



In Memory of Katsura MORIMOTO (1 January 1934 – 3 September 2019)

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Katsura MORIMOTO, an Emeritus Professor at Kyushu University, Fukuoka, Japan was born in 1934 in Nakajinzenji, Kôchi, Shikoku and spent his childhood during the Pacific War. In 1946, the year after the end of the war, he entered Kôchi-Jôtô Junior High School under the old system of education, where he started insect collecting as a member of biology club by catching a butterfly, *Melanitis phedima*. He studied entomology by himself based on limited literature in a period when supplies were very scarce due to the postwar chaos. During this time, he met Shun-ichi UENO who studied Carabidae and they developed a friendship which made him want to major in insect taxonomy at a university. Yuzô SUGIHARA, who was a hymenopterist working at Hokkaido University and a member of the Entomological Society of Kôchi, strongly recommended that he study entomology under the guidance of Prof. Teizo ESAKI and Associate Prof. Keizo YASUMATSU at Kyushu University.

In 1952, he entered Kyushu University and selected the superfamily Curculionoidea as a research target. He reminisced about that time when “Associate Prof. Takashi SHIRÔZU at the Faculty of Education recommend me to study the taxonomy of ichneumon wasps or weevils as basic research for applied entomology, I selected weevils as a kind of beetles that were more familiar to me.” He started his study on weevils by following a series of publications on Asian weevils by Hiromichi KÔNO, learning German by himself. In an era with no copying machines, he learned description methods in weevil taxonomy by transcribing publications of several European authors, such as G. A. K. MARSHALL, E. VOSS, K. M. HELLER, and A. HUSTACHE. He spent his university days in the Entomological

Laboratory (ELKU) with Yozo MURAKAMI studying Hymenoptera, Shinsaku KIMOTO studying Chrysomelidae and Hiroyuki KAMIYA (changed to SASAJI, after he got married) studying Coccinellidae, as well as with many other leading Japanese entomologists in their youth, studying very hard and encouraging each other. In 1956, he graduated from Kyushu University with a taxonomic and ecological study on Japanese *Ceutorhynchus* (Curculionidae, Ceutorhynchinae) associated with Brassicaceae as his bachelor's thesis. In 1958, he got a master's degree at Kyushu University with a taxonomic revision of Japanese Curculionini (Curculionidae, Curculioninae) as the subject of study. After that, he studied systematics of the superfamily Curculionoidea as a Ph.D student in ELKU and completed his degree in 1961. His dissertation was divided into three parts and published separately in 1962 as '*Comparative morphology and phylogeny of the superfamily Curculionoidea of Japan*', '*Descriptions of a new subfamily, new genera and species of the family Curculionidae of Japan*', and '*Key to families, subfamilies, tribes and genera of the superfamily Curculionoidea of Japan excluding Scolytidae, Platypodidae and Cossoninae*'. These important works, based on detailed morphological comparisons, have been essential for weevil systematics until now.

In May 1961, he was employed as a researcher of termites at the Forestry Experiment Station, Forest Bureau, Ministry of Agriculture and Forestry, Tokyo. He reminisced about that time, stating "As there was no post for an expert on weevils at that time, Prof. YASUMATSU made a considerable effort to push me to the position". He began his study on the taxonomy and ecology of Japanese termites and produced remarkable research achievements. He also played an important role as an expert on termites for an extended period in the Japan Termite Control Association. Besides studying termites, he continued active weevil research and published some important works on curculionid taxa including agricultural and forestry pests, such as *Shirahoshizo*, *Dyscerus*, *Scepticus*, and *Dorytomus*.

For one year beginning in February 1968, he visited the British Museum (Natural History), London for studies on termites and xylophagous beetles, supported by the Science and Technology Agency, Japan. He spent the first half a year working on termites and then worked for weevils under the supervision of R. T. THOMPSON. He photographed and sketched many weevil specimens (types, in particular) preserved at the museum, and identified weevil specimens from Japan and its adjacent region by comparing with types. Meanwhile, in September 1968, he visited some institutes and museums having important weevil collections, such as Muséum national d'Histoire naturelle, Paris and Naturhistoriska risksmuseet, Stockholm; however, he could not visit Museum für Tierkunde, Dresden, Old East Germany for J. FAUST's and K. M. HELLER's types, due to the social situation during the Cold War. He revised Asian genera of Anthribidae, Cryptorhynchinae, Cossoninae, and some other major taxa in Curculionoidea. In addition, he obtained important entomological literature during this time, which was not available or very difficult to obtain in Japan.

This overseas research should have greatly accelerated his subsequent research on weevils, but he made relatively little progress in weevil studies for a long time from 1969 to 1977. In 1969 just after he came back to Japan, he was transferred to the Kyushu Branch of the Forestry Experiment Station as the head of the Entomological Laboratory, in order to engage in a special research project attempting to understand the cause of the pine withering phenomenon. In this research project, he revealed that the causal pathogen of the pine wilt disease, the pine wood nematode *Bursaphelenchus xylophilus*, is transmitted by the Japanese pine sawyer beetle *Monochamus alternatus*, elucidated a mutual relationship among the nematode, beetle and pine tree, and finally established a pine wilt prevention method in Japan. He also surveyed the relationship between the amount of pine loss and population dynamics of the pine sawyer beetle and produced remarkable research achievements. For these remarkable contributions in forestry, he received the Japanese Forest Society Award, Japan Prize of Agricultural Science, Yomiuri Prize of Agricultural Science, and Japanese Society of Applied Ento-

mology and Zoology Award. In addition, he established an effective biological control method against the pine needle gall midge, *Thecodiplosis japonensis*, which was successfully practiced on a large scale in South Korea. He revealed that damage caused by the cryptomeria needle gall midge, *Contarinia inouyei*, was not significant in healthy cedar forests and stopped redundant insecticide spraying which was practiced on a large scale throughout Japan. He remembered that time as “I was too busy to study weevils at work. So, for weevils I could almost only prepare specimens and deal with identification requests after coming home at night.” In the meanwhile, when he had time to spare from pine wilt research, he published some important works on weevils, such as ‘*A key to the genera of Oriental Anthribidae*’ (1972) and ‘*On the genera of Oriental Cossoninae (Coleoptera: Curculionidae)*’ (1973), both based on his works during the 1968 overseas research, as well as ‘*On the Japanese species of the family Brentidae*’ and ‘*Notes on the family characters of Apionidae and Brentidae, with a key to the related families*’ published in 1976.

In 1978, he returned as an Associate Professor to ELKU, where his entomological studies began, and began his study on weevils in earnest again. He was then promoted to Professor in 1989. He continuously published revisionary works in the journal ‘*Esakia*’ on Japanese and Oriental weevils, e.g. Anthribidae, Rhynchaeninae, Cryptorhynchinae, Anthonominae (with Hiroaki KOJIMA), Baridinae (with Kazumi YOSHIHARA), and Acicnemidinae (with Sumiaki MIYAKAWA). He also conducted morphological research on weevils and published some important works, such as ‘*On the homology of the thoracic and abdominal areas of the weevil larvae as based on a study of the muscles (Coleoptera: Curculionoidea)*’ published in 1987 (with Chan-Young LEE). Reading this paper, Charles W. O’BRIEN, a weevil researcher then at Florida A&M University, was very surprised and asked him how he observed the larval muscular system, expecting the use of some special methods. However, O’BRIEN was disappointed by MORIMOTO’s answer since there were nothing special but an unrivaled anatomical skill. He guided many ELKU students including those who majored in weevils, such as Chan-Young LEE (larvae), Yoshihisa SAWADA (Attelabidae), Jeong-Doeg Bae (mouth parts), Takeyuki NAKAMURA (Entiminae, Tanymericini) and Hiroaki KOJIMA (Curculionoidea), as well as Yoko TAKEMATSU who majored in termites. He interacted widely with students of other universities and amateur beetle enthusiasts, imparting fundamental and current knowledge about weevils and dealing with numerous identification requests for weevil specimens. In 1984, he published ‘*The Coleoptera of Japan in Color, IV*’ including the section on weevils (Masao HAYASHI, Katsura MORIMOTO and Shinsaku KIMOTO, the editors), which became the bible for weevil enthusiasts in Japan. He guided Toshio SENOH (Anthribidae), Kazumi YOSHIHARA (Baridinae) and some other researchers, and cultivated many parataxonomists of weevils throughout the country. Consequently, faunistic research on Japanese weevils rapidly advanced. He also contributed to administrative needs by dealing with identification and lecture requests from plant protection stations, agricultural experiment stations, and forestry experiment stations. He was involved in many organizations, including president of the Entomological Society of Japan (1995–1996). While working at the university, he managed his own time thoroughly to maximize his research activity on weevils. People who knew him at the time recalled how “He used to come to the laboratory early in the morning and went home early in the evening everyday.” Especially, a few hours in the morning were precious for him to concentrate, without being disturbed by anyone, on observing and sketching morphological traits of weevils.

In March 1997, he retired from Kyushu University but continued active weevil research. In the year after retirement, he visited the Natural History Museum, London and Museum für Tierkunde, Dresden with his wife, Mihoko, for type examinations. He regularly worked on weevils at the university (the Faculty of Agriculture until the first half of 2001 and the Kyushu University Museum after that) in the morning and did so at home in the afternoon. He published many taxonomic works on

weevils, represented by two major works: ‘*The Insects of Japan, Volume 3. Curculionoidea: General Introduction and Curculionidae: Entiminae (Part 1)*’ and ‘*The Insects of Japan, Volume 4. Curculionidae: Entiminae (Part 2)*’. He also conducted functional morphological research on weevils and published an important work in 2003: ‘*Morphologic characters of the weevil head and phylogenetic implications (Coleoptera, Curculionoidea)*’ (with Hiroaki KOJIMA). Even after his retirement, he guided some students who majored in weevils, such as Hijiri HIRANO (Conoderinae), Shôma SEJIMA (Curculioninae, Cionini), Naomichi TSUJI (Cryptorhynchinae) and Shunsuke IMADA (Anthribidae), as well as myself, in which I developed my knowledge of weevil systematics under his tutelage. He had been the representative of the Japanese Weevil Information Network (JWIN) from the beginning in 2002 and enjoyed interacting with weevil enthusiasts, especially through annual excursions of the organization to various places in Japan. He served as editor-in-chief of ‘*The Entomological Review of Japan*’ published by the former Japan Coleopterological Society until 2010.

In his last few years, he was dedicated to a taxonomic revision of Japanese Cossoninae, trying to meet a long-ago promise to the late Elwood C. ZIMMERMANN to solve confusion in Asia-Pacific Cossoninae. However, he fell ill in late April 2017, just before the completion of the last great task of his life. He survived, but the aftereffects of his illness remained. He did not lose his motivation for research even under such adversity and strove through a difficult rehabilitation to resume his own research activity. In autumn 2018, he recovered enough to occasionally visit the university in a wheelchair pushed by his wife, but his health declined in late May 2019 and he passed away at a hospital in Fukuoka on September 3, 2019 at the age of 85. He described many new taxa (three subfamilies, four tribes, three subtribes, 94 genera, seven subgenera, 659 species and 16 subspecies) in 239 publications about weevils in his lifetime.* It was a life dedicated to the weevils and country he loved so deeply.

*A list of his publications about weevils will be published on ‘*Zou-mushi*’, the newsletter of JWIN.