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FIELDIANA Zoology

Published by Field Museum of Natural History

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URBANA-CHAMPAIGN

New Series, No. 3

January 27, 1980

Species of the Scincid Genus *Dasia* Gray

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Greer (1970) redefined the genus *Dasia* and suggested relationships with other genera, basing his conclusions mainly on skull morphology and scutellation. The purpose of our study, in contrast to Greer's, has been to clarify specific definitions within the genus, emphasizing the forms that have been confused with the widespread *D. olivacea* Gray (type locality: Penang).

Of the species of *Dasia* recognized by Greer (1970), the two from Sri Lanka and southern India, *D. haliana* (Haly & Nevill) and *D. subcaerulea* (Boulenger), respectively, pose the fewest taxonomic problems perhaps because they are isolated from the remainder. *Dasia haliana* can be distinguished from all its congeners by the low number of scale rows at mid-body (22-24) and the enlarged vertebral scale rows. *Dasia subcaerulea*, unlike the others, has smooth dorsals; on this point our observations differ from those of Boulenger (1891) and Smith (1935) who said the scales were "feebly striated" with "3 very indistinct keels." These two species are further distinguished from their congeners by having two pairs of dark stripes on the head, one stripe from the rear of the eye and one on top of the head from the supraocular region to the nape. In both species the supranasals are separated along the mid-line; in *subcaerulea* the prefrontals are broadly in contact.

Library of Congress Catalog Card No. 79-54247
ISSN 0015-0754

Publication 1304

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The distribution of the genus resumes in Southeast Asia at about 15°N (Smith, 1935). From here to Java at one extreme and through Borneo into the Philippines at the other, populations of *Dasia* form a complex series. We will proceed from central Thailand south and southeastward considering the variation observed in each area and attempting to construct a cumulative picture of each nominate form. From 15°N in Thailand to 5°N in Malaya, apparently only one species occurs, *D. olivacea* Gray. Its distinctive characteristics in this sample (row I in table 1)¹ are: weak dorsal keels, supranasal and prefrontal usually separated from the corresponding contralateral scute, anterior loreal clearly longer than high, low ventral counts, head scales usually margined with black, and juveniles (table 2) with light, unmarked tails.

South of 4°N in Malaya two species appear: *olivacea* and a species to which Smith (1935) applied the name *D. grisea* (Gray) (type locality: "Philippines"). Having examined the holotype of *grisea* (BMNH 1946.8.20.15), we concur with Smith. Distribution of character states in these two southern Malayan samples is shown in rows II and III. Combining the first two rows leaves *olivacea* sharply distinct from *grisea*, particularly in terms of the first five characters listed in the table. Also the maximum size attained by adults appears to be larger in *grisea*.

Our Sumatran sample also consists of two species, *olivacea* (row V) and one (row IV) identical to *grisea* as we have just defined it. The 11 we refer to *olivacea* extend the range of variation in arrangement of supranasals and prefrontals. The two adults that are most at variance from typical *olivacea* in those characters nonetheless are distinguishable from *grisea* in terms of shape of the anterior loreal, carination of the dorsals, and ventral counts.

The Javan sample, mainly from Bogor, appears to be intermediate between *olivacea* and *grisea* in terms of prefrontals and shape of anterior loreal. There is no association of "*grisea*" states in these two characters so that the series does not divide itself into two clusters. In terms of dorsal carination, supranasals, ventral counts, and juvenile coloration (table 2), the Javan population agrees with *olivacea* as defined by rows I, II, and V, and we assign it to that species.

The 28 lizards we have seen from Borneo, with two exceptions, fall

¹Row numbers refer only to those in Table 1.

TABLE 1. Characteristics of samples of *Dasia*.

	Sample	Sample size	Keels on dorsals	Prefrontals			Supranasals			Species
				separated	meet at point	broad contact	separated	meet at point	broad contact	
I	Thailand/Malaya (5°-15°)	22	3-5 weak	19	3	0	22	0	0	<i>olivacea</i>
II	Malaya (0°-4°N)	4	3-5 weak	4	0	0	4	0	0	<i>olivacea</i>
III	Malaya (0°-4°N)	4	3 strong	0	0	4	0	0	4	<i>grisea</i>
IV	Sumatra	2	3 strong	0	0	2	0	0	2	<i>grisea</i>
V	Sumatra	11	3-5 weak	7	2	2	9	1	1	<i>olivacea</i>
VI	Java	23	3-5 weak	4	10	9	22	0	0	<i>olivacea</i>
VII	Borneo	17	3-5 weak	12	2	3	17	0	0	<i>olivacea</i>
VIII	Borneo	9	3 strong	0	0	9	0	0	9	<i>grisea</i>
IX	Borneo	2	3 weak	1	0	1	0	0	2	<i>semicincta</i>
X	Mindanao	7	3-5 weak	6	1	0	0	0	7	<i>semicincta</i>
XI	Palawan	18	3 weak/mod.	17	1	0	0	0	18	<i>griffini</i>
XII	Marinduque	7	3 moderate	0	0	7	0	0	7	<i>grisea</i>
XIII	"Philippines"	1	3 moderate	0	0	1	0	0	1	<i>grisea</i> holotype
XIV	India	2	smooth	0	0	2	2	0	0	<i>subcaerulea</i>
XV	Sri Lanka	2	3-5 weak	2	0	0	2	0	0	<i>haliana</i>

TABLE 1 — Continued

	Sample	Anterior loreal height/length*	Ventrals*	Scale rows	Lamellae 4th toe	Dark rings axilla to groin	Snout-vent mm. 5 largest	Species
I	Thailand/Malaya (5°-15°N)	.52-.74(.61)	45-58(52.2)	28-30	17-19	8-10	92-106	<i>olivacea</i>
II	Malaya (0°-4°N)	.50-.59	48-54	30	19	7-9	89	<i>olivacea</i>
III	Malaya (0°-4°N)	.87-1.07	59-63	26-30	18-19	9-10	123-130	<i>grisea</i>
IV	Sumatra	.88-.95	57-59	26-28	18-19	9	88-117	<i>grisea</i>
V	Sumatra	.53-.71(.61)	50-56(52.9)	30-32	17-20	7-9	83-112	<i>olivacea</i>
VI	Java	.68-1.0(.82)	50-55(52.5)	28-30	18-19	6-9	98-103	<i>olivacea</i>
VII	Borneo	.42-.73(.58)	49-53(51.8)	28-30	17-21	6-9	87-97	<i>olivacea</i>
VIII	Borneo	.83-1.3(.95)	61-67(63.7)	28-30	17-20	9-14	104-124	<i>grisea</i>
IX	Borneo	.93-.95	59-61	30	20-22	6-7	102-111	<i>semimincta</i>
X	Mindanao	.75-.80(.79)	59-63(61.5)	28-30	17-21	5-8	90-125	<i>semimincta</i>
XI	Palawan	.62-.80(.73)	51-53	26-28	17-20	8-10	102-116	<i>griffini</i>
XII	Marinduque	.67-.92(.77)	60-62(61)	28	17-20	8-10	(subadults)	<i>grisea</i>
XIII	"Philippines"	.80	59	30	—	9	112	<i>grisea</i> holotype
XIV	India	—**	55	26-28	—	—	57-70	<i>subcaerulea</i>
XV	Sri Lanka	—	56-57	22-24	17-18	3-4	66-90	<i>haliana</i>

*Mean in parentheses.

**Long dashes indicate lack of information.

TABLE 2. Juvenile coloration in samples of *Dasia*.
All individuals smaller than 51 mm. snout-vent.

Sample	Head pattern	Width of dark bands on torso	Dark caudal rings		Species
			present	complete ventrally	
Thailand/Malaya (5°-15°N)	scales with black margins	2½-4 scales	no		<i>olivacea</i>
Malaya (0°-4°N)	same as above	2 scales	no		<i>olivacea</i>
Sumatra	same as above	2½-3 scales	no		<i>olivacea</i>
Java	same as above	2-2½ scales	no		<i>olivacea</i>
Borneo	same as above	2-4 scales	no		<i>olivacea</i>
Borneo	parietal spots	1 scale	yes	no	<i>grisea</i>
Mindanao	transverse bands	3-6 scales	yes	yes	<i>semicineta</i>
Palawan	parietal spots	—	yes*		<i>griffini</i>
Marinduque	spotted	2-3 scales	yes	no	<i>grisea</i>

*Present only at base of tail.

**Long dashes indicate lack of information.

into the distinct clusters agreeing with those found in Malaya: *olivacea* (row VII) and *grisea* (row VIII). We have both species from three widely separated localities in Sarawak — Kuching, Labang, and Niah. Included in row VIII are the cotypes of *Mabuya saravacensis* Bartlett (type locality: Kuching, Sarawak) and the holotype of *D. moultoni* Barbour and Noble (type locality: Sadong, Sarawak). The two exceptional lizards (row IX) will be discussed below.

Our sample (row X) from Mindanao constitutes one species and includes the type of *D. semicinctus* (Peters) (type locality: Mindanao). This is the first sample in our discussion to have supranasals broadly in contact while the prefrontals are separated (except in one). Compared to *grisea*, the keels are not as strong, the dark rings are fewer, and the anterior loreal is not quite as high. The separation of the prefrontals is another difference. This series differs from *olivacea* (rows I, II, V, VI, VII) in the broad contact of the supranasals, high ventral counts, and distinctly ringed tail of juveniles (table 2). We believe this population represents a distinct species, *D. semicincta* (Peters).

The two uncertain individuals from Borneo (row IX) resemble *grisea* in shape of anterior loreal. They are similar to both *grisea* and *semicinctus* in terms of ventral counts and supranasals. They resemble *semicincta* in having fewer dark body rings and weaker keels on dorsals. Thus, although there is some disparity in the arrangement of the prefrontals and in the height/length ratio of the anterior loreal, we provisionally place these Bornean specimens (BMNH 1903.4.30.2, FMNH 67340) in *semicincta*.

Dasia griffini Taylor (row XI) is known only from Palawan Island. Our sample of 18, like *semicincta*, differs from *grisea* in the small size of the prefrontals, which are separated, the weak carination of the dorsal scales, and the low number of ventral scales. It differs from *olivacea* in terms of the large supranasals, which meet in the midline, and possibly the larger size attained by adults. From *semicincta*, it differs in the low mid-body scale count, the greater number of dark transverse bands on the body, and the lower ventral scale count.

The last sample of this species group (row XII), from Marinduque Island just south of Luzon, resembles the type of *grisea* (row XIII) in every character listed in Table 1 and we do not hesitate to assign that name to the population.

Reviewing all of these samples from Thailand southeastward, we can recognize one widespread species, *Dasia olivacea* Gray, ranging from 15°N on the continent to Borneo and Java. It has weak dorsal keels, supranasals separated (except in two individuals), prefrontals usually separated (except in two populations), low ventral counts (only four out of 77 have more than 55), a relatively long anterior loreal, six to nine dark bars or rings on the torso, and juveniles (table 2) with light, unmarked tails. The largest adult measured 112 mm. and only 10 of 77 exceeded 99 mm. Many adults have a light, continuous dorsolateral streak beginning in the lumbar area and extending on to the tail. The Javan and Sumatran samples show the most variation in what might be called diagnostic characters, but even those individuals that seem to have some of the character states of *grisea* are clearly more similar to *olivacea* when compared directly.

A second widespread species, *Dasia grisea* (Gray), occurs from about 4°N on the continent through Sumatra and Borneo and, after a wide gap, in the northcentral Philippines. As we have defined it (rows III, IV, VIII, XII, XIII), *Dasia grisea* has moderate to strong dorsal keels, prefrontals and supranasals with broad sutures in the midline, an anterior loreal that is squarish (height/length ratio usually greater than .85), high ventral counts (more than 56), adults commonly larger than 110 mm. snout-vent (11 of 22 exceeded 99 mm.), and juveniles (table 2) with ventrally interrupted, dark caudal rings. In spite of its disjunct distribution, *grisea* has less inter-population variation than does *olivacea*. The main variation involves carination of the dorsals, which are slightly less sharply keeled in Philippine lizards than in those from Borneo, Sumatra, and Malaya. Also the juvenile pattern of broad dark bands seems to be retained longer in Philippine samples. Marinduque Island sub-adults (77, 81 mm.) have bands 2-2½ scales wide, whereas in several in that size range (71-76 mm.) from Borneo and Malaya the bands are, as in adults, barely one-half scale wide. So far, *grisea* is unknown from Palawan and Mindanao, the main herpetofauna gateways to the Philippines (Inger, 1954; Brown & Alcalá, MS). These lizards are not likely candidates for accidental transport by man as they live in upper arboreal strata in forest trees. The disjunction is, therefore, puzzling.

Dasia semicineta (Peters), known so far only from Mindanao and, tentatively, Borneo, has characteristics intermediate between *grisea* and *olivacea* (see above). The juvenile coloration (table 2), however,

has several distinctive elements: the tail has uninterrupted dark rings, and the head is crossed by continuous broad, dark bands.

Dasia griffini Taylor, known only from Palawan, shares a few of the characters studied with each of the three species, *olivacea*, *grisea*, and *semicincta*, yet differs from each of them in two or more characters.

Our views of the species we recognize are summarized in the following key.

- A. Scale rows at mid-body 24 or fewer; vertebral scale rows enlarged ... *haliana*
- B. Scale rows 26 or more; vertebrals not enlarged2
- 2A. Ventrals (counted in mid-line from mental to vent) more than 56; supranasals broadly in contact in mid-line3
- B. Ventrals 56 or fewer; supranasals various4
- 3A. Adults with 5-8 dark rings between axilla and groin; prefrontals usually (7 out of 9 individuals) separated in mid-line *semicincta*
- B. Adults with 8-14 dark rings; prefrontals in broad contact in mid-line .. *grisea*
- 4A. Supranasals broadly in contact in mid-line *griffini*
- B. Supranasals usually separated (in 77 out of 79 examined)5
- 5A. Top of head with two dark longitudinal stripes *subcaerulea*
- B. Top of head without stripes *olivacea*

Mertens (1971) added *Lygosoma (Dasia) leucostictum* Müller to the list of species in the genus, largely, it appears, because he was not able to examine the palate of *leucostictum* and because its dorsal pattern included dark cross bars. Three specimens of *leucostictum* (Museum Zoologicum Bogoriense 915, 916, 1375, all from Mt. Gedeh, Java) agree with Greer's definition of *Lamprolepis* (Greer, 1970) in the separation of the pterygoids medially, the absence of pterygoid teeth, the smooth body scales, and the meeting of the parietals behind the interparietal. We, therefore, refer Müller's species to *Lamprolepis*.

Dasia olivacea Gray

Dasia olivacea Gray, 1838, Ann. Mag. Nat. Hist., (2) 1838, p. 331 — Penang Island.

Euprepes ernesti Duméril & Bibron, 1839, Erp. Gén., 5, p. 696 — Java.

Range.—Southeast Asia south of 15°N, Sumatra and adjacent islands, Borneo, Java, Natuna Ids.

Specimens examined.—Burma, MNHN 93.366; Viet Nam, MNHN 1142a-b; Thailand, BM 1921.4.1.156, FMNH 177229, 177652, 180785-6, USNM 22921, 23752, 72234, 76061, 76833, 84880; West Malaysia, BM 60.3.10, 1936.6.6.101, FMNH 143002, MNHN 5903a-b, NHMW 9816 (5), 9819 (2), RMNH 8325 (2); Singapore, BM

96.6.25.21, CAS 7547-8; Pulo Condore, BM 1921.4.1.157; Nicobar, BM 1934.11.2.27; Siberut, BM 1926.3.18.14; Simalur, RMNH 5145-7, 5149, 5150, 5167, USNM 30791; Nias, USNM 31677; Sumatra, BM 55.12.26.324, FMNH 119689, 208326, MNHN 7094, NHMW 9815, MZB (HKV 17040, 17590), RMNH 4275, 5199, 7165; Borneo, BM 72.8.19.2, 99.1.20.5, FMNH 120257, 120314, 150750, 150752, 158733, MNHN 89.187, 89.315, NHMW 9825, RMNH 4347, 7313, 7314 (3), SM 3 unnumbered, USNM 36288; Java, MZB 464, 465 (5), 472, 480, 546, 645a-b, 659, 682, 703, 747, 1007-8, 1204, 1372, 1561, MNHN 12.17-8, USNM 43654-5, 62616.

***Dasia grisea* (Gray)**

Tiliqua grisea Gray, 1845, Cat. Liz. Brit. Mus., p. 110 — Philippines.

Dasia grisea Smith, 1935, Fauna Brit. India, Reptiles, 2, p. 278.

Mabuia saravacensis Bartlett, 1895, Croc. Liz. Borneo, p. 94 — Santubong and Kuching, Sarawak.

Dasia moultoni Barbour & Noble, 1916, Proc. New Engl. Zool. Club, 6, p. 22 — Sadong, Sarawak.

Range.—Southern Malay Peninsula, Borneo, Sumatra, Philippine Islands.

Specimens examined.—Malay Peninsula, BM 1904.7.19.10, FMNH 184671-73, MNHN 1974.64; Sumatra, MZB (HKV 17281, 17448), NHMW 9826; Borneo, BM 99.1.20.6 (syntype of *saravacensis*), FMNH 129546, 149000, 150749, 150751, MCZ 11203 (holotype of *moultoni*), SM 2 unnumbered, USNM 36287, 134112; "Philippines," BM 1946.8.20.51 (holotype of *grisea*); Marinduque, CM 65241-7; Mindoro, CAS 25768, USNM 36135; Semirara, CAS 134218, MNHN 6298.

***Dasia semicincta* (Peters)**

Euprepes (Tiliqua) semicinctus Peters, 1867, Monatsber, Akad. Wiss. Berlin 1867, p. 21 — Mindanao.

Dasia semicincta Taylor, 1915, Philip. Jour. Sci., 10, p. 104.

Range.—Borneo and Mindanao.

Specimens examined.—Borneo, BM 1903.4.30.2, FMNH 67340; Mindanao, CM 1779-81, 1783, 1785-6, NHMW 9818 (syntype), SNG 28027.

***Dasia griffini* Taylor**

Dasia griffini Taylor, 1915, Philip. Jour. Sci., 10, p. 104 — Taytay, Palawan.

Range.—Palawan.

Specimens examined.—AMNH 90104, CAS 28648, 28669-75, 62178, FMNH 52554-6, MCZ 26412-3, USNM 158212.

***Dasia haliana* (Haly & Nevill)**

Euprepes halianus Haly & Nevill, 1887, Taprobanian, 2, p. 56 — Henaratgoda and Anuradhapura, Ceylon.

Dasia haliana Smith, 1935, Fauna Brit. India, Reptiles 2, p. 278.

Range.—Sri Lanka.

Specimens examined.—BM 1908.3.19.3, FMNH 165065.

***Dasia subcaerulea* (Boulenger)**

Lygosoma subcaeruleum Boulenger, Ann. Mag. Nat. Hist., (6) 8, p. 289 — Bodanaikanur, Travancore.

Dasia subcaerulea Smith, 1935, Fauna Brit. India, Reptiles, 2, p. 278.

Range.—Southern India.

Specimens examined.—BM 1946.8.15.55 (holotype), 1949.1.8.51.

ACKNOWLEDGEMENTS

We are indebted to the following persons for lending us specimens in their care: A. G. C. Grandison (British Museum Natural History), W. R. Heyer (U.S. National Museum of Natural History), M. S. Hoogmoed (Rijksmuseum van Natuurlijke Historie), D. Iskandar (Bandung Institute of Technology), C. J. McCoy (Carnegie Museum), F. Sabar (Museum Zoologicum Bogoriense), F. Tiedemann (Naturhistorisches Museum Wien), and E. E. Williams (Museum of Comparative Zoology). We are also grateful to J. P. Rosado (Museum of Comparative Zoology) for information on the type of *Dasia moultoni*.

ABBREVIATIONS

AMNH — American Museum of Natural History; BM — British Museum (Natural History); CAS — California Academy of Science; CM — Carnegie Museum; FMNH — Field Museum of Natural History; MCZ — Museum of Comparative Zoology; MNHN — Musée National d'Histoire Naturelle Paris; MZB — Museum Zoologicum Bogoriense; NHMW — Naturhistorisches Museum Wien; RMNH — Rijksmuseum van Natuurlijke Historie; SM — Sarawak Museum; SNG — Natur-Museum und Forschungs Institut Senckenberg; USNM — U.S. National Museum of Natural History.

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