

A new stick insect of the genus *Oncotophasma* from Costa Rica (Phasmatodea, Diapheromeridae, Diapheromerinae)

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Abstract. – A new species of Phasmatodea, *Oncotophasma laetitiae* n. sp. from Costa Rica, is described and illustrated in both sexes and the egg.

Résumé. – Un nouveau Phasme du genre *Oncotophasma* du Costa Rica (Phasmatodea, Diapheromeridae, Diapheromerinae). Une nouvelle espèce de Phasmatodea du Costa Rica, *Oncotophasma laetitiae* n. sp., est décrite et illustrée, incluant les deux sexes et l'œuf.

Resumen. – Un nuevo fásrido del género *Oncotophasma* de Costa-Rica (Phasmatodea, Diapheromeridae, Diapheromerinae). Una nueva especie de Phasmatodea de Costa Rica, *Oncotophasma laetitiae* n. sp., es descrita e ilustrada, incluyendo ambos sexos y el huevo.

Keywords. – New species, taxonomy, morphology, host plant.

A new phasmid species was collected by the author in 2011 in Costa Rica, in the Heredia Province at the Research Station of Refugio de Vida Silvestre Cerro Dantas, at about 2000 m above sea level. Three females, one male and two female nymphs were found on the same shrub but only one pair was collected. The specimens were found in copula, which confirms them to be conspecific. The author obtained one egg from the female kept alive an extra night.

Examination has shown this species to belong in the genus *Oncotophasma* Rehn, 1904 (Diapheromerinae, Diapheromerini) and detailed comparison with the types of the known species has proven this to be a still undescribed species. So far, the genus contained eight species, distributed throughout Costa Rica, Panama and Colombia (ZOMPRO, 2007). The species described herein is the 7th species recorded from Costa Rica and rises the number of known species of *Oncotophasma* to nine.

A revision of *Oncotophasma* was published by ZOMPRO (2007), which stated the genus to be characterized by the swollen or at least differently structured posterior portion of the metanotum of males. The new species at hand however contradicts this character and is remarkable for having a slender metanotum that does not show any considerable differences between the sculpturing of the surface of the anterior and the posterior portions. All other important characters, including the egg-morphology, however fully agree with *Oncotophasma* and leave no doubt about its generic affiliation.

MATERIAL AND METHODS

Measurements are given in millimeters with a precision of ± 0.1 mm.

The classification used follows ZOMPRO (2001, 2004). Listed information and data of the types are mainly based on the online database Phasmida Species File (BROCK, 2015) and ZOMPRO (2007).

Abbreviations used. – MNHN, Museum national d'Histoire naturelle, Paris, France; coll. YB, private collection of Yannick Bellanger, Trédias, France; MRSN, Museo Regionale di Scienze Naturali, Torino, Italy; NHMW, Naturhistorisches Museum Wien, Austria; NRM, Naturhistoriska Riksmuseet, Stockholm, Sweden.

RESULTS

Phasmatodea, Anareolatae, Diapheromeridae, Diapheromerinae,
Diapheromerini, “*Clonistria*-group”

Genus *Oncotophasma* Rehn, 1904

Type-species: *Bostra martini* Griffini, 1896: 10 [MRSN], by original designation (REHN, 1904: 59).

Oncotophasma Rehn, 1904: 59. KIRBY, 1904: 351; HEBARD, 1922: 358; BRADLEY & GALIL, 1977: 180; BRAGG, 2001: 638;

ZOMPRO, 2001: 228; ZOMPRO, 2004: 316; OTTE & BROCK, 2005: 233; ZOMPRO, 2007: 3; CONLE *et al.*, 2011: 55.

Syn. *Paradiapheromera* Brunner von Wattenwyl, 1907: 317. Type-species: *Paradiapheromera strumosa* Brunner von Wattenwyl, 1907: 317 [syn. *Bostra martini* Griffini, 1896), by monotypy] [synonymised by HEBARD (1922: 358)].



Fig. 1-2. – *Oncotophasma laetitia* n. sp., in natura. – 1, ♂ holotype. – 2, ♀ paratype. (Pictures from the author).

Species included and their distribution:

<i>Oncotophasma armatum</i> (Brunner von Wattenwyl, 1907)	[Panama]
<i>O. coxatum</i> (Brunner von Wattenwyl, 1907)	[Costa Rica, Colombia]
<i>O. laetitiae</i> n. sp.	[Costa Rica]
<i>O. limonense</i> Zompro, 2007	[Costa Rica, Colombia]
<i>O. maculosum</i> Zompro, 2007	[Costa Rica]
<i>O. martini</i> (Griffini, 1896)	[Costa Rica, Panama, Colombia]
<i>O. modestum</i> (Brunner von Wattenwyl, 1907)	[Costa Rica, Panama]
<i>O. podagricum</i> (Stål, 1875)	[Panama, Colombia]
<i>O. weitschati</i> Zompro, 2007	[Costa Rica]

***Oncotophasma laetitiae* n. sp.** (fig. 1-2)

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HOLOTYPE: ♂, Costa Rica, Heredia Province, Refugio de Vida Silvestre, Cerro Dantas, alt. 2000 m., 30.VIII.2011, rec. Yannick Bellanger (MNHN).

PARATYPES: 1 ♀, *idem* holotype (MNHN); 1 egg, laid by the female paratype (coll. YB).

Description of the female. – General colour of body light brown. Fig. 2-3.

Head of rectangular shape, 1.4× longer than wide, flattened dorsally and rounded laterally (fig. 4); slightly longer than pronotum; posterior half with a longitudinal median furrow. Eyes projecting hemispherically. Antennae reaching abdominal segment VII; scapus almost rectangular, flattened dorso-ventrally, and distinctly longer than third antennomere; pedicellus cylindrical, slightly narrowed apically and considerably shorter than third antennomere.

Pronotum almost rectangular, longer than wide, with a distinct medio-longitudinal furrow and a medio-transverse bow-shaped furrow; lateral margins protruded. Mesonotum 5.7× longer than pronotum and 2.5× longer than metanotum, minutely granulose and with a slightly visible medio-longitudinal carina. Metanotum 1.9× longer than median segment, minutely granulose; medio-longitudinal carina somewhat more pronounced than on mesonotum and with a slightly protruding darker bulge near posterior margin.

Legs. Profemora curved and compressed basally, trapezoidal in cross section with antero-dorsal carina slightly raised; protibias about equal in length to corresponding femora; probasitarsi shorter than the four following tarsomeres combined. Mesofemora slightly longer than corresponding tibias and with two small black sub-apical spines on the medio-ventral carina; mesotibias slightly raised dorso-apically; mesobasitarsi as long as the three following tarsomeres combined. Metafemora and metatibias equal in length; metafemora with two to three small black sub-apical spines on the medio-ventral carina (fig. 5); metabasitarsi longer than the three following but shorter than the four following tarsomeres combined.

Abdomen with a distinct medio-longitudinal carina and with latero-longitudinal carinae. Lateral margins of tergites III to VII bearing six to nine minute, rounded and brown tubercles (only two to three on II and VIII). Tergites III to V the longest and of equal length; II and VI equal in length but slightly shorter than III-V; tergites VIII to X decreasing in length and shorter than previous ones, X the shortest. Anal segment with a distinct triangular median indentation at posterior margin (fig. 7). Epiproct small, shield-shaped and with a distinct medio-longitudinal keel. Cerci conical, straight and rounded at the apex, facing downward and projecting distinctly over the anal segment. Subgenital plate elongated, smooth and slightly shiny; projecting over apex of abdomen by more than the length of anal segment; posterior part with lateral margins overlapping and forming a closed tube with the apex acutely pointed (fig. 6-8). Sternum V sparsely granulose. No visible praeopercular organ. Gonapophyses only slightly visible, spotted and translucent, not reaching the apex of the anal segment but reaching two-thirds along the subgenital plate.

Description of the male. – Slender, general coloration of body brown. Fig. 1, 9.

Head almost rectangular, slightly narrowed in its posterior part, 1.45× longer than wide, flat dorsally and rounded laterally (fig. 10); roughly of the same size as pronotum; posterior half with a longitudinal median furrow; cheeks with a darker line behind the eyes and slightly narrower than the eyes. Eyes projecting hemispherically. Antennae longer than body; scapus almost rectangular and flat, compressed

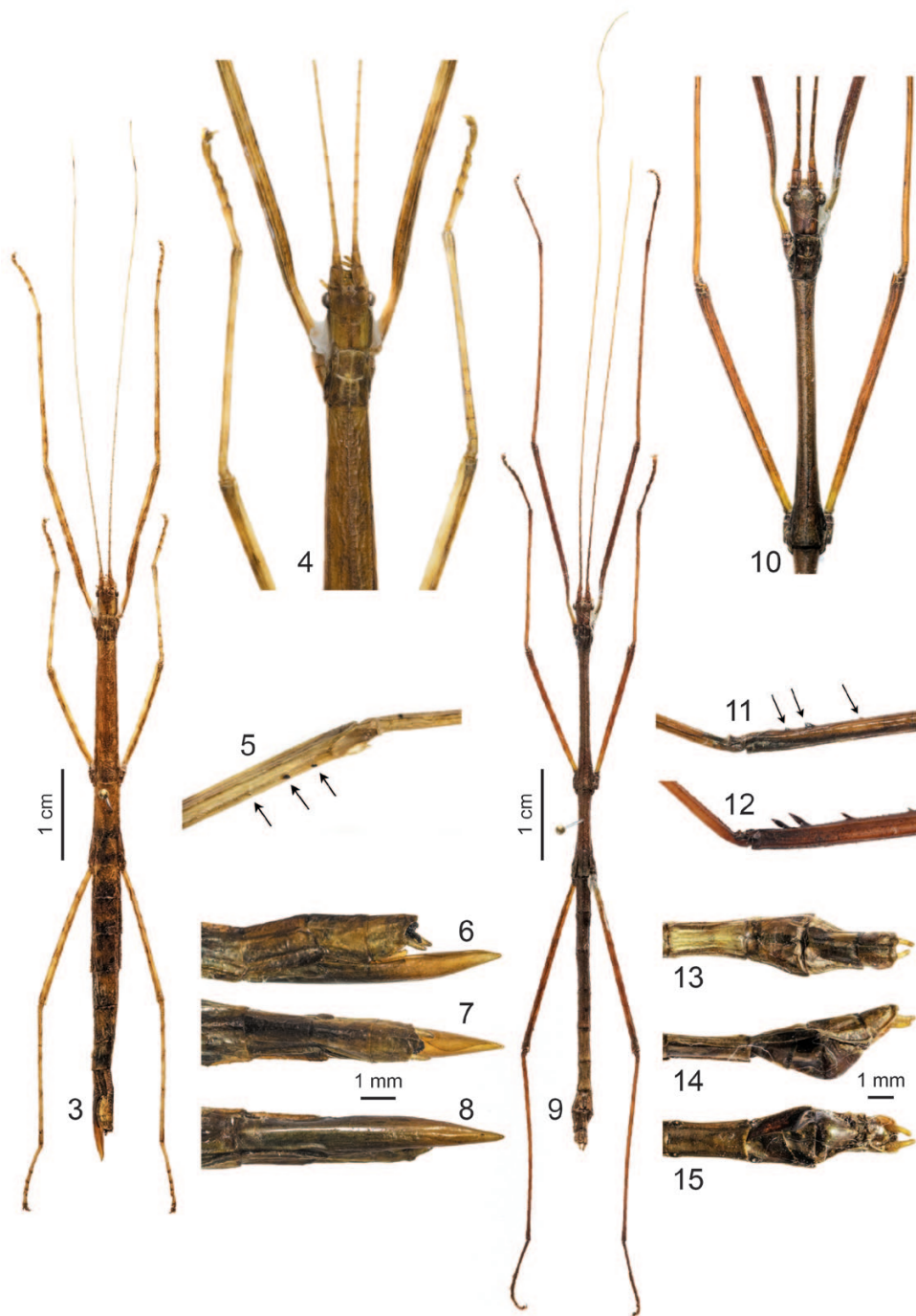


Fig. 3-15. – *Oncotophasma laetitiae* n. sp. – 3-8, ♀ paratype: 3, habitus, dorsal view; 4, head, dorsal view; 5, apical part of metafemora; 6-8, abdominal extremity (6, lateral view; 7, dorsal view; 8, ventral view). – 9-15, ♂ holotype: 9, habitus, dorsal view; 10, head, dorsal view; 11, apical part of metafemora; 12, apical part of metafemora of *Oncotophasma podagricum* (Stål); 13-15, abdominal extremity (13, dorsal view; 14, lateral view; 15, ventral view). (Pictures from Vincent Guillemot, except fig. 12 from Gunvi Lindberg).

dorso-ventrally and smaller than third antennomere; pedicellus cylindrical and considerably shorter than third antennomere; scapus and pedicellus combined slightly longer than third antennomere.

Pronotum rectangular, longer than wide, with a distinct medio-longitudinal furrow and a bow-shaped medio-transverse furrow; lateral margins protruded. Mesonotum $5.7\times$ longer than pronotum and $2.3\times$ longer than metanotum. Metanotum $2.4\times$ longer than median segment and with a slightly protruding darker bulge near posterior margin. Meso- and metasternum smooth and shiny.

Legs. Profemora curved and trapezoidal in cross section; protibias slightly longer than corresponding femora; probasitarsi almost as long as the four following tarsomeres combined. Mesofemora slightly shorter than corresponding tibias, and with two small black sub-apical spines on the medio-ventral carina; mesotibias straight and slightly raised dorso-apically; mesobasitarsi longer than the three following but shorter than the four following tarsomeres combined. Metafemora shorter than corresponding tibias, with small black sub-apical spines on the medio-ventral carina: the spine in the middle being the largest and closer to the apical one; metabasitarsi slightly longer than the four following tarsomeres combined.

Abdomen smooth but with a weakly defined medio-longitudinal carina and indistinct latero-longitudinal carinae only on tergites VI and VII. Tergites III and IV the longest and of equal length; II and V slightly shorter and almost of equal length; following tergites decreasing in length and shorter than previous ones, X the shortest. Tergite VII slightly widened posteriorly and VIII strongly widened posteriorly; IX narrowed posteriorly and compressed laterally, especially in its posterior two-thirds. Anal segment with a distinct medio-longitudinal carina and an emarginated apex (fig. 13). Cerci slightly narrowed towards apex, gently upcurving, with the apex rounded and projecting distinctly over the anal segment. Sternites II to VII smooth and shiny. Poculum cup-shaped with base rounded and not reaching the posterior margin of tergum IX; posterior margin triangular (fig. 14-15). Vomer visible and triangular.

Description of the egg. – Bullet-shaped, about $2.2\times$ longer than wide and $2\times$ longer than high, compressed laterally. Colour brown. Fig. 16-18.

Capsule covered by a fine and irregular network of carinae with smooth and slightly shiny areas in-between. Ventral surface almost straight, dorsal surface gently convex and somewhat narrowed towards the polar area. Operculum anteriorly surrounded by a collar. Micropylar plate suboval, covered by the same network of carinae, roughly placed in the center of anterior surface, and about one-third as long as the capsule. Median line distinct and reaching the posterior apex of the capsule. Operculum oval, flat, and inserted at an angle of about 35° ; surface with irregularly radially directed carinae; central area with an oval rim of raised hairy structures.

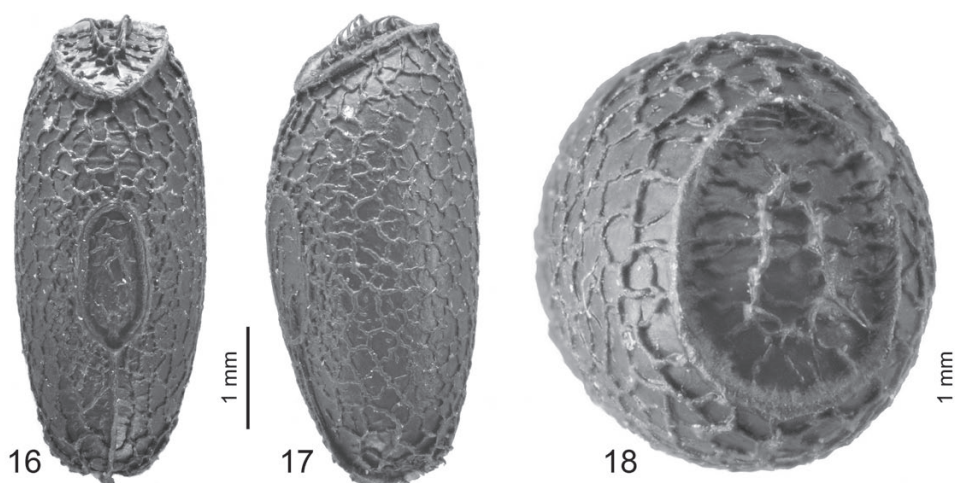


Fig. 16-18. – *Oncotophasma laetitiae* n. sp., egg. – 16, Dorsal view. – 17, Lateral view. – 18, Apical view of operculum. (Pictures from Philippe Lelong).

Measurements (millimeters). – ♂ **holotype**. Body: 59.7; antennae: 66.0; head: 2.9; pronotum: 2.8; mesonotum: 16.0; metanotum: 6.9; median segment: 2.9; profemora: 20.6; mesofemora: 15.0; metafemora: 19.7; protibias: 22.8; mesotibias: 15.8; metatibias: 22.0.

♀ **paratype**. Body (including the subgenital plate): 62.7; antennae: 50.4; head: 3.5; pronotum: 3.1; mesonotum: 15.5; metanotum: 6.3; median segment: 3.3; profemora: 17.2; mesofemora: 12.3; metafemora: 16.1; protibias: 17.1; mesotibias: 11.4; metatibias: 16.3; subgenital plate : 10.3; tergite IX: 2.7; tergite X: 2.2.

Egg. Capsule length: 4.5; capsule height: 2.2; capsule width: 2.0; operculum: small diameter: 1.2; large diameter: 1.8.

Etymology. – This new species is dedicated to my wife who accompanied me in Costa Rica and has supported my passion for Phasmatodea for many years.

DISCUSSION

Males of *Oncotophasma* are characterized by having a swollen and often wrinkled to granulose metanotum, which sometimes bears tubercles in its posterior part. However the metanotum of *Oncotophasma laetitia* n. sp. is slender and entirely smooth without any swellings or elevations, which readily distinguishes it from all other known species. Another difference is represented by the metafemora of the males which are not broadened. Despite of those distinguishing characters which need to be incorporated in the genus description, this species perfectly fit the description in ZOMPRO (2007). The female has the typical long subgenital plate of the genus, which considerably projects beyond the extremity of the abdomen.

A closely related species is *O. podagricum* (Stål, 1875), which is only known from the male (holotype in NRM). From this species *O. laetitia* n. sp. differs in the slender metanotum and the smaller number and less distinct spines on the anteroventral carina of the metafemora (see fig. 11-12).

Females resemble *O. maculosum* Zompro, 2007, which is only known from the female, but differ by the light brown colour, the lack of dark spots on the body and legs, the relatively shorter metanotum which is only 1.9× longer than the median segment (2.8× longer in *O. maculosum*) and the much shorter third antennomere which is considerably shorter than the scapus (almost as long as scapus and pedicellus combined in *O. maculosum*).

Biology and distribution. – This species is so far only known from the type locality in the Heredia Province of Costa Rica. The biotope is a cloudy and very humid mountainous rainforest with lots of lichens in the trees (fig. 19). At the time of collecting, the night temperatures were

Table I. – Differentiation between *Oncotophasma laetitia* sp. n. and the closest related species.

	<i>O. laetitia</i> n. sp.	<i>O. podagricum</i> (Stål, 1875)	<i>O. maculosum</i> Zompro, 2007
Medio-ventral carina of the metafemora (♂)	With 3 small black sub-apical spines (fig. 11)	With 6 dark spines, of which the 3 apical ones are very well developed (fig. 12)	Male unknown
Posterior part of the metanotum (♂)	Not raised dorsally	Raised dorsally	
Metanotum length (♀)	1.9× longer than the median segment	Female unknown	2.8× longer than the median segment
Third antennomere (♀)	Shorter than scapus		Almost as long as scapus and pedicellus combined



Fig. 19. – View of the natural habitat of *Oncotophasma laetitiae* n. sp. in Cerro Dantas, Costa Rica. (Picture from the author).

around 8°C and the day temperatures around 18°C. The specimens were found at night feeding on a plant of the family Melastomataceae, *Monochaetum* sp. (possibly *M. floribundum* Naudin), which consequently is one of their host plants.

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