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Steiroxys strepens (Noisy Shieldback) at Woodruff Meadows

text and photos by Ron Lyons

Steiroxys is a genus of shield-backed katydids (Orthoptera: Tettigoniidae: Tettigoniinae) restricted to western North America and the southern portion of western Canada. Only 4 species have been described so far:

Steiroxys borealis Scudder, 1894,
Steiroxys pallidipalpus (Thomas, 1872),
Steiroxys strepens Fulton 1930, and
Steiroxys trilineata (Thomas, 1870).

In their revision of the shield-backed katydids, Rentz and Birchim (1968: 144) write, "Members of this diurnal genus have always been baffling to systematists at the specific level. . . . Only study of large series will show the true relationships. . . ." There is evidence that all 4 species, at least as currently defined, can be found in Oregon. The genus is in serious need of revision and additional species are being processed.

Steiroxys strepens (Figure 1–6) was described by Fulton (1930: 627–630) using specimens collected from two locations in Oregon: Jackson's Hill (6 miles north of Corvallis) in Benton County and Woodruff Meadows in Jackson County. Jackson's Hill is now called Dimple Hill (see Hietala-Henschell [2017]). Woodruff Meadows is west of Highway 62 just south of the boundary between Jackson and Douglas Counties, a few miles northwest of Prospect. Fulton did not indicate that individuals had been found anywhere else.

Steiroxys strepens is a diurnal katydid with short flight wings—like many other species of shield-backed katydids, it cannot fly. The type specimens were from Jackson's Hill as were 5 male and 7 female paratypes. Eleven additional male paratypes were collected at Woodruff Meadows. The Jackson's Hill specimens used in the description were collected July 12, 1922. (Fulton mentions that first and second instar nymphs were found the following year on April 26.) The date that the Woodruff Meadows specimens were collected was not specifically mentioned under the description but was probably August 5, 1922, mentioned later in a discussion of that area (p. 636). It is interesting that Fulton does not mention having collected any females from Woodruff Meadows. All of his specimens were green, except for one male collected from Woodruff Meadows which appeared to have been light brown. Although Fulton worked at the Oregon Agricultural College (now Oregon State University) at the time, none of his *Steiroxys* specimens are present in the Oregon State Arthropod Collection (the paper was published after Fulton took up a position at North Carolina State College). Photographs of the male type and female allotype can be found on the Orthoptera Species File website, <http://orthoptera.speciesfile.org/Common/basic/Taxa.aspx?TaxonNameID=1142430>.

Figure 1: Light brown male of *Sterioxys strepens* photographed at Woodruff Meadows on August 22, 2019.

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Submit content to **Ron Lyons** <pondhawk@uci.net>. To be included on the distribution list contact **Jim Johnson** <gomphusjim@google.com>.

Figure 2. Left: Dark brown male *Steiroxys strepens* photographed August 22, 2019. Above: Cerci of the same male.

Males of *Steiroxys strepens* can be separated from those of other species of *Steiroxys* by the shape of their cerci. Fulton (p. 628) writes "Cerci gently curved throughout on outer border; **terminal portion finger-shaped, nearly straight and with rounded apex** [emphasis added]. A curved spine projects perpendicularly inward just beyond the middle of the cercus and terminates in a sharp claw." He also writes that "The male cerci of the Woodruff Meadows series have on the average a stouter and shorter apical portion and a longer and more slender inner spine."

In 2019, I made four visits to the east side of Woodruff Meadows (August 22, September 5, September 12, and September 26) finding *Steiroxys strepens* on each occasion—the number on each date, based on my photographs, were 10, 3, 1 and 1 respectively; I only found males, 5 of them, on the first trip. I found green and brown individuals—the brown individuals ranged from light to dark brown; only one female had a noticeable dorsal stripe (Figure 6). The appearance of the male cerci (Figures 2 and 3) and the female sub-genital plate (Figure 7) agree in general with the descriptions and accompanying figures in Fulton's work. Fulton described the call of *Steiroxys strepens*; I was not aware of any calls on my trips (field start times ranged from 10:40 to 13:30).

In the Oregon State Arthropod Collection there is a male collected at Union Creek on VII 27 '45 by H.A. Scullen (OSAC 693637; Figure 8) (this location is just east of Woodruff

Figure 3. Left: Green male photographed on August 22, 2019. Above: Cerci of the same male.

Figure 4. Green female photographed September 5, 2019.

Figure 5. Brown female photographed September 12, 2019.

Meadows). There are also 7 females collected from Mary's Peak near Corvallis. The features of the male and the female specimens are consistent with Fulton's work.

Rentz and Birchim (p. 144) say "Great variation in the shape of the cerci occurs even among individuals from a single locality." From Fulton's work and my limited sample, I do not believe this to be the case for *Steiroxys strepens*. For that reason, I have excluded these 2 reports from Oregon that would have expanded its range in the state:

1) *Steiroxys strepens* has been reported from the H.J. Andrews Forest near Blue River in Lane County (Lightfoot 1981).
2) on bugnet, a male *Steiroxys* photographed in Union County has been identified as *Steiroxys strepens* (<https://bugguide.net/node/view/702410/bgimage>).

In both cases, **based solely on the material presented**, the cerci do not appear to be consistent with Fulton's description. (David Lightfoot recently confirmed [priv. comm. October 2019] that the species from the Andrews Forest is not *Steiroxys strepens*.) Outside of Oregon, Miskelly (2012) reported that a *Steiroxys* that looks very much like *Steiroxys strepens* occurs on Vancouver Island in British Columbia.

There are at least 2 shield-backed katydids known from, or adjacent to, the area where *Steiroxys strepens* is currently known in Oregon. *Tessellana tessellata*, a non-native diurnal shield-backed katydid, has expanded northward since its introduction into central California around 1950, and occurs well into Washington (Lyons 2012, Walker 2019), and now perhaps even southern British Columbia. This katydid is widespread in western Oregon and has distinctive flight wings of variable length. In Woodruff

Figure 6. This female *Sterioxys strepens* has the most extreme color pattern of any of the individuals I photographed. It is the only one with a dorsal stripe, noticeable mainly because of contrast between the pale dorsum of the pronotum and its dark sides.

Figure 7. Sub-genital plate of green female found September 26, 2019. The image was taken through glass and is slightly overexposed. Part of the ovipositor can be seen at the bottom of the image.

Meadows, it is more common than *Steiroxys strepens* but is smaller and easily overlooked with all the grasshopper activity**.** The second species, *Idiostatus gurneyi* described in Rentz (1973: 42–48), is a diurnal species that has been recorded at Crater Lake, west of Woodruff Meadows. Rentz points out that *Idiostatus gurneyi* "shares many characters with species of the genus *Steiroxys*." In particular, the male cerci (Figure 8) look very much like those described for *Steiroxys strepens*. Currently, it is "known from montane peaks from northern California and southern Oregon."

At Woodruff Meadows, I found at least 7 of the grasshopper species found by Fulton (p. 637): *Chloealtis aspasma*, *Oedaleonotus pacificus*, *Melanoplus bivittatus* (Two-striped Grasshopper), *Melanoplus validus*, *Camnula pellucida* (Clear-winged Grasshopper), *Cratypedes neglectus* (Pronotal Range Grasshopper), and *Trimerotropis fontana*. In addition, I have a couple pictures that may be *Melanoplus lovetti*, a species described by Fulton in the same paper and, so far, known only from Woodruff Meadows. I also found some other grasshopper species not specifically mentioned by Fulton.

Fulton (1930: 636–637) discussed the landscape of Woodruff Meadows. He refers to a ". . . striking zonation of the vegetation. The center contained some surface water and was covered with a high sedge and large lupines. Surrounding this was a wide zone of damp ground with shorter swamp grasses, and another zone of dryer ground bordering the forest and covered mostly by herbs." I am not sure how big the area was that Fulton described. The central area, which I did not get to, has a confluence of streams according to my map. Most of the rest is damp to dry mixed woodland with scattered open areas and several large fenced off meadows, although the fences I came across are in disrepair. The evidence of free-roaming cattle was apparent everywhere I went, but I only saw them once as a herd moved through one of the large meadows.

Fulton pointed out that there are many small natural prairies on the west slopes of the Cascades. He indicated, "Their isolation and diverse conditions as to moisture and temperature tend to give them a more or less individual fauna," making them worthy of further investigation.

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Figure 8. Left: Cerci of male *Steiroxys strepens* collected at Union Creek in Jackson County on VII 27 '45 by H.A. Scullen (OSAC 693637). Right: Cerci of male *Idiostatus gurneyi* photographed on Mount Ashland September 5, 2012.

41st Northwest Lepidopterists' Workshop

When: Saturday and Sunday, 19 and 20 October 2019
Where: Cordley Hall, Oregon State University, Corvallis, Oregon

Hosts: Drs. Paul Hammond and David McCorkle

Sponsored by the Oregon State Arthropod Collection and the Oregon State Department of Integrative Biology

NOTE: Please contact Chris Marshall (<Christopher.Marshall@oregonstate.edu>) if you want to use the Oregon State Arthropod Collection before or after the meeting. The collection will NOT be available Friday, Saturday or Sunday.

Saturday Program, October 19

9:00 AM Register at Cordley Hall, room 1070 (west wing). No fee.
Workshop Preview: Arrange study specimens, etc.

10:00 Welcome and announcements, Cordley Hall room 2113 (east wing)
Drs. David Maddison and Christopher Marshall
Introduce guest speaker - Dr. Richard Brown from Mississippi State University

10:30 Activity reports: new state and county records, meeting reports, book announcements, etc.*

12:30 pm Group picture. Location to be announced

12:45 Lunch at local restaurants

2:00 Workshop session: Cordley Hall room 1070. (Preceded by a brief orientation to this year's groups if requested.)

Groups of emphasis for this year:
- ►Butterflies: *Euphydryas* (checkerspots), *Oeneis* (arctics) and *Erebia* (alpines)
- ►Moths: Tortricidae (leafrollers)

Also specimens of any Lepidoptera from recent field trips or of special interest.
Information exchange and specimen gift exchange is encouraged.

4:00–4:45 Richard Brown: Introduction to the Tortricidae with example specimens (classroom adjacent to room 1070)

5:00 Workshop session conclusion

5:30 Dinner at the Izzy's Restaurant, 2475 NW 9th, Corvallis.

7:15 Evening session: Ag Life Science Building (ALS) room 4001
Brief planning session followed by the evening lecture:

Keynote Speaker: Dr. Richard Brown, Mississippi State University
"In search of primitive moths: expeditions to unknown worlds"

9:30 Meeting recessed until Sunday morning

*Please bring your NW collecting records with you in written form. Dana Ross will put them into a master file and send any significant county records to Jon Shepard for inclusion in the Lepidopterists' Society Season Summary (include state, county, location and date, and if available, range & township or lat/long coordinates as well as elevation). Ann Potter is also soliciting records especially for Washington.

Program continued next page. . .

Program continued. . .

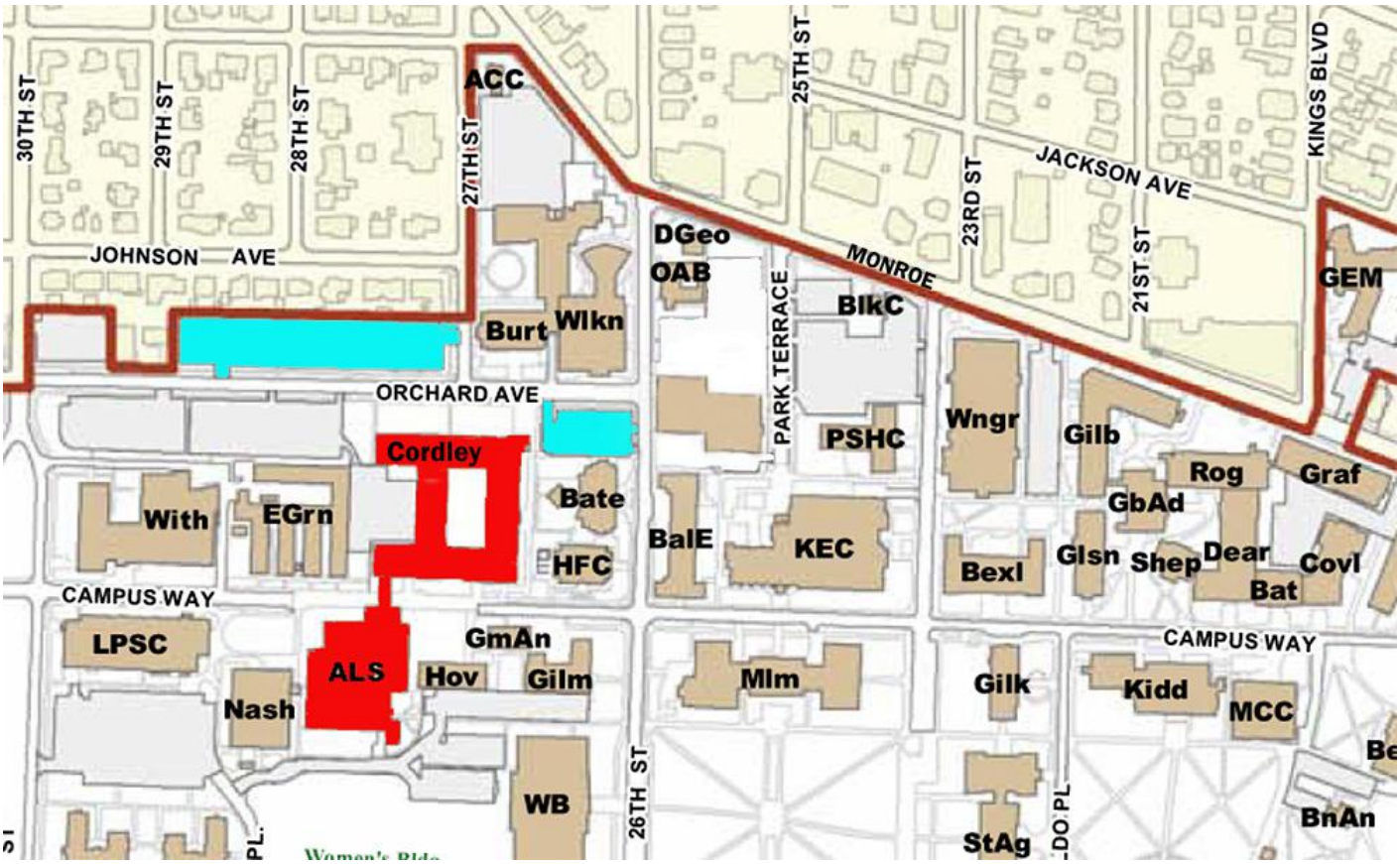
Sunday Program, October 20

8:30 AM Workshop session resumed, Cordley Hall room 1070 (west wing)

10:00 Field trip reports and other contributions. PowerPoint, etc. Cordley Hall room 2113 (east wing)
This is your opportunity to contribute a presentation on or related to Lepidoptera, e.g. field trip report, favorite images, etc.. Please notify Paul Hammond prior to this meeting with your equipment needs. In general presentations are expected to be about 10 minutes or less in length; please let Paul know in advance if you will need more.

"12:00" Meeting concluded

The map below shows Cordley Hall and the ALS Building in red. Most of the meeting takes place in Cordley Hall. Enter this building through the weekend entrance—the entrance closest to the small parking lot colored in turquoise. The Saturday evening presentation in Ag 4001 is on the 4th floor of the ALS building, reached from the 3rd floor of Cordley Hall via a sky bridge.



The smaller of the two parking areas colored in turquoise is the one favored by participants as it is the one closest to the weekend entrance for Cordley Hall (access this lot via Orchard Ave). This smaller lot has some handicapped parking spots. Street parking is also available along Orchard Ave.

Visit <http://transportation.oregonstate.edu/parking/maps> for a full campus map with the parking areas marked. You can download this map as a PDF, if desired.