SPECIES FACT SHEET

<u>Common Name</u>: Malheur Cave Springtail <u>Scientific Name</u>: *Oncopodura mala* Christiansen and Bellinger 1996.

Phylum: Arthropoda Class: Elliplura Order: Collembola Family: Oncopoduridae

Type Locality: OREGON, Harney County, Malheur Cave, elevation 1,300 m E.H. Gruber and L. Wright colls., November 10, 1978.

OR/WA BLM and FS Region 6 Units where Suspected or Documented:

BLM: Andrews Resource Area (documented). Burns District (documented).

Description:

Collembola (springtails) are small hexapods that range from 1 to 6 mm in length. The Malheur Cave Springtail is very small (1.3 mm), and like many other collembolans, it has an appendage extending from the terminus of the abdomen. The appendage is called a furcula, and is used to leap and escape predators.

The Malheur Cave Springtail is white without a trace of pigment. The body of this species has many small hairs that are used by taxonomists to determine species identification.



Adult Oncopodura species. Photo by Janssens 2005.

Life History:

Most soil-inhabiting springtails feed on decaying plant material, fungi, and bacteria. Others feed on arthropod feces, pollen, algae, and other materials (Borror et al. 1989). The diet of *Oncopodura mala* has not been described.

On hatching young springtails resemble small adults and develop through several instars before reaching maturity. Adults continue to moult, up to 50 times but put on little additional growth. Generally, Collembola take 3 to 5 weeks to develop into adults. Immature stages of *Oncopodura mala* have not been described.

Range, Distribution (Current and Historic), and Abundance:

Oncopodura mala Christiansen and Bellinger 1996 type specimens are all from Malheur Cave in Oregon, however other specimens of this species have been collected from Eagle View Cave #2, Calaveras County, CA; Three Rivers, South Fork Kaweah River, Tulare County, CA; Tilden Park, Inspiration Point, Contra Costa County, CA; and from two other localities not identified.

<u>Habitat Associations</u>:

Oncopodura mala occur only in cave habitats and is likely a cave obligate.

<u>Threats</u>:

The most significant threat for cavern wildlife can be disturbance and alteration of the habitat. Human visitation from tourism to spelunking can alter temperature, disturb hibernating bats, and introduce pollutants. Closure of entrances or further opening of a cave can affect wildlife use and the air circulation patterns and air temperatures. Vandalism or intentional destruction has been noted as well. Other threats include pollution of aquatic systems that maintain the humidity of the cave environment.

Loss of vegetation can lead to increased erosion and water runoff. Polluted runoff washes into waterways, which drain into underground areas, affecting both the cave environment and the creatures that live within it.

The most inappropriate activities with the highest impact are those that destroy or alter cave resources, such as: acts of vandalism, graffiti and spray painting, dumping garbage or litter, removal or damage of cave resources, or other such destructive behaviors or activities.

Conservation Considerations:

- (1) Tread slowly and softly at all times. Take care where you place your hands and feet.
- (2) Be aware of sensitive features, including fauna and their habitats. Walk carefully around waterways, tree roots, sediment banks and organic deposits (leaf litter, wood, dead animals). Look but don't disturb spider webs and other nests.
- (3) Protect water quality in the area.
- (4) Maintaining the natural surface vegetation is vital to the survival of cave ecosystems.

Other pertinent information (includes references to Survey Protocols, etc):

Specimens can be found in its cave habitat under decaying boards and other organic debris. They can be collected using an aspirator and should be stored in vials containing 70% alcohol. This species is likely the only Collembola in Malheur Cave and therefore is easily identified in the field. Immature stages likely have a similar appearance as adults, only smaller. They have not been described. The specific epithet is derived from the Latin word *malus* meaning "bad" after the type locality, Malheur (bad fortune) Cave (Christiansen and Bellinger 1996).

ATTACHMENTS:

- (1) Map of Range and Distribution
- (2) BLM Distribution Maps
- (3) List of Pertinent References/Literature
- (4) Technical Description
- (5) Original Published Description

Christiansen, K. and P. Bellinger. 1996. Cave PSEUDOSINELLA and ONCOPODURA new to science. Journal of Caves and Karst Studies. 58(1):38-53.

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Distribution of Oncopodura mala Christiansen and Bellinger in Oregon.

BLM Distribution Maps



BLM Resource Areas where Oncopodura mala Christiansen has been found.



BLM Districts/USFS Forests where Oncopodura mala Christiansen has been found.

References

Borror, D.J., C.A. Triplehorn, and N.F. Johnson. 1989. An Introduction to the Study of Insects. Sixth Edition. Saunders College Publishing, Philadelphia. 875 pp.

Christiansen, K. and P. Bellinger. 1996. Cave PSEUDOSINELLA and ONCOPODURA new to science. Journal of Caves and Karst Studies. 58(1):38-53.

Hopkin, S.P. (1997) The Biology of Springtails (Insecta: Collembola). Oxford University Press Inc. New York.

Janssens, F. 2005. Checklist of the Collembola website: A new cave species of the genus Oncopodura (Collembola: Oncopoduridae) from Belgium.

http://www.geocities.com/CapeCanaveral/Lab/1300/publicat/dethier2. htm.

Technical Description:

Maximum length 1.3 mm. White without trace of pigment. Antennae 0.9 - 1.04 times as long as cephalic diagonal, without scales. Fourth segment without apical bulb, but a conical projection; subapical trio with sharply curved type 6 setae and one straight thick stout acuminate seta; a distal file of 4 type 8 setae; other setae of type 1A. Third antennal segment with one type 13 seta, one distal and one smaller subapical seta of type 8, about 15 dorsal setae intermediate between types 2 and 1A; ventral surface with setae of types 1A and 3. Second antennal segment with one apical and one subapical seta of type 8, one short, spine-like seta, and remaining dorsal setae intermediate between types 2 and 1A; ventral surface with setae of types 1A and 3. First antennal segment dorsally with type 2 setae in apical row plus one basal. Single unlobed, small globular PAO in type specimens. Unguis short, stout and untoothed, without lateral lamina; inner pretarsal seta about 0.3 times as long as inner unguis. Unguiculus broad, acuminate, and not basally swollen. Differentiated outer seta of mesotibiotarsus shaped like a lacrosse stick. Tenent hair slender and acuminate. Other tibiotarsal setae acuminate and smooth or finely ciliate. Ventral tube with 4 distolateral type 1A setae, and small papillae at tip of ventral grove; small canals are present. Tenaculum with 4+4 teeth and a short acuminate type 14 seta on the corpus. Manubium dorsaly with 5+5 type 3 and 8+8 type 14 setae, plus 1+1 microsetae. Dens ventrally with 5 acuminate smooth setae distally with a large curved spine having many small to minute scales; dorsal surface with 4 long type 14 and 1-2 thick type 1A setae basally and 2 long type 14 setae and 2 microsetae medially; inner face with 2 spine-like type 1A setae basally, one large basal bidentate spine, and one smaller bi- or tridentate spine distally. Mucro with 4 teeth, crenulate lamella, and large basal scale. Fourth abdominal segment setae with 4+4 macrochaetae plus row of smaller type 14 setae along each posterolateral margin. Fifth abdominal segment with 4+4 stout, acuminate, ciliate setae anteriorly, medially with 2+2 slender type 1A setae, posteriorly with a row of 4+4 microchaetae, and 4 type 14 setae in an angled row on each side. Sixth segment with type 14 setae in anterior row of 6, a medial row of 3, posterior row of 5; and a row of 4 microsetae between the first two rows.

This species is easily distinguished from all other Nearctic forms by the unusual chaetotaxy of the fifth abdominal segment and the tiny postantennal organ (PAO). California specimens differ from those collected in Malheur Cave in having lobes on the PAO, but are otherwise identical, and are therefore considered a geographic variety (Christiansen and Bellinger 1996).