

SPECIES FACT SHEET

Scientific Name: *Vanduzeeina borealis californica* (Van Duzee 1925)

Common Name: California Shield-backed Bug

Phylum: Arthropoda

Class: Insecta

Order: Hemiptera

Suborder: Heteroptera

Superfamily: Pentatomoidea

Family: Scutelleridae

Conservation Status:

Global Status (2001): G3T3

Rounded Global Status: T3 - Vulnerable

National Status (United States): NNR

State Status: Oregon (S1), California (not evaluated)
(NatureServe 2008).

Technical Description:

Scutellerids are distinguished from other hemipterans by the greatly enlarged scutellum that covers the entire abdomen like a shield, hence the common name “shield-backed bugs.” The similar pentatomid bugs are distinguished from scutellerids by having a smaller scutellum that does not cover the wings and abdomen. Juvenile stages of scutellerids look similar to adults, but are smaller, have less-developed wings and scutella, and may be difficult to identify to species. Identification is therefore best conducted using adult specimens, recognizable by the fully-enlarged scutella and fully-developed wings. Field identification is possible by those familiar with heteropteran taxonomy, and can be accomplished by non-experts who have examined and become familiar with museum specimens. Field identification may be facilitated using photographs of the species and of common look-alike species. Confirmation of field identifications should be done by taxonomic experts with experience identifying scutellerids.

This subspecies can be readily distinguished from the similar *V. b. borealis* by the narrower head, truncate apically; acute (not rounded) antero-lateral angle of the pronotum; general gray-brown color with trace of fuscous maculations on scutellum; scutellum with apical pale spot; connexivum more distinctly alternated; and slightly differing female genital plates and male aedeagus (Lattin 1964). The specimens of this subspecies are remarkably similar in appearance throughout its range (Lattin 1964).

The technical description for this subspecies is as follows (Lattin 1964):

Male: length 6.3 mm, width 3.7 mm. Head: length 1.6 mm, width including eyes 2.08 mm. Pronotum: length 1.6 mm, width 3.58 mm. Scutellum: length 3.52 mm, width 3.44 mm. Proportions of antennal segments I to V: 2.5:2.0:2.0:3.4:5.3; proportions of rostral segments I to IV: 3.5:7.5:3.0:2.5. The male aedeagus is very similar to that of *V. b. borealis* except for the shape of the sclerotized portions of the biramous apical conjunctival appendages.

Female: length 7.5 mm., width 4.3 mm. Eighth terga strongly concave, spiracles small, dorsal margin of ninth terga slightly angulate, first gonocoxites not impressed medially.

The holotype (male) and allotype (female) are deposited at the California Academy of Sciences, San Francisco, California (#1748 and #1749) (Lattin 1964). Additionally, there are four specimens in John Lattin's research collection at Oregon State University, and one specimen is reported to be housed in the Arthropod Collection at Oregon State University, although this specimen was not recovered during a recent (2009) visit.

Life History:

The life history of this subspecies is poorly known, but it is probably best surveyed for in mid-summer (Lattin 2009, *pers. comm.*). It is known in Oregon from just two collections; the specimen from Hood River County was collected on July 5th, 1927, while the collection date for the Lane County record is unknown. In California, this subspecies has been collected from June 4th through August 10th, 1911 to 1951.

Range, Distribution, and Abundance:

The range of this species extends from the Sierra Nevada of California, east to Illinois and South Dakota, and north through the forested mountain ranges to the Yukon Territory of Canada (Applegarth 1995, McPherson 1982). In Canada, *V. borealis* has been recorded in the Yukon, British Columbia, Alberta, Manitoba and Ontario (Maw *et al.* 2000, Strickland 1953).

The subspecies *Vanduzeeina borealis californica* is known only from California (Yosemite National Park and Cisco, just west of Donner Pass) and Oregon (Mt. Hood area, Hood River County and H. J. Andrews Experimental Forest, eastern Lane County).

Forest Service/BLM Land: This subspecies has been documented on the Willamette National Forest and either on or near (<1.6 km away from) Mt. Hood National Forest. It is suspected in the Umpqua, Siuslaw, and Rogue River-Siskiyou National Forests, and on BLM land in the Eugene,

Salem, Roseburg, Medford, Lakeview, and Coos Bay Districts (Lattin 2009, *pers. comm.*). In the Eugene District, it may inhabit BLM land in the McKenzie Resource Area (Applegarth 1995).

Habitat Associations:

A tall grass prairie specialist, this subspecies inhabits high elevation (e.g. 900 m) natural balds and meadows (Applegarth 1995).

Threats:

Since the distribution of this subspecies is not well known, establishment of regionally specific threats is difficult. Habitat disturbance and degradation via cattle-grazing, agriculture, exotic grasses, road construction, building construction, and timber harvest may threaten this species.

Conservation Considerations:

Inventory: Because this subspecies is known from only two sites in Oregon, further documentation of its range and habitat is critical for advancing our understanding of its needs and taking the appropriate conservation measures. At a minimum, revisit appropriate habitat (high elevation natural balds and meadows) at the Mt. Hood site and in the H. J. Andrews Experimental Forest, in an effort to establish the current status of the subspecies at these sites. Explore similar habitat in unsurveyed territory in the Oregon Cascades, Coast Range, and Siskiyou Mountains, and survey for this species. Since population size is important in evaluating the stability of a species at a given locality, abundance estimates for this species would also be valuable.

Management: Protect all new and known sites from practices that would adversely affect any aspect of this species' life cycle, including exotic grasses, cattle-grazing, agriculture, road construction, building construction, and timber harvest.

Prepared by: Sarah Foltz

Xerces Society for Invertebrate Conservation

Date: March 2009

Edited by: Sarina Jepsen

Xerces Society for Invertebrate Conservation

Date: April 2009

ATTACHMENTS:

- (1) **References**
- (2) **List of pertinent or knowledgeable contacts**
- (3) **Distribution Map**

(4) Survey Protocol

ATTACHMENT 1: References

Applegarth, J.S. 1995. Invertebrates of special status or special concern in the Eugene district. U.S. Department of the Interior, Bureau of Land Management.

Lattin, J.D. 1964. The Scutellerinae of America North of Mexico (Hemiptera: Heteroptera: Pentatomidae). Ph.D. Dissertation, Zoology. University of California, Berkeley. University Microfilms, Inc. Ann Arbor, Michigan.

Lattin, John D. 2009. Personal communication with Sarah Foltz.

Maw, H.E.L., Footit, R.G., Hamilton, K.G.A. and Scudder, G.G.E. 2000. Checklist of the Hemiptera of Canada and Alaska, 220 pp.

McPherson, J.E. 1982. The Pentatomoidea (Hemiptera) of northeastern North America with emphasis on the fauna of Illinois. Southern Illinois University Press, Carbondale, IL, 240 pp.

NatureServe. 2008. "*Vanduzeeina borealis californica*." *NatureServe Explorer: An online encyclopedia of life [web application]*. Feb. 2008. Version 7.0. NatureServe, Arlington, Virginia. 15 Dec. 2008 <<http://www.natureserve.org/explorer/>>.

Strickland, E.H. 1953. An annotated list of the Hemiptera (s.l.) of Alberta. *The Canadian Entomologist* 85: 193-214.

Triplehorn, C. and N. Johnson. 2005. Introduction to the Study of Insects. Thomson Brooks/Cole, Belmont, CA, 864pp.

ATTACHMENT 2: List of pertinent or knowledgeable contacts

John D. Lattin

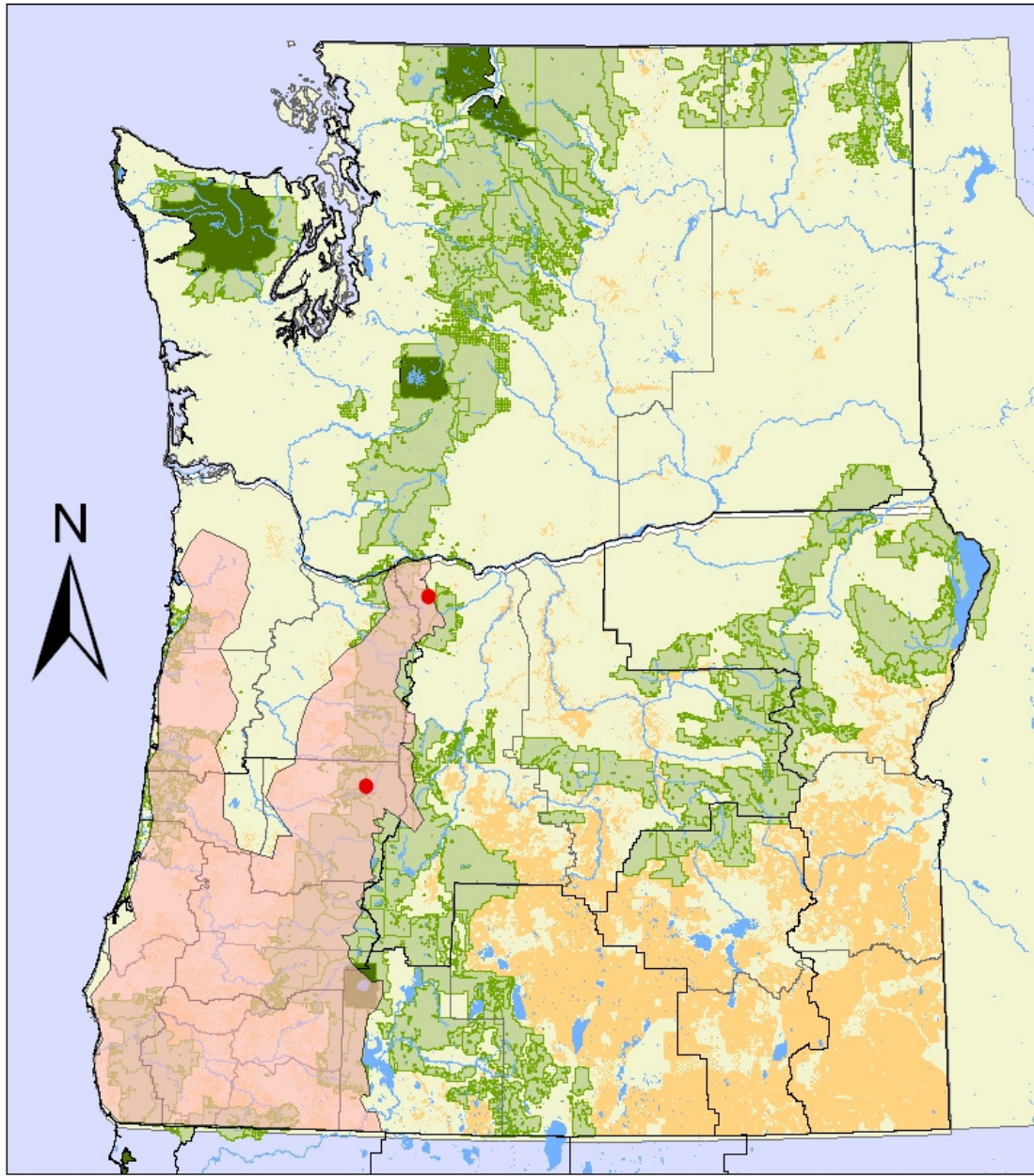
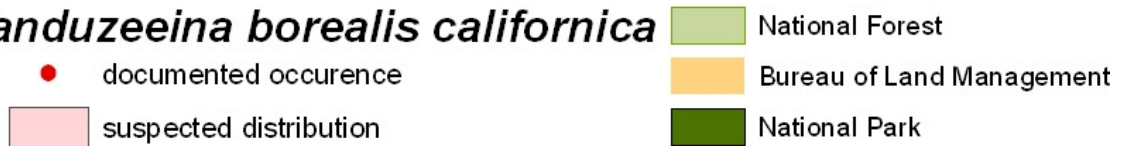
Peter D. Lattin

Michael D. Schwartz

Richard C. Froeschner

ATTACHMENT 3: Distribution Map

Vanduzeeina borealis californica



Records of *V. b. californica* in Oregon, relative to BLM and USFS land. BLM District boundaries are shown in black, and Resource Area boundaries are shown in grey. Although the distribution of this rarely collected species is poorly known, the suspected distribution shown here is based on personal communication with regional scutellerid expert, Dr. John. D. Lattin (2009).

ATTACHMENT 4: Survey Protocol

***Vanduzeeina borealis californica* (Van Duzee 1925)**

Where:

The range of this species extends from the Sierra Nevada of California, east to Illinois and South Dakota, and north through the forested mountain ranges to the Yukon Territory of Canada (Applegarth 1995, McPherson 1982). In Canada, *V. borealis* has been recorded in the Yukon, British Columbia, Alberta, Manitoba and Ontario (Maw *et al.* 2000, Strickland 1953). The subspecies *Vanduzeeina borealis californica* is known only from California (Yosemite National Park and Cisco, just west of Donner Pass) and Oregon (Mt. Hood area, Hood River County and H. J. Andrews Experimental Forest, eastern Lane County). In the Eugene District, it may inhabit BLM land in the McKenzie Resource Area (Applegarth 1995).

A tall grass prairie specialist, this subspecies inhabits high elevation natural balds and meadows (Applegarth 1995).

When:

The seasonality of this subspecies in Oregon is poorly known but it is probably best surveyed for in mid-summer (Lattin 2009, *pers. comm.*). The only known specimen from Hood River County was collected on July 5th, 1927, while the collection date for the Lane County record is unknown. In California, this subspecies has been collected from June 4th through August 10th, 1911 to 1951.

How:

Since this subspecies inhabits the bases of grasses, it may be missed by surveys utilizing sweep nets (Applegarth 1995). The standard survey method is to get down on your hands and knees and pick apart the bases and root masses of grasses, searching for the red-brown, ~7 mm-long bug. Vacuum sampling is another survey possibility whose success has yet not been evaluated (Applegarth 1995).

After capture, voucher specimens should be placed immediately into a kill jar until pinning. A field catch can also be temporarily or permanently stored in 75% ethyl alcohol, but the alcohol will cause some colors to fade (Triplehorn and Johnson 2005). Adult specimens should be pinned through the scutellum, a little to the right of the midline (Triplehorn and Johnson 2005). Juveniles are best preserved in vials containing 75% ethyl alcohol. Collection labels should include the following information: date, collector, detailed locality (including

geographical coordinates, mileage from named location, elevation, etc.), and detailed habitat/host plant. Complete determination labels include the species name, sex (if known), determiner name, and date determined.

Although photographs are not available of this subspecies, a technical description of this subspecies is provided in the ISSSSP Species Fact Sheet, and the holotype (male) and allotype (female) are deposited at the California Academy of Sciences, San Francisco, California (#1748 and #1749) (Lattin 1964). Additionally, there are four specimens in John Lattin's research collection at Oregon State University, and potentially one specimen in the Arthropod Collection at Oregon State University, although this specimen was not recovered during a recent (2009) visit. Although this subspecies can be readily distinguished from the similar *V. b. borealis* by several features (outlined in the Species Fact Sheet), confirmation of field identifications should be done by taxonomic experts with experience identifying scutellerids.

References (Survey Protocol)

Applegarth, J.S. 1995. Invertebrates of special status or special concern in the Eugene district. U.S. Department of the Interior, Bureau of Land Management.

Lattin, J.D. 1964. The Scutellerinae of America North of Mexico (Hemiptera: Heteroptera: Pentatomidae). Ph.D. Dissertation, Zoology. University of California, Berkeley. University Microfilms, Inc. Ann Arbor, Michigan.

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