

An average of 20.1 *Cochliomyia americana* were caught per day per trap, when liver was used as bait, in the spring and summer of 1936.

Trap-caught flies oviposited viable eggs on wounds on animals and lived an average of 3.4 days after being taken out of traps. The majority of the flies caught over liver bait were indicated to be in the preoviposition stage while those caught on wounds were apparently ready for oviposition.

#### Literature Cited

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### GONIODES CENTROCERCI, A NEW MALLOPHAGAN FROM GROUSE.

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During the last several years nearly a hundred sage grouse from various localities in Wyoming have been examined by parasitologists on the staff of the University of Wyoming Agricultural Experiment Station. Only two species of Mallophaga were taken from these birds: *Lagopoecus perplexus* Kellogg and Chapman, 1899; and *Goniodes centrocerci* n. sp. here described. The latter is considerably more common.

Described from 82 individuals; 29 immature, 42 female, and 11 male; collected from sage grouse in Wyoming and Montana as follows: 13 specimens from Fergus County, Montana, 1931, loaned, for this study, by the Rocky Mountain Laboratory at Hamilton, Montana; 22 specimens from the region of Daniel, Wyoming, 1934, by George L. Girard; 4 specimens from the region of the Graham Ranch, Wyoming, 1934, by John W. Scott; 8 specimens from the region of Wallrock Canyon near Laramie, Wyoming, 1936, by Felix Simon; and 35 specimens from the region of Battle Mountain, Wyoming and the Miller Hill Refuge, Wyoming, 1937, by Ralph F. Honess and Felix Simon.

**Description of male:** Head 1.24 times as wide as long; widest at apex of angulate temples; forehead widest just in front of antennae. Occiput concave posteriorly. Trabeculae absent, but postero-lateral expansion of forehead partially covering antennal fossa anteriorly. Eyes prominent, bordering antennal fossa posteriorly; thick cornea clear, bearing single, long ocular seta. Pharyngeal sclerite prominent. Color light brown. Antennae short, capable of extending backwards as far as the lateral apex of the temple; first segment greatly enlarged and as long as the last three combined; second segment not quite so long as the last three combined; process of third segment projects mediad and is larger than the rest of the segment; fourth and fifth segments about the same size. One long seta mediad to each eye; one in the fossa just anterior to each antenna; one long seta and one very short, spike-like seta on each lateral apex of the temples; and one, rarely two, long setae in each posterior concave face of the temples.

**Thorax** two-thirds as long as head, light brown in color with darker margins. Prothorax roughly trapeziform, with a dorso-lateral seta near each posterior angle. Pterothorax with two dorso-lateral setae near each posterior angle, and two dorsal setae a third of the way mediad from each side. Progressing posteriorly the legs become successively longer, and the coxae more widely separated.

**Abdomen** of nine segments, short, with rounded sides; widest at segment four; the first segment longest; segments two to five about equal; six to eight becoming successively reduced with sides increasingly rounded forming a truncate posterior end, the truncate appearance being broken by the extrusion of the ninth segment. Lateral abdominal bands are deep and conspicuous. Spiracles on segments two to seven inclusive. Chaetotaxy: Segment one: two or three lateral setae near each posterior angle, and two to four dorsal setae about a third of the way mediad from each side. Segments two, three, and four: three lateral setae near each posterior angle; two or three behind each spiracle. Segments five and six: four lateral setae near each posterior angle; two or three behind each spiracle. Segment seven: the setae near the posterior angle and those behind the spiracle are confluent, forming a row of eight or nine on each side. Segment eight: two setae at each posterior angle. Segment nine: more than twenty setae in all. There are

a few mid-dorsal setae on all segments except six, seven, and eight. Each of segments two to seven bears two setae near the middle of the sternite. Segments eight and nine have a few ventral setae. There may be one or two small, adventitious setae with those behind the spiracles on segments two to seven, or with those a third of the way mediad on segment one.

**Description of female:** Head as in male except larger and angles of temples sharper. Antennae shorter; segment two is longer than segment one, though not so long as the last three segments combined. Segment three bears no process.

**Thorax** as in male but comparatively shorter and wider.

**Abdomen** similar to male but longer and more ovoid, being without the truncate appearance. Ninth segment not extruded beyond eighth. Segments one to seven bear five to six mid-dorsal setae. There are two lateral setae at the anterior angle of the eighth segment, as well as two at the posterior angle. Only one large seta on each side of the ninth segment. Seventh segment bears a pair of cerci.

Average measurements in mm.

	Male		Female	
	Length	Width	Length	Width
Head	0.623	0.784	0.708	1.009
Thorax	0.421	0.641	0.440	0.716
Abdomen	1.067	1.101	1.476	1.224
Total	2.111		2.624	

**Immature forms** with the same chaetotaxy and of the same general shape except for comparatively larger and more rounded abdomens.

**Type host:** Sage grouse, *Centrocercus urophasianus*

**Type locality:** Battle Mountain, Wyoming. Paratypes from Miller Hill Refuge, Wyoming; Daniel, Wyoming; Graham Ranch, Wyoming; Laramie, Wyoming; and Fergus County, Montana.

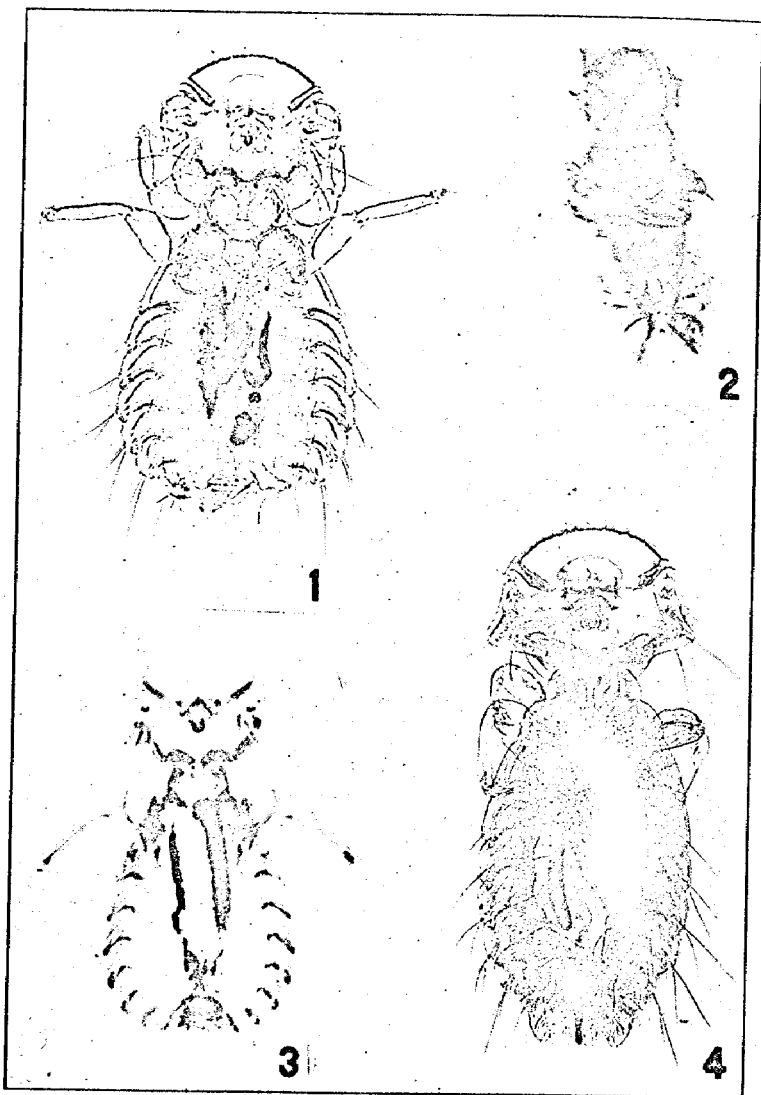
**Type slide:** U. S. N. M. Number 52636. Paratypes in the parasitology collection of the Experiment Station at the University of Wyoming.

**Discussion:** By way of distinguishing *G. centrocerci* n. sp. from related species and from species infesting hosts closely related to the sage grouse: *G. cupido* is less than half the size of *G. centrocerci* n. sp. The head of *G. mammillatus*, a very similar species, is longer than wide. *G. cervinicornis* is fifty per cent larger than *G. centrocerci* n. sp., and the male bears a process on the first antennal segment. *G. tetraonis* and *G. dissimilis* are less than half the size of *G. centrocerci* n. sp.; also *G. dissimilis* bears a spiracle on the first abdominal segment according to Nitzsch's plate in Denny. Although Packard's description of *G. merriamanus* suggests a very similar form, the drawings accompanying the description are distinctly different from *G. centrocerci* n. sp. Packard states that the antennae are four segmented, but his drawing of the female shows three segments, of the male, five.

Between the Sandstone Ranger Station and Battle Mountain, not far from the latter, 42 Mallophaga of the genus *Goniodes* were collected from the blue grouse *Dendragapus obscurus obscurus* by Ralph F. Honess and Felix Simon, 1937. Although there were slight differences in the male genitalia, these lice were identified as *G. centrocerci* n. sp.

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EXPLANATION OF PLATE

- Figure 1. *Goniodes centrocerci* n. sp. male.
- Figure 2. *Goniodes centrocerci* n. sp. male genital armature 97 x.
- Figure 3. *Goniodes centrocerci* n. sp. male, showing genital armature in situ.
- Figure 4. *Goniodes centrocerci* n. sp. female.

BLOOD PULSATIONS IN *EUXOA DETERSA* (WALKER)

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Because of the unpigmented condition of the skin, the cutworm *Euxoa deterosa* (Walker) offers a good opportunity for studying the pulsations of the dorsal blood vessel. On June 23, 1937, a few such observations were made on these larvae, but no records were kept of surrounding environmental conditions, such as temperature and humidity. Sixteen cutworms were observed and the number of pulsations per minute were recorded. Each individual was confined in a tin salve box along with food and a small amount of sand. Two observations were made on each individual. First, the pulsations were counted when the cutworm was undisturbed, as shown in column I of the table below. Then the larva was prodded into movement, and the second observations were made, as recorded in column II of the table. The count on the undisturbed cutworms showed a variation from 8 to 48, with an average of 26.5, for the sixteen cutworms, while the count taken after they were disturbed varied from 10 to 60 with an average of 34.5. The summary of the counts taken are shown in the following table:

Cage No.	Locality Collected	Pulsations per Minute	
		I	II
1.	West Point, Neb.	48	60
2.	West Point, Neb.	34	40
3.	West Point, Neb.	40	40
4.	West Point, Neb.	22	28
5.	West Point, Neb.	24	24
6.	West Point, Neb.	24	40
7.	Pierce, Nebr.	10	18
8.	Pierce, Nebr.	40	50
9.	Pierce, Nebr.	18	28
10.	Pierce, Nebr.	42	46
11.	Pierce, Nebr.	26	30
12.	Pierce, Nebr.	10	30
13.	Pierce, Nebr.	30	48
14.	Pierce, Nebr.	8	14
15.	Pierce, Nebr.	40	46
16.	Pierce, Nebr.	8	10
Average		26.5	34.5