

Two new species of Arctiidae (Lepidoptera) from the Yukon Territory, Canada¹

J. D. LAFONTAINE

EASTERN CEREAL AND OILSEED RESEARCH CENTRE, AAFC, K. W. NEATBY BLG., C. E. F.,
OTTAWA, ON, CANADA K1A 0C6

J. T. TROUBRIDGE

PACIFIC AGRI-FOOD RESEARCH CENTRE, AAFC, 6947 #7 HWY, P.O. BOX 1000, AGASSIZ, BC,
CANADA V0M 1A0

ABSTRACT

Arctia brachyptera sp. n. and *Dodia verticalis* sp. n. are described from the Yukon Territory, Canada, and *Arctia caja opulenta* is elevated to species rank. Illustrations of the adults and female genitalia are provided.

INTRODUCTION

For reasons that are not clear, most of the arctic Arctiidae are extremely rare. For example, only two nearctic specimens of *Hyperborea czekanowskii* Grun-Grshimailo (Ferguson, 1985) and two specimens of *Neoarctia lafontainei* Ferguson, have been collected. With the exception of *Grammia quenseli* (Paykull) and *Acsala anomala* Benjamin, most other arctic species are known from fewer than a dozen nearctic specimens. Most of these species are holarctic and are equally rare in the Palearctic. Here we elevate *Arctia caja opulenta* (Hy. Edwards) to species status and describe one new *Arctia* Schrank and one new *Dodia* Dyar below.

Arctia opulenta (Hy. Edwards) **rev. stat.**
(Figures 1c, 2c)

Euprepia opulenta Hy. Edwards, 1881: 38

Arctia caja ssp. *americana*

a) *phaeosoma* (Butler), *Ab. opulenta* (Hampson, 1901:464).

Arctia caia opulenta (Hy. Edwards), Dyar, 1902:92.

Arctia caja opulenta (Hy. Edwards), McDunnough, 1938:53; Hodges, 1983:117

Arctia opulenta differs from *A. caja* (L.) by its smaller size (forewing length 25 mm), its small, ellipsoidal eyes and diurnal flight vs. larger size (forewing length 32 mm), large, orbicular eyes and nocturnal flight. Also, the posterior portion of the corpus bursae of female *A. caja* narrows toward the ductus bursae (Figure 2a) but the posterior corpus bursae of *A. opulenta* is swollen to about the same size as the anterior corpus bursae and separated from it by a slight constriction (Figure 2c). In *A. caja* the appendix bursae is smooth, C-shaped, and bends from the side of the posterior corpus bursae across the dorsal side of the ductus bursae and around, almost to the dorsal corpus bursae; the ductus seminalis arises from the tip of the appendix bursae, from which a large, sausage-like diverticulum extends anteriorly, almost to the anterior end of the corpus bursae. In *A. opulenta* the appendix bursae is smooth-walled like that of *A. caja* (deeply furrowed in *A. brachyptera*) but much shorter, terminating on the dorsal side of the ductus bursae. As in *A. caja*, the ductus seminalis arises from the tip of the appendix bursae and has a large, sausage-like diverticulum; however, this diverticulum is much smaller than that of *A. caja*, closely approaching the appendix bursae in size and shape. Externally, the ovipositor lobes of *A. opulenta* are deeply notched and those of *A. caja* are bluntly pointed.

Arctia opulenta has been collected in arctic, alpine and subarctic habitats from Alaska, east to Manitoba.

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Arctia brachyptera Troubridge and Lafontaine **sp. n.**

(Figures 1a, 1b, 2b)

Type material. Holotype female: Canada, Yukon, Nickel Creek, 4500'. St. Elias Range, 24-25 June 1991. J. Troubridge, in the Canadian National Collection, Ottawa. Paratypes: 1 female, same data as holotype; 1 female, YT, Mt Archibald, 6500', St. Elias Range, 26 June 1991, J. Troubridge.

Description. Female. Forewing length 18 mm. Head, palpi, and scape mouse brown; antennae pectinate; eye reduced, ellipsoidal, length to width ratio 1.6:1; haustellum reduced. Prothoracic collar mouse brown, thinly edged basally with red and then white scales. Thorax mouse brown, with off-white scales in anterior tegulae. Abdomen mouse brown, tergites edged antero-laterally with pinkish orange scales. Dorsal forewing mouse brown, adbasal, basal, medial, postmedial, and subterminal lines off white, variable in width, and may be reduced or absent (Figures 1a, 1b); fringe medium gray, checkered with dark gray between veins. Dorsal hindwing pinkish orange (Figure 1b) to pinkish brown (Figure 1a); subterminal black spots may fuse to form black band; postmedial black spot across discal cell; antemedial band black.

Male genitalia. Unknown.

Female genitalia. Ovipositor lobes notched apically, covered with setae; ductus bursae heavily sclerotized; corpus bursae bulbous, furrowed anteriorly with two minute dorsal signa, posterior half very deeply furrowed, from which the irregular, deeply furrowed appendix bursae arises; appendix bursae gives rise to ductus seminalis; ductus seminalis with large, oblong diverticulum arising near juncture with appendix bursae; diverticulum swollen, resembling a second corpus bursae.

Diagnosis. This species cannot be confused with any other species in western North America. The closely related *A. opulenta* (Figure 1c) occurs with *A. brachyptera* in the St. Elias Mts., YT, and *A. caja* (Figure 1d) occurs farther to the south in more temperate habitats. The females of these species can easily be separated by their wing size - those of *A. opulenta* and *A. caja* are of normal size, and those of *A. brachyptera* are reduced, leaving the females, at least when carrying a full egg-load, flightless. In addition, the abdomen of *A. brachyptera* is brown with the tergites edged anterolaterally with pinkish-orange scales, while those of *A. opulenta* and *A. caja* are reddish orange with large black spots centrally located on the tergites. Also, the black hindwing spots on *A. brachyptera* do not have the blue sheen present in *A. opulenta* and *A. caja*. The eyes of *A. caja* are large and orbicular, indicating nocturnal flight, but those of *A. brachyptera* and *A. opulenta* are small and ellipsoidal, indicating diurnal habits. Internally, the posterior corpus bursae of *A. brachyptera* is much narrower than that of the other two species and the appendix bursae is short and deeply furrowed in *A. brachyptera* but long, sausage-like, and smooth in the other two species. The ovipositor lobes of *A. brachyptera* are notched apically but not as deeply notched as in *A. opulenta*. Those of *A. caja* are bluntly pointed. The male, when found, should have fully developed wings and have wing and abdominal markings similar to those of the female.

Derivation of the name. The name *brachyptera* refers to the reduced wing size of the female.

Distribution and Habitat. All three known specimens of *A. brachyptera* were collected in late June on dry tundra hilltops in the St. Elias Mts., YT. A single larva of *A. opulenta* was collected at the same time but at a lower elevation in wet shrub tundra.

Dodia verticalis Lafontaine and Troubridge **sp. nov.**

(Figures 1e, 2d,)

Type Material. Holotype female: Canada, Yukon Territory, British Mts., 69°17'N 140°03'W, 24 VI 1984, G. & M. Wood & D. Lafontaine, in the Canadian National Collection. Paratype: 1 female, Yukon, Km 406, Dempster Hwy., 20 June 1987, Jim Troubridge.

Description. Female. Forewing length 15 mm. Head covered in hair-like gray-brown scales; antennae filiform, black ventrally, covered with white and gray-brown scales dorsally; scape gray brown; eye reduced, oval; haustellum short but typical for genus; palpi very small but typical for genus. Prothoracic collar, tegulae, and thorax covered with hair-like gray-brown scales. Abdomen stout, light gray brown. Wings sparsely covered with narrow scales. Dorsal forewing very pale gray with darker gray brown, diffuse, broad, basal, antemedial, and postmedial lines arising perpendicular to posterior margin, bending to become perpendicular to costal margin at cubitus; subterminal row of diffuse, gray-brown spots between veins; fringe light gray. Dorsal hindwing very pale gray with obscure, gray-brown subterminal band; submarginal band whitish; fringe light gray; discal lunule gray brown.

Male genitalia. Unknown.

Female genitalia. Ovipositor lobes rounded, covered with setae, with dorsolateral pits at base; ductus bursae lightly sclerotized, relatively short; corpus bursae bulbous, thin-walled, with two small dorsal signa, corpus bursae posterioris narrows, widely attached to smaller appendix bursae at ductus bursae; left appendix bursae gives rise to ductus seminalis; ductus seminalis with large, bulbous diverticulum arising near juncture with appendix bursae - this diverticulum swollen so as to resemble a second corpus bursae but very thin-walled and delicate; anterior apophyses present and well developed; posterior apophyses short.

Derivation of the name. The name *verticalis* refers to the ordinary lines of the dorsal forewing, which arise perpendicular to the posterior margin. Those of *D. albertae* run more or less parallel with the outer margin.

Diagnosis. Dr. Vladimir Dubatolov has compared a photograph of *D. verticalis* with the *D. sazovovi* Dubatolov types from the Altai Mts. The wing markings of female *D. verticalis* are similar to those of male *D. sazovovi*, but the females of *D. sazovovi* are flightless (forewing length 5 mm) (V.V. Dubatolov, pers. comm.). In the Nearctic, *D. verticalis* flies with *D. albertae* Dyar (Figure 1f) and *D. kononenkoi* Tshistjakov and Lafontaine (Figure 1g). The wings of *D. albertae* are more heavily scaled than those of *D. verticalis* and the body is thinner and more delicate in *D. albertae* than *D. verticalis*. The ordinary lines of the dorsal forewing of *D. verticalis* arise perpendicular to the posterior margin, but those of *D. albertae* run more or less parallel with the outer margin. The wings of *D. kononenkoi* are slate gray and unmarked, but those of *D. verticalis* are paler with faint but noticeable bands. Judging by the stout body of *D. verticalis*, we feel that it is more closely related to the *D. kononenkoi-transbaikalensis* Tshistjakov group than the *Dodia albertae*-*D. diaphana* (Eversmann) group, whose members have a more slender bodies. The vertical lines on the forewing of *D. verticalis* are considerably more obvious on fresh specimens than on dried material. The scales probably shrivel up when they dry, making the wings even more translucent than they were originally. Adults and genitalia of the other Nearctic species of *Dodia* were illustrated by Tshistjakov and Lafontaine (1984).

Distribution and habitat. *Dodia verticalis* has been found on dry tundra hillsides in the Richardson and British Mts., YT. It flies in mid to late June.

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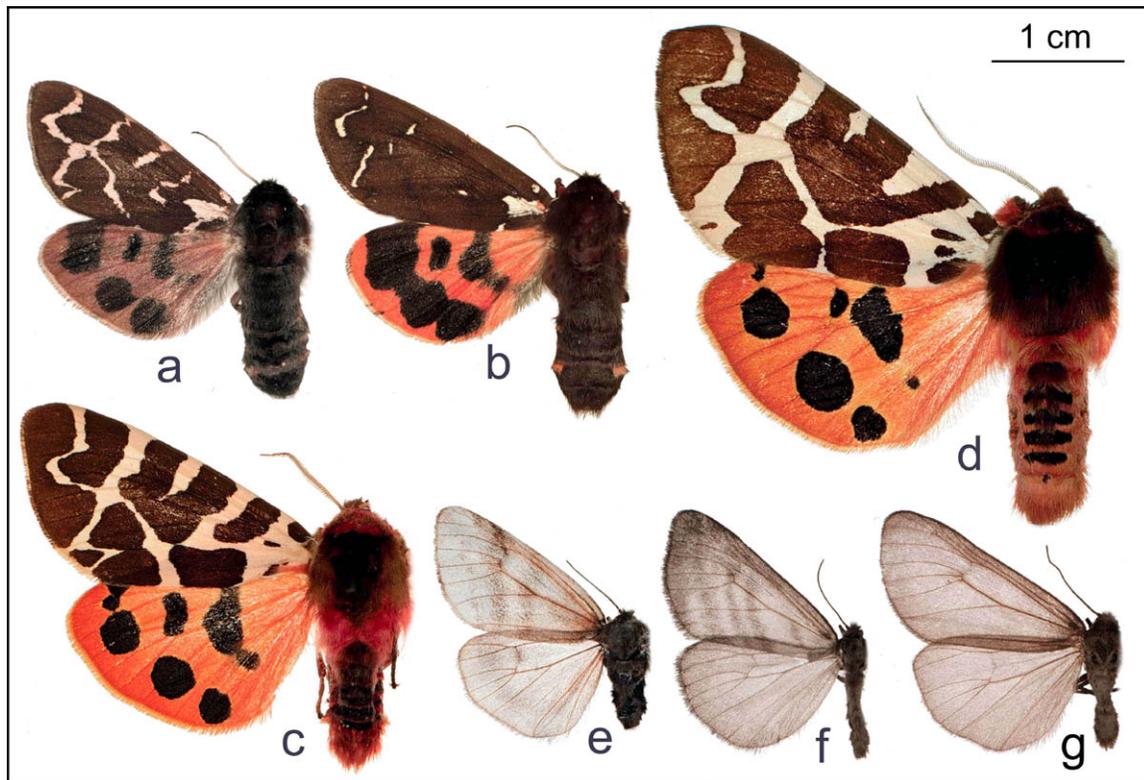


Figure 1. Adult females of: **a)** *Arctia brachyptera* (paratype), Mt Archibald, St. Elias Mts., YT; **b)** *Arctia brachyptera* (paratype), Nickel Creek, St. Elias Mts., YT; **c)** *Arctia opulenta*, Mt Archibald, St. Elias Mts., YT; **d)** *Arctia caja*, Oyster R., BC; **e)** *Dodia verticalis* (holotype), British Mts., YT; **f)** *Dodia albertae*, Nickel Creek, St. Elias Mts., YT; **g)** *Dodia kononenkoi*, Richardson Mts., YT.

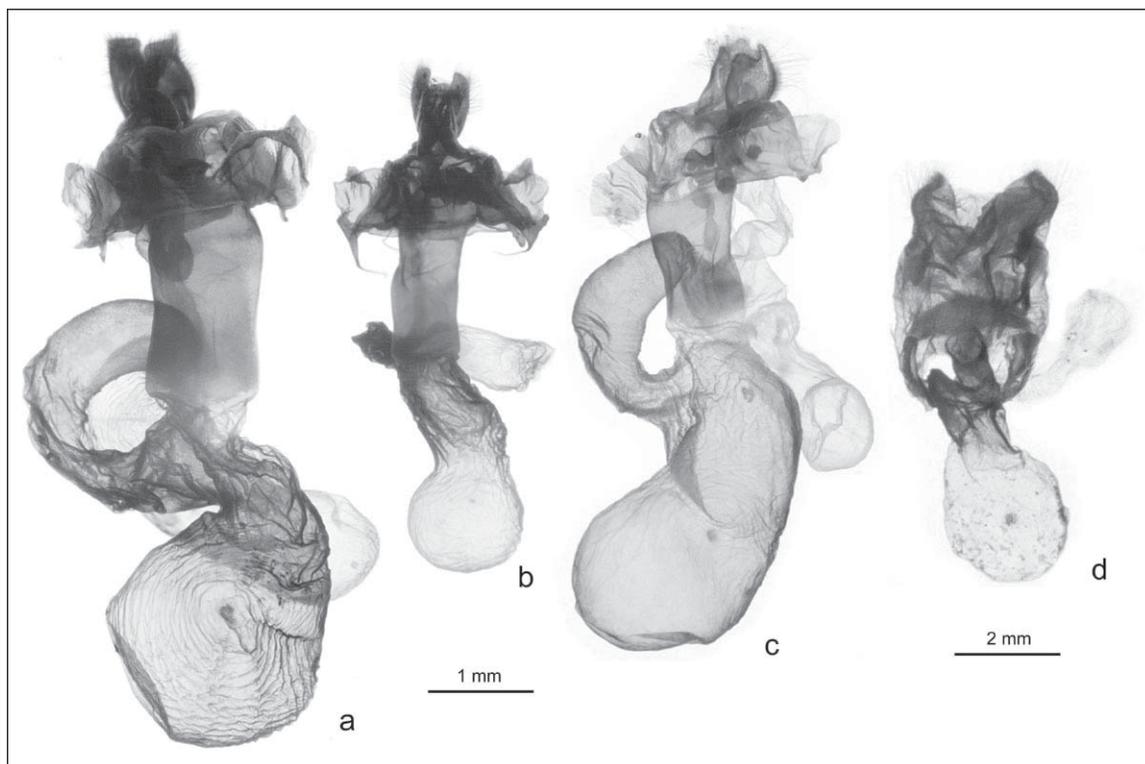


Figure 2. Female genitalia of: **a)** *Arctia caja*; **b)** *Arctia brachyptera* (paratype); **c)** *Arctia opulenta*; **d)** *Dodia verticalis* (holotype).