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A NEW SPECIES OF *SCHINIA* (NOCTUIDAE) FROM MANITOBA AND SASKATCHEWAN WITH DESCRIPTION OF ITS LIFE HISTORY

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ABSTRACT. *Schinia verna*, closely related to *S. honesta* (Grote), is described as new. The new species is a resident of the parkland belt of Manitoba and Saskatchewan and feeds in the larval stage in the flowering heads of *Antennaria neodioica* Greene. The immature stages of the new species are described.

While undertaking field work in the Glenboro area of southern Manitoba in the spring of 1979, my wife and I collected and reared a new species of *Schinia*, closely related to *Schinia honesta* (Grote, 1881). The following year a specimen of the undescribed species, collected at Saskatoon, Saskatchewan, was submitted to the Biosystematics Research Institute, Agriculture Canada, Ottawa, for identification.

Schinia verna, new species
(Figs. 1, 2)

Description. Eyes greatly reduced, elliptoid. Antennae filiform in both sexes. Foretibia with a conspicuous, elongate apical spine on inner side and a shorter apical spine on outer side; two or three additional slender, inconspicuous spines on either side of foretibia proximal to apical spines.

New species smaller and paler than *Schinia honesta* (Fig. 3), which it most closely resembles in maculation. New species with dark areas of wing suffused with reddish and with pale areas more extensive than in *honesta*.

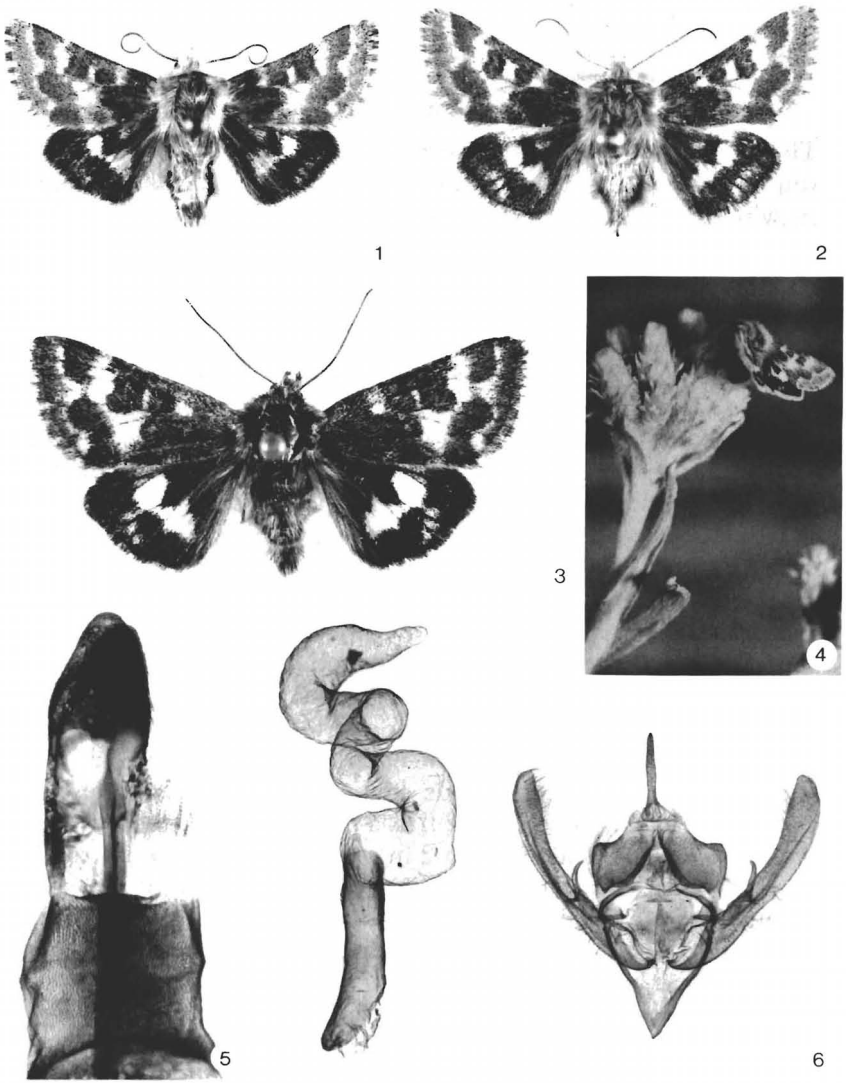
Vestiture of head and thorax hair-like, light grey suffused with mauve; abdomen black-scaled with an overlay of pale-grey hair. Underside of body white.

Forewing olive-brown, heavily suffused with mauve or reddish-brown and marked with light grey and white. Reddish suffusion lost in worn specimens. Transverse anterior line indicated only by color change, roughly triarcuate, the median arc very broad and deep; often an elongate narrow notch anterior to median arc. Basal space olive-brown, suffused with reddish; pale grey at immediate base. Transverse posterior line sinuous, evident as a grey shade or indicated only by color change. Median space white, shaded with grey posteriorly and often with a narrow grey band along costal margin. Orbicular spot prominent, circular. Reniform spot only slightly larger than orbicular; both spots concolorous with basal space. Subterminal line white, forming an inward notch opposite cell and another toward anal angle. Subterminal space concolorous with basal space, often shading to grey proximally. Terminal space pale grey. Fringe grey with white points.

Hind wing black, with a white central area containing a large black discal spot. Some pale shading in black outer-marginal area. Fringe white with a darker basal shade.

Underside of forewing white with a black basal dash, black reniform and orbicular spots and black and grey subterminal band. Fringe white with dark intervenal dashes. Underside of hind wing white with a dark-grey discal spot and dark-grey patch near anal angle; suffused with grey basally. Fringe white.

Expanse: 19.9 ± 1.6 mm (16 specimens).



FIGS. 1–6. *Schinia* spp.: **1 & 2,** *S. verna,* n. sp., holotype and allotype, Glenboro, Manitoba; **3,** *S. honesta* (Grote), Monument Pk., Linn Co., Ore.; **4,** *S. verna* ovipositing in head of *Antennaria neodioica* Greene; **5,** *S. verna,* female genitalia; **6,** *S. verna,* male genitalia.

Male genitalia (Fig. 6). Indistinguishable from those of *honesta* (see Hardwick, 1958, p. 69), except for their proportionately smaller size.

Female genitalia (Fig. 5). Very similar to those of *honesta* and differing chiefly in the conformation of the ovipositor valve, which is broadly rounded apically in *verna* rather than pointed as in *honesta.*

Type material. HOLOTYPE: ♂, Glenboro, Manitoba, 11 June 1979, D. & V. Hardwick. ALLOTYPE: ♀, same locality and collectors, 6 June 1979. PARATYPES: 8 ♂♂, 6 ♀♀, Glenboro, 9 to 12 June 1979, D. & V. Hardwick; 1 ♂, Saskatoon, Saskatchewan, 23 May 1980. The type material is in the Canadian National Collection (Type No. 16876).

Life History and Habits

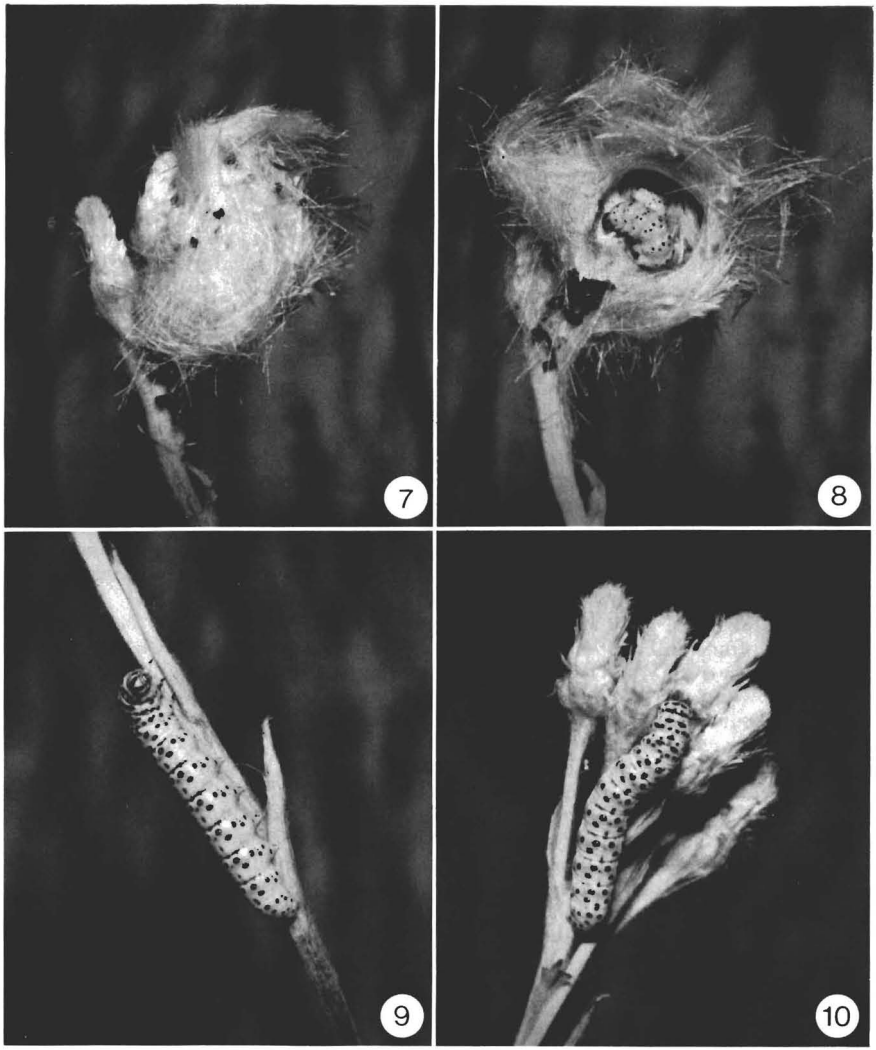
The population of *Schinia verna* from which the type series was taken is located in south-central Manitoba, north of Glenboro, in an area which has recently been incorporated into Spruce Woods Provincial Park. The meadow which constitutes the habitat of the species here is in a semi-wooded region of spruce and aspen. It was formerly part of the farm of Mr. Wm. Shewfelt and is still grazed by his cattle; the meadow supports a variety of spring-blooming plants.

Two species of *Antennaria* (pussy toes), are present in the area, *A. neodioica* Greene and *A. aprica* Greene. *Eutricopis nexilis* Morrison, a heliothentine that feeds on a number of species of *Antennaria* from eastern to western North America, was flying abundantly among the patches of pussy toes. The first few specimens of *S. verna* were netted and killed on the assumption that they were also *E. nexilis*. Although eggs and larvae of *S. verna* were only found in the heads of *Antennaria neodioica*, partially grown larvae would also readily accept the heads of *A. aprica* as food.

The very large egg of *verna* is deposited (Fig. 4) deeply within the flowering head of the food plant. The newly hatched larva usually burrows directly to the achene layer and feeds on the seeds and also on the tissue of the receptacle. The early instars are very cannibalistic, and a number of dissected heads contained the remnants of both *S. verna* and *E. nexilis* larvae as well as a healthy first or second stadium *verna* larva. First instars hatching in previously occupied heads have the habit of crawling out of the head and seeking another to enter. The survival rate among these small wanderers is probably not very high. In most cases observed the displaced first instars could not penetrate a second head and fell from the food plant.

Second instars seem quite capable of migrating from one head to another. Commonly, larvae remain in the initial head until reaching the second stadium, at which time they seek another, entering the second head from the top. Second stadium and early third stadium larvae continue to feed within the head, and their habit of attacking the receptacle as well as the seeds usually causes a complete disintegration of the head with the florets and pappus falling free.

Late third instars and subsequent stadia feed from outside the head. Third and fourth instars often tie adjacent *Antennaria* heads together to form a protective shelter from which they feed; on becoming pre-



FIGS. 7–10. *Schinia verna*, n. sp., on *Antennaria neodioica* Greene; **7,** molting nest of fourth stadium larva; **8,** same, opened to show larva; **9,** ultimate stadium larva, lateral; **10,** same, dorsal.

molt, they form a very definite nest of floral parts (Figs. 7, 8) in which they can remain quiescent until moulting is completed.

Last instars feed exposed, attacking the base of the head from a position on the stem (Fig. 10). Larvae of *Schinia verna* mature in five stadia and require a mean period of 17.1 days from hatching to the

cessation of feeding to complete their development. The mature larva retires to the ground and digs a short tube below the surface at the end of which it forms its pupal cell. The species is univoltine, the pupae remaining in diapause until the following spring.

Immature Stages

Egg. Very large. Translucent white when deposited. Showing little change until two days after deposition, when anterior end becomes suffused with pink. On day of hatching pink suffusion fades, and mandibles become visible at micropylar end. All eggs observed had an incubation period of three days.

First instar. Head, prothoracic and suranal shields black. Trunk dirty-white with small black setal bases. Mean duration of stadium, 3.1 days.

Second instar. Head black. Prothoracic and suranal shields somewhat paler. Trunk medium greenish-grey, becoming paler toward end of stadium. Setal bases black, proportionately much larger than in first stadium. Mean duration of stadium, 2.6 days.

Third instar. Head capsule black. Prothoracic and suranal shields dark brown. Trunk medium grey with large black setal bases. Mean duration of stadium, 2.5 days.

Fourth instar. Head black with a large brown patch on either side; often a whitish triangle on frons. Prothoracic shield black with a yellowish transverse median band. Suranal shield black with an anchor-shaped yellowish median mark. Trunk medium grey with a variably expressed, yellow, transverse median shade on each segment, yellow shading becoming more intense toward end of stadium. Setal bases large, black. Rims of spiracles dark brown. Mean duration of stadium, 3.3 days.

Fifth instar (Figs. 9, 10). Head fawn dorsally and laterally and finely mottled with light brown; frons dull white; a black inverted V through adfrontal areas; a pair of black spots above inverted V and a black patch in ocellar area. Prothoracic shield black with a pale-yellow transverse median band. Suranal shield undistinguished from remainder of trunk. Trunk uniform greyish-white. A variably expressed transverse yellow shade on dorsum of each segment. Setal bases very large and black, giving larva a checkered appearance. Spiracles small, dark brown. Mean duration of stadium, 5.6 days.

Pupa. Well sclerotized; orange-brown, without green suffusion across appendages. Mesothoracic legs relatively long, terminating only a short distance anterior to apex of proboscis. Metathoracic legs evident as triangulate plates distal to apex of proboscis. Anterior third of each of abdominal segments 5 to 7 not raised above remainder of segment; anterior third of these segments finely and only sparsely pitted and not more darkly pigmented than remainder of segments. Spiracles set into shallow oval pits; rims of spiracles elevated to form short but definite tubes. Cremaster reduced to 2, rather stout, usually curved bristles, borne at apex of a conical prolongation of 10th abdominal segment.

Remarks

The spring of 1979 was a very late one in central Canada, and the flight data for the type series may indicate a period of activity that is later than normal. The type locality was revisited during the first week of June of 1980; no adults were collected and the few larvae found were all in the fourth and fifth stadia.

As noted previously *Schinia verna* is most closely related to *S. honesta*, which is distributed in montane western North America from southern British Columbia southward to the Rocky Mountains of Colorado and the Sierra Nevada of California. The new species is smaller

and more delicately colored than is *honesta*. The food plant and immature stages of *honesta* are unknown. It will be interesting to ascertain how closely the immatures resemble those of *S. verna*.

ACKNOWLEDGMENTS

I take pleasure in naming the new species after my wife, Verna, in thanks for her continuing assistance in the field. I also acknowledge the assistance of Mr. Eric Rockburne of the Biosystematics Research Institute for the preparation of genitalic slides and of illustrations accompanying this paper. Mr. Wm. Shewfelt was most hospitable in showing me various topographic features in the region of his homestead in southern Manitoba.

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