

THE ITALIAN ANNOTATED BIBLIOGRAPHY ON MEDITERRANEAN SPEARFISH (*TETRAPTURUS BELONE*, RAFINESQUE, 1810) AND OTHER BILLFISH AND SPEARFISH SPECIES

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SUMMARY

The Italian scientists have a long tradition of studies and research on the many large pelagic species, including spearfish and other billfish. One of these species (Tetrapturus belone) can show relevant catches in some years, while other species are incidental. This is the first attempt to list together the papers published so far by Italian scientists, concerning the biology of these species, the fisheries and many other scientific issues. The aim of this paper is to provide a sort of annotated bibliography, with specific key words, even if it is surely incomplete, because sometimes the Mediterranean spearfish is hidden in some papers on the pelagic fisheries. In total, we found so far 93 papers on spearfish and billfish. This bibliography was set together to serve the scientists and to help them in finding some rare references that might be useful for their work.

RÉSUMÉ

Les scientifiques italiens ont une longue tradition d'études et de recherches sur les nombreuses grandes espèces pélagiques, y compris les Tetrapturus spp. et d'autres istiophoridés. L'une de ces espèces (Tetrapturus belone) présente des captures importantes certaines années, alors que d'autres espèces sont capturées en tant que prises accessoires. Il s'agit de la première tentative de répertorier les articles publiés à ce jour par des scientifiques italiens concernant la biologie de ces espèces, les pêcheries et de nombreuses autres questions scientifiques. Le but de ce document est de fournir une sorte de bibliographie annotée, avec des mots clés spécifiques, même si elle est sûrement incomplète, car parfois le marlin de la Méditerranée est caché dans certains documents sur les pêcheries pélagiques. Au total, nous avons trouvé jusqu'à présent 93 documents scientifiques sur les Tetrapturus spp. et les istiophoridés. Cette bibliographie a été établie pour les scientifiques afin de les aider à trouver des références rares qui pourraient leur être utiles dans leurs travaux.

RESUMEN

Los científicos italianos tienen una larga tradición de estudios e investigaciones sobre muchas especies de grandes pelágicos, lo que incluye a Tetrapturus spp. y otros istiofóridos. Una de estas especies (Tetrapturus belone) puede presentar capturas importantes algunos años, mientras que otras especies son captura incidental. Este es el primer intento de reunir muchos documentos publicados hasta ahora por científicos italianos sobre la biología de estas especies, las pesquerías y muchos otros temas científicos. El objetivo de este documento es proporcionar una especie de bibliografía anotada, con palabras clave específicas, incluso aunque la lista sea incompleta a causa de que a veces el marlín del Mediterráneo está oculto en algunos documentos sobre pesquerías pelágicas. En total, hemos encontrado hasta ahora 93 documentos sobre Tetrapturus spp. e istiofóridos. Esta bibliografía se reunió para servir a los científicos y ayudarles a hallar algunas raras referencias que podrían resultarles útiles para su trabajo.

KEYWORDS

Mediterranean spearfish, Tetrapturus belone, shortbill spearfish, Tetrapturus angustirostris, Roundscale spearfish, Tetrapturus georgii, white marlin, Kajikia albida, black marlin, Istiompax indica, blue marlin, Makaira nigricans, Atlantic sailfish, Istiophorus albicans, billfish species, spearfish species, bibliography, biology, reproduction, feeding, history, fishery, catches, techniques, systematics, nomenclature.

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1. Foreword

This paper was prepared for providing an annotated overview of the Italian literature on Mediterranean spearfish (*Tetrapturus belone*, Rafinesque, 1810) and other more occasional on incidental billfish species, such as the shortbill spearfish, *Tetrapturus angustirostris*, Tanaka, 1815, the roundscale spearfish, *Tetrapturus georgii*, Lowe, 1841, the white marlin, *Kajikia albida* (Poey, 1860), the black marlin, *Istiompax indica* (Cuvier, 1832), the Atlantic sailfish, *Istiophorus albicans* (Latreille, 1804), and the blue marlin, *Makaira nigricans*, Lacépède, 1802.

The choice was driven by the fact that the Mediterranean spearfish is reported and observed since old times, while most of the incidental species are known since at least one century in the Mediterranean Sea; a few ones are recent immigrants. All these species have a good market and, therefore, they are important for the fishery.

Many papers were written in Italian, a language which is not on the list of the three used in ICCAT (English, French and Spanish), and possibly some scientists may have problems in understanding the contents.

Another reason for setting-up this annotated bibliography is because several papers are not available in electronic format and therefore some young colleagues, who are not used to study and mine in traditional libraries anymore, seem not able to detect the many studies that have been carried out so far on these species.

However, as a matter of fact, most of the modern (the last 200 years) studies on Mediterranean spearfish and other more incidental billfish and spearfish had Italian or Spanish authors, even if Italian authors are the large majority.

Therefore, it is a sort of national proudness to try to set-up the list of Italian papers on the Mediterranean spearfish (*Tetrapturus belone*, Rafinesque, 1810) and other less frequent billfish and spearfish species that we have been able to find so far, annotating them with keywords for improving the opportunities to detect them with an electronic searching engine.

2. Criteria

The bibliography on Mediterranean spearfish (*Tetrapturus belone*) and other more occasional billfish and spearfish species included in this work was selected when an Italian scientist was the only author of a paper or when one or more Italian scientists were among the authors of collective papers.

This was the only criterium we used for selecting the many papers, independently if they were peer-review papers, books, not-peer-review papers, papers present to conferences or meetings or congresses, reports to public administrations or project reports.

Of course, each paper included in our list shall be directly related to Mediterranean spearfish (*Tetrapturus belone*) and other billfish and spearfish species, even if, in some cases, these species are concerned by just a part of the text.

For the old papers, we reported the first edition that it was possibly to find, independently from the date of the original work.

When vernacular names or old scientific names were used in the original paper, they were possibly listed in the annotation; old scientific names or old vernacular names made the selection work even more difficult. The annotations required each paper to be checked in detail and this implied a huge workload.

The annotations show the main subjects in the content, and we mostly used the descriptors proposed by ASFIS (Fagetti, Privett and Sears, 2009), adding additional descriptors when necessary. As concerns the main species included in each reference, we used both the international common name(s) and the Latin name(s).

3. Discussion

One of the major problem for the current paper was the need to homogenise the style of all citations, which were reported under many different styles. Apparently, this fact can appear as a minor problem, but it required a very important amount of work and time.

The number of titles which are now available surely constitutes a very useful reference list for all the colleagues working on Mediterranean spearfish (*Tetrapturus belone*, Rafinesque, 1810) and other less frequent spearfish and billfish species, which are often neglected when discussing about the spearfish and billfish in the Mediterranean Sea, including SCRS and ICCAT in recent years.

The opportunity provided in recent times by the web is improving the number of available articles on these species and their fisheries.

This annotated bibliography required an important amount of work and a lot of attention, due to the fact that several documents were published not only by marine scientists, but also by scientists and journalists dealing with other disciplines, making the search very wide and difficult, certainly very multidisciplinary.

Even limiting the bibliography to the works where an Italian scientist was among the authors, the number of citations we discovered so far is higher than we imagined, being anyway conscious that the list is certainly incomplete.

At the same time, during this work, it was amazing to learn so many details about all these species. Going through the various titles (and the text behind) in the bibliography it is possible to find important catch data and biological information, but also historical information which is important particularly for other billfish and spearfish species.

In total, we are listing 93 papers (**Annex 1**), mostly edited in the very last century and in the current one (**Figure 1**). As a matter of fact, it seems that the Mediterranean spearfish was not distinguished from swordfish till the very beginning of the XIX century, therefore historical information is missing. It is very clear how the scientific papers on these species increased in number in the last part of the XIX century and in the very first part of the XX century, as a positive consequence of the activity of few scientists mostly in Genova and Messina. The papers and studies increased in a considerable way after the '80s, thanks to the national research triennial plans adopted by the Ministry of Merchant Marine (and then by MIPAAF) and, in the last two decades, thanks also to the EC Data Collection Programme, followed by the EC Data Collection Framework.

4. Conclusion

The Mediterranean spearfish and the other incidental billfish and spearfish species in the Mediterranean Sea are usually even not mentioned by the ICCAT SCRS BIL SG, even if in the past, for few years, the Mediterranean spearfish was included in the report, along with the catch table. This unexplicable problem shall be urgently fixed.

The list of Italian books and scientific papers on spearfish and billfish here provided is still certainly incomplete and we hope that this work may further stimulate scientists to provide additional titles, with the purpose to create a complete reference literature list to be used by all the colleagues working on this subject or on related subjects, for helping them in their work.

Several other documents are certainly still kept in ancient archives, either public or private, sometimes in churches, ancient libraries, old company's archives, and in other places. Indeed, this is a never-ending work and we should be conscious that this work will be never completed.

The most traditional fishing technique for the Mediterranean spearfish, the harpoon fishery, has a know-how that remained almost the same since centuries, with very limited technological improvements, mostly in the last half-century. The development of the driftnet fishery till the year 2000 and the longline fishing, changed considerably both the fishing and the opportunities for the biological sampling for all the spearfish and billfish species.

As it was mentioned in a previous paper (Di Natale, 2018), in recent years many scientists and particularly (but not only) young colleagues are adopting a sort of selective attitude when they prepare their papers, avoiding even to mention papers which were not published in peer-review journals or by scientists who are competing with them. This attitude is clearly causing a sort of scientific disaster, because there are several very recent papers which are not at all using the knowledge available till the '70s, which sometimes means forgetting the largest part of the scientific knowledge we already have.

Clearly, there is the need to improve the knowledge on previous available studies on spearfish and billfish which were and are present in the Mediterranean Sea and this annotated review was made exactly for providing a helping hand to all the colleagues working on this species.

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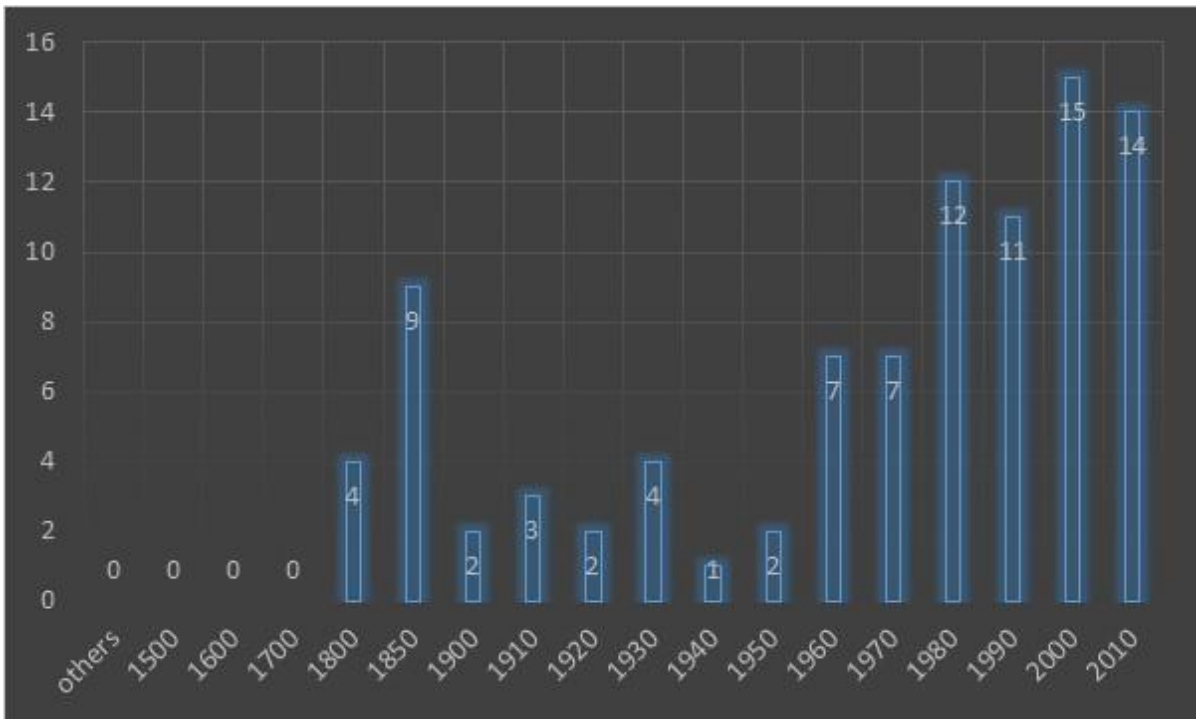


Figure 1. Number of the papers published on spearfish and billfish by Italian authors over the years (since 1800 to 2019).

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