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ARBOREAL BEETLES OF NEOTROPICAL FORESTS: TAXONOMIC SUPPLEMENT FOR THE *AGRA VIRGATA* AND *OHAUSI* GROUPS WITH A NEW SPECIES AND ADDITIONAL DISTRIBUTION RECORDS (COLEOPTERA: CARABIDAE)

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Abstract

In the genus *Agra*, the *virgata* group is a circum-Amazonian-Middle American lineage, consists of 10 highly characteristic species that have a composite range extending from the tropics of México to Bolivia, east as far as the Brazilian State of Goiás. The majority of species are found on the periphery of the Amazon Basin, the rest in Middle America. Members of the *virgata* group and some brentid beetles (*e.g.*, *Arrhenodes gnatho* (Licht.)) have similar bright and contrasting colors and elytral pattern and are sometimes found together. No connection or interaction between these two is known at present that could explain this similarity. *Agra mime*, **new species,** is described and attributed to the *virgata* group. The type locality is: **Ecuador**: Napo Province, 20 km east of Puerto Napo, Alinahui, 450 m, 01°00′S, 077°25′W.

A revised key and checklist of the *virgata* group species are provided. A map of all known localities for the 10 species in the group is provided. A general discussion is included of the new species, as well as biogeographical notes for 6 additional species for which new locality records were found (*Agra vate, A. nola, A. virgata, A. chocha, A. phainops, A. imaginis*).

The *ohausi* group, a southeastern Brazil lineage, consists of 4 species. Here I report a new synonymy for *A. ohausi* Liebke (=*Agra rugipunctata* Straneo, **n. syn.**).

This paper supplements my previous revision of the *virgata* and *ohausi* groups (Erwin 1986) providing data from newly acquired specimens on loan from museums and from my own recent fieldwork in Middle and South America. I have now studied 131 specimens from these groups. Here I provide a revised key, checklist, new locality records for 6 species, a description for one new species, and a newly discovered synonymy in the *ohausi* group. Additional locality records extend the known ranges of some of the species.

Methods

General methods followed are described in Erwin (1997). Species concepts are outlined in Erwin and Kavanaugh (1981). Character sets are amplified from those published before (Erwin 1986). One-hundred and nine characters and their states are presented in Table 1 of Erwin (2000a), but because of its length, not duplicated here. The *virgata* matrix included herein (Table 1) may be used as a data set for cladistic analysis or for threading together a traditional description, neither of which is provided here. From the matrix data, I have provided a diagnosis for the user that, coupled with the illustrations, will allow species recognition of the new species described herein.

Measures for body parts are coded as follows and are presented in the species description. Measures were made with a Summagraphics digitizing pad

Table 1. Character matrix for species of the *virgata* group of the Genus *Agra*. Characters (numbered 1 to 109) and their states are described in Appendix 1 (Erwin, in press) (m = male, f = female, * = character state variable, ? = character state unknown.)

Character	vate	nola	cada-bra	virgata	chocha	phai-nops	ima-ginis	ocel-lata	inca	mime
	m	m	m	m	m		m			m
	f	f		f	f	f	f	f	f	
1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1
4	2	2	2	2	2	2	2	2	2	2
5	5	19	6	6	12	5	5	3	3	6
6	1	1	1	1	1	1	1	2	1	1
7	1	1	1	1	1	1	1	1	1	1
8	2	2	2	2	2	2	2	2	2	2
9	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1
11	4	4	4	4	4	4	4	4	4	4
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	2	2	2	2	1	1	2	2	2	2
15	1	1	1	1	1	1	1	1	1	1
16	2	2	2	2	2	2	2	2	2	2
17	4	4	4	4	4	4	4	4	4	4
18	2	2	2	2	2	2	2	2	2	2
19	2	2	2	2	2	2	2	2	2	2
20	1	1	1	1	1	1	1	1	1	1
21	3	2	3	3	3	2	2	3	3	1
22	1	1	1	1	1	1	1	1	1	1
23	2	2	2	2	2	2	2	2	2	2
24	2	2	2	2	2	2	2	2	2	2
25	2	2	2	2	2	2	2	2	2	2
26	1	1	1	1	1	1	1	1	1	1
27	4	4	4	4	4	4	4	4	4	4
28	1	1	1	1	1	1	1	1	1	2
29	1	1	1	1	1	1	1	1	1	1
30	2	2	2	2	2	2	2	2	2	2
31	4	4	4	4	4	4	4	4	4	4
32	3	3	3	3	3	3	3	3	3	3
33	1	1	1	1	1	1	1	1	1	1
34	27	27	27	27	27	27	27	27	27	27
35	5	5	5	5	3	2	5	1	5	5
36	2	2	2	2	2	2	2	2	2	2
37	2	2	2	2	2	2	2	2	2	2
38	2	2	2	2	2	2	2	2	2	2
39	2	2	2	2	2	2	2	2	2	2
40	7	7	7	7	7	7	7	7	7	7
41	3	2	2	2	2	2	2	2	2	2
42	1	1	1	1	1	1	1	1	1	1
43	1	1	1	1	1	1	1	1	1	1
44	3	3	3	3	3	3	3	3	3	3
45	4	4	7	7	7	7	7	7	7	4
46	5	5	5	5	5	5	5	5	5	5
47	11	11	11	11	11	11	11	11	11	11
48	11	11	11	11	11	11	11	11	11	11
49	2	2	2	2	2	2	2	2	2	2

Table 1. Continued.

Character	vate m f	nola m f	cada- bra m	virgata m f	chocha m f	phai- nops f	ima- ginis m f	ocel- lata f	inca f	mime m
50	11	11	11	11	11	11	11	11	11	11
51	9	9	9	9	9	9	9	9	9	9
52	3	3	3	3	3	3	3	3	3	3
53	2	2	2	2	2	2	2	2	2	2
54	1	1	1	1	1	1	1	1	1	1
55	4	4	4	4	4	4	4	4	4	4
56	2	2	2	2	2	2	2	2	2	2
57	1	1	1	1	1	1	1	1	1	1
58	1	1	1	1	1	1	1	1	1	4
59	1	1	1	1	1	1	1	1	1	2
60	4	4	4	4	4	4	4	4	4	4
61	1	1	1	1	1	1	1	1	1	1
62	1	1	1	1	1	1	1	1	1	1
63	1	1	1	1	1	?	1	?	?	1
64	2	2	2	2	2	2	2	2	2	2
65	2	2	2	2	2	2	2	2	2	2
66	2	2	2	2	2	2	2	2	2	2
67	1	1	1	1	1	1	1	1	1	1
68	1	1	1	1	1	1	1	1	1	1
69	1	1	1	1	1	1	1	1	1	1
70	1	1	1	1	1	1	1	1	1	1
71	1	1	1	1	1	1	1	1	1	1
72	2	2	2	2	2	2	2	2	2	2
73	1	1	1	1	1	1	1	1	1	1
74	5	5	5	5	5	5	5	5	5	5
75	1	1	1	1	1	1	1	1	1	1
76	1	1	1	1	1	1	1	1	1	1
77	5	5	5	5	5	5	5	5	5	5
78	1	1	1	1	1	1	1	1	1	1
79	1	1	1	1	1	1	1	1	1	1
80	1	1	1	1	1	1	1	1	1	1
81	1	1	1	1	1	1	1	1	1	1
82	1	1	1	1	1	1	1	1	1	1
83	1	1	1	1	1	?	1	?	?	1
84	2	2	2	2	2	?	2	?	?	2
85	2	2	2	2	2	?	2	?	?	2
86	7	7	7	2	11	?	2	?	?	2
87	1	2	1	2	2	?	2	?	?	2
88	1	3	3	1	3	?	1	?	?	3
89	3	3	3	3	3	?	3	?	?	3
90	1	1	1	1	1	?	1	?	?	1
91	4	4	?	4	4	4	4	4	4	?
92	4	4	?	4	4	4	4	4	4	?
93	4	4	?	4	4	4	4	4	4	?
94	1	1	1	1	1	1	1	1	1	1
95	1	1	1	1	1	1	1	1	1	1
96	1	1	1	1	1	?	1	?	?	1
97	9	9	9	9	9	9	9	9	9	9
98	3	3	3	3	3	3	3	3	3	3
99	2	2	2	2	2	2	2	2	2	2
100	1	1	1	1	1	1	1	1	1	1

Table 1. Continued.

Character	vate	nola	cada-bra	virgata	chocha	phai-nops	ima-ginis	ocel-lata	inca	mime
	m f	m f	m	m f	m f	f	m f	f	f	m
101	1	1	1	1	1	1	1	1	1	1
102	2	2	2	2	2	2	2	2	2	2
103	1	1	1	1	1	1	1	1	1	1
104	1	1	1	1	1	1	1	1	1	1
105	1	1	1	1	1	1	1	1	1	1
106	2	2	2	2	2	2	2	2	2	2
107	2	2	2	2	2	2	2	2	2	2
108	1	1	1	1	1	1	1	1	1	1
109	1	1	1	1	1	?	1	?	?	1

and camera lucida. Measurements are in millimeters: **ABL** = apparent body length, length used by most previous authors as total length, measured by holding a ruler alongside the specimen; **SBL** = standardized body length equal to the sum of LH, LP, and LE; **TW** = total width across the widest portion of elytra, estimated by doubling the measurement of the left elytron (WE).

Species groups are assigned a two digit number and species a three digit number. These numbers act as a cross-reference between the key, map, and checklist. Additionally, such a numbering system will allow the entire set of group revisions to be organized and indexed as a single monograph on electronic media.

Unless otherwise specified, illustrations are of specimens from starred (*) localities under each species description (reference here is to the *virgata* group revision in Erwin 1986).

All geographic data, measures, and field data have been standardized, then computerized using appropriate programs at the Smithsonian Institution. Locality records given below for each species are enhanced from that given on the specimen labels through geographic research on maps and in gazetteers. All specimens referred to herein have been assigned a unique number in the form ''ADP 000000,'' ''FOG 000000,'' or ''BIOLAT/COLE 000000'' or INBio ''CHI'' number, which for INBio specimens is accompanied by a geographic reference in the LN (Lambert North) system. Data concerning each specimen is retrievable from the NMNH carabid database archives at: http://entomology.si.edu (select ''Databases'').

Taxonomy

Agra Fabricius (See Erwin 1982)
Section *Feisthameli* (See Erwin 1987)
08. The *virgata* group (See Erwin 1986)

Revised Checklist of the Species of the *virgata* group

01. Agra vate Erwin (1986:302) [México, Costa Rica, Guatemala, Panamá]
02. Agra nola Erwin (1986:302) [Costa Rica, Panamá]
03. Agra cadabra Erwin (1986:303) [Ecuador]
04. Agra virgata Chevrolat (1856:352) [México, Costa Rica, Panamá]

05. Agra chocha Erwin (1986:304) [French Guiana, Trinidad, Venezuela]
06. Agra phainops Erwin (1986:306) [French Guiana, Surinam, Venezuela]
07. Agra imaginis Erwin (1986:306) [Brazil]
08. Agra ocellata Liebke (1938:63) [Bolivia]
09. Agra inca Erwin (1986:307) [Perú]
10. Agra mime **new species** [Ecuador]

Revised key to the species of the *virgata* group

(**Figs.** in boldface are from Erwin 1986; otherwise, ''Figs.'' are herein.)

1. Elytron with interneurs biserially punctate 2
1′. Elytron with interneurs triserially punctate ..... 01. *Agra vate* Erwin
2(1). Pronotum finely and evenly punctulate over entire surface 3
2′. Pronotum punctulate only at sides, median area of notum smooth ..... 05. *Agra chocha* Erwin
3(2). Elytral pattern simple, longitudinally striped (**Figs. 5 and 6;** Fig. 1) 4
3′. Elytral pattern complex, stripes variously separated to form spots ... 6
4(3). Elytron with interneur 5+6 testaceous (**Figs. 5 and 6**); anterior and posterior margins of pronotum infuscated 5
4'. Elytron with only interneur 5 infuscated (Fig. 1); prothorax concolorous ..... 10. *Agra mime* n. sp.
5(4) Elytra long and narrow (compare **Figs. 5 and 6**); head long, gena longer than diameter of eye ..... 02. *Agra nola* Erwin
5'. Elytra short and wide, ovate (compare **Figs. 5 and 6**); head short, gena shorter than diameter of eye ..... 03. *Agra cadabra* Erwin
6(3'). Elytron with punctures of interneurs small, adjacent to each other horizontally, in pairs 7
6'. Elytron with punctures of interneurs large and coarse, alternate to each other horizontally, not in pairs ..... 08. *Agra ocellata* Liebke
7(6). Elytron with apex bidentate, sutural and lateral teeth of equal size, or lateral tooth slightly longer 8
7'. Elytron with apex spinose suturally, dentate laterally, spine longer than tooth 9
8(7). Head elongate, square behind (**Fig. 17**) in both sexes, male head slightly more tapered ..... 03. *Agra virgata* Chevrolat
8'. Head short, rounded behind (**Fig. 19**) in female, male unknown ..... 04. *Agra phainops* Erwin
9(7'). Size, ABL = 12.5 mm or less, elytral color pattern mostly light, with vittate ..... 02. *Agra imaginis* Erwin
9'. Size, ABL = 13.0 mm or more, elytral color pattern mostly dark, with testaceous spots (**Fig. 11**) ..... 09. *Agra inca* Erwin

01. *Agra vate* Erwin
(Fig. 3)

Geographical Distribution (Fig. 3). Previously know from Veracruz, México and northeastern Guatemala, numerous new collections show that the distribution is much more widespread, extending from Los Tuxlas, Veracruz, to Cerro Campana, Panamá, and with many localities now known from Costa Rica due to the INBio National Survey initiative.

New Locality Records. Costa Rica, 1 female, Guanacaste, P.N. Rincon de la Vieja, Estacíon Las Pailas, LN306300_388600 #2237, 800 m, Jul-19-25-1993, (D. Garcia)(INBIO), CRI001126633, 1 male, May-7-26-1994 (INBIO) CRI001879454; 1 female, Faldas, SW V Cacao, LN#322300_376000 #7646, 1,150–1,250 m, Jun-1996, (C. Moraga & I. Villegas)(INBIO), CRI002422733, 1 female, Heredia, P.N. Braulio Carrillo, Estacíon Magsasay, LN#264600_581100 200, 2/1/91, (A. Fernandez)(INBIO), CRI000526166; 1 female, Limón Catari, 30 km N Sector Cerro Cocori, LN286000_567500 150, Mar-26–Apr-24-1992, (F.A. Quesada)(INBIO), CRI000794824, 1 male, Sardinas, Barra del Colorado, LN#291900_565900 #4639, 15 m, 26-Apr–3-May-1995, (F. Araya)(INBIO), ADP 87171 + CRI002169836, 1 male, P.N. Tortuguero, Tortuguero, Estacíon Cuatro Esquinas, 83 32′W, 10 34′N, LN#280000_590500, 4/1/89, (R. Aguilar & J. Solano)(INBIO), CRI000021342, 1 male, Puntarenas, A.C. Arenal, San Luis, Monteverde, 84°50′W, 10°14′N, 1,000–1,350 m, 7/1/94, (Z. Fuentes)(INBIO), CRI002013840, 2 males, Buen Amigo, San Luis, Monteverde, 84°50′W, 10°14′N, 1,000–1,350 m, 8/1/94, (Z. Fuentes)(INBIO), CRI001992032, CRI001991884, 1 female, Monteverde, 84°48′W, 10°18′N, Jun-8-10-1986, (Chemsak et al.)(UCB), ADP 7516, 1 male, May-17-18-1984, (F.T. Hovore)(F.T.H.C.), ADP 70511, 1 male, 5/25/79, (H.F. Howden & A. Howden)(UASM), ADP 85297, 1 female, 5/25/79 (UASM) ADP 85306. **México,** 2 females, Est. Biol. Los Tuxtlas, 95°01′W, 18°30′N, 6/26/89 (J. L. Colin)(UNAM), ADP 2170, 6/5/89, (J. L. Colin & H. Rojas)(UNAM), ADP 2171, 1 female, Est. Biol. Los Tuxtlas, 95°01′W, 18°30′N, (UNAM), 1 female, 7/30/89, (S. Zaragosa) (UNAM), ADP 2179, 2 females, Apr-26-May-6-1989, (E. Giesbert)(FSCA), ADP 4481, ADP 4482, 4 females, 4/1/91, (F.T. Hovore)(F.T.H.C.), ADP 6494, ADP 6495, ADP 6496, ADP 6497, 1 male, 4/26/91, (H.A. Hespenheide)(HAH), ADP 6918, 1 male, Jul-1-9-1988, (J.A. Chemsak)(UCB), ASP7448, 1 male, Zapuapan de Cabañas, 9/3/2023, (UNAM), ADP 2159. **Panamá,** 1 female, Panamá, Chica, Cerro Campana, 79°55′W, 08°41′N, 5/1/89, (F.T. Hovore)(F.T.H.C.), ADP 6391.

02. *Agra nola* Erwin
(Fig. 3)

Geographical Distribution (Fig. 3). The known distribution of this species has not changed, however, new specimens have been recorded below.

New Locality Records. Costa Rica, 1 female, Cartago, Turrialba—IICA/CATIE, 09°53′N, 83°38′W, April, (E.Giesbert)(FSCA), ADP 4479, 1 male, ADP 4480; 1 male, Puntarenas, Monteverde, 1,300–1,500 m, 10°06′N, 83°26′W, May (E.Giesbert)(LACM) ADP 57826, 1 female, April, (A. & J.G. Edwards)(SJSC), ADP 4501, 2 males, (G. A. Dahlem)(CUNY), ADP 5447, ADP 5446, 1 male, June (F.T. Hovore)(F.T.H.C.), ADP 87127.

04. *Agra virgata* Chevrolat
(Fig. 3)

Geographical Distribution (Fig. 3). Previously, this species was known from its type locality in Cordova, México and from eastern Panamá. Numerous new records from Costa Rica begin to fill the geographic gap. This species overlaps *A. vate* throughout most of its range, although they have not yet been collected at the same sites.

New Locality Records. Costa Rica, 2 females, Alajuela 2 km SW Dos Rios Finca San Gabriel, 600 m, 10°50′N, 85°22′W 5/1/89, (GNP Biodiversity

Survey INBio)(INBIO), CRI001024218, CRI001024217, 1 female, Guanacaste, La Pacifica, nr. Cañas, 10 25′N, 85 07′W, 6/20/69 (F.T. Hovore)(F.T.H.C.), ADP 6430, 1 male, 9 km S Santa Cecillia, P.N. Guanacaste, Estacíon Pitilla, 700 m, 10°59′26″N, 85°25′40″W, 5/1/89, (GNP Biodiversity Survey INBio)(INBIO), CRI000009787, 1 male, Mar-21–Apr-6-1993, (C. Moraga)(INBIO), CRI001391809, 1 male, Limón, near Cariari Hacienda ''La Suerte,'' 5/26/84, (F.T. Hovore) (F.T.H.C.), ADP 70507, 1 male, Puntarenas, Quepos, P.N. Manuel Antonio, 80 m, 09°24′N, 84°09′W, 5/1/91, (R. Zuñiga)(INBIO), CRI001364249. **Panamá,** 1 female, Canal Zone, Barro Colorado Island, 30°09′10′N, 79°50′W, 5/4/78, (R. Silberglied & A. Aiello)(USNM), ADP 81125,1 male, 3/4/78, (H. Wolda)(USNM), ADP 61836, 1 female, Colón, north shore Gatun Lake, 09°12′N, 79°55′W, 5/20/90, (F.T. Hovore)(FTHC), ADP 6428, 1 female, Panamá, La Chorrea, 08°53′N, 79°47′W, May-, (Busck)(USNM), ADP 9642.

05. *Agra chocha* Erwin.
(Fig. 3)

Geographical Distribution (Fig. 3). The following new records extend the range of this species from Trinidad and French Guiana into Surinam and Venezuela.

New Locality Records. French Guiana, 1 male, Kaw Road, Pk-37, August (J.E. Wappes)(J.E.W.C.), ADP 93446. **Suriname,** 1 male, Saramacca, Coebiti Agric. Sta., August (M.I. Russell)(BMNH), ADP 76790. **Trinidad,** 1 male, Mont Bleu, 800 m, April (W.E. Carter, E.R. Hoebeke & J.K. Li) (CUNY), ADP 81143, 1 male, St. George East, Arima Valley, Simla Res. Station,10°39′N, 61°16′W Jun-25–20 July (Carpenter & Edgerly)(CUNY), ADP 5448. **Venezuela,** 1 male, Aragua, Cagua,10 11′N, 67 27′W, April (E. Dorestes)(UCV), ADP 85480, 1 female, Bolivar, Foresta Imataca, El Bochincha, December (Fac. Agronomia)(UCV), ADP 85477, 2 males, Tachira, Rio Frio, 07°35′N, 72°09′W, May (J.A. Clavijo & A. Chacon)(UCV), ADP 85452, 85479, 1 female, ADP 85454, 1 female, December, (J.A. Clavijo, A. Chacon, & J Ayala)(UCV), ADP 85478.

06. *Agra phainops* Erwin
(Fig. 3)

Geographical Distribution (Fig. 3). The new record below extends the range of this species from French Guiana and Surinam into Venezuela.

New Locality Records. Venezuela, 1 male, Delta Amacuro, 15 km E Los Casillos, 45 km NE Ciudad Guyana, 08°32′N, 60°28′W, June (M.A. Ivie)(MAIVIE), ADP 85547.

07. *Agra imaginis* Erwin
(Fig. 3)

Geographical Distribution (Fig. 3). The specimens below are additional records in the Brazilian State of Goiás, where this species was previously recorded.

New Locality Records. Brazil, 2 males, Goiás, 7 km NE Alto Paraiso, 1100 m, 14°75′S, 047°31′W, October, (S.E. Miller)(USNM), ADP 3123, 3124.

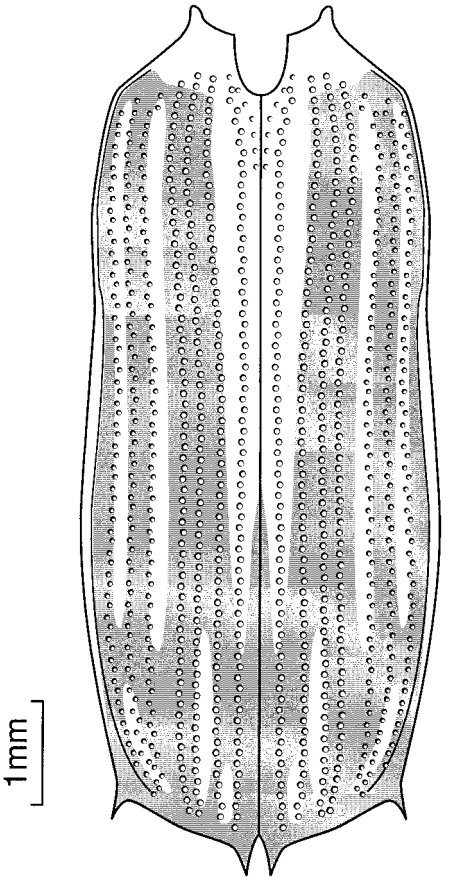

Fig. 1. Elytra (dorsal aspect) of *Agra mime,* **new species.**

10. *Agra mime Erwin*, **new species**
(Figs. 1, 2, 3)

Diagnosis. Elytron with interneurs biserially punctate; color pattern simple, longitudinally striped with interneur 5 pale in color (Fig. 1). Pronotum finely and evenly punctulate over entire surface; prothorax concolorous, without anterior and basal blackish bands.

Description (See Table 1): Size: ABL = 13.5 mm; SBL = 12.79 mm; TW = 3.4 mm; LH = 2.12 mm; LP = 2.91 mm; LE = 7.76 mm.

Geographical Distribution (Fig. 3). Know only from the type locality.

Specimens Examined. Holotype male, **Ecuador**: Napo Province, 20 km E Puerto Napo, Alinahui, 450 m, 01°00′S, 077°25′W, E. S. Ross, September, 1997, CAS, ADP 56338*.

Etymology. The specific epithet, *mime*, refers to the similarity of this species to some brentids, such as *Arrhenodes gnatho* (Licht.).

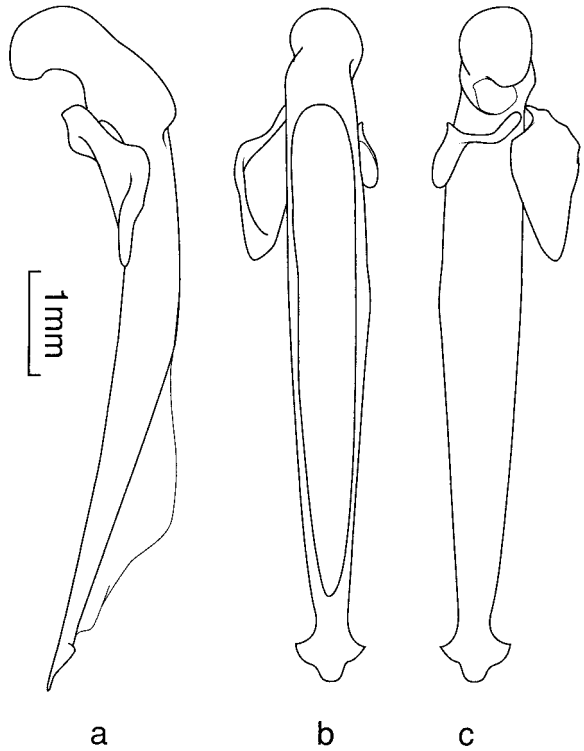

Fig. 2. Male aedeagus of *Agra mime,* n. sp., a. left lateral, b. dorsal, and c. ventral aspects.

ohausi group

Agra ohausi Liebke (1938:62)

Agra rugipunctata Straneo, 1979:215, **New synonymy.** Holotype, male, in the Zoological Museum, São Paulo, 1 of 6 paratypes in USNM.

Notes. A specimen labeled ''*Agra subgemmata* m.'' ''det. Straneo 1964'' ''Paratypus'' is in fact *A. ohausi* Liebke. This specimen was not included in Straneo's original description. Whether he lost track of the specimen or changed his mind after returning the specimen to Paris is not known. The ''Allotypus'' of *Agra subgemmata* also labeled by Straneo is **not** *A. ohausi,* and **it does** represent a valid species in the *catenulata* group. I have not yet seen the holotype of *A. subgemmata* which is in the Zoological Museum, São Paulo.

Regarding Relationships

If one regards complexity of elytral color pattern and geographical location, one would hypothesize that *Agra mime* is related to the South American members of the *virgata* clade. Elytral form and male genitalia are similar to those

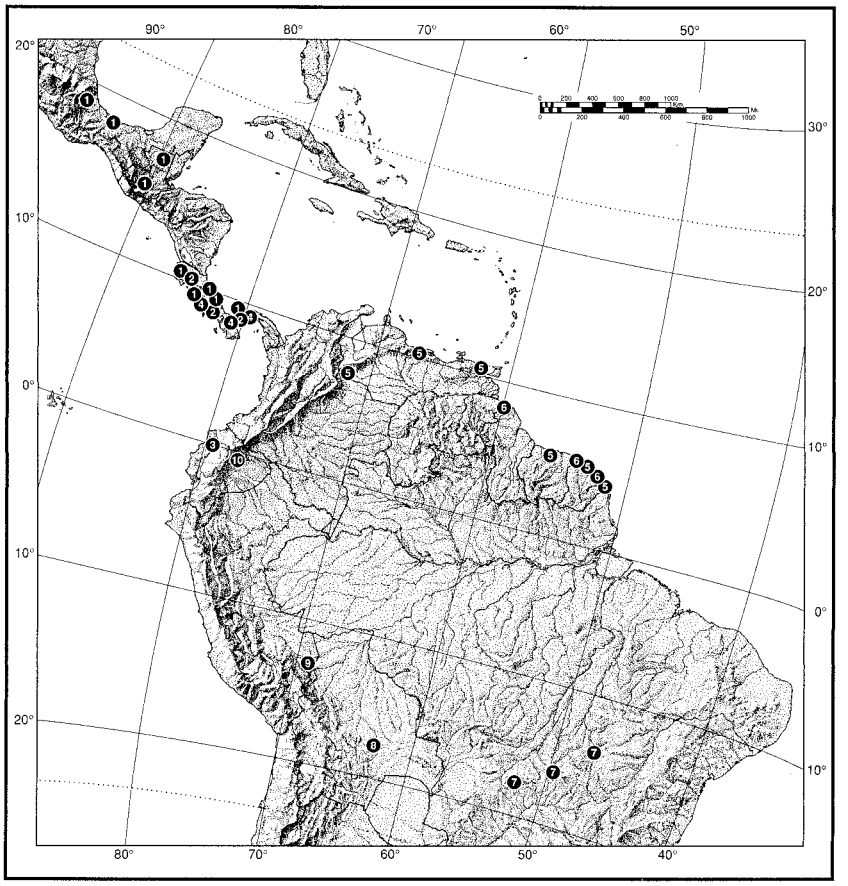

Fig. 3. Geographical distribution map: Members of the *virgata* group. **1**) *Agra vate*; **2**) *A. nola*; **3**) *A. cadabra*; **4**) *A. virgata*; **5**) *A. chocha*; **6**) *A. phainops*; **7**) *A. imaginis*; **8**) *A. ocellata*; **9**) *A. inca*; **10**) *A. mime.*

of *A. chocha,* but not elytral pattern in its detail. Distribution of character states in Table 1, without computer-assisted cladistic analysis, readily indicates that only two informative characters of morphology (arrangement of setae on antennal scape and shape of elytral apex between sutural and lateral apices) exist among the scored states. These two states conflict with elytral color pattern and form (neither used in the matrix). Character 86, shape of aedeagus apex, is unknown in 3 of the 11 species. Thus, relationships among the species of the *virgata* group are equivocal at present.

Biogeography

A detailed biogeographic study awaits cladistic analysis of the group and related groups, if not the entire genus. That will follow forthcoming revisions in groups related to *virgata* and *ohausi* groups. Additional specimens reported

here help extend our knowledge of the ranges of some species, particularly *A. virgata* and *A. vate*, which previously appeared to be somewhat disjunct. The overall pattern (Fig. 3) is highly reminiscent of that of the *klugii* and *semiviridis* subgroups of the *platyscelis* group (Erwin 2000b), that is, circum-Amazonia and Middle America.

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