The New World species of *Ataenius* Harold, 1867. V. Revision of the *A. strigatus* group (Scarabaeidae: Aphodiinae: Eupariini)

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Abstract. The *strigatus* group of the New World species of *Ataenius* Harold is revised. Seventeen species are recognized including two species described as new: *Ataenius ecruensis* sp. nov. from the United States and *A. oaxacaensis* sp. nov. from Mexico. Fifteen previously used names are considered valid, three new synonyms are proposed: *A. liogaster* Bates (= *A. edwardsi* Chapin syn. nov. = *A. hoguei* Cartwright and Spangler syn. nov.), *A. wenzelii* Horn (= *A. rudellus* Fall, syn. nov.). New state records are presented for *A. spretulus* (Haldeman) (Washington) and *A. cognatus* (LeConte) (Indiana, Missouri, and Mississippi). The taxa are diagnosed, keyed and illustrated; available biological information and distribution data are given.

Key words: Scarabaeidae, Aphodiinae, *Ataenius strigatus* group, new species, taxonomy, New World.

Introduction

This is the fifth part of a revision of the New World species of the genus *Ataenius* Harold (Stebnicka 2001, 2002, 2003b, in press) and deals with the *A. strigatus* group of species widely distributed in the middle and southern United States, Central and South America. As now understood, the group consists of seventeen species, two of which are here described as new. Of the seventeen species considered, eight species are hitherto known only from the United States, three species occur in the USA and Mexico, one species is apparently endemic to the Lesser Antilles, and five species are distributed in Mexico and South America, including one anthropogenic species that has invaded the Oriental and Australian regions.

The intention of intrageneric grouping is to facilitate identification of numerous species. As stressed by Stebnicka and Howden (1997), and then by Stebnicka (2001), the taxonomy and biogeography of the Gondwanan genus *Ataenius* is very difficult. A problem with grouping as we have done is that some species do not fit easily into any particular group, and could probably be placed in monotypic "groups." On the other hand, there are clusters of species that share similar combinations of the external character states, often correlated with structures of the male genitalia, but some species within a group have male genitalia similar to those from other species groups. Other problems are connected with a north/south vicariance demonstrated by several species, and with extreme ecological (ecophenotypic) and seasonal variation of many species having larger geographic ranges. Variation is expressed either externally, often in several character states, and/or in characters of the male genitalia. Therefore, some qualifications and limitations should be emphasized in the context of current knowledge of the taxonomy of *Ataenius*. Every student who attempts to identify a specimen using this and subsequent group revisions should consider that: 1/ the specimen may be of a species not previously recorded from a given area; 2/ it may be a peripheral representative of a species of northern or southern cohesive range; 3/ it may be from a local population with somewhat different characters than any examined before; 4/ it may be of a species forming a transition link between two groups; 5/ it may be of a species unknown to science. In the latter case, both external and internal characters should be carefully analyzed.

Collections Studied

Approximately 1738 specimens of *Ataenius strigatus* group have been selected from the material of Aphodiinae hitherto identified, including all the type specimens available to us.

Material for this study was obtained from the following institutions and private collections. The abbreviations listed below are used in all text citations:

ANSP Academy of Natural Sciences of Philadelphia, Pennsylvania, USA
BCP Balthasar's Collection, National Museum, Prague, Czech Republic
CFC Carlos Flechtmann Collection, Brasilia (Brazil)
CMN Canadian Museum of Nature, Ottawa, Canada
FCC F. Chalumeau Collection, Guadeloupe, Lesser Antilles
FMLT Fundacion Miguel Lillo, Tucumán, Argentina
FSCA Florida State Collection of Arthropods, Gainesville, Florida, USA
FVMC Fernando Vaz-de-Mello Collection, Viçosa, Brazil
HAHC Henry and Anne Howden Collection, Ottawa, Canada
HNHM Hungarian Natural History Museum, Budapest, Hungary
ISEA Institute of Systematics and Evolution of Animals PAS, Krakow, Poland
MCZC Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA
MHNG Muséum d'histoire naturelle, Geneva, Switzerland
MNHN Museum National d'histoire naturelle, Paris, France
MMU Museum of Manchester, The University, Oxford, UK
MSNUP Museo di Storia Naturale, Universita di Pisa, Calci, Italy
MSUC Mississippi State University Collection, Starkville, Mississippi, USA
NRS Naturhistoriska Rijksmuseet, Stockholm, Sweden
PKLC Paul K. Lago Collection, Biology Department, University of Mississippi, Mississippi, USA
PSC Paul Skelley Collection, Gainesville, Florida, USA
RMC Roy Morris Collection, Lakeland, Florida, USA
RTC Robert Turnbow Collection, Enterprise, Alabama, USA
RVNH Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
SMNS Staatliche Museum für Naturkunde, Stuttgart, Germany
SMTD Staatliches Museum für Tierkunde, Dresden, Germany
TMP Transvaal Museum, Pretoria, South Africa
USNM United States National Museum of Natural History, Washington DC, USA
WSUC Washington State University Collection, Pullman, Washington, USA
WBWC William B. Warner Collection, Chandler, Arizona, USA
ZMHB Zoologisches Museum für Naturkunde der Humboldt Universität, Berlin, Germany

Taxonomy
The *Ataenius strigatus* group

Diagnostic characters. Approximate length 3.4-6.0 mm, body (Figs. 1, 2) elongate-oblong in most species, moderately convex, glabrous, shiny black or piceous. Epipharynx and other mouthparts are homogenous in shape or very weakly differentiated at the species level and do not offer any useful diagnostic characters within this group. Head moderate in size, not strongly elevated medially, clypeal margin usually broadly rounded on each side of median emargination, never dentate or angulate; clypeal surface in some species, or occasionally in one of the sexes, weakly transversely wrinkled or rugulose, middle of head minutely to finely punctured, vertex with scattered punctures or with regular band of closer punctures. Pronotum transverse, surface punctate, sides and base margined, margin more or less deeply grooved, lateral margin usually fringed with short to moderate, pale setae. Scutellum triangular or suboval. Elytra parallel-sided or with lateral margins slightly convex, basal bead fine, humeral denticles small to moderate; elytral striae distinctly impressed and punctate, intervals convex or flat, smooth, rarely eroded posteriorly, lateral intervals usually not different. Ventral surface shiny; abdominal sternites glabrous, finely fluted along sutures, sometimes sternites 4-5 with coarser fluting, surface punctures concentrated on sides. Profemur shiny, finely to

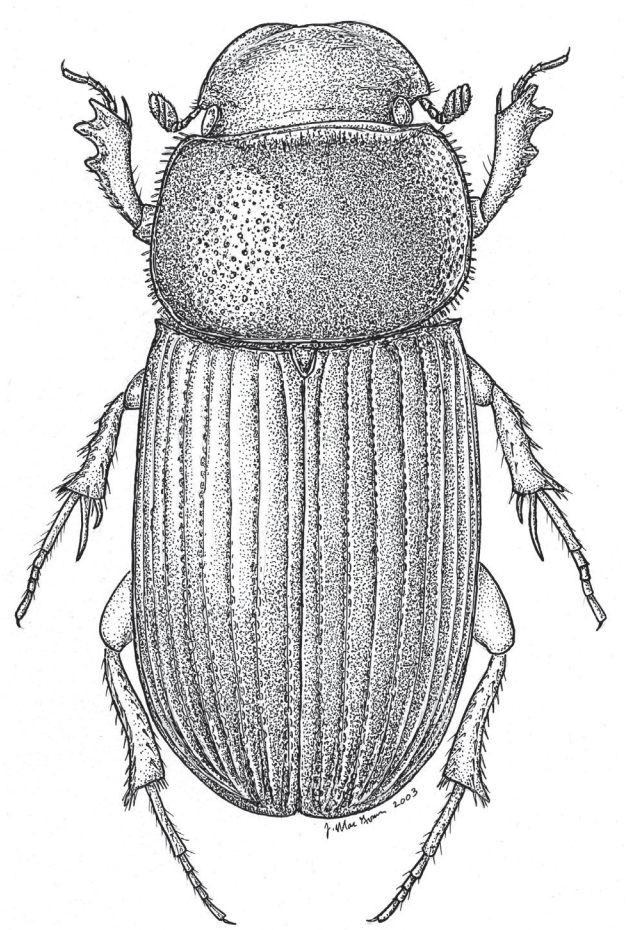


Figure 1. *Ataenius oaxacaensis* n. sp.

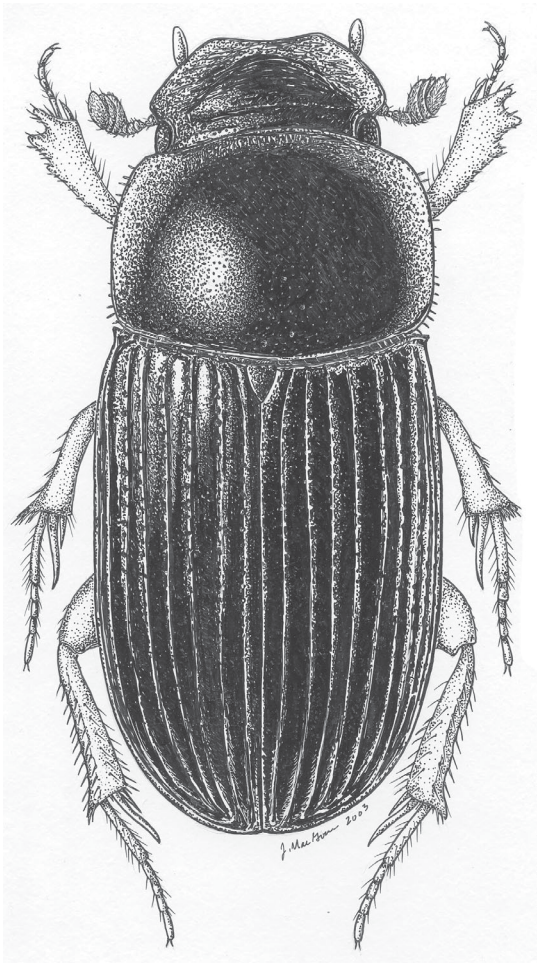


Figure 2. *Ataenius ecruensis* n. sp.

coarsely punctate, never scabrous; meso- and metafemora shiny, metafemur in most species with incomplete posterior marginal line, this line rarely lacking; meso- and metatibiae slender, subcylindrical, apex with accessory spine, slender spurs and few setae; tarsi slender, basal tarsomere of metatarsus longer than upper tibial spur and usually shorter than following tarsomeres together.

External sexual differences apparent mostly in the sculpture of the head, pronotum and metasternum, in the shape of terminal spur of protibia, and in the length of abdominal sternites 5-6. Male genitalia (Figs. 7-23) moderately sclerotized, parameres usually as long as phallobase or longer, slender, narrowed apically; internal sac (Fig. 6) in most species with symmetrical, serrate sclerites and fine spicules.

Affinities. The *Ataenius strigatus* group is most closely allied to the indigenous West Indian *A. terminalis* group of species (Stebnicka 2002) sharing a number of character states such as the external sexual differences and same basic form of the male genitalia. The differences include the unicolored and glabrous body in the *strigatus* group, the femora with posterior marginal lines in most species, and the more cylindrical meso- and metatibiae furnished with accessory spine. Male genitalia within the *A. strigatus* group are rather well differentiated and paramere shape may be used to distinguish the various species satisfactorily.

Key to the species of *Ataenius strigatus* group

1. Elytral intervals in apical third or fourth carinate and weakly to strongly eroded on each side (Fig. 21). 2
1' Elytral intervals convex or carinate apically, not eroded on each side (Fig. 22, 23) 4

2(1) Body alutaceous, subopaque; clypeal surface very densely, roughly punctate; sides of pronotum with contiguous punctures; elytral intervals 6-9 subcarinate to carinate, closely punctate, 10th interval flat, opaque. South America ..... 7. *A. impiger* Schmidt

2' Body shiny; clypeal surface transversely rugulose with scattered punctures; sides of pronotum with punctures variable; elytral intervals 6-8 slightly convex with scattered punctures, lateral intervals not different. USA, Mexico 3

3(2) Erosion of intervals at elytral apex very evident (Fig. 21); transverse rugulae of clypeus generally faint and restricted to the anterior third (Fig. 24); posterior femur with a line of 3 or 4 coarse punctures near posterior margin at knee; posterior tibia with fringe of 6 (usually) to 8 setae, not counting seta isolated by accessory spine ..... 8. *A. apicalis* Hinton

3' Erosion of intervals at elytral apex never as pronounced as in figure 24; transverse rugulae of clypeus more prominent, evident on anterior three fourths (Fig. 25); posterior femur without, rarely with one or two, coarse punctures near knee; posterior tibia with fringe of 4 or 5 setae, not counting seta isolated by accessory spine ..... 10. *A. strigatus* (Say) (in part)

4(1) Elytra short, oval with convex margins, length less than 2 times as long as pronotum; humeral denticles strong, acutely pointed. USA ..... 16. *A. brevis* Fall

4' Elytra elongate, nearly parallel-sided, length 2.1 times as long as pronotum or longer, humeral denticles fine to moderate, usually obtuse 5

5(4) Body castaneous, feebly shiny; pronotal lateral margin fringed with broad, truncate (particularly posterior corners), pale setae separated by less than their lengths. Mexico ..... 15. *A. oaxacaensis* **sp. n.**

5' Body black or piceous, moderately to strongly shiny; pronotal lateral margin fringed with slender, acute setae separated by their lengths or without fringe of setae 6

6(5) Ventral surface strongly shiny, impunctate; abdominal sternites very finely fluted along sutures, smooth; vertex with large, densely spaced, deep punctures; disc of pygidium shiny with few coarse punctures in transverse depressions on either side of mid-line, not eroded. Central America, Venezuela ..... 9. *A. glabriventris* Schmidt

6' Ventral surface shiny or subopaque, punctate; abdominal sternites variously fluted along sutures, distinctly punctate, at least laterally; vertex with fine or mixed fine and moderate punctures; disc of pygidium eroded, opaque, without punctures 7

7(6) Elytra long, about 2.4 to 2.7 times as long as pronotum; eroded area on disc of pygidium extensive (Fig. 27); posterior line of mesofemur complete, arching toward anterior margin; terminal fringe of setae on posterior tibia of 8 to 10 setae, accessory spine small, with no seta between it and the tibial spurs. USA ..... 12. *A. erratus* Fall

7' Elytra moderate in length, 2.5 times as long as pronotum or less; eroded area of pygidium more moderate in size (Fig. 28); posterior line of mesofemur present or absent, never arching toward anterior margin; terminal fringe on posterior tibia generally of 5 or 6 setae and with one seta positioned between the accessory spine and the tibial spurs 8

8(7) Head (vertex) with a distinctly impressed, transverse band of densely spaced, deep, coarse punctures just behind median convexity, head anterior to impression uniformly, finely punctate; elytral intervals slightly convex on disc, nearly carinate on apical declivity. Guadeloupe ..... 5. *A. cartwrighti* Chalumeau and Gruner

8' Head (vertex) not distinctly impressed, punctation variable; elytral intervals convex, not differentiated apically 9

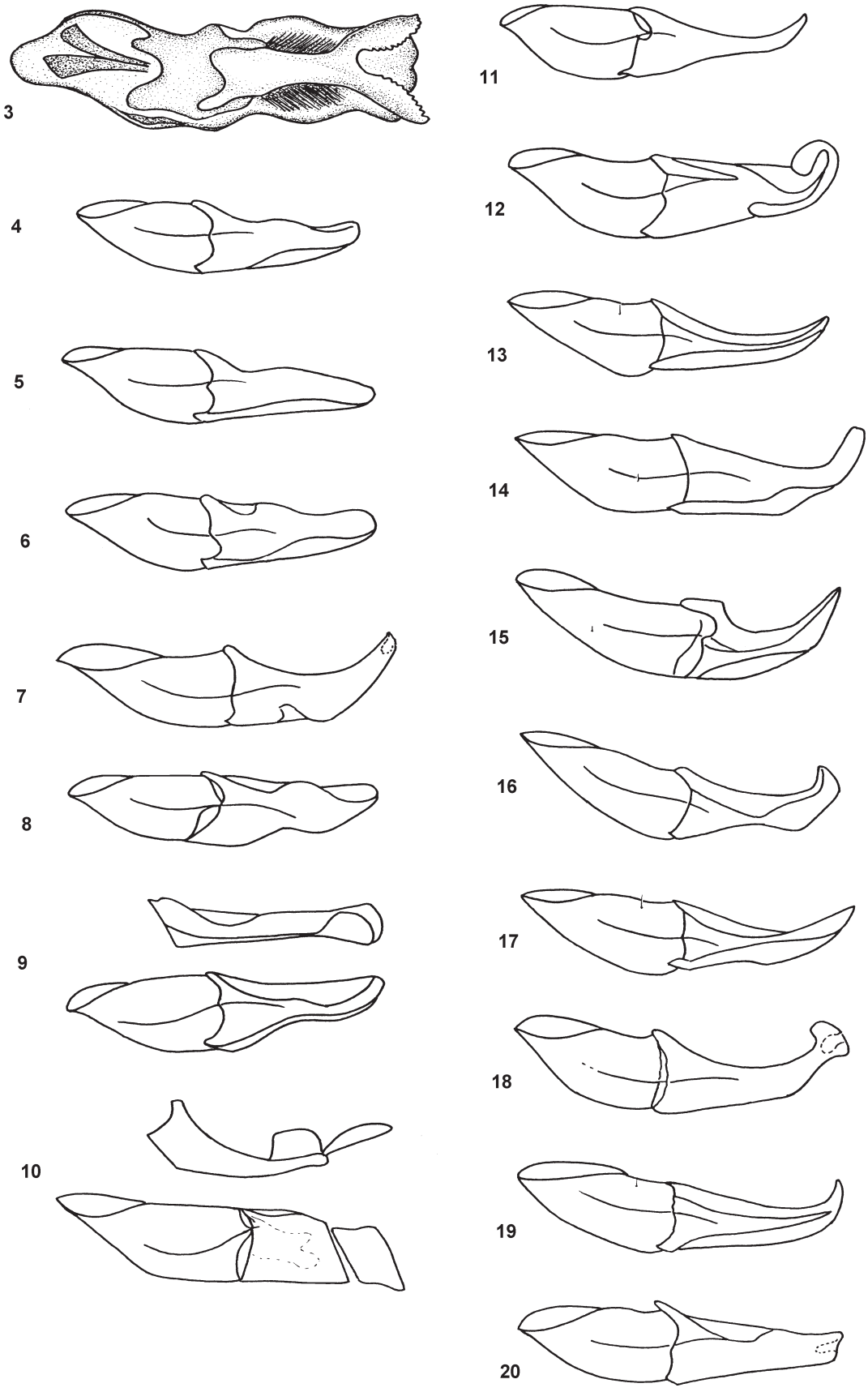
9(8) Metafemur without posterior marginal line (Fig. 29) 10

9' Metafemur with posterior marginal line (may be feeble), either complete or incomplete (Fig. 30) 13

10(9) Lateral margin of pronotum without fringe of setae; clypeus without rugulae or with rugulae only vaguely indicated. South America ..... 6. *A. purator* Harold

10' Lateral margin of pronotum with fringe of setae; clypeus with weakly to strongly developed rugulae 11

Figures 3-20. 3) Internal sac of male genitalia, characteristic of *strigatus* group. 4-20. Male genitalia. 4) *A. liogaster* Bates; 5) *A. californicus* Horn; 6) *A. stephani* Cartwright; 7) *A. ecruensis n. sp.;* 8) *A. cartwrighti* Chalumeau and Gruner; 9) *A. purator* Harold; 10) *A. impiger* Schmidt; 11) *A. apicalis* Hinton; 12) *A. glabiventris* Schmidt; 13) *A. strigatus* (Say); 14) *A. fattigi* Cartwright; 15) *A. erratus* Fall; 16) *A. spretulus* (Haldeman); 17) *A. cognatus* (LeConte); 18) *A. oaxacaensis n. sp.;* 19) *A. brevis* Fall; 20) *A. wenzelii* Horn.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11(10) Base of head without distinct band of coarse punctures, punctation of vertex similar to remainder of head; anterior disc of pronotum with fine punctures only (Fig. 30). USA, Mexico .... 3. *A. stephani* Cartwright

11' Base of head with band of coarse punctures; anterior disc of pronotum with at least a few large punctures in addition to numerous fine punctures (Fig 31) 12

12(11) Abdominal sternites with coarse punctures confined to lateral 1/3, micropunctate or nearly impunctate medially. SW USA .... 2. *A. californicus* Horn

(Specimens of *A. liogaster* may key to this couplet if the posterior marginal line on the metafemora is effaced (or not recognized). Although *A. liogaster* and *A. californicus* are closely related, the latter characteristically has very deep coarse pronotal punctures relative to those of *A. liogaster*. In addition, *A. liogaster* is not known to occur in he USA.)

12' Abdominal sternites, particularly first two, with coarse puntures extending across middle, not leaving an impunctate area medially. USA, Mexico ..... 14. *A. cognatus* (LeConte)

13(9) Clypeus uniformly punctate, without transverse rugulae or with faint traces only near anterior edge (Fig. 26); posterior face of profemur coarsely punctate (as in Fig. 33); terminal fringe of posterior tibia composed of 6 to 8 setae. USA. ..... 11. *A. fattigi* Cartwright

(Rare individuals of *A. apicalis* that lack erosion of the apical elytral intervals will key to couplet 13. The rugulae are more prominent than they are in *A. fattigi*, but the terminal fringe of the posterior tibia is composed of 6 to 8 setae. In *A. apicalis*, the posterior femora have a line of 3 or 4 coarse punctures paralleling the posterior margin near the knee, which are not present in *A. fattigi*. The only species beyond this point that might have 6 setae in the apical fringe is *A. wenzelii*, which has isodiametric sculpturing on the elytra, quite unlike the smooth, shiny elytra in *A. apicalis*.)

13' Clypeus with weak (Fig. 24) to strong (Fig. 25) rugulae below median convexity, distinct punctures usually present on top of, beside and behind median convexity; posterior face of profemur punctate or not; terminal fringe of posterior tibia generally composed of 5 setae (rarely 6 in *wenzelii*, but here the clypeal rugulae are distinctly present) 14

14 (13) Posterior face of profemur coarsely punctate (Fig. 33); coarse punctures on outer third of pronotum often contiguous or confluent. USA..... ..... 10. *A. strigatus* (Say)

14' Posterior face of profemur impunctate or with fine scattered punctures (Fig. 34); most coarse punctures of pronotum distinct, rarely a few confluent 15

15(14) Elytra alutaceous or feebly shiny, with dense, nearly isodiametric microsculpture (Fig. 35); discal intervals nearly flat compared to convex lateral intervals; posterior angles of pronotum crenulate (best seen in ventral view). USA .... 17. *A. wenzelii* Horn

15' Surface of elytra shiny, intervals punctate, without distinct microsculpture; all intervals equally convex; posterior angles of pronotum not crenulate 16

16(15) Pronotum covered with fine punctures, with a few widely scattered coarse punctures laterally, but these lacking in median anterior disc (anterior disk similar to *stephani*, Fig. 31, but with fewer coarse punctures laterally). USA .... 4. *A. ecruensis* **sp.n.**

16' Pronotum with coarse punctures more numerous and more widely distributed (but extremely variable in number and placement in *A. spretulus*), at least a few present in median anterior disc 17

17(16) Posterior marginal line of metafemur incomplete, strong (Fig. 30); elytra with lateral margins slightly convex; setae of lateral pronotal fringe relatively short, separated by their lengths (fresh specimens); in males, terminal spur of protibia slightly bent downward apically; USA .... 13. *A. spretulus* (Haldeman)

17' Posterior marginal line of metafemur incomplete and fine or very fine, in a few specimens, hardly noticeable; elytra parallel-sided; setae of lateral pronotal fringe moderately long, separated by less than their lengths (fresh specimens); in males, terminal spur of protibia hooked inward apically; Central and South America, West Indies, Micronesia, Oriental and Australian regions ..... 1. *A. liogaster* Bates

1. *Ataenius liogaster* Bates
(Fig. 4, Map 1)

Ataenius liogaster Bates, 1887: 94.- Hinton, 1937: 193 (as synonym of *orbicularis*); Chapin, 1940: 29-30.

Ataenius orbicularis Schmidt, 1914: 697, *et Auctt*.- Stebnicka and Howden, 1997: 744-746, figs 1-3, 21.

Ataenius edwardsi Chapin, 1940: 26-27.- Cartwright and Chalumeau, 1978: 14; Chalumeau, 1981: 174; Chalumeau, 1983: 82-83, figs. 28, 49; Dellacasa, 1988: 274 (catalogue) (**new synonymy**).

Map 1. Distribution of *Ataenius liogaster* Bates (dots) and *A. glabiventris* Schmidt (stars).

Ataenius nitidulus Nomura, 1943: 78.- Cartwright and Gordon, 1971: 270 (as synonym of *orbicularis*).

Ataenius kelatianus Balthasar, 1965: 316.- Stebnicka, 1991: 4 (as synonym of *orbicularis*).

Ataenius hoguei Cartwright and Spangler, 1981: 785-789, figs 1-5;- Dellacasa, 1988: 350 (catalogue) (**new synonymy**).

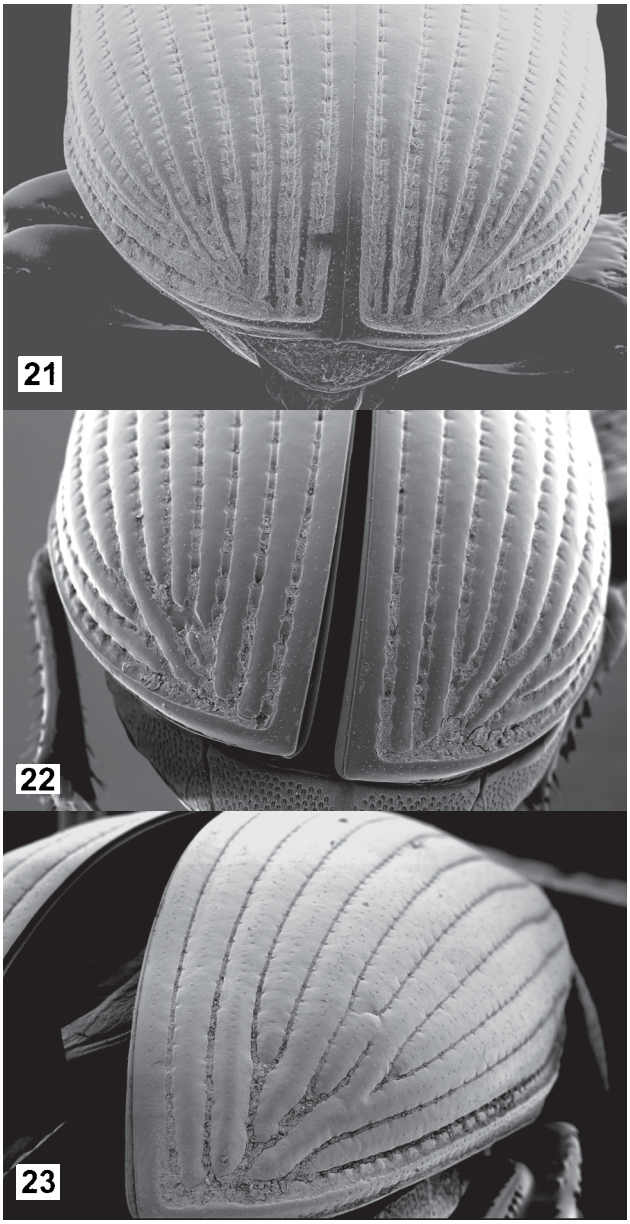
Material examined. *Ataenius liogaster*: Lectotype female (Mexico) designated by Cartwright (1964), in BMNH. *Ataenius orbicularis*: Holotype male (Samoa), in NRS. *Ataenius edwardsi*: Holotype male, labeled "Jamaica, Spa. Town 2.II.37", "Sta 377 Chapin and Blackwelder," "*Ataenius edwardsi* det Chapin 1939," "No 53324 USNM."

Ataenius hoguei: Paratypes: male and female (same data as holotype) labeled "Mexico, Socorro Island, Revillagigedo Arch., 5 June 1977, Steele Exp. 1977, Station 1, sea level, C. Hogue and E. Evans", in CMN, USNM.

Other specimens (102 specimens from Central and South America and 340 specimens from the Philippines). **Costa Rica** – Cartago, Turrialba. **Ecuador** – Guayas, Guayaquil; Rio Palenque; Napo. **El Salvador** – Santa Tecla. **Guatemala** – Zacapa; El Progresso; Solola. **Honduras** – Morazan, Guinope. **Mexico** – Nuevo Leon, 5 mi S Monterey; Nayarit, Tepic; Sinaloa, Mazatlan; Veracruz, Los Tuxtlas Biol. Sta.; Quintana Roo, Cancun. **Nicaragua** – Managua. **Panama** – Las Cumbres; Soberania Nat. Park. **Venezuela** – Guarico, Coroso Pando; Apure, Hato del Frio. **West Indies** - Cuba, Hispaniola, Puerto Rico, Guadeloupe, St Croix,. Antigua, St Lucia, Barbados, St Vincent, Grenada, Carriaçou, Trinidad (Tunapuna).

Distribution. Central America, the West Indies and northern South America (Map 1), Micronesia, Oriental and Australian Regions.

Diagnostic characters. Length 3.5-5.0 mm. Body shiny, black, legs reddish brown. Head moderately convex, clypeal surface transversely wrinkled upward to median convexity, then finely punctate to vertex. Pronotum moderately convex, posterior angles broadly, evenly rounded from side into base, sides and base distinctly margined, margin smooth, fringed with fine setae; surface punctures mixed fine and moderate, the latter irregularly spaced on disc, slightly larger and closer toward sides, sparse along lateral margin. Elytra subparallel, humeri weakly denticulate; striae moderately impressed, punctures deep, crenating inner margins of intervals; all intervals moderately convex, surface with minute scattered punctures. Mesosternum shagreened with fine contiguous punctures and



Figures 21-23. Elytral apices. 21) *A. apicalis* Hinton, showing eroded intervals; 22) *A. stephani* Cartwright, showing intervals of uniform width; 23) *A. erratus* Fall, showing intervals of uniform width.

short, decumbent setae, weakly carinate between mesocoxae; metasternum shiny, finely punctate, smooth laterally, midline fine, long, lateral metasternal triangle strongly depressed; abdomen shiny with scattered fine punctures at middle increasing in size and density toward sides; pygidium with wide apical lip and roughly eroded disc. Femora with scattered minute punctures, perimarginal groove of profemur deep; posterior line of metafemur incomplete, fine, occasionally very fine and difficult to see, posterior tibial fringe of 5 short setae and fine accessory spine; basal tarsomere of metatarsus equal in length to upper tibial spur and to following three tarsomeres together.

Male. Pronotal punctures usually finer and less close than in female, disc of metasternum with minute pale setae; penultimate abdominal sternite shorter than that of female, terminal spur of protibia hooked inwardly at the tip; genitalia as in Fig. 4.

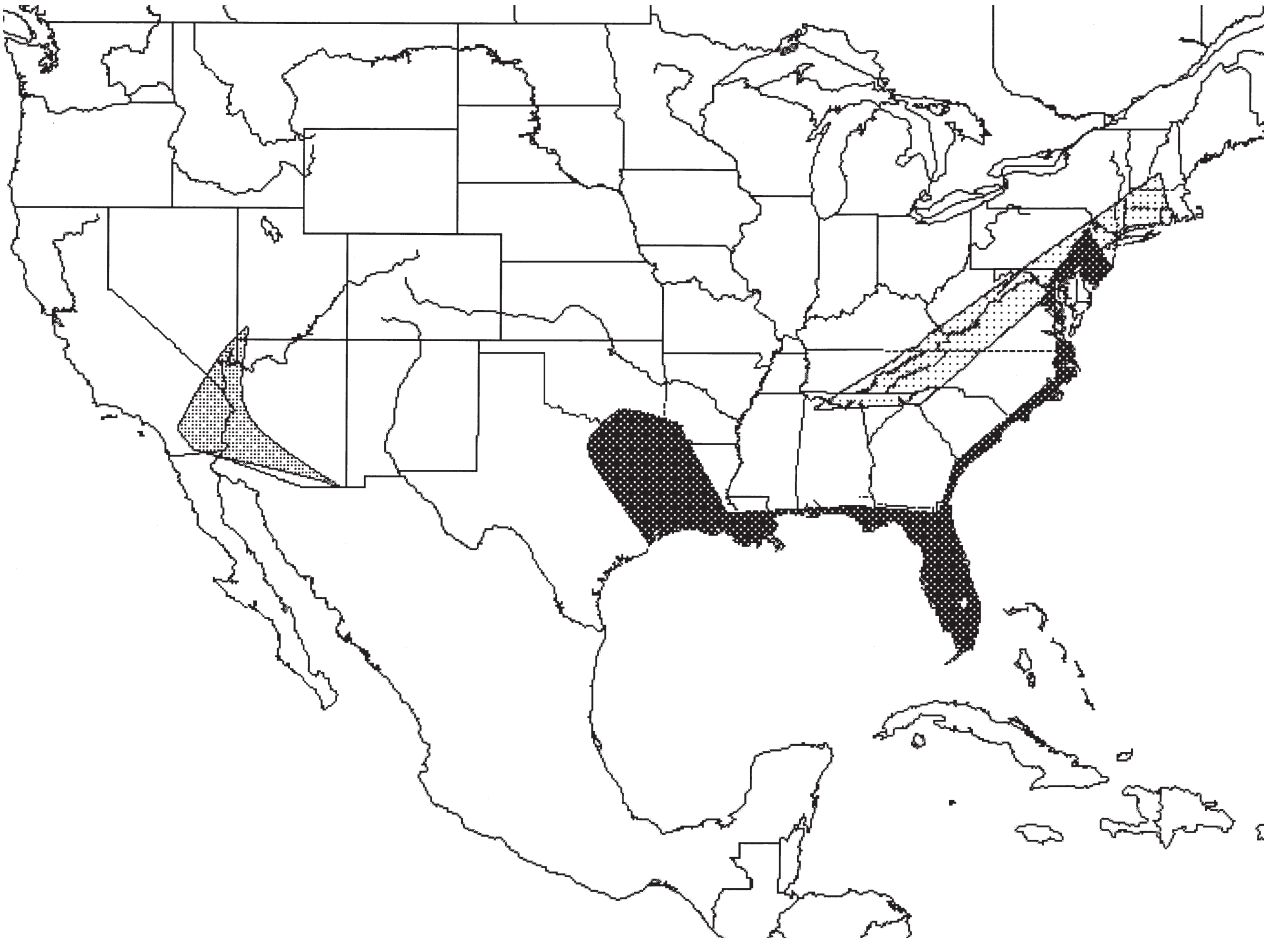
Female. Clypeal surface usually with coarser wrinkles than in male, pronotum more convex; punctures of abdominal sternites usually denser; terminal spur of protibia straight.

Remarks. *Ataenius liogaster* is closely related to *A. californicus* in many characters including those of the male genitalia and it is undoubtedly of Mesoamerican origin. The metafemora in *A. californicus* lack a posterior marginal line, but in *A. liogaster* this groove is present, although it may be quite feeble. Females are often very similar externally to *A. spretulus* but may be distinguished by having a more slender, parallel-sided body and by having the posterior groove of the metafemora rather poorly developed. Much synonymy of *A. liogaster* has resulted from the separate descriptions of the male or female specimens, by the authors studying only limited faunal areas. The species was recorded under the name *A. orbicularis* from Vietnam, Thailand, Malaya, Indonesia and Micronesia (Stebnicka 1992, 1993, 1994) and from Christmas Island (Stebnicka and Howden 1997). Recently, *A. liogaster* was recorded from southern states of Mexico by Galante *et al.* (2003). The specimens were found in various biotopes, collected at light, in pitfall traps and in soil and leaf litter samples. They have been collected throughout the year. The large series of this species mentioned above that was collected in the Philippines (Luzon, Laguna, Los Baños) was taken in 1990 by R. J. Cooter (MMU) on rice cultivations of the International Rice Research Institute.

2. *Ataenius californicus* Horn
(Figs. 5, 32, Map 2)

Ataenius californicus Horn, 1887:84.- Fall, 1930: 107; Cartwright, 1948: 151; 1974: 91-95; Stebnicka, 1991: 4; Dellacasa, 1988: 113 (catalogue).

Type data. Holotype "San Bernardino, California", No 3613, in ANSP.



Map 2. Distribution of *Ataenius californicus* Horn (medium shading), *A. brevis* Fall (light shading), and *A. wenzelii* Horn (dark shading).

Material examined. Specimens (25). **USA** - Arizona, Yuma, 23.VII., coll. Hubbart and Schwarz; California, Berkeley, 9.III.1936, coll. Schoemaker ; 22.IX.1977, F.G. Andrews and A.R. Hardy (HNHM); California, Berkeley, 7.III.1936 (PKLC); California Imperial Co. Algodones Dunes, 3.4 mi SE Glamis; 3 mi NW Glamis, 15-16.IX.1972, M. Wasbauer and A. Hardy (ISEA, USNM); California, Imperial Co, 1.3 rd mi W Glamis, 14.IX.1979, A.V. Evans (PKLC).

Distribution. USA – Arizona, California, extreme southern Nevada and southeastern Utah (Map 2).

Diagnostic characters. Length 3.8-5.3 mm. Elongate-oblong, parallel, shiny rufo-piceous to piceous, legs rufous. Clypeal margin broadly rounded on each side of wide median emargination, sides nearly straight to obtuse gena; sculpture of head variable, surface transversely wrinkled anteriorly and finely punctate above median convexity, transverse band of moderate, close punctures. Pronotum with arcuate sides and widely rounded posterior angles, sides and base strongly margined and grooved, marginal fringe of moderate to short setae across base, marginal crenations scarcely visible; surface punctures mixed fine and very coarse, the latter usually separated by one to four times their diameters. Elytra convex, humeral denticles moderate, striae deep, strial punctures strongly crenating inner margins of intervals; discal intervals slightly convex, punctures very fine, scattered or invisible. Metasternal midline deep, disc with fine and moderate punctures separated by about one diameter; abdominal sternites with gradually longer fluting along sutures, surface punctures widely scattered, very fine punctures medially to coarse and close punctures on sides. Profemur with peri-

marginal groove and shiny punctate surface; metafemur with incomplete posterior line extending about one third the distance from the knee to the trochanter and with 1-2 setigerous punctures at knee; first tarsomere of metatarsus longer than upper tibial spur and equal to or slightly longer than following three tarsomeres combined.

Male. Punctures of metasternum bear extremely short setae; penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia distinctly sinuate or curved apically; genitalia as in Fig. 5.

Female. Clypeal wrinkles more distinct than in male, punctures of pronotum usually coarser and closer.

Remarks. This species is similar to *A. stephani*, *A. ecruensis* sp.n., and *A. liogaster*. In *A. californicus*, the pronotum has a thicker marginal line and the anterior disk bears numerous coarse punctures (Fig. 32), quite different from the conditions apparent in either *A. stephani* (Fig. 31) or *A. ecruensis*. The metafemora of the Central and South American *A. liogaster* have a fine posterior marginal line which immediately separates most specimens of that species from *A. californicus*. For those few *A. liogaster* in which this marginal line is extremely fine or effaced, separation from *A. californicus* may be difficult. Generally, the coarse pronotal punctures in *A. californicus* are deeper and more pronounced than the coarse punctures in *A. liogaster*. This, of course, is a relative character and comparative material is helpful in appreciating the difference. The male genitalia are similar, but differ distinctively (compare Figs. 4 and 5). Distribution is also helpful (*A. liogaster* is not known to occur in the USA). This species has been reported as damaging roots of seedling sugar beets in California, as a casual feeder on immature flies and as an "excavator of animal dung" (Cartwright 1974).

3. *Ataenius stephani* Cartwright
(Figs. 6, 22, 31, Map 3)

Ataenius stephani Cartwright, 1974: 81-82 (description).- Dellacasa, 1988: 343 (catalogue).

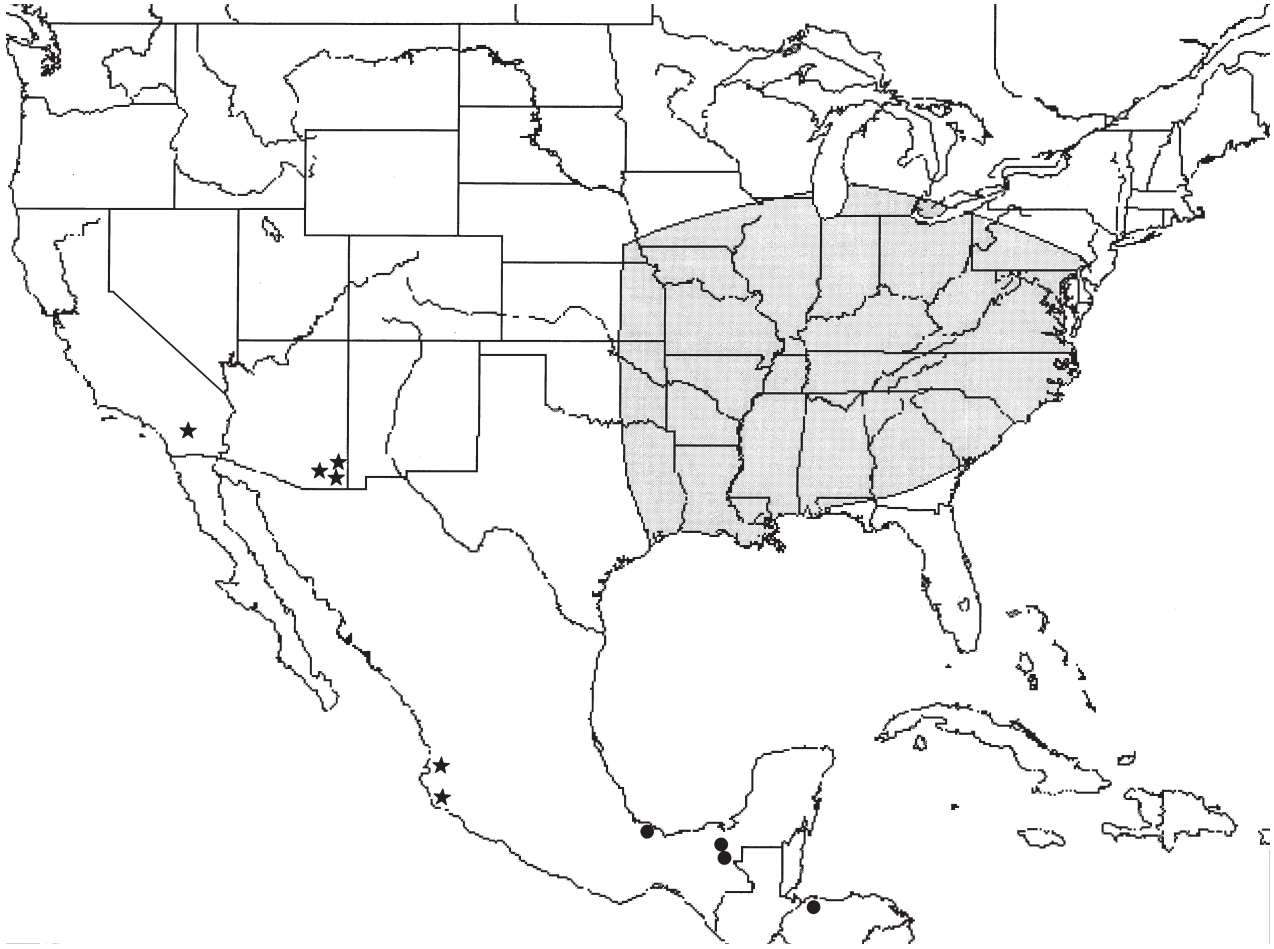
Type data. Holotype "Tucson, Arizona", No 71748 in USNM. Paratypes (2) "Arizona Santa Catalina", in CMN.

Material examined. Paratypes and 76 other specimens. **Mexico** – Sinaloa, Mazatlan, 1-2.VII.1964, P.J. Spanski; Baja California, Playa Pedrito 3 mi S Todos Santos, 14.XI.1981, R. Gordon (ISEA, USNM); Teopisca, San Blas (ZMHB); Jalisco, vicinity of Chamela, 9-14.VII.1994, R. Morris (FSCA). **USA** - **Arizona** – Pima Co., Green Valley, VIII. 1971, R. Lenczy; Tucson nr Sabino Cyn, 7.XI.1990, P. Skelley (FSCA), Sabino Cyn, nr Tucson, 16.VII.1980, P.K. Lago; 8 mi NNE Tucson, 15.VII.1980, P.K. Lago (ISEA, PKLC); base of Tortolta Mts (so. side) 3000 ft, 5.VIII.1984, R.S. Beal (PKLC); Santa Cruz Co, Pena Blanca Lake, 20.VII.1985, P.K. Lago; Cochise Co, Guadelupe Cyn, 30 mi E Douglas, 25.VII.1980, P.K. Lago; **California**, San Diego Co, Borrego Springs, 4.VII.2002, R.H. McPeak (PKLC

Distribution. Southeastern Arizona and western Mexico, including Baja California, south to Jalisco (Map 3).

Diagnostic characters. Length 4.8-5.2 mm. Body oblong, strongly shiny, black, legs, and occasionally pronotal margins, reddish brown. Clypeal margin rounded on each side of moderate median emargination, sides straight to obtuse gena; surface finely transversely wrinkled anteriorly, upper clypeus and frontal area evenly minutely punctate, vertex with few scattered, larger punctures. Pronotum transverse, posterior angles broadly rounded, marginal setae moderately long, shorter and closer posteriorly, marginal crenations very weak; surface with mixed punctures, very finely evenly punctate over anterior median area and narrowly so inside lateral groove, elsewhere with additional scattered, variably spaced moderate to coarse punctures, the latter very few on posterior disc, more concentrated on sides. Elytra parallel-sided, humeral denticles fine, obtuse; striae deep, punctures more or less distinctly crenate inner margins of intervals; intervals convex, shiny, minute punctures scattered. Ventral sclerites shiny; metasternal midline deep, sometimes ending in a deep pore, disc finely punctate; abdominal sternites finely, closely fluted along sutures, with minute to fine punctures at middle increase in size toward sides. Profemur shiny smooth; metafemur usually without posterior line, in some specimens a trace of line occurs at knee; mesotarsus slightly longer than tibia and equal in length to metatarsus; basal tarsomere of metatarsus subequal in length to upper tibial spur and to three following tarsomeres combined.

Male. Terminal spur of protibia hooked inwardly at the tip; penultimate abdominal sternite



Map 3. Distribution of *Ataenius apicalis* Hinton (dots and shading), and *A. stephani* Cartwright (stars).

shorter than in female, disc of pygidium longer; genitalia as in Fig. 6.

Female. Punctures of pronotum usually denser than in male.

Remarks. *Ataenius stephani* is most closely related to *A. ecruensis* sp. n. (see Remarks under that species). The moderate to coarse punctures around the smoother, finely punctate anterior median disc of the pronotum (Fig. 31) give it an appearance similar to the Central American *A. usingeri* Hinton belonging to the *A. platensis* group (revision in preparation).

William Warner (Chandler, AZ, pers. comm) has related to us that turf grass companies in both Arizona and California (Palm Springs) have sent specimens of *A. stephani* to him for identification. Typically, the species is found in riparian habitats in Arizona and was considered rare in other situations, but has become a common lawn insect in the Phoenix, AZ area. He speculated that its intrusion into California has been facilitated through the transport of sod for golf courses.

4. *Ataenius ecruensis,* new species

(Figs. 2, 7, Map 4)

Type data. Holotype male, USA, North Carolina, Edgecombe Co., 2 mi NW Tarboro, 25.VII.1979, W.H. Cross, in USNM. Paratype, male, Mississippi, Pontotoc Co., 1 mi SE Ecru, 31.VII.1980, W.H. Cross, in PKLC.

Description of males. Length 4.8-5.0 mm. Body elongate oblong (Fig. 2), moderately convex, shiny black, legs reddish brown. Head moderately convex, clypeus rounded on each side of moderate median emargination, sides straight to right-angled gena; clypeal surface above emargination with weak traces of transverse rugulae, upper clypeus

with shallow, superficial minute punctures, vertical area with irregularly scattered fine punctures. Pronotum rectangular, sides and base margined, sides arcuate toward obtuse posterior angles; marginal crenations scarcely visible, marginal fringe of moderate, slender setae separated by about their lengths; pronotal surface in anterior median disc with shallow minute punctures similar to those on upper clypeus and with very few moderate punctures widely separated along base and slightly closer at anterior angles. Elytra very slightly arcuate, humeri finely dentate; striae narrow, increasingly deeper toward sides, strial punctures separated by about one diameter, transversely crenating inner margins of intervals; discal intervals 1-4 flat, lateral intervals slightly convex. Ventral surface shiny; mesosternum carinate between mesocoxae; metasternum shiny, midline deep, surface punctures minute; abdominal sternites very finely fluted along sutures, with minute scattered punctures medially and moderate, more widely spaced punctures on sides; eroded disc of pygidium finely scabrous. Profemur smooth, shiny, with very few minute scattered punctures; perimarginal groove fine, terminal spur of protibia hooked inwardly at the tip; meso- and metafemora with incomplete but strong posterior lines, surface smooth, shiny; accessory spine of metatibia strong, apical fringe composed of 5 setae, with an additional seta between spine and spurs; basal tarsomere of metatarsus a trifle longer than upper tibial spur and subequal to the next tarsomeres together. Male genitalia as in Fig. 7.

Female unknown.

Remarks. *Ataenius ecruensis* n.sp. is most closely related to *A. stephani*, but it differs from that species by its markedly finer and less close pronotal punctures and the meso- and metafemora with strong posterior lines.

5. *Ataenius cartwrighti* Chalumeau and Gruner (Fig. 8)

Ataenius cartwrighti Chalumeau and Gruner, 1974: 813, figs 18,30.- Chalumeau, 1983: 86, fig. 27; Dellacasa, 1988: 344 (catalogue)

Type data. Holotype male, Guadeloupe, Saint-Felix (Gosier), 18.VI.72, leg. Chalumeau, in FCC. Paratype, same data as holotype, in MNHN.

Material examined. Paratype and 6 other specimens. **West Indies** - Guadeloupe, Viard, IX, P. Bourg (HAHC, ISEA).

Distribution. Apparently endemic to Guadeloupe.

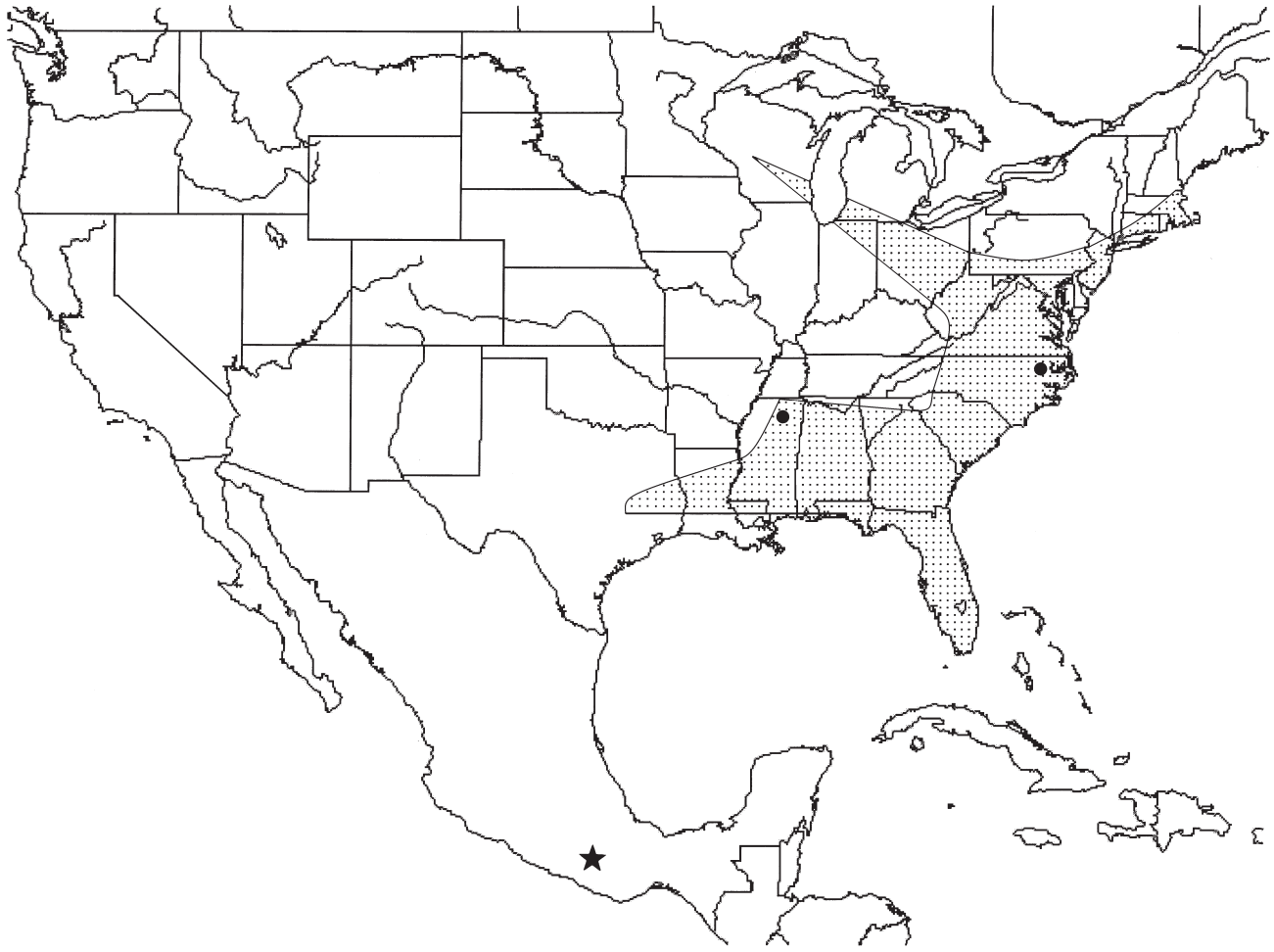
Diagnostic characters. Length 3.8-4.8 mm. Body elongate, narrow, moderately shiny, black. Head relatively small, clypeal margin rounded on each side of shallow median emargination, gena small obtusely rounded; surface of head everywhere evenly finely punctate, frontal suture slightly concave just behind median gibbosity, vertex with band of close, larger punctures separated by less than one diameter. Pronotum subquadrate, convex, sides slightly arcuate toward obtuse posterior angles, side margin without fringe of setae; surface punctures generally distributed, usually fine, on disc separated by 1-3 times their diameters, on sides, punctures slightly larger, separated by about one diameter. Elytra slightly elongate apically, humeral denticles small, striae narrowly impressed with close punctures not strongly crenating inner margins of intervals; intervals shiny, slightly convex on disc, carinate apically, lateral intervals 7-9 with fine distinct punctures. Ventral sclerites moderately shiny; mesosternum shagreened, pubescent, mesocoxal carina narrow; metasternum longitudinally concave, midline impressed, disc smooth, few minute punctures scattered; abdominal sternites very finely, uniformly fluted along sutures, surface with minute widely scattered punctures, only slightly wrinkled on sides. Profemur smooth, perimarginal groove fine; meso- and metafemora without posterior lines, smooth shiny; terminal spur of protibia straight in both sexes; meso- and metatibiae slender, apical spurs thin, tarsi slender; basal tarsomere of metatarsus longer than upper tibial spur and longer than three following tarsomeres combined.

Male. Penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 8.

Female. Body larger than in male in the few specimens examined.

Remarks. *Ataenius cartwrighti* is most closely related to *A. purator* (see Remarks under that species). Bionomics unknown.

6. *Ataenius purator* Harold (Fig. 9, Map 5)



Map 4. Distribution of *Ataenius ecruensis*, n. sp. (dots), *A. oaxacaensis* n.sp. (star), and *A. fattigi* Cartwright (shaded).

Ataenius purator Harold, 1868: 85.- Schmidt, 1922: 432; Dellacasa, 1988: 279 (catalogue); Stebnicka, 1998: 202-203, fig. 2.

Ataenius gothi Balthasar, 1933: 9.- Chalumeau, 1992: 204, fig. 6 (as valid species).

Ataenius gagates Petrovitz, 1963: 317.- Chalumeau, 1992: 204 (as synonym of *gothi*).

Ataenius splendens Endrödi, 1963: 52-54.- Stebnicka, 1998: 202 (as synonym of *purator*).

Material examined. *Ataenius purator*: Lectotype (Brazil, Pará) designated by Stebnicka (1998), in ZMHB. *Ataenius gothi*: described from Venezuela. Holotype (studied in 1983), in BCP. *Ataenius gagates*: holotype and 3 paratypes, labeled "Pelotas Süd-Brasilien," in MHNG. *Ataenius splendens*: holotype and 3 paratypes, labeled "Suriname, Dirkshoop", in HNHM, RVNH.

Other specimens (206). **Argentina** – Prov. Buenos Aires, XI.1946, coll. Martinez (CMN); Prov. Corrientes, Ituzaingo, 20.XII.1990, S.& J. Peck (CMN); Prov. Chaco, Resistencia, 12.XI.1950, A. Willink (FMLT); Argentina, Chaco 60 km NE Resistencia, 25.I.1989, O'Brien & G. Witmer (PKLC); Prov. Entre Rios, Dep. Concordia , XI.1979, coll. Martinez (CMN); Rio Parana, Ibicuy, Pto Ibicuy, 10.XII.1979, S. Flint (USNM). **Bolivia** - Beni, 40 km E San Borja, Estacion Biol. Beni, Palm Camp at Rio Curitaba, 6-8.IX.1987, W.E. Steiner (ISEA,USNM). **Brazil** – (MG) Cordisburgo, Faz. Pontinha, VII.1994, Eldorado do Sul, X.1996, F. Vaz-de-Mello (FVMC, ISEA); (Pa) Para, Cachimbo; (RG) Rio Grande do Sul, Pelotas, 7.XII.1952, leg. Biezanko; (MT) Mato Grosso, Varzea Grande Co., Cuiaba, 20.IV.1972, W.H. Whitcomb (USNM); (Ba) Bahia, Encruzilhada, XI.1972, M. Alvarenga (FSCA). **Guyana** – Pirara Ranch & River, 23-27.IV.1995, O. Flint (USNM). **Paraguay** – Villarica, Independentia, 25 km E, 21.I.1991, S. Endrödy-Younga (ISEA, TMP); San Pedro, W Vaca Ihu, Est.

Map 5. Distribution of *Ataenius purator* Harold.

Triangulo 180 m, 1-6.XI.1995, F. Bretzendorfer & C. Hause (SMNS). **Surinam** - Vank, VIII.1959, coll. Endrödi (HNHM). **Uruguay** – Rocha, Punto del Diablo, 25.VIII.1995, J. Verdú (ISEA). **Venezuela** – Bolivar, 15 km E Caicara, 12-13.VI.1996; Bolivar, Guri, 11.VII.1998, H.& A. Howden (CMN); Guarico, Calabozo, Est. Biol. 18.VIII.1961 (MHNG); Guarico 12 km S Calabozo, 9-13.II.1969, Lago de Los Patos, P. Spangler; Guarico, 15 km S Calabozo, 9-13.II.1969, Est. Biol. Los Llanos, P.& P. Spangler; Guarico, Hato Masaguaral, 45 km S Calabozo 75 m, M. Epstein & R. Blahnik (ISEA, USNM).

Distribution. South America (Map 5).

Diagnostic characters. Length 4.0-5.0 mm. Body elongate, parallel-sided, shiny black, in freshly emerged specimens rusty-brown. Head relatively small, clypeal margin rounded on each side of shallow median emargination, gena obtuse; surface of head everywhere evenly finely punctate, often with very weak rugulae just above median emargination, vertical area with band of close, larger punctures separated by about one diameter. Pronotum subquadrate, convex, sides slightly arcuate toward obtusely rounded posterior angles, side margin without setae, or setae inconspicuous; surface punctures generally fine, on disc separated by one to three times their diameters, on sides slightly larger punctures separated by one to two diameters. Elytra parallel-sided, humeral denticles small, striae narrowly impressed with close punctures transversely crenating inner margins of intervals; intervals shiny, slightly convex or flat on disc, lateral intervals usually with fine scattered punctures. Ventral sclerites shiny; mesosternum shagreened, pubescent, mesocoxal carina long, narrow; metasternum convex, midline impressed, disc smooth, few minute punctures scattered; abdominal sternites very finely, uniformly fluted along sutures, surface with minute widely scattered punctures, only slightly wrinkled on sides. Profemur smooth, perimarginal groove fine; meso- and metafemora without posterior lines, smooth, shiny; terminal spur of protibia straight in both sexes; meso- and metatibiae slender, apical spurs thin, slightly sinuate, tarsi slender; basal tarsomere of metatarsus about one-fourth longer than upper tibial spur and longer than three following tarsomeres combined.

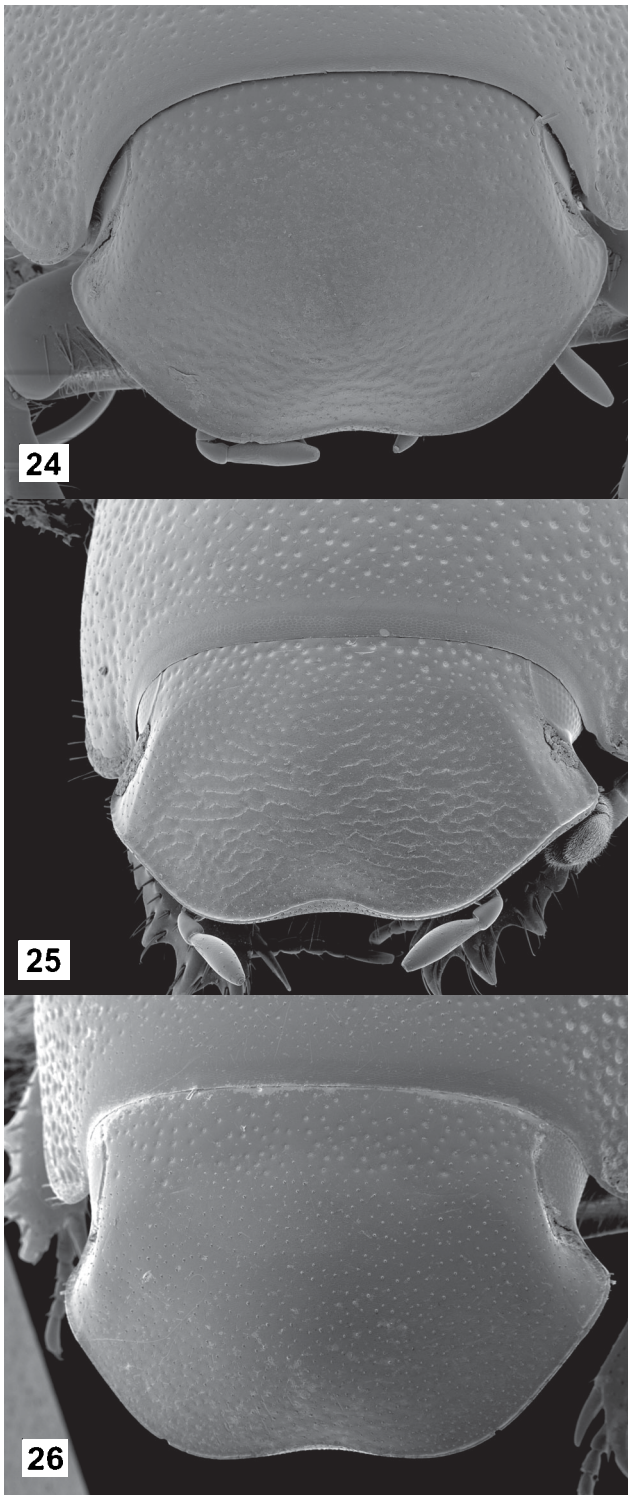
Male. Punctures of pronotum finer and less close than in female; penultimate sternite shorter, disc of pygidium longer; genitalia as in Fig. 9.

Female. Body usually larger and more convex than in male.

Remarks. There is some variation in proportions of the pronotum and elytra and in the punctation of the pronotum. *Ataenius purator* is closely related to the allopatric *A. cartwrighti* but is quite distinct in having a more robust body, the pronotal punctures less close and the elytra not prolonged apically. The small series of specimens from Venezuela (Guarico) have the body smaller and the pronotal punctures finer than do those from other areas of its known distribution, but the male genitalia do not differ in shape. As indicated by label data, the specimens were collected at light on savanna, in wet grassland and in wet forest.

7. *Ataenius impiger* Schmidt
(Fig. 10, Map 6)

Ataenius impiger Schmidt, 1916: 104.- Dellacasa, 1988: 276 (catalogue); Chalumeau, 1992: 203, figs 4,17.



Figures 24-26. Head. 24) *A. wenzelii* Horn, showing moderate rugulae; 25) *A. cognatus* (LeConte), showing extensive, strong rugulae; 26) *A. fattigi* Cartwright, showing faint rugulae near anterior margin.

Ataenius laterigranulatus Balthasar, 1941: 166-167; Chalumeau, 1992: 203 (as synonym of *impiger*)
Ataenius perpunctatus Balthasar, 1961: 124; Chalumeau, 1992: 203 (as synonym of *impiger*).

Type data. *Ataenius impiger*: holotype (sex undetermined), labeled "Paraguay," *At. impiger* m. Type', in NRS. *Ataenius laterigranulatus*: described from Argentina. Holotype in BCP. *Ataenius perpunctatus*: described from Bolivia. Holotype in BCP.

Material examined. Holotype of *impiger* and 160 other specimens. **Argentina** - Prov. Jujuy, Calilegua Nat. Park, Aguas Negras 500 m, 18-28.XII.1987, S.& J. Peck (CMN); Prov. Santa Fe, Reconquista, 23.XII.1965, leg. Mahunka (HNHM); Prov. Chaco, Resistencia, Rio Negro, XI.1945, coll. Martinez (CMN); Chaco, 100 km NW Resistencia, Chaco NP., 16.XII.1990, S.& J. Peck (CMN); Prov. Formosa, Las Lomitas, XII.1953, coll. Martinez (CMN); 50 km NW Clorinda, NP Rio Pilcomayo , 17.XII.1990, S.& J. Peck (CMN); La Merced, Guayedec (MHNG); Prov. Salta, El Rey Nat. Pk, 9-10.XII.1987, S.& J. Peck (CMN); Salta, D. Vellard (FMLT); Prov. Buenos Aires, 170 km SW, 1.XII.1961, leg. Topal (HNHM); Buenos Aires, 6.IX.1941, A. Rossi (FMLT, MHNG), **Bolivia** – Santa Cruz, Saavedra Res. Sta. 7.IV.1978, H. Serrate (WBWC); 10 mi W Portachuelo, 27.III.1978, G.B. Marshall (WBWC); 6 km W Santa Cruz de la Sierra, Rio Pirai; Santa Cruz, 10 mi W Pto Banegas, 25.III.1978, G.B. Marshall (FSCA); Beni, 40 km E San Borja, Estancia del Porvenir, 6-8.IX.1987, W.E. Steiner (USNM); Tatarenda (Chaco), coll. C.Felsche Kauf 20, 1918 (SMTD); **Brazil** – (MT) Mato Grosso, S. Rohde (ZMHB); Mato Grosso, Varzea Grande Co., Cuiaba, 20.IV.1972, W.H. Whitcomb (FSCA); (Am) Manaos, leg. Huebner (SMTD), Madeira River above Manaos, IX.1928, L. Prizer (ISEA); (MS) Selviria, 5.XII.1991, C. Flechtmann (CFC); (Sc) Santa Catarina, Nova Teutonia, XI.1972, F. Plaumann (CMN). **Paraguay** – Villarica, Independentia, 25 km E, 28.I.1992, S.& J. Peck (CMN); San Pedro, W Vaca Ihu, Est. Triangulo 180 m, 1-6.XI.1995, F. Bretzendorfer & C. Hauser (ISEA, SMNS). **Peru** – Loreto, 160 km NE Iquitos, Explornapo Camp at Rio Sucusari 2 km from Rio Napo, 27-31.VIII.1992, P. Skelley (PSC); Iquitos, 26.VI.1963, B.K. Dozier; Madre do Dios, Rio Tambopata Res., 30 km SW Pto Maldonado 290 m, 16-20.XI.1979, J.B. Heppner (USNM). **Venezuela** – San Fernando de Apure; Apure, Hato El Frio, between Montecal & El Saman, 7.VI.1988, M. Epstein; Guarico, 8 km N Corozo Pando, 17-18.VI.1984,

F. Eiland (ISEA, USNM); Guarico, 12 km W Valle de La Pascua, 21-22.VI.1996, H.& A. Howden (CMN); Bolivar, 5 km E Caicara, 12-13.VI.1996, H.& A. Howden (CMN).

Distribution. South America (Map 6).

Diagnostic characters. Length 4.1-5-2 mm. Body oblong, piceous, moderately shiny to opaque. Clypeal margin obtusely rounded on each side of rather deep median emargination, sides slightly arcuate to obtuse gena; surface of head everywhere very densely, roughly punctate, punctures on sides often confluent. Pronotum transverse, almost parallel-sided, strongly margined laterally and basally, lateral crenations distinct; marginal setae short, truncate at ends; surface with scattered minute and moderate, very close punctures becoming slightly larger toward sides, on disc separated by one diameter, on sides contiguous and confluent along lateral margin. Elytra about 2.5 times as long as pronotum, base strongly margined, humeral denticles moderate in size, acute; striae narrow but deep, with a sharp edge on either side, slightly undulate, lateral striae 6-8 wide, in some specimens nearly as wide as intervals or only slightly narrower, strial punctures usually transversely crenate inner margins of intervals, in some specimens crenations weak; intervals 1-5 convex, intervals 6-9 subcarinate to carinate and closely, sometimes roughly punctate,10th interval flat, intervals in apical two-thirds or in apical half more or less distinctly eroded on each side, sometimes lateral intervals slightly eroded from base to apex. Ventral surface slightly alutaceous; metasternal midline impressed, disc finely punctate throughout; abdominal sternites uniformly fluted along sutures and punctate from side to side, punctures on sides only slightly larger than those at middle, everywhere separated by about one diameter. Profemur with deep perimarginal groove and roughly punctate surface; apical spur of protibia straight in both sexes; meso- and metafemora with rather strong, complete posterior line; basal tarsomere of metatarsus one-third longer than upper tibial spur and subequal or equal to following four tarsomeres combined.

Male. Pronotum usually wider than in female, penultimate abdominal sternite shorter, disc of pygidium longer; genitalia as in Fig. 10.

Female. Body usually more shiny than in male.

Remarks. *Ataenius impiger* is a rather atypical member of the *strigatus* group, sharing a combination of characters also with *A. strigicauda* group of species (revision in preparation). However, the peculiar male genitalia do not correspond to those of the *strigicauda* group, nor to those of any other species group. This widely distributed and very variable species (as indicated in the description) is most similar externally to *Ataenius apicalis*, but may be easily distinguished from that species by the characters given in the key. The specimens were collected in various habitats, including: in cattle droppings on pastures with *Brachiaria decumbens* complex, at light in riverine forest, and in tropical humid forest, and several specimens were taken from a sealed shipment of tropical fish.

8. *Ataenius apicalis* Hinton
(Figs. 11, 21, Map 3)

Ataenius apicalis Hinton, 1937: 195, figs 40-44.- Cartwright, 1948: 151; Woodruff, 1973: 113; Cartwright, 1974: 98-99; Dellacasa, 1988: 89 (catalogue).

Type data. Holotype "Mexico, Veracruz, Minatitlan", No 68188 in USNM.

Material examined. Specimens (103). **Honduras** – Atlantida, 6 km W Tela, 5.XII.1995, R. Turnbow (RTC). **Mexico** – Jalisco, Chapala; Sinaloa, Culiacan; Veracruz, Lake Catemaco, 20.IV – 1.V.1969, H.& A. Howden (HAHC); Sinaloa, Mazatlan, 1-2.VII.1964, P.J. Spangler (ISEA); Tabasco, La Chontalpa, 29.IV,1973, G. Ekis (ISEA); Oaxaca, Jaltepec Isth., Tehuantepec, 21.V.1964, F.S. Blanton (USNM); Chiapas, Chancala, Estrella 250 m, 29.VI.2002, M. Dellacasa & M. Martinez (MSNUP); Chiapas, Rte 186 via Catazaja, 250 ft, 22.V.1972, P.A. Meyer (CMN); Chiapas, Palenque 100 m, 2-5.VII.1983, S.& J. Peck (HAHC). **USA** – **Alabama**, Limestone Co. Limestone Creek@Nicle Davis Road, 2.VI.1984, S.C. Harris; Marion Co, Luxapallila Creek@Co. Hwy 3, 25.VI.1985, S.C. Harris (PKLC); **Louisiana**, New Orleans 16.III.1945, coll. S. Endrodi (HNHM); **Mississippi**, Lafayette Co, 7 mi NW Oxford, 23.VII.1979, P.K. Lago; Madison Co, 10 mi NE Canton, 6.V.1979, P.K. Lago; George Co, 12 mi SW Lucedale, 19.V.1987, P.K. Lago; Simpson Co, 3.5 mi SSW Mendenhall, 30.VIII.1985, P.K. Lago; (PKLC), Oktibbeha Co, Starkville, 29.V1981, R.L. Brown; Adams Co, Cowpen Point, 26.VI.1992; Neshoba Co, Burns de Lake Park, 31.VIII.1984, P.R. Miller; Washington Co, Leroy Percy State Park, 28.IV.1993, R.L. Brown; Sharkey Co, Delta National Forest, 18.VIII.1993, T.L. Schiefer

Map 6. Distribution of *Ataenius impiger* Schmidt.

(MSUC). **Texas**, Orange Co. 14-28.VIII.1953, L.P. Beamer; Harris Co, 4.XII.1928, A.M. James (HNHM).

Distribution. Most of the eastern USA (see Cartwright, 1974, fig. 16), south through Mexico to Honduras (Map 3).

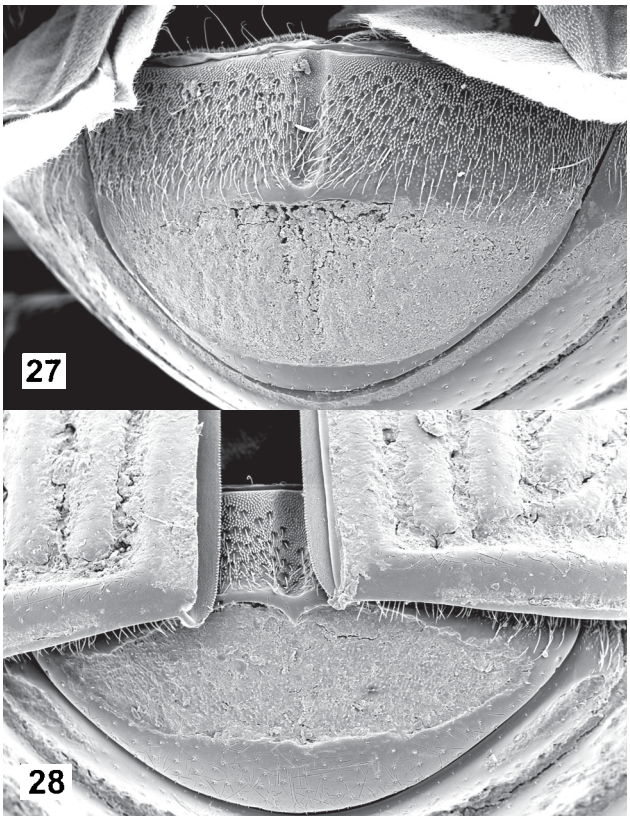
Diagnostic characters. Length 4.0-5.0 mm. Body moderately convex, oblong, shiny black. Clypeus broadly, shallowly emarginate, sides nearly straight to right-angled gena; clypeal surface weakly transversely rugulose over anterior third, middle of head usually finely punctured, in some specimens punctures minute, scattered or nearly imperceptible. Pronotum rectangular, posterior angles obtusely rounded, marginal setae short, crenations inconspicuous; surface everywhere with mixed fine and moderate punctures, the latter separated by 1-3 times their diameters, sometimes slightly closer on sides. Elytra 2.7 times as long as pronotum, moderately convex, humeri very finely dentate; striae rather fine, strial punctures fine, close, more or less distinctly transversely crenating inner margins of intervals; discal and lateral intervals subconvex or flat, subcarinate apically, usually eroded on each side in apical third or in apical fourth (Fig. 21), rarely erosion is scarcely visible or even lacking, surface of intervals usually slightly microreticulate, often with minute punctures. Metasternum smooth, shiny, midline fine, disc with scattered minute punctures; abdominal sternites with fine to moderate punctures from side to side, punctures laterally deeper, separated by about their diameter. Profemoral surface variably punctured, in some specimens with group of contiguous punctures, in some with large elongate punctures below tibial insertion; terminal spur of protibia straight in both sexes; metafemur with incomplete posterior line and 2-3 coarse punctures at knee; basal tarsomere of metatarsus one-third to one-fourth longer than upper tibial spur and subequal to following tarsomeres together.

Male. Body more slender than in female, clypeal rugulae weak or absent; penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia acutely pointed, slightly curved downward; genitalia as in Fig. 11.

Female. Punctures of pronotum usually larger and closer than in male.

Remarks. *Ataenius apicalis* is similar in general appearance to *A. strigatus* and *A. fattigi* but it differs from these species by having relatively longer elytra with significantly closer strial punctures and with intervals posteriorly more or less distinctly eroded. The latter character is shared in part with the closely allied *A. impiger*. Occasionally, specimens of *A. strigatus* show traces of interval erosion on the elytral apex, and these individuals may easily be confused with *A. apicalis*; however, the characters presented in the key should be sufficient to separate the two species. In the USA, specimens have been collected in raccoon dung and human feces; other specimens, as indicated on data labels, were attracted to light and found in cow dung on borders of swamp forest, in *Typha* marsh, in fungi and in rainforest litter. Phenology of *Ataenius apicalis* and reproductive features were discussed by Martinez and Cruz (2002), and its occurrence in southern states of Mexico was reported by Galante *et al.* (2003).

9. *Ataenius glabriventris* Schmidt
(Fig . 12, Map 1)



Figures 27-28. Pygidium. 27) *A. erratus* Fall; 28) *A. cognatus* (LeConte).

Ataenius glabriventris Schmidt, 1911: 52.- 1922: 433; Dellacasa, 1988: 275 (catalogue).

Material examined. Holotype labeled "Typus," "Mexico," "*A. glabriventris* m.", in NRS. Other specimens (179). **Costa Rica** – Guanacaste, 3 km N Canas, Hac. La Pacifica, 90 m, 9-11.VIII.1987, H.& A. Howden (CMN); Prov. Heredia, F. la Selva 3 km S Puerto Viejo, 2.VII.1991, H.& A. Howden (HAHC). **El Salvador** - S Area, 11.V.1971, H.& A. Howden (CMN). **Guatemala** – Zacapa, 5 km SW Rio Hondo, 17.VI.1993, H.& A. Howden; Santa Rosa, Los Esclavos 3 km S Cuilapa 1200 m, 23.VI.1993, H.& A. Howden (HAHC). **Honduras** – Morazan, 7 km N Guinope, 1200 m, 27.V.1994, H.& A. Howden (HAHC). **Mexico** – Veracruz, Mocambo, 15 km S Veracruz, 11.VII.1981, W. Steiner (USNM); Veracruz, 19 mi NE Totutla 2500 ft, 25.VII.1973, A. Newton (ISEA); Oaxaca 1.5 mi E Zopilote, Carr. Panam. 5.VI.1987, W. Warner (ISEA); Oaxaca, 8 km NW Dias Ordaz 2400 m, 15.VI.1979, H.& A. Howden (HAHC). **Panama** - Canal Zone, Balboa, 3.VI.1977, H.& A. Howden (CMN); Pta Paitilla, 21.V.1970, H. Hespenheide (ISEA). **Venezuela** - Maracay, 6.VI.1951, 14.VI.1953, H.E. Box (USNM); Guarico 12 km W Valle de la Pascua, 21-22.VI.1996, H.& A. Howden (HAHC); Guarico, Corozo Pando (8 km N), 17-18.VI.1884, F.W. Eiland & V. Linares (USNM); Guarico, Calabozo, Est. Biol. 18.VIII.1961 (MHNG); Bolivar, 20 km E El Palmar, 18.VI.1996, H.& A. Howden (CMN); Bolivar, 22 km E Upata, 18-19.VI.1996, H.& A. Howden (HAHC); Bolivar, Guri, 12.VII.1998, H.& A. Howden (ISEA).

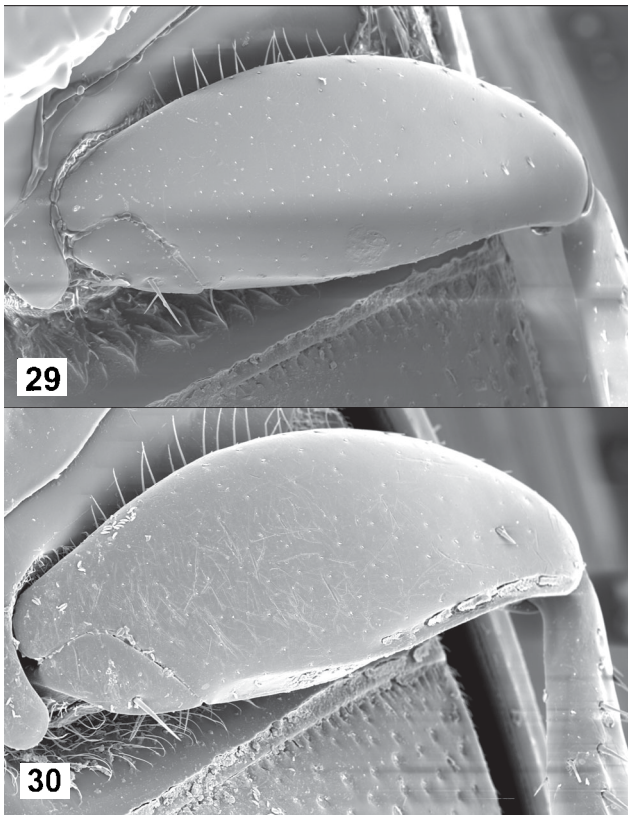
Distribution. Southern Mexico throughout Central America to Venezuela (Map 1).

Diagnostic characters. Length 4.0-5.8 mm. Body elongate-oblong, strongly shiny, black. Clypeal margin rounded on each side of moderate median emargination, gena right-angled; clypeal surface from anterior margin upward over median gibbosity with coarse transverse wrinkles, vertical area with band of close, deep punctures separated by about one diameter. Pronotum transverse, convex, sides slightly arcuate toward obtusely rounded posterior angles, side margin without setae, or setae inconspicuous; surface punctures generally medium-sized,on disc separated by one to three times their diameters, on sides slightly larger, separated by one to two times their diameters. Elytra slightly arcuate, humeral denticles small, striae impressed with punctures crenating inner margins of intervals; intervals shiny, slightly convex, lateral intervals not different. Ventral surface strongly shiny; mesosternum shagreened, pubescent; metasternum convex, midline impressed, disc smooth, impunctate; abdominal sternites very finely, uniformly fluted along sutures, surface smooth, impunctate; disc of pygidium not eroded, shiny with transverse row of coarse punctures. Profemur smooth, perimarginal groove fine; meso- and metafemora without posterior lines, smooth shiny; terminal spur of protibia straight in both sexes; meso- and metatibiae slender, tarsi slender; basal tarsomere of metatarsus about one-fourth longer than upper tibial spur and longer than three following tarsomeres combined.

Male. Penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 12.

Female. Clypeal wrinkles coarser than in male, punctures of pronotum denser.

Remarks. *Ataenius glabriventris* is most closely allied to *A. purator* and *A. cartwrighti*, but is easily recognizable by having the abdominal sternites



Figures 29-30. Ventral surface of metafemur. 29. *A. cognatus* (LeConte); 30. *A. spretulus* (Haldeman).

strongly shiny and smooth, and the disc of pygidium punctate, not eroded. The latter character states converge with those shared by all species of the genus *Ataeniopsis* Petrovitz (Stebnicka 2003a). As indicated on data labels, specimens examined were collected from May through August in light traps in open forest, occasionally in a great numbers. *Ataenius glabriventris* was recently recorded from southern Mexico by Galante *et al.* (2003).

10. ***Ataenius strigatus*** (Say)
(Figs. 13, 33)

Aphodius strigatus Say 1823: 212.- Haldeman 1848: 106.

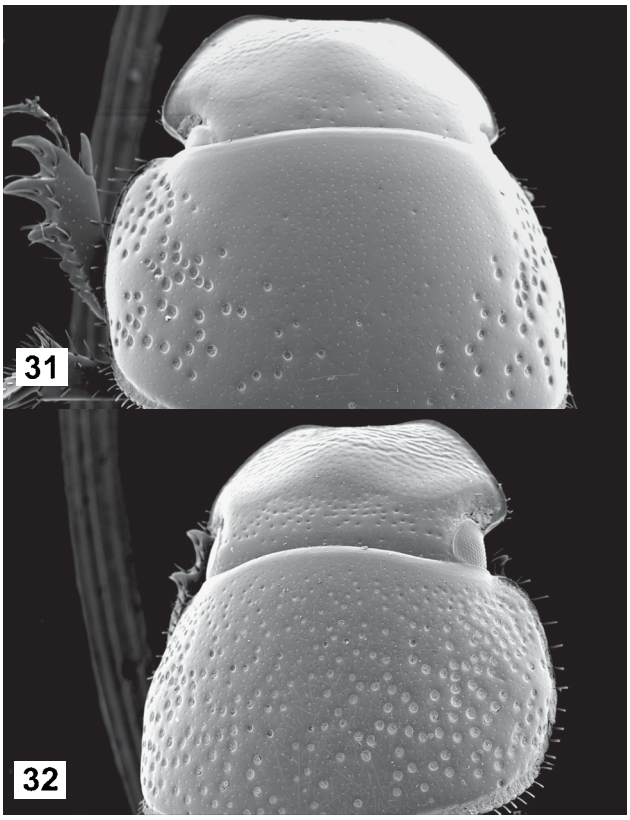
Ataenius strigatus: Gemminger and Harold 1869: 1067; Horn 1887: 82; Schmidt 1922: 428; Fall 1930: 101; Cartwright 1948: 151; Woodruff 1973: 132-133; Cartwright 1974: 95-96; Dellacasa 1988: 281 (catalogue).

Type data. Neotype "Pennsylvania, 5 mi NW Davidsburg, 9.IX.1968, J. Spangler", designated by Cartwright (1974), No 71751 in USNM.

Material examined. Specimens (63). **Canada** - Ontario, Lake Erie, 17.V.1962, J. Schulze (ZMHB). **USA** – **Illinois**, Knoxville, 4.VI.1979, A.C. Ashworth (PKLC); **Indiana**, Monroe Co, Bloomington, 19.VIII.1987, F.N. Young ; Montgomery Co, Crawfordsville, 25.V.1975, J.W. Smith (PKLC); **Iowa**, Osceola Co. 2 mi S Ocheyedan, 27.V.1981, P.K. Lago (PKLC); **Kansas**, Johnson Co, Shawnee, 20.VII.1975, P.K. Lago (PKLC); **Maryland**, Greenholt, 1.VIII.1970, G. Puthz. (ZMHB); **Michigan**, Selfridge Field, 27.VI.1944, B. Malkin (ISEA); **Mississippi**, Adams Co, Natchez, 1.VI.1979, A.E. Zuccaro, Jr.; Warren Co , Vicksburg, 19.V.1985, W.R. Martin (PKLC) ; Oktibbeha Co. Starkville, 25.III.1981, W.H. Cross; Hancock Co, 2 mi N Waveland, 23.V.1982, W.H. Cross; Panola Co, 6 mi SW Como, 2.VIII.1979; Pontotoc Co. 1 mi SE Ecru, 24.IV.1980, W.H. Cross (MSUC); **Nebraska**, Lancaster Co. Lincoln, 11.VII.1971, B.C. Ratcliffe (ISEA); **New Jersey**, Guttenberg, 23.IX.1943, leg. Soltan (ISEA); **Tennessee**, Madison Co. Rte. 152, 1 mi W I-40, 6.III.1988, P.W. Kovarik (PKLC); **Virginia**, Arlington Va. 20.VII.1987, F.W. Poos (ISEA).

Distribution. USA – almost all of the contiguous 48 states (see Cartwright 1974, fig. 8). Most records are, however, from east of the 100th meridian and north of the Gulf Coastal Plain.

Diagnostic characters. Length 3.8-5.5 mm. Elongate-oblong, shiny black, legs usually reddish black. Clypeal margin widely rounded on each side of shallow median emargination, sides nearly straight to right-angled gena; surface usually with weakly marked transverse wrinkles and fine punctures throughout. Pronotum with nearly straight and parallel sides, obtuse posterior angles and sinuate base, setae of lateral fringe short, crenations distinct at posterior angles; surface punctures mixed minute to fine and moderate to coarse, variable in size and spacing, on sides usually very close, often contiguous. Elytral humeral denticles rather strong, striae narrowly impressed, strial punctures crenating inner margins of intervals; discal intervals slightly convex or flat, punctures very fine scattered or invisible. Metasternal midline deep, disc with very fine sparse punctures; abdominal sternites punctate from side to side, 5th sternite with large elongate pore at extreme side. Profemur grooved anteriorly and closely roughly punctate on posterior face (Fig. 33); metafemur with incomplete posterior line and 1-2 setigerous punctures at knee;



Figures 31-32. Head and pronotum. 31) *A. stephani* Cartwright; 32) *A. californicus* Horn.

first tarsomere of metatarsus longer than upper tibial spur and equal to, or slightly longer than following three tarsomeres combined.

Male. Punctures of metasternum bear extremely short setae; penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia distinctly sinuate; genitalia as in Fig. 13.

Female. Clypeal wrinkles more distinct than in male, punctures of pronotum usually coarser and closer.

Remarks. *Ataenius strigatus* is the earliest described in the group. Due to taxonomic confusion, most early records of this species were given under the names "*stercorator*" and "*cognatus*." It is most closely related to *A. wenzelii* and to *A. spretulus* (see Remarks under these species) and shows considerable variation, particularly in the pronotal and elytral characters. Occasionally, specimens show traces of interval erosion on the elytral apex and these may be confused with *A. apicalis*, but the characters of the head, posterior femur and posterior tibial fringe as presented in the key should separate them. This species is very common in the United States and is found most often in cow dung and at light. A small series was taken among the roots of grasses growing on the muddy banks of a small stream in northwestern Iowa.

11. *Ataenius fattigi* Cartwright
(Fig. 14, Map 4)

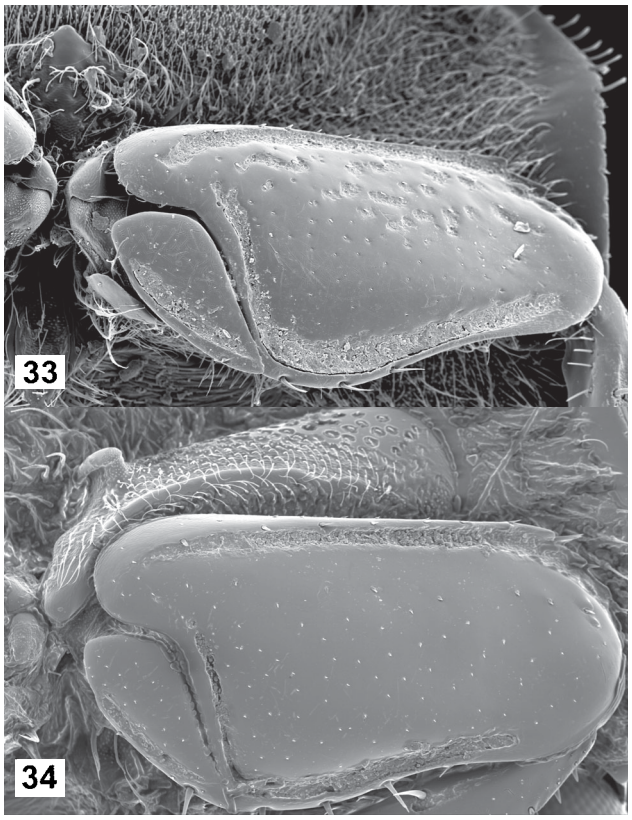
Ataenius fattigi Cartwright, 1948: 151-153.- Woodruff 1973: 116-117.; Cartwright 1974: 99-100; Dellacasa 1988: 274 (catalogue).

Type data. Holotype "Georgetown Co. South Carolina", No 58821, in USNM.

Material examined. Paratypes (3). 1 -"Blackville S.C. Edisto Exp. Sta. 1.IV.1938, O.L. Cartwright" in ZMHB; 2 – "Yemassee S.C. 22.VIII.1945, O.L. Cartwright", in HNHM. Other specimens (36) **USA – Alabama**, Lee Co. Choctafaula Ck @ Hwy 26, 28.V.1984, S.C. Harris (PKLC); Baldwin Co, Weeks Bay NER Reserve, 3.VIII.2000, B.A. Smith (MSUC); **Florida**, Highlands Co. Archbold Biol. Sta. 9 mi S Lake Placid, 4.VIII.1988, 30.VI.1988, P. Skelley; Gainesville, 30.VIII.1979, P. Choate (ISEA); **Mississippi**, Stone Co, Univ. of MS forestlands; 18.V.1978, P.K. Lago; Oktibbeha Co. Craig Springs, 21.I.1975, Wm. Scott; Harrison Co, 2 mi N Lyman, 25.V.1980, P.K. Lago; Tishomingo Co, Tishomingo State Park, 8.IX.1980, P.K. Lago; Sharkey Co, Delta National Forest, 7.VI.1996, D. Dakin; Jackson Co. Univ. of MS forestlands; 10.III.1990, P.K. Lago; Wayne Co. 16.5 mi SW Waynesboro, 15.VI.1987, P.K. Lago; Hinds Co, Clinton, MC Campus, 6.IV.1986, B.P. Stark; Stone Co, Red Creek @ Hwy 15, 18.V.1987, P.K. Lago (PKLC); Oktibbeha Co, MSU Campus, 8.VI- 10.VII.1979, R. Combs and J. MacDonald; Webster Co. Bellefontaine, 31.VII.1980, R. Combs and J. MacDonald (MSUC); **South Carolina**, Aiken Co, Upper Three Runs SRP Rd C, 5.VI.1984, B. Kondratieff (PKLC);.

Distribution. Primarily coastal states along both the Gulf of Mexico and the eastern seaboard in the USA, with disjunct records from a few interior states (WI, MI, WV) (Map 4).

Diagnostic characters. Length 4.8-6.0 mm. Body oblong, shiny black, legs usually brownish piceous. Head relatively broad, clypeal margin broadly rounded on each side of moderate median emargination, sides arcuate to right-angled gena; sculpture



Figures 33-34. Ventral surface of profemur. 33) *A. strigatus* (Say); 34) *A. spretulus* (Haldeman).

of head variable, surface usually with faint traces of rugulosity and fine punctures over front of clypeus, a wide band of close punctures across vertex. Pronotum rectangular with slightly arcuate sides and distinctly marked posterior angles, setae of lateral fringe moderate to short, lateral crenations scarcely visible; surface punctures mixed very fine and moderate to coarse, variable in size and spacing, on sides usually closer, often strongly concentrated at anterior angles. Elytra parallel-sided, humeral denticles strong, striae deep, crenately punctate; discal intervals almost flat, strongly convex at apex, surface punctures fine irregularly scattered. Metasternal midline deeply impressed, disc with very fine sparse punctures and group of coarser punctures posteriorly; abdominal sternites punctate from side to side, coarse punctures on sides gradually finer across middle. Profemur grooved anteriorly, surface smooth, shiny, finely punctate; metafemur with incomplete posterior line; basal tarsomere of metatarsus longer than upper tibial spur and longer than following three tarsomeres together.

Male. Penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia distinctly sinuate; genitalia as in Fig. 14.

Female. Clypeal rugulae more distinct than in male, punctures of pronotum usually coarser and closer.

Remarks. This species is most closely related to *Ataenius spretulus* and *A. cognatus*; differing from both species by having the anterior pronotal angles with a group of coarse, close punctures. Specimens examined were collected at light, under broken leaves, twigs and surface litter along paths of hard ground in woodlands, others were reported as possible pests of "Tidwarf Bermuda grass." Specimens are commonly taken in cow dung and may be found occasionally in other types of fecal material.

12. *Ataenius erratus* Fall
(Figs. 15, 23, 27, Map 7)

Ataenius erratus Fall 1930: 96.- Cartwright 1948: 149; Woodruff 1973: 115-116; Cartwright 1974: 75-76; Dellacasa 1988: 125(catalogue).

Type data. Holotype "Enterprise, Florida," in MCZ.

Material examined. Specimens (25). **USA – Alabama**, St. Clair Co, Beaver Creek @ Hwy 26, 19.VII.1982, S.C. Harris; Marion Co, 5 mi ESE Hamilton, 25.VI.1985, S.C. Harris; Chambers Co, 5 mi WNW 5 Points, 5.VI.1989, S.C. Harris; Chilton Co, 2 mi S Maplesville, 31.V.1985, S.C. Harris (PKLC); **Florida**, Highlands Co. Archbold Biol.Sta 8 mi S Lake Placid, 1.VII.1988, P. Skelley; Alachua Co. Gainesville, 5.III.1978, P.M. Choate (ISEA); **Mississippi**, Oktibbeha Co, MSU Campus, 14.VI.1978, R. Combs and J. MacDonald; same location, 8.VI.1979, R. Combs and J. MacDonald; same location, 5.VIII.1980, R. Combs and J. MacDonald; Oktibbeha Co, 3 mi W Adaton, 15.VII.1999, T.L. Schiefer, Clarke Co, Clarkco State Park, 26.VI.1984, P.K. Lago (PKLC); Oktibbeha Co, Adaton, 26.VI.1981, W.H. Cross (MSUC) **South Carolina**, Clemson College, 16.VII.1935, O.L. Cartwright (HNHM); Moncks Corner, 7.VII.1976, O.L. Cartwright; Charleston, 15.VI.1930, O.L. Cartwright (HNHM, ISEA); Effingham Co, 2 mi W Meldrim, 1.VII.1983, A.C. Benke (PKLC).

The apparent disjunct records from Ohio and Texas recorded by Cartwright (1974) (solid squares, Map 7) would indicate a somewhat wider distribution for this uncommonly encountered species.

Diagnostic characters. Length 4.5-5.8 mm. Body elongate, more convex posteriorly, moderately shiny, piceous or reddish black. Clypeal margin broadly rounded on each side of shallow median emargination, sides nearly straight to right-angled gena; surface of clypeus sometimes with vague rugulae, evenly finely punctate throughout. Pronotum relatively short, feebly convex, posterior angles widely rounded from arcuate sides to base, setae of lateral fringe rather short; crenations distinct; surface punctures fine and moderately coarse, the latter irregularly spaced, not dense, on sides usually closer. Elytra long, 2.4 to 2.7 times as long as pronotum, humeri not noticeably dentate, strial punctures very finely crenating inner margins of intervals; intervals moderately convex and minutely alutaceous, surface punctures scattered, very fine or nearly invisible. Mesosternum without noticeable mesocoxal carina; metasternal midline inconspicuous, disc shiny, with very fine sparse punctures; abdominal sternites uniformly finely punctate from side to side, punctures generally separated by 3-4 times their diameters, erosion of pygidial disc extensive (Fig. 27). Profemur deeply grooved anteriorly, surface alutaceous, posterior face finely punctate; posterior line of mesofemur complete, decreasing in depth to trochanter, arching and widening forward; metafemur with incomplete posterior line and slightly alutaceous surface; meso- and metatarsi longer than tibiae, first tarsomere of metatarsus longer than upper tibial spur and equal to following three tarsomeres combined.

Male. Disc of metasternum widely concave, abdominal sternites flattened medially, penultimate sternite shorter than in female, terminal spur of protibia strongly incurved apically; genitalia as in Fig. 15.

Female. Disc of metasternum less concave than in male, abdominal sternites convex.

Remarks. *Ataenius erratus* is a typical member of the *strigatus* group, being closely related to *strigatus-wenzelii* on one hand, and to *spretulus-fattigi* from the other. It differs from all these species by its relatively long elytra and tarsi and the posterior line of mesofemur arching forward away from the hind margin. Specimens examined were mostly attracted to light. Other label data (Woodruff 1973) include: fruit of *Ocotea catesbyana*, *Solanum tuberosum*, *Pinus clausa* debris, floated from *Solenopsis geminata* nests (Alachua Co., FL)

12. *Ataenius spretulus* (Haldeman) (Figs. 16, 30, 34)

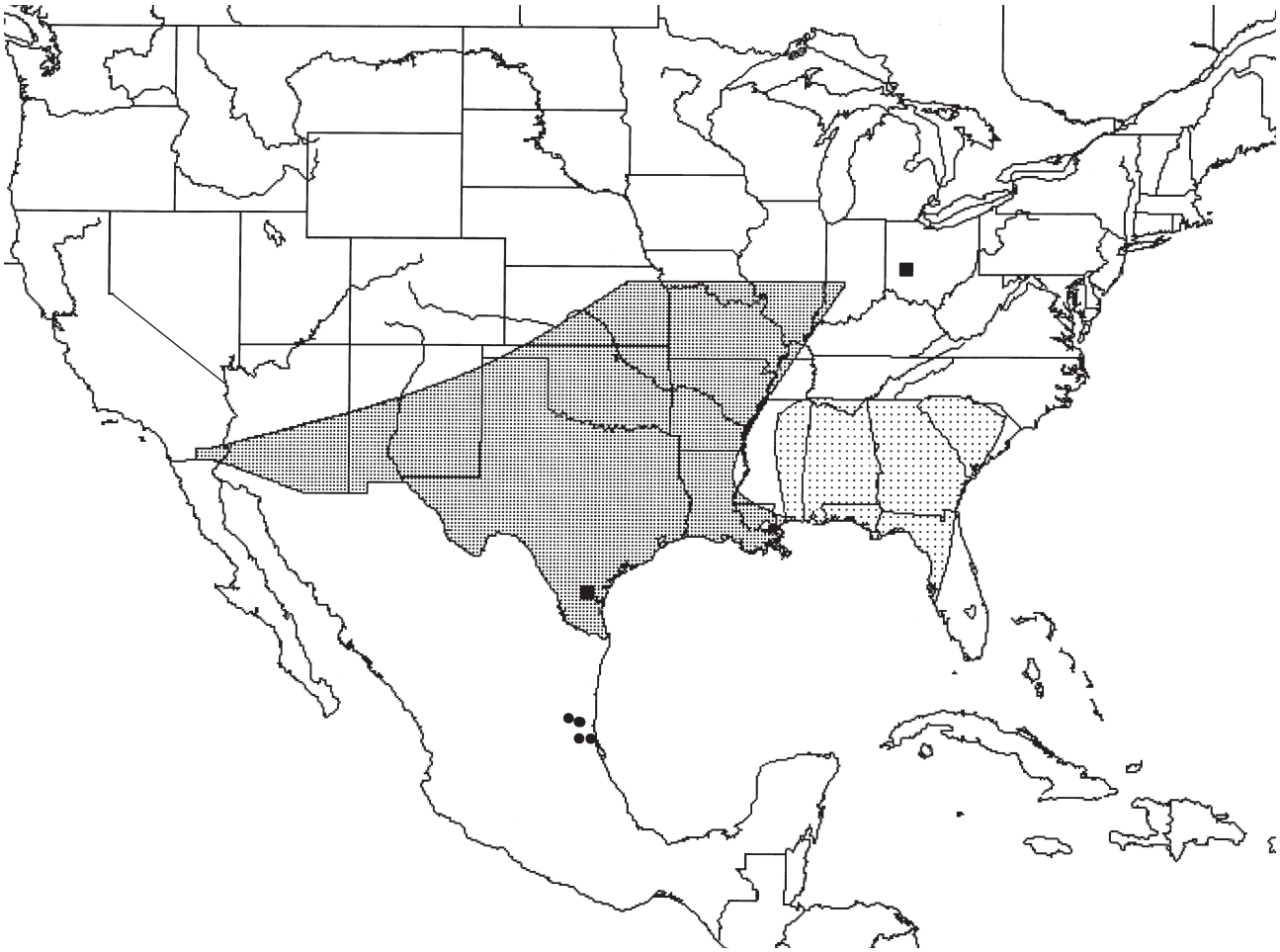
Aphodius spretulus Haldeman 1848: 106.
Ataenius spretulus: Gemminger and Harold 1869: 1067 (as synonym of *strigatus* Say); Horn 1887: 109; Cartwright 1943: 108; 1948: 150; Woodruff 1973: 131-132; Cartwright 1974: 89-90; Dellacasa 1988: 201 (catalogue).
Ataenius consors Fall 1930: 104 (non Blackburn, 1904: 161).- Cartwright 1943: 108 (as synonym of *spretulus*).
Ataenius falli Hinton 1934: 119.- Cartwright 1943: 108 (as synonym of *spretulus*).

Type data. Holotype "Middle States", No 8358, in MCZ.

Material examined. Specimens (72). **USA** - **Alabama**, Tallapoosa Co, Tallapoosa River @ Hwy 66, 25.V.1984, S.C. Harris (PKLC); **Arizona**, Tempe, 4-5.IX.1962 (ISEA); **Indiana**, Monroe Co., Bloomington, 27.XI.1986, F.N. Young (HNHM); Montgomery Co, Crawfordsville, 25.V.1975, J.W. Smith; Monroe Co, Bloomington, 19.VIII.1987, F.N. Young (PKLC); **Iowa**, Lucas Co, 4 mi N Chariton, 26.VIII.1979, P.K. Lago; Osceola Co, 2 mi S Ocheyedan, 25.V.1981, P.K. Lago (PKLC); **Kansas**, Johnson Co, Shawnee, 20.VII.1975, P.K. Lago (PKLC); **Mississippi**, Pearl River Co., O.L. Cartwright (ISEA); Lafayette Co, Oxford, 2.IX.1976, P.K. Lago; Jackson Co, Ocean Springs, 12 VIII.1977, S. Hurdle; Adams Co. 5 mi N Natchez, 22.V.1978, P.K. Lago; Oktibbeha Co, Starkville, 19.IX.1975, W.H. Cross (PKLC); **New York**, West Point, 19.IV.1909, leg. Robinson; Lake Ontario, IX.1962, K. Lenczy (HNGM); **Pennsylvania**, Hatfield, 1963, J. Balogh (HNGM); **Texas**, Goliad Co, Goliad State Park, 14.V.1982, P.K. Lago, San Patricio Co, Welder Wildlife Refuge, 13.V.1985, P.K. Lago; (PKLC); **Washington**, Asotin Co., Clarkston, 7.VIII.1998, H. Brown, ex. golf course turf (new state record) (WSUC).

Distribution. USA – almost all states except for the far West (see Woodruff 1973, figs. 288, 289 and Cartwright 1974, fig.15). As is true for the distribution of *A. strigatus*, most of the records for this species are from east of the 100th meridian.

Diagnostic characters. Length 3.6-5.5 mm. Body oblong, moderately shiny, black, legs usually reddish black. Head relatively small, clypeal margin widely rounded on each side of moderate median emargination, sides nearly straight to right-angled



Map 7. Distribution of *Ataenius cognatus* (LeConte) (dots and dark shading) and *A. erratus* Fall (squares and light shading - squares represent records from locations considerably disjunct from main distribution)

gena; surface usually with weak, often invisible transverse rugulae and fine punctures medially, lateral area of head with few scattered punctures or nearly smooth. Pronotum transverse, posterior angles rather widely rounded, setae of lateral fringe moderate to short, partially lacking; surface punctures mixed minute to medium-sized, the latter irregularly spaced on sides, usually separated by one to three times their diameters. Elytral humeral denticles fine, striae narrowly impressed, strial punctures crenating inner margins of intervals; discal intervals slightly convex, punctures extremely minute or nearly invisible. Metasternal midline deep, disc with very fine sparse punctures; abdominal sternites punctate from side to side, 5th sternite with large elongate pore at extreme side. Profemur deeply grooved, shiny anteriorly, posterior face shiny, with few small punctures (Fig. 34) metafemur with incomplete but rather strong posterior line (Fig. 30); first tarsomere of metatarsus longer than upper tibial spur and subequal to following three tarsomeres combined.

Male. Punctures of metasternum bear extremely short setae; penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia distinctly sinuate; genitalia as in Fig. 16.

Female. Clypeal rugulosity more distinct than in male, punctures of pronotum usually coarser and closer.

Remarks. *Ataenius spretulus* was synonymized with *A. strigatus* by Gemminger and Harold (1869) and was not recognized until 1943, when Cartwright reestablished the name. It was also often confused with *A. cognatus*, thus most earlier records are unreliable. This species is very similar in a general appearance to *A. strigatus* and *A. cognatus*, but differs from both these species by the characters given in the key and by the shape of the male

genitalia (Fig. 16). Specimens examined were collected at light, found in cow dung and in deer droppings, and beneath piles of decaying *Chara* and weed debris along ditches.

14. *Ataenius cognatus* (LeConte)
(Figs. 17, 28, 29, Map 7)

Aphodius cognatus LeConte 1858: 65.
Ataenius cognatus: Gemminger and Harold 1869: 1066; Horn 1887: 83; Schmidt 1922: 424; Fall 1930: 106; Cartwright 1948: 150; Cartwright 1974: 92-93; Dellacasa 1988: 111 (catalogue).

Type data. Lectotype "Texas", designated by Cartwright (1974), No 3732, in MCZ.

Material examined. Specimens (259). **Mexico** – **San Luis Potosi**, Cd Valles, Palma Motel, 8-23.VII.1969, S.& J. Peck (CMN); 10 km E Cd Valles, 21.VII.1988, R. Turnbow (RTC); **Tamaulipas**, Cd Mante, 5-8.VII.-23.VII.1969, S.& J. Peck (CMN); Ocampo Rd, 31.V.1982, R. Turnbow (RTC); San Fernando, 25.IX.1981, M.H. Cross (PKLC); **Nuevo Leon**, 5 km S Monterey, 6.VII.1963, H.& A. Howden (HAHC). **USA** – **Arizona**, Cochise Co, Guadelupe Cyn, 30 mi E Douglas, 25.VII.1985, P.K. Lago; Cochise Co, Wilcox, 22.VII.1985, P.K. Lago; Cochise Co. Ft. Bowie Monument Area, Chiricahau Mts., 30,VII.1991, P.K. Lago; **California**, Fresno Co, 6 mi N Dinuba, 24.VI.1989, C. Busack (PKLC); Ripley, Riverside Co. 24.VII.1946; Blythe, Riverside Co. 27.VI.1946, coll. Endrodi; Imperial Co. Algodones Dunes 3.5 mi SE Glamis, 22.IX.1977, F.G. Andrews & A.R. Hardy; **Texas**, Menard, 6.VII.1947, 27.I.1947, L.J. Bottimer; **Indiana**, Monroe Co., Bloomington, 18-19.IX.1980, F.N. Young (HNHM, ISEA); **Mississippi**, Harrison Co. Keesler Air Force Base, 6.VI.1972, R. McManaway (PKLC); **Missouri**, no additional data; **Arizona**, Portal Arizona, VII.1968, R. Lenczy; Tempe, 4-5.IX.1962 (ISEA); **Texas**, Kerr Co, Kerrvilel, 25.V.1983, J.C. Burne; San Patricio Co, Welder Wildlife Refuge, 13.V.1985, & 15.V.1985, P.K. Lago; Lubbock Co, Lubbock, 29.VIII.1989, T. Doederlein (PKLC)

Distribution. Southwestern and middle United States, from southern California east to northern Kansas, Louisiana (see Cartwright 1974, fig. 14), Indiana, Missouri, Mississippi (new state records) and northeastern Mexico (Map 7).

Diagnostic characters. Length 4.2-5.5 mm. Body elongate-oblong, shiny black, legs usually reddish black. Clypeal margin broadly rounded on each side of shallow median emargination, sides slightly arcuate to right-angled gena; clypeal surface with transverse wrinkles above emargination and fine punctures throughout becoming larger and closer basally. Pronotum with nearly parallel sides and arcuate base, setae of lateral fringe moderate, crenations scarcely visible; surface punctures mixed minute and medium-sized, the latter always shallow and microreticulate inside, usually closer laterally but never contiguous. Elytral humeral denticles moderate, striae deeply impressed, strial punctures crenating inner margins of intervals; discal intervals slightly convex, punctures extremely minute or nearly invisible. Ventral surface strongly shiny; metasternal midline deep, disc with sparse punctures; abdominal sternites punctate throughout. Profemur grooved, surface smooth; meso- and metafemora fusiform without trace of posterior lines (Fig. 29); first tarsomere of metatarsus longer than upper tibial spur and longer than following three tarsomeres combined.

Male. Disc of metasternum with patch of moderate, setigerous punctures posteriorly; penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia sinuate; genitalia as in Fig. 17.

Female. Clypeal wrinkles more distinct than in male, punctures of pronotum usually closer.

Remarks. *Ataenius cognatus* is most similar to *A. strigatus* and *A. spretulus*, but the lack of posterior femoral lines and significantly shallower punctures of the pronotum will quickly distinguish this species. Biological notes recorded for *A. cognatus* by Hoffman (1935) almost certainly refer to *A. strigatus* or *A. spretulus*.

15. *Ataenius oaxacaensis,* sp. n.
(Figs. 1, 18, Map 4)

Type material: Holotype male, Oaxaca, Oaxaca, 12.VII.1968, G. Pollard, in CMN. Paratypes (2), same data as holotype, in ISEA, PKLC.

Description. Length 5.2-6.0 mm. Body elongate, parallel-sided (Fig. 1), slightly alutaceous and moderately shiny; color castaneous, elytra slightly lighter than fore body. Head moderately convex, clypeal margin broadly rounded on each side of shallow median emargination, sides arcuate toward right-

angled gena; surface of head with minute, shallow, scattered punctures throughout, becoming a trifle larger basally. Pronotum rectangular, sides and base margined, lateral crenations weak, lateral fringe composed of moderately long palisade setae separated from each other by less than their lengths; surface punctures mixed minute and fine to moderate, the latter widely scattered on disc, closer toward sides and here separated by 1-2 times their diameters. Elytra parallel-sided, basal bead fine, humeral denticles fine, obtuse; striae narrow, slightly increasingly deeper toward sides, apically as wide as intervals, strial punctures shallowly transversely crenate inner margins of intervals; intervals feebly convex, lateral intervals not different. Ventral surface subopaque; mesosternum shagreened with close pale decumbent setae, carinate between mesocoxae; metasternum slightly concave, midline shallow, surface punctures fine, separated by their diameter; abdominal sternites uniformly fluted along sutures and punctate from side to side, punctures at middle slightly finer than those on sides, separated by about one diameter; eroded disc of pygidium finely scabrous. Profemur with fine perimarginal groove, surface alutaceous, lacking punctures; meso- and metafemora with short and fine posterior lines; terminal spur of protibia straight in both sexes; meso- and metatibiae with lateral row of close pale setae; metatarsus as long as tibia, densely setaceous, basal tarsomere only slightly longer than upper tibial spur and subequal to following four tarsomeres together.

Male. Head broader than in female without trace of transverse rugulae; metasternum with short, pale setae, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 18.

Female. Clypeal surface with very weak transverse rugulae above emargination; marginal setae of pronotum slightly shorter and thinner than in male.

Remarks. *Ataenius oaxacaensis* is most similar to *A. fattigi* and *A. spretulus*, but it may be easily recognized by its castaneous, alutaceous body, the pronotal fringe of close, truncate setae and the densely setaceous tarsi.

16. *Ataenius brevis* Fall
(Fig. 19, Map 2)

Ataenius brevis Fall 1930: 98.- Cartwright 1948: 150; 1974: 87-89; Dellacasa 1988: 101 (catalogue).

Type data. Holotype "Pennsylvania," No 24767 in MCZ.

Material examined. Specimens (6). **USA – Kentucky**, Marshall Co, Aurora, 23.VI.1983, J. Goddard (PKLC); **South Carolina**, River Falls, 27.VIII.1942, O.L. Cartwright (HNHM, ISEA).

Distribution. Eastern United States. The distribution of this species follows the Appalachian Mountains from northern Alabama to New Hampshire (Map 2).

Diagnostic characters. Length 3.4-4.8 mm. Body short oval, shiny black, apex of elytra and legs usually dark rufous. Clypeal margin broadly rounded on each side of wide, shallow median emargination, sides arcuate to right-angled gena; surface very finely evenly punctate, punctures sometimes weakly but perceptibly transversely wrinkled just above emargination. Pronotum subquadrate with nearly parallel sides, setae of lateral fringe very short, crenations scarcely visible; surface with very fine and numerous moderate, irregularly distributed punctures usually becoming closer toward sides and here separated by about one diameter. Elytra short, convex, sides arcuate, humeral denticles strong, acute; striae narrow, crenately punctate; discal intervals smooth, shiny, 10th interval slightly flattened. Metasternal midline deep, disc with fine sparse punctures; abdominal sternites punctate throughout, punctures fine medially to moderate on sides, fluting increasingly longer on each sternite. Profemur deeply grooved anteriorly and closely roughly punctate in posterior face; metafemur with incomplete but strong posterior line; accessory spine of metatibia strong; first tarsomere of metatarsus distinctly longer than upper tibial spur and longer than following three tarsomeres combined.

Male. Penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia shorter, curved downward apically; genitalia as in Fig. 19.

Female. Punctures of pronotum usually coarser and closer.

Remarks. This species is most closely related to *A. glabriventris* and *A. fattigi*. The short, almost quadrate pronotum and short, oval elytra quickly separate *Ataenius brevis* from other species in the group. Habitat unknown, the larva was described by Jerath (1960).

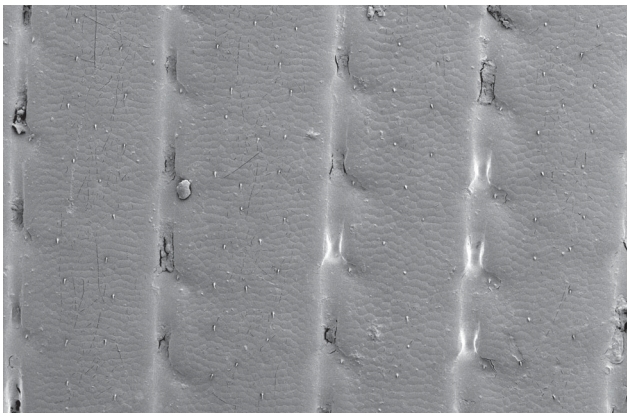


Figure 35. Isodiametric sculpturing of *A. wenzelii* Horn elytra (200x).

17. *Ataenius wenzelii* Horn
(Fig. 20, 24, Map 2)

Ataenius wenzelii Horn 1887: 77.- Robinson 1947: 150; Cartwright 1948: 150; Woodruff 1973: 133-134; Cartwright 1974: 91-92; Dellacasa 1988: 216 (catalogue).
Ataenius ludovicianus Fall 1930: 100.- Cartwright 1948: 150 (as synonym of *wenzelii*)
Ataenius rudellus Fall 1930: 103.- Cartwright 1948: 150 (synonym *wenzelii*?); Woodruff 1973: 133-134; Cartwright 1974: 93-94 (**new synonymy**).

Type data. *Ataenius wenzelii*: holotype "Atlantic City, New Jersey", No 3610, in ANSP. *Ataenius rudellus*: holotype "St Petersburg, Florida", No 24771, in MCZ.

Material examined. Specimens (11). **USA – Florida**, Monroe Co. Bahia Honda St. Park, 1-4.VII.1973, R.E. Woodruff; Monroe Co. Bahia Honda, 13.XI.1983, J.A. Shuey (ISEA); Monroe Co. Sugarloaf Key, 4 June 1983, W.H. Cross; Dade Co. Key Largo, 13 December 1983, at blk lt., R.D. Akre; **Mississippi**, Pearl River Co, 4.5 mi SSW Silver Run, 12.V.1986, S. Testa; Hancock Co, Gulfport, 6.VI.1966, V.H. Owens; Jackson Co, Horn Island, T9S-R7W-Sec 22, 3.VIII.1999, T.C. Lockley; **New Jersey**, Ocean Co, 3 mi S Tuckerton, 15.VI.1983, D.S. Chandler (PKLC).

Distribution. USA – Generally encountered in coastal localities along the eastern seaboard and the Gulf of Mexico, with several records from northeastern Texas, southern Oklahoma and southern Arkansas (Map 2). A single record from northeastern Iowa, reported by Cartwright (1974), requires confirmation.

Diagnostic characters. Length 4.5-5.5 mm. Body elongate-oblong, moderately shiny to opaque, color black, legs reddish. Clypeal margin broadly rounded on each side of shallow median emargination, gena right-angled; surface anteriorly weakly transversely rugulose or not (Fig. 24), middle of head finely punctate. Pronotum rectangular, sides broadly, evenly rounded into base, lateral fringe of moderate setae, crenations distinct at posterior angles and base; surface punctures mixed fine and moderate in size, the latter closer toward sides. Elytra moderately convex, humeral denticles sharply pointed; striae moderately deep, fine with punctures slightly crenating inner margins of intervals; intervals weakly to strongly alutaceous, microreticulate, flat or slightly convex on disc, more convex laterally and apically, lateral intervals usually finely punctate. Metasternum shiny, midline deep, disc finely punctate; lateral metasternal triangle usually smooth; abdominal sternites with progressively longer fluting along sutures, punctate throughout. Profemur with perimarginal groove, surface shiny; posterior marginal line of metafemur fine; basal tarsomere of metatarsus, upper tibial spur and three following tarsomeres combined subequal in length.

Male. Penultimate abdominal sternite shorter than in female, disc of pygidium longer; terminal spur of protibia hooked inwardly; genitalia as in Fig. 20.

Female. Punctures of pronotum closer than in male, terminal spur of protibia straight.

Remarks. This species is most closely related to *A. strigatus*, from which it differs in having the elytral intervals microreticulate, usually alutaceous, and flatter, and in having the posterior surface of the profemur relatively smooth and shiny, with fine punctures only, resembling the condition seen in *A. spretulus*. Cartwright (1948) first suggested that *Ataenius rudellus* Fall may eventually be considered a synonym of *A. wenzelii*. Specimens these "species" are difficult to separate even with comparative material, and we can find only minor differences, all of which fall within the range of variation of *A. wenzelii*.

Catalog
Ataenius strigatus group
(Nearctic and Neotropical Region)

apicalis (Hinton 1937) Eastern USA through Mexico to Honduras

brevis (Fall 1930) Eastern United States

californicus (Horn 1887) USA (Arizona, California, southern Nevada and southeastern Utah)

cartwrighti (Chalumeau and Gruner 1974) West Indies (Guadeloupe)

cognatus (LeConte 1858) USA (southwestern and middle states)

ecruensis Stebnicka and Lago, *sp. nov.* USA (North Carolina, Mississippi)

erratus (Fall 1930) USA (southeastern states)

fattigi (Cartwright 1948) USA (coastal states along Gulf of Mexico)

glabriventris (Schmidt 1911) Southern Mexico throughout Central America to Venezuela

impiger (Schmidt 1914) South America
laterigranulatus (Balthasar 1941)
perpunctatus (Balthasar 1961)

liogaster (Bates 1887) Central America, northern South America, West Indies, Micronesia, Oriental and Australian Regions
orbicularis (Schmidt 1914)
edwardsi (Chapin 1940)
nitidulus (Nomura 1943)
kelatianus (Balthasar 1965)
hoguei (Cartwright and Spangler 1981)

oaxacaensis Stebnicka and Lago, *sp. nov.* Mexico (Oaxaca)

purator (Harold 1868) South America
gothi (Balthasar 1933)
gagates (Petrovitz 1963)
splendens (Endrödy 1963)

spretulus (Haldeman 1848) USA (almost all states)
consors (Fall 1930)
falli (Hinton 1934)

stephani (Cartwright 1974) USA (southeastern Arizona), western Mexico

strigatus (Say 1823) USA (almost all states)

wenzelii (Horn 1887) USA
ludovicianus (Fall 1930)
rudellus (Fall 1930)

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