

FIELD INVESTIGATIONS OF  
SAXIFRAGA BRYOPHORA VAR. TOBIASIAE (TOBIAS' SAXIFRAGE)  
A REGION 4 SENSITIVE SPECIES,  
ON THE PAYETTE NATIONAL FOREST,  
WITH NOTES ON  
CAMPANULA SCABRELLA (ROUGH BELLFLOWER)

by

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#### ABSTRACT

A field investigation of Saxifraga bryophora var. tobiasiae (Tobias' saxifrage) was carried out in the western Salmon River Mountains of the Payette National Forest by the Idaho Department of Fish and Game's Natural Heritage Program. The investigation was a cooperative Challenge Cost-share project between the Department and the Payette National Forest.

Tobias' saxifrage is endemic to the Payette NF and is a Category 2 candidate for federal listing and a Region 4 Sensitive Species. Prior to 1989, only two populations were known. During this investigation, these two populations were relocated and their known limits were extended. Three additional populations were discovered in the vicinity. The species remains rare, with only two populations being extensive. It is recommended that Tobias' saxifrage remain a candidate and a Sensitive Species, and that additional surveys be undertaken in the western Salmon River Mountains.

In addition to the species of primary interest, I encountered an additional rare plant species during the survey, Campanula scabrella (rough bellflower). Only seven sites are known in Idaho, and all recently-visited populations are small and vulnerable to inadvertent disturbance. Rough bellflower is currently a Region 1 Sensitive Species and should be added to the Region 4 Sensitive Species List for the Salmon and Payette NFs.

TABLE OF CONTENTS

ABSTRACT ..... i  
TABLE OF CONTENTS ..... ii  
LIST OF APPENDICES ..... ii  
INTRODUCTION ..... 1  
RESULTS ..... 2  
    Saxifraga bryophora var. tobiasiae ..... 3  
    Campanula scabrella ..... 7  
DISCUSSION AND OVERALL RECOMMENDATIONS  
    Need For Additional Data ..... 11  
    Summary of Status Recommendations ..... 11  
REFERENCES ..... 12

LIST OF APPENDICES

APPENDIX 1 ....Line drawings of Saxifraga bryophora var. tobiasiae and Campanula scabrella.  
APPENDIX 2 ....Distribution of Saxifraga bryophora var. tobiasiae and Campanula scabrella in Idaho.  
APPENDIX 3 ....Demographic data for populations of Saxifraga bryophora var. tobiasiae and Campanula scabrella on the Payette NF.  
APPENDIX 4 ....Maps of areas searched for Saxifraga bryophora var. tobiasiae and Campanula scabrella.  
APPENDIX 5 ....Slides of Saxifraga bryophora var. tobiasiae and Campanula scabrella and their habitats.

## INTRODUCTION

The National Forest Management Act and Forest Service policy require that Forest Service land be managed to maintain populations of all existing native animal and plant species at or above the minimum viable population level. A minimum viable population consists of the number of individuals, adequately distributed throughout their range, necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

The Forest Service, along with other Federal and State agencies, has recognized the need for special planning considerations in order to protect the flora and fauna on the lands in public ownership. Species recognized by the Forest Service as needing such considerations are those that (1) are designated under the Endangered Species Act as endangered or threatened, (2) are under consideration for such designation, or (3) appear on a regional Forest Service sensitive species list.

Saxifraga bryophora var. tobiasiae (Tobias' saxifrage) was only recently discovered and described as a taxon new to science. Prior to 1989, it was known only from the type locality near Fisher Creek Saddle and upper Pearl Creek, in the Salmon River Mountains, north of McCall, Idaho. It is on the Region 4 Sensitive Species List and is a Category 2 candidate for federal listing.

The primary objectives of this investigation were as follows:

- 1) Survey the two known populations of Tobias' saxifrage and search potential habitats on the Payette NF for new populations.
- 2) Characterize habitat conditions for known populations.
- 3) Assess population trends and threats to existing populations and make management recommendations to the forests based on these assessments.

## RESULTS

During July 1989, Dr. Barbara Ertter, University of California, Berkeley, Dr. Chris Davidson, Director of the Idaho Botanical Garden, Boise, and I surveyed potential habitats of Tobias' saxifrage in the western Salmon River Mountains north of McCall (Appendix 4). In addition to relocating and extending the known limits of the populations near Fisher Creek Saddle and in the upper North Fork Pearl Creek, we discovered three new sites in the vicinity.

I also discovered a new population of another rare species, Campanula scabrella (rough bellflower), south of Fisher Creek Saddle. Two other populations of this species are known from the Payette NF. This species is on the Region 1 Sensitive Species List.

Following is a detailed discussion of each species, including information on its taxonomy and identification, range and habitat, conservation status, and recommendations concerning its status in Idaho to the U.S. Fish and Wildlife Service, Regional Forester, and Payette NF.

Saxifraga bryophora A. Gray var. tobiasiae Grimes and Packard

CURRENT STATUS USFS Region 4 Sensitive Species (Payette NF)  
USFWS - C2  
Idaho Native Plant Society - None  
Heritage Rank - G5T1 S1

TAXONOMY

Family: Saxifragaceae (Saxifrage)

Common Name(s): Tobias' saxifrage

Synonyms: Saxifraga foliolosa R. Br. var. foliolosa was initially applied to Idaho plants before their taxonomic position was clarified.

Citation: Grimes and Packard. Brittonia 33:430-434. 1981.

Technical Description: Glandular-pubescent annual, 4-20 cm tall; stems usually one, rarely more, much branched, terminated by a single flower, other flowers replaced by bulbils; leaves to 15 mm long, ciliate with multicellular hairs; petals 4-6, 4-6 x 2 mm, with sagittate bases up to 0.25 mm long (modified from Grimes and Packard 1981).

Nontechnical Description: Tobias' saxifrage is a diminutive annual with one main stem (rarely 2-3) that has several lateral branches. The main stem is terminated by a prominent white flower, as is an occasional lateral branch. The remaining flowers are replaced with numerous bulbils. The herbage is covered with glandular hairs. Although Grimes and Packard (1981) noted that the branches are never terminated by a flower, occasional specimens were found in 1989 that had one to several of the branches bearing flowers at their terminus. See Appendix 1 for a line drawing of Tobias' saxifrage and Appendix 5 for slides of its habit and habitat.

Distinguishing Features and Similar Species: Five other Saxifraga species were seen in the vicinity of Tobias' saxifrage populations on the Payette NF. All are perennial species and only one, S. rhomboidea, was observed to occur in a Tobias' saxifrage population. In addition to longevity, the five differ in habit, as follows (compare with Tobias' saxifrage habitat in Habitat and Associated Species section):

S. arguta - occurs along perennial streams and rivulets.

S. debile - restricted to steep, north-facing outcrops that rarely receive direct sunlight.

S. ferruginea - generally occurs on N-facing rock outcrops or moist slopes with thin soil over bedrock.

S. rhomboidea - one plant was seen in a Tobias' saxifrage population but it usually occurs on moist north-facing slopes with more organic matter in the surface layers.

S. tolmiei var. ledifolia - restricted to the immediate vicinity

of late-lying snowbanks on north-facing slopes.

#### DISTRIBUTION

Range: Tobias' saxifrage is endemic to the western Salmon River Mountains, Idaho. Prior to 1988, it was known only from the type locality near Fisher Creek Saddle, about 17 miles north of McCall (Grimes and Packard 1981). Barbara Ertter and Chris Davidson discovered a small population in the upper North Fork Pearl Creek in 1988. During July 1989, we relocated the two previously-known populations and discovered three more in the vicinity. See Appendix 2 for maps showing the distribution of Tobias' saxifrage and Appendix 3 for demographic data on the five known sites.

The Fisher Creek Saddle East and Fisher Creek Saddle West are the largest populations known, each with greater than 5000 individuals covering many acres. The other three populations are small and localized.

Habitat and Associated Species: Tobias' saxifrage occurs in openings in subalpine forest communities, classified as the Vaccinium globulare phase of the Abies lasiocarpa/Xerophyllum tenax habitat type (Steele et al. 1981). It was rarely seen beneath the forest canopy. Within this community it occurs in microhabitats characterized by considerable amounts of exposed bare soil and substrate instability, although the cause of the instability has two sources, pocket gopher activity and meltwater runoff. Competition for space and resources appears to limit the distribution of Tobias' saxifrage to these open soil areas.

The highest density of individuals occur on and around earth cores that have been pushed into snow tunnels by pocket gophers during winter and spring. It is most abundant on gopher activity from the previous winter, although it was still common on two- to three-year-old cores. Cores older than that were well-vegetated, with a high canopy coverage, and generally lacked any Tobias' saxifrage.

Tobias' saxifrage is also common in small snow runoff channels between areas stabilized by perennial vegetation. It generally occurs in the flat to gently sloping portions of the channel. It does not occur in the steeper sections of the channels where the substrate is continually being subjected to downslope movement, or in gravelly depressions where ephemeral ponding occurs.

Species associated with Tobias' saxifrage in these habitats include Lewisia triphylla, Hypericum formosum, Polygonum phytolaccaefolium, Castilleja miniata, Antennaria lanata, Erythronium grandiflorum, Arenaria capillaris, Trisetum spicatum, Vaccinium scoparium, Mimulus breweri, Phlox diffusa, Poa gracillima, Cymopterus glaucus, Pinus albicaulis, Suksdorfia ranunculifolia, and Polygonum austinae.

Although they are saturated early in the growing-season, soils at all sites are dry by about mid-July. Most populations occur on west-, south-, and east-facing slopes. Elevations of known populations range between 7400 and 8400 feet. The geology underlying the populations is uniformly intrusive, although several rock-types are present, including quartz monzonite, grandiorite, and quartz diorite

(Gaston and Bennett 1979).

#### CONSERVATION STATUS

Conservation Status - Idaho: Tobias' saxifrage was first discovered in the Fisher Creek Saddle area by Nelle Tobias in 1978. This was the only known population until 1988. The plants she discovered were initially identified as *S. foliolosa* var. *foliolosa*, a taxon whose distribution is mainly arctic. Packard (1981) evaluated this taxon for the Rare and Endangered Plants Technical Committee of the Idaho Natural Areas Council, where she recommended that it be placed on the State Watch List because of its disjunct distribution and lack of threats. The taxonomic status of this population was later reevaluated and found to be an undescribed variety of *S. bryophora*, previously thought to be endemic to California (Grimes and Packard 1981).

Because only two populations were known for the taxon, it was recommended for federal Category 2 candidate status at the annual Idaho Rare Plant Conference in 1989 (Idaho Native Plant Society 1989). It will appear as such when the updated list of candidates is published in the Federal Register soon. It is on the Region 4 Sensitive Species List for the Payette NF (USDA Forest Service 1988a).

Tobias' saxifrage has no Idaho Native Plant Society Status because it is a Category 2 candidate (Idaho Native Plant Society 1989).

The Idaho Natural Heritage Program currently ranks Tobias' saxifrage as G5T1 S1 (G5 = *Saxifraga bryophora* is demonstrably secure; T1 = var. *tobiasiae* is critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; because it is endemic to Idaho, the state (S) rank is the same as the taxon's global (T) rank).

Conservation Status - Elsewhere: Tobias' saxifrage is endemic to Idaho.

Ownership: All known populations of Tobias' saxifrage occur on the Payette NF. A small portion of the Fisher Creek Saddle West population occurs in the Bruin Mountain Research Natural Area (RNA).

Threats: No threats are foreseen to any populations. They occur in areas that are generally unsuitable for timber harvest, being on high elevation ridges of low productivity and having considerable amounts of exposed bedrock. Past and possibly present sheep grazing takes place in some populations, but does not appear to negatively affect the populations.

#### ASSESSMENT AND RECOMMENDATIONS

Summary: Five populations of Tobias' saxifrage are known. Two populations are extensive and consist of several thousand individuals, while three are small and local. No threats were observed to any of the populations and none are foreseen.

Recommendation to the U.S. Fish and Wildlife Service: Tobias' saxifrage



remains a rare taxon, with a majority of the populations being small and localized. Based on these data, I recommend that it remain a Category 2 candidate until more habitat is inventoried in the western Salmon River Mountains of the Payette NF.

Recommendation to the Regional Forester: Because of its rarity and its status as a candidate for federal listing, I recommend that Tobias' saxifrage remain on the Region 4 Sensitive Species List.

Recommendations to Payette National Forest: A considerable amount of suitable-appearing habitat remains to be surveyed. Further searches should include the Granite Mountain-Hard Butte-Patrick Butte divide, Squaw Point-Bear Pete Mountain divide, and the Payette Crest east of McCall. Sensitive plant clearances should be conducted for all projects that occur in suitable habitat in this region of the Forest.

Campanula scabrella Engelm.

CURRENT STATUS USFS Region 1 Sensitive Species (Nez Perce NF)  
USFS Region 4 - None  
USFWS - None  
Idaho Native Plant Society - Sensitive  
Heritage Rank - G4 S1

TAXONOMY

Family: Campanulaceae (Harebell)

Common Name(s): Rough bellflower, rough harebell

Citation: Engelm. Botanical Gazette 6:237. 1881.

Technical Description: Perennial from a taproot and more or less slenderly branched caudex, minutely spreading-hirtellous throughout, the several stems up to 1 dm tall; leaves entire, the basal one oblanceolate, 0.5-4 cm long, the cauline ones narrower and slightly to strongly reduced; flowers solitary, or sometimes 2-5, erect; calyx lobes 2-6 mm long; corolla blue, 6-12 mm long, the lobes from a little shorter to a little longer than the tube; anthers 3.5-5 mm long; style about equalling the corolla; capsule cylindric-obconic, 5-7 mm long, opening near the summit (Cronquist 1959).

Nontechnical Description: Rough bellflower is a low-growing, tufted species with narrow, entire leaves that are covered with coarse, stiff hairs. The inflorescence has few, light blue flowers and erect fruits (Duft and Moseley 1989) See Appendix 1 for a line drawing of rough bellflower and Appendix 5 for slides of its habit and habitat.

Distinguishing Features and Similar Species: Rough bellflower occurs with Campanula parryi var. idahoensis at the Fisher Creek Saddle West site. Campanula parryi is widespread at high elevations in the mountains of central Idaho, and can easily be confused with rough bellflower. While Campanula parryi is a somewhat taller plant, the following key can be used to distinguish them more definitively (Cronquist 1959):

Plants minutely spreading-hirtellous throughout; capsule 5- 7 mm long ..... C. scabrella

Plants glabrous or nearly so except for the ciliate-margined bases of the lower leaves; capsule 7-11 mm long ..... C. parryi

DISTRIBUTION

Range: Rough bellflower is distributed in the Cascade Range, from Central Washington to Mt. Scott, California. It is disjunct in central Idaho and western Montana (Cronquist 1959). In Idaho, it is known from six sites in three mountain ranges in the central part of the state, as follows:

Seven Devils Mountains (Bingham 1987)

- o Windy Saddle, Hells Canyon NRA
- o Mirror Lake, Hells Canyon NRA
- o Pollock Mountain, Payette NF

Salmon River Mountains

- o Patrick Butte, Payette NF
- o south of Fisher Creek Saddle, Payette NF
- o Heart Lake, Bighorn Crags, Salmon NF (Steele 1975)

Beaverhead Mountains

- o Peak 9992, Salmon NF

See Appendix 2 for maps showing the distribution rough bellflower and Appendix 3 for demographic data on the three known Payette NF populations.

Only three populations are known from the Payette NF, despite the considerable amount of floristic inventory that has taken place in the western Salmon River Mountains in conjunction with Research Natural Area inventories, Heritage Program status surveys (e.g. Moseley 1988), and other projects. All known populations are small, and isolated from each other by over 15 miles.

Habitat and Associated Species: Rough bellflower occurs in small pockets of mineral soil between cracks in the bedrock on exposed, rocky ridgelines and summits. The Patrick Butte and Fisher Creek Saddle populations occur on sites that are scoured by wind during the winter, leaving little to no snow cover. The geologic substrates underlying Payette NF populations are quartz monzonite, quartz diorite, grandiorite, and possibly basalt on Pollock Mountain (Gaston and Bennett 1979). This general type of habitat is common on the Payette NF, so it is surprising that so few populations have been discovered.

Species associated with rough bellflower at these sites include Oryzopsis exigua, Heuchera grossulariifolia, Sitanion hystrix, Carex phaeocephala, Microseris nutans, and Campanula parryi var. idahoensis. The populations are exposed to full sunlight on slopes that generally face south, and have little to no tree cover. Elevations of the Payette NF populations range from 8040 to 8814 feet.

CONSERVATION STATUS

Conservation Status - Idaho: Bob Steele (1975) was the first to recognize the rare occurrence of rough bellflower in Idaho. Dick Bingham (1979; 1987) recognized it as a rare species in the Seven Devils Mountains. Steve Brunsfeld (1981), in his evaluation of rough bellflower for the Rare and Endangered Plants Technical Committee of the

Idaho Natural Areas Council, placed it on the State Watch List, due to its rarity and lack of known threats. It was placed on the Region 1 Sensitive Species List (USDA Forest Service 1988b) based on this evaluation.

Rough bellflower is considered a Sensitive species by the Idaho Native Plant Society's (1989) list of rare plants of Idaho. The Sensitive category refers to taxa with "small populations or localized distributions within Idaho that presently do not meet the criteria for classification as Priority 1 or 2, but whose populations and habitats may be jeopardized without active management or removal of threats."

The Idaho Natural Heritage Program currently ranks rough bellflower as G4 S1 (G4 = apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery; S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction).

#### Conservation Status - Elsewhere:

OREGON - Rough bellflower is on the Oregon Natural Heritage Data Base's List 3, which includes taxa limited in abundance throughout their range but are currently stable (Oregon Natural Heritage Data Base 1989).

Ownership: All known populations of rough bellflower in Idaho occur on National Forest land in Regions 1 and 4. The populations are administered by the Salmon NF, Payette NF, and Hells Canyon NRA (Nez Perce NF administered by the Wallowa-Whitman NF).

Threats: No immediate, direct threats are known to the Payette NF populations. The populations on Patrick Butte and Pollock Mountain are in proposed RNAs. Designation of these sites as RNAs will enhance conservation efforts. The sites are remote, however, and the populations are small and localized, so it will be difficult to prevent inadvertent disturbance to rough bellflower habitat. There has been a lookout on Pollock Mountain for many years. The impact that the development of this facility has had on the rough bellflower population is unknown.

#### ASSESSMENT AND RECOMMENDATIONS

Summary: Seven populations of rough bellflower are known from Idaho. All are small and could be easily impacted by any inadvertent, small-scale disturbance. The population on Pollock Mountain may have been impacted by past development of the fire lookout. No immediate, direct threats to the population near Fisher Creek Saddle was observed.

Recommendation to the Regional Forester: Rough bellflower occurs in five, widely separated populations in Region 4, on the Payette and Salmon NFs. All recently-visited populations are small and, therefore, vulnerable to disturbance and extirpation. Rough bellflower is currently on the Regional Forester's Sensitive Species List for Region 1 (Nez Perce NF). I recommend that it be added to the Sensitive Species List for Region 4 (Payette and Salmon NFs).

Recommendations to Payette National Forest: For the most part, rough bellflower is well removed from most Forest management activity. All populations are small, however, and could be easily extirpated by almost any inadvertent, relatively small-scale disturbance. Therefore, rough bellflower should be given special consideration in land management planning, and sensitive plant clearances should be performed for projects in habitat that appears suitable for rough bellflower.

## DISCUSSION AND OVERALL RECOMMENDATIONS

### Need for Additional Data

Land managers and field personnel on the Payette NF should be informed of the possible occurrence of the Tobias' saxifrage and rough bellflower in their areas. Possible sightings should be documented by specimens (if size of the population warrants collecting), including both roots and flowers. Specimens should be sent to the University of Idaho Herbarium (Department of Biological Sciences, University of Idaho, Moscow, ID 83843; 208/885-6798) for verification of their identity. Confirmed sightings of these species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

### Summary of Conservation Status Recommendations

#### Saxifraga bryophora var. tobiasiae

- o remain a Category 2 candidate
- o remain on R4 Sensitive Species List

#### Campanula scabrella

- o add to R4 Sensitive Species List

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## Appendix 1

Line drawings of  
Saxifraga bryophora var. tobiasiae (from Grimes and Packard 1981)  
and Campanula scabrella (from Cronquist 1959)

## Appendix 2

Distribution of Saxifraga bryophora var. tobiasiae  
and Campanula scabrella in Idaho

Map 1. Overview of the distribution of Saxifraga bryophora var. tobiasiae in Idaho.

Map 2. Distribution of Saxifraga bryophora var. tobiasiae in the western Salmon River Mountains. Portion of the 1984 Payette National Forest map.

Map 3. Location of the Fisher Creek Saddle West and Fisher Creek Saddle East populations of Saxifraga bryophora var. tobiasiae and Campanula scabrella. Portion of 1963 Black Tip 7.5' quadrangle.

Map 4. Location of the Slab Butte population of Saxifraga bryophora var. tobiasiae. Portion of 1963 Brundage Mtn 7.5' quadrangle.

Map 5. Location of the North Fork Pearl Creek population of Saxifraga bryophora var. tobiasiae. Portion of 1969 Box Lake 7.5' quadrangle.

Map 6. Location of the Beaverdam South population of Saxifraga bryophora var. tobiasiae. Portion of 1969 Box Lake 7.5' quadrangle.

Map 7. Overview of the distribution of Campanula scabrella in Idaho.

## Appendix 3

Demographic data for populations of Saxifraga bryophora var. tobiasiae  
and Campanula scabrella on the Payette NF.

Saxifraga bryophora var. tobiasiae

1. Fisher Creek Saddle West

- a. Location:
- b. Area: ca. 80 acres
- c. Number of plants: greater than 5000 in 1989
- d. Density: Low to high
- e. Evidence of expansion/contraction: None

2. Fisher Creek Saddle East

- a. Location:
- b. Area: ca. 100 acres
- c. Number of plants: greater than 5000 in 1989
- d. Density: Low to high
- e. Evidence of expansion/contraction: None

3. Slab Butte

- a. Location:
- b. Area: ca. 1 acre
- c. Number of plants: ca. 250 in 1989
- d. Density: Low to moderate
- e. Evidence of expansion/contraction: None

4. North Fork Pearl Creek

- a. Location:
- b. Area: ca. 1 acre
- c. Number of plants: ca. 200 in 1989
- d. Density: Low
- e. Evidence of expansion/contraction: None

5. Beaverdam South

- a. Location:
- b. Area: ca. 10 acres
- c. Number of plants: ca. 1500 in 1989
- d. Density: Low to moderate
- e. Evidence of expansion/contraction: None

Campanula scabrella

1. Fisher Creek Saddle West
  - a. Location:
  - b. Area: less than 100 square feet
  - c. Number of plants: ca. 50 plants in 1989
  - d. Density: Low
  - e. Evidence of expansion/contraction: None
  
2. Patrick Butte proposed Research Natural Area  
(summit of Patrick Butte)
  - a. Location:
  - b. Area: less than 1 acre
  - c. Number of plants: less than 150 in 1987
  - d. Density: Low
  - e. Evidence of expansion/contraction: None
  
3. Pony Creek proposed Research Natural Area  
(summit of Pollock Mountain)
  - a. Location:
  - b. Area: unknown
  - c. Number of plants: scarce in 1978.
  - d. Density: unknown
  - e. Evidence of expansion/contraction: None

#### APPENDIX 4

Maps of areas searched for Saxifraga bryophora var. tobiasiae on the Payette National Forest.

- Map 1. Fisher Creek Saddle area. Portion of 1963 Black Tip 7.5' quadrangle.
- Map 2. Slab Butte area. Portion of 1963 Brundage Mtn 7.5' quadrangle.
- Map 3. Brundage Mountain area. Portion of 1963 Brundage Mtn 7.5' quadrangle.
- Map 4. Pearl Lake area. Portion of 1969 Box Lake 7.5' quadrangle.
- Map 5. Box Lake area. Portion of 1969 Box Lake 7.5' quadrangle.

#### APPENDIX 5

Slides of Saxifraga bryophora var. tobiasiae and Campanula scabrella and their habitats.

1. Saxifraga bryophora var. tobiasiae - close-up of plant. Note annual habit and nodding bulbils.
2. Saxifraga bryophora var. tobiasiae - close-up of plant. Note terminal flowers and nodding bulbils.
3. Saxifraga bryophora var. tobiasiae - habitat. Plants occur in bare-soil areas between Xerophyllum tenax bunches in center of photo.
4. Saxifraga bryophora var. tobiasiae - habitat. Plants occur in bare-soil areas (center foreground) between rock and closed-canopy vegetation.
5. Campanula scabrella - close-up of plants. Note grayish (pubescence) leaves.
6. Campanula scabrella - habitat. Plants occur on ridgeline in small grassy patches in rocks (foreground).