

**RHIPIDOLESTES YANGBINGI SPEC. NOV., A NEW SPECIES  
WITH SOME UNUSUAL FEATURES, FROM SICHUAN, CHINA  
(ZYGOPTERA: MEGAPODAGRIONIDAE)**

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The new sp. is described from West China (holotype ♂: Emeishan, Sichuan, July 1992; deposited in CUMZ). The sp. has unique wing markings and is not particularly closely related to any other member of the genus.

INTRODUCTION

The genus *Rhipidolestes* was established by RIS (1912) to accommodate a new species of medium-sized zygopteran which we now know as the type of the genus, *R. aculeatus*. This was found in Taiwan (then Formosa) and actually at Hoozan, a source locality for other very interesting new Odonata in the past (e.g. the magnificent endemic *Chlorogomphus brevistigma*).

Ris recognised that his new species belonged to de Selys's "Légion Podagrion" by venational characters which he described in detail, he then defined *Rhipidolestes* again mainly on venational features. "Rhipido-" (Gk) means "dim" and we do not understand Ris's intention here unless it is that the Lestidae of E Asia are mainly large, highly coloured and metallic (relatively not dim?); *R. aculeatus* has a colourful face but the rest is rather dull pink to dark brown. *Aculeatus*, however, refers to a very interesting character, Ris's Dorn (German = "thorn"), a thorn-shaped tubercle, placed dorsally on abdominal segment 9. He describes this as "... a very unusual male-specific character ..." He could not have guessed, when handling the first species of a new genus, that this would be a generic character and one with useful species-specific features also. It is an interesting and a sobering thought that more than half of the 37 genera of the important assembly of relics into which he put *Rhipidolestes* were already recognised before the turn of this century, what we now call the Megapodagrionidae.

The fate of the *Rhipidolestes* was to grow rather slowly by a few new species or subspecies each decade to the 1950s. Eight species and 1 subspecies were listed by DAVIES & TOBIN (1984); 9 species by BRIDGES (1993) and a new species by ASAHINA (1994).

The last 8 months, 1997/1998 are exceptional in adding 3 new species. WILSON (1997) described *R. janetae* from Hong Kong, but also redescribed *R. truncatidens* and described its previously unknown female; in addition this excellent paper generally reviews the main features of the genus and its distribution (from Burma to the SE Asia offshore islands). This paper made it easy for ZHU & YANG (1998) to describe *R. bastiaani* from Shaanxi, a species close to *R. malaisei*, and likewise the new species described below.

### *RHIPIDOLESTES YANGBINGI* SP. NOV.

Figures 1-8

**M a t e r i a l.** – Holotype: ♂, Emeishan, Sichuan, West P.R. China, July 1992. Additional material: 4 ♂, paratypes, same data; all Mr B. Yang leg. Holotype and 1 paratypes to be deposited at the Museum of Zoology, Downing Street, University of Cambridge, England; 2 paratypes deposited at the Kunming Institute of Zoology, Academia Sinica, Yunnan, P.R. China.

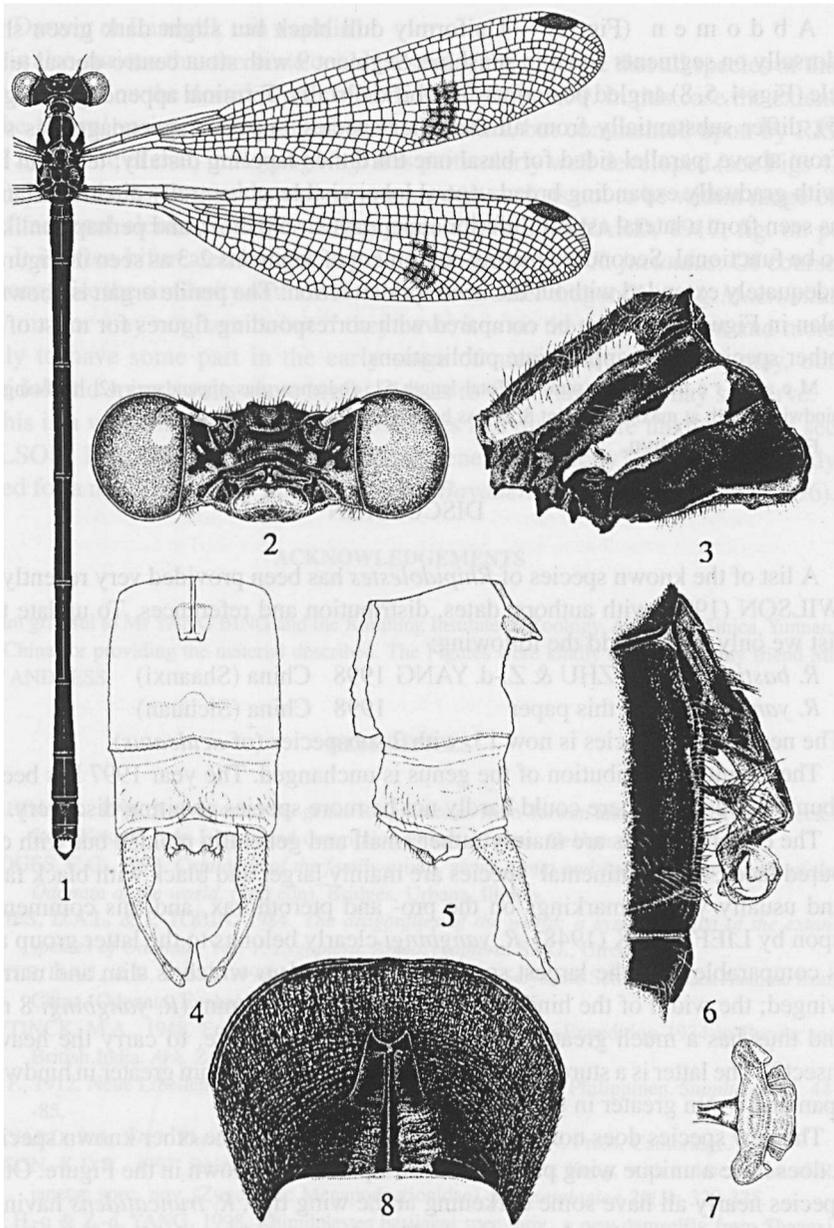
**E t y m o l o g y.** – Named for Mr Y a n g B i n g, who apprehended the specimens.

**MALE.** – A large black, non-pruinose species with bright yellow markings.

**H e a d** (Fig. 2). – Labium shiny black. Labrum pale yellowish brown. Clypeus dark brown with hairy anterior edge. Rest of head dull black, ocelli whitish. Row of long hairs along posterior edge of vertex. Antennae: scape yellow, pedicel yellow with brown at distal tip, flagellum black.

**T h o r a x.** – Prothorax matt black with anterior lobe finely bordered with yellow along anterior edge; yellow lateral stripe as continuation of the antehumeral stripe of pterothorax. Pterothorax (Fig. 3) shiny black with dark green reflections in sunlight, specially between antehumeral and metepisternal stripes; antehumeral stripes bright yellow, broad, about equal width throughout, slightly curved inwards anteriorly and squared off at origin; straightening posteriorly and stopping short of wing bases by about a fifth of their total length. Sides of pterothorax with bright yellow metepisternal stripe, broad at dorsal origin, narrowing ventrally and almost pointed at, but just covering spiracle. A thin yellow line runs along the upper two-thirds of the metapleural suture. Ventral surface of thorax dull black. Coxae whitish above, legs otherwise pale brown with slight darkening at the joints.

**Wings** (Fig. 1) essentially hyaline, including the apical area, but having very curious pairs of brown patches about 12 mm proximal to the apex in all wings; of these pairs the anterior is always the smaller and the pairs on the forewings are more extensive than those on the hindwings. Pterostigma dark reddish bordered with black, length 3 mm and subtending 4 to 5 cells, trapesoidal with acute angle directed proximally.



Figs 1-8. *Rhipidolestes yangbingi* sp. n., West China, ♂: (1) body with right fore and hind wings; – (2) head, frontal view; – (3) pterothorax, antero-lateral aspect; – (4) caudal appendages, dorsal; – (5) caudal appendages, lateral; – (6) copulatory organs, lateral (in situ); – (7) penial organ; – (8) bifid tubercle on dorsum of abdominal segment 9, dorsal view with seg. 8 below and seg. 10 above.

**A b d o m e n** (Fig. 1). – Uniformly dull black but slight dark green shine dorsally on segments 1 to 4 in sunshine. Segment 9 with stout centro-dorsal tubercle (Figs 4, 5, 8) angled posteriorly and bifid distally. Terminal appendages (Figs 4, 5), differ substantially from all the other species; superior appendages, as seen from above, parallel sided for basal one third then tapering distally; terminal half with gradually expanding broad ventral lobe, visible as ventrally directed triangle as seen from a lateral aspect. Inferior appendages very short, and perhaps unlikely to be functional. Secondary mating equipment of segments 2-3 as seen in Figure 6, adequately extended without the need for dissection. The penile organ is shown in plan in Figure 7 and can be compared with corresponding figures for most of the other species in the appropriate publications.

**M e a s u r e m e n t s** (mm). – Total length 51, abdomen plus appendages 42, hindwing 35, hindwing width at maximum point 8, across head 6.

**FEMALE** unknown.

## DISCUSSION

A list of the known species of *Rhipidolestes* has been provided very recently by WILSON (1997) with authors, dates, distribution and references. To update that list we only have to add the following:

*R. bastiaani* ZHU & Z.-d. YANG 1998 China (Shaanxi)

*R. yangbingi* this paper 1998 China (Sichuan)

The new total of species is now 13, with 2 subspecies (of *aculeatus*).

The extent of distribution of the genus is unchanged. The year 1997 has been a ‘bumper’ year and there could hardly not be more species awaiting discovery.

The eastern species are mainly rather small and generally pinkish but with coloured faces; the ‘continental’ species are mainly larger and black with black faces and usually yellow markings on the pro- and pterothorax, and this commented upon by LIEFTINCK (1948). *R. yangbingi* clearly belongs to the latter group and is comparable with the largest species *R. truncatidens* which is slim and narrow winged; the width of the hindwing at its maximum is 6 mm (*R. yangbingi* 8 mm and thus has a much greater wings area, about 30% more, to carry the heavier insect?). The latter is a sturdier insect while the former is 1.5 mm greater in hindwing span and 4 mm greater in total length.

The new species does not have a ‘near relative’ among the other known species; it does have a unique wing pattern of brown patches as shown in the Figure. Other species nearly all have some darkening at the wing tips, *R. truncatidens* having a substantial wing-tip dark brown patch. These wing markings look as though they have been added as an afterthought in a random manner but are exactly alike in the 5 known males except for slight differences in extent and depth of colour. Do they represent an incipient stripe, or a remnant of a stripe? They would seem to fit the category of items ‘not adequate to serve a useful purpose’, a problem which nei-

ther Darwin or Lamarck can explain!

It is also curious that the same could be said of the tubercle that all species of the genus exhibit on the dorsal aspect of abdominal segment 9. In this case the extent of the 'thorn' varies from vestigial in *R. aculeatus*, but commented upon by RIS (1912) in spite of that, in *R. yangbingi* it is particularly well developed (see Figs 4, 5, 8). Nevertheless it would seem remote enough such as not to be within range of the functional elements of the mating process (see TILLYARD, 1917, fig. on p. 36). It is often bifurcated but not, e.g. in *R. aculeatus* and *R. jucundus*. Of course we recognise the similarity with the dorsal spine in other dragonflies, e.g. *Macromia*: they may or may not have it, but if they have, it is on the 10th segment and more likely to have some part in the early stage of mating. Be that as it may, our rhipidolestid spine awaits some bright idea as to what function it may subserve.

This is a very interesting genus whose likes and dislikes are unknown (but see WILSON, 1997). What is their niche in the generic hierarchy? A question already posed for a not dissimilarly ranging genus, *Bayadera* (DAVIES & YANG, 1996).

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