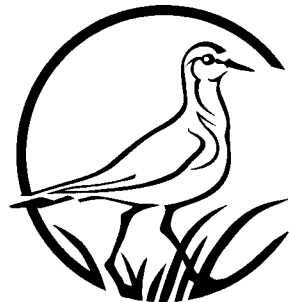


Terrestrial Mollusk Surveys on Region 1 USFS Lands

**Paul Hendricks, Bryce Maxell, Susan Lenard, Coburn Currier,
and Ryan Kilacky**

Montana Natural Heritage Program



MONTANA
Natural Heritage
Program

<http://nhp.nris.state.mt.us>

Globally Rare Land Snails Present on R1 Forests

- Selway Forestsnail (*Allogona lombardi*) (ID) G1
- Dry Land Forestsnail (*Allogona ptychophora solida*) (ID)? G5T2T3
- Nimapuna Tigersnail (*Anguispira nimapuna*) (ID) G1
- Chrome Ambershell (*Catinella rehderi*) (MT, ID?) G1G2Q*
- Salmon Oregonian (*Cryptomastix harfordiana*) (ID)? G3G4
- Mission Creek Oregonian (*Cryptomastix magnidentata*) (ID)? G1
- Oregonian (*Cryptomastix mullani blandi*) (ID)? G4T1
- River of No Return Oregonian (*Cryptomastix mullani clappi*) (ID) G4T1
- Kingston Oregonian (*Cryptomastix sanburni*) (ID)? G1
- Lake Disc (*Discus brunsoni*) (MT)? G1
- Marbled Disc (*Discus marmorensis*) (ID) G1G3
- Striate Disc (*Discus shimekii*) (MT, ID?) G5
- Salmon Coil (*Helicodiscus salmonaceus*) (ID) G1G2
- Alpine Mountainsnail (*Oreohelix alpina*) (MT) G1
- Bitterroot Mountainsnail (*Oreohelix amariradix*) (MT) G1G2
- Keeled Mountainsnail (*Oreohelix carinifera*) (MT) G1
- Carinate Mountainsnail (*Oreohelix elrodi*) (MT) G1
- Seven Devils Mountainsnail (*Oreohelix hammeri*) (ID) G1
- A Land Snail (Hells Canyon) (*Oreohelix idahoensis baileyi*) (ID) G1G2T1
- Costate Mountainsnail (*Oreohelix idahoensis idahoensis*) (ID)? G1G2T1T2
- Deep Slide Mountainsnail (*Oreohelix intersum*) (ID)? G1
- Boulder Pile Mountainsnail (*Oreohelix jugalis*) (ID)? G1
- Berry's Mountainsnail (*Oreohelix strigosa berryi*) (MT) G5T2
- Striate Mountainsnail (*Oreohelix strigosa goniogyra*) (ID) G5T1Q
- Whorled Mountainsnail (*Oreohelix vortex*) (ID)? G1G3
- Lava Rock Mountainsnail (*Oreohelix waltoni*) (ID)? G1G3
- Gallatin Mountainsnail (*Oreohelix yavapai mariae*) (MT) G4T1
- Robust Lancetooth (*Haplotrema vancouverense*) (MT, ID) G5
- Western Flat-whorl (*Planogyra clappi*) (ID) G3G4
- Humped Coin (*Polygyrella polygyrella*) (MT, ID) G2G3
- Northern Tightcoil (*Pristiloma arcticum*) (MT, ID?) G3G4*
- Thinlip Tightcoil (*Pristiloma idahoense*) (ID) G2G3
- Fir Pinwheel (*Radiodiscus abietum*) (MT, ID) G3

SUMMARY

- 31 Species G1-G3 so USFS SOC
- 2 Species G5, but S1-S3 so USFS SOI

Globally Rare Land Snails - Examples



Fir Pinwheel (*Radiodiscus abietum*)



Nimapuna Tigersnail (*Anguispira nimapuna*)



Selway Forestsnail (*Allogona lombardii*)



Humped Coin (*Polygyrella polygyrella*)

Globally Rare Slugs Present on R1 Forests

- **Marbled Jumping-slug (*Hemphillia danielsi*) (MT) G2G3**
- **Pale Jumping-slug (*Hemphillia camelus*) (MT, ID) G3G4**
- **Pygmy Slug (*Kootenaia burkei*) (MT, ID) G1G2**
- **Magnum Mantle-slug (*Magnipelta mycophaga*) (MT, ID) G3**
- **Reticulate Taildropper (*Prophysaon andersoni*) (MT, ID) G5**
- **Blue-gray Taildropper (*Prophysaon coeruleum*) (ID) G4**
- **Papillose Taildropper (*Prophysaon dubium*) (ID) G4**
- **Smoky Taildropper (*Prophysaon humile*) (MT, ID) G2**
- **Lyre Mantleslug (*Udosarx lyrata lyrata*) (MT, ID) G2T2**
- **Russell Mantleslug (*Udosarx lyrata russelli*) (MT)? G2T1**
- **Sheathed Slug (*Zacoleus idahoensis*) (MT, ID) G3G4**

SUMMARY

- **8 Species G1-G3 = USFS SOC**
- **3 Species G4-G5, but S1-S3 = USFS SOI**

Globally Rare Slugs - Examples



Pale Jumping-Slug (*Hemphillia camelus*)



Lyre Mantleslug (*Udosarx lyrata lyrata*)



Smoky Taildropper (*Prophysaon humile*)



Magnum Mantleslug (*Magnipelta mycophaga*)

Montana Heritage Program Survey Approach

- **Stratify effort by Forest, then District within Forest**
- **Timed visual encounter surveys while actively searching through litter, woody debris, talus, and bryophyte mats**
- **Record habitat and species detection information on a standard survey form**
- **Information on basic distribution, habitats used, number detected per unit time and percent of sites occupied as a measure of status, and basic natural history information**

Focal Habitats for Surveys



Talus



Riparian with Rock Outcrops and Talus



Limestone Outcrop



Old Growth Moist/Mesic Forest



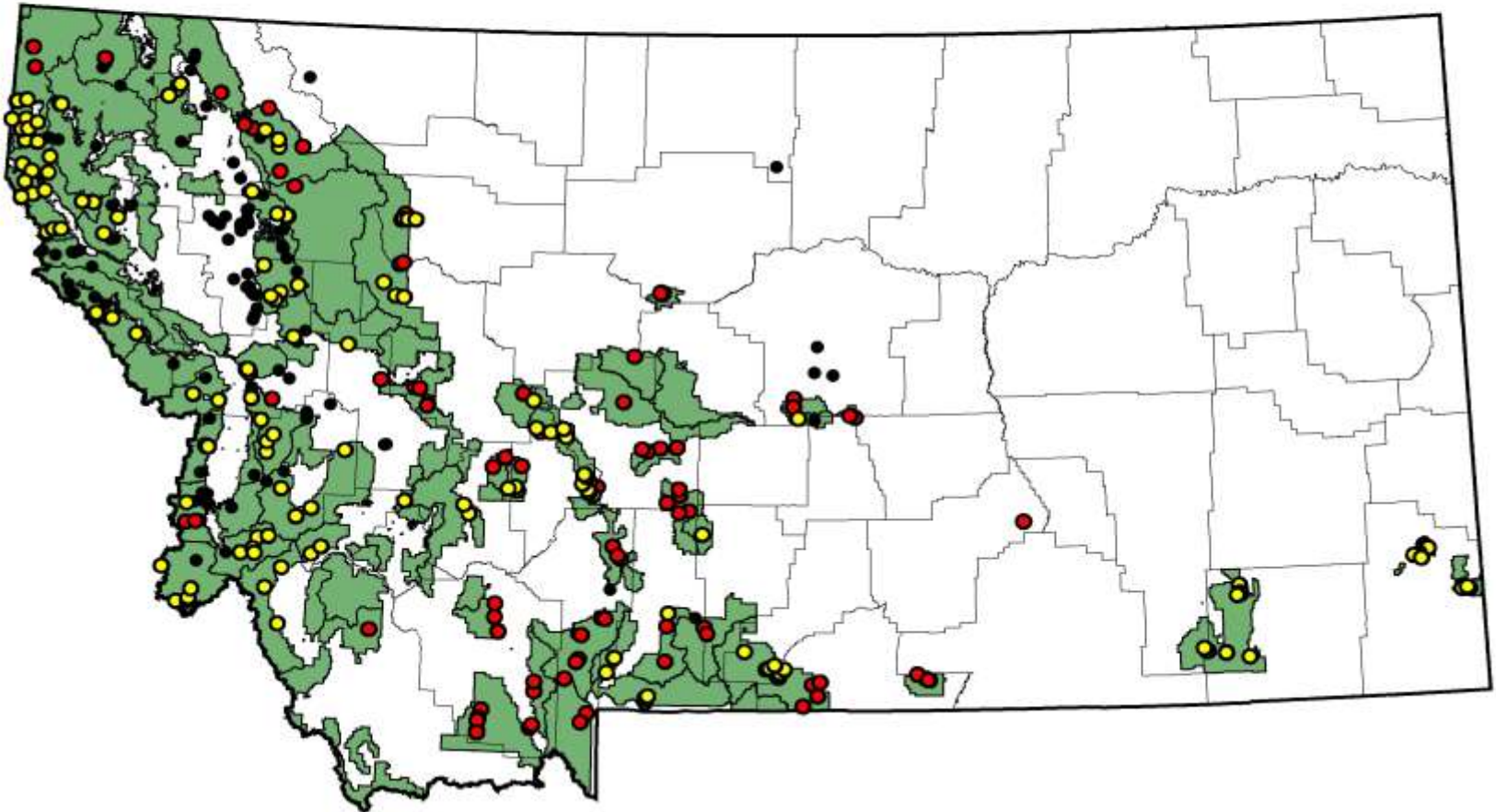
Aspen Stands

Terrestrial Survey Locations: 2006

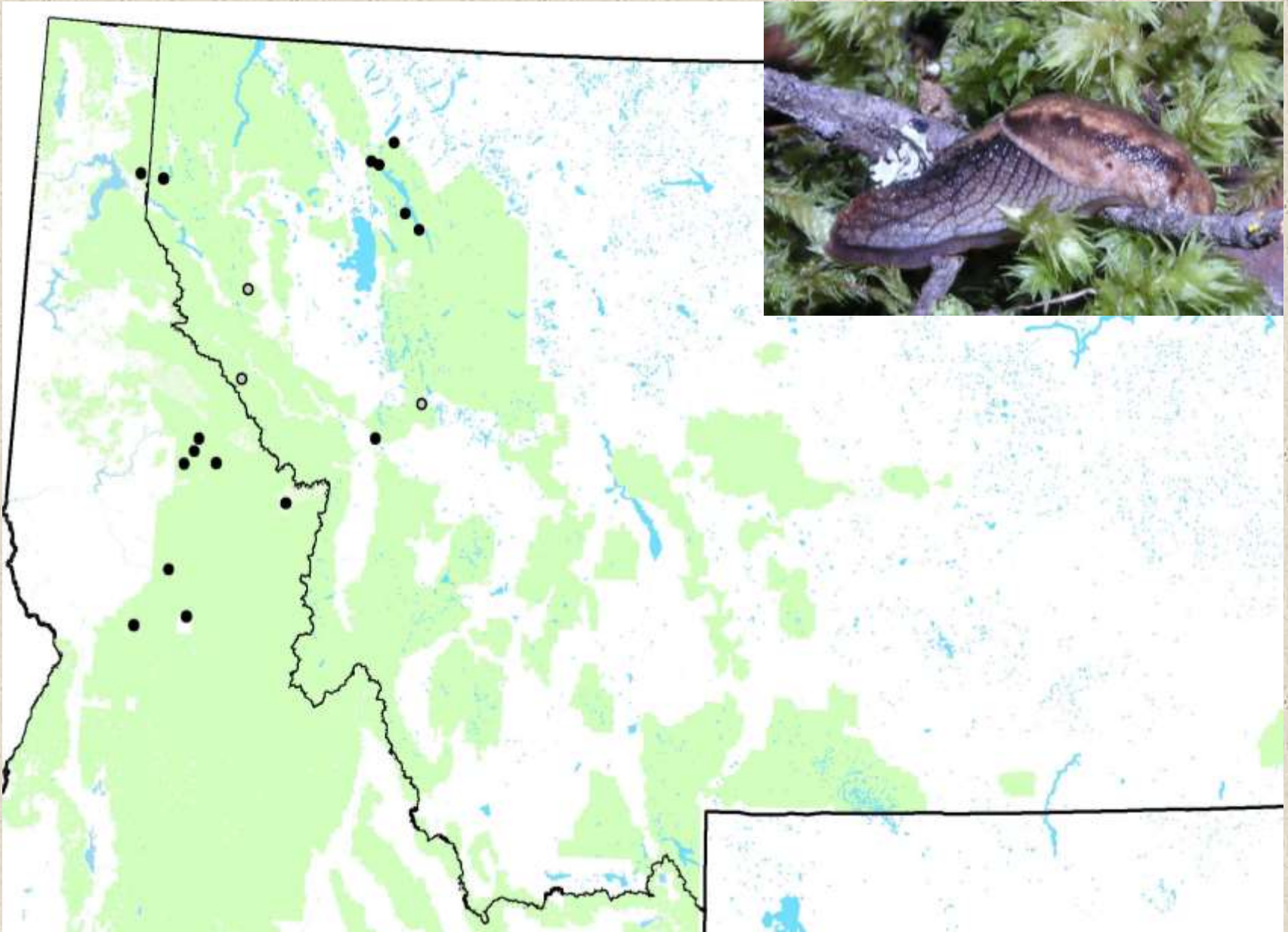
Terrestrial Mollusc Point Locations

Legend

- 2006 point locations
- 2005 point locations
- POD records prior to 2005



Smoky Taildropper (*Prophysaon humile*): 2005

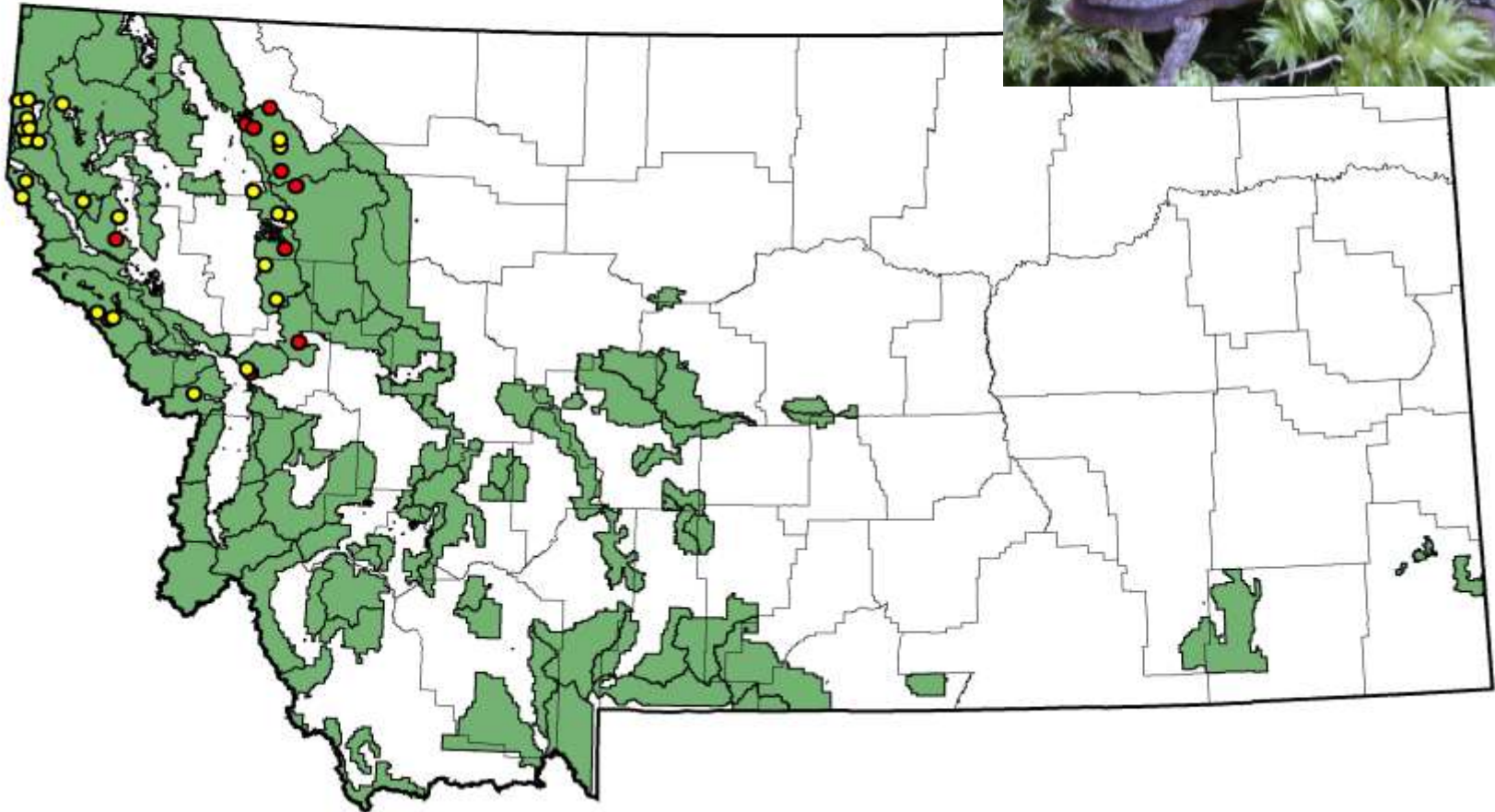


Smoky Tail-dropper (*Prophysaon humile*): 2006

Prophysaon humile

Legend

- 2006 point locations
- Previous known locations

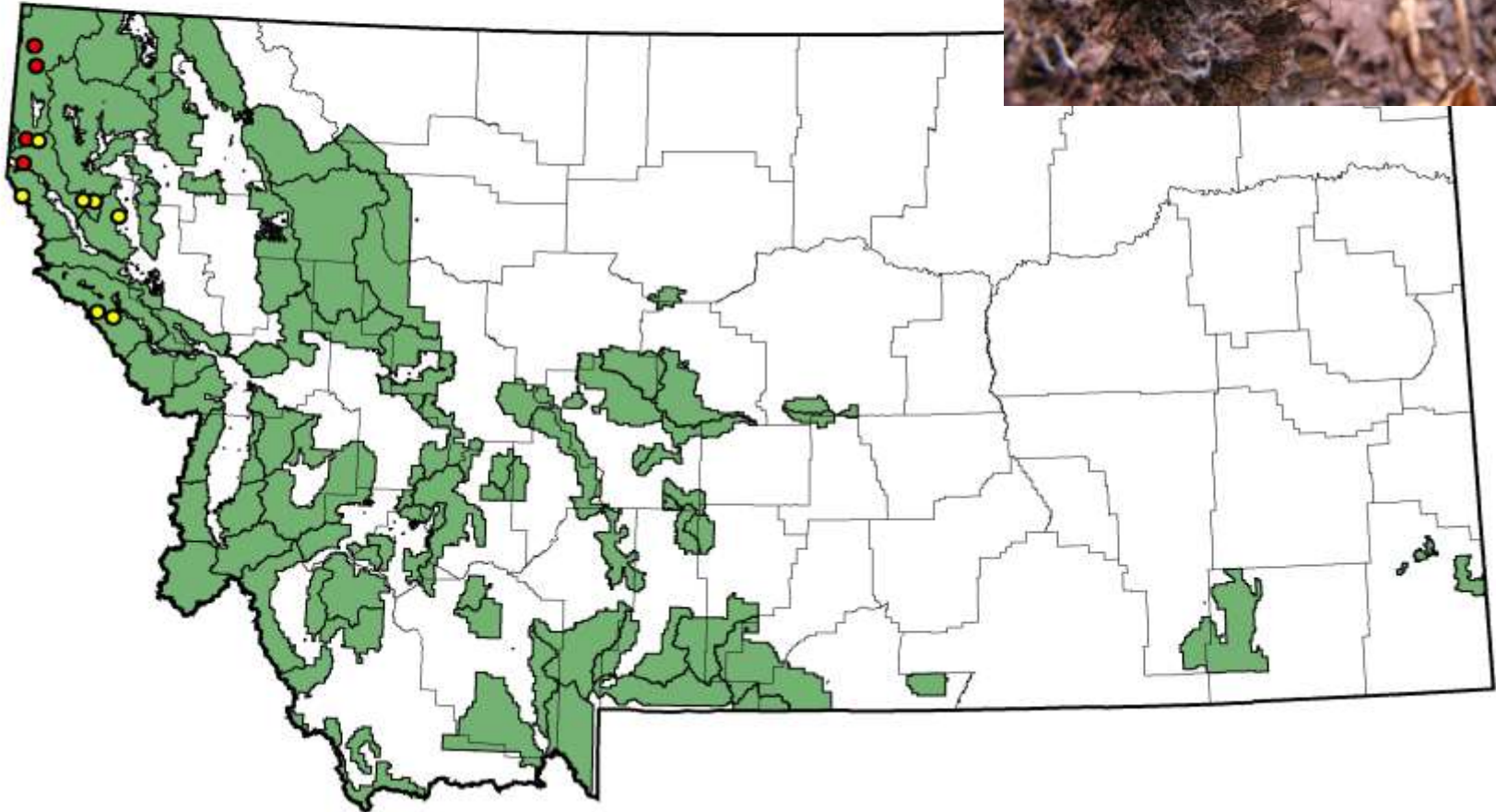


Pygmy Slug (*Kootenaia burkei*): 2006

Kootenaia burkei

Legend

- 2006 point locations
- Previous known locations



Highlights & Products through Fall 2006

- **Initial Status Assessment Report (2003)**
- **Summary Report of 2005 survey results**
- **Provisional Survey Protocols and Field Testing**
- **Standardized Datasheet**
- **Matrices summarizing distribution & habitat use**
- **Surveys of 264 sites in 2005 and 2006**
- **Four mollusk SOC documented in Montana for first time**
(Pale Jumping-slug, Pygmy Slug, Reticulate Taildropper, Boreal Top)
- **Reduced G Ranks of five mollusk SOC** (Humped Coin, Fir Pinwheel, Pale Jumping-slug, Pygmy Slug, Smoky Taildropper)
- **Consultation on SOC approach for Forest Plans**
- **Monitoring Scheme**
- **Terrestrial Mollusk Inventory and Monitoring Database**

Management Issues

- Fire
- Timber harvest
- Weed spraying
- Road development
- Quarry development
- Grazing impacts to riparian areas and springs
- Exotic mollusks
- Lack of information on identification, status, distribution, biology



ID and Natural History



Livestock Trampling of Springs



Exotic Mollusks

Recommendations For Future

- **Surveys**

 - **Basic Distribution → NonRandom Site Selection**

 - **Habitat Use → Random Site Selection**

 - **Status → Monitor Site Occupancy - detectability**

- **Predictive Distribution Modeling**

- **Workshops on ID and Management**

- **Information up on Heritage Website Field Guide**

- **Posters**

- **Simplistic Field Guide and Photo ID cards**

- **Genetics to inform taxonomy**