# University of Nebraska - Lincoln Digital Commons@University of Nebraska - Lincoln

Papers in Entomology

Museum, University of Nebraska State

3-1-2003

# The genus Dacne Latreille (Coleoptera: Erotylidae) in tropical America

Paul E. Skelley

Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services

Follow this and additional works at: http://digitalcommons.unl.edu/entomologypapers



Part of the Entomology Commons

Skelley, Paul E., "The genus Dacne Latreille (Coleoptera: Erotylidae) in tropical America" (2003). Papers in Entomology. Paper 108. http://digitalcommons.unl.edu/entomologypapers/108

This Article is brought to you for free and open access by the Museum, University of Nebraska State at Digital Commons@University of Nebraska -Lincoln. It has been accepted for inclusion in Papers in Entomology by an authorized administrator of Digital Commons@University of Nebraska -Lincoln.

# The genus *Dacne* Latreille (Coleoptera: Erotylidae) in tropical America

## Paul E.Skelley

Florida State Collection of Arthropods Florida Department of Agriculture and Consumer Services P.O.Box 147100 Gainesville, FL 32614-7100 USA

Abstract. A new species of Dacne Latreille from Brazil, D. (Dacne) ducke, n. sp., and a new specimen of Dacne brodzinskyi Skelley (amber fossil) show characteristics presently unreported for the genus. Dacne ducke is the first member of the tribe Dacnini to be discovered in South America. A checklist of species and updates to an identification key for all known species are presented.

#### Introduction

Skelley (1997) reviewed the genus Dacne to describe a fossil species, *D. brodzinskyi* Skelley. Since that time, a new fossil specimen of *D. brodzynskyi* has been discovered in which the entire ventral surface is visible. Structures now visible, including mouthparts, firmly establish this species as a member of the genus Dacneas presently understood, and confirmed features that make it unique in the genus.

Being primarily a Holarctic genus, the discovery of a new species of *Dacne* from the Amazon Basin was quite a surprise. Closer examination of all available species show that D. brodzinskyi and this new Amazonian species share one character not seen in any other member of the genus; a narrow, anteriorly arched meso-metasternal suture. This narrow mesometasternal articulation is similar to that occurring in most members of the Pharaxonothinae, Xenocelinae, and Loberinae, and would indicate a similar monocondylic internal articulation. Most erotylines and cryptophilines possess a broad, straight mesometasternal suture with a dicondylic internal articulation. Due to insufficient materials the number of condyles in the internal articulation was not confirmed for the new species.

Preliminary phylogenetic analyses of the subfamily Erotylinae have been published by Wegrzynowicz (2002), who studied relationships primarily within erotylines, and Leschen (2003), who used erotyline exemplar taxa in an extensive analysis of the old families Languriidae and Erotylidae. Both analyses conclude the family Languriidae is paraphyletic in regards to the Erotylidae and merge the old Languriidae+Erotylidae into a single family, the Erotylidae. Both Wegrzynowicz and Leschen place the genus *Dacne* and tribe Dacnini at the base of the Erotylinae lineage. All members of the tribe Dacnini,

including its supposed relatives, need a thorough analysis to understand the relationships between the basal Erotylinae and the remaining members of the Erotylidae (sensu Wegrzynowicz 2002 and Leschen 2003).

For various reasons, descriptions of *Dacnes* pecies by Narukawa (1992), Nikitsky and Kompantzev (1995), and Ashida and Kim (1999) were not included in Skelley (1997). This work supplements the description for *D. brodzinskyi*, describes this new species, and updates the key and checklist to the world's species.

### Dacne brodzinskyi Skelley Fig. 1

Dacne brodzinskyi Skelley 1997: 51-52.

Diagnosis: This species is only known from fossils in Dominican amber. It is readily recognized from all other members of the genus by its dilated tibia (Fig.

**Description**: The following list of characters is presented to supplement the original species description.

Length = 1.9 mm. Maxillary and labial terminal palpomeres acuminate (Fig. 1). Mentum broad, width = 2.5 x width, weakly triangular (as most members of the genus). Prosternum coarsely punctate, puncture size = 0.75 x eye facet diameter; prosternum with anterior edge straight, narrow and rounded basally, basal width less than procoxal diameter; prosternal lines weak, not extending forward onto prosternum. Meso-metasternal suture short (Fig. 1), length distinctly less than mesocoxal diameter, anteriorly arched. Abdomen with distinct coxal line. All legs with tibiae triangularly expanded at apex.



Figure 1. Dacne brodzinskyi Skelley, ventral view.

**Specimen studied**: The new specimen was presented to me by the late Jake Brodzinski and is deposited in my personal collection (PESC).

### Dacne ducke Skelley, n.sp.

**Diagnosis**: This species is easily recognized from all known members of the genus by its small body size, distinct color pattern having entirely yellow-orange elytra with black head and pronotum (Fig. 2), narrowed prosternum, and narrow, anteriorly arched meso-metasternal suture. It is the only known member of the genus from South America.

**Description**: Length = 1.8 mm. Width = 0.8 mm. Body stout, elongate, lacking any dorsal setation. Head, prothorax and antennal club black; pterothorax red-brown; abdomen, elytra, legs, palpi and base of antennae yellow-orange.

Head (Fig. 5) width between eyes =  $4 \times eye$  diameter in dorsal view; punctation coarse, sparse, separated by 5-6 puncture diameters; epistome truncate, lacking marginal line on anterior margin; stridulatory files not evident. Antenna (Fig. 3) reaching middle of pronotum; antennomere III equal in length to II,  $1.5 \times ext{longer}$  than IV; antennomere IV-VII quadrate; antennomere VIII same length as VII, wider than long; each of antennomeres IX-XI width =  $2 \times ext{length}$ ,  $2 \times ext{longer}$  than VIII. Maxillary and labial terminal palpomeres acuminate (Fig. 4), sensory area restricted to apex. Mentum broad with anterior projection, almost triangular, slightly more than  $2 \times ext{longer}$  wider than long.

Pronotum (Fig. 2) arched, anterior margin projecting in front of anterior angles (typical for the subgenus Dacne); base with complete margin; puncture size and density as on head. Scutellum transverse, width =  $2 \times 100$  key length. Elytra margined basally; strial punctures confused, although study under normal lighting revealed subcutaneous discoloration of the strial punctures allowing for easy recognition.

Prosternum (Fig. 6) with anterior edge straight, lacking margin; posterior process narrow, rounded, width less than diameter of procoxa; prosternal lines apparently lacking; punctures coarse, diameter = eye facet, separated by 1-3 puncture diameters. Mesometasternal suture medially short, distinctly shorter than width of mesocoxa, distinctly arched anteriorly. Meso- and metasternum with punctures as on prosternum. Abdomen with distinct coxal lines on first ventrite nearly attaining posterior margin. Legs with tibia not dilated at apex.

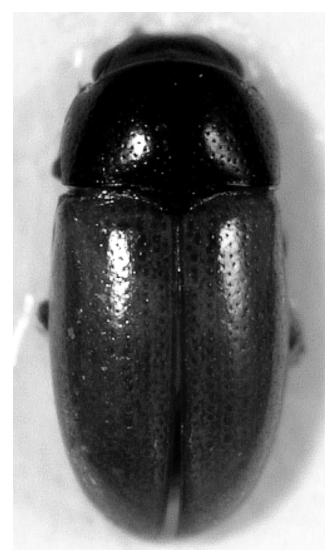


Figure 2. Dacne ducke Skelley, holotype, dorsal view.

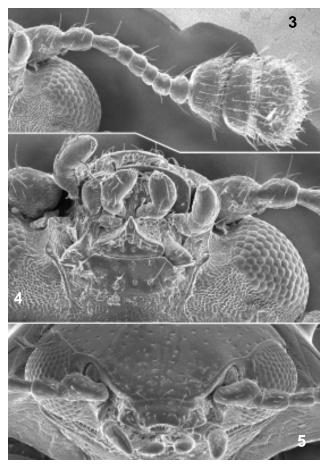
Male genitalia (Fig. 7) with median lobe short, apically pointed; median strut length =  $3 \times median$  lobe; tegmen with parameres long, flattened, tightly fitting basal piece and each other.

**Holotype**: Male. Label data: "/[white paper] BRA-ZIL: Amazonas [underlined with green], Reserva Ducke, 26km NE Manaus, Hurtado, J.C.G. / [left half of label green] *Eschweilera atropetiolata* 2.v.1996 / [left half of label pink] Tree No. 5, Tray No. 9 / [yellow label with black border] C91.2 / [red label] HOLO-TYPE Dacne (Dacne) ducke P.E.Skelley 2003 /". It is deposited in the Natural History Museum, London [NHML], and is on a card mount with genitalia on a separate card.

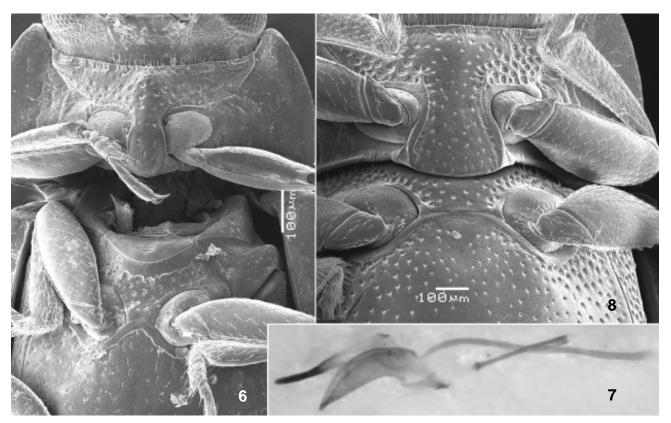
**Additional Specimen**: A single paratype male did not differ significantly from the holotype in any feature studied. The label data are identical to those of the holotype except: "..../[left half of label pink] Tree No. 5, Tray No. 6 / ...." [NHML].

**Etymology**. The species is named for the reserve in which the type specimens were collected; the Reserva Ducke, near Manaus, Amazonas, Brazil (noun in apposition).

**Remarks**: Dacne ducke is the first member of the genus and tribe to be recognized in South America. Specimens were collected in a canopy fogging study in the Reserva Ducke (pers. comm. M. Brendell, NHML via M.Barclay). This opens whole new phylogenetic and zoogeographic hypotheses that will take much more work and specimens to explore. For example, a study of female genitalia for D. ducke (female unknown) would help confirm a number of questions about its placement within the genus.



**Figures 3-5.** *Dacne ducke* Skelley, holotype; 3). antenna, venteral view; 4). head, ventral view; 5). head, anterior view.



**Figures 6-8.** Dacne spp.; 6-7. Dacne ducke Skelley, holotype; 6). thorax, ventral view; 7). genitalia. 8). Dacne quadrimaculata (Say), thorax, ventral view

## Update to world key

The genus *Dacne* should be revised on a world basis. Within the subgenus *Dacne*, there appears to be three groups of species. First are the species D. brodzinskyi and D. ducke which lack prosternal lines, have a short, arched meso-metasternal suture, have typical antennal club development, and are found in tropical America. Second is a group of species near *D. japonica* Crotch which lack prosternal lines, have a long, straight meso-metasternal suture, have enlarged antennal clubs, and are found from tropical Asia to Japan. Lastly are the typical species which have prosternal lines extending forward beyond the procoxae, have a long, straight meso-metasternal suture, have typical sized antennal clubs, and occur throughout the Holarctic. Because several species are presently unavailable for study, these groups are not formally established, nor is the validity of any previously described species evaluated here.

The following key is updated from that in Skelley (1997). A star by the name indicates that specimens were not studied and key characters are based on the species description.

- 2(1). Pronotal lateral margin thin for entire length (Fig. 4 in Skelley 1997); pronotum swollen anteriorly, projecting forward beyond anterior pronotal angles (Figs 2, 8 in Skelley 1997); widespread, northern hemisphere [Sg. Dacne Latreille] ..... 7
- Pronotal lateral margin thickened, often broader anteriorly (Fig. 5 in Skelley 1997); pronotal anterior margin normal, not projecting forward beyond anterior angles (Fig. 3 in Skelley 1997); western North America and Japan [Sg. Xenodacne Boyle]
- 3(2). Body primarily black; elytra black with distinct orange markings; Japan ......4
- Body primarily brown; elytra without distinct markings, or with weakly defined stripes; western North America .......

4(3).	Each elytron with one orange mark; pronotum black	13(12). Procoxal lines lacking; body entirely reddish- brown; India
_	Each elytron with two orange markings; pronotum orange	<ul> <li>Procoxal lines extending forward beyond coxae; body usually darker ventrally, elytra usually with basal spot; western North America</li> </ul>
5(3).	Prosternal lines not extending in front of procoxae; epistome elliptical, separated from vertex by a	
_	distinct suture	14(12). Elytron black with basal and apical spot 15  — Elytron black with basal spot only
6(5).		15(14). Head and pronotum reddish-brown; antennomer-
	Elytra with fine basal margin; prosternal lines widely separated, lateral pronotal margin strong-	es IX and XI same width16  Head and pronotum black; antennomere XI dis-
	ly swollen anteriorly, body dorsally glabrous	tinctly wider than antennomere IX; eastern USA
		and Canada D. (D.) quadrimaculata (Say)
_	Elytra without basal margin; prosternal lines nar-	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	rowly separated; lateral pronotal margin weakly swollen anteriorly; body dorsally pubescent  D. (X.) pubescens Boyle	16(15). Pronotal disc punctures dense, separated by less than their diameter; western North America
	D. (A.) pubescens Boyle	<ul> <li>Pronotal disc punctures sparse, separated by more</li> </ul>
7(2).	Meso-metasternal suture shorter than mesocoxal	Tronocar also parietares sparse, separacea sy more
,	diameter (Fig. 6), strongly arched anteriorly (tropical America)27	17(14). Metasternum reddish, contrasting with black of elytra18
_	Meso-metasternal suture as long as mesocoxal	<ul> <li>Metasternum dark, not contrasting with elytra</li> </ul>
	diameter (Fig. 8), straight or sinuate with middle	19
	arched posteriorly (Holarctic, primarily boreal)	40/45) D
	8	18(17). Pronotum black; Japan D. (D.) kidoi Nakane
8(7).	Antennomere IX broad, width greater than 2.5	- Pronotum red30
0(1).	times length; antennomere XI asymmetrical; club shape somewhat triangular (Fig. 6 in Skelley	19(17). Head and pronotum same color, not contrasting
	1997); each elytron with one orange band at base,	Reddish head and black pronotum contrasting in
	approaching the base near the humerus, but	color22
	usually not touching base; head and pronotum	
	orange (pronotal disc may be darkened)9	20(19). Head and pronotum black; Europe, Siberia
_	Antennomere IX not broad, width usually less than	
	2.5 times length; antennomere XI symmetrical or	Head and pronotum reddish-brown; Europe, west-
	not; club shape usually oval (Fig. 7 in Skelley	ern North America21
	1997); color not as above, basal elytral mark (if present) broadly touching base, usually a simple	21(20). Basal elytral spot poorly defined, often lacking,
	spot; head and pronotum orange or black 12	when present large and occupying most of elytral
		base; western North America
9(8).	Head with broad, dorsal groove between eyes; Sri	
	Lanka D. (D.) pulchella Arrow	<ul> <li>Basal elytral spot well defined, small, occupying</li> </ul>
_	Head lacking notable groove10	less than half of elytral base; Europe, Siberia .
40(0)		D. (D.) bipustulata (Thunberg)
10(9).	Orange elytral mark a jagged diagonal band; Japan	00/10\ EL , L , L ,
		22(19). Elytral mark not reaching epipleural fold, broadly
_	Orange erytrai mark smoothly rounded11	separated23  — Elytral mark reaching epipleural fold; Europe, west-
11(10)	Pronotum entirely orange28	ern Asia
_ ` '	Pronotum with darkened disc; Japan, Korea	, , , , , , , , , , , , , , , , , , ,
		23(22). Each elytral spot width a third of body width; Europe, Siberia D. (D.) rufifrons (Fabricius)
12(8).	Elytron unicolor, entirely reddish-brown13	<ul> <li>Each elytral spot width a quarter of body width;</li> </ul>
_	Elytron distinctly bicolored, black with orangish	Japan D. (D.) fungorum Lewis
	basal spot14	04/4) A
		24(1). Antennal club strongly elongate, length = 2 times width

_	Antennal club not strongly elongate, length = 1.4 times width25
25(24)	. Punctures of elytral stria strong; eyes coarsely faceted; each elytron with a basal and apical mark (possibly forming a band)
_	Punctures of elytral stria fine; eyes finely faceted; markings variable26
26(25)	. Pronotum and elytra entirely reddish-brown  D. (A.) rufa Delkeskamp*
_	Pronotum and elytra with black marks
27(7).	Tibia dilated (Fig. 1 and Skelley 1997: Figs. 8-10);  Dominican Republic (amber fossil)  D. (D.) brodzinskyi Skelley
_	Tibia not dilated (figs. 6); Brasil (extant)
28(11)	. From Thailand and Burma
_	From Chejudo Island, South Korea
29(16)	. Pronotum entirely reddish-brown; basal elytral mark not continuous across base, black near scutellum; Caucasus
_	
30(17)	. Elytra with base entirely reddish; Japan
_	<i>D.</i> ( <i>D.</i> ) <i>akitai</i> Narukawa* Elytra with black mark over scutellar area; Japan

#### Checklist of known Dacne species

#### Dacne Latreille

Sg. Afrodacne Delkeskamp

Dacne (Afrodacne) aequinoctialis (Thompson) Dacne (Afrodacne) clavata Delkeskamp Dacne (Afrodacne) nigropicta Delkeskamp Dacne (Afrodacne) rufa Delkeskamp

Sg. Dacne Latreille

Dacne (Dacne) akitai Narukawa
Dacne (Dacne) bipustulata (Thunberg)
Dacne (Dacne) brodzinskyi Skelley [fossil]
Dacne (Dacne) californica (Horn)
Dacne (Dacne) ducke Skelley
Dacne (Dacne) fungorumLewis
Dacne (Dacne) indica (Crotch)

Dacne (Dacne) japonica Crotch
Dacne (Dacne) kidoi Nakane
Dacne (Dacne) minima Nikitsky and Kompantzev
Dacne (Dacne) notata (Gmelin)
Dacne (Dacne) optabilis Gorham
Dacne (Dacne) osawai Ashida and Kim
Dacne (Dacne) picta Crotch
Dacne (Dacne) pontica (Bedel)
Dacne (Dacne) pulchella Arrow
Dacne (Dacne) quadrimaculata (Say)
Dacne (Dacne) rufifrons (Fabricius)
Dacne (Dacne) semirufula (Reitter)

Sg. Xenodacne Boyle

Dacne (Xenodacne) cyclochilus Boyle Dacne (Xenodacne) maculata Chûjô Dacne (Xenodacne) picea LeConte Dacne (Xenodacne) pubescens Boyle Dacne (Xenodacne) zonaria Lewis

### Acknowledgements

I thank M. Barclay, Natural History Museum, London, UK, for all of his assistance providing specimens and information for my studies. I thank R. A. B. Leschen, Landcare Resesarch, Auckland, New Zealand, for discussions on phylogenetic relationships in this group, and for assistance in confirming the new species was indeed a member of the genus *Dacne* and not some odd "languriid".

For editorial comments of the manuscript, I thank R. A. B. Leschen, Landcare Research, Auckland, New Zealand; J. V. McHugh, University of Georgia, Athens, GA-USA; M. C. Thomas and W. Dixon, Florida Department of Agriculture and Consumer Services, Gainesville, FL-USA. This is Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Entomology Contribution No. 952.

#### Literature cited

**Ashida, H. and C.-G. Kim**. 1999. A new species of *Dacne* from Chejudo Island off South Korea. Elytra, Tokyo 27(2): 381-385.

**Leschen, R. A. B.** 2003. Erotylidae (Insecta: Coleoptera: Cucuoidea): phylogeny and review. Fauna of New Zealand No. 47. Manaaki Whenua Press, Lincoln, NZ, 103 pp.

**Narukawa**, **N.** 1992. A new species of the genus *Dacne* form the Kii Peninsula, central Japan. Entomological Review of Japan 47(1): 67-69.

**Nikitsky, N.B. and A. V. Kompantzev.** 1995. The new species of pleasing fungus beetles (Coleoptera, Erotylidae) from the Russian Far East with the

comments on the distribution and biology of some other species. Zoologicheskii Zhurnal 74(6): 83-92. [Russian]

**Skelley, P. E.** 1997. A new species of *Dacne* Latreille from Dominican Amber, with a key and checklist to the known species of *Dacne* (Erotylidae: Dacninae). Annales Zoologici 47(1/2): 49-53.

**Wegrzynowicz, P.** 2002. Morphology, phylogeny and classification of the family Erotylidae based on adult characters (Coleoptera: Cucujoidea). Genus 13(4): 435-504.

Note: After this paper was accepted for publication, a fourth specimen of *Dacne brodzinskyi* was discovered. It is deposited in the collection of Albert Allen, Boise, ID, USA.