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## On the 80th birthday of Professor John C. Morse, an outstanding entomologist and freshwater researcher

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**Abstract.** The article presents a brief biographical essay on the activities and achievements of the famous American entomologist, Doctor of Philosophy, Professor, John C. Morse (Clemson University, South Carolina, USA). An assessment is given of his contribution to the development of global aquatic entomology and the training of a new generation of personnel in the field of freshwater ecology. Throughout his time, J. Morse has devoted himself to the study of aquatic insects, especially the order Trichoptera, as well as to the development of international scientific relations, especially with experts in the field of trichopterology, young scientists and educational centers of Asian countries. Dr. Morse's scientific collaboration with Asian trichopterists spans more than 40 years and with Russian trichopterists over 30 years. This publication commemorates the anniversary of this outstanding scientist, who made an invaluable contribution to the development of trichopterology in Asia and worldwide.

**Keywords:** Aquatic entomology, trichopterology, environmental education, Clemson University, Professor, Dr. John C. Morse, anniversary.

## К 80-летию юбилею профессора Джона К. Морза – выдающегося энтомолога, исследователя пресных вод

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**Аннотация.** В статье представлен краткий биографический очерк о деятельности и достижениях известного американского энтомолога, Ph.D., профессора Джона К. Морза (Клемсоновский университет, Южная Каролина, США). Дана оценка его вклада в развитие мировой водной энтомологии и воспитание кадров нового поколения в области пресноводной экологии. В течение всего времени академических исследований Дж. Морз уделяет внимание изучению водных насекомых, особенно отряда ручейников (Trichoptera), а также развитию международных научных связей, особенно с экспертами в области трихотерологии, научной молодёжью и научно-образовательными центрами Азии. Научное сотрудничество д-ра Морза с российскими трихотерологами насчитывает более 30 лет. Публикация приурочена к юбилею выдающегося ученого, внесшего неоценимый вклад в изучение отряда Trichoptera в Азии и мире.

**Ключевые слова:** водная энтомология, трихотерология, экологическое образование, Клемсоновский университет, профессор Джон К. Морз, юбилей.

October 12, 2025 marks the 80th anniversary of the birth of the outstanding scientist, entomologist, professor, Dr. John C. Morse, a mentor of a huge number of students (masters, doctoral students) from around the world. J. Morse devoted almost his entire fruitful professional life to Clemson University, where he rose through the university's

career ranks, from visiting assistant professor (1974–1975), assistant professor (1975–1978), associate professor (1978–1983), to professor (1983–2008), and after retirement – professor emeritus to the present day.

In the scientific world, Professor J. Morse is widely known as an outstanding scientist in the field of aquatic entomology and, in particular, trichopterology, the science of aquatic insects from the order caddisflies. However he gained even greater fame as a specialist in training professionals of the highest level in the specialty of entomology. Clemson University is a leading center for training aquatic entomologists and an international center for trichopterology education. Students also study methods for monitoring freshwaters using aquatic insects. Colleagues call J. Morse the “Asian gardener” because he has planted, cultivated, and harvested many students from Asian countries. He is rightfully considered the leader of the world Trichopterological school, being a follower of the outstanding American entomologist Herbert Ross (1908–1978). He considers Dr. Glenn Wiggins (1927–2013), the Canadian trichopterologist, and Dr. Oliver S. Flint, Jr. (1931–2019), Curator at the US National Museum of Natural History, to be two of his other significant teachers and mentors.

Dr. Morse’s first interest in science began in early childhood. He says: “As a child, I loved playing in streams, building dams, chasing crayfish and frogs, and watching water striders and whirligigs. When I was studying biology in college, my uncle showed me caddis flies and the fascinating portable cases and stationary filternets they make, telling me that “there are not many people studying this group of insects and I predict that they will become important for the environment.” I’ve loved learning about them ever since’. He grew up in Winston-Salem, North Carolina, where he attended R. J. Reynolds High School.

Dr. Morse began his professional career with degrees in Biology (Davidson College, BS, 1968), his Master of Science degree in Entomology at Clemson University, Clemson, SC (1970), and the Doctor of Philosophy degree in Entomology at the University of Georgia, Athens, GA (1974) under Dr. Herbert Ross. Then he joined the faculty at Clemson in 1974 and “retired” officially in 2008. Since then he has continued his academic activities (teaching, research, public outreach) as a volunteer. So far he has served in academia at Clemson University for more than 51 years: non-tenure-track faculty 1974–1975, tenure-track faculty 1975–2008, post-retirement volunteer 2008–present. While on faculty, his appointment was divided among teaching, research, public outreach, and administration. Besides courses in insect systematics, insect larvae, etc., he has taught courses related to aquatic insects at Clemson, at Highlands Biological Station in North Carolina, in several other states, and in 9 countries so far in East Asia for more than 50 years. A publicly available documentary video about his teaching at Highlands Biological Station has been recorded (<https://www.waterbear.com/watch/caddisfly>). Since 1967, his research specialization has been the identification, biology, and historical development of caddisflies. Together with his students, he also studies other aquatic insects, river ecology and conservation, and river biomonitoring.

A big part of his academic activities has been to serve as Director for the Clemson University Arthropod Collection, maintaining the collection in excellent order and expanding it with interesting materials from around the world to over 2 million specimens. As a result, the insect collection, especially for aquatic insects, is very interesting for entomological scholars around the world, specifically with regard to Trichoptera.

Dr. Morse’s professional work focuses on five main objectives: training master’s and doctoral students in entomology; teaching students and specialists from Asian countries

the principles and methods of systematic entomology; promoting research in the field of systematic biology among high school students, increasing young people's knowledge of biodiversity; creating and maintaining an infrastructure for scientific research in the field of Trichoptera taxonomy; and professional development of taxonomic skills for water quality monitoring in the United States and around the world. During his teaching career, Dr. Morse was Major Advisor for 43 graduate students (28 M.S., 15 Ph.D.; with 10 M.S. and 4 Ph.D. since retirement); Advisory Committees for 27 other graduate students (12 M.S., 19 Ph.D.; with 1 M.S. and 5 Ph.D. since retirement); Advisor for 7 post-doctoral Visiting Scholars (3 since retirement), and Advisor for undergraduate researchers: 6 Honors Researchers (2 since retirement) and 1 Summer Scholar. He has served and continues to serve on various expert commissions and is an advisor and consultant to dozens of researchers, research students and specialists in the field of freshwater biomonitoring. For 19 years (1990–2008) he was the Coordinator of the postgraduate program in entomology at Clemson.



Dr. Morse's contribution to the training of students and specialists from Asian countries and to the development of freshwater monitoring in Asia should be particularly highlighted. He was one of the first to attempt to unite the efforts of scientists from Asian countries to develop and implement international methods for monitoring freshwater using macroinvertebrates, so that specialists could learn to “speak the same language” for effective assessment of freshwater quality during biomonitoring of internal and transboundary river basins (Morse et al. 2007).

He was a Major Advisor for 5 Asian PhD students (1 since retirement), 1 MS: Taiwan, China, Russia, S. Korea, Mongolia X2; a Mentor for 7 Visiting Scholars: Israel, China X3 (2 since retirement), Thailand X3 (1 since retirement), Brazil (1 since retirement); a Teacher for courses in aquatic entomology and taxonomy in PR China (1994, 2011, 2018), Mongolia (1998, 2001, 2002, 2008), Far East Russia (1999, 2000), Thailand (2002), Indonesia (2005), India (2007), Singapore (2009, 2024), Iraq (2010), and Philippines (2018).

He was repeatedly awarded honorary titles both in his own country and in the countries where he carried out his educational activities. For instance, since 2012 he has been an Honorary Member of the Hydrobiological Society of Russia Zoological Institution, Saint-Petersburg, Russia); in 2011 he was recognized as The Best Scientist for Nature and Environment in Mongolia, with a presentation by the Mongolian Ambassador, Mongolian Embassy, Washington, DC (Mongolian Ministry of Nature, Environment, and Tourism); since 2003 he has been an Honorary Expert, Public Clean Water Center (Vladivostok, Russia).

Dr. Morse collaborates closely with scientists from Asian countries. He has been directly involved in initiating and organizing more than 30 international events: symposia, conferences, and scientific and practical seminars on entomology and freshwater resource monitoring, conducted, among others, with Russian scientists. Dr. Morse and James Stribling (Tetra Tech Inc., Center for Ecological Sciences, Owings Mills, MD, USA) in 2008 were invited by Primorye Government to participate in the III Ecological Forum and also took part in the International Symposium “Biomonitoring of Land and Freshwater



**Figure.** Dr. John Morse and James Stribling – invited speakers at the International Forum “Nature Without Borders” (Vladivostok, 2008).

**Рисунок.** Доктор Джон Морз и Джеймс Стриблинг – приглашённые докладчики на международном форуме «Природа без границ» (Владивосток, 2008 г.).

Systems in Zones of International Economic Cooperation and Intensive Exploration of Natural Resources in East Asia” (figure).

Dr. Morse is an author of more than 215 research publications (130 refereed papers, 8 books, 62 book chapters; 2 bulletins, 5 reviews, etc.) and he is a co-organizer of 4 WWW Databases. Eighty-seven of his publications were co-authored with Asian colleagues.

One of Dr. Morse’s most important contributions was the creation of the very useful information platform: The Trichoptera World Checklist (TWC) (Morse, 1999, 2019). The TWC is a project of the successful International Symposia on Trichoptera, with the responsibility for its policy and maintenance assigned to the international Trichoptera Checklist Coordinating Committee (TCCC). This project has rightfully made Dr. Morse “Trichopterologist of the World”, and the TWC has become the world’s go-to guide for experienced and novice taxonomists in the field of trichopterology.

The TWC was initiated by Morse about 1990 with data from the Trichopterorum Catalogus (Fischer, 1960–1973), Zoological Record (1961–2008), and publications received in exchanges from colleagues. In 1995, it was transliterated from its original WordPerfect software (Corel WordPerfect® version 5.1) to FileMaker Pro software (Claris® FileMaker Pro® version 3.0) with support from the Integrated Taxonomic Information System (ITIS, <http://www.itis.gov/>). The work on the TWC was reported in 1995 to the participants in the 8th International Symposium on Trichoptera. At that same meeting, the original Taxonomic Checklist Coordinating Committee was elected. Records in the TWC concern names of extant and extinct (fossil) taxa that are regulated by the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature 1999), i. e., family-group, genus-group, and species-group names, as well as more-inclusive taxa of Amphiesmenoptera in orders †Protomeropina, †Tarachoptera, and Trichoptera. Records are provided for these orders and all descendant categories through subspecies. The purpose



of the TWC is to promote and facilitate scientific investigation in Trichoptera, helping scientists throughout the world to initiate biosystematic studies, investigate biodiversity and distribution, serve as a reference for Trichoptera names and literature, provide key words for information storage and retrieval, and build catalogues, bibliographies, and other uses. The TWC is intended neither to impose a standard classification for Trichoptera nor to restrict scientific opinion. Advantages for providing the TWC on the worldwide web, rather than as a printed work, include making it more readily accessible and without cost to scientists and natural history scholars throughout the world, more readily searchable for data combinations, more amenable for continual updating, and more readily reviewable by the TCCC and other experts.

Due to Dr. Morse' efforts, a total of more than 17384 extant species and 559 fossil species of Trichoptera have been recorded in the World (Morse et al. 2019 and personal communication), making Trichoptera the seventh most speciose order of all insects (Adler 2017) and with more species than the combined total of all the other primarily aquatic insect orders: mayflies (Ephemeroptera, 3436 spp.), dragonflies and damselflies (Odonata, 5956 spp.), stoneflies (Plecoptera, 3562 spp.), and dobsonflies and alderflies (Megaloptera, 350 spp.) (Morse 2007, 2017). Only the primarily terrestrial order Diptera (51197 spp.) has more known freshwater species (Morse 2017; 2019). The extant caddisfly species are classified in 609 genera of 51 families of two suborders: Annulipalpia and Integripalpia. In addition, there are 559 fossil species of caddisflies, some of which are included in 133 fossil genera and 12 fossil families (Morse et al. 2019 and personal communication).

To support the scientific activities of students and young scientists, Dr. Morse, together with his wife Suzanne Morse and Dr Y. Jae Bae, founded a special fund (John Morse Student Award, Asian Society for Hydrobiology, 2024), thereby promoting talented youth in their desire to follow the best traditions of entomological science, in studying the "secrets" of "flying over water"—amazing creatures, created, probably, to understand the greatness of Life and its uniqueness on Earth.

Dr. Morse is a shining example of an outstanding Teacher and Scientist who contributes to the development of science, educating generations of young scientists in the best traditions of world science – unifying, but not divisive; making scientific research accessible and interesting to a wide audience, which is the key to preserving the environment, as well as attracting young people's interest in Science.

Happy birthday, dear Dr. Morse, happiness and prosperity to you and your family, and talented students who will continue your Life's Work!

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