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Ichthyological contributions of Juraj Kolombatović (1843-1908)

Jakov DULČIĆ

Institute of Oceanography and Fisheries, P.O.Box 500, 21000 Split, Croatia

Corresponding author, e-mail: dulcic@izor.hr

*This paper is dedicated to Juraj Kolombatović, the renowned Croatian natural scientist, who passed away 100 years ago. We recognize this special anniversary by presenting a biography and summary of the scientific achievements of Juraj Kolombatović who gained his greatest success in ichthyological research, a field in which he discovered and described seven new fish species: (4 gobiid species) Kolombatović's goby *Chromogobius zebratus* (Kolombatović, 1891), Liechtenstein's goby *Corcyrogobius liechtensteini* (Kolombatović, 1891), Millerigobius macrocephalus (Kolombatović, 1891), large-scaled goby *Thorogobius macrolepis* (Kolombatović, 1891), (3 blennioid species) *Parablennius zvonimiri* (Kolombatović, 1892), *Lipophrys adriaticus* (Steindachner & Kolombatović, 1883) and *Lipophrys dalmatinus* (Steindachner & Kolombatović, 1883). Besides his contributions to basic biological science, he has actively contributed at an early date to cope with fisheries management issues in the region at both, local and international level.*

Key words: ichthyology, contributions, Juraj Kolombatović

INTRODUCTION

This year marks 165 years since the birth, and 100 years since the death, of Prof. Juraj Kolombatović (Fig. 1). He was a professor in mathematics at Split's Senior Secondary School and an acknowledged and self-educated natural scientist who, with his research on land and marine vertebrates, has not only become a permanently established figure in the world of Croatian but also in international science.

BIOGRAPHY

Juraj Kolombatović was born in Split on December 8, 1843. He attended junior secondary schools in Split and Zadar and later on the senior

secondary school in Venice. He was trained as a teacher in mathematics in Padua (Italy) and subsequently in Vienna (Austria) in 1867.

In 1864 he was appointed as a teacher in mathematics at the Senior Secondary School in Split where he was active until his retirement in 1900. During his 36 year career in teaching he taught "freehand writing, geometry, geometrical drawing and descriptive geometry." Despite being trained as a mathematician he was actively engaged in natural science, thus it was in this area of his work that he achieved most of his scientific successes, gained great recognition and entered the world of fame.

While studying in Italy he was influenced by the great movement among Italian people for freedom and unity and, swayed by the

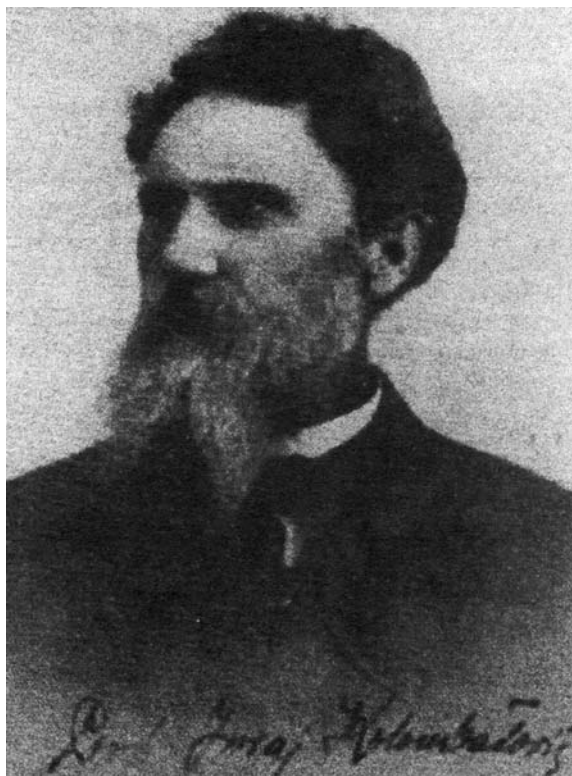


Fig. 1. Juraj Kolombatović (1843-1908)

enthusiasm of youth, he joined the Garibaldi movement. It was in those years and with those same motivations that he learned to be a Croat, Slav and patriot. From Italy he brought to his native Dalmatia all the passion of genuine patriotism where he joined a small group of nationalists who were striving politically for national awareness of Split. The result of such political activities was significant as it led to the defeat of the autonomists under the leadership of Split's longstanding major, A. Bajamonti, and the passage of the town of Split into the peoples' hands under the leadership of Dr. Gajo Bulat in 1882, with Prof. Kolombatović being elected as a councillor of the first Croatian local council in Split, a position he held until his death. The second half of the 19th century was not only a period of turbulent political events but was also the time of an all encompassing wave of scientific discoveries, especially in biological disciplines, and this holds also for the Dalmatian region as well as throughout the whole of Croatia. Certainly, the regional development

was a reflection of similar developments taking place in the wider Croatian environment, especially in Italy and Austria (in those times Austro-Hungary). In that period in Dalmatia, as well as in Croatia in general, many educated natural scientists as well as science amateurs were active and set an indelible mark on the Croatian science landscape as well as in the international science community, among which one has to include Spiridion Brusina, Dragutin Gorjanović-Kramberger, Lazar Car, Krunoslav Babić, Baldo Kosić, Grgur Bučić and many others. Juraj Kolombatović may without doubt be classified amongst the most significant researchers in the area of natural sciences, during a period in which the richness of the natural fauna was recognized and extended research started to explore the natural world with modern scientific approaches (JARDAS & DULČIĆ, 1998).

Kolombatović was, without doubt, among the most remarkable personalities of Split in the second half of the 19th century and was beloved among his students and all the population of Split. He died at 65 years of age on 21 August 1908. The news of his death was painfully echoed not only in Split but throughout the whole Europe (CVITANIĆ, 1958).

Kolombatović, while performing his duties with high dedication in a variety of disciplines, was often elected and invited to participate in an advisory capacity in committees and to represent different associations on issues regarding freshwater and marine fisheries. In 1881 he was elected as the Dalmatian representative to the committee of the ornithological monitoring cell of the Austro-Hungarian monarchy and in 1885 became a member of the professional fishing committee of the Split maritime area. In 1884 he left for Gorica as a professional member of the Austrian delegation in the international committee between Austro-Hungary and Italy regarding fishing issues, and in 1886 he joined the supervisory committee for unresolved legal issues regarding fisheries. Due to his hard work and dedication in legal issues regarding fisheries as well as due to his scientific work, in 1900 he was honoured by Franz Josef II with a cross

for his services and was awarded the title of knight. In the year of his death, 1908, members of the "Marjan" society planted a cypress tree on Marjan with an engraved plate "Čempres prof. Juraja Kolombatovića, 1908 (in English: Prof. Juraj Kolombatović's cypress)" Today, as a tribute to Juraj Kolombatović, there is a small bust on the top of Marjan besides the old entrance to the rundown and decrepit building of the ZOO park, which was the former Natural Science Museum of Split, in the street that bears his name Kolombatović Boulevard (JARDAS & DULČIĆ, 1998). KOVAČIĆ & MILLER (2000) named new goby species *Gobius kolombatovici* in honour of Juraj Kolombatović, one of the most important Croatian taxonomists, and the only Croatian naturalist to have worked intensively on small inshore fishes (Blenniidae, Gobiidae, Tripterygiidae).

ICHTHYOLOGICAL CONTRIBUTIONS

Juraj Kolombatović was mainly involved with ichthyology although, alongside fish, he dedicated himself with the same ardour and commitment to the research of fauna of other classes of vertebrate entities including amphibians, reptiles, birds and mammals. He was also greatly involved in studies on cephalopods. His research was mainly carried out in the localities around Split.

His greatest successes were recorded in the area of basic ichthyologic research. He described a great number of species, subspecies and fish varieties which he considered unknown until then. Today he is acknowledged in ichthyologic sciences for discovering seven new species, of which four are gobiid species and three are belonging to the group of blenniids, of which he considered the locality of Split, as regards the Adriatic Sea, as their typical habitat (*locus typicus*). As per principles of zoological nomenclature, apart from the names of the species directly named after him, as the describing author, the year and name is also entered when these species were described for the first time, thereby making them known to the world of

science. For species that he considered to be unknown until his discovery were then briefly described in Latin, as was common at the time. The fish species recognized today and described by him for the first time are:

Gobies:

- a) *Chromogobius zebratus* (Kolombatović, 1891) or Kolombatović's goby,
- b) *Corcyrogobius liechtensteini* (Kolombatović, 1891) or Liechtenstein's goby,
- c) *Thorogobius macrolepis* (Kolombatović, 1891) or large-scaled goby,
- d) *Millerigobius macrocephalus* (Kolombatović, 1891).

All of these species are described by Kolombatović in his work "Goby (Gobii) of the maritime area of Split in Dalmatia" that was published in the journal "Yearly Report of the Senior Secondary School of Split".

He described and published data on two new species of blenny (that he also called "mačkulje") in the journal "Sitzungsberichte der königlichen Akademie der Wissenschaften" (Records of the Royal Academy of Sciences) with the then well-known Austrian ichthyologist Dr. Franz Steindachner, director of the Court Museum in Vienna. Those two new species were: a) *Lipophrys adriaticus* (Steindachner & Kolombatović, 1883) or Adriatic blenny, and b) *Lipophrys dalmatinus* (Steindachner & Kolombatović, 1883) or Dalmatian blenny. A third type of blenny described by Kolombatović alone and published in the paper "Glasnik hrvatskog naravoslovnog društva" was *Parablennius zvonimiri* (Kolombatović, 1892) or dark-stag blenny.

Some other species and subspecies of fish were found by Kolombatović near Split, and described in his work as new species, have not gained recognition today following scientific scrutiny in the field of ichthyologic science. For a long time two species remained as they had been first described by him and were: *Gobius luteus* Kolombatović, 1891 – golden goby, which he described as a variation of the species *Gobius auratus* Risso, 1810, that is *G. auratus* var. *lutea*, as opposed to *G. auratus* var. *ruginosa* (today: *Gobius luteus* Kolombatović, 1891

→ *Gobius auratus* Risso, 1810; *G. auratus* var. *ruginosa* Kolombatović, 1891 → *Gobius fallax* Sarato, 1889), and *Antonogadus megalokynodon* (Kolombatović, 1894) – Mediterranean bigeye rockling, enlisted under the name *Mottela megalokynodon* (today: *Antonogadus megalokynodon* (Kolombatović, 1894) → *Gaidropsaurus biscayensis* (Collett, 1890)). There are others of those species which did not withstand the rigorous analysis of modern science as new insights became available, including: *Trutta adriatica*, described as a new species in 1890, *Gobius ferrugineus* (today: *Pomatoschistus marmoratus* (Risso, 1810)), as well as *Gobius affinis* (today: *Pomatoschistus pictus* (Malm, 1856)).

He published approximately 30 professional and scientific discussion papers including those on vertebrates and cephalopods, although most of them focussed on fish. He was multi-lingual and wrote in English, Italian and German languages. He found more than 30 species of fish that had not been noted in the Adriatic up to that time. Also, it remains interesting even to this day that some of his noted occurrences of rare fish in the Adriatic remain rare, in particular since there have been no recordings of their capture in the Adriatic. In addition, he was among the first to compile a list (in 1881) of fish species established in the Adriatic, stating that there are 219 species classified in 44 families. Kolombatović published his work in the periodicals of that time. The greatest number of his articles may be found in “Glasnik Hrvatskog naravoslovnog društva” of Zagreb,” “Yearly Report of the Senior Secondary School of Split” as well as “Sitzungsberichte der k. Akademie der Wissenschaften” from Vienna (DUJMOVIĆ, 2002). The first list of works by Juraj Kolombatović was drawn up by LANGHOFFER (1909).

His published ichthyologic contributions are:

Kolombatović, J. 1880. Osservazioni sugli Uccelli della Dalmazia. Settimo programma dell I.R. Scuola reale superiore in Spalato per l' anno scolastico 1879., 3-49.

Kolombatović, J. 1881. Pesci delle acque di Spalato e Catalago degli Anfibi e dei Rettili dei contorni di Spalato. God. Izvješće c. Kr.

Vel. Realke u Splitu škol. god. 1880-1881., 1-29.

Kolombatović, J. 1882. Fische, welche in den Gewässern von Spalato beobachtet und überhaupt im adriatischen Meere registriert wurden. Spalato.

Kolombatović, J. 1883. Mammiferi, anfibi e rettili e pesci rari e nuovi per l'Adriatico catturate nelle acque di Spalato. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1881-1882, 3-35.

Steindachner, F. and Kolombatović, J. 1883. Beiträge zur Kenntnis der Fische der Adria. Sitzungsber. d. Akad. Wien, 88, 1193-1202.

Kolombatović, J. 1884. Aggiunte ai vertebrati della Dalmazia. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1883-1884., 3-28.

Kolombatović, J. 1885. Seconde aggiunte a vertebrati della Dalmazia. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1884-1885., 27-38.

Kolombatović, J. 1886. Terze aggiunte ai vertebrati della Dalmazia. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1885-1886., 21-32.

Kolombatović, J. 1887. Imenik kraljeznjaka Dalmacije. II. Dio: Dvoživci, Gmazovi i Ribe. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1885-1886, III-XX.

Kolombatović, J. 1887. Sui Pleuronectes Boscii (Risso) e Megastoma (Donov.). God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1886-1887., 27-33.

Kolombatović, J. 1888. Catalogus vertebratorum dalmaticorum. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1887-1888., 3-31.

Kolombatović, J. Notizie ittologiche. Glasnik Hrv. naravosl. dr., V, 165-174.

Kolombatović, J. 1891. Glamoči (Gobii) Spljetskog Pomorskog okružja u Dalmaciji. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1890-1891., 3-29.

Kolombatović, J. 1892. Mačkulje (Blenniini) Spljetskog Pomorskog okružja u Dalmaciji. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1891-1892., 3-24.

- Kolombatović, J. 1892. *Blennius zvonimiri* n. sp. Nova vrsta babice dalmatinskog mora. Glasnik Hrv. naravosl. dr., 7, 107-112.
- Kolombatović, J. 1893. Novi nadodaci kralježnjacima Dalmacije. God. Izvješće c. Kr. Vel. Realke u Splitu škol. god. 1892-1893., 3-27.
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I feel it is appropriate that the pioneering work of Professor Kolombatović being recognized and his achievements remembered by todays scientists. As a dedicated and highly motivated scientist he became a role model for many others and still today provides an encouraging example to future generations where inter-disciplinary concepts as well as indepth knowledge in specific fields is needed more than ever.

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Ihtiološki doprinosi Juraja Kolombatovića (1843-1908)

Jakov DULČIĆ

Institut za oceanografiju i ribarstvo, P.P. 500, 21000 Split, Hrvatska

Kontakt adresa, e-mail: dulcic@izor.hr

SAŽETAK

Ovaj pregledni članak posvećen je Juraju Kolombatoviću, poznatom i uglednom hrvatskom prirodoslovcu, kojeg se sjećamo povodom 100-godišnjice od njegove smrti. Znanstveni doprinosi Juraja Kolombatovića su uglavnom bili unutar ihtiologije, gdje su se očitivali prije svega u otkriću i prvom znanstvenom opisu sedam vrsta riba: (4 vrste glavoča) Kolombatovićev glavoč ili glavočić sedlan *Chromogobius zebratus* (Kolombatović, 1891), Liechtensteinov glavoč ili glavočić korčulanski *Corcyrogobius liechtensteini* (Kolombatović, 1891), glavočić batoglavčić *Millerigobius macrocephalus* (Kolombatović, 1891), glavočić veleljuskaš trećoperac *Thorogobius macrolepis* (Kolombatović, 1891), (3 vrste babica) Kolombatovićeva babica *Parablennius zvonimiri* (Kolombatović, 1892), jadranska babica *Lipophrys adriaticus* (Steindachner & Kolombatović, 1883) i babica rupičarka *Lipophrys dalmatinus* (Steindachner & Kolombatović, 1883). Kolombatovićevi doprinosi se nisu očitivali samo u ihtiologiji već i u ribarstvu, poglavito gospodarenju živim bogatstvima mora, i to ne samo na nacionalnoj već i na međunarodnoj razini.

Ključne riječi: ihtiologija, doprinosi, Juraj Kolombatović