

Early evolutionary trends of the Hymenoptera
(xyelid sawflies) in relation to ovipositor
preserved fossils trends of the Hymenoptera

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(産卵管が保存された化石に基づくナギナタハバチ類の初期進化)

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論 文 内 容 の 要 約

Six species of the Late Triassic primitive sawflies assigned to family Xyelidae, were newly described based on the well-preserved fossil assemblage from the Upper Triassic (Carnian) Momonoki Formation in Yamaguchi, southwest Japan. The sawfly fossils are usually preserved as separated wings, while two complete body fossils still keeping ovipositors were newly found. It is the first discovery of intact bodies for subfamily Madygellinae. The madygellines are the important basal representatives of xyelid sawflies appeared in Triassic, but their wings were the only thing we could find previously. Information from the intact body fossils is expected to be useful for updating the classification, and following comprehensive features were confirmed, i.e., xyelid-like antenna, straight or weakly arcuated anterior margin and the straight positor margin of pronotum, well developed ovipositor, the absence of the anterior branch of RS, straight RS, narrow costal space, weak or absence SC. In relation, they have the most primitive slender type of ovipositors. Taking several ovipositor-preserved Hymenoptera fossils as well as extant species into consideration, two evolutionary trends of ovipositors, i.e., towards stout and towards hyper-slender, can be recognized in the history of Hymenoptera. The stout type appeared in herbivorous sawflies diversified after Middle Jurassic. It can be interpreted as adaptation to newly emerging plants in mid-Mesozoic. On the other hand, the hyper-slender type appeared in Middle Jurassic. It was associated with the functional change, i.e., it gave rise to parasitic wasps spawning eggs to larvae in Jurassic, and further, to venomous stingers of worker bees. The morphology of ovipositors is an important key to understand the early evolution of basal Hymenoptera, and the slender type of ovipositor show in Triassic Madygellinae is the origin of various forms and functions of the ovipositors of Symphyta diversified after Middle Jurassic.