

**DISTRIBUTIONAL NOTES ON THE GENUS *RHIPIDOLESTES*,
WITH DESCRIPTIONS OF TWO NEW SPECIES
FROM SOUTH CHINA
(ZYGOPTERA: MEGAPODAGRIONIDAE)**

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R. alleni sp. n. (holotype ♂: Da Ming Shan, Guangxi) and *R. cyanoflavus* sp. n. (holotype ♂: Bai Yong, Guangdong) are described from South China. A table and map is provided detailing the distribution of all known *Rhipidolestes* species and subspecies.

INTRODUCTION

WILSON (1997) reviewed eleven species of *Rhipidolestes* known, from Burma, China and Japan and described *R. janetae*. At the same time ASAHINA (1997) described *R. owadai* from northern Vietnam. Subsequently ZHU & YANG (1998) described *R. bastiaani* from Shaanxi, China and DAVIES (1998) described *R. yangbingi* from Sichuan, China. Two further species from South China are described in this paper bringing the total number of species known to 16 species, 11 of which are known from China.

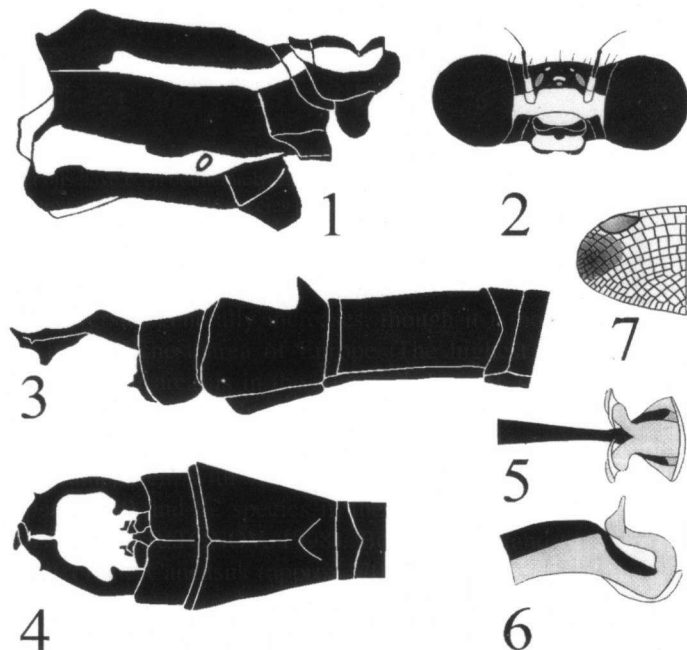
***RHIPIDOLESTES ALLENI* SP. NOV.**

Figures 1-7

Material. — **Holotype** ♂: Da Ming Shan, Guangxi, (23°24'-23°30'N by 108°20'-108°32'E), 13-V-1997. — **Paratypes**: allotype ♀, Da Ming Shan, Guangxi, 13-V-1997; 1 ♂, do., 12-V-1997; 2 ♂, do., 13-V-1997; 1 ♀, do., 13-V-1997. — Holotype and allotype to be deposited at the Tai Lung Experimental Station, Agriculture and Fisheries Department, Lin Tong Mei, Sheung Shui, NT, Hong Kong, China.

Etymology. — Name in honour of Dr D. Allen L. Davies.

MALE. — A large sized, robust *Rhipidolestes*, predominantly black, with bright ochrous yellow markings on the face and thorax. Labium blackish brown. Labrum ochrous. Lower sides of face (genae) shiny blackish brown. Anteclypeus ochrous, bordered dark brown. Postclypeus dark brown, Middle of face, between base of antennae and clypeus, with a transverse band of ochrous yellow. Top of head and vertex matt-black with shiny black anterior eye margins (see Fig. 2). Small mid-brown oval spots between lateral ocelli and antennae and a small single mid-brown spot below central ocelli. Prothorax matt-black with a pair of broad pale yellow dorso-lateral stripes. Dorsum of thorax black with broad incomplete antehumeral stripes patterned as shown in Figure 1. Sides of thorax shiny black with broad ochrous yellow metepisternal stripe with large black indentation, posterior to the spiracle, from the mesepimeron. Ventrum of synthorax dark brown with large central yellow spot. Coxae dark brown. Legs a uniform pale reddish brown. Wings hyaline with tips heavily pigmented dark-brown (Fig. 7). Pterostigma reddish brown. Abdominal segments 1-5 dark brown with segment 1-2 shiny. Segments 6-10 blackish brown. Base of ninth segment with a stout, sharply pointed, conical spike slightly angled posteriorly (Figs 3-4). The length of the projection



Figs 1-7. *Rhipidolestes alleni* sp. n., ♂, Da Ming Shan, Guangxi: (1) thorax, lateral; — (2) head, frontal; — (3) caudal abdomen and genitalia, lateral; — (4) caudal abdomen and genitalia, dorsal; — (5) penile organ, ventral; — (6) penile organ, lateral; — (7) wing tip.

is slightly less than half the length of the ninth segment. Caudal genitalia as illustrated in Figures 3-4. The tip of the penile organ forms a pair of curved horns which are reflexed inwards to form long very sharply pointed tips which almost meet as illustrated in Figures 5-6. Basal quarter of superior appendages expanded with a prominent dorsal projection. At three quarters of length a small lateral projection on outer face. Tip of superior appendage with finger-like projection. Inferior appendages extremely short with small outward pointing projections.

Measurements (mm). — Abdomen + anal appendages 42.0-48.0, hind wing 36.0-37.5.

FEMALE. — Very similar to ♂ with stouter body and paler yellow markings. Pterostigma bright cream with all borders progressively dark brownish with the exception of the outer border. Wings hyaline with dark-brown pigmentation at the tip much reduced in comparison with the ♂. Abdomen slightly shorter and stouter than ♂ without the ninth dorsal projection. The ventral surface of the ovipositor is only slightly curved and extends beyond tip of abdomen.

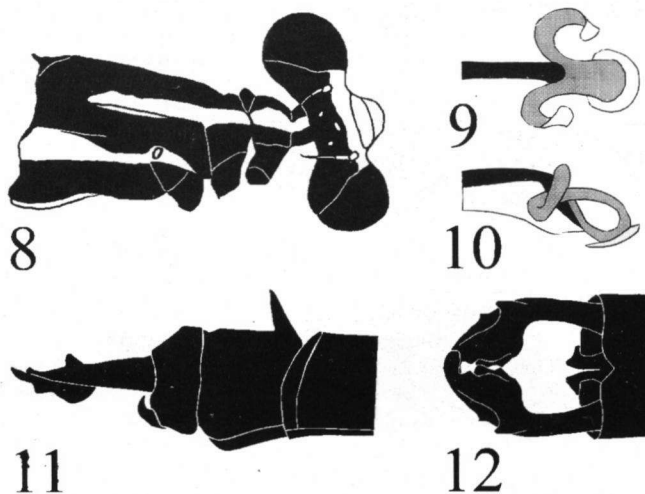
Measurements (mm). — Abdomen + anal appendages 42.0-44.0, hind wing 34.0-35.5.

RHIPIDOLESTES CYANOFLAVUS SP. NOV.

Figures 8-12

Material. — **Holotype** ♂: Bai Yong, Guangdong (22°10'N by 111°50'E), 3-V-1998. — **Paratypes:** allotype ♀, do., 3-V-1997; 1 ♂, do., 3-V-1997. — Holotype and allotype to be deposited at the Tai Lung Experimental Station, Agriculture and Fisheries Department, Lin Tong Mei, Sheung Shui, NT, Hong Kong, China.

Etymology. — From *cyano* = blue and *flavus* = yellow.



Figs 8-12. *Rhipidolestes cyanoflavus* sp. n., ♂, Bai Yong, Guangdong: (8) thorax, lateral, and head, dorsal; — (9) penile organ, ventral; — (10) penile organ, lateral; — (11) caudal abdomen and genitalia, lateral; — (12) caudal genitalia, dorsal.

MALE. — A large sized *Rhipidolestes*, predominantly black, with pale blue markings on the face and bluish yellow markings on thorax. Labium blackish brown. Labrum, clypeus, and base of antennae pale blue. Middle of face, between base of antennae and clypeus, with a transverse band of pale blue. Top of head and vertex matt-black with shiny black anterior eye margins (see Fig. 8). Prothorax matt-black with a pair of broad pale bluish yellow dorso-lateral stripes. Dorsum of thorax shining black with broad incomplete antehumeral stripes patterned as shown in Figure 8. Sides of thorax shiny black with broad pale bluish yellow metepisternal stripe with large black indentation, posterior to the spiracle, from the mesepimeron. Coxae black. Legs pale with posterior margin dark brown. Wings hyaline with tips heavily pigmented mid-brown. Pterostigma bright crimson red. Abdominal segments 1, 7-10 dark blackish brown with segment 1 shiny. Segments 2-6 mid-brown. Base of ninth segment with a very tall, sharply pointed, thin conical spike slightly angled posteriorly. The length of the projection is more than half the length of the

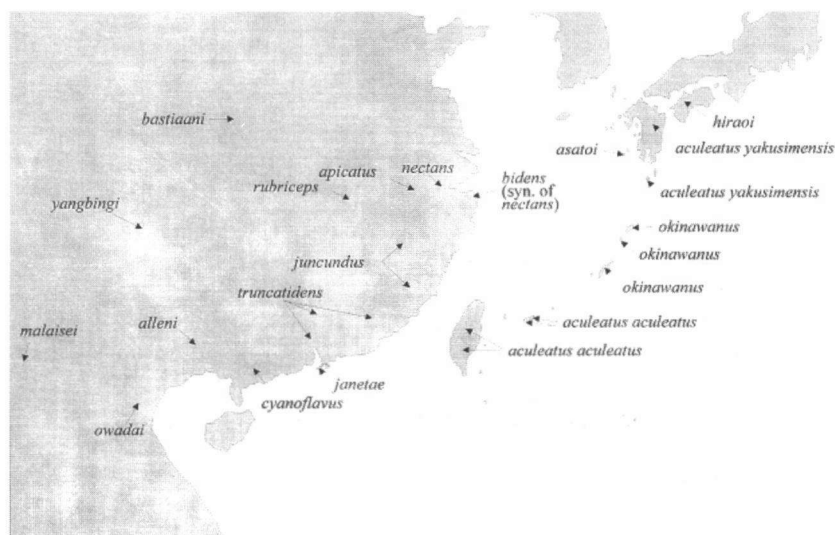


Fig. 13. Map indicating the distribution of all known *Rhipidolestes* species and subspecies:

<i>janetae</i> Wilson, 1997	China (Hong Kong)	<i>juncundus</i> Lieftinck, 1948	China (Fujian)
<i>alleni</i> This paper	China (Guangxi)	<i>malaisei</i> Lieftinck, 1948	Burma
<i>aculeatus</i> Ris, 1912	China (Taiwan), Japan	<i>nectans</i> (Needham, 1928)	China (Zhejiang)
<i>a. yakusimensis</i>		<i>okinawanus</i> Asahina, 1951	Japan (Ryukyus)
Asahina, 1951	Japan (Ryukyus, Kyushu)	<i>owadai</i> Asahina, 1997	North Vietnam
<i>apicatus</i> Navás, 1934	China (Zhejiang)	<i>rubripes</i> (Navás, 1936)	China (Jiangxi)
<i>asatoi</i> Asahina, 1994	Japan (Kyushu)	<i>truncatidens</i>	
<i>bastiaani</i> Zhu & Yang, 1998	China (Shaanxi)	Schmidt, 1931	China (Guangdong, Fujian)
<i>cyanoflavus</i> This paper	China (Guangdong)	<i>yangbingi</i> Davies, 1998	China (Sichuan)
<i>hiraoui</i> Yamamoto, 1955	Japan (Shikoku)		

ninth segment. Caudal genitalia as illustrated in Figures 11 and 12. The tip of the penile organ forms a pair of slightly incurved blunt horns as illustrated in Figures 9-10. Basal half of superior appendages not expanded with a small dorsal projection just beyond the mid-point. At three quarters of length a small lateral projection on outer face. Tip of superior appendage with finger-like projection. Inferior appendages extremely short with small upward pointing projections.

Measurements (mm). – Abdomen + anal appendages 48.0, hind wing 32.5-33.0.

FEMALE. – Very similar to ♂ with shorter, stouter body and pale bluish yellow markings are replaced by dull yellow markings. Base colour of labrum mid-brown superimposed with a thin coat of feint grey. Clypeus pale dull yellow with dark brown borders. Large dull yellow transverse band between clypeus and antennae. Fore and hind wing hyaline. Pterostigma as ♂ with crimson red centres bordered dark brown. Wings hyaline with feint dark-brown pigmentation at the tip. Abdominal segments 1-7 dark brown; shiny at segment 1 fading to matt at segment 7. Segments 7-10 matt black. Abdomen shorter and stouter than ♂ without the ninth dorsal projection. The ventral surface of the ovipositor slightly curved extending beyond tip of abdomen.

Measurements (mm). – Abdomen + anal appendages 37.0, hind wing 28.5.

DISCUSSION

R. alleni shares many features with its congeners. It is closest to *R. owadai*, which is geographically one of the nearest neighbours, from northern Vietnam. The penile organ of *alleni* is distinctive and will serve to separate it from other known *Rhipidolestes*. *R. cyanoflavus* is coloured pale bluish on the head. The only other *Rhipidolestes* with bluish markings is *R. apicatus* described by Navas with a bluish violet face. However, the bluish yellow thoracic markings of *cyanoflavus* and its very tall, thin conical projection at the base of the ninth abdominal segment are unique.

Seven *Rhipidolestes* species have been discovered and named in the past five years and all of these except one Japanese species and one North Vietnamese species have come from China. ASAHINA (1994) provided a map of the species known at the time. In view of the many additions, which have been made in recent years, an updated map of the 16 species and 1 additional Japanese subspecies is provided in Figure 13.

Rhipidolestes is a mountain stream specialist. Most species are found on the middle to upper levels of forested mountains occurring in headwaters, seepages or minor tributary streams. Given the opportunity for isolation within mountain ranges in China there are likely to be many more species, which await discovery. However, extensive deforestation in areas with low winter rainfall will have undoubtedly caused many headwaters streams and seepages to dry up towards the end of

the extensive southern Chinese dry season. The remaining unlogged or partially logged forested mountains will be the most productive.

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