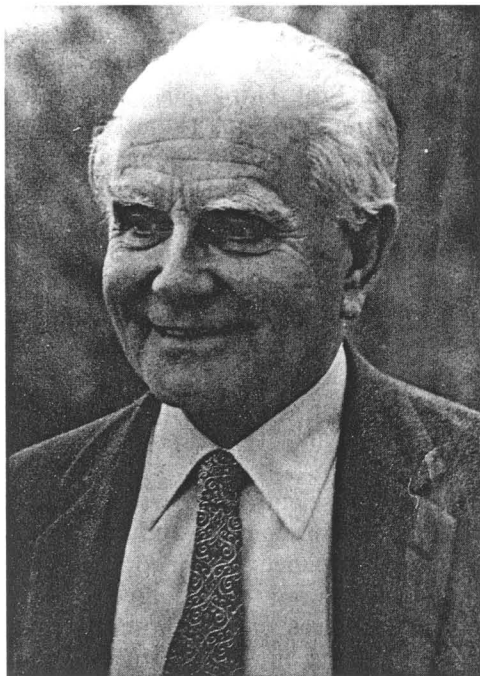


In Memoriam to Prof. Dr. TOMO GAMULIN



Professor TOMO GAMULIN, one of most the prominent Croatian scientists and investigators of the Adriatic Sea, a corresponding member of the Croatian Academy of Arts and Sciences, died of pneumonia in Dubrovnik on June 4, 1991. He died in the town he immensely loved and where he spent more than half of his life. With an incessant enthusiasm he established – overcoming many difficulties and with modest means – an up-to-date marine biology institute. He was the author of many scientific projects, taught and trained many scientists, and established the well-known Dubrovnik Aquarium. His work helped preserve and protect the island of Lokrum, situated in the immediate vicinity of Dubrovnik, where he founded a Botanic Garden. In the Benedictine Monastery on the island, Prof. GAMULIN installed classic natural history exhibits. He actively promoted the ecological protection of the Adriatic, especially Mali Ston Bay, a famous oyster and mussel farming region. Even fishermen from Dalmatia found interest in his popular articles on plankton and fisheries. Among his many awards, the one most precious to him was that awarded by the town of Dubrovnik.

Dr. GAMULIN was born on April 28, 1906 in Jelsa on the island Hvar to JURAJ and LJUBICA GAMULIN. He began his primary education in Jelsa and soon afterwards moved to Split, where he completed his secondary education. From 1927 to 1932 he studied zoology, botany, and geology with mineralogy at the Ljubljana Philosophy Faculty. He started his work as a teacher in Bitolj, Macedonia and in Kotor, Montenegro. In June 1936, at his professor's invitation, he began work at Split's Institute for Fishery and Oceanography, where he investigated the zooplankton of Kaštela Bay and the island Šolta. In early 1939, Prof. GAMULIN wrote his dissertation entitled "Qualitative and Quantitative Investigations of Plankton Copepoda at two Stations of Middle Dalmatian Coastland", under his adviser Prof. HADŽI. In 1941, he left Split and came to Podgora to teach in a local primary school. From 1942 to 1944 he lived in Ston, where he led the Shell Culturing Station. Soon afterward he served as the director of the Dubrovnik Grammar school. He returned to Split to become the director of the Institute. He remained in this position until 1947 and continued to work in the Institute up to 1949, when he left Split for good. From 1949 to 1950 he worked as an associate to the Biology Institute in Rovinj, and was then appointed director of the Oceanography Station in Dubrovnik. In the academic year 1956–1957, he was appointed visiting professor of zoology at the Zagreb Natural History and Mathematics College. In 1957, he again returned to Dubrovnik and served as director of the Dubrovnik Biological Institute of the then Yugoslav Academy of Arts and Sciences; he remained at this position until his retirement in 1980.

Prof. GAMULIN published 40 scientific papers on zooplankton and ichthyoplankton, with a special interest in spawning and spawning sites of the Adriatic "small blue fishes". Many of his papers remained unpublished, especially those on certain topics on which he was a leading expert – *Chaetognatha* and *Siphonophora*. Prof. GAMULIN was one of those rare marine scientists who succeeded in obtaining knowledge on and investigating almost all taxa of both meso- and macrozooplankton in the Mediterranean. He also investigated biomass of total zooplankton, horizontal and vertical distribution patterns, seasonal and annual variations in population density, and paid special attention to ecological factors of the Adriatic. He also co-ordinated and led the joint project of the Stazione Zoologica di Napoli and the Dubrovnik Biological Institute, and founded the Zooplankton Laboratory in Naples. The importance of this project was that for the first time, two different basins in the Mediterranean were investigated simultaneously; this made it possible to determine their interdependency. He used his excellent knowledge of zooplankton to investigate and solve many problems concerning the biology of small blue fish, especially the sardine *Sardina pilchardus* in the Adriatic. He also studied the influence of plankton and its nutritional quality on the migration phenomenon of the sardine, namely its migration towards areas rich in zooplankton at spawning time. He defined major spawning sites of the sardine in the Adriatic and established the influence of ecological factors on the sardine spawning period. Furthermore, he determined the time of day in which the sardine deposits its spawn and studied the development of sardine embryos in connection with sea temperature. His works on the reproduction and developmental stages of the Adriatic palinuran *Palinurus elephas* until metamorphosis – namely

its final plankton stage – have contributed to preventing overfishing of this species in the Adriatic.

Prof. GAMULIN made thorough and extensive studies of 10 zooplankton groups, which were included in the famous book “Fauna und Flora der Adria” by R. RIEDL. From 1980 to 1990, he was a member of the editorial board of the journal P.S.Z.N.I: Marine Ecology.

Prof. GAMULIN was a prominent investigator, marine biologist, leading expert on zooplankton and ichthyoplankton, scientific manager, as well as a popularizer and authority on the history of marine biology. He advocated the ecological protection of the Adriatic. Prof. GAMULIN was also an excellent pedagogue and teacher, unselfishly transmitting his immense knowledge to his students and fellow workers. For all this, we all owe him our gratitude and thanks.

FRANO KRŠINIĆ
Biological Institute
Dubrovnik, Croatia

Bibliography of TOMO GAMULIN

- GAMULIN, T., 1938: Izvještaj o istraživanjima pojavljivanja planktonskih kopepoda u okolini Splita u godini 1936–37. Ocean. inst., Godišnjak, **1**: 51–61.
- GAMULIN, T., 1938: Prilog poznavanju planktonskih kopepoda Boke Kotorske. Ocean. inst., Godišnjak, **1**: 110–121.
- GAMULIN, T., 1939–40: Opažanja o pojavljivanju ribljih jaja u okolici Splita sa specijalnim obzirom na jaja srdele i brgljuna. Ocean. inst., Godišnjak, **2**: 1–19.
- GAMULIN, T., 1939: Kvalitativna i kvantitativna istraživanja planktonskih kopepoda u istočnim obalnim vodama srednjeg Jadrana tokom godine 1936/37. Prir. istr., Jug. akad. znan. umj., **22**: 97–180.
- GAMULIN, T., 1948: Quelques observations sur la ponte de la Sardine (*Clupea pilchardus* WALB.) dans la zone insulaire de la Dalmatie moyenne. Acta Adriat., **3**: 55–87.
- GAMULIN, T., 1948: Prilog poznavanju zooplanktona srednjedalmatinskog otočnog područja. Acta Adriat., **3**: 159–194.
- GAMULIN, T., 1953: La ponte et les aires de ponte de la sardine (*Clupea pilchardus* WALB.) dans l'Adriatique 1947–1950. FAO, Rome, Document Technique, **40**: 1–4.
- GAMULIN, T., 1954: Mriješćenje i mrijestilišta srdele (*Sardina pilchardus* WALB.) u Jadranu u 1947–50. Reports Exp. “Hvar”, **4**: 1–66.
- GAMULIN, T. & J. HURE, 1955: Contribution a la connaissance de l'écologie de la ponte de la sardine (*Sardina pilchardus* WALB.) dans l'Adriatique. Acta Adriat., **7**: 1–23.
- GAMULIN, T., 1955: Contribution a la connaissance de l'écologie de la langouste (*Palinurus vulgaris* LATR.) dans l'Adriatique. Acta Adriat., **7**: 1–20.
- GAMULIN, T. & J. HURE, 1955: Sur l'écologie de la ponte de la sardine dans l'Adriatique. FAO, Rome, Debats et Doc., **3**: 141–143.
- GAMULIN, T., 1955: Migrations of the sardine (*Sardina pilchardus* WALB.) in relation to the zooplankton. U. N. General Assembly, A/conf. 10/I.25: 2–4.
- GAMULIN, T. & J. KARLOVAC, 1956: Etude intensive d'une aire de la ponte de la sardine (*Sardina pilchardus* WALB.) en Adriatique moyenne en 1950–1951. Acta Adriat., **8**: 1–47.
- GAMULIN, T. & J. HURE, 1956: Spawning of the sardine at a definite time of day. Nature, London, **177**: 193–194.
- GAMULIN, T., 1957: Migratsii sardiny i ikh zavisimost ot zooplanktona. Materiali mezdjunarodnih konferencii po ohrane zapasov rib., Moskva, **1**: 206–207.

- GAMULIN, T. & J. KARLOVAC, 1957: Données récentes concernant la densité des œufs de sardine (*Sardina pilchardus* WALB.) sur une frayère de L'Adriatique moyenne. FAO, Rome, Débats et Doc., **4**: 219–226.
- GAMULIN, T., 1960: Les problèmes de la ponte de la sardine (*Sardina pilchardus* WALB.). Proc. of the World scient. meeting on the biology of sardines and related species. FAO, Rome, **3**: 1003–1014.
- GAMULIN, T. & D. ZAVODNIK, 1961: La ponte de la sardine (*Sardina pilchardus* W.) sur la côte ouest d'Istria (Adriatique nord). Proc. gen. Fish. Coun. Médit., **6**: 121–123.
- GAMULIN, T., 1962: The spawning and spawning areas of the sardine (*Sardina pilchardus* WALB.) in the Adriatic Sea from 1947 to 1950. National Science Found., Washington, D.C.: 19–90. Nolit, Beograd.
- GAMULIN, T., 1964: Značenje sjevernog plitkog Jadrana za bolje poznavanje pelagičnih riba. Acta Adriat., **11**: 91–96.
- GAMULIN, T., M. NIKOLIĆ & D. ZAVODNIK, 1964: 70 godina Biološkog instituta u Rovinju 1891–1961. Thalassia Jugosl., **2**: 5–26.
- GAMULIN, T. & L. ROTTINI, 1966: *Ersaea elongata* WILL. gonoforo di *Muggiaea kochi* WILL. (Siphonophora, Calyptophorae). Boll. Soc. Adriatica Scienze, **54**: 3–8.
- GAMULIN, T., 1966: Contribution to the knowledge of *Lensia fowleri* (BIGELOW) (Siphonophora, Calyptophorae). Pubbl. Staz. Zool. Napoli, **35**: 1–6.
- GAMULIN, T., 1968: Les Siphonophores calyptophores de la côte orientale de l'Adriatique. Rapp. Comm. Int. Mer Médit., **19**: 479–480.
- GAMULIN, T., J. HURE & B. SCOTTO DI CARLO, 1968: Comparazione tra lo zooplancton del Golfo di Napoli e dell'Adriatico meridionale presso Dubrovnik. Pubbl. Staz. Zool. Napoli, **36**: 8–20.
- ROTTINI, L. & T. GAMULIN, 1969: Distribuzione dei Sifonofori in Adriatico a nord della trasversale Fano-Lussino. Boll. Pesca Piscic. Idrobiol., **24**: 79–89.
- GAMULIN, T., 1971: Comparaisons entre le zooplancton de la baie de Naples et celui de l'Adriatique méridionale près de Dubrovnik. Rapp. Comm. Int. Mer Médit., **20**: 379–383.
- GAMULIN, T., 1972: Per un programma di ricerche sullo zooplancton dell'Adriatico. Boll. Zool., **39**: 463–466.
- GAMULIN, T., 1977: Répartition des Chaetognathes en mer Adriatique. Rapp. Comm. Int. Mer Médit., **24**: 139–140.
- GAMULIN, T., 1977: Répartition des calyptophores en mer Adriatique. Rapp. Comm. Int. Mer Médit., **24**: 103–104.
- GAMULIN, T., 1979: Uvodna riječ i istraživanja zooplanktona. Nova Thalassia, **3** (Suppl.): 5–31.
- GAMULIN, T., 1979: Cruises of the research vessel "Vila Velebita" in the Kvarner region of the Adriatic Sea, 1973–1974. Preface. Thalassia Jugosl., **15**: 1–10.
- GAMULIN, T., 1979: Zooplankton istočne obale Jadranskog mora. Prir. istr., **43**, Acta biologica **8/1–10**: 177–270.
- GAMULIN, T., 1979: Za jedan bolji pristup istraživanju Jadranskog mora. Drugi kongres ekološka Jugoslavije, Savez društava ekologa Jugoslavije, 93–101, Zagreb.
- GAMULIN, T., 1981: Riječ za Makarsku, njenu "Planinu" i "More". Acta Biokovica, **1**: 17–22.
- GAMULIN, T., 1982: Zooplankton – Siphonophora. Reports and results of the oceanographic investigations in the Adriatic Sea. HIRM, Split: 183–188.
- GAMULIN, T., 1982: Zooplankton – Chaetognatha. Reports and results of the oceanographic investigations in the Adriatic Sea. HIRM, Split: 205–210.
- GAMULIN, T., 1983: Špiro Brusina i istraživanje Jadranskog mora. Rad Jugosl. akad. znan. i umjet., **404**: 241–309.
- GAMULIN, T. & J. HURE, 1983: Mriješćenje i mrestilišta pelagičnih riba u Jadranskom moru. Acta Adriat., **24**: 97–131.
- GAMULIN, T. & E. GHIRARDELLI, 1983: Les Chaetognathes de la mer Adriatique. Rapp. Comm. Int. Mer Médit., **28**: 175–177.
- GAMULIN, T. & J. HURE, 1985: The distribution of midwater fish *Maurollicus muelleri* (GMELIN) eggs in the Jabuka Pit region of the Adriatic Sea. P.S.Z.N.I: Marine Ecology, **6**: 321–328.
- GAMULIN, T. & F. KRŠINIĆ, 1993: Distribution and abundance of calyptophores (Siphonophora, Calyptophorae) in the Mediterranean and Adriatic Sea. P.S.Z.N.I: Marine Ecology, **13** (2).