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The Origin of the metatibial Spur of Delphacidae (Homoptera)【Scientific note】

飛蝨科後足脛距之由來【科學短訊】

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Abstract

The metatibial apical teeth of the first to third instar nymphs of Purohita taiwanensis (Muir) are described and illustrated after observation by scanning electron microscope. The origin of the metatibial spur is proposed.

摘要

本文敘述，繪圖Purohita taiwanensis (Muir) 第一至第三齡若蟲後足脛節端刺，並用電子顯微鏡觀察。從而探討飛蝨科後足脛距之由來。

Key words: Metatibial spur, Delphacidae.

關鍵詞: 後足脛距、飛蝨科。

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The Origin of the Metatibial Spur of Delphacidae (Homoptera)

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ABSTRACT

The metatibial apical teeth of the first to third instar nymphs of *Purohita taiwanensis* (Muir) are described and illustrated after observation by scanning electron microscope. The origin of the metatibial spur is proposed.
Key words: Metatibial spur, Delphacidae.

Introduction

Muir (1915) considered that "as [the metatibial spur] is the characteristic feature of the [Delphacidae], it is not surprising that its shape should be of taxonomic value." He did not mention this structure in other families of Fulgoroidae. Wagner (1962) compared the arrangement of the metatibial apical teeth of the Cixiidae and the evolutionary trend of the metatibial spur of the Delphacidae but did not further discuss it. Muir (1915) cited "Swezey (1908) had shown that *Mesodryas freycinliae* has but an apical tooth on the spur in first instar, those on the hind edge appearing at later instar." Metcalfe (1969) suggested "[the metatibial spur] appears to have developed from an apical tibial spur." These points of view have been largely ignored by most specialists of Fulgoroidea.

In this paper, the metatibial apical teeth of the first, second and third instar nymphs of *Purohita taiwanensis* (Muir) are described and illustrated, and the detailed structure is observed by a scanning electron microscope. The origin of the metatibial spur is then proposed.

Results

First instar nymph (Figs. 1A, D)

The metatibia has two apical teeth on the outer side and a single large tooth on the inner side. The base of the inner large tooth has a completely continuous surface without any recognizable articulation. Below the inner large tooth another small tooth is located submarginally.

Second instar nymph (Figs. 1B, E)

The metatibia has two apical teeth on the outer side and a single tooth on the inner side. The inner tooth occupies almost the same position of the original large tooth of the first instar nymph. The conical metatibial spur with an articulation at its base can be easily recognized.

Third instar nymph (Figs. 1C, F)

The metatibia has five apical teeth. The spur sinks deeply.

Discussion

According to Remane (1952), the relative positions of neighboring structures or organs are the criteria of homo-

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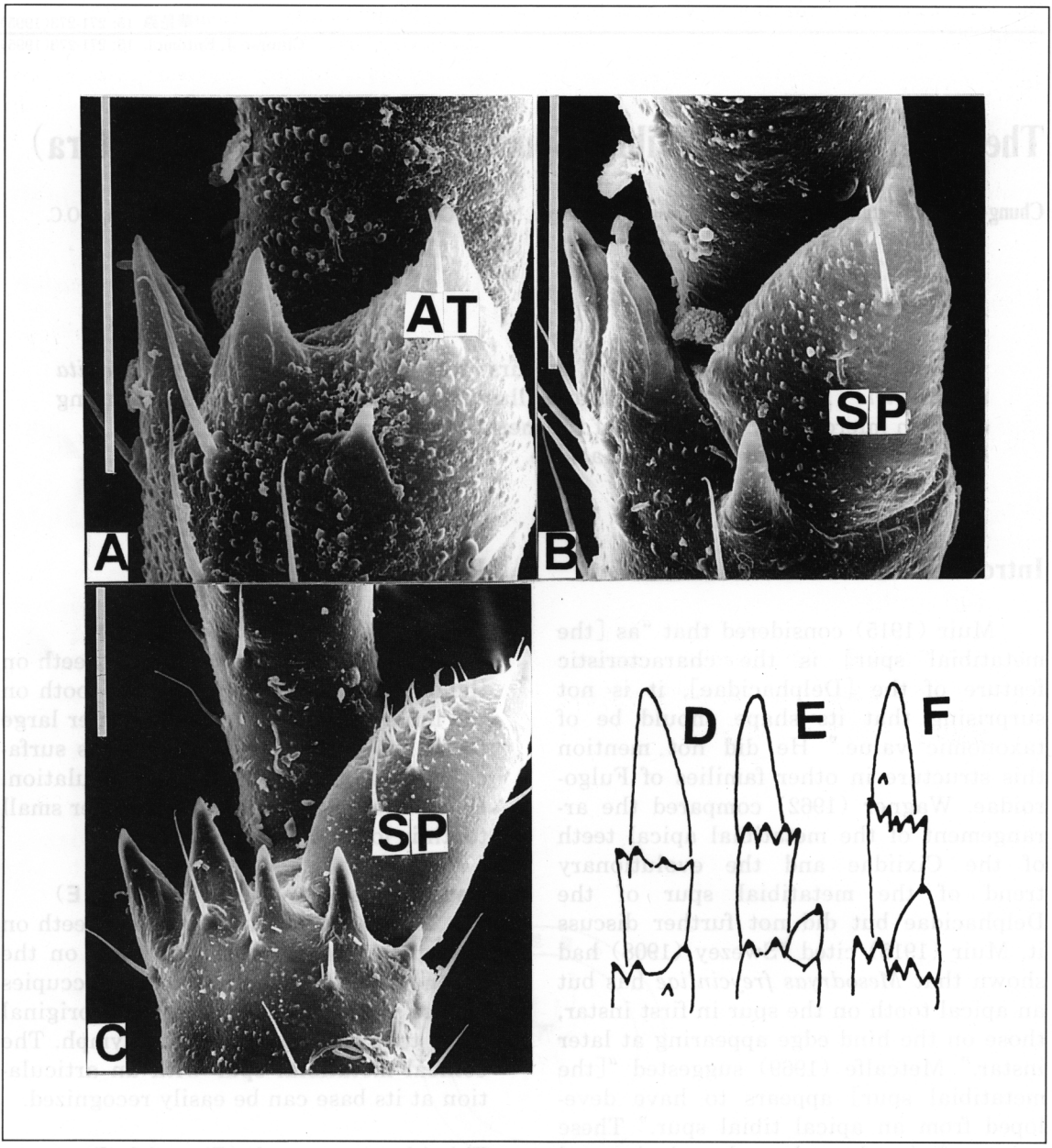

Fig. 1. Metatibia of *Purohita taiwanensis* (Muir) A. and D., first instar nymph; B. and E., second instar nymph; C.and F., third instar nymph. AT: apical tooth. SP: spur.

logy. The metatibial spur of the second instar nymph and the inner large metatibial apical tooth of first instar nymph are homologous structures.

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摘 要

本文敘述，繪圖*Purohita taiwanensis* (Muir)第一至第三齡若蟲後足脛節端刺，並用電子顯微鏡觀察。從而探討飛蝨科後足脛距之由來。

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