 2008. Lessepsian migration and tetrodotoxin poisoning due to *Lagocephalus sceleratus* in the eastern Mediterranean. *Toxicon*, 52: 964-968.
- 4 - Gweta S., Spanier, E. and Bentur, Y. 2008. Venomous fish injuries along the Israeli Mediterranean coast: scope and characterization. *Isr. Med. Assoc. J.* 10(11): 783-788.