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**TWO NEW SPECIES OF *PODOLESTES* SELYS FROM  
BORNEO, WITH A KEY FOR THE IDENTIFICATION  
OF THE KNOWN SPECIES**

(Odonata, Megapodagriidae)

by

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The genus *Podolestes*, as far as at present known, is confined to the Malaysian subregion of the Indo-Australian Archipelago. Descriptions and drawings of structural details of four species are to be found in two of the writer's previous papers on Malaysian dragonflies, viz.:

New and little known Odonata of the Oriental and Australian Regions. *Treubia*, 15, 1935: 177-183, fig. 1-3.

Descriptions and records of South-East Asiatic Odonata (II). *Ibid.* 17, 1940: 347-350, fig. 4-5.

The species of *Podolestes* have been found in marshes and along muddy creeks flowing through wooded areas in low country. Owing to their retiring habits the insects are but seldom encountered and all species are rare in collections. Little or nothing is known of their life-histories, and the larva is still unknown.

The six known members of the genus, two of which are here described for the first time, may be distinguished by the following

Key to the species.

1. Dorsum of thorax uniform metallic bronzy black. Labrum, mandibles and genae shiny black. Ante-alar triangles bronzy-black, unmarked. Nervure Ac situated much nearer  $Ax_2$  than  $Ax_1$ ; nervure Ab complete, meeting Ac at the wing-margin. Quad-rilateral short, markedly widened distally, costal and distal sides approximately

- equal in length in fore wing. Three to four postquadrangular antenodal cells. Male anal appendages of slender build, blackish in colour; superior pair a trifle longer than the inferiors; apex of inf. app. expanded, truncated and slightly notched . . . 2.
- Dorsum of thorax with two pairs of light-coloured spots on mesepisternum, and sides with an oblique band extending from below the spiracle upwards as far as the dorsal end of humeral suture. Labrum, mandibles and genae blue. Nervure Ab incomplete, not meeting Ac coincidentally at the wing-margin. Quadrilateral longer, not noticeably widened distally, costal side in fore wing markedly longer than distal side . . . 3.
2. Legs mainly reddish-brown, apices of femora obscured; inner surface of femora and tibiae sulphur-yellow. Metapleurae with bronzy-black episternal band confluent with the black colour on mesepimeron and with the marking on middle of metepimeron irregular in shape. Adult male with bluish-white pruinescence on head, pro- and synthorax. ♂ abd. + app. 29.0—30.5, hw. 22.0—24.0; ♀ 28.0—29.0, 24.0—25.0 mm. Hab.: Borneo . . . . . *chrysopus* Selys.
- Legs with the outer surface of femora Sanford's brown and the apices chestnut-coloured; outer surface of tibiae salmon-orange; inner surface of femora and tibiae orange-chrome. Metapleurae of thorax with two isolated, oblique, bronzy-black bands. ♂ abd. + app. 30.0, hw. 22.7 mm. Female unknown. Hab.: Sumatra  
*burwaldai* Lieft.
3. Distance from base of fore wing to Ax<sub>1</sub> less than 1½ times the distance separating Ax<sub>1</sub> from Ax<sub>2</sub>. Nervure Ac situated much nearer Ax<sub>2</sub> than Ax<sub>1</sub>. Two postquadrangular antenodal cells. Inferior pair of blue antehumeral thoracic spots oval or sub-circular in outline. Ante-alar triangles at least partly blue. Wings broad, rather abruptly expanded beyond the petiole, the apices obtuse and broadly rounded off. 4.
- Distance from base of fore wing to Ax<sub>1</sub> at least 1½ times as long as the distance separating Ax<sub>1</sub> from Ax<sub>2</sub>. Wings not so broad and more evenly expanded beyond the petiole, tips normal, evenly rounded off. Ante-alar triangles bronzy-black, with no light spots . . . . . 5.
4. Tenth abdominal segment of male strongly elevated, roof-shaped. Inferior appendages longer than the superiors, the tips of which are truncated and strongly incurved in dorsal view. A stoutly built species of larger size. ♂ abd. + app. 29.0—31.5, hw. 22.0—24.0; ♀ 27.5—29.0, 23.8—23.0 mm. Hab.: Sumatra . . . . . *coomansi* Lieft.
- Tenth abdominal segment of male longitudinally carinate, but the tergite not elevated. Inferior appendages a little shorter than the superiors, the tops of which are more evenly rounded and nearly straight in dorsal view. Species of slenderer build and smaller size. ♂ abd. + app. 25.5, hw. 20.3 mm. Female unknown, Hab.: Borneo  
*furcifer*, sp. n.
5. Two postquadrangular antenodal cells. Ac situated about mid-way between Ax<sub>1</sub> and Ax<sub>2</sub>. Distance from base of fore wing to Ax<sub>1</sub> at least two times as long as the distance from Ax<sub>1</sub> to Ax<sub>2</sub>. Mesepisternum of thorax with a pair of irregular, roundish, blue patches upon lower one-third, and with numerous minute light specks and points irregularly distributed over the entire surface. Anal appendages of male of slender form, each of the superiors but slightly outcurved basally, and inferior pair without conspicuous hair tufts at base and apex ventrally. Insect of slenderer build and smaller size. ♂ abd. + app. 26.5—30.0, hw. 23.0—25.0; ♀ 25.5—27.5, 23.0—25.0 mm.

Hab.: Borneo . . . . . *atomarius*, sp.n.

- Three, rarely four, postquadrangular antenodal cells. Ac situated much nearer Ax<sub>2</sub> than Ax<sub>1</sub>. Distance from base of fore wing to Ax<sub>1</sub> one and one-half to two times as long as the distance from Ax<sub>1</sub> to Ax<sub>2</sub>. Mesepisternum of thorax with a pair of incomplete, oblique, blue antehumeral bands, pointing dorsad and mesiad, extending from the mesocoxae upwards to  $\frac{1}{3}$ - $\frac{2}{3}$  of the whole length of mesepisternum; no traces of minute light specks distributed all over the surface. Anal appendages of male strongly built, each of the superiors almost semicircularly outcurved basally; inferior pair much thicker and provided along ventral border with two conspicuous tufts of long golden-yellow pencil-hairs, one at extreme base and another at the bend before the apex of each. Insect of robust build and large size. Pro- and synthorax of adult male partly covered with blue pruinescence. ♂ abd. + app. 31.0-37.0, hw. 26.5-31.5; ♀ 29.0-33.0, 27.0-30.0 mm. Hab.: Malaya; (Riouw) Lingga Archip.; Sumatra; Billiton; Borneo. . . . . *orientalis* Selys.

***Podolestes atomarius*, sp.n. (figs. 1-2)**

Material studied. — Numerous specimens, both sexes, S.E. Borneo, Kandangan distr., Ampah and surroundings, 0-20 m, iv-v. 1948, Liem Swie Liong leg. Holotype ♂ and allotype ♀ in the Leiden Museum.

Male (ad.). — Labium pale yellow or creamy-white, tips of lateral lobes ferruginous. Mandibles, labrum and anteclypeus vivid lumière blue (Ridgway), the tips of the mandibles obscured. Labrum finely bordered with reddish-brown and fringed with stiff golden-brown bristles. Genae also blue, this colour continued upwards along the margin of compound eyes as far as the insertion-point of antennae but indented by a glossy black spot on either end of the fronto-clypeal suture. Postclypeus and the entire dorsal surface of head dull bronzy-black with no other light marks than three tiny orangish streaks, one in front of the anterior ocellus and one on either side of the posterior ocelli. Occipital ridge dull brown. Rear of the head black, the lower half pruinose blue on each side of the middle. Antennae long and fine, the second joint with sharply defined yellow basal and apical rings.

Prothorax sky-blue, the anterior and posterior lobes as well as the lower portion of the propleuron dull bronzy-black. Posterior lobe depressed, simply rounded, its free margin very slightly upcurved.

Synthorax deep purplish bronzy-black, marked with sky-blue as appears from fig. 1; mesepisternal blue spots irregular in shape and slightly variable, as is also the oblique forked band crossing the spiracle; the upper or anterior (mesepimeral) and lower or posterior (metepisternal) prolongations of this band are either narrowly connected with the rest of the band or obliterated and broken up into smaller spots; blue specks on dorsum and sides somewhat variable in size, shape and arrangement, but always numerous. Ante-alar triangles metallic greenish-black. Nota and axillaries bright blue. No

pruinescence, except on the ventral surface and the lower part of the pleurae, the creamy-buff ground-colour shining through.

Legs slim and slender, posterior femur extending back as far as the hind margin of first abdominal segment; ground-colour dirty cream-buff; exterior surface of coxae thinly pruinescent blue and a little obscured on middle. All femora with two broad and conspicuous purplish-brown rings and with the apices also brown; tibiae and tarsi unicolorous ochraceous-buff, the tibiae not dilated. All spines and tarsal claws brown.

Wings hyaline, very similar in shape to those of *orientalis*, only the apices are a little more obtuse. Neuration with the following peculiarities. Petiole longer than in *orientalis*. Ab entering the wing-margin at level of the upper distal angle of the quadrilateral or a little more proximad (*orientalis*: only slightly distal to the proximal side of it). Ac situated mid-way between  $Ax_1$  and  $Ax_2$  (*orientalis*: distinctly distal to that level). Distance

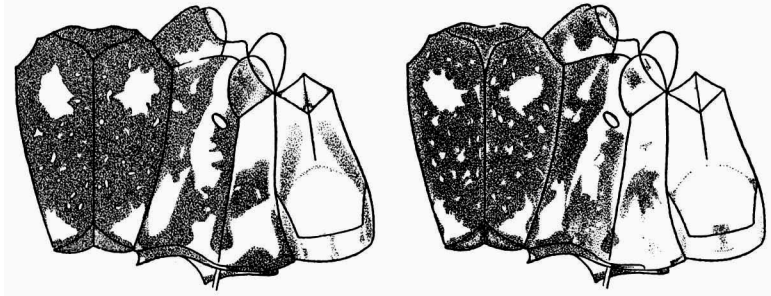


Fig. 1. *Podolestes atomarius*, sp.n., S.E. Borneo. Diagram of thoracic colour-pattern of ♀ (left) and ♀ (right).

between base of wing and  $Ax_1$  more than two times as long as the distance separating  $Ax_1$  and  $Ax_2$ . Quadrilateral longer than in *orientalis*: costal side in fore wing almost twice as long and in hinder wing almost two and one-half times as long as distal side. Two postquadrangular antenodal cells in all wings. Origin of  $M_2$  approximately half-way between nodus and pterostigma.  $M_{1a}$  arises 2-4 cells further distad. Pterostigma shaped similarly to *orientalis* but a trifle shorter; colour pale creamy yellow, growing darker with age, almost black in old matured individuals. 16-19 postnodal cross-nerves in fore wing, 16-18 in hinder wing.

Abdomen short and of slender build, coloured much as in the related species. Segm. 1 yellowish, dorsum with a brown mark, slightly narrowed anteriorly, extending from base to apex. Dorsum of 2 with a pair of closely approximated sky-blue oval spots, occupying about the basal one-third, followed by a broad dark brown mark that occupies the rest of the dorsum

and part of the sides; laterally this mark is somewhat angular, and the colour beyond the basal half of segment is paler; lower part of sides ochreous to greyish-blue. Ground-colour of 3-7 dirty ochreous, each with sharply defined dark brown apical rings and with slightly longer, and more diffuse brown marks roundabout their middle, tapering on both ends; 3-4 or 3-5 moreover with tiny subtriangular mid-dorsal blue spots at extreme base, the largest (on segm. 3) extending about one-sixth of the length of segment. Segm. 8-10 mainly dark brown or black; 8 with traces of light baso-dorsal spots and a pale brown stripe along lower margin; 9 with a circular blue, mid-dorsal spot just beyond half-way its length; upper surface of 10 wholly blue. Tenth segment more or less distinctly carinate.

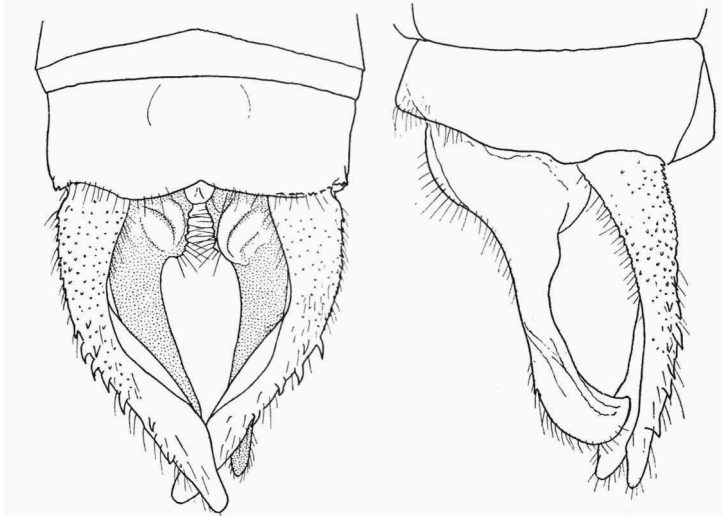


Fig. 2. *Podolestes atomarius*, sp.n., S.E. Borneo. Anal appendages of ♂, dorsal and left lateral view.

Anal appendages (fig. 2) obscured, almost black and slightly pruinose in matured examples; outer surfaces of superior pair dirty ochreous basally; the expanded basal parts as well as the ventro-apical surface of the inferior pair yellowish. Basal pubescence on the inside of the inferior appendages golden-yellow; otherwise black. Superior pair of simple structure. Inferior pair a little shorter than the superiors, much swollen and approximated basally, thence considerably narrowed, each at first outbent and then again a little incurved, the broadened apices in ventral view nearly meeting in the median line, with the inner border of each evenly rounded, but the extreme tips a little divaricate, tapering to a blunt point. No conspicuous pubescence.

Female (ad.). — Resembling the male closely in colour and markings

except that the blue marks on the head and on the pro- and synthorax are of a paler tint, the smaller light spots and specks on dorsum of mesothorax being rather more ochreous or yellow in colour. The dorsum of the thorax is rather more bister-coloured and there is a narrow tawny-olive stripe joining the humeral suture; pattern approximately equal in the two sexes (fig. 1). Legs also similarly coloured to the male.

Wings as in male, membrane hyaline. Pterostigma maize-yellow to yellow-ocher, deepening to tawny-olive in old adults.

Abdomen short and stout with cylindrical segments; 8-10 but little inflated in lateral, more distinctly so in dorso-ventral dimension. Ground-colour cream-buff to chamois; median and apical rings of 3-6 sharply defined, snuff-brown, the former more than two times broader than the latter and triangularly indented by yellow postero-laterally above the ventral border of each segment. Segm. 2 with the brown mark covering the dorsum less sharply defined and lighter in colour than in the male, the baso-dorsal light blue spot subrectangular in outline. On segm. 3 to 8 these blue basal spots are a little larger than in the male and more or less triangular in shape. Segm. 8-10 russet or cinnamon-brown with reduced pale markings; 8 with an additional blue mid-dorsal point close to the posterior margin, and 9 with a triangular light blue mark, tapering to a point anteriorly, occupying the posterior half of the dorsum. Tenth segment barely one-fourth as long as the preceding segment, annular, its posterior border almost straight and finely denticulate; dorsum wholly blue in colour.

Anal appendages only little longer than 10th segment, straight, conical, slightly depressed, pointed. Valves long but of rather slender build, surpassing apex of 10th segment for about one and one-half times the length of this segment; lower margin of the apical one-third slightly convex and armed with a row of numerous extremely minute denticles; apices gently and triangularly upcurved; colour light brown, the tips yellowish or pale blue.

Measurements. — Length: ♂ abd. + app. 26.5-30.0, hw. 23.0-25.0; pt. hw. 1.3-1.7 mm; ♀ 25.5-27.5, 23.0-25.0, 1.5-1.7 mm.

#### ***Podolestes furcifer*, sp. n. (figs. 3-4).**

Material studied. — One male (ad., colours faded), S. Borneo, Sampit, 0-50 m, ii. 1950, W. Buyn. Holotype ♂ in the Leiden Museum.

Male (ad.). — Labium vinaceous-buff, tips of lateral lobes olive-brown. Mandibles and labrum blue; anteclypeus pinkish-buff; tips of mandibles chestnut coloured. Labrum with a sharply defined snuff brown line along anterior border, which is sparsely fringed with long golden-brown bristles.

Genae light blue, this colour continued upwards along the margin of compound eyes as a narrow triangular spot, pointed to the rear, as far upwards as the level of the median ocellus. Postclypeus and the entire dorsal surface of head uniform bronzy-black, the area posterior to the ocellar tubercle, between the postocular lobes, with metallic blue lustre. Rear of the head black, under surfaces covered with thin bluish pruinescence. A short distance away from the margin of compound eye, the occipital lobes are furnished with a minute black tubercle, clearly visible with a lens when viewed from above. Antennae brown, second joint paler basally.

Ground-colour of pro- and synthorax discoloured to a dull glaucous-blue (probably clear blue in life). Prothorax wholly blue, but the anterior and posterior lobes bronzy-black, these parts connected with each other by a

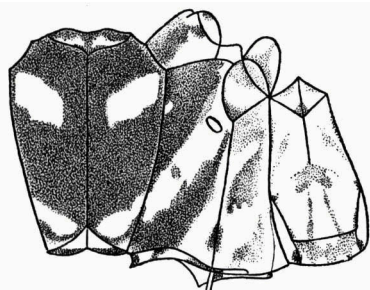


Fig. 3. *Podolestes furcifer*, sp.n., S. Borneo. Diagram of thoracic colour-pattern of ♂ holotype.

fine black median longitudinal line. Posterior lobe depressed, simply rounded, its free margin very slightly raised.

Synthorax deep bronzy-black, marked with blue as is shown in fig. 3. Ante-alar triangles bright blue, their posterior one-third sharply defined black. Nota also blue; axillaries discoloured and obscured (possibly black in well-preserved specimens). Ground-colour of metepimeron and ventral surface of thorax vinaceous-buff (discoloured), underparts with pale blue pruinescence.

Legs long and slender, posterior femur reaching back almost as far as half-way the length of second abdominal segment; ground-colour tawny-olive, coxae slightly pruinescent. Femora somewhat obscured exteriorly, but without traces of dark rings; tibiae dirty yellowish, somewhat darker on the inside; tarsi brown. All spines and tarsal claws dark brown.

Wings hyaline, resembling in shape those of *coomansi*, especially in regard to the rounded tips, but differing from that species in the slightly longer

petiole. Neuration with the following peculiarities. Ab entering the wing-margin only little distal to the proximal side of the quadrilateral in both pairs of wings. Ac situated much nearer  $Ax_2$  than  $Ax_1$ , the distance separating it from the quadrilateral only about  $1\frac{1}{2}$ -2 times that of its own length. Distance from base of wing to  $Ax_1$  only little longer than the distance from  $Ax_1$  to  $Ax_2$ . Quadrilateral with the costal side in fore wing about two times, and in hinder wings about two and one-half times as long as the distal side. Two postquadrangular antenodal cells in all wings.

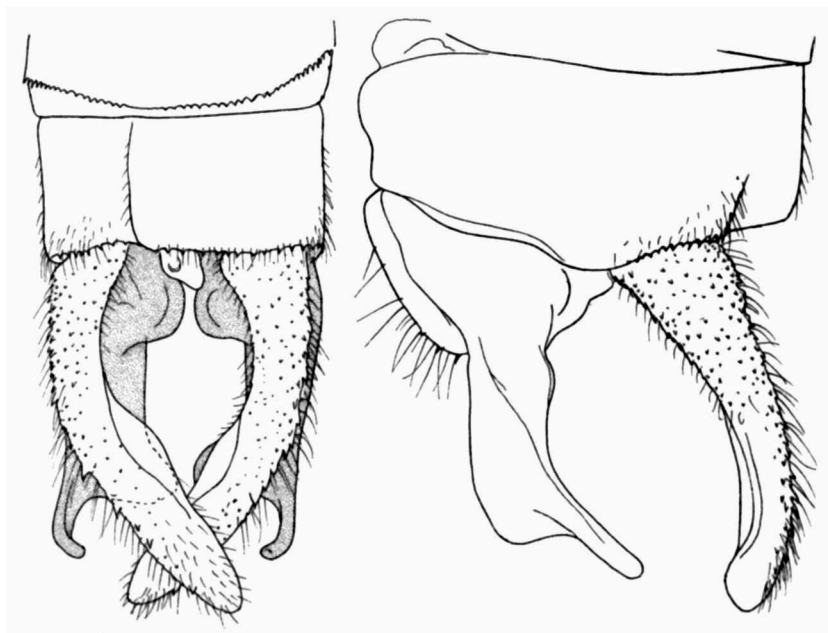


Fig. 4. *Podolestes furcifer*, sp.n., S. Borneo. Anal appendages of ♂ holotype, dorsal and left lateral view.

Origin of  $M_2$  well proximal to the middle between nodus and pterostigma, arising at  $Px_7$  in fore wing and at  $Px_6$  in hinder wing.  $M_{1a}$  arises 4-6 cells further distad. Pterostigma shaped similarly to *orientalis* and allies but still shorter than in *atomarius*; colour very dark brown, the anal and distal sides bordered with a fine yellowish line, 18 postnodal cross-nerve in fore wing, 17 in hinder wing.

Abdomen short and of slender build, coloured similarly in principle to the allied species. Segm. 1 yellowish, dorsum with an indistinct brownish mark extending from base to apex. Dorsum of 2 with a squarish sky-blue mark occupying approximately its basal one-third, the rest of the segment



dark reddish-brown, the lower portion of the sides being light blue. Ground colour of 3-6 dirty ochreous, each of these segments with sharply defined blackish-brown apical rings, occupying a little less than one-third of their length, and with much longer pale brown marks roundabout their middle, expanding all over the dorsum but becoming indistinct laterally and leaving the basal and apical parts of the sides yellow; 3-8 moreover with distinct, subtriangular, baso-dorsal bright blue spots, that on 3 being largest, extending about one-sixth the length of segment. Segm. 7-10 gradually more obscured, 9 and 10 discoloured, but probably also blue dorsally. Tenth segment distinctly carinate.

Anal appendages (fig. 4) black. Superior pair of simple structure, apices blunt. Inferior pair somewhat shorter than the superiors, much swollen and closely approximated basally, thence narrowed and strongly compressed, the middle portion at first a little outbent and then again incurved, the intero-ventral border of each strongly and abruptly angulate, the tips considerably narrowed so as to form very slender incurved hooks.

Measurements. — Length: ♂ abd. + app. 25.5, hw. 20.3, pt. hw. 1.4 mm.  
Female. — Unknown.