

Research Article

Taxonomic Studies on the Genus *Athesapeuta* (Coleoptera: Curculionidae: Baridinae) from India with Description of Three New Species

B. Ramesha and V. V. Ramamurthy

Division of Entomology, Indian Agricultural Research Institute, New Delhi 110012, India

Correspondence should be addressed to B. Ramesha, b.ramesha@gmail.com

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Six species of genus *Athesapeuta* Faust (Coleoptera: Curculionidae: Baridinae) from India and the adjacent countries are included, of which three new species, namely *meghalayensis* sp. nov., *richardi* sp. nov., and *spinulatus* sp. nov., are described. An annotated checklist of known species along with their synonymy and distribution is given. Descriptions are supplemented with details of genitalia and elytral vestiture; a key to the species studied is provided.

1. Introduction

Athesapeuta belongs to the tribe Madarini which at present is considered under the subfamily Baridinae of the family Curculionidae [1]. The majority of its species are known from the Oriental region, of which eight are from India. Except for the studies by Faust [2, 3] and Marshall [4], taxonomic studies on the Indian fauna are inadequate, scattered, and need to be updated and supplemented with descriptions of genitalia, morphometrics, and terminology. In particular, elytral vestiture and female genitalia which are emerging as important characters have not been included in descriptive work. The present study addresses these gaps for the currently recognized species and adds three new species.

2. Materials and Methods

Voucher specimens and type material are deposited with the National Pusa Collection (NPC) of the Division of Entomology, Indian Agricultural Research Institute, New Delhi. Materials from the National Pusa Collection (NPC) of the Division of Entomology, Indian Agricultural Research Institute, New Delhi; Forest Research Institute (FRI), Dehra Dun; Zoological survey of India (ZSI), Kolkotta; Panjab University (PU), Chandigarh, were included. Paratypes were studied for all the species described, and they are compared

with original literature and photographs. All taxonomic characters, except the elytral vestiture and genitalia, were studied in intact specimens. Specimens were processed following Supare et al. [5], and genitalia and elytral vestiture were studied following Ramamurthy and Ghai [6]. The terminology of Supare et al. [5], Thompson [7], Poorani and Ramamurthy [8], O'Brien and Pakaluk [9], Wanat [10], and Davis [11] was followed for the description of female and male genitalia. General taxonomic characters and genitalia were studied with Leica M205FA stereozoom microscope, and elytral vestiture was studied with Leica DM1000 phase contrast microscope. Photographs were captured using the software Leica application Suite ver. 2.8.2 on a Leica DFC290 camera. Illustrations were made using a drawing tube fitted with a camera lucida and scales of magnification provided in the illustrations. Total length given in the descriptions is excluding rostrum, and the standard length is from anterior margin of pronotum to end of pygidium. The measurements given in the descriptions are mean and standard error except for new species, wherein measurements are of holotype.

3. Genus: *Athesapeuta* Faust

Athesapeuta Faust 1894 [2]. Type species: *Baridius subsignatus* Motschulsky, 1866 [12] = *Athesapeuta motschulskyi* Voss, 1958 [13]; gender: Female. (By "Original Designation").

Description. General colour shiny black; body rhomboidal, subcylindrical, or oblongovate, much longer than broad. Head not separated from rostrum by a deep transverse incision, frons narrower than base of rostrum, 1.5–4x as broad as long. Rostrum long, cylindrical, straight at least in basal half, separated from head by a sharp sulcus between eyes; more or less curved with mandibles adducent type, dentate internally or conical with straight cutting edge, 0.79–0.98x as long as head and pronotum combined (Figure 1(a)); eyes 1.28–2.12x as wide as long. Antennae inserted at 1.1–1.8x of length from base of rostrum; scape 6.25–10x as long as broad; funicle widening distally; seventh funicle not fitting closely to club (Figure 1(b)). Prothorax generally shallowly bisinuate at posterior dorsal margin, anterior dorsal margin truncate, not produced over head when viewed in profile, as broad as to 1.28x as broad as long. Scutellum generally trapezoidal, as broad as to 1.5x as broad as long. Elytra oblong or ovate, smooth; 0.5–0.92x as wide as prothorax; separately arcuate at base; deeply striate, striae 10 complete; separately rounded at apices, with narrow membrane and paler fringe along apical margin, without any trace of subapical calli (Figure 1(c)). Legs with femora clavate (Figure 1(d)), unarmed, not sulcate beneath; tibiae with longitudinally confluent punctures, sulcate, not tuberculate (Figure 1(e)); claws almost parallel to each other, more or less divergent, narrowly separated (Figure 1(f)). Sternum with a furrow on prosternum; procoxa 1.53–2.5x as wide as intercoxal process; hind margin of prosternum produced in middle; mesosternum transversely impressed, intercoxal process 0.9–1.25x as broad as a coxa; metasternum elongate, 1.5–1.66x as long as mesocoxa; pro-, meso-, and metasterna not interrupted in continuity by mesosternum (Figure 1(g)). Abdomen with first and second ventrites not connate; pygidium fully or broadly exposed, directed posteroventrally, visible dorsally, without transverse carina along hind margin of elytra in general; lateral part of fifth ventrite visible dorsally on each side of pygidium. Female genitalia with spermatheca more or less sclerotised at distal arm, distal arm shorter than proximal arm; spiculum ventrale 1.5–2.5x as long as basal plate; apical end with hairs. Male genitalia with median lobe moderately sclerotised; apophyses 0.25–1.06x as long as median lobe.

4. Annotated Checklist

Faust [2] described this genus, and Voss [13] synonymised *Baridius subsignatus* with *Athesapeuta motschulskyi*, the type species. The majority of species were described before 1950. Faust contributed the most with nine species, followed by Marshall (7), Voss (6), Bohemann and Hustache (3 each); Motschulsky (2), and Fabricius, Gerstaecker and Zimmerman (1 each). This genus is predominantly Oriental (18 species) Thirteen are Afrotropical, and five occur in the Palaearctic.

Checklist: Type species: Baridius subsignatus Motschulskyi, 1866 [12] = *Athesapeuta motschulskyi* Voss, 1958 [13]. (For more details see Table 1).

5. Description of Species

5.1. Athesapeuta cyperi Marshall, 1928 [17]. (Figures 2(a), 3(a), 4(a), 5(a), 6(a), 6(b), 8(a), 9(a), 10(a), 11(a), 11(d), 12(a), 13(a)–13(c), 14(a), 14(b), 15(a)–15(d) and 16(a)–16(c)).

Description. Colour shiny black; antennae, tibiae, elytra on lateral and apical margins reddish brown. Head bare, finely alutaceous with sparse punctures, 1.5x as broad as long; eyes 1.28x as wide as long. Rostrum 0.79x as long as head and pronotum combined, strongly curved, smooth, with four rows of small punctures in addition to punctate area above scrobes, sparse vestiture on each side of base, at middle 0.77x as broad as at apex, 0.76x as broad as at base (Figures 2(a) and 3(a)). Antennae inserted at 1.57x of length from base of rostrum; scape slender, long, 9.13x as long as broad, impunctate; funicle with first segment 3.5x as long as second and third combined, third 0.5x as long as broad, segments three to seven slightly transverse, subequal in length and breadth; funicle 1.18x as long as club (Figure 4(a)). Prothorax 1.03x as broad as long, sides subparallel from base to middle, anterior margin truncate, behind apex with tubular constriction, posterior margin shallowly bisinuate, at middle 1.91x as broad as at apex, and 0.98x as broad as at base; dorsum gently convex longitudinally, set with close shallow separated punctures, with a broad impunctate median stripe, punctures on pleurae larger and subreticulate (Figure 5(a)). Scutellum bare, trapezoidal, with two low longitudinal costae, 1.09x as broad as long. Elytra oblong ovate, separately rounded at apex, at middle 1.14x as broad as at apex, 1.13x as broad as at base; striae deep, indefinitely punctate, not diminishing at apex, striae 10 complete; intervals flat, 3x as broad as a striae, with a row of large shallow punctures, each with minute recumbent scale, vestiture small on intervals one to five, larger, scale-like on outer intervals (Figure 8(a)); elytral vestiture whitish, rod-shaped, tapering and pointed at base, blunt at apex, surface with striations reaching apex (Figure 9(a)). Legs coarsely punctate, each puncture containing a grey elongate vestiture; tibia sulcate; profemur with a fringe of long vestiture on ventral surface (Figure 6(a)), 1.12x as long as mesofemur, 1.09x as long as metafemur. Protibia 1.53x and 1.25x as long as meso- and metatibia, respectively, with a sharp tooth on inner edge at about middle in males (Figure 6(b)), females without it. First tarsal segment 1.1x as long as broad, 1.1x as long as second, 0.83x as long as and 0.71x as broad as third, third 1.16x as broad as long, fourth 3x as long as broad. Prosternum with deep transverse sulcus behind apex, base with raised fovea. Procoxa 1.87x as broad as its intercoxal process; mesosternum plate-like, depressed at base, raised at apex, intercoxal process 0.96x as broad as mesocoxa; metasternum depressed in middle with longitudinal impressed line, intercoxal process 1.33x as broad as metacoxa. Venter black, strongly punctate, each with broad vestiture; anterior margin of first ventrite broadly and shallowly ogival, posterior margin straight, 2.92x as broad as long, 1.74x as long as second, second 5x as broad as long, 0.65x as long as three and four combined, ventrites third and fourth subequal in length, five 2.18x as broad as long,

TABLE 1

Sl No	Species	Distribution
(1)	<i>affinis</i> Faust, 1898 [3]	India
(2)	<i>amoena</i> Voss, 1958 [13]	China
(3)	<i>armata</i> Hustache, 1932 [14]	Madagascar
(4)	<i>atronuda</i> Marshall, 1941 [15]	Uganda
(5)	<i>aurantiaca</i> Faust, 1894 [2]	Myanmar
(6)	<i>bengalica</i> Faust, 1894 [2]	India
(7)	<i>chinensis</i> Faust, 1894 [2]	China
(8)	<i>conradti</i> Hustache, 1932 [16]	Cameroun
(9)	<i>cyperi</i> Marshall, 1928 [17]	Philippines
(10)	<i>dodonis</i> (Marshall) = <i>Baris dodonis</i> Marshall, 1936 [18]; Pajni and Kohli, 1990 [19]	Uganda
(11)	<i>famula</i> (Fabricius) = <i>Curculio famula</i> Fabricius, 1798 [20]; Hustache, 1938 [21] = <i>Rhynchaenus famula</i> (Fabricius, 1798 [20]); Fabricius, 1801 [22]; Hustache, 1938 [21] = <i>Baridius famula</i> (Fabricius, 1798 [20]); Boheman in Schoenherr, 1836 [23]; Hustache, 1938 [21] = <i>centrodentatus</i> Desbrochers des Loges, 1891 [24]; Hustache, 1938 [21]	India
(12)	<i>flavicornis</i> (Boheman in Schoenherr) = <i>Baridius flavicornis</i> Boheman in Schoenherr, 1836 [23]; Hustache, 1938 [21]	USA
(13)	<i>gyrosicollis</i> Marshall, 1948 [25]	Southern Shan States
(14)	<i>immaculata</i> Faust, 1898 [3]	India
(15)	<i>latifasciata</i> Voss, 1958 [13]	China
(16)	<i>lineolatofasciata</i> (Motschulsky) = <i>Baridius lineolatofasciata</i> Motschulsky, 1866 [12]; Faust, 1894 [2]	India
(17)	<i>madugodana</i> Voss, 1957 [26]	Sri Lanka
(18)	<i>meghalayensis</i> sp. nov.	India
(19)	<i>motschulskyi</i> Voss, 1958 [13]	China
(20)	<i>oryzae</i> Marshall, 1916 [4]	India
(21)	<i>pinguis</i> Faust, 1894 [2]	Myanmar
(22)	<i>politirostris</i> Voss, 1962 [27]	Congo
(23)	<i>richardi</i> sp. nov.	India
(24)	<i>sculptilis</i> Gerstaecker, 1871 [27] = <i>scutellaris</i> Faust, 1896: 145	Africa
(25)	<i>secura</i> Faust, 1894 [2]	Myanmar
(26)	<i>semirubra</i> (Hustache) = <i>Titanobaris semirubra</i> Hustache, 1935 [28]; Marshall, 1941 [15]	Angola
(27)	<i>soror</i> Faust, 1898 [3]	India
(28)	<i>spinulatus</i> sp. nov.	India
(29)	<i>subcalva</i> Marshall, 1941 [15]	Uganda
(30)	<i>subsignatus</i> (Boheman in Schoenherr) = <i>Baridius subsignatus</i> Boheman in Schoenherr, 1836 [23]; Faust, 1894 [2]	Africa
(31)	<i>subsignata</i> (Motschulsky) not Boheman = <i>Baridius subsignata</i> Motschulsky, 1866 [12]; Faust, 1894 [2]	India
(32)	<i>sculpticollis</i> Voss, 1958 [13]	China
(33)	<i>ulvae</i> Zimmerman, 1942 [29]	Guam
(34)	<i>varicolor</i> Marshall, 1941 [15]	Uganda
(35)	<i>versicolor</i> (Boheman) = <i>Baridius versicolor</i> Boheman, 1859 [30] = <i>Baris versicolor</i> (Boheman, 1859 [30]); Hustache, 1938 [21]; Pajni and Kohli, 1990 [19]	Indonesia
(36)	<i>vinculata</i> Faust, 1894 [2]	Myanmar

posterior margin truncate; pygidium distinctly punctate with fringes of vestiture, exposed on ventral side, with an arch-shaped marking at middle in males (marking being the junction of tergites VII and VIII), females without it, 1.03x as broad as long (Figure 10(a)).

Female Genitalia. Spermatheca not sclerotised, distal arm as long and as broad as proximal arm, angle between proximal and distal arms not acute, nodulus small, ramus flat, cornu blunt (Figures 11(a) and 14(a)). Spiculum ventrale with shaft elongate, 1.5x as long as basal plate, basal plate 5x as long as

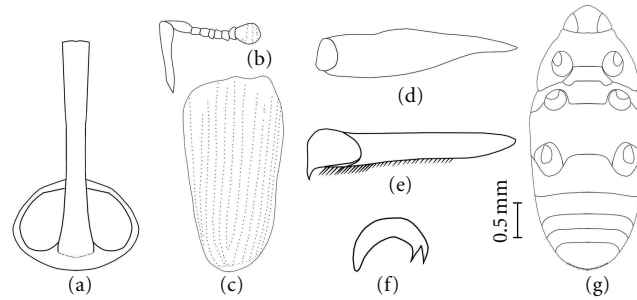


FIGURE 1: *Athesapeuta*. Genus characters: (a), rostrum, dorsal view; (b), antennae; (c), elytron, dorsal view; (d), femur, lateral view; (e), tibiae; (f), tarsal claw; (g), habitus; ventral view.

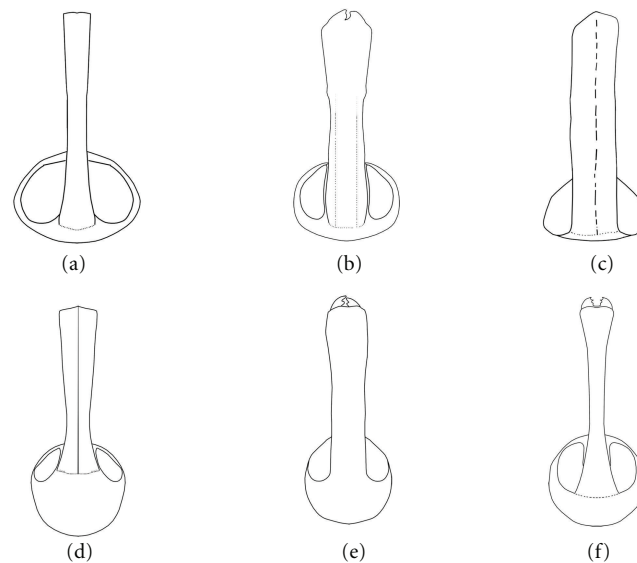


FIGURE 2: Rostrum, dorsal view: (a), *A. cyperi*; (b), *A. immaculata*; (c), *A. meghalayensis* sp. nov.; (d), *A. oryzae*; (e), *A. richardi* sp. nov.; (f), *A. spinulatus* sp. nov.

broad, apical end truncate, without hairs (Figures 11(d) and 14(b)).

Male Genitalia. Apophyses 0.25x as long as median lobe, 0.25x as long as spiculum gastrale; median lobe moderately sclerotised, parallel sided from base to behind middle, apex sinusoidal, at middle 1.42x as broad as at apex and as broad as at base (Figures 13(a)–13(c) and 15(a)–15(d)). Spiculum gastrale uniformly thick, curved at apex, 11.6x as long as broad (Figures 12(a) and 15(d)).

Measurements. Total length: 3.25 ± 0.23 mm; standard length: 3–3.30 mm; breadth: 1.36 ± 0.07 mm.

Material Examined. India: 6 ♂♂, Maharashtra: Phaltan, feeding on nut sedge, x.1999, Coll. Nimbkar; 4 ♂♂, 3 ♀♀, West Bengal: Kolkata, 11.i.2011, Coll. Ramasubramanian, larvae boring on *Cyperus rotundus*.

Distribution. India: Maharashtra; West Bengal. Philippines: Los Banos. Hawaii: Honolulu, Oahu.

5.2. *Athesapeuta immaculata* Faust, 1898 [3]. (Figures 2(b), 3(b), 4(b), 5(b), 8(b), 9(b), 9(c), and 16(d)–16(f)).

Description. Colour shiny black. Head with sparse punctures, 3.2x as broad as long; eyes 1.38x as wide as long. Rostrum 0.98x as long as head and pronotum combined, strongly curved, with two dorsal carinae from base to antennal insertion and then fading out, at middle 0.85x as broad as at apex, 0.92x as broad as at base (Figures 2(b) and 3(b)). Antennae inserted at 1.8x of length from base of rostrum; scape brown, impunctate, 8.33x as long as broad; funicle with first segment 1.16x as long as second and third combined, third as long as broad, segments three to seven slightly transverse and subequal in length and breadth; funicle 1.81x as long as club; club ovate (Figure 4(b)). Prothorax as broad as long, with granular punctures, anterior margin truncate, behind the apex without tubular constriction, posterior margin shallowly bisinuate, at middle 1.78x as broad as at apex, and 0.75x as broad as at base; dorsum gently convex longitudinally, set with shallow regular punctures, confluent in curves, without any median line. Scutellum raised, trapezoidal, sparsely punctate, as long as

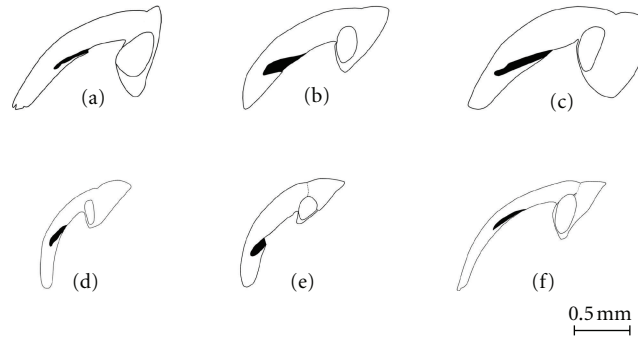


FIGURE 3: Rostrum, lateral view: (a), *A. cyperi*; (b), *A. immaculata*; (c), *A. meghalayensis* sp. nov.; (d), *A. oryzae*; (e), *A. richardi* sp. nov.; (f), *A. spinulatus* sp. nov.

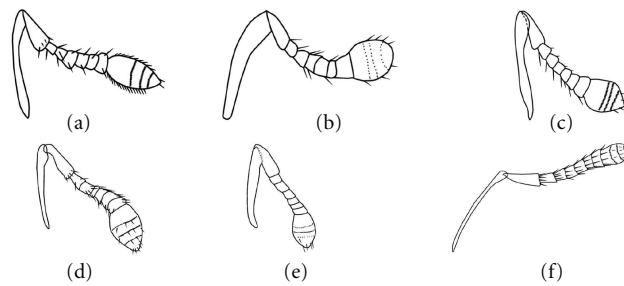


FIGURE 4: Antenna: (a), *A. cyperi*; (b), *A. immaculata*; (c), *A. meghalayensis* sp. nov.; (d), *A. oryzae*; (e), *A. richardi* sp. nov.; (f), *A. spinulatus* sp. nov.

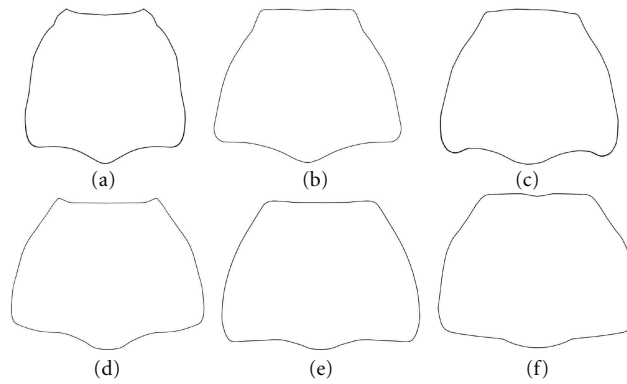


FIGURE 5: Prothorax, dorsal view: (a), *A. cyperi*; (b), *A. immaculata*; (c), *A. meghalayensis* sp. nov.; (d), *A. oryzae*; (e), *A. richardi* sp. nov.; (f), *A. spinulatus* sp. nov.

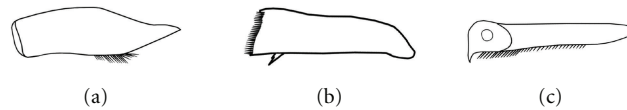


FIGURE 6: (a, b) Profemur and metatibia: *A. cyperi*; (c) Protibia: *A. oryzae*.



FIGURE 7: Protibia and metatibia: *A. richardi* sp. nov.

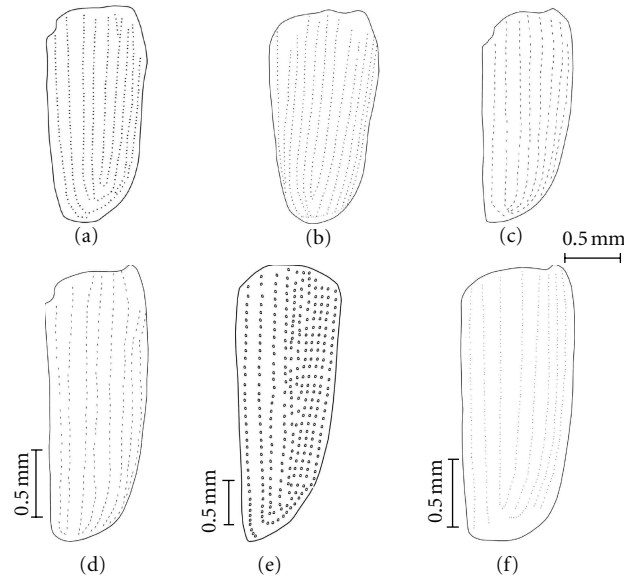


FIGURE 8: Elytron, dorsal view: (a), *A. cyperi*; (b), *A. immaculata*; (c), *A. meghalayensis* sp. nov.; (d), *A. oryzae*; (e), *A. richardi* sp. nov.; (f), *A. spinulatus* sp. nov.

broad (Figure 5(b)). Elytra oblong ovate, separately rounded at apex, without any posterior calli, at middle 1.32x as broad as at apex, 1.22x as broad as at base; striae shallow, with distant catenulate punctures which do not encroach on intervals, striae 10 complete; intervals flat, 1.5x as broad as a striae, with a row of transverse punctures, each containing a minute recumbent scale (Figure 8(b)). Elytral vestiture predominantly of two types; either yellowish white, base tapering and apex concave, surface with granular serrations (Figure 9(b)), or brownish yellow, both ends broader and surface with dense granular serrations (Figure 9(c)). Legs coarsely punctate, each puncture containing grey vestiture; tibia sulcate; profemur 0.90x as long as mesofemur, 0.83x as long as metafemur. Protibia 1.2x and 0.93x as long as meso- and metatibia, respectively. First tarsal segment 1.66x as long as broad, 1.66x as long as second, as long as and 0.54x as broad as third, third 0.90x as broad as long, fourth 4x as long as broad. Prosternum with deep transverse sulcus behind apex, base of prosternum with raised fovea, with definite punctures all over sternum and each punctures with a grey recumbent vestiture. Procoxa 2.5x as broad as intercoxal process; mesosternum plate like, depressed at base and apex, intercoxal process 1.25x as broad as mesocoxa; metasternum depressed in middle with longitudinal impressed line, intercoxal process 1.08x as broad as metacoxa.

Measurements. Total length: 5.4–5.5 mm; standard length: 4.7 mm; breadth: 2.2–2.4 mm.

Material Examined. 2 specimens, location unknown, from Nagasilla grass (abdomen damaged), 12.vii.1985, Coll. unknown.

Distribution. India.

5.3. Athesapeuta meghalayensis sp. nov. (Figures 2(c), 3(c), 4(c), 5(c), 8(c), 9(e), 10(b), 12(b), 13(d)–13(g), 15(e)–15(i), and 16(g)–16(i)).

Diagnosis. It is closely related to *A. richardi* sp. nov., but differs in prothorax with broad stripe of yellow vestitures (white in *A. richardi* sp. nov.), with a smooth median line (absent in *A. richardi* sp. nov.); posterior end of tibia does not carry sharp tooth (present in *A. richardi* sp. nov.), metatibia lateroventrally without fringes of grey hairs (present in *A. richardi* sp. nov.).

Description. Colour black. Head with close regular punctures, 4x as broad as long; eyes ventrally placed, 2.12x as wide as long. Rostrum 0.9x as long as head and pronotum combined, strongly curved, gradually widening, irregularly punctate, each punctures with yellow vestiture, more prominent in basal region, irregular punctures become reticulate and rugose beyond antennal insertion, with a median smooth impunctate line, almost parallel sided, without any subbasal dilation (Figures 2(c) and 3(c)), at middle 1.09x as broad as at apex, 0.92x as broad as at base. Antennae inserted at 1.22x of length from base of rostrum; scape robust, 6.25x as long as broad, almost impunctate; funicle with first segment 1.2x as long as second and third combined, segments second to seven carry sharp spines all over surface, third as long as broad, segments three to seven transverse and subequal in length and breadth; funicle 1.46x as long as club; club ovate (Figure 4(c)). Prothorax 1.03x as broad as long, with granular punctures, with a stripe of yellow vestiture on lateral aspect just behind the anterior margin on both sides, which is continuous with scaling of lower surface, tubular constriction at apex, sides gently rounded, posterior margin shallowly bisinuate, at middle 1.8x as broad as at apex, 0.95x as broad as at base, dorsum gently convex

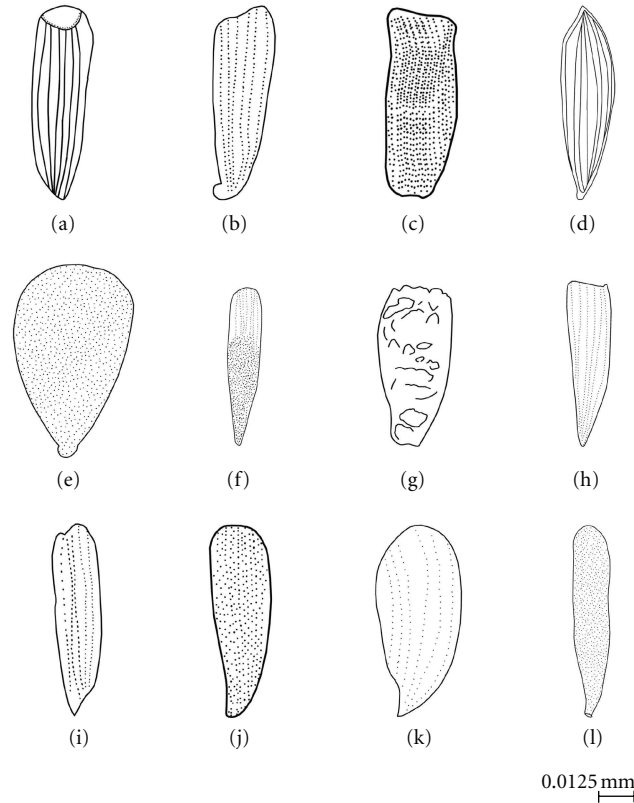


FIGURE 9: Elytral vestiture: (a), *A. cyperi*; (b)-(c), *A. immaculata*; (d)-(e), *A. meghalayensis* sp. nov.; (f)-(g), *A. oryzae*; (h)-(j), *A. richardi* sp. nov.; (k)-(l), *A. spinulatus* sp. nov.

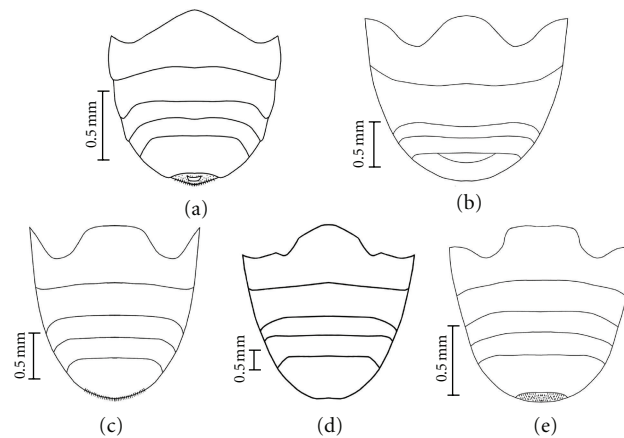


FIGURE 10: Venter: (a), *A. cyperi*; (b), *A. meghalayensis* sp. nov.; (c), *A. oryzae*; (d), *A. richardi* sp. nov.; (e), *A. spinulatus* sp. nov.

longitudinally, set with close granular punctures, confluent in curves, with smooth median line, patches of yellowish white vestiture just above posterior margin of prothorax (Figure 5(c)). Scutellum strongly transverse, square shaped, not punctate, without median impression, as broad as long. Elytra ovate, without deep subapical impressions, without posterior calli, apices rounded, at middle 1.14x as broad as at apex, 1.33x as broad as at base; striae shallow, with distant separate punctures which do not encroach on intervals, striae 10 complete; intervals 4x as broad as a striae, with

a row of catenulate transverse punctures, each containing a minute black recumbent scale, lateral margin smooth at apex, interval five with a patch of yellowish vestiture on basal end, middle of elytra with larger patch of vestiture on interval 4 and 5 (Figure 8(c)); elytral vestiture either brownish yellow, with basal end blunt, apex pointed with lines on surfaces reaching apex (Figure 9(d)), or greyish white, pear shaped, broad at apex with granular striations on surface (Figure 9(e)). Legs coarsely punctate, each puncture containing a grey vestiture; tibiae sulcate; profemur 1.31x

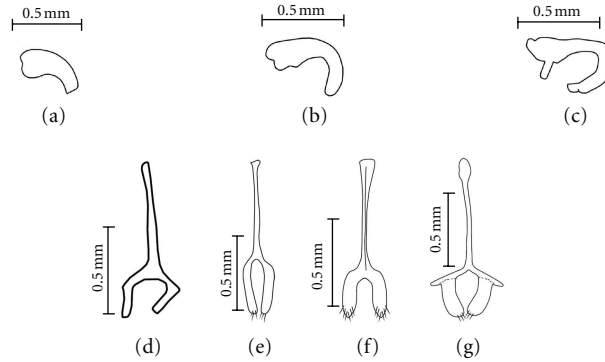


FIGURE 11: Female genitalia, spermatheca, and spiculum ventrale: (a), (d), *A. cyperi*; (b), (e), *A. oryzae*; (c), (f), *A. richardi* sp. nov.; (g), *A. spinulatus* sp. nov.

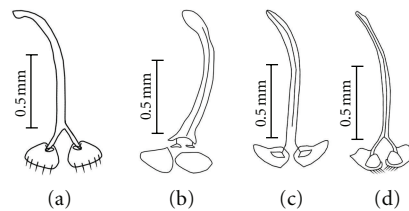


FIGURE 12: Male genitalia, spiculum gastrale: (a), *A. cyperi*; (b), *A. meghalayensis* sp. nov.; (c), *A. richardi* sp. nov.; (d), *A. spinulatus* sp. nov.

as long as mesofemur, 0.92x as long as metafemur. Protibia 0.97x as long as mesotibia, and as long as metatibia. First tarsal segment as long as broad, 1.25x as long as second, 0.83x as long as third, third 1.66x as broad as long, fourth 2.75x as long as broad. Prosternum with deep transverse sulcus behind apex, base of prosternum with raised fovea. Procoxa 1.98x as broad as intercoxal process; mesosternum plate like, depressed at base and apex, intercoxal process 1.03x as broad as mesocoxa; metasternum shallowly depressed at middle with impressed longitudinal line, intercoxal process 2.01x as broad as metacoxa. Venter black, clothed with broad greyish yellow vestiture, strongly punctate, each with broad white scale, anterior margin of first ventrite ogival, posterior margin subtruncate, 2.7x as broad as long, 1.66x as long as second, second 4.22x as broad as long, 1.12x as long as three and four combined, third and fourth subequal in length, ventrite five 3.12x as broad as long, posterior margin rounded; pygidium distinctly punctate, broadly exposed with long hairs from each puncture, 1.53x as broad as long (Figure 10(b)).

Male Genitalia. Apophyses 1.06x as long as median lobe, 0.7x as long as spiculum gastrale, 1.84x as long as tegmen; median lobe moderately sclerotised, parallel sided from base to behind middle, apex truncate, at middle 1.25x as broad as at apex, and 1.42x as broad at base (Figures 13(d)–13(f) and 15(e)–15(g)). Tegmen 1.9x as long as manubrium, 1.58x as long as parameroid lobe; manubrium flat (Figures 13(g) and 15(i)). Spiculum gastrale uniformly thick, curved at apex, with a median line, 12.5x as long as broad (Figures 12(b) and 15(h)).

Measurements of Holotype. Total length: 4.20 mm; standard length: 3.80 mm; breadth: 1.78 mm.

Material Examined. Holotype ♂, India: Meghalaya: Tura, date and coll. unknown, from wild plant (latitude: 25° 30' N; Longitude: 90° 16' E). Paratypes (2 ♂♂): 1 ♂, India: Meghalaya: Ambashi, from wild plant, 26.v.1988, Coll. D. Kumar; 1 ♂, Assam: Nagora, from wild plants, 23.v.1988, Coll. Baljinder.

Distribution. India: Meghalaya; Assam.

Etymology. The specific epithet refers to the type locality.

5.4. *Athesapeuta oryzae* Marshall, 1916 [4]. (Figures 2(d), 3(d), 4(d), 5(d), 6(c), 8(d), 9(f), 9(g), 10(c), 11(b), 11(e), 14(c), 14(d)).

Description. Colour shiny black. Head convex, finely shagreened with regular close puncture, 1.75x as broad as long; eyes 1.47x as wide as long. Rostrum 0.92x as long as head and pronotum combined, strongly curved, without any subbasal dilation, with coarse punctures especially at sides, and with an impunctate median carinae, at middle 0.83x as broad as at apex, 0.67x as broad as at base (Figures 2(d) and 3(d)). Antennae black, with whorls of stout yellowish vestiture, inserted at 1.1x of length from base of rostrum; scape slender, 10x as long as broad; funicle with first segment 1.42x as long as second and third combined, third as long as broad, segments three to seven transverse and subequal in length and breadth; funicle 1.85x as long as

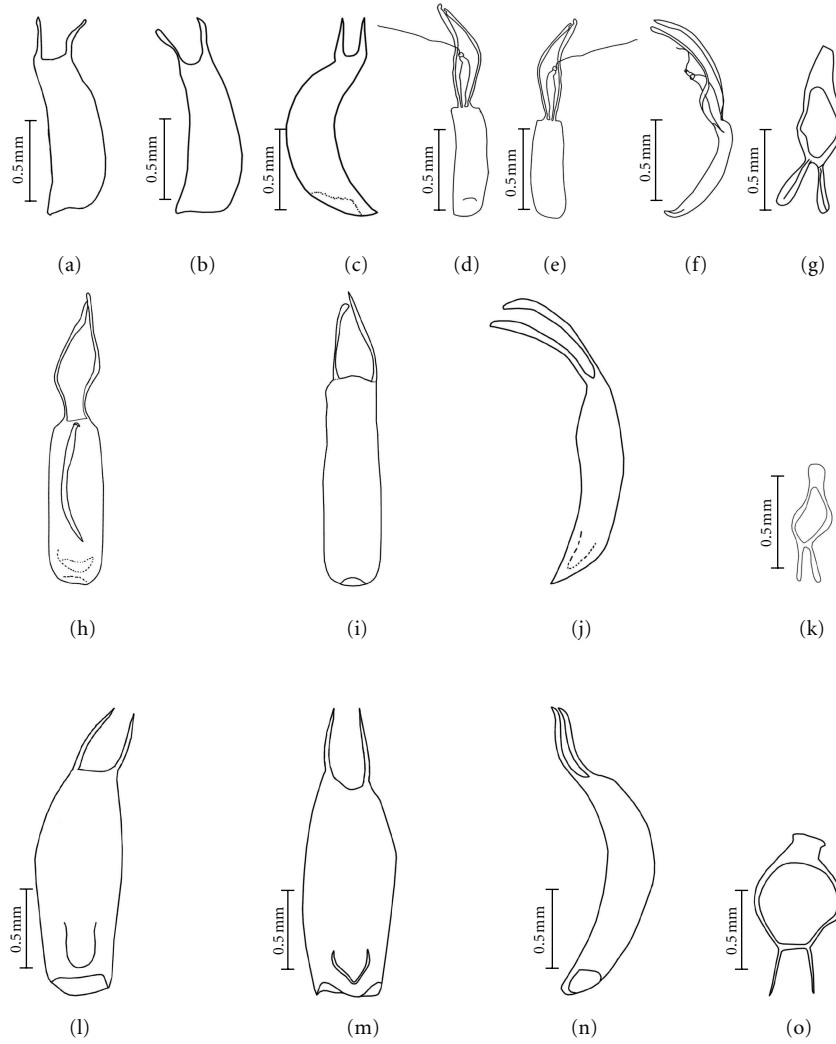


FIGURE 13: Median lobe (dorsal, ventral, and lateral view) and tegmen: (a)–(c), *A. cyperi*; (d)–(g), *A. meghalayensis* sp. nov.; (h)–(k), *A. richardi* sp. nov.; (l)–(o), *A. spinulatus* sp. nov.

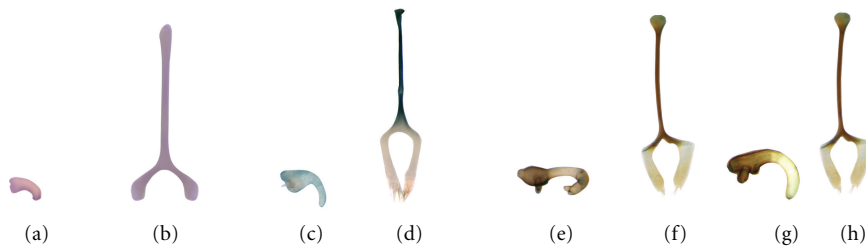


FIGURE 14: Female genitalia, spermatheca, and spiculum ventrale: (a), (b), *A. cyperi*; (c), (d), *A. oryzae*; (e), (f), *A. richardi* sp. nov.; (g), (h), *A. spinulatus* sp. nov.

club; club with whorls of vestiture (Figure 4(d)). Prothorax 1.19x as broad as long, anterior margin truncate, posterior margin bisinuate, at middle 1.9x as broad as at apex, 0.97x as broad as at base, with broad lateral stripe, which is continuous with scaling of lower surface, interrupted about middle by a small bare kidney-shaped spot, with shallow constriction at apex, gently rounded at sides, set with close

coarse punctures, with an abbreviated impunctate median line (Figure 5(d)). Scutellum strongly transverse, coarsely punctate, with narrow vestiture, 1.2x as broad as long. Elytra oblong, separately rounded at apex, at middle 1.21x as broad as at apex, 1.21x as broad as at base, with a large basal patch consisting of lines of vestiture on intervals three to eight, those on fifth and sixth longest, those on four, three,

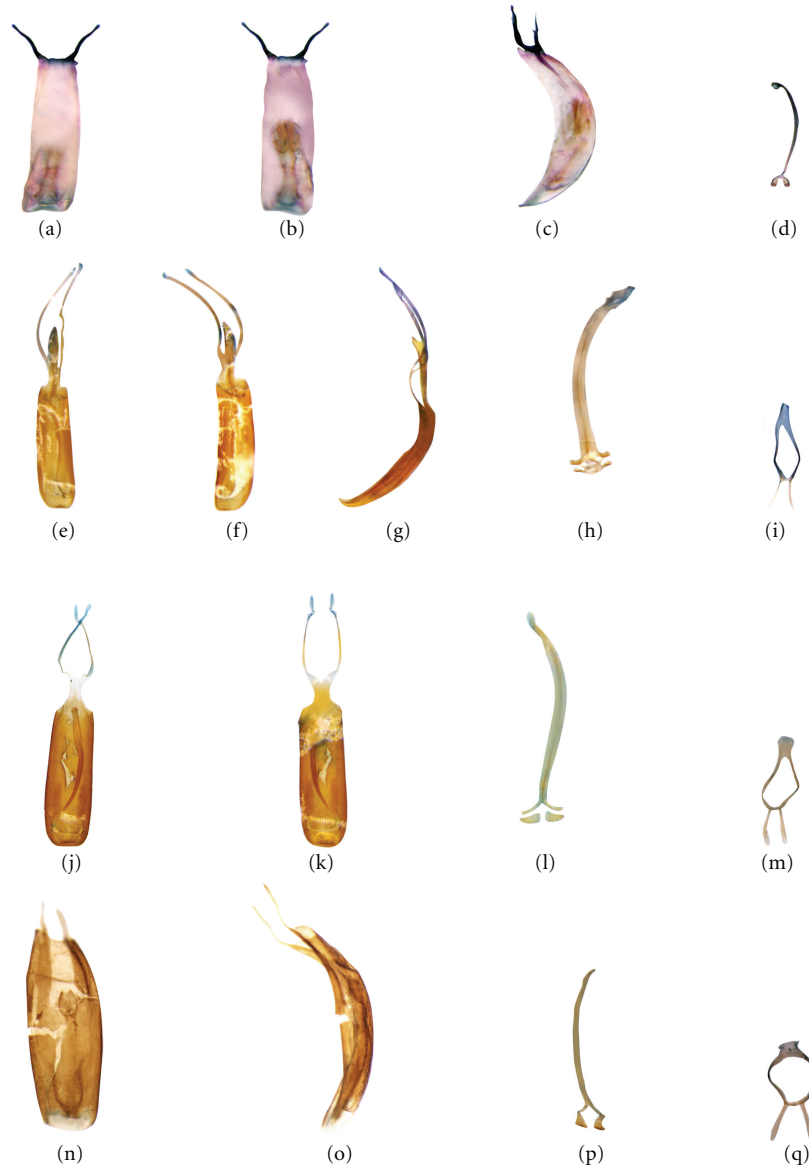


FIGURE 15: Male genitalia, median lobe (ventral, dorsal, and lateral view), spiculum gastrale, and tegmen: (a)–(d), *A. cyperi*; (e)–(i), *A. meghalayensis* sp. nov.; (j)–(m), *A. richardi* sp. nov.; (n)–(q), *A. spinulatus* sp. nov.

seven, and eight diminishing in the order given, whole patch covering about one-third of elytra and leaving shoulder bare, close behind it another large irregular patch, lines of which intervals 2, 3, 4, 8, and 9 are short, with 5, 6, and 7 being longer, that on 5 longest, with a “v”-shaped apical patch extending from interval 3 to 8; striae deep, striae 10 complete; intervals almost plane, 4x as broad as a striae (Figure 8(d)); elytral vestiture elongate, and with sparse punctures on it (Figure 9(f)), or with irregular patches on it (Figure 9(g)). Legs with densely clothed yellowish white vestiture; all tibiae at apical end on sides with fringes of hairs (Figure 6(c)); profemur 1.13x as long as mesofemur, 1.09x as long as metafemur. Protibia 1.25x and 1.12x as long as meso and metatibia respectively. First tarsal segment 0.85x as long as broad, 0.75x as long as second, 0.46x as long as and 0.53x as

broad as third, third as long as broad, fourth 3.75x as long as broad. Prosternum with deep transverse sulcus behind apex, whole lower surface densely scaled, base of prosternum with fovea. Procoxa 2.42x as broad as intercoxal process; mesosternum plate like, raised at apex, intercoxal process 0.9x as broad as mesocoxa; metasternum flat without median line, vestiture closer on meta-episternum, intercoxal process 2x as broad as metacoxa. Venter black, strongly punctate, each with broad scale, anterior margin of first ventrite ogival, posterior margin shallowly straight, 3.73x as broad as long, 1.03x as long as second, second 4.5x as broad as long, 0.92x as long as three and four combined, third and fourth subequal in length, ventrite five 5x as broad as long, posterior margin rounded; pygidium indistinctly punctate, exposed on dorsal side, 1.33x as broad as long (Figure 10(c)).

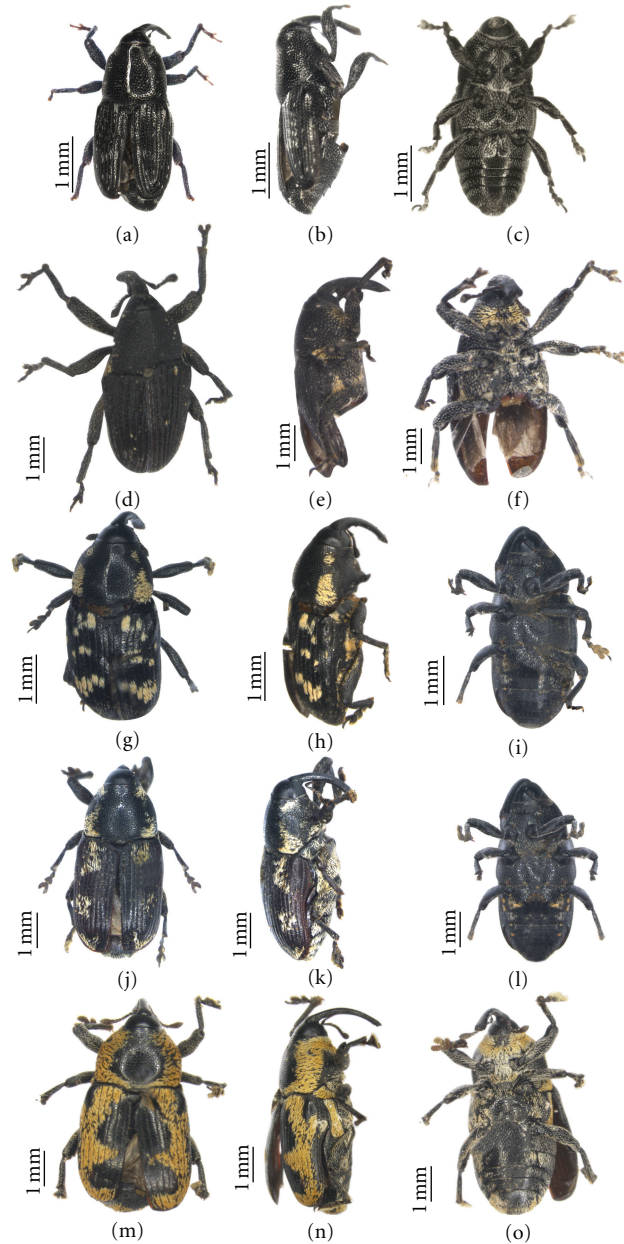


FIGURE 16: Habitus: dorsal, lateral, and ventral view: (a)–(c), *A. cyperi*; (d)–(f), *A. immaculata*; (g)–(i), *A. meghalayensis* sp. nov.; (j)–(l), *A. richardi* sp. nov.; (m)–(o), *A. spinulatus* sp. nov.

Female Genitalia. Spermatheca not sclerotised, distal arm as long as and as broad as proximal arm, angle between proximal and distal arms not acute, nodulus small, ramus flat, cornu slightly bent, not pointed (Figures 11(b) and 14(c)). Spiculum ventrale with shaft elongate, 1.84x as long as basal plate, basal plate 4.75x as long as broad, apical end rounded with hairs (Figures 11(e) and 14(d)).

Measurements. Total length: 5.38 mm; standard length: 4.90 mm; breadth: 2.28 mm.

Material Examined. 1 ♀, Coimbatore, Coll. and host unknown (written as Paratype and determined by G. A. K. Marshall).

Distribution. India: Tamil Nadu; Andhra Pradesh.

5.5. *Athesapeuta richardi* sp. nov. (Figures 2(e), 3(e), 4(e), 5(e), 7(a), 7(b), 8(e), 9(h)–9(j), 10(d), 11(c), 11(f), 12(c), 13(h)–13(k), 14(e), 14(f), 15(j)–15(m), and 16(j)–16(l)).

Diagnosis. This species is closely allied to *Athesapeuta oryzae* but differs in vestiture which is greyish white as compared to yellowish in *A. oryzae*; rostrum which is without impunctate median line, whereas in *A. oryzae* it is with impunctate median line; tibia with a sharp tooth just above mucro on lateral side and this is absent in *A. oryzae*, and female with cornu of spermatheca having finger-like projection in this species.

Description. Colour shiny blackish yellow. Head with close punctures, 1.76x as broad as long; eyes ventrally placed, 1.53x as wide as long. Rostrum 0.80x as long as head and pronotum combined, strongly curved, gradually widening, punctate, without median line, almost parallel sided, without any subbasal dilation, at middle 0.92x as broad as at apex, 0.63x as broad as at base (Figures 2(e) and 3(e)). Antennae inserted at 1.68x of length from base of rostrum; scape robust, 8.45x as long as broad, almost impunctate; funicle with first segment 0.76x as long as second and third combined, third subequal in length and breadth, segments three to seven transverse, subequal in length and breadth; funicle 2.56x as long as club; club ovate (Figure 4(e)). Prothorax 1.17x as broad as long, with granular punctures, with a broad lateral stripe of white vestiture, which is continuous with scaling of lower surface, interrupted about middle by a small bare kidney-shaped spot, apex with tubular constriction, sides gently rounded, anterior margin truncate, posterior margin shallowly bisinuate; at middle 1.80x as broad as at apex, 0.96x as broad as at base; dorsum gently convex longitudinally, set with close granular punctures, not confluent in curves, without any smooth median line (Figure 5(e)). Scutellum strongly transverse, square shaped, not punctate, without median impression, 1.5x as broad as long. Elytra ovate, without deep subapical impressions and posterior calli absent, apices rounded; at middle 1.62x as broad as at apex, 1.63x as broad as at base; striae shallow, with distant separate punctures which do not encroach on intervals, striae 10 complete; intervals 5.45x as broad as striae, with a row of irregular transverse punctures, each containing a minute vestiture, lateral margin smooth at apex (Figure 8(e)); elytral vestiture either white, with granular serrations reaching apex (Figure 9(h)), or brown with serrated granular ridges on it (Figure 9(i)), or surface without regular serrations but with scattered punctures (Figure 9(j)). Legs coarsely punctate, each puncture containing a grey vestiture; tibiae sulcate, posterior end of all tibiae just before mucro carries sharp tooth (Figure 7(a)); metatibia with fringes of grey hairs on lateroventral side (Figure 7(b)); profemur 1.06x as long as mesofemur, 0.93x as long as metafemur. Protibia 1.19x and 1.07x as long as meso- and metatibia, respectively. First tarsal segment 1.35x as long as broad, 0.98x as long as second, 0.76x as long as third, third 1.24x as broad as long, fourth 4.80x as long as broad. Prosternum with deep transverse sulcus behind apex, base with raised fovea. Procoxa 1.98x as broad as intercoxal process; mesosternum plate like, depressed at base and apex, intercoxal process 1.03x as broad as mesocoxa; metasternum shallowly depressed in middle with longitudinal line, intercoxal process 2.01x as broad as metacoxa. Venter black, strongly punctate, each with broad white vestiture, anterior margin of first ventrite ogival, posterior margin subtruncate, 3.09x as broad as long, 1.64x as long as second, second 4.70x as broad as long, 0.89x as long as three and four combined, third and fourth subequal in length, ventrite five 3.48x as broad as long, posterior margin rounded; pygidium with indistinct punctures, 1.53x as broad as long (Figure 10(d)).

Female Genitalia. Spermatheca more sclerotised at proximal arm, distal arm 0.93x as long as proximal arm, angle between proximal and distal arms acute, nodulus small, tapering towards apex, ramus tubular and long, cornu strongly pointed and with a finger-like projection (Figures 11(c) and 14(e)). Spiculum ventrale with shaft elongate, 2x as long as basal plate, basal plate 3x as long as broad, apical end pointed with hairs (Figures 11(f) and 14(f)).

Male Genitalia. Apophyses 1.06x as long as median lobe, 0.7x as long as spiculum gastrale, 1.84x as long as tegmen; median lobe moderately sclerotised, parallel sided from base to behind middle, apex truncate, at middle 1.25x as broad as at apex, and 1.42x as broad as at base (Figures 13(h)–13(k), 15(j) and 15(k)). Tegmen 1.9x as long as manubrium, 1.58x as long as parameroid lobe, manubrium flat (Figures 13(k) and 15(m)). Spiculum gastrale uniformly thick, curved at apex, with a median line, 12.5x as long as broad (Figures 12(c) and 15(l)).

Measurements of Holotype. Total length: 5.42 mm; standard length: 5.20 mm; breadth: 2.30 mm.

Material Examined. Holotype ♂: India: Meghalaya: Tura, Date and Coll. unknown, from wild plant (latitude: 25° 30' N; longitude: ° 16' E). Paratypes: 16 specimens (2 ♂♂, 1 ♀): India: 2 ♂, Meghalaya: Tura, date and coll. unknown, from wild plant; 1 ♀, 12 specimens, Andhra Pradesh: Patancheru, 18.ix.1985, Coll. M.Haq, from agricultural plants.

Distribution. India: Meghalaya; Andhra Pradesh.

Etymology. The name is derived from and in recognition of Dr. Richard Thompson for his contribution towards baridine weevils.

5.6. *Athesapeuta spinulatus* sp. nov. (Figures 2(f), 3(f), 4(f), 5(f), 8(f), 9(k), 9(l), 10(e), 11(g), 12(d), 13(l)–13(o), 14(g), 14(h), 15(n)–15(q), and 16(m)–16(o))

Diagnosis. This species is closely related to *A. immaculata* but differs in its larger size, with dense vestitures all over body; antennae with all funicular segments with four rows of spines; elytra ovate (oblong ovate in *immaculata*).

Description. Colour black. Head with shallow sparse punctures, 1.8x as broad as long; eyes ventrally placed, 1.48x as wide as long. Rostrum 0.91x as long as head and pronotum combined, curved, gradually widening, broadest at apex, closely punctate at basal side on lateral aspect, each puncture with yellow vestiture, dorsal surface smooth, at middle 0.75x as broad as apex, 0.66x as broad as at base, without any subbasal dilation (Figures 2(f) and 3(f)). Antennae inserted at 1.36x of length from base of rostrum; scape slender, long, 8.75x as long as broad, almost impunctate; funicle with first segment 1.1x as long as second and third combined, third 1.3x as long as broad, segments three to seven transverse

and subequal in length and breadth; funicle 2.53x as long as club, all segments carry sharp four rows of spines on its surface, seventh funicular segment broadest, which is not in continuous with club; club ovate (Figure 4(f)). Prothorax 1.28x as broad as long, with granular punctures at centre, a stripe of yellow vestiture on lateral aspect on both sides, which is continuous with scaling of lower surface, without tubular constriction at apex, broadly rounded at sides, anterior margin truncate, posterior margin shallowly bisinuate, at middle 2.22x as broad as at apex, 1.03x as broad as at base, dorsum gently convex longitudinally without any median line (Figure 5(f)). Scutellum strongly transverse, not punctate, without median impression, 1.5x as broad as long. Elytra ovate, without subapical impressions and without posterior calli, apices rounded, at middle 1.2x as broad as at apex, 1.5x as broad as at base; striae shallow, with distant separate punctures which do not encroach on intervals, striae 10 complete; intervals 6x as broad as a striae, with a row of catenulate transverse punctures, each containing a minute black recumbent vestiture, lateral margin smooth at apex, a patch of yellowish vestiture starts from interval 2 which continues up to 10 (Figure 8(f)); elytral vestiture yellow, either with broad parallel striae running from base to apex (Figure 9(k)), or with granular striations on surface (Figure 9(l)). Legs coarsely punctate, each puncture containing a grey vestiture; tibiae sulcate; profemur as long as mesofemur, 0.8x as long as metafemur. Protibia 1.25x and 1.1x as long as meso- and metatibia, respectively. First tarsal segment 1.66x as long as broad, 1.5x as long as second, and as long as third, third 1.66x as broad as long, fourth 6.66x as long as broad. Prosternum with deep transverse sulcus behind apex, base of prosternum with raised fovea. Procoxa 1.53x as broad as intercoxal process; mesosternum plate like, depressed at base and apex, intercoxal process 1.1x as broad as mesocoxa; metasternum shallowly depressed in middle with impressed longitudinal line, intercoxal process 2.05x as broad as metacoxa. Venter black, clothed with broad greyish yellow vestiture, strongly punctate and each with broad vestiture, anterior margin of first ventrite sinusoidal, posterior margin subtruncate, 2.91x as broad as long, 1.72x as long as second, second 4.75x as broad as long, 0.75x as long as three and four combined, third and fourth subequal in length, ventrite five 2.48x as broad as long, its posterior margin rounded; pygidium distinctly punctate, broadly exposed with long hairs from each puncture, 1.02x as broad as long (Figure 10(e)).

Female Genitalia. Spermatheca more sclerotised at proximal arm, distal arm as long as proximal arm, angle between proximal and distal arms acute, nodulus small, tapering towards apex, ramus small, cornu bent and blunt at apex (Figure 14(g)). Spiculum ventrale with shaft elongate, 2.5x as long as basal plate, basal plate 2.85x as long as broad, apical end truncate with hairs, basal end with a lateral projection (Figures 11(g) and 14(h)).

Male Genitalia. Apophyses 0.44x as long as median lobe, 0.4x as long as spiculum gastrale, as long as tegmen; median lobe moderately sclerotised, parallel sided from base to

behind middle, apex truncate, at middle 1.9x as broad as at apex, 1.35x as broad at base (Figures 13(l)–13(n), 15(n), and 15(o)). Tegmen 2.85x as long as manubrium, 2x as long as parameroid lobe, manubrium short and flat (Figures 13(o) and 15(q)). Spiculum gastrale uniformly thick, not curved at apex, with a median line, 16.66x as long as broad (Figures 12(d) and 15(p)).

Measurements of Holotype. Total length: 5.69 mm; standard length: 5.30 mm; breadth: 2.33 mm;

Material Examined. Holotype ♂: India: Haryana: Jind, 9.vii.1986, coll. unknown, from grass (latitude: 29° 48' N; longitude: 78° 26' E). Paratypes (2 ♂♂, 2 ♀♀): India: 1 ♀, Haryana: Jind, 9.vii.1986, coll. unknown, from grass; 2 ♂♂, Andhra Pradesh: Patancheru, 18.ix.1985, coll. unknown, from wild aquatic plant; 1 ♀ (no data).

Distribution. India: Haryana; Andhra Pradesh.

Etymology. The specific name is given after the funicular segments which have sharp spines in four rows.

6. Key to the Indian Species of *Athesapeuta*

- (1) (a) Rostrum without carinae—2.
(b) Rostrum with carinae—3.
- (2) (a) Rostrum with four rows of small punctures; prothorax with a broad impunctate median stripe; profemur with fringes of long vestiture on ventral surface (Figure 6(a)); protibia with sharp tooth on inner edge at about middle in males (Figure 6(b)), females without it—*cyperii*.
(b) Rostrum without four rows of small punctures; prothorax without a broad stripe; profemur without fringes of long vestiture on ventral surface; protibia without tooth in males or females—4.
- (3) (a) Tibiae at apical end on sides with fringes of hairs (Figure 6(c)); elytra oblong, with large basal patch consisting of lines of vestiture on intervals three to eight, those on fifth and sixth longest, those on four, three, seven, and eight diminishing in the order given, whole patch covering about one third of the elytra and leaving the shoulder bare, close behind it another large irregular patch, lines of which intervals 2, 3, 4, 8, and 9 are short, and 5, 6 and 7 being longer, that on 5 longest, with a “v”-shaped apical patch extending from interval 3 to 8—*oryzae*.
(b) Tibiae without fringes of hairs; elytra not oblong but ovate or oblongovate—5.
- (4) (a) Funicular segments without spines; posterior end of all tibiae carries sharp tooth (Figure 7(a)), metatibia with fringes of grey hairs on lateroventrally (Figure 7(b)); apex of prothorax with tubular constriction, granular punctures all over, sides gently

rounded; apophyses 1.06x as long as median lobe; spiculum gastrale 12.5x as long as broad—*richardi*, sp. nov.

(b) Funicular segments with spines (Figure 4(f)); posterior end of all tibia does not carry sharp tooth; apex of prothorax without tubular constriction, granular punctures only at centre, sides broadly rounded; apophyses 0.44x as long as median lobe; spiculum gastrale 16.66x as long as broad—*spinulatus*, sp. nov.

- (5) (a) Prothorax with broad lateral stripe, with smooth median line; elytra ovate (Figure 8(c)); elytral vestiture either brownish yellow, with basal end blunt, apex pointed with lines on surfaces reaching apex (Figure 9(d)), or greyish white, pear shaped, broad at the apex with granular striations on the surface (Figure 9(e))—*meghalayensis*, sp. nov.

(b) Prothorax without broad lateral stripe, without median line; elytra oblongovate (Figure 8(b)); elytral vestiture either yellowish white, base tapering, apex concave, surface with granular serrations (Figure 9(b)), or brownish yellow, both ends broader, surface with dense granular serrations (Figure 9(c))—*immaculata*.

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