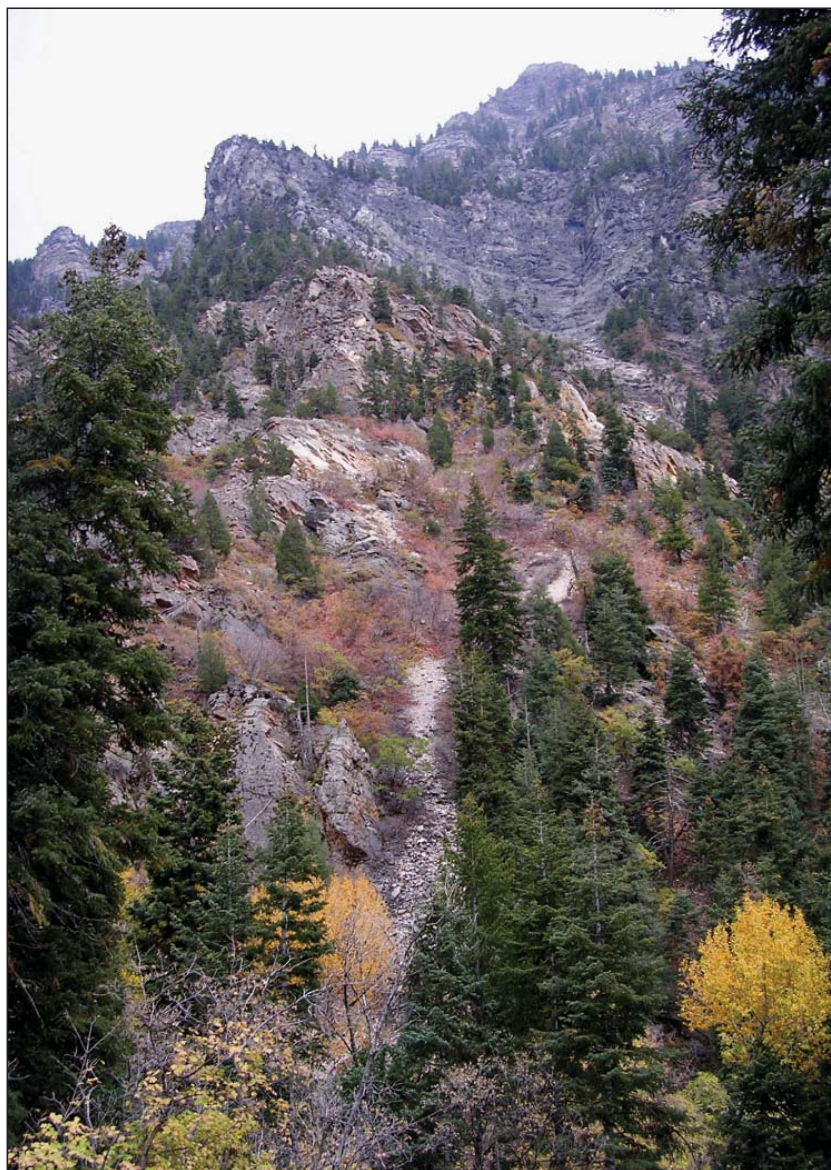




# Annotated Checklist of Vascular Flora

## *Timpanogos Cave National Monument*

Natural Resource Technical Report NPS/NCPN/NRTR-2009/167



**ON THE COVER**

Fall foliage, Timpanogos Cave National Monument, Utah. Photograph by Walter Fertig.

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# Abstract

In 2005–2006, the National Park Service’s Northern Colorado Plateau Network received funding to develop a revised checklist of the vascular plant flora of Timpanogos Cave National Monument. This entailed a thorough review of existing literature, re-examination of specimens from the Timpanogos Cave National Monument herbarium and other state and national museum collections, and additional field work to corroborate unverified species reports or locate new species. Based on this study, 235 vascular plant taxa have been confirmed (with vouchers) as occurring in the monument. Another 37 species formerly considered part of the monument flora have now been shown to be falsely reported. The current flora of Timpanogos Cave National Monument represents 6.5% of the known flora of Utah and 12.6% of the flora of the Utah–Wyoming Rocky Mountains ecoregion within Utah. At least eight of these species are considered species of concern by the state’s natural heritage program. Introduced plants make up 26.8% of the monument flora (63 species), of which only three species are considered noxious weeds by the State of Utah. Further surveys in Timpanogos Cave National Monument are likely to find additional new species (about 285 are known from similar habitats outside the monument boundary), especially among late-season flowering, weedy, or wetland taxa.



# Acknowledgements

We would like to thank the following individuals for their assistance with this project. Botanist Dr. Angela Evenden, former leader of the Northern Colorado Plateau Network in Moab, Utah, was an active proponent of this project and helped secure funding for field work and herbarium studies in 2006. Cami Pulham and Mike Gosse provided access to specimens from the Timpanogos Cave National Monument herbarium. Libby Nance, former database specialist with the NCPN, assisted with development and quality control of the monument's NPSpecies database. Libby Nance, Janet Coles, and Helen Thomas also provided data from recent vegetation mapping studies in the monument. Dr. Stanley Welsh provided access to herbarium collections at Brigham Young University and confirmed the identity of some problematic specimens. Dr. Michael Piep provided access to collections at the Utah State University (Intermountain) herbarium. Dr. Ron Hartman and Ernie Nelson provided access and specimen loans from the Rocky Mountain Herbarium at the University of Wyoming (RM). Thanks to the technical reviewers (Dr. Angela Evenden, Dr. Dusty Perkins, and Libby Nance) for their comments and suggestions. To any others whom we may have inadvertently forgotten, please accept our apologies (and thanks).

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# 1 Introduction

In 2006, the National Park Service (NPS) established a cooperative agreement with the University of Wyoming, through the Rocky Mountains Cooperative Ecosystem Studies Unit, to produce a series of technical reports summarizing the vascular plant flora of each of the 16 national park units of the Northern Colorado Plateau Network (NCPN). These reports are based on existing information in the park service's NPSpecies database system and augmented by further data mining, reviews of state and regional herbaria, and new field surveys to resolve the status of many reported and unconfirmed species. The objective of these reports is to summarize the current state of knowledge of the flora of each park for the benefit of NPS biologists and interpretive staff, outside researchers, and the general public. The following report addresses the vascular flora of Timpanogos Cave National Monument, in northern Utah. Other NCPN park units are addressed in separate reports.

## 1.1 Background and justification

One of the primary missions of the NPS is “to conserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment of this and future generations” (NPS 2000). Due to their high degree of protection and distribution across a wide variety of habitat types, the nation's national park units make a significant contribution to the protection of biological diversity (Noss and Cooperrider 1994). Unfortunately, the full contribution of the NPS system is not known, as many park units have traditionally lacked comprehensive biological inventories or monitoring programs to identify the composition and condition of their biota. Knowing the status of park flora and fauna is critical for effective park management and for systematically identifying and filling gaps in the nation's protected area network (Margules and Pressey 2000).

To rectify this shortcoming, Congress passed the National Parks Omnibus Management Act in 1998 to provide guidance and funding for an inventory and monitoring program across the entire national park system. Since 2000, the NCPN Inventory and Monitoring Program has been developing and verifying species lists of vertebrates and vascular plants for each park unit in the network

(Evenden et al. 2002). This effort has entailed reviewing existing species checklists, corroborating the identification of specimens in park museum and herbarium collections, locating additional specimen records from other museums, mining relevant literature and datasets, and conducting field surveys to locate new taxa or confirm unsubstantiated reports.<sup>†</sup> All of these data have been synthesized in NPSpecies, the park service's standardized database for documenting park status (present, probably present, unconfirmed, falsely reported), abundance, residency, nativity, and rarity. With the production of a technical series of reports on the flora of each park, the NPSpecies data will now be available to a broader audience.

## 1.2 Objectives

The objectives of this project were to:

1. Document the current status (present, reported, potential, or falsely reported) of all vascular plant species that have been cited as occurring in Timpanogos Cave National Monument based on a review of herbarium collections and past literature.
2. Develop an annotated checklist of the flora of Timpanogos Cave National Monument with supplemental information on taxonomic synonyms, distribution, within-park abundance, flowering period, growth form, nativity, habitat, and sources for each record.

## 1.3 Study area

### 1.3.1 History and setting

In the fall of 1887, Martin Hansen followed cougar tracks up the steep south face of American Fork Canyon to the mouth of what would become known as Hansen Cave, the first of three caves to be discovered in the canyon. Hansen Cave was well-decorated with stalactites, stalagmites, flowstones, twisted helictites, and many other crystalline formations produced by dripping, lime-rich waters (Mayo et al. 2003). Unfortunately, souvenir hunters and professional collectors removed most of the cave's geologic treasures over the next few years.

Additional caves were discovered in 1915 (Timpanogos Cave) and 1921 (Middle Cave). To protect these caves from incurring damage similar to that

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<sup>†</sup>Taxa refer to all named species, subspecies, and varieties.

done to Hansen Cave, President Warren Harding created Timpanogos Cave National Monument in October 1922, to preserve the “unusual scientific interest and importance” of the caves. The monument was managed under the authority of Wasatch National Forest until 1934, when it was transferred to the National Park Service (Even-den et al. 2002).

Timpanogos Cave National Monument (NM) is located along the north flank of Mount Timpanogos in the Wasatch Range, about 12 miles east of Lehi, in Utah County, Utah (Figure 1.3.1). The monument covers an area of 250 acres (101 ha) and ranges in elevation from 5,480 feet (1,670 meters) at the bottom of American Fork Canyon to 8,050 feet (2,454 meters) on the slopes above the caves. A steep, 1.5-mile trail climbs 1,065 feet to the entrance of the caves, which are now connected by a human-made tunnel system. The caves are accessible to the public only via guided tour.

### 1.3.2 Geology

American Fork Canyon cuts through 500–620 million-year-old Precambrian and early Cambrian marine strata consisting of thick quartzites, mudstones, and limestones. These are overlain by tilted layers of 250–300 million-year-old Mississippian limestones and Pennsylvanian shales deposited at the edge of a shallow marine basin. The Timpanogos area was faulted and folded during the Sevier Orogeny in the late Cretaceous and again during uplift of the modern Wasatch Range in the Miocene (about 17 million years ago) (Mayo et al. 2003). This uplift, coupled with downcutting by American Fork Creek and Pleistocene glaciation, has helped form the current steep, V-shaped valley of American Fork Canyon.

The caves probably began to form during the Pleistocene, along existing cracks created by faulting during uplift of the Wasatch Front. Underground water percolated through fractures in the Mississippian Desert Formation and slowly eroded the limestone layers to form openings. Percolation of calcium carbonate-enriched water gradually formed the unusual mineral ornaments of the caves. Sixteen different depositional features have been recorded in the Timpanogos caves, including stalactites (formed by mineral-laden water dripping from cave ceilings), stalagmites (built up from water droplets on the cave floor), helictites (branched stalactites), and various multi-colored disks, fluted columns, nodules, and crystals (Stokes 1986).

### 1.3.3 Vegetation

Allred (1975) described four general vegetation zones correlating with elevation on Mount Timpanogos. Timpanogos Cave NM falls within Allred’s Foothills (woodland) and montane zones. Foothills vegetation is characterized by Gambel oak (*Quercus gambelii*), bigtooth maple (*Acer grandidentatum*), Rocky Mountain juniper (*Juniperus scopulorum*), chokecherry (*Prunus virginiana*), and mountain mahogany (*Cercocarpus* spp.), and is especially well-developed on rocky, south-facing slopes. Montane vegetation, dominated by white fir (*Abies concolor*) and Douglas-fir (*Pseudotsuga menziesii*), occupies north-facing slopes at the monument’s higher elevations. American Fork Creek is bordered by a narrow band of riparian vegetation dominated by narrowleaf cottonwood (*Populus angustifolia*), boxelder (*Acer negundo*), and red-osier dogwood (*Cornus sericea*) (Even-den et al. 2002). A more detailed vegetation classification is currently being developed by the NCPN’s vegetation mapping team (NCPN in ed.).

### 1.3.4 Previous botanical studies

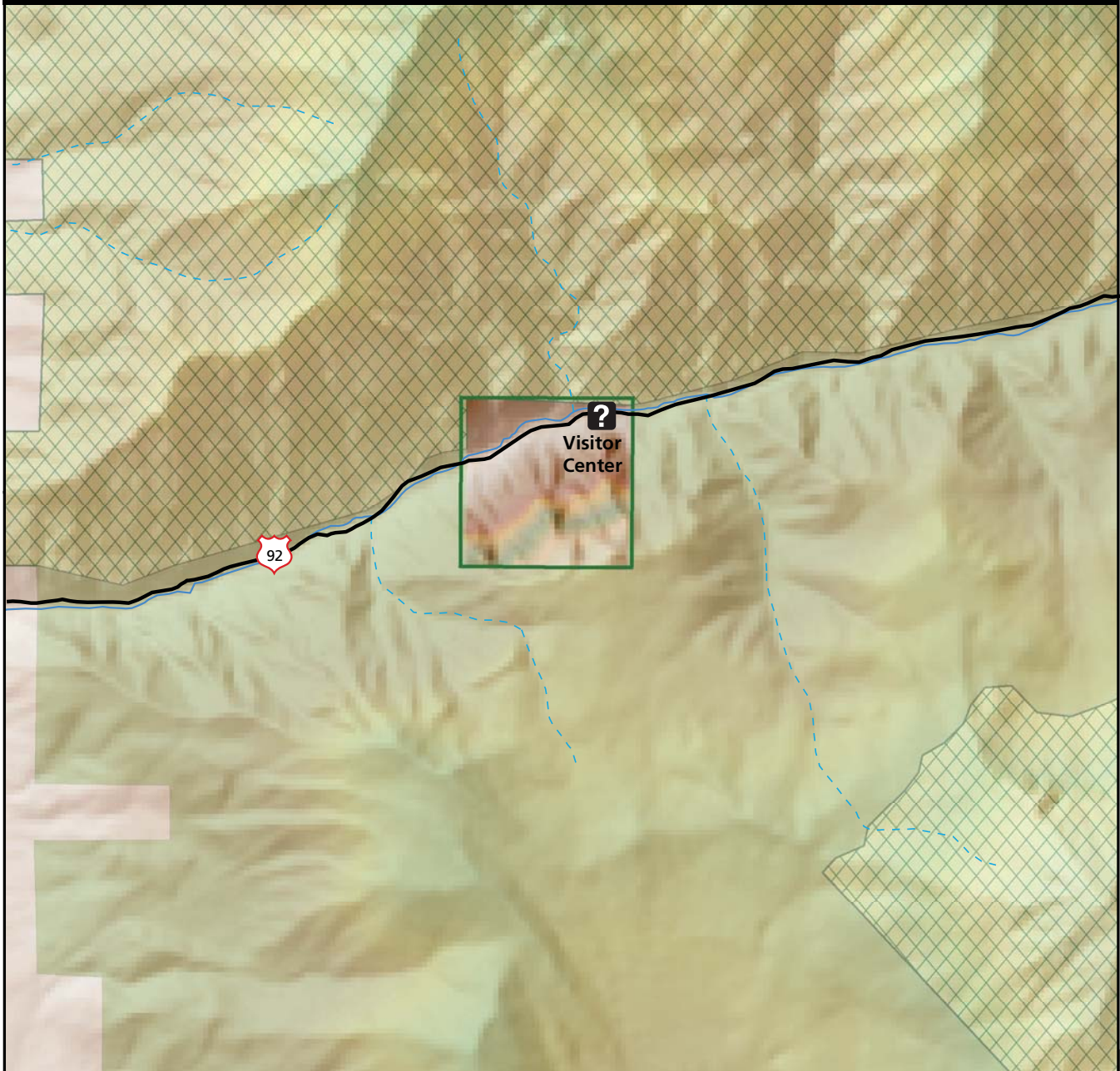
The earliest recorded botanical study of the Timpanogos Cave area was conducted by Sereno Watson, botanist with Clarence King’s epic survey of the 40<sup>th</sup> Parallel in August 1869 (Cronquist et al. 1972). Watson collected at least 18 species in American Fork and Provo canyons, including types of four species somewhere in American Fork Canyon (Allred 1975; Welsh 1982) (Table 1.3.4). Location data for collections from this era are notoriously vague, so it remains unknown whether Watson actually collected within the boundaries of what would become Timpanogos Cave National Monument.

Marcus E. Jones collected extensively on Mount Timpanogos in July and August 1880, and collected at least one type specimen (Utah bladderpod; *Physaria utahensis*) in American Fork Canyon (Allred 1975; Welsh 1982). Again, the exact site of Jones’s collecting activities is imprecisely known, and *P. utahensis* has not been corroborated for the immediate area of the monument.

The oldest known collection from Timpanogos Cave National Monument was made by Bassett Maguire in 1935, at the mouth of the caves. At present, only Maguire’s collection of bushy blazingstar (*Mentzelia dispersa*) has been located via the New York Botanical Garden’s electronic

# Timpanogos Cave National Monument

Utah



Established October 14, 1922  
1,670–2,454 m elevation  
(5,480–8,050 ft elevation)  
101 ha (250 ac)



### Legend

- Intermittent streams
- Perennial streams
- Paved roads
- ▭ Park boundary (NPS)
- U.S. Forest Service (USFS)
- ▨ Wilderness area (USFS)
- Private

MAP CREATED BY ANETH WIGHT, NCPN (DERIVED FROM EVENDEN ET AL. 2002)

Figure 1.3.1. Location of Timpanogos Cave National Monument, Utah County, Utah.

herbarium database. The full extent of Maguire's collecting within the monument is not known.

Monument staff began collecting specimens for the Timpanogos Cave National Monument herbarium (TICA) in 1963. Over the next 12 years, Arlo Shelley, Carl Davis, Norman Hersman, and Bob Randall added 66 new species to the monument flora in the course of collecting 78 specimens. In 1983, John Hendrix added 25 new species to the monument checklist (Table 1.3.4).

Kelly Allred, a graduate student from Brigham Young University (BYU), conducted a floristic survey of Mount Timpanogos in 1973–1974. As part of his thesis, Allred (1975) compiled a list of 684 potential plant species from Timpanogos

Cave NM based on a review of literature and his collections from higher on Mount Timpanogos. Nearly two-thirds of the species on this list are not known to occur in the monument (Table 1.3.4).

Dr. N. Duane Atwood, collections manager of the BYU herbarium, was contracted by the National Park Service in 2001 to conduct a thorough floristic survey of the monument. With the assistance of university students and Timpanogos Cave NM staff, Atwood collected 234 specimens and documented 124 new taxa, more than doubling the size of the monument flora (Figure 1.3.4). Since 2001, Janet Coles and colleagues from the NCPN vegetation mapping team and Walter Fertig have discovered eight additional species.

**Table 1.3.4. Chronology of plant-collecting efforts in Timpanogos Cave National Monument.**

Year	Collector(s)	# of new taxa	Comments
1869	S. Watson	0	Sereno Watson, botanist with Clarence King's survey of the 40 <sup>th</sup> Parallel, collected specimens in American Fork Canyon, including types of Watson's brickellbush ( <i>Brickellia microphylla</i> var. <i>watsonii</i> ), dwarf mountain mahogany ( <i>Cercocarpus intricatus</i> ), Wasatch jamesia ( <i>Jamesia americana</i> var. <i>macrocalyx</i> ), and differentleaf sphaeromeria ( <i>Sphaeromeria diversifolia</i> ). Watson's location data are vague, so it is unknown whether these collections were actually made within the area that would later become Timpanogos Cave National Monument.
1880	M. E. Jones	0	Marcus E. Jones collected the type of <i>Physaria utahensis</i> in American Fork Canyon in the vicinity of the area that would become Timpanogos Cave National Monument.
1935	B. Maguire	1	Bassett Maguire collected <i>Mentzelia dispersa</i> below Timpanogos Cave (specimen at NY Botanical Garden).
1963–1965	A. Shelley & C. F. Davis	22	Arlo Shelley and Carl Davis collected the first 28 specimens for the TICA herbarium.
1973–1975	N. R. Hersman, R. Randall, A. Shelley, C. F. Davis	44	Norman Hersman, Bob Randall, Arlo Shelley, and Carl Davis collected 60 specimens for the TICA herbarium, including 44 new species for the monument.
1974–1975	K. W. Allred	0	Kelly Allred, graduate student from Brigham Young University (BYU), reported 684 plant taxa for Timpanogos Mountain based on field work and a literature review (Allred 1975), though Allred's collections apparently were all outside of the monument.
1983	J. C. Hendrix	25	John Hendrix documented 25 new species in 41 collections at the TICA herbarium.
2000	C. Delmatier	1	Charmaine Delmatier documented sharpleaf twinpod ( <i>Physaria acutifolia</i> var. <i>acutifolia</i> ) within the monument.
2001	N. D. Atwood, J. Jasper, C. Pulham, T. Hawkins, Q. Bahr, D. Tilley, D. Cann, B. Furniss	124	Duane Atwood, with help from BYU students and TICA staff, conducted a floristic survey of Timpanogos Cave National Monument for the National Park Service and added 124 new species to the monument flora.
2006–2007	W. Fertig & J. Coles	8	Walter Fertig found 4 new species in the monument in 2006–2007. Janet Coles, of the NCPN vegetation mapping team (NCPN in ed.), added 4 new species in 2007.



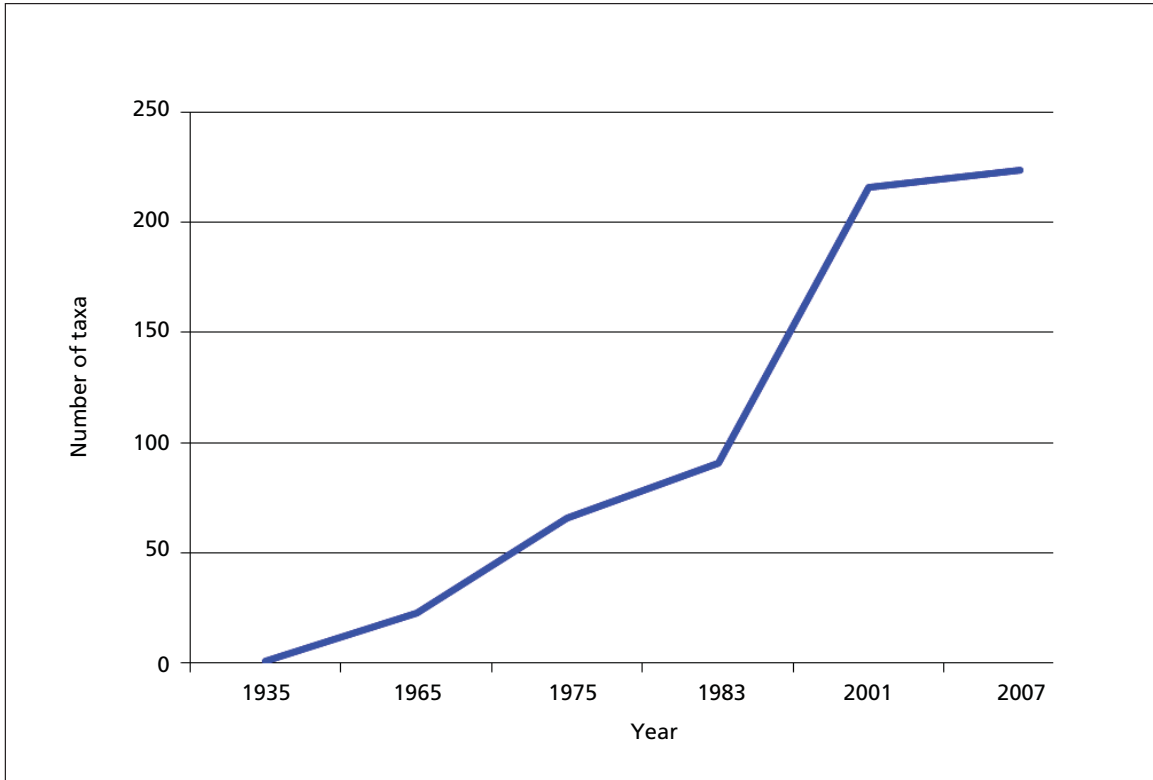


Figure 1.3.4. Increase in the number of plant taxa confirmed as present in Timpanogos Cave National Monument by decade, 1935–2007.



## 2 Methods

In December 2005, we reviewed all mounted specimens in the TICA herbarium to determine whether each was correctly identified to species, subspecies, or variety following the nomenclature of Welsh et al. (2003). As necessary, we made corrections and annotations to each specimen and to the voucher records in the monument's Automated National Cataloging System (ANCS+) and NPSpecies database. Based on this herbarium work and a review of monument references (Atwood 2001; NCPN in ed.), we developed four lists:

1. A revised checklist of species that were present in the park (confirmed by an authenticated voucher; included in Appendices A and D);
2. A list of species that were reported in the literature but not corroborated with a voucher (equivalent to "probably present" in NPSpecies terminology; included in Appendices A and D);
3. A list of potential species ("unconfirmed" in NPSpecies) known from the vicinity of Timpanogos Cave NM based on records from the Brigham Young University herbarium (BRY) and Albee et al. (1988) (Appendix B); and
4. A list of species that are now known to be misidentified or highly questionable (Appendix C).

Each list was annotated with supplemental information on life form, geographic range (within the

context of Utah), population size in the monument, flowering period, distribution across general vegetation types, nativity, data source (collector and collection number from a sample specimen or literature citation), year of earliest collection (from herbarium records), and relevant synonymy and taxonomic problems (based on review of Barkworth et al. 2003, 2007; Barneby 1989; Cronquist 1994; Cronquist et al. 1972, 1977, 1984, 1997; Dorn 2001; Flora of North America Editorial Committee 1993, 1997, 2000, 2002a, 2002b, 2003, 2005, 2006a, 2006b, 2006c; Holmgren et al. 2005; Weber and Wittmann 2001). The annotations to these lists and label data from the TICA herbarium review were then incorporated into the NPSpecies database for the monument.

Work in 2006–2007 focused on confirmation of reported and potential species for the monument flora through field surveys and review of collections from state and regional herbaria. We made two collecting trips to Timpanogos Cave NM, in October 2006 and March 2007, to target missing species, emphasizing under-sampled wetland, weedy, and late-flowering taxa. We undertook herbarium studies at Brigham Young University (BRY), Utah State University (USU), and the University of Wyoming (RM) in March, June, and October 2006 and February and March 2007. We also documented monument specimens from the Virtual Herbarium website of the New York Botanical Garden (<http://sciweb.nybg.org/science2/hcol/intf/index.asp>). Finally, we found additional new species reports by examining unmounted collections and data from the NCPN vegetation mapping project (NCPN in ed.).



# 3 Results

## 3.1 Summary of the flora of Timpanogos Cave National Monument

Of the 374 vascular plant vouchers in the TICA herbarium that we examined in 2005 (excluding 7 specimens from outside the monument), 76 were misidentified (20.3%), 21 were revised to a more current name (5.6%), 62 had variety or subspecies names added (16.6%), and 215 were found to be correctly determined (57.5%). Based solely on these collections, the confirmed flora of Timpanogos Cave National Monument stood at 218 taxa (Fertig 2006). From 2005 to 2007, we located nine additional species from collections at

Brigham Young University and the New York Botanical Garden Virtual Herbarium. Field surveys in 2006–2007 netted another eight new species from our field collections and those of the NCPN vegetation mapping team (NCPN in ed.). Overall, the documented flora of Timpanogos Cave NM has increased by 17 species (7.2%), bringing the total number of taxa to 235 (Table 3.1, Appendices A, D).

Previously, showy goldeneye (*Viguera multiflora*) had been reported for Timpanogos Cave NM (Fertig 2006), but had not been confirmed. A 1973 voucher for this species was located in the BRY collection. No other species are currently reported for the monument without a voucher (Table 3.1, Appendix A).

**Table 3.1. Statistical summary of the flora of Timpanogos Cave National Monument.**

Category	Number confirmed in park	Number additionally reported for park	Total
<b>Taxonomic diversity</b>			
Total taxa (including varieties and subspecies)	235	0	235
Full species (excluding varieties and subspecies)	231	0	231
Families	51	0	51
<b>Life form diversity</b>			
Tree taxa	14	0	14
Shrub taxa	34	0	34
Perennial forb taxa	122	0	122
Annual forb taxa	36	0	36
Perennial graminoid taxa	21	0	21
Annual graminoid taxa	6	0	6
Fern taxa	2	0	2
<b>Biogeographic diversity</b>			
Introduced taxa	63	0	63
Native taxa			
Locally endemic taxa	5	0	5
Regionally endemic taxa	10	0	10
Disjunct taxa	0	0	0
Peripheral taxa	2	0	2
Sparse taxa	2	0	2
Widespread taxa	153	0	153
<i>Total native taxa</i>	<i>172</i>	<i>0</i>	<i>172</i>

The number of taxa and families is based on taxonomic concepts of Welsh et al. (2003). See Appendices, “Codes and Definitions”, for an explanation of the various categories.

At the start of the 2006 field season, we recognized 309 taxa as potentially occurring in Timpanogos Cave NM based on the proximity of the monument to known populations (Albee et al. 1988; Fertig 2006). At least 13 of these species were found to occur in the monument based on field collections or relocated herbarium specimens in 2006–2007. Another 11 species were eliminated from the potential list based on their low probability of occurring in the monument. The current number of potential species that we are recognizing for Timpanogos Cave National Monument is 285 (Appendix B).

Of the original pool of species documented or reported for Timpanogos Cave NM, we found that 37 taxa were falsely reported based on misidentified voucher specimens in the TICA and BRY herbaria (Appendix C).

The confirmed and reported flora of Timpanogos Cave NM represents 6.5% of the 3,594 native and naturalized taxa documented for the State of Utah by Welsh et al. (2003) and 33.8% of the state's 151 plant families (Table 3.1). Within Utah County, the monument flora captures 17.6% of the 1,334 taxa reported by Welsh et al. (2003). At the ecoregional scale, Timpanogos Cave NM contains 12.6% of the 1,870 species reported for the Utah–Wyoming Rocky Mountains (Shultz et al. 2006).

### 3.2 Life form and biogeographic diversity

Although ecologically dominant, tree and shrub species make up only 20.4% of the confirmed and reported plant taxa of Timpanogos Cave NM (see Table 3.1). Perennial forbs are the most species-rich life form in the monument flora, with 122 known and reported taxa (51.9% of the total flora). Less than 18% of the flora is composed of annual forbs and grass-like plants. Like trees and shrubs, perennial graminoids are ecologically important but relatively species-poor, representing less than 9% of the total flora. The diversity of ferns and fern-allies in Timpanogos Cave NM is especially low (0.9%) (see Table 3.1).

Of the monument's 172 native taxa, 153 (89%) are widespread across Utah and western North America. Only five species (3% of the native monument flora) have extremely limited global distributions (local endemics found within an area of less than 1° degree of latitude × 2° of longitude; see Appendices for complete definitions

of biogeographic categories). Regional endemics (largely restricted to the Colorado Plateau) comprise an additional 5.8% of the monument's native flora (see Table 3.1). Species at the periphery of their contiguous range or that are sparsely distributed across the state account for 2.3% of the monument flora.

### 3.3 Plants of special concern

Timpanogos Cave National Monument has no plants listed as threatened or endangered under the U.S. Endangered Species Act. At least three monument taxa were formerly candidates for potential listing (Category 2 or 3C) under the act (Table 3.3) (UDWR 1998). The Utah Division of Wildlife Resources Conservation Data Center (UTCDC) tracks eight species from Timpanogos Cave NM as species of special concern (UDWR 1998) (Table 3.3). The report of Nuttall's rock-creep (*Arabis nuttallii*) from the TICA herbarium is an immature specimen and should be re-assessed to confirm its proper identity. Likewise, the collection of mountain ninebark (*Physocarpus monogynus*) from BRY should be re-evaluated, as it was found co-occurring with look-alikes dwarf ninebark (*P. alternans*) and mallow-leaved ninebark (*P. malvaceus*). Nearly all of the rare species at Timpanogos Cave NM occur in the vicinity of the main trail to the caves and on limestone outcrops above the cave in the monument's southeast corner.

### 3.4 Non-native and noxious weeds

Introduced plant species (not historically native to Utah or North America) make up 26.8% of the confirmed and reported flora of Timpanogos Cave National Monument (see Table 3.1). This figure is nearly double the statewide average of 13.5% non-native species (Fertig 2007; Welsh et al. 2003). Of the 63 introduced plant species confirmed or reported for Timpanogos Cave NM (see Table 3.1), only three are listed as noxious by the State of Utah (State of Utah Department of Agriculture and Food 2007). Spotted knapweed (*Centaurea maculosa*), field bindweed (*Convolvulus arvensis*), and quackgrass (*Elymus repens*) have all been documented from the visitor center grounds, residence area, or Swinging Bridge picnic area. A fourth noxious weed, musk thistle (*Carduus nutans*), is known from the immediate vicinity but has not yet been documented within Timpanogos Cave NM.

**Table 3.3. Plant species of conservation concern from Timpanogos Cave National Monument.**

Family	Species	Common name	TNC global rank	Legal status	UTCDC status
Compositae (Asteraceae)	<i>Aster kingii</i> var. <i>kingii</i>	King's aster	G3	USFS Region 4: Sensitive; USFWS: former C2 candidate	Rare, S1
Compositae (Asteraceae)	<i>Erigeron arenarioides</i>	Wasatch daisy	G3?	USFWS: 3C	Watch, S3
Compositae (Asteraceae)	<i>Haplopappus watsonii</i> var. <i>rydbergii</i>	Wasatch goldenbush	G3G4		Watch, S3S4
Cruciferae (Brassicaceae)	<i>Arabis nuttallii</i>	Nuttall's rockcress	G5		Peripheral, S2?
Cruciferae (Brassicaceae)	<i>Draba brachystylis</i>	Wasatch draba	G1G2		Rare, S1
Rosaceae	<i>Physocarpus monogynus</i>	mountain ninebark	G4		Taxonomic Problems, SR
Saxifragaceae (Hydrangeaceae)	<i>Jamesia americana</i> var. <i>macrocalyx</i>	Wasatch jamesia	G5T2	USFS Region 4: Sensitive	Rare, S2
Scrophulariaceae	<i>Penstemon platyphyllus</i>	broadleaf penstemon	G2G3		Watch, S2S3

This list is derived from Utah Division of Wildlife Resources (1998) for UTCDC status. All species are confirmed as present in the monument.

Codes: **TNC global rank** assesses abundance and conservation priority on a scale of 1–5 (1 being extremely vulnerable and 5 being secure) for full species (G) and varieties or subspecies (T) across their entire range. A "?" indicates uncertainty in the rank, Q = taxonomic questions, U = unknown, and NR = not ranked. A comparable scoring system is used to measure state abundance (S) in Utah under the column UTCDC status.

Under **legal status**, USFWS = U.S. Fish and Wildlife Service. C2 = category 2 candidate (a former category used for taxa that might warrant being proposed for Threatened or Endangered status following additional research). 3C = category 3 candidates (species dropped from consideration for listing). USFS = U.S. Forest Service. BLM = U.S. Bureau of Land Management.

**UTCDC status** includes conservation categories adopted by the state natural heritage program to prioritize endemic and rare plant taxa (UDWR 1998). These categories include: Historical (presumed extinct or only known historically through their range), Rare (plants with rangewide viability concerns), Watch (regional endemics without rangewide viability concerns), Peripheral (rare or uncommon in Utah, but more common rangewide), Infrequent (plants occur infrequently over western US), Taxonomic Problems (validity of species, subspecies, or variety has been questioned), Additional Data (species appear rare, but more information needed before being assigned to a different category).





## 4 Discussion

Due primarily to the efforts of Dr. Duane Atwood and his students from Brigham Young University, the confirmed flora of Timpanogos Cave National Monument now stands at 235 taxa (Table 1.3.1, Figure 1.3.4, Appendix A). Based on available habitats and proximity, at least 285 additional species may occur within the monument (Appendix B). Should all of these potential species be found, the documented flora of the monument would

increase by nearly 55%. Many of the “missing” potential or reported taxa consist of cryptic species that flower late in the growing season, or occur in undersampled wetland or weedy habitats. Confirmation of reported species should remain a high priority, as identification of some of these taxa may ultimately prove to be erroneous. Additional studies would also be useful to better refine the abundance and distribution of species of high management interest (especially rare plants and invasive non-natives).



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# Appendices

The following appendices contain annotated checklists of the vascular flora of Timpanogos Cave National Monument. Appendix A lists all species that have been confirmed for the flora with an authenticated voucher specimen (including extant and historical records) or that have been reliably reported for the monument in the literature (NCPN in ed.). Vouchers were examined from the TICA herbarium and collections from Brigham Young University (BRY), Utah State University (USU), the University of Wyoming (RM), and the digital museum database of the New York Botanical Garden (NY). Species entries in Appendix A are organized alphabetically by family and genus.

Appendix B includes species that may potentially occur within Timpanogos Cave NM based on the proximity of the monument to other populations or the presence of suitable habitat.

Appendix C lists species that have been previously reported for Timpanogos Cave NM but are now considered erroneous because they are based on misidentified specimens or questionable literature records.

Appendix D contains the same confirmed, historical, and reported taxa as in Appendix A, but organized by life form rather than by family in order to better meet the needs of NPS interpretive specialists. The codes and references for each field in the appropriate appendices are summarized below.

## Family (Appendices A, B, C, and D)

Family concepts and nomenclature follow *A Utah Flora, third edition* (Welsh et al. 2003). Alternative family names and treatments from other regional floras (Dorn 2001; *Flora of North America* Editorial Committee 1993, 2002b; Holmgren et al. 2005; Weber and Wittman 2001) are listed in parentheses.

## Species name (Appendices A, B, C, and D)

Nomenclature for scientific names and taxonomic concepts are derived from Welsh et al. (2003). Scientific names are listed in alphabetical rather than phylogenetic order.

## Synonyms/Taxonomic notes (Appendices A, B, and C)

Pertinent synonyms are included for species with alternative scientific names in other recent state and regional floras (Barkworth et al. 2003, 2007; Barneby 1989; Cronquist 1994; Cronquist et al. 1972, 1977, 1984, 1997; Dorn 2001; *Flora of North America* Editorial Committee 1993, 1997, 2000, 2002a, 2002b, 2003, 2005, 2006a, 2006b, 2006c; Holmgren et al. 2005; Weber and Wittmann 2001). No effort has been made to identify additional synonyms from monographs and floras preceding the early 1970s.

## Common name (Appendices A, B, C, and D)

Common names are derived primarily from Welsh et al. (2003) and the *Intermountain Flora* (Barneby 1989; Cronquist 1994; Cronquist et al. 1972, 1977, 1984, 1997; Holmgren et al. 2005).

## Life form (Appendices A, B, C, and D)

Life form is based on the stature and growth habit of typical members of a species at reproductive maturity. **Trees** are woody perennials with a single stem or trunk and are typically over 3.5 m tall. **Shrubs** are woody perennials with one to many trunks arising from near the base of the plant and are usually less than 3.5 m tall. **Perennial Forbs (PerF)** are broad-leaved dicots or monocots with non-woody stems (at least above ground level) that live for multiple years. **Annual Forbs (AnnF)** are broad-leaved dicots or monocots with non-woody stems that complete their life cycle (mature, flower, and die) in one year. **Perennial Graminoids (PerG)** are linear-leaved, grass-like monocots that live for multiple years. **Annual Graminoids (AnnG)** are linear-leaved, grass-like monocots that complete their life cycle (mature, flower, and die) in one year. **Ferns and fern-allies (Fern)** are non-flowering vascular plants that reproduce by spores.

## Range (Appendices A, B, and C)

Range represents the distribution of a species within Utah and the state's contribution to the plant's overall global range. **Disjunct (Disj)** taxa have their Utah distribution separated from the main, contiguous portion of their range by a gap of more than 800 km (ca 500 miles). **Introduced (Intro)** taxa are those that are not native to Utah or North America but have become naturalized (breeding on their own without human assistance). **Local Endemics (LocEn)** are taxa whose entire global range is restricted to an area of less than 16,500 km<sup>2</sup> (ca 6,370 mi<sup>2</sup>, or 1° of latitude × 2° of longitude). **Peripheral (Periph)** taxa have a widespread global distribution but occur at the margin of their contiguous range in Utah and occupy less than 5% of the state's area (usually only within a few miles of the state border). **Regional Endemics (RegEn)** are taxa with a global range of 16,500–250,000 km<sup>2</sup> (an area about the size of the state of Wyoming). **Sparse** taxa occur widely across Utah or North America but their range within Utah is small and patchy, with populations restricted to specialized or uncommon habitats. **Widespread (Wide)** taxa have global ranges exceeding 250,000 km<sup>2</sup> and occur over at least 10% of the state.

## Park status (Appendices A, C, and D)

Park status identifies whether a species is **Present (Pres)**, **Historical (Hist)**, or **Reported (Rep)** for Timpanogos Cave National Monument. Species are considered **Present** if a confirmed voucher or documented observation has been made within monument boundaries since 1970.

Historical species have been confirmed with a voucher from the monument but have not been relocated since before 1970. Reported species are listed for the monument in the literature (NCPN in ed.), but have not been corroborated with a voucher specimen. Species that may potentially occur in TICA are listed in Appendix B. Rejected taxa (listed in Appendix C) have either been falsely reported (**FalsRep**) in the literature based on misidentified herbarium specimens or are considered Questionable (**Ques?**) because park reports are from well outside their known or expected range.

#### **Pop. size (Appendix A)**

Population size refers to the abundance and frequency with which a species occurs within Timpanogos Cave National Monument. Abundance data are derived from Northern Colorado Plateau Network (in ed.), and personal observations. Abundant (**Abun**) taxa have large populations, have a broad ecological amplitude (often being dominant in one to several vegetation types), or occur extensively across the monument. Common (**Com**) taxa have large local populations but may be restricted to a single vegetation type or do not occur across the entire monument. Uncommon (**Unc**) taxa have low to medium-sized populations, typically have a narrow ecological amplitude (or at least contribute relatively little to total vegetative cover), or have a small range across the monument. Rare taxa usually have low population numbers and are restricted to a single location within the monument. A “?” indicates that population size is unknown.

#### **Source (Appendix A)**

Sources are the evidence for the assigned park status. In the case of Present and Historical taxa, sources are herbarium records (with collector, collection number, and repository) that were corroborated during this study. For reported taxa, the source is a published or unpublished reference citing the species within the monument. Specimen repositories include the Timpanogos Cave National

Monument herbarium (TICA), Brigham Young University (BRY), Utah State University (USU), New York Botanical Garden (NY), and the University of Wyoming’s Rocky Mountain Herbarium (RM).

#### **Year doc. (Appendix A)**

Year documented indicates the first year in which a species was confirmed or reported to occur in Timpanogos Cave National Monument. This year does not necessarily correspond with the date of the voucher specimen cited under Source. “NA” indicates that the first year is not known (used mostly for “reported” taxa).

#### **Comments (Appendices A, B, C, and D)**

This column includes additional comments on the status of a particular species in the monument, the place of origin for introduced species, legal status, and other data.

#### **Nativity (Appendix D)**

Nativity indicates whether a species is native to Utah or Introduced (Intro) based on Fertig (2007).

#### **Flower Time (Appendix D)**

Flower Time refers to the months in which a species is most likely to be in flower. NA indicates a species that is a non-flowering fern or gymnosperm.

#### **Habitat (Appendix D)**

The distribution of species across generalized habitats in Timpanogos Cave National Monument is indicated by an “x” in the columns Oak Brush through Wet, and is derived from the Timpanogos Cave NM vegetation classification (NCPN in ed.), Allred (1975), and Welsh et al. (2003). **Oak Brush** = Gambel oak brush on rocky hillsides. **Doug-fir** = Douglas-fir forests. **Wet** = Wetlands. Additional comments are included for species that are restricted to a particular soil/geologic type or are found mostly in disturbed sites.

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Aceraceae	<i>Acer glabrum</i> var. <i>glabrum</i>	Includes vars. <i>neomexicanum</i> , <i>douglasii</i> , & <i>tripartitum</i>	Rocky Mountain maple	Shrub	Wide	Pres	Unc	Atwood & Bahr 27444 (TICA)	1983	
Aceraceae	<i>Acer grandidentatum</i>		bigtooth maple	Tree	Wide	Pres	Com	Randall & Shelley s.n. (TICA)	1973	
Aceraceae	<i>Acer negundo</i>	<i>A. negundo</i> var. <i>interius</i> , <i>Negundo</i> <i>aceroides</i> ssp. <i>interius</i>	box elder	Tree	Wide	Pres	Com	Hersman s.n. (TICA)	1973	
Amaranthaceae	<i>Amaranthus</i> <i>retroflexus</i>		redroot pigweed	AnnF	Intro	Pres	Unc	Fertig 23046 (TICA)	2006	Native to Central America
Anacardiaceae	<i>Rhus aromatica</i> var. <i>trilobata</i>	<i>R. trilobata</i> var. <i>trilobata</i>	squawbush	Shrub	Wide	Pres	Unc	Shelley s.n. (TICA)	1965	
Anacardiaceae	<i>Rhus glabra</i>		smooth sumac	Shrub	Wide	Pres	Unc	Coles JC06280701 (TICA)	2007	
Apocynaceae	<i>Apocynum</i> <i>androsaemifolium</i> var. <i>androsaemifolium</i>		spreading dogbane	PerF	Wide	Pres	Rare	Davis s.n. (TICA)	1975	
Apocynaceae	<i>Apocynum</i> <i>androsaemifolium</i> var. <i>pumilum</i>	Included in var. <i>androsaemifolium</i> by some authors	spreading dogbane	PerF	Sparse	Pres	Unc	Atwood & Pulham 27646 (TICA)	1973	
Asclepiadaceae	<i>Asclepias speciosa</i>		showy milkweed	PerF	Wide	Pres	Unc	Hendrix s.n. (TICA)	1983	
Berberidaceae	<i>Mahonia repens</i>	<i>Berberis repens</i>	Oregon-grape	Shrub	Wide	Pres	Unc	Atwood & Jasper 27039 (TICA)	1975	
Betulaceae	<i>Betula occidentalis</i>	<i>B. fontinalis</i>	water birch	Tree	Wide	Pres	Unc	Atwood & Jasper 27036 (TICA)	2001	
Boraginaceae	<i>Cryptantha gracilis</i>		slender cryptanth	AnnF	Wide	Pres	Unc	Atwood and Bahr 27442 (BRY)	2001	

*Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.*

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Boraginaceae	<i>Cryptantha humilis</i>	<i>Oreocarya humilis</i> ssp. <i>nana</i>	dwarf cryptanth	PerF	Wide	Pres	Unc	Atwood & Bahr 27413 (TICA)	1963	
Boraginaceae	<i>Cryptantha torreyana</i>		Torrey's cryptanth	AnnF	Wide	Pres	Unc	Atwood & Bahr 27410 (TICA)	2001	
Boraginaceae	<i>Cynoglossum officinale</i>		common hound's-tongue	PerF	Intro	Pres	Unc	Atwood & Pulham 27648 (TICA)	2001	Native to Eurasia
Boraginaceae	<i>Hackelia floribunda</i>		showy stickseed	PerF	Wide	Pres	Rare	Atwood, Tilley, & Cann 27668 (TICA)	2001	
Boraginaceae	<i>Hackelia patens</i> var. <i>patens</i>		spotted stickseed	PerF	Wide	Pres	Com	Atwood, Pulham, & Hawkins 27401 (TICA)	1975	TICA population may represent var. <i>harrisonii</i>
Boraginaceae	<i>Lithospermum ruderale</i>		western stoneseed	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27693 (BRY)	2001	
Caprifoliaceae (Adoxaceae)	<i>Sambucus caerulea</i>	<i>S. nigra</i> ssp. <i>caerulea</i> , <i>S. cerulea</i>	blue elderberry	Shrub	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27788 (TICA)	1973	
Caprifoliaceae	<i>Symphoricarpos oreophilus</i> var. <i>utahensis</i>	<i>S. rotundifolius</i> ; includes vars. <i>parishii</i> & <i>oreophilus</i>	mountain snowberry	Shrub	Wide	Pres	Com	Atwood, Tilley, & Cann 27681 (TICA)	1983	Type locality is Logan, Cache Co., UT (Rydberg s.n. US).
Caryophyllaceae	<i>Dianthus barbatus</i>	<i>D. barbatus</i> ssp. <i>barbatus</i>	sweet William	PerF	Intro	Pres	Rare	Atwood, Furniss, Cann, & Pulham 27778 (TICA)	2001	Native to Eurasia
Caryophyllaceae (Alsiniaceae)	<i>Holosteum umbellatum</i> var. <i>umbellatum</i>	<i>H. umbellatum</i> ssp. <i>umbellatum</i>	holosteum	AnnF	Intro	Pres	Unc	Atwood & Jasper 27042 (TICA)	2001	Native to Europe



Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Caryophyllaceae	<i>Saponaria officinalis</i>		bouncing-bet	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27770 (TICA)	2001	Native to Europe
Caryophyllaceae (Asteraceae)	<i>Stellaria jamesiana</i>	<i>Pseudostellaria jamesiana</i>	James' chickweed	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27671 (TICA)	2001	
Celastraceae	<i>Pachystima myrsinites</i>	<i>Paxistima myrsinites</i> , <i>Pachistima myrsinites</i>	mountain-lover	Shrub	Wide	Pres	Unc	Atwood, Pulham, & Hawkins 27400 (TICA)	2001	
Chenopodiaceae	<i>Bassia scoparia</i>	<i>Kochia scoparia</i> , <i>B. sieversiana</i>	summer-cypress	AnnF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27758 (TICA)	2001	Native to Eurasia
Chenopodiaceae	<i>Chenopodium fremontii</i> var. <i>fremontii</i>	<i>C. fremontii</i>	Fremont's goosefoot	AnnF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27755 (TICA)	2001	
Compositae (Asteraceae)	<i>Achillea millefolium</i> var. <i>lanulosa</i>	<i>A. lanulosa</i> , <i>A. millefolium</i> var. <i>occidentalis</i> . Vars. not recognized in <i>Flora of North America</i> (2006)	common yarrow	PerF	Wide	Pres	Rare	Davis s.n. (TICA)	1965	
Compositae (Asteraceae)	<i>Agoseris glauca</i> var. <i>laciniata</i>	<i>A. parviflora</i>	cutleaf agoseris	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27718 (TICA)	2001	
Compositae (Asteraceae)	<i>Ambrosia psilostachya</i>	<i>A. coronopifolia</i> , <i>A. psilostachya</i> var. <i>coronopifolia</i>	western ragweed	PerF	Wide	Pres	Unc	Atwood 28005 (TICA)	2001	
Compositae (Asteraceae)	<i>Antennaria microphylla</i>	Includes <i>A. rosea</i>	small-leaf pussyoes	PerF	Wide	Pres	Rare	Shelley s.n. (TICA)	1965	
Compositae (Asteraceae)	<i>Arctium minus</i>		burdock	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27754 (TICA)	2001	Native to Eurasia

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Compositae (Asteraceae)	<i>Arnica cordifolia</i> var. <i>cordifolia</i>	Vars. not recognized in <i>Flora of North America</i> (2006). Misspelled var. <i>cordata</i> in <i>Utah Flora</i> 2003.	heartleaf arnica	PerF	Wide	Pres	Unc	Atwood & Bahr 27441 (TICA)	1973	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>		Louisiana wormwood	PerF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27763 (TICA)	1975	
Compositae (Asteraceae)	<i>Artemisia tridentata</i> var. <i>vaseyana</i>	Includes <i>A. tridentata</i> var. <i>pauciflora</i> , <i>Seriphidium vaseyanum</i>	mountain big sagebrush	Shrub	Wide	Pres	Com	Fertig 23061 (TICA)	2007	Type locality of var. <i>pauciflora</i> is Left Fork of Hobble Creek, Utah Co., UT (Goodrich et al. 21492 BRY)
Compositae (Asteraceae)	<i>Aster ascendens</i>	<i>A. chilensis</i> ssp. <i>adscendens</i> , <i>A. adscendens</i> , <i>Symphotrichum ascendens</i> , <i>Virgulastrum ascendens</i>	Pacific aster	PerF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27760 (TICA)	2001	
Compositae (Asteraceae)	<i>Aster kingii</i> var. <i>kingii</i>	<i>Machaeranthera kingii</i> , <i>Herrickia kingii</i> var. <i>kingii</i> , <i>Tonestus kingii</i> var. <i>kingii</i>	King's aster	PerF	LocEn	Pres	Unc	Atwood, Cann, & Tilley 27736 (TICA)	2001	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 507 Y). USFS: Region 4 Sensitive, USFWS: former C2 candidate

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Compositae (Asteraceae)	<i>Brickellia californica</i>		California brickellbush	Shrub	Wide	Pres	Unc	Atwood 28003 (TICA)	2001	
Compositae (Asteraceae)	<i>Brickellia grandiflora</i>		tassel-flower brickellbush	PerF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27799 (TICA)	1973	
Compositae (Asteraceae)	<i>Centaurea maculosa</i>	<i>C. stoebe</i> ssp. <i>micranthos</i> , <i>C. biebersteinii</i> , <i>Acosta maculosa</i>	spotted knapweed	PerF	Intro	Pres	Unc	Atwood 28006 (TICA)	2001	Utah state noxious weed. Native to Europe
Compositae (Asteraceae)	<i>Chaenactis douglasii</i>	Includes vars. <i>douglasii</i> & <i>montana</i>	hoary dusty-maiden	PerF	Wide	Pres	Unc	Hendrix s.n. (TICA)	1983	
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>gnaphalodes</i>	<i>C. nauseosus</i> var. <i>hololeucus</i> , <i>Ericameria nauseosa</i> var. <i>hololeuca</i>	graystem rabbitbrush	Shrub	Wide	Pres	Com	Atwood 28004 (TICA)	1973	
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>viscidiflorus</i>		green rabbitbrush	Shrub	Wide	Pres	Unc	Coles JC06280703 (TICA)	2007	
Compositae (Asteraceae)	<i>Cichorium intybus</i>		chicory	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27767 (TICA)	2001	Native to Eurasia
Compositae (Asteraceae)	<i>Cirsium neomexicanum</i> var. <i>utahense</i>	<i>C. utahense</i> . Not recognized in <i>Flora of North America</i> (2006) with elements split between <i>C. neomexicanum</i> & <i>C. inamoenum</i> var. <i>inamoenum</i> .	Utah thistle	PerF	RegEn	Pres	Rare	Atwood, Furniss, Cann, & Pulham 27801 (TICA)	2001	Type locality is Silver Reef, Washington Co., UT (Jones 5163q GH)
Compositae (Asteraceae)	<i>Cirsium vulgare</i>		bull thistle	PerF	Intro	Pres	Unc	Jasper s.n. (TICA)	2001	Native to Europe
Compositae (Asteraceae)	<i>Crepis acuminata</i>	<i>Psilochenia acuminata</i>	mountain hawkbeard	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27707 (TICA)	2001	

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Compositae (Asteraceae)	<i>Crepis atribarba</i>	<i>Psilochenia atribarba</i>	slender hawksbeard	PerF	Wide	Pres	Unc	Shelley s.n. (TICA)	1965	
Compositae (Asteraceae)	<i>Crepis intermedia</i>	<i>Psilochenia intermedia</i>	gray hawksbeard	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27709 (BRY, TICA)	2001	
Compositae (Asteraceae)	<i>Erigeron arenarioides</i>		Wasatch daisy	PerF	LocEn	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27791 (TICA)	1975	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 547 US). USFWS: 3C.
Compositae (Asteraceae)	<i>Erigeron speciosus</i> var. <i>mollis</i>	<i>E. subtrinervis</i> var. <i>subtrinervis</i>	hairy pretty daisy	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27687 (TICA)	2001	
Compositae (Asteraceae)	<i>Grindelia squarrosa</i> var. <i>serrulata</i>	Vars. not recognized in <i>Flora of North America</i> (2006)	curly-cup gumweed	PerF	Wide	Pres	Rare	Davis s.n. (TICA)	1975	
Compositae (Asteraceae)	<i>Grindelia squarrosa</i> var. <i>squarrosa</i>	Vars. not recognized in <i>Flora of North America</i> (2006)	curly-cup gumweed	PerF	Sparse	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27751 (TICA)	2001	May be introduced from C USA
Compositae (Asteraceae)	<i>Gutierrezia sarothrae</i>		broom snakeweed	Shrub	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27794 (TICA)	2001	
Compositae (Asteraceae)	<i>Haplopappus acaulis</i> var. <i>acaulis</i>	<i>Stenotus acaulis</i> var. <i>acaulis</i>	stemless goldenweed	PerF	Wide	Pres	Unc	Atwood, Cann, & Tilley 27740 (TICA)	1983	
Compositae (Asteraceae)	<i>Haplopappus acaulis</i> var. <i>glabratus</i>	<i>Stenotus acaulis</i> var. <i>glabratus</i> . Vars. not recognized in <i>Flora of North America</i> (2006).	glabrate goldenweed	PerF	Wide	Pres	Rare	Hendrix s.n. (TICA)	1983	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Compositae (Asteraceae)	<i>Haplopappus watsonii</i> var. <i>rydbergii</i>	<i>Ericameria obovata</i>	Wasatch goldenbush	Shrub	RegEn	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27793 (TICA)	1983	Type locality is City Creek Canyon, Salt Lake Co., UT (Jones 1081 NY)
Compositae (Asteraceae)	<i>Helianthella uniflora</i>		little sunflower	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27710 (TICA)	2001	
Compositae (Asteraceae)	<i>Lactuca serriola</i>		prickly lettuce	AnnF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27750 (TICA)	2001	Native to Europe
Compositae (Asteraceae)	<i>Machaeranthera canescens</i> var. <i>canescens</i>	<i>Aster canescens</i> , <i>Dieteria canescens</i> var. <i>canescens</i>	hoary aster	PerF	Wide	Pres	Unc	Hersman s.n. (TICA)	1973	
Compositae (Asteraceae)	<i>Microseris nutans</i>		nodding microseris	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27718 (TICA)	2001	
Compositae (Asteraceae)	<i>Petradoria pumila</i> var. <i>pumila</i>	<i>Solidago petradoria</i>	rock-goldenrod	PerF	Wide	Pres	Com	Hendrix s.n. (TICA)	1975	
Compositae (Asteraceae)	<i>Senecio integerrimus</i> var. <i>exaltatus</i>		western groundsel	PerF	Wide	Pres	Com	Atwood & Bahr 27046 (TICA)	1965	
Compositae (Asteraceae)	<i>Senecio multilobatus</i>	<i>Packera multilobata</i>	basin groundsel	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27719 (TICA)	2001	Type locality is Uinta River, Uintah Co., UT (Fremont 549 GH)
Compositae (Asteraceae)	<i>Senecio serra</i> var. <i>serra</i>		saw-toothed groundsel	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27690 (TICA)	2001	
Compositae (Asteraceae)	<i>Solidago velutina</i>	<i>S. sparsiflora</i> , <i>S. velutina</i> var. <i>sparsiflora</i>	three-nerve goldenrod	PerF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27774 (TICA)	1973	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Compositae (Asteraceae)	<i>Sphaeromeria diversifolia</i>	<i>Tanacetum diversifolium</i>	differentleaf sphaeromeria	Shrub	RegEn	Pres	Unc	Atwood, Furniss, Cann, & Hawkins 27380 (TICA)	1983	Type locality is canyons of Cottonwood Creek and American Fork, Utah Co., UT (Watson 632 Y)
Compositae (Asteraceae)	<i>Taraxacum officinale</i>		common dandelion	PerF	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27380 (TICA)	2001	Native to Eurasia
Compositae (Asteraceae)	<i>Tragopogon dubius</i>	<i>T. dubius</i> var. <i>major</i>	yellow salsify	PerF	Intro	Pres	Unc	Hersman s.n. (TICA)	1973	Native to Europe
Compositae (Asteraceae)	<i>Viguiera multiflora</i> var. <i>multiflora</i>	<i>Heliomeris multiflora</i> var. <i>multiflora</i>	showy goldeneye	PerF	Wide	Pres	Unc	Davis s.n. (TICA)	1973	
Convolvulaceae	<i>Convolvulus arvensis</i>		field bindweed	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27764 (TICA)	1975	Utah state noxious weed. Native to Eurasia
Cornaceae	<i>Cornus sericea</i> var. <i>sericea</i>	<i>C. stolonifera</i> , <i>Swida sericea</i>	red-osier dogwood	Shrub	Wide	Pres	Unc	Atwood, Pulham, & Hawkins 27389 (TICA)	1975	
Crassulaceae	<i>Sedum debile</i>		weak-stemmed stonecrop	PerF	Wide	Pres	Unc	Atwood, Cann, & Tilley 27735 (TICA)	1983	
Cruciferae (Brassicaceae)	<i>Alyssum alyssoides</i>		pale madwort	AnnF	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27388 (TICA)	1983	Native to Europe
Cruciferae (Brassicaceae)	<i>Arabis hirsuta</i>	Includes vars. <i>glabrata</i> & <i>pyncocarpa</i>	hairy rockcress	PerF	Wide	Pres	Unc	Atwood and Bahr 27415 (BRY)	2001	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Cruciferae (Brassicaceae)	<i>Arabis holboellii</i> var. <i>pinetorum</i>	<i>Boechea holboellii</i> var. <i>pinetorum</i> . Name may be misapplied (Holmgren et al. 2005)	Holboell's rockcross	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27689 (TICA)	1975	
Cruciferae (Brassicaceae)	<i>Arabis nuttallii</i>	<i>Boechea nuttallii</i>	Nuttall's rockcross	PerF	Wide	Pres	Rare	Atwood & Jasper 27043 (TICA)	2001	
Cruciferae (Brassicaceae)	<i>Arabis perennans</i> var. <i>perennans</i>	<i>Boechea perennans</i>	perennial rockcross	PerF	Wide	Pres	Unc	Atwood, Pulham, & Hawkins 27402 (TICA)	2001	
Cruciferae (Brassicaceae)	<i>Arabis sparsiflora</i> var. <i>sparsiflora</i>	<i>Boechea sparsiflora</i>	elegant rockcross	PerF	Wide	Pres	Rare	collector not given	NA	
Cruciferae (Brassicaceae)	<i>Brassica campestris</i>	<i>B. rapa</i> , <i>B. napus</i>	field mustard	AnnF	Intro	Pres	Unc	Shelley s.n. (TICA)	1965	Native to Europe
Cruciferae (Brassicaceae)	<i>Capsella bursa-pastoris</i>		shepherd's-purse	AnnF	Intro	Pres	Unc	Atwood & Jasper 27040 (TICA)	1965	Native to Europe
Cruciferae (Brassicaceae)	<i>Cardaria draba</i>	<i>Lepidium draba</i> , <i>C. draba</i> var. <i>draba</i>	whitetop	PerF	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27395 (TICA)	2001	Native to Europe
Cruciferae (Brassicaceae)	<i>Chorispora tenella</i>		blue mustard	AnnF	Intro	Pres	Unc	Atwood & Jasper 27038 (TICA)	2001	Native to Asia
Cruciferae (Brassicaceae)	<i>Descurainia californica</i>		California tansy-mustard	AnnF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27679 (TICA, BRY)	2001	Previously considered a false report, but specimen confirmed at BRY.
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>intermedia</i>	Included in <i>D. pinnata</i> var. <i>osmarum</i> by some authors	western tansy-mustard	AnnF	Wide	Pres	Unc	Atwood, Pulham, & Hawkins 27381 (TICA)	2001	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>osmiarum</i>	<i>D. pinnata</i> ssp. <i>halictorum</i>	western tansy- mustard	AnnF	Wide	Pres	Unc	Shelley s.n. (TICA)	1963	
Cruciferae (Brassicaceae)	<i>Descurainia sophia</i>		flixweed	AnnF	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27392a (BRY)	2001	Native to Europe
Cruciferae (Brassicaceae)	<i>Draba brachystylis</i>		Wasatch draba	PerF	LocEn	Pres	Unc	Atwood & Bahr 27455 (TICA)	2001	Type locality is Alta, Wasatch Mountains, Salt Lake Co., UT (Jones 1357 NY). Reports from Clark County, NV probably are an undescribed species.
Cruciferae (Brassicaceae)	<i>Erysimum asperum</i> var. <i>purshii</i>	<i>E. asperum</i> var. <i>asperum</i> , <i>E.</i> <i>capitatum</i> var. <i>purshii</i> . Included in var. <i>capitatum</i> in <i>Intermountain Flora</i> (2005)	sand dune wallflower	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27678 (TICA)	2001	Type locality is near the Great Salt Lake, Salt Lake Co., UT (Carrington s.n.)
Cruciferae (Brassicaceae)	<i>Hesperis matronalis</i>		dame's rocket	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27779 (TICA)	2001	Native to Europe
Cruciferae (Brassicaceae)	<i>Lepidium campestre</i>	<i>Neolepia campestris</i>	field pepperwort	AnnF	Intro	Pres	Unc	Atwood & Pulham 27647 (TICA)	2001	Native to Asia
Cruciferae (Brassicaceae)	<i>Physaria acutifolia</i> var. <i>acutifolia</i>	<i>P. australis</i>	sharp-leaf twinpod	PerF	Wide	Pres	?	Delmatier 8200 (BRY)	2000	
Cruciferae (Brassicaceae)	<i>Sisymbrium altissimum</i>		tumble mustard	AnnF	Intro	Pres	Unc	Hendrix s.n. (TICA)	1983	Native to Europe



**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Cupressaceae	<i>Juniperus communis</i> var. <i>depressa</i>	<i>J. communis</i> ssp. <i>alpina</i>	common juniper	Shrub	Wide	Pres	Com	Atwood, Cann, & Tilley 27739 (TICA)	1983	
Cupressaceae	<i>Juniperus osteosperma</i>	<i>Sabina osteosperma</i>	Utah juniper	Shrub	Wide	Pres	Unc	Atwood & Bahr 27435 (BRY)	2001	
Cupressaceae	<i>Juniperus scopulorum</i>	<i>Sabina scopulorum</i>	Rocky Mountain juniper	Tree	Wide	Pres	Com	Atwood, Pulham, & Hawkins 27399 (TICA)	1975	
Cyperaceae	<i>Carex hoodii</i>		Hood's sedge	PerG	Wide	Pres	Unc	Atwood, Tilley, & Cann 27667 (TICA)	2001	
Euphorbiaceae	<i>Chamaesyce glyptosperma</i>	<i>Euphorbia glyptosperma</i>	ridge-seeded spurge	AnnF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27782 (TICA)	2001	
Fagaceae	<i>Quercus gambelii</i> var. <i>gambelii</i>	<i>Q. gambelii</i>	Gambel oak	Tree	Wide	Pres	Com	Randall s.n. (TICA)	1975	
Geraniaceae	<i>Erodium cicutarium</i>		stork's-bill	AnnF	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27394 (TICA)	2001	Native to Europe
Gramineae (Poaceae)	<i>Aegilops cylindrica</i>	<i>Cylindropyrum cylindricum</i>	jointed goatgrass	AnnG	Intro	Pres	Unc	Atwood & Pulham 27654 (TICA)	2001	Native to Eurasia
Gramineae (Poaceae)	<i>Agropyron cristatum</i>	<i>A. cristatum</i> var. <i>cristatum</i> , <i>A. cristatum</i> ssp. <i>pectinatum</i> , <i>A. sibiricum</i> , <i>A. desertorum</i> , <i>A. fragile</i> , <i>A. mongolicum</i>	crested wheatgrass	PerG	Intro	Pres	Unc	Atwood, Cann, & Tilley 27747 (TICA)	2001	Native to Eurasia
Gramineae (Poaceae)	<i>Bromus carinatus</i>	<i>B. marginatus</i> , <i>B. polyanthus</i> , <i>Ceratochloa carinata</i>	mountain brome	PerG	Wide	Pres	Unc	Atwood, Tilley, & Cann 27688 (TICA)	2001	

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Gramineae (Poaceae)	<i>Bromus inermis</i> var. <i>inermis</i>	<i>Bromus inermis</i> , <i>Bromopsis inermis</i>	smooth brome	PerG	Intro	Pres	Com	Atwood & Pulham 27653 (TICA)	1983	Native to Eurasia
Gramineae (Poaceae)	<i>Bromus japonicus</i>	<i>B. arvensis</i> ; includes <i>B. commutatus</i>	Japanese chess	AnnG	Intro	Pres	Unc	Atwood & Pulham 27650 (TICA)	2001	Native to Eurasia
Gramineae (Poaceae)	<i>Bromus tectorum</i>	<i>Anisantha tectorum</i>	cheatgrass	AnnG	Intro	Pres	Com	Shelley s.n. (TICA)	1963	Native to Eurasia
Gramineae (Poaceae)	<i>Dactylis glomerata</i>		orchard grass	PerG	Intro	Pres	Unc	Hendrix s.n. (TICA)	1983	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Elymus elongatus</i>	<i>Elymus elongatus</i> var. <i>ponticus</i> , <i>Agropyron elongatum</i> , <i>Thinopyrum ponticum</i>	tall wheatgrass	PerG	Intro	Pres	Unc	Coles JC06280706 (TICA)	2007	Native to Eurasia
Gramineae (Poaceae)	<i>Elymus hispidus</i>	<i>E. hispidus</i> var. <i>hispidus</i> , <i>Agropyron intermedium</i> , <i>Elytrigia intermedia</i> , <i>Thinopyrum intermedium</i>	intermediate wheatgrass	PerG	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27766a (TICA)	2001	Native to Eurasia
Gramineae (Poaceae)	<i>Elymus repens</i>	<i>Agropyron repens</i> , <i>Elytrigia repens</i>	quackgrass	PerG	Intro	Pres	Unc	Atwood & Pulham 27644 (TICA)	2001	Utah state noxious weed. Native to Eurasia
Gramineae (Poaceae)	<i>Elymus spicatus</i>	<i>Agropyron spicatum</i> , <i>Pseudoroegneria spicata</i> , includes ssp. <i>inermis</i> & <i>spicata</i>	bluebunch wheatgrass	PerG	Wide	Pres	Unc	Atwood, Tilley, & Cann 27715 (TICA)	2001	Hybrids with <i>E. lanceolatus</i> have been documented (NCPN veg mapping team, 2007).

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Gramineae (Poaceae)	<i>Elymus trachycaulus</i>	<i>E. trachycaulus</i> var. <i>trachycaulus</i> , <i>E. alaskanus</i> ssp. <i>latiglumis</i> , <i>Agropyron caninum</i> , <i>A. subsecundum</i> , <i>A. trachycaulum</i> , <i>A. latiglume</i>	slender wheatgrass	PerG	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27772 (TICA)	2001	
Gramineae (Poaceae)	<i>Hordeum murinum</i>	<i>H. murinum</i> sp. <i>leporinum</i> , <i>H. leporinum</i> , <i>Critesion glaucum</i>	rabbit barley	AnnG	Intro	Pres	Unc	Atwood & Pulham 27652 (TICA)	2001	Native to Europe
Gramineae (Poaceae)	<i>Leucopoa kingii</i>	<i>Hesperochloa kingii</i>	spike fescue	PerG	Wide	Pres	Com	Atwood & Bahr 27422 (TICA)	2001	
Gramineae (Poaceae)	<i>Melica bulbosa</i>	<i>Bromelica bulbosa</i>	oniongrass	PerG	Wide	Pres	Unc	Atwood, Tilley, & Cann 27674 (TICA)	2001	
Gramineae (Poaceae)	<i>Poa bulbosa</i>		bulbous bluegrass	PerG	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27398 (TICA)	2001	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Poa compressa</i>		Canada bluegrass	PerG	Intro	Pres	Com	Hendrix s.n. (TICA)	1983	Native to Eurasia
Gramineae (Poaceae)	<i>Poa fendleriana</i>	<i>P. longiligula</i> , <i>P. fendleriana</i> sp. <i>longiligula</i>	muttongrass	PerG	Wide	Pres	Com	Shelley s.n. (TICA)	1963	
Gramineae (Poaceae)	<i>Poa pratensis</i>	<i>P. agassizensis</i>	Kentucky bluegrass	PerG	Intro	Pres	Unc	Atwood & Bahr 27426 (TICA)	2001	Native to Europe
Gramineae (Poaceae)	<i>Poa reflexa</i>		nodding bluegrass	PerG	Wide	Pres	Unc	Atwood, Cann, & Tilley 27742 (TICA)	2001	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Gramineae (Poaceae)	<i>Poa secunda</i>	Includes <i>P. gracillima</i> , <i>P. juncifolia</i> , <i>P. sandbergii</i> , <i>P. canbyi</i> , <i>P. scabrella</i> , <i>P. nevadensis</i> , <i>P. ampla</i> and all vars. of <i>P. secunda</i>	Sandberg's bluegrass	PerG	Wide	Pres	Unc	Atwood & Bahr 27424 (TICA)	2001	
Gramineae (Poaceae)	<i>Puccinellia distans</i>		weeping alkaligrass	PerG	Intro	Pres	Unc	Atwood & Pulham 27643 (TICA)	2001	Native to Eurasia
Gramineae (Poaceae)	<i>Secale cereale</i>		cultivated rye	AnnG	Intro	Pres	Unc	Hendrix s.n. (TICA)	1983	Native to Eurasia
Gramineae (Poaceae)	<i>Setaria viridis</i>		green bristlegrass	AnnG	Intro	Pres	Unc	Davis s.n. (TICA)	1975	Native to Eurasia
Gramineae (Poaceae)	<i>Stipa hymenoides</i>	<i>Oryzopsis hymenoides</i> , <i>Achnatherum hymenoides</i>	Indian ricegrass	PerG	Wide	Pres	Com	Atwood, Pulham, & Tilley 27663 (TICA)	1983	
Gramineae (Poaceae)	<i>Stipa nelsonii</i> var. <i>nelsonii</i>	<i>Achnatherum nelsonii</i> var. <i>nelsonii</i> , <i>S. columbiana</i> var. <i>nelsonii</i>	Nelson's needlegrass	PerG	Wide	Pres	Unc	Atwood, Tilley, & Cann 27720 (TICA)	2001	
Hydrophyllaceae	<i>Hydrophyllum capitatum</i> var. <i>capitatum</i>	<i>H. capitatum</i>	capitate waterleaf	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27722 (TICA)	2001	
Hydrophyllaceae	<i>Nemophila breviflora</i>		Great Basin nemophila	AnnF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27682 (TICA)	2001	Type locality is Parley's Park, Summit Co., UT (Watson 169 GH)
Juglandaceae	<i>Juglans nigra</i>		black walnut	Tree	Intro	Pres	Rare	Atwood, Furniss, Cann, & Pulham 27756 (TICA)	2001	Native to E North America

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Labiatae (Lamiaceae)	<i>Agastache urticifolia</i>		nettle-leaf horsemint	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27685 (TICA)	2001	
Labiatae (Lamiaceae)	<i>Leonurus cardiaca</i>		motherwort	PerF	Intro	Pres	Com	Atwood & Pulham 27649 (TICA)	1963	Native to Asia
Labiatae (Lamiaceae)	<i>Monardella odoratissima</i>	<i>M. odoratissima</i> var. <i>glauca</i> , <i>M. glauca</i>	stinking horsemint	PerF	Wide	Pres	Unc	Shelley s.n. (TICA)	1973	
Labiatae (Lamiaceae)	<i>Nepeta cataria</i>		catnip	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27766 (TICA)	2001	Native to Europe
Leguminosae (Fabaceae)	<i>Lathyrus lanszwertii</i> var. <i>pallescens</i>	Included in <i>L. lanszwertii</i> var. <i>laetivirens</i> by some authors	pale sweetpea	PerF	RegEn	Pres	Rare	Shelley s.n. (TICA)	1963	Type locality is E slope Mt. Nebo, Juab Co., UT (Kruckeberg 4496 NY)
Leguminosae (Fabaceae)	<i>Lathyrus pauciflorus</i> var. <i>utahensis</i>		Utah sweetpea	PerF	RegEn	Pres	Unc	Atwood, Pulham, & Tilley 27661 (TICA)	2001	Type locality is Salina Canyon, Sevier Co., UT (Jones 54411 POM)
Leguminosae (Fabaceae)	<i>Lupinus argenteus</i> var. <i>rubricalis</i>		subalpine lupine	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27696 (TICA)	2001	
Leguminosae (Fabaceae)	<i>Lupinus sericeus</i> var. <i>sericeus</i>	Vars. not recognized in Barneby (1989)	silky lupine	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27676 (TICA)	2001	
Leguminosae (Fabaceae)	<i>Medicago lupulina</i>		black medick	AnnF	Intro	Pres	Unc	Shelley s.n. (TICA)	1963	Native to Europe
Leguminosae (Fabaceae)	<i>Medicago sativa</i>	<i>M. sativa</i> var. <i>sativa</i>	alfalfa	PerF	Intro	Pres	Unc	Davis s.n. (TICA)	1975	Native to Europe
Leguminosae (Fabaceae)	<i>Mellilotus officinalis</i>		yellow sweet- clover	PerF	Intro	Pres	Unc	Atwood & Pulham 27645 (TICA)	1974	Native to Europe

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Leguminosae (Fabaceae)	<i>Trifolium pratense</i>		red clover	PerF	Intro	Pres	Unc	Davis s.n. (TICA)	1975	Native to Europe
Leguminosae (Fabaceae)	<i>Trifolium repens</i>		white clover	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27769 (TICA)	2001	Native to Europe
Leguminosae (Fabaceae)	<i>Vicia americana</i> var. <i>americana</i>		American vetch	PerF	Wide	Pres	Unc	Atwood & Bahr 27408 (TICA)	2001	
Liliaceae (Alliaceae)	<i>Allium acuminatum</i>		taper-tip onion	PerF	Wide	Pres	Unc	Atwood & Bahr 27407 (TICA)	1965	
Liliaceae (Alliaceae)	<i>Allium bisceptrum</i>	Includes vars. <i>bisceptrum</i> & <i>palmeri</i>	twincrest onion	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27694 (TICA)	2001	
Liliaceae (Calochortaceae)	<i>Calochortus nuttallii</i>		sego-lily	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27717 (TICA)	1983	
Liliaceae (Calochortaceae)	<i>Disporum trachycarpum</i>	<i>Prosartes trachycarpa</i>	rough-fruited fairy-bells	PerF	Wide	Pres	Unc	Atwood & Bahr 27439 (TICA)	2001	Type locality is Parley's Park, Summit Co., UT (Watson 1166 NY)
Liliaceae (Convallariaceae or Ruscaceae)	<i>Smilacina racemosa</i>	<i>Maianthemum amplexicaule</i> , <i>M. racemosum</i> var. <i>amplexicaule</i>	false Solomon's seal	PerF	Wide	Pres	Unc	Atwood, Pulham, & Hawkins 27405 (TICA)	1973	
Liliaceae (Melanthiaceae)	<i>Zigadenus paniculatus</i>	<i>Toxicoscordion paniculatum</i>	foothills death camas	PerF	Wide	Pres	Unc	Atwood & Bahr 27436 (BRY)	2001	
Linaceae	<i>Linum perenne</i> ssp. <i>lewisii</i>	<i>L. lewisii</i> var. <i>lewisii</i> , <i>Adenolinum lewisii</i>	blue flax	PerF	Wide	Pres	Unc	Shelley s.n. (TICA)	1965	
Loasaceae	<i>Mentzelia dispersa</i>	Includes vars. <i>compacta</i> , <i>dispersa</i> , & <i>latifolia</i> , <i>Acrolasia dispersa</i>	Nevada stickleaf	AnnF	Wide	Pres	Unc	Atwood & Bahr 27411 (TICA)	1935	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Malvaceae	<i>Malva neglecta</i>		common mallow	AnnF	Intro	Pres	Unc	Fertig 23048 (TICA)	2006	Native to Eurasia
Onagraceae	<i>Epilobium brachycarpum</i>	<i>E. paniculatum</i> var. <i>paniculatum</i>	autumn willow-herb	AnnF	Wide	Pres	Unc	Fertig 23045 (TICA)	2006	
Onagraceae	<i>Gayophytum ramosissimum</i>		branching groundsmoke	AnnF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27672 (TICA)	2001	
Onagraceae	<i>Oenothera biennis</i>		biennial evening-primrose	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27777 (TICA)	2001	Native to Eurasia
Onagraceae	<i>Zauschneria latifolia</i> var. <i>garrettii</i>	<i>Z. garrettii</i> , <i>Epilobium canum</i> var. <i>garrettii</i>	hummingbird-flower	PerF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27798 (TICA)	2001	Type locality is Big Cottonwood Canyon, Salt Lake Co., UT (Garrett 2031 NY)
Orchidaceae	<i>Corallorhiza striata</i>	<i>C. striata</i> var. <i>striata</i>	striped coral-root	PerF	Wide	Pres	Rare	Atwood, Cann, & Tilley 27734 (TICA)	2001	
Pinaceae	<i>Abies concolor</i>		white fir	Tree	Wide	Pres	Com	Atwood & Bahr 27460 (TICA)	2001	
Pinaceae	<i>Pinus flexilis</i>		limber pine	Tree	Wide	Pres	Unc	Atwood, Cann, & Tilley 27738 (TICA)	2001	
Pinaceae	<i>Pseudotsuga menziesii</i> var. <i>glauca</i>		Douglas-fir	Tree	Wide	Pres	Com	Randall s.n. (TICA)	1975	
Plantaginaceae	<i>Plantago lanceolata</i>		English plantain	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27752 (TICA)	2001	Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Plantaginaceae	<i>Plantago major</i>	Includes var. <i>pachyphylla</i>	common plantain	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27781 (TICA)	2001	Mostly native to Europe. Type locality of var. <i>pachyphylla</i> is Salt Lake City, Salt Lake Co., UT (Jones 1030 POM)
Polemoniaceae	<i>Collomia linearis</i>		small collomia	AnnF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27670 (TICA)	2001	
Polemoniaceae	<i>Ipomopsis aggregata</i> var. <i>aggregata</i>	<i>Gilia aggregata</i> var. <i>aggregata</i>	scarlet gilia	PerF	Wide	Pres	Unc	Shelley s.n. (TICA)	1963	
Polemoniaceae	<i>Leptodactylon watsonii</i>	<i>Linanthus watsonii</i>	Watson's prickly-phlox	PerF	Wide	Pres	Unc	Atwood & Bahr 27416 (TICA)	1983	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson s.n. GH)
Polemoniaceae	<i>Microsteris gracilis</i> var. <i>humilior</i>	<i>Phlox gracilis</i> ssp. <i>humilis</i>	slender phlox	AnnF	Wide	Pres	Unc	Atwood & Jasper 27033 (TICA)	2001	
Polemoniaceae	<i>Polemonium foliosissimum</i> var. <i>alpinum</i>		white leafy Jacob's-ladder	PerF	RegEn	Pres	Unc	Atwood, Tilley, & Cann 27658 (TICA)	2001	Type locality is Alta, Salt Lake Co., UT (Jones 1114)
Polygonaceae	<i>Eriogonum brevicaule</i> var. <i>brevicaule</i>		shortstem wild buckwheat	PerF	Wide	Pres	Com	Hendrix s.n. (TICA)	1973	
Polygonaceae	<i>Eriogonum racemosum</i> var. <i>racemosum</i>	<i>E. racemosum</i>	redroot wild buckwheat	PerF	Wide	Pres	Rare	Davis s.n. (TICA)	1975	



Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Polygonaceae	<i>Eriogonum umbellatum</i> var. <i>majus</i>	<i>E. umbellatum</i> var. <i>subalpinum</i> , <i>E. subalpinum</i> , includes var. <i>dichrocephalum</i> & <i>desereticum</i>	cream wild buckwheat	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27723 (TICA)	2001	
Polygonaceae	<i>Polygonum aviculare</i>	<i>P. arenastrum</i> , <i>P. aviculare</i> ssp. <i>aviculare</i>	yard knotweed	AnnF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27753 (TICA)	2001	Native to Eurasia
Polygonaceae	<i>Polygonum douglasii</i> var. <i>johnstonii</i>	<i>P. sawatchense</i> var. <i>sawatchense</i>	Sawatch knotweed	AnnF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27691 (TICA)	2001	
Polygonaceae	<i>Rumex crispus</i>		curly dock	PerF	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27757 (TICA)	2001	Native to Eurasia
Polypodiaceae (Aspleniaceae)	<i>Cystopteris fragilis</i>	Includes <i>C. utahensis</i> , <i>C. reevesiana</i> , & <i>C. tenuis</i>	brittle bladder fern	Fern	Wide	Pres	Unc	Atwood & Bahr 27445 (TICA)	2001	
Polypodiaceae (Adiantaceae)	<i>Pellaea breweri</i>		Brewer's cliff-brake	Fern	Wide	Pres	Unc	Atwood, Cann, & Tilley 27744 (TICA)	2001	
Portulacaceae	<i>Montia perfoliata</i> var. <i>perfoliata</i>	<i>Claytonia perfoliata</i> ssp. <i>intermontana</i> , <i>C. perfoliata</i> ssp. <i>perfoliata</i> , <i>C. rubra</i>	miner's lettuce	AnnF	Wide	Pres	Unc	Atwood & Bahr 27443 (TICA)	2001	
Pyrolaceae (Ericaceae)	<i>Pyrola secunda</i>	<i>Orthilia secunda</i>	sidebells pyrola	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27711 (TICA)	2001	
Ranunculaceae (Helleboraceae)	<i>Actaea rubra</i>	<i>A. rubra</i> ssp. <i>arguta</i>	red baneberry	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27724 (TICA)	2001	

*Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.*

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Ranunculaceae (Helleboraceae)	<i>Aquilegia flavescens</i>	Includes vars. <i>flavescens</i> & <i>miniata</i>	yellow columbine	PerF	Wide	Pres	Rare	Atwood, Furniss, Cann, & Pulham 27780 (TICA, BRY)	2001	Specimen at TICA herbarium lacks flowers and was tentatively identified as <i>A. coerulea</i> by W. Fertig in 2005. Duplicate at BRY has yellow flowers and is clearly <i>A. flavescens</i> . Type locality is Wasatch Mountains, Salt Lake Co., UT (Watson 35 YU)
Ranunculaceae	<i>Clematis hirsutissima</i>	<i>Clematis hirsutissima</i> var. <i>hirsutissima</i> , <i>Coriflora hirsutissima</i>	sugar-bowls	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27695 (TICA)	2001	
Ranunculaceae (Helleboraceae)	<i>Delphinium nuttallianum</i>	<i>D. nelsonii</i>	Nuttall's larkspur	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27680 (TICA)	2001	
Ranunculaceae	<i>Ranunculus testiculatus</i>	<i>Ceratocephala orthoceras</i> , <i>C. testiculata</i>	bur buttercup	AnnF	Intro	Pres	Unc	Atwood & Jasper 27032 (TICA)	2001	Native to Eurasia
Ranunculaceae (Thalictraceae)	<i>Thalictrum fendleri</i>		Fendler's meadow-rue	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27726 (TICA)	2001	
Rosaceae	<i>Amelanchier alnifolia</i>		Saskatoon serviceberry	Shrub	Wide	Pres	Rare	Randall & Shelley s.n. (TICA)	1975	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Rosaceae	<i>Cercocarpus intricatus</i>	<i>C. ledifolius</i> var. <i>intricatus</i>	dwarf mountain mahogany	Shrub	Wide	Pres	Unc	Atwood & Bahr 27429 (TICA)	1963	Hybrids with <i>C. ledifolius</i> present (Shelley s.n. TICA). Type locality is American Fork Canyon, Utah Co., UT (Watson 314 US).
Rosaceae	<i>Cercocarpus ledifolius</i> var. <i>intermontanus</i>		curl-leaf mountain mahogany	Shrub	Periph	Pres	Unc	Atwood & Jasper 27037 (TICA)	2001	Type locality is ca 10 km E of Oak City, Millard Co., UT (Holmgren & Holmgren 11298 NY)
Rosaceae	<i>Cercocarpus montanus</i>		alder-leaf mountain mahogany	Shrub	Wide	Pres	Com	Atwood, Pulham, & Hawkins 27396 (TICA)	1973	
Rosaceae	<i>Holodiscus dumosus</i>	<i>H. discolor</i>	bush oceanspray	Shrub	Wide	Pres	Unc	Atwood & Bahr 27430 (TICA)	1975	
Rosaceae	<i>Malus pumila</i>	<i>Pyrus malus</i>	common apple	Tree	Intro	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27783 (TICA)	2001	Native to Eurasia
Rosaceae	<i>Petrophyton caespitosum</i>	<i>Spiraea caespitosa</i>	rock spiraea	PerF	Wide	Pres	Unc	Atwood, Furniss, Cann, & Pulham 27800 (TICA)	1983	
Rosaceae	<i>Physocarpus alternans</i>		dwarf ninebark	Shrub	Wide	Pres	Unc	Atwood & Bahr 27463 (TICA)	2001	

**Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.**

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Rosaceae	<i>Physocarpus malvaceus</i>		mallow-leaved ninebark	Shrub	Wide	Pres	Unc	Atwood & Bahr 27464 (TICA)	1975	
Rosaceae	<i>Physocarpus monogynus</i>		mountain ninebark	Shrub	Periph	Pres	Rare	Atwood & Bahr 27465 (BRY)	2001	UT reports considered to be misidentified robust <i>P. alternans</i> in Holmgren et al. (1997)
Rosaceae	<i>Prunus armeniaca</i>	<i>Armeniaca vulgaris</i>	apricot	Tree	Intro	Pres	Rare	Atwood & Bahr 27432 (TICA)	2001	Native to China
Rosaceae	<i>Prunus avium</i>		sweet cherry	Tree	Intro	Pres	Rare	Atwood & Bahr 27457 (TICA)	2001	Native to Eurasia
Rosaceae	<i>Prunus virginiana</i> var. <i>melanocarpa</i>	<i>Padus virginiana</i> ssp. <i>melanocarpa</i>	western chokecherry	Shrub	Wide	Pres	Com	Atwood, Pulham, & Hawkins 27404 (TICA)	1973	
Rosaceae	<i>Rosa woodsii</i>	<i>R. woodsii</i> var. <i>ultramontana</i> , includes <i>R. manca</i>	Woods' rose	Shrub	Wide	Pres	Unc	Atwood, Cann, & Tilley 27737 (TICA)	2001	
Rosaceae	<i>Rubus idaeus</i> var. <i>strigosus</i>	<i>R. idaeus</i> var. <i>aculeatissimus</i> , <i>R. idaeus</i> ssp. <i>melanolasius</i>	common red raspberry	Shrub	Wide	Pres	Unc	Hendrix s.n. (TICA)	1983	
Rosaceae	<i>Sorbus scopulina</i>		rock mountain-ash	Shrub	Wide	Pres	Unc	Atwood & Bahr 27447 (BRY)	2001	
Rubiaceae	<i>Galium aparine</i> var. <i>echinospermum</i>	<i>G. spurium</i>	cleavers	AnnF	Wide	Pres	Unc	Randall s.n. (TICA)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Rubiaceae	<i>Galium bifolium</i>		twin-leaf bedstraw	AnnF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27683 (TICA)	2001	Type locality is Wasatch Mtns, Salt Lake Co., UT (Watson 480 US)
Rubiaceae	<i>Galium multiflorum</i> var. <i>multiflorum</i>	<i>G. multiflorum</i>	shrubby bedstraw	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27698 (TICA)	1983	
Salicaceae	<i>Populus angustifolia</i>		narrow-leaved cottonwood	Tree	Wide	Pres	Com	Hendrix s.n. (TICA)	1983	
Salicaceae	<i>Populus x intercurrentis</i>	<i>P. acuminata</i> , <i>P. x acuminata</i> . Hybrid of <i>P. fremontii</i> x <i>P. angustifolia</i>	lance-leaf cottonwood	Tree	Wide	Pres	Unc	Coles JC06280702 (TICA)	2007	Type locality is Jesse Ewing Canyon, Daggett Co., UT (Goodrich 24441 BRY)
Saxifragaceae (Hydrangeaceae)	<i>Fendlerella utahensis</i>		Utah fendlerella	Shrub	Wide	Pres	Unc	Atwood, Cann, & Tilley 27748 (TICA)	1983	Type locality is "Kanab", Kane Co., UT (Thompson s.n. GH), but probably collected farther to the east.
Saxifragaceae	<i>Heuchera parvifolia</i>	Includes vars. <i>major</i> , <i>parvifolia</i> , & <i>utahensis</i>	littleleaf alumroot	PerF	Wide	Pres	Unc	Atwood, Cann, & Tilley 27741 (TICA)	2001	Type locality of var. <i>utahensis</i> is City Creek Canyon, Salt Lake Co., UT (Jones 1458 NY)

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Saxifragaceae	<i>Heuchera rubescens</i> var. <i>rubescens</i>	Vars. not recognized in Holmgren et al. (1997)	red alumroot	PerF	Wide	Pres	Unc	Atwood & Bahr 27427 (TICA)	1975	Type locality is Stansbury's Island, Tooele Co., UT (Stansbury s.n. NY)
Saxifragaceae (Hydrangeaceae)	<i>Jamesia americana</i> var. <i>macrocalyx</i>		Wasatch jamesia	Shrub	LocEn	Pres	Unc	Atwood, Cann, & Tilley 27732 (TICA)	1973	Type locality is American Fork Canyon, Utah Co., Utah (Watson 371 US). USFS Region 4 Sensitive
Saxifragaceae	<i>Lithophragma glabrum</i> var. <i>ramulosum</i>	<i>L. bulbifera</i> , <i>L. glabra</i>	fringe cup woodland star	PerF	Wide	Pres	Unc	Atwood & Bahr 27446 (TICA)	1963	
Saxifragaceae	<i>Mitella stauropetala</i> var. <i>stenopetala</i>	<i>M. stauropetala</i> var. <i>stenopetala</i>	smallflower mitrewort	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27725 (TICA)	2001	Type locality is Wasatch Mtns, UT (Watson 365 GH)
Saxifragaceae (Grossulariaceae)	<i>Ribes aureum</i>	<i>R. aureum</i> var. <i>aureum</i>	golden currant	Shrub	Wide	Pres	Unc	Atwood & Bahr 27431 (TICA)	2001	
Saxifragaceae (Grossulariaceae)	<i>Ribes cereum</i> var. <i>inebrians</i>	<i>R. cereum</i> var. <i>pedicellare</i>	wax currant	Shrub	Wide	Pres	Unc	Atwood & Bahr 27458 (TICA)	1975	
Saxifragaceae (Grossulariaceae)	<i>Ribes viscosissimum</i> var. <i>viscosissimum</i>		sticky currant	Shrub	Wide	Pres	Unc	Atwood, Tilley, & Cann 27731 (TICA)	2001	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Scrophulariaceae	<i>Castilleja applegatei</i> var. <i>viscida</i>	<i>C. applegatei</i> ssp. <i>pinetorum</i>	wavy-leaved Indian-paintbrush	PerF	RegEn	Pres	Unc	Atwood, Cann, & Tilley 27733 (TICA)	2001	Type locality is headwaters of Big Cottonwood Canyon, Salt Lake Co., UT (Rydberg & Carlton 6593 NY)
Scrophulariaceae	<i>Castilleja chromosa</i>	<i>C. angustifolia</i> var. <i>dubia</i> , <i>C. applegatei</i> ssp. <i>martinii</i>	desert paintbrush	PerF	Wide	Pres	Unc	Atwood & Bahr 27462 (TICA)	2001	Type locality is Leroy, Uinta Co., WY (Nelson, A. 4577 RM)
Scrophulariaceae	<i>Castilleja linariifolia</i>	<i>C. linariaefolia</i>	Wyoming paintbrush	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27664 (TICA)	2001	
Scrophulariaceae	<i>Castilleja rhexifolia</i> var. <i>sulphurea</i>	<i>C. sulphurea</i>	sulphur paintbrush	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27662 (TICA)	2001	
Scrophulariaceae	<i>Collinsia parviflora</i>		blue-eyed mary	AnnF	Wide	Pres	Unc	Shelley s.n. (TICA)	1963	
Scrophulariaceae	<i>Linaria dalmatica</i>	<i>L. genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	PerF	Intro	Pres	Unc	Atwood & Bahr 27412 (TICA)	2001	Native to Europe
Scrophulariaceae	<i>Linaria vulgaris</i>		butter-and-eggs	PerF	Intro	Pres	Unc	Jasper s.n. (TICA)	2001	Native to Eurasia
Scrophulariaceae	<i>Orthocarpus tolmiei</i>	Includes ssp. <i>holmgreniorum</i>	Tolmie's owl-clover	AnnF	RegEn	Pres	Unc	Atwood, Pulham, & Tilley 27657 (TICA)	2001	
Scrophulariaceae	<i>Penstemon cyananthus</i> var. <i>cyananthus</i>		Wasatch penstemon	PerF	RegEn	Pres	Unc	Atwood, Tilley, & Cann 27728 (TICA)	2001	

*Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.*

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Scrophulariaceae	<i>Penstemon eatonii</i> var. <i>eatonii</i>		Eaton's firecracker	PerF	Wide	Pres	Unc	Atwood & Bahr 27417 (TICA)	1975	Type locality is lower Provo Canyon, Utah Co., UT (Watson 776 GH)
Scrophulariaceae	<i>Penstemon humilis</i> var. <i>brevifolius</i>		shortleaf penstemon	PerF	RegEn	Pres	Unc	Atwood, Tilley, & Cann 27699 (TICA)	2001	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 781 US)
Scrophulariaceae	<i>Penstemon</i> <i>platyphyllus</i>		broadleaf penstemon	PerF	LocEn	Pres	Unc	Lacy s.n. (TICA)	1975	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 787 GH)
Scrophulariaceae	<i>Scrophularia</i> <i>lanceolata</i>		lance-leaf figwort	PerF	Wide	Pres	Unc	Atwood, Pulham, & Tilley 27659 (TICA)	2001	
Scrophulariaceae	<i>Verbascum thapsus</i>		woolly mullein	PerF	Intro	Pres	Unc	Hendrix s.n. (TICA)	1983	Native to Eurasia
Scrophulariaceae	<i>Veronica biloba</i>	<i>Pocilla biloba</i>	two-lobe speedwell	AnnF	Intro	Pres	Unc	Atwood, Pulham, & Hawkins 27387 (TICA)	2001	Native to Asia
Solanaceae	<i>Solanum dulcamara</i>		European bittersweet	PerF	Intro	Pres	Unc	Hersman s.n. (TICA)	1973	Native to Eurasia
Umbelliferae (Apiaceae)	<i>Cymopterus longipes</i>	<i>C. longipes</i> var. <i>longipes</i>	long-stalk spring-parsley	PerF	Wide	Pres	Unc	Atwood & Jasper 27034 (TICA)	1965	Type locality is Wasatch Mtns, Salt Lake Co., UT (Watson 451 GH)



Appendix A. Confirmed, historical, and reported vascular plant taxa of Timpanogos Cave National Monument, organized by family and scientific name with taxonomic and biogeographic notes, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Umbelliferae (Apiaceae)	<i>Lomatium dissectum</i> var. <i>eatonii</i>	<i>L. dissectum</i> , <i>L. dissectum</i> var. <i>multifidum</i>	giant lomatium	PerF	Wide	Pres	Unc	Atwood, Pulham, & Hawkins 27403 (BRY)	2001	Type locality of var. <i>eatonii</i> is "Utah" (Eaton 147)
Umbelliferae (Apiaceae)	<i>Osmorhiza chilensis</i>	<i>O. berteroi</i>	Chilean sweet-cicely	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27730 (TICA)	2001	
Urticaceae	<i>Urtica dioica</i> var. <i>occidentalis</i>	<i>U. dioica</i> ssp. <i>holosericea</i> , <i>U. gracilis</i> ssp. <i>holosericea</i>	stinging nettle	PerF	Wide	Pres	Unc	Shelley s.n. (TICA)	1975	
Valerianaceae	<i>Valeriana occidentalis</i>		western valerian	PerF	Wide	Pres	Unc	Atwood, Tilley, & Cann 27660 (TICA)	2001	
Violaceae	<i>Viola nephrophylla</i>	<i>V. sororia</i> var. <i>affinis</i>	northern bog violet	PerF	Wide	Pres	Unc	Atwood & Bahr 27449 (BRY)	2001	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Amaranthaceae	<i>Amaranthus albus</i>		tumble pigweed	AnnF	Intro	Native to tropical America
Amaranthaceae	<i>Amaranthus blitoides</i>	<i>A. graecizans</i>	prostrate pigweed	AnnF	Wide	
Anacardiaceae	<i>Toxicodendron rydbergii</i>	<i>Rhus radicans</i> , <i>T. radicans</i>	western poison ivy	Shrub	Wide	
Apocynaceae	<i>Apocynum cannabinum</i>	Includes vars. <i>cannabinum</i> , <i>glaberrimum</i> , & <i>angustifolium</i>	common dogbane	PerF	Wide	
Betulaceae	<i>Alnus incana</i> var. <i>occidentalis</i>	<i>A. incana</i> ssp. <i>tenuifolia</i> , <i>A. tenuifolia</i>	thinleaf alder	Shrub	Wide	
Boraginaceae	<i>Anchusa officinalis</i>		bugloss alkanet	PerF	Intro	
Boraginaceae	<i>Cryptantha affinis</i>		ally cryptanth	AnnF	Wide	
Boraginaceae	<i>Cryptantha watsonii</i>		Watson's cryptanth	AnnF	Wide	Type locality is Wasatch Mountains, Salt Lake Co., UT (Watson 858 GH)
Boraginaceae	<i>Hackelia micrantha</i>	<i>H. jessicae</i>	smallflower stickseed	PerF	Wide	
Boraginaceae	<i>Lappula occidentalis</i> var. <i>cupulata</i>	<i>L. texana</i> , <i>L. redowskii</i> var. <i>cupulata</i> , <i>L. marginata</i>	cupseed stickseed	AnnF	Wide	
Boraginaceae	<i>Lithospermum incisum</i>		showy stoneseed	PerF	Wide	
Boraginaceae	<i>Mertensia arizonica</i>	<i>Mertensia arizonica</i> var. <i>grahamii</i>	aspen bluebell	PerF	Wide	
Boraginaceae	<i>Mertensia ciliata</i>		streamside bluebell	PerF	Wide	
Boraginaceae	<i>Mertensia oblongifolia</i>		western bluebell	PerF	Wide	
Boraginaceae	<i>Plagiobothrys scouleri</i> var. <i>penicillatus</i>	<i>P. scouleri</i> var. <i>hispidulus</i>	meadow popcorn-flower	AnnF	Wide	
Cannabaceae	<i>Humulus lupulus</i> var. <i>neomexicanus</i>	<i>H. lupulus</i> ssp. <i>americanus</i>	common hops	PerF	Wide	
Capparaceae (Cleomaceae)	<i>Cleome serrulata</i>		Rocky Mountain beeplant	AnnF	Wide	
Caprifoliaceae	<i>Lonicera involucrata</i>	<i>Distegia involucrata</i>	black twinberry	Shrub	Wide	
Caprifoliaceae	<i>Lonicera utahensis</i>		Utah honeysuckle	Shrub	Wide	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 477 US)
Caprifoliaceae (Adoxaceae)	<i>Sambucus racemosa</i> var. <i>microbotrys</i>	<i>S. microbotrys</i> ; included in <i>S. racemosa</i> var. <i>racemosa</i> by some authors	red elderberry	Shrub	Wide	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Caryophyllaceae (Alsinaeeae)	<i>Arenaria congesta</i> var. <i>congesta</i>	<i>Eremogone congesta</i> var. <i>congesta</i> ; includes var. <i>cephaloidea</i>	ball-head sandwort	PerF	Wide	
Caryophyllaceae (Alsinaeeae)	<i>Arenaria fendleri</i> var. <i>glabrescens</i>	<i>Eremogone kingii</i> var. <i>glabrescens</i> , <i>E. kingii</i> var. <i>uintahensis</i> , <i>Arenaria kingii</i> ssp. <i>uintahensis</i> , <i>compacta</i> , <i>plateauensis</i>	basin sandwort	PerF	Wide	
Caryophyllaceae (Alsinaeeae)	<i>Arenaria nuttallii</i>	<i>Minuartia nuttallii</i> var. <i>nuttallii</i> , <i>Minuopsis nuttallii</i>	Nuttall's sandwort	PerF	Wide	
Caryophyllaceae	<i>Cerastium arvense</i>	<i>C. strictum</i> , <i>C. arvense</i> ssp. <i>strictum</i>	field chickweed	PerF	Wide	
Caryophyllaceae (Alsinaeeae)	<i>Sagina saginoides</i>		alpine pearlwort	PerF	Wide	
Caryophyllaceae	<i>Silene douglasii</i>	<i>S. douglasii</i> var. <i>douglasii</i>	Douglas' campion	PerF	Wide	
Caryophyllaceae	<i>Silene menziesii</i>	<i>S. menziesii</i> var. <i>menziesii</i> , <i>Anotites menziesii</i> var. <i>menziesii</i>	Menzies' campion	PerF	Wide	
Chenopodiaceae	<i>Chenopodium atrovirens</i>	<i>C. fremontii</i> var. <i>atrovirens</i>	mountain goosefoot	AnnF	Wide	
Chenopodiaceae	<i>Chenopodium capitatum</i> var. <i>parvicapitatum</i>	<i>C. overi</i> , <i>C. foliosum</i>	smallhead goosefoot	AnnF	Wide	Type locality is Indian Creek, Tushar Mountains, Beaver Co., UT (Martin & Welsh 17148 BRY)
Chenopodiaceae	<i>Chenopodium simplex</i>	<i>C. hybridum</i> , <i>C. gigantospermum</i> , <i>C. standleyanum</i>	maple-leaf goosefoot	AnnF	Wide	
Chenopodiaceae	<i>Monolepis nuttalliana</i>		Nuttall's poverty-weed	AnnF	Wide	
Chenopodiaceae	<i>Salsola tragus</i>	<i>S. kali</i> , <i>S. iberica</i> , <i>S. pestifer</i> , <i>S. australis</i>	Russian thistle	AnnF	Intro	Native to Asia
Compositae (Asteraceae)	<i>Agoseris aurantiaca</i> var. <i>aurantiaca</i>		orange agoseris	PerF	Wide	
Compositae (Asteraceae)	<i>Anaphalis margaritacea</i>		pearly-everlasting	PerF	Wide	
Compositae (Asteraceae)	<i>Arnica longifolia</i>		longleaf arnica	PerF	Wide	Type locality is Uinta Mountains, Summit Co., UT (Watson 655)

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Compositae (Asteraceae)	<i>Arnica mollis</i>	Includes <i>A. ovata</i>	hairy arnica	Perf	Wide	Type locality of <i>A. ovata</i> is Alta, Salt Lake Co., UT (Jones 1128 NDG)
Compositae (Asteraceae)	<i>Artemisia carruthii</i>		Carruth's wormwood	Perf	Wide	
Compositae (Asteraceae)	<i>Artemisia dracunculosa</i> var. <i>glauca</i>	<i>Oligosporus dracunculus</i> ; vars. not recognized in Cronquist (1994) and <i>Flora of North America</i> (2006)	tarragon	Perf	Wide	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>incompta</i>		Louisiana wormwood	Perf	Wide	
Compositae (Asteraceae)	<i>Artemisia tridentata</i> var. <i>tridentata</i>	<i>Seriphidium tridentatum</i> ssp. <i>tridentatum</i>	basin big sagebrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Aster eatonii</i>	<i>Symphotrichum eatonii</i> , <i>A. bracteolatus</i>	Eaton's aster	Perf	Wide	
Compositae (Asteraceae)	<i>Aster engelmannii</i>	<i>Eucephalus engelmannii</i>	Engelmann's aster	Perf	Wide	
Compositae (Asteraceae)	<i>Aster foliaceus</i> var. <i>parryi</i>	<i>Symphotrichum foliaceum</i> var. <i>parryi</i>	Parry's aster	Perf	Wide	
Compositae (Asteraceae)	<i>Aster glaucodes</i>	<i>Eucephalus glaucus</i> , <i>Eurybia glauca</i> , <i>Herrickia glauca</i> var. <i>glauca</i>	blueleaf aster	Perf	Wide	
Compositae (Asteraceae)	<i>Aster perelegans</i>	<i>Eucephalus elegans</i>	elegant aster	Perf	Wide	
Compositae (Asteraceae)	<i>Brickellia microphylla</i> var. <i>watsonii</i>	Included in <i>B. microphylla</i> var. <i>microphylla</i> in <i>Flora of North America</i> (2006)	Watson's brickellbush	Shrub	Wide	Type locality is American Fork Canyon, Utah Co., Utah (Watson 494 GH)
Compositae (Asteraceae)	<i>Carduus nutans</i>	Includes ssp. <i>leiophyllus</i> & <i>macrolepis</i>	musk thistle	Perf	Intro	Utah state noxious weed. Native to Eurasia
Compositae (Asteraceae)	<i>Chrysopsis villosa</i> var. <i>minor</i>	<i>C. villosa</i> var. <i>hispidula</i> , <i>Heterotheca villosa</i> var. <i>hispidula</i> , <i>H. villosa</i> var. <i>minor</i>	hispid golden-aster	Perf	Wide	
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>consimilis</i>	<i>Ericameria nauseosa</i> var. <i>consimilis</i> , <i>Ericameria nauseosa</i> var. <i>oreophila</i> , <i>Chrysothamnus nauseosus</i> var. <i>oreophilus</i>	greenish rabbitbrush	Shrub	Wide	

**Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>graveolens</i>	<i>Ericameria nauseosa</i> var. <i>graveolens</i> , <i>E. nauseosa</i> var. <i>glabrata</i> , includes <i>C. nauseosus</i> var. <i>oreophilus</i>	glabrate rabbitbrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>lancoelatus</i>		lanceleaf rabbitbrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Cirsium undulatum</i> var. <i>tracyi</i>	<i>C. tracyi</i>	Tracy's thistle	PerF	RegEn	
Compositae (Asteraceae)	<i>Cirsium undulatum</i> var. <i>undulatum</i>	<i>C. undulatum</i>	wavy-leaved thistle	PerF	Wide	
Compositae (Asteraceae)	<i>Erigeron caespitosus</i>		tufted fleabane	PerF	Wide	
Compositae (Asteraceae)	<i>Erigeron divergens</i> var. <i>divergens</i>	<i>E. divergens</i>	spreading daisy	PerF	Wide	
Compositae (Asteraceae)	<i>Erigeron eatonii</i>	<i>E. eatonii</i> var. <i>eatonii</i>	Eaton's daisy	PerF	Wide	Type locality is ridge above Bear River Canyon, Uinta Mountains, Watson 546 GH)
Compositae (Asteraceae)	<i>Gnaphalium stramineum</i>	<i>G. chilense</i> , <i>Pseudognaphalium stramineum</i>	cottonbatting cudweed	AnnF	Wide	
Compositae (Asteraceae)	<i>Haplopappus macronema</i>	<i>H. macronema</i> var. <i>linearis</i> , <i>H. macronema</i> var. <i>canescens</i> , <i>Ericameria discoidea</i> var. <i>linearis</i> , <i>E. discoidea</i> var. <i>discoidea</i> , <i>Macronema discoideum</i>	narrowleaf goldenweed	Shrub	Wide	
Compositae (Asteraceae)	<i>Helianthus nuttallii</i>	<i>H. nuttallii</i> ssp. <i>nuttallii</i>	Nuttall's sunflower	PerF	Wide	
Compositae (Asteraceae)	<i>Lactuca tatarica</i> var. <i>pulchella</i>	<i>L. pulchella</i> , <i>L. oblongifolia</i> , <i>Mulgedium pulchellum</i>	blue lettuce	PerF	Wide	
Compositae (Asteraceae)	<i>Madia glomerata</i>		mountain tarweed	AnnF	Wide	
Compositae (Asteraceae)	<i>Matricaria matricarioides</i>	<i>M. discoidea</i> , <i>Lepidotheca suaveolens</i>	pineapple-weed	AnnF	Wide	
Compositae (Asteraceae)	<i>Rudbeckia occidentalis</i>	<i>R. occidentalis</i> var. <i>occidentalis</i>	western coneflower	PerF	Wide	

**Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Compositae (Asteraceae)	<i>Senecio canus</i>	<i>Packera cana</i>	woolly groundsel	PerF	Wide	
Compositae (Asteraceae)	<i>Senecio crassulus</i>		thick-leaf groundsel	PerF	Wide	
Compositae (Asteraceae)	<i>Senecio eremophilus</i> var. <i>kingii</i>		cut-leaved groundsel	PerF	Wide	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 676 NY)
Compositae (Asteraceae)	<i>Senecio streptanthifolius</i> var. <i>streptanthifolius</i>	<i>Packera streptanthifolia</i> var. <i>streptanthifolia</i> . Vars. not recognized in <i>Flora of North America</i> (2006)	Rocky Mountain groundsel	PerF	Wide	
Compositae (Asteraceae)	<i>Senecio triangularis</i>		arrowleaf groundsel	PerF	Wide	
Compositae (Asteraceae)	<i>Solidago canadensis</i> var. <i>salebrosa</i>	<i>S. altissima</i> , <i>S. lepida</i> var. <i>salebrosa</i>	Canadian goldenrod	PerF	Wide	
Compositae (Asteraceae)	<i>Solidago multiradiata</i> var. <i>scopulorum</i>	Vars. not recognized in <i>Flora of North America</i> (2006).	Rocky Mountain goldenrod	PerF	Wide	
Compositae (Asteraceae)	<i>Solidago nana</i>		baby goldenrod	PerF	Wide	
Compositae (Asteraceae)	<i>Solidago parryi</i>	<i>Haplopappus parryi</i> , <i>Oreochrysum parryi</i>	Parry's goldenweed	PerF	Wide	
Compositae (Asteraceae)	<i>Sonchus arvensis</i>	<i>S. arvensis</i> var. <i>arvensis</i>	field sow-thistle	PerF	Intro	Native to Europe
Compositae (Asteraceae)	<i>Tetradymia canescens</i>		spineless horsebrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Xanthium strumarium</i> var. <i>canadense</i>	<i>X. pensylvanicum</i> , <i>X. saccharatum</i> ; vars. not recognized in <i>Flora of North America</i> (2006).	rough cocklebur	AnnF	Wide	
Crassulaceae	<i>Sedum lanceolatum</i>	<i>Amerosedum lanceolatum</i> ; includes ssp. <i>lanceolatum</i> & <i>subalpinum</i>	lance-leaved stonecrop	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Arabis drummondii</i>	<i>Boechea angustifolia</i> , <i>B. drummondii</i> , <i>B. stricta</i>	Drummond's rockcress	PerF	Wide	

**Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Cruciferae (Brassicaceae)	<i>Arabis glabra</i> var. <i>glabra</i>	<i>Turritis glabra</i> ; vars. not recognized in Holmgren et al. (2005)	tower-mustard	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Arabis microphylla</i> var. <i>microphylla</i>	<i>Boechera microphylla</i> var. <i>microphylla</i>	small-leaf rockcress	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Barbarea orthoceras</i>		northern wintercress	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Camelina microcarpa</i>		little-pod false flax	AnnF	Intro	Native to Asia
Cruciferae (Brassicaceae)	<i>Cardamine breweri</i>	Includes vars. <i>breweri</i> & <i>leibergii</i>	Brewer's bittercress	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Cardamine cordifolia</i> var. <i>cordifolia</i>		heartleaf bittercress	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Chlorocrambe hastatus</i>	<i>Chlorocrambe hastata</i>	spearhead	PerF	Disj	
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>filipes</i>	<i>D. incisa</i> var. <i>filipes</i>	western tansy-mustard	AnnF	Wide	
Cruciferae (Brassicaceae)	<i>Draba aurea</i>		golden draba	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Draba cuneifolia</i> var. <i>cuneifolia</i>		wedgeleaf draba	AnnF	Wide	
Cruciferae (Brassicaceae)	<i>Draba nemorosa</i>		woods draba	AnnF	Intro	Native to Eurasia
Cruciferae (Brassicaceae)	<i>Draba oligosperma</i> var. <i>oligosperma</i>	<i>D. oligosperma</i>	few-seed whitlow-grass	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Draba stenoloba</i> var. <i>nana</i>	<i>D. albertina</i>	slender whitlow-grass	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Erysimum cheiranthoides</i>	<i>E. cheiranthoides</i> ssp. <i>altum</i>	worm-seed wallflower	PerF	Wide	Sometimes considered adventive from Europe (at least in part)
Cruciferae (Brassicaceae)	<i>Lepidium densiflorum</i> var. <i>densiflorum</i>	Includes var. <i>macrocarpum</i>	prairie pepperwort	AnnF	Wide	
Cruciferae (Brassicaceae)	<i>Lepidium montanum</i> var. <i>Jonesii</i>		Jones' pepperwort	PerF	Wide	
Cruciferae (Brassicaceae)	<i>Physaria utahensis</i>	<i>Lesquerella utahensis</i>	Utah bladderpod	PerF		Type locality is American Fork Canyon, Utah Co., UT (Jones 1354 NY)

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Cruciferae (Brassicaceae)	<i>Rorippa curvipes</i> var. <i>curvipes</i>	<i>R. curvipes</i>	blunt-leaf yellowcress	PerF	Wide	
Cyperaceae	<i>Carex aquatilis</i>	<i>C. aquatilis</i> var. <i>aquatilis</i>	water sedge	PerG	Wide	
Cyperaceae	<i>Carex aurea</i>	<i>C. garberi</i>	golden sedge	PerG	Wide	
Cyperaceae	<i>Carex disperma</i>		soft-leaved sedge	PerG	Wide	
Cyperaceae	<i>Carex geyeri</i>		elk sedge	PerG	Wide	
Cyperaceae	<i>Carex microptera</i>	<i>C. microptera</i> var. <i>microptera</i> , <i>C. festivella</i> , <i>C. macloviana</i> var. <i>microptera</i>	small-wing sedge	PerG	Wide	
Cyperaceae	<i>Carex nebrascensis</i>		Nebraska sedge	PerG	Wide	
Cyperaceae	<i>Carex pellita</i>	<i>C. lanuginosa</i>	woolly sedge	PerG	Wide	
Cyperaceae	<i>Carex praeegracilis</i>		blackcreeper sedge	PerG	Wide	
Cyperaceae	<i>Carex rossii</i>	<i>C. deflexa</i> var. <i>boottii</i> , <i>C. brevipes</i> , <i>C. pityophila</i>	Ross' sedge	PerG	Wide	
Cyperaceae	<i>Carex utriculata</i>	<i>Carex rostrata</i> (sensu lato)	beaked sedge	PerG	Wide	
Cyperaceae	<i>Carex valliscola</i>		valley sedge	PerG	Wide	
Cyperaceae	<i>Eleocharis acicularis</i>		slender spikerush	PerG	Wide	
Cyperaceae	<i>Eleocharis palustris</i>	Includes <i>E. macrostachya</i> , <i>E. erythropoda</i> , & <i>E. uniglumis</i>	common spikerush	PerG	Wide	
Elaeagnaceae	<i>Shepherdia canadensis</i>		Canada buffaloberry	Shrub	Wide	
Equisetaceae	<i>Equisetum arvense</i>		field horsetail	Fern	Wide	
Euphorbiaceae	<i>Chamaesyce serpyllifolia</i>	<i>Euphorbia serpyllifolia</i>	thyme-leaved spurge	AnnF	Wide	
Euphorbiaceae	<i>Euphorbia brachycera</i>	<i>E. robusta</i> , <i>E. brachycera</i> var. <i>robusta</i> , <i>Tithymalus brachyceras</i>	shorthorn spurge	PerF	Wide	
Fumariaceae	<i>Corydalis aurea</i> var. <i>occidentalis</i>	<i>C. curvisiliqua</i> ssp. <i>occidentalis</i>	golden corydalis	PerF	Wide	
Gentianaceae	<i>Gentiana amarella</i>	<i>Gentiana amarella</i> , <i>Gentiana amarella</i> ssp. <i>acuta</i> , <i>Gentiana amarella</i> var. <i>amarella</i> , <i>Gentiana acuta</i>	northern gentian	PerF	Wide	
Gentianaceae	<i>Swertia radiata</i>	<i>Frasera speciosa</i>	elkweed	PerF	Wide	
Geraniaceae	<i>Geranium richardsonii</i>		Richardson's crane's-bill	PerF	Wide	
Geraniaceae	<i>Geranium viscosissimum</i> var. <i>incisum</i>	<i>G. viscosissimum</i> var. <i>nervosum</i>	sticky crane's-bill	PerF	Wide	
Gramineae (Poaceae)	<i>Agrostis exarata</i>		spike bentgrass	PerG	Wide	



**Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Gramineae (Poaceae)	<i>Agrostis scabra</i>	<i>A. hiemalis</i> , <i>A. geminata</i>	ticklegass	PerG	Wide	
Gramineae (Poaceae)	<i>Agrostis stolonifera</i>	<i>A. alba</i> , <i>A. gigantea</i>	redtop	PerG	Intro	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Alopecurus aequalis</i>	<i>A. aequalis</i> var. <i>aequalis</i>	shortawn foxtail	PerG	Wide	
Gramineae (Poaceae)	<i>Aristida purpurea</i>	<i>A. glauca</i> , <i>A. purpurea</i> var. <i>fendleriana</i> , <i>A. fendleriana</i> , <i>A. purpurea</i> var. <i>longiseta</i>	purple three-awn	PerG	Wide	
Gramineae (Poaceae)	<i>Arrhenatherum elatius</i>		tall oatgrass	PerG	Intro	Native to Eurasia
Gramineae (Poaceae)	<i>Bromus anomalus</i>	<i>Bromus frondosus</i> , <i>Bromus porteri</i> , <i>Bromopsis porteri</i> . According to <i>Flora of North America</i> (2007), material ascribed to <i>B. anomalus</i> in regional floras is mostly <i>B. porteri</i> or <i>B. lanatipes</i> .	nodding brome	PerG	Wide	
Gramineae (Poaceae)	<i>Bromus ciliatus</i>	Includes vars. <i>ciliatus</i> & <i>richardsonii</i> , <i>Bromopsis canadensis</i>	fringed brome	PerG	Wide	
Gramineae (Poaceae)	<i>Calamagrostis scopulorum</i>		Jones' reedgrass	PerG	Wide	Type locality is Springdale, Washington Co., UT (Jones 6075 POM)
Gramineae (Poaceae)	<i>Calamagrostis stricta</i>	<i>C. neglecta</i> , <i>C. inexpansa</i>	slimstem reedgrass	PerG	Wide	
Gramineae (Poaceae)	<i>Catabrosa aquatica</i>		brookgrass	PerG	Wide	
Gramineae (Poaceae)	<i>Cinna latifolia</i>		drooping woodreed	PerG	Wide	
Gramineae (Poaceae)	<i>Deschampsia cespitosa</i>	<i>D. caespitosa</i>	tufted hairgrass	PerG	Wide	
Gramineae (Poaceae)	<i>Deschampsia elongata</i>		slender hairgrass	PerG	Wide	
Gramineae (Poaceae)	<i>Elymus canadensis</i>	<i>E. canadensis</i> var. <i>canadensis</i>	Canada wildrye	PerG	Wide	
Gramineae (Poaceae)	<i>Elymus cinereus</i>	<i>Leymus cinereus</i>	Great Basin wildrye	PerG	Wide	
Gramineae (Poaceae)	<i>Elymus glaucus</i>	<i>E. glaucus</i> var. <i>glaucus</i>	blue wildrye	PerG	Wide	
Gramineae (Poaceae)	<i>Festuca ovina</i> var. <i>ingrata</i>	<i>F. idahoensis</i>	Idaho fescue	PerG	Wide	
Gramineae (Poaceae)	<i>Festuca ovina</i> var. <i>saximontana</i>	<i>F. ovina</i> var. <i>rydbergii</i> , <i>F. saximontana</i>	Rocky Mountain fescue	PerG	Wide	
Gramineae (Poaceae)	<i>Festuca pratensis</i>	<i>Lolium pratense</i> , <i>Schedonorus pratensis</i>	meadow fescue	PerG	Intro	Native to Eurasia
Gramineae (Poaceae)	<i>Glyceria striata</i>	Includes <i>G. elata</i>	fowl mannagrass	PerG	Wide	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Gramineae (Poaceae)	<i>Hordeum brachyantherum</i>	<i>Critesion brachyantherum</i>	meadow barley	PerG	Wide	
Gramineae (Poaceae)	<i>Hordeum jubatum</i>	<i>Critesion jubatum</i>	foxtail barley	PerG	Wide	
Gramineae (Poaceae)	<i>Koeleria macrantha</i>	<i>K. cristata</i> , <i>K. pyramidata</i> , <i>K. nitida</i>	junegrass	PerG	Wide	
Gramineae (Poaceae)	<i>Lolium perenne</i>		perennial ryegrass	PerG	Intro	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Muhlenbergia richardsonis</i>		mat muhly	PerG	Wide	
Gramineae (Poaceae)	<i>Phleum pratense</i>		timothy	PerG	Intro	Native to Eurasia
Gramineae (Poaceae)	<i>Poa annua</i>		annual bluegrass	AnnG	Intro	Native to Eurasia and W North America
Gramineae (Poaceae)	<i>Poa arnowiae</i>	<i>P. curta</i>	Wasatch bluegrass	PerG	Wide	
Gramineae (Poaceae)	<i>Poa glauca</i> var. <i>glauca</i>	<i>P. nemoralis</i> ssp. <i>interior</i> , <i>P. interior</i>	interior bluegrass	PerG	Wide	
Gramineae (Poaceae)	<i>Poa nervosa</i> var. <i>wheeleri</i>	<i>P. wheeleri</i>	Wheeler bluegrass	PerG	Wide	
Gramineae (Poaceae)	<i>Poa palustris</i>		fowl bluegrass	PerG	Wide	
Gramineae (Poaceae)	<i>Setaria glauca</i>	<i>S. pumila</i> ssp. <i>pumila</i> , <i>Pennisetum glaucum</i>	yellow bristlegrass	PerG	Intro	Native to Eurasia
Gramineae (Poaceae)	<i>Sphenopholis obtusata</i>	<i>S. obtusata</i> var. <i>obtusata</i>	prairie wedgrass	PerG	Wide	
Gramineae (Poaceae)	<i>Stipa comata</i> var. <i>comata</i>	<i>Hesperostipa comata</i> var. <i>comata</i>	needle-and-thread	PerG	Wide	
Gramineae (Poaceae)	<i>Trisetum spicatum</i>	Includes ssp. <i>alaskanum</i> & <i>congdonii</i> , <i>T. montanum</i>	spike trisetum	PerG	Wide	
Guttiferae (Hypericaceae)	<i>Hypericum formosum</i>	<i>H. scouleri</i> , <i>H. formosum</i> var. <i>scouleri</i>	western St. John's-wort	PerF	Wide	
Hydrophyllaceae	<i>Hydrophyllum occidentale</i> var. <i>watsonii</i>	<i>H. occidentale</i>	western waterleaf	PerF	Wide	Type locality is Wasatch Mountains, Utah (Watson 866)
Hydrophyllaceae	<i>Phacelia hastata</i>	Includes vars. <i>hastata</i> , <i>leucophylla</i> , & <i>alpina</i>	lancheaf phacelia	PerF	Wide	
Hydrophyllaceae	<i>Phacelia heterophylla</i>	Includes ssp. <i>heterophylla</i> & var. <i>virgata</i>	wand phacelia	PerF	Wide	
Hydrophyllaceae	<i>Phacelia linearis</i>		narrow-leaved phacelia	AnnF	Wide	
Iridaceae	<i>Sisyrinchium idahoense</i>	<i>S. idahoense</i> var. <i>occidentale</i>	Idaho blue-eyed grass	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Juncaceae	<i>Juncus arcticus</i>	<i>J. arcticus</i> var. <i>balticus</i> , <i>J. arcticus</i> ssp. <i>ater</i> , <i>J. balticus</i> var. <i>montanus</i> , includes var. <i>mexicanus</i>	Baltic rush	PerG	Wide	
Juncaceae	<i>Juncus bufonius</i>	Includes vars. <i>bufonius</i> , <i>occidentalis</i> , <i>halophilus</i> , & <i>ambiguus</i>	toad rush	AnnG	Wide	
Juncaceae	<i>Juncus confusus</i>		perplexing rush	PerG	Wide	
Juncaceae	<i>Juncus ensifolius</i> var. <i>montanus</i>	<i>J. saximontanus</i> ; includes <i>J. tracyi</i> , <i>J. xiphoides</i>	mountain rush	PerG	Wide	
Juncaceae	<i>Juncus longistylus</i>		longstyle rush	PerG	Wide	
Labiatae (Lamiaceae)	<i>Dracocephalum parviflorum</i>	<i>Moldavica parviflora</i>	smallflower dragonhead	PerF	Wide	
Labiatae (Lamiaceae)	<i>Prunella vulgaris</i> var. <i>lanceolata</i>		self-heal	PerF	Wide	
Labiatae (Lamiaceae)	<i>Scutellaria galericulata</i>	<i>S. galericulata</i> var. <i>epilobifolia</i>	little skullcap	PerF	Wide	
Leguminosae (Fabaceae)	<i>Astragalus kentrophyta</i> var. <i>tegetarius</i>	<i>Astragalus kentrophyta</i> var. <i>implexus</i>	mountain kentrophyta	PerF	Wide	
Leguminosae (Fabaceae)	<i>Astragalus miser</i> var. <i>oblongifolius</i>		Rydberg's weedy milkvetch	PerF	Wide	
Leguminosae (Fabaceae)	<i>Astragalus utahensis</i>		Utah milkvetch	PerF	Wide	Type locality is Stansbury Island, Tooele Co., UT (Stansbury s.n. NY)
Leguminosae (Fabaceae)	<i>Hedysarum boreale</i> var. <i>boreale</i>	Includes var. <i>pabulare</i>	northern sweetvetch	PerF	Wide	
Leguminosae (Fabaceae)	<i>Lupinus argenteus</i> var. <i>argenteus</i>		silvery lupine	PerF	Wide	
Leguminosae (Fabaceae)	<i>Meilottus alba</i>	<i>M. albus</i> ; included in <i>M. officinalis</i> by some authors	white sweet-clover	AnnF	Intro	Native to Europe
Leguminosae (Fabaceae)	<i>Thermopsis montana</i>	<i>T. pinetorum</i> , <i>T. rhombifolia</i> var. <i>montana</i> , includes <i>T. rhombifolia</i> var. <i>ovata</i>	montane golden pea	PerF	Wide	
Leguminosae (Fabaceae)	<i>Trifolium hybridum</i>		alsike clover	PerF	Intro	Native to Europe
Leguminosae (Fabaceae)	<i>Trifolium longipes</i> var. <i>reflexum</i>		Wind River clover	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Liliaceae	<i>Erythronium grandiflorum</i>	<i>E. grandiflorum</i> var. <i>grandiflorum</i>	glacier-lily	PerF	Wide	
Liliaceae	<i>Fritillaria atropurpurea</i>		leopard-lily	PerF	Wide	
Liliaceae	<i>Fritillaria pudica</i>		yellow-bell	PerF	Wide	
Liliaceae (Convallariaceae or Ruscaceae)	<i>Smilacina stellata</i>	<i>Maianthemum stellatum</i>	starry false Solomon's-seal	PerF	Wide	
Liliaceae (Melanthiaceae)	<i>Zigadenus elegans</i>	<i>Anticlea elegans</i>	mountain death camas	PerF	Wide	
Loasaceae	<i>Mentzelia laevicaulis</i>	<i>Nuttallia laevicaulis</i>	giant blazingstar	PerF	Wide	
Malvaceae	<i>Iliamna rivularis</i>	Includes vars. <i>diversa</i> & <i>rivularis</i>	wild hollyhock	PerF	Wide	
Malvaceae	<i>Sidalcea oregana</i> var. <i>oregana</i>		Oregon checker-mallow	PerF	Wide	
Malvaceae	<i>Sphaeralcea coccinea</i>	Includes ssp. <i>coccinea</i> , <i>elata</i> , & <i>dissecta</i>	scarlet globe-mallow	PerF	Wide	
Malvaceae	<i>Sphaeralcea munroana</i>	Includes ssp. <i>munroana</i> & <i>subrhomboidea</i>	white-stem globe-mallow	PerF	Wide	
Onagraceae	<i>Circaea alpina</i> var. <i>pacifica</i>		small enchanter's-nightshade	PerF	Wide	
Onagraceae	<i>Clarkia rhomboidea</i>		broad-leaved clarkia	AnnF	Wide	
Onagraceae	<i>Epilobium angustifolium</i> var. <i>canescens</i>	<i>Chamerion angustifolium</i> var. <i>canescens</i> , <i>C. angustifolium</i> ssp. <i>circumvagum</i> , <i>C. danielsii</i>	fireweed	PerF	Wide	
Onagraceae	<i>Epilobium ciliatum</i>	<i>E. ciliatum</i> var. <i>ciliatum</i> , <i>E. watsonii</i> , <i>E. adenocaulon</i>	northern willow-herb	PerF	Wide	
Onagraceae	<i>Epilobium hornemannii</i> var. <i>hornemannii</i>		Hornemann's willow-herb	PerF	Wide	
Onagraceae	<i>Epilobium saximontanum</i>		Rocky Mountain willow-herb	PerF	Wide	
Onagraceae	<i>Gaura parviflora</i>	<i>G. mollis</i>	small-flowered gaura	AnnF	Wide	
Onagraceae	<i>Gayophytum diffusum</i> var. <i>strictipes</i>	<i>G. diffusum</i> ssp. <i>parviflorum</i> , <i>G. lasiospermum</i>	diffuse groundsmoke	AnnF	Wide	
Onagraceae	<i>Gayophytum racemosum</i>		raceme groundsmoke	AnnF	Wide	
Onagraceae	<i>Oenothera caespitosa</i> var. <i>caespitosa</i>		tufted evening-primrose	PerF	Wide	
Orchidaceae	<i>Coralorrhiza maculata</i>	<i>C. maculata</i> var. <i>maculata</i>	spotted coral-root	PerF	Wide	
Orchidaceae	<i>Goodyera oblongifolia</i>		giant rattlesnake-plantain	PerF	Wide	

**Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Orchidaceae	<i>Habenaria dilatata</i> var. <i>leucostachys</i>	<i>Platanthera dilatata</i> var. <i>leucostachys</i> , <i>P. leucostachys</i>	Lindley's white bog-orchid	PerF	Wide	
Orchidaceae	<i>Habenaria hyperborea</i>	<i>Limnorchis hyperborea</i> , <i>Platanthera hyperborea</i> . Includes <i>P. aquilonis</i> , <i>P. huronensis</i>	northern bog orchid	PerF	Wide	
Orobanchaceae	<i>Orobanche corymbosa</i>		flat-topped broomrape	PerF	Wide	
Pinaceae	<i>Abies lasiocarpa</i>	<i>A. bifolia</i>	subalpine fir	Tree	Wide	
Pinaceae	<i>Picea engelmannii</i>		Engelmann spruce	Tree	Wide	
Pinaceae	<i>Picea pungens</i>		blue spruce	Tree	Wide	State tree of Utah and Colorado
Polemoniaceae	<i>Linanthus septentrionalis</i>	<i>Leptosiphon septentrionalis</i> , <i>Linanthus harknessii</i> var. <i>septentrionalis</i>	northern linanthus	AnnF	Wide	
Polemoniaceae	<i>Polemonium caeruleum</i> var. <i>pterospermum</i>	<i>P. occidentale</i> , <i>P. caeruleum</i> ssp. <i>amygdalinum</i>	western Jacob's-ladder	PerF	Wide	
Polygonaceae	<i>Eriogonum heracleoides</i>	<i>E. heracleoides</i> var. <i>heracleoides</i>	whorled wild buckwheat	PerF	Wide	
Polygonaceae	<i>Eriogonum ovalifolium</i>	Includes vars. <i>ovalifolium</i> & <i>purpureum</i>	cushion wild buckwheat	PerF	Wide	
Polygonaceae	<i>Rumex obtusifolius</i>		bitter dock	PerF	Intro	Native to Eurasia
Polygonaceae	<i>Rumex salicifolius</i> ssp. <i>triangulivalvis</i>	<i>R. mexicanus</i> , <i>R. salicifolius</i> var. <i>mexicanus</i> , <i>R. utahensis</i> , <i>R. triangulivalvis</i> var. <i>mexicanus</i> , <i>R. triangulivalvis</i> var. <i>montigenitus</i> .	willow dock	PerF	Wide	
Polypodiaceae (Aspleniaceae)	<i>Asplenium viride</i>	<i>A. trichomanes-ramosum</i>	green spleenwort	Fern	Periph	
Polypodiaceae (Adiantaceae)	<i>Cheilanthes feei</i>		slender lip-fern	Fern	Wide	
Polypodiaceae (Dennstaedtiaceae)	<i>Pteridium aquilinum</i> var. <i>pubescens</i>	<i>P. aquilinum</i> var. <i>lanuginosum</i>	bracken fern	Fern	Wide	
Polypodiaceae (Aspleniaceae)	<i>Woodsia oregana</i>	<i>W. oregana</i> ssp. <i>oregana</i>	Oregon woodsia	Fern	Periph	
Portulacaceae	<i>Claytonia lanceolata</i>	<i>C. lanceolata</i> var. <i>lanceolata</i> , includes <i>C. rosea</i>	lanceleaf springbeauty	PerF	Wide	
Portulacaceae	<i>Montia chamissoi</i>	<i>Crunocallis chamissoi</i>	Chamisso's candy-flower	PerF	Wide	
Potamogetonaceae	<i>Potamogeton pectinatus</i>	<i>Stuckenia pectinata</i> , <i>Coleogeton pectinatus</i>	fennel-leaf pondweed	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Primulaceae	<i>Androsace septentrionalis</i>	Includes ssp. <i>puberulenta</i> , <i>subumbellata</i> , & var. <i>subulifera</i>	pygmy-flower rock-jasmine	AnnF	Wide	
Primulaceae	<i>Dodecatheon pulchellum</i> var. <i>pulchellum</i>	<i>D. pauciflorum</i> . Includes "subvars" from UT Flora <i>coriaceum</i> , <i>atwoodii</i> , & <i>huberi</i>	dark-throat shooting-star	PerF	Wide	
Ranunculaceae (Helleboraceae)	<i>Aconitum columbianum</i> var. <i>columbianum</i>	Includes var. <i>ochroleucum</i>	Columbian monkshood	PerF	Wide	
Ranunculaceae	<i>Clematis occidentalis</i> var. <i>grosseserrata</i>	<i>Atragene occidentalis</i>	purple virgin's-bower	PerF	Wide	
Ranunculaceae (Helleboraceae)	<i>Delphinium occidentale</i>	Hybrid of <i>D. glaucum</i> x <i>D. barbeyi</i> , <i>D. glaucum</i>	western larkspur	PerF	Wide	
Ranunculaceae	<i>Ranunculus cymbalaria</i>	<i>Halerpestes cymbalaria</i> ssp. <i>saximontana</i> , <i>R. cymbalaria</i> var. <i>cymbalaria</i> . Vars. not recognized in Flora of North America (1997)	marsh buttercup	PerF	Wide	
Ranunculaceae	<i>Ranunculus inamoenus</i>	<i>R. inamoenus</i> var. <i>inamoenus</i> . Includes var. <i>alpeophilus</i>	drab buttercup	PerF	Wide	
Rhamnaceae	<i>Ceanothus velutinus</i>	<i>C. velutinus</i> var. <i>velutinus</i>	deer-brush	Shrub	Wide	
Rosaceae	<i>Crataegus douglasii</i> var. <i>rivularis</i>	<i>C. rivularis</i>	river hawthorn	Shrub	Wide	
Rosaceae	<i>Fragaria vesca</i> var. <i>bracteata</i>	<i>F. vesca</i>	woodland strawberry	PerF	Wide	
Rosaceae	<i>Fragaria virginiana</i>	Includes ssp. <i>glauca</i> & <i>platypetala</i>	Virginia strawberry	PerF	Wide	
Rosaceae	<i>Geum macrophyllum</i> var. <i>perincisum</i>		large-leaved avens	PerF	Wide	
Rosaceae	<i>Potentilla arguta</i> var. <i>convallaria</i>	<i>Drymocalis arguta</i> , includes ssp. <i>arguta</i>	tall cinquefoil	PerF	Wide	
Rosaceae	<i>Potentilla concinna</i> var. <i>modesta</i>	<i>P. concinna</i> . Combined with <i>P. rubricaulis</i> in Holmgren et al. (1997)	modest cinquefoil	PerF	RegEn	
Rosaceae	<i>Potentilla fruticosa</i>	<i>Pentaphylloides fruticosa</i> , <i>Pentaphylloides floribunda</i> , <i>Dasiphora fruticosa</i> ssp. <i>floribunda</i> , <i>D. floribunda</i>	shrubby cinquefoil	Shrub	Wide	
Rosaceae	<i>Potentilla gracilis</i> var. <i>elmeri</i>	<i>P. pectinisecta</i>	comb-leaf cinquefoil	PerF	Wide	
Rosaceae	<i>Potentilla gracilis</i> var. <i>pulcherrima</i>	<i>P. pulcherrima</i>	beautiful cinquefoil	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Rosaceae	<i>Potentilla norvegica</i>	<i>P. norvegica</i> ssp. <i>monspeliensis</i>	Norwegian cinquefoil	AnnF	Intro	Native to Europe and possibly E North America
Rosaceae	<i>Purshia tridentata</i>		antelope bitterbrush	Shrub	Wide	
Rosaceae	<i>Rosa nutkana</i> var. <i>hispidata</i>		Nootka rose	Shrub	Wide	
Rosaceae	<i>Rubus parviflorus</i> var. <i>parviflorus</i>	<i>Rubacer parviflorum</i>	western thimbleberry	Shrub	Wide	
Rubiaceae	<i>Galium trifidum</i>	Includes ssp. <i>columbianum</i> , <i>trifidum</i> & <i>subbiflorum</i>	small bedstraw	PerF	Wide	
Salicaceae	<i>Populus tremulooides</i>		quaking aspen	Tree	Wide	
Salicaceae	<i>Salix bebbiana</i>		Bebb's willow	Shrub	Wide	
Salicaceae	<i>Salix eriocephala</i> var. <i>watsonii</i>	<i>S. lutea</i> , <i>S. rigida</i> var. <i>watsonii</i>	yellow willow	Shrub	Wide	
Salicaceae	<i>Salix exigua</i> var. <i>stenophylla</i>	<i>S. exigua</i> var. <i>exigua</i>	coyote willow	Shrub	Wide	
Salicaceae	<i>Salix geyeriana</i>		Geyer's willow	Shrub	Wide	
Salicaceae	<i>Salix scouleriana</i>		Scouler's willow	Shrub	Wide	
Santalaceae	<i>Comandra umbellata</i> var. <i>pallida</i>	<i>C. pallida</i>	bastard toadflax	PerF	Wide	
Saxifragaceae	<i>Darmera peltata</i>		umbrella plant	PerF	Intro	Native to NW North America. If native, UT population is disjunct.
Saxifragaceae	<i>Mitella pentandra</i>		fivestar mitrewort	PerF	Wide	
Saxifragaceae	<i>Saxifraga odontoloma</i>	<i>S. arguta</i> , <i>Micranthes odontoloma</i>	brook saxifrage	PerF	Wide	
Scrophulariaceae	<i>Castilleja miniata</i>		scarlet paintbrush	PerF	Wide	
Scrophulariaceae	<i>Mimulus guttatus</i>		yellow monkeyflower	PerF	Wide	
Scrophulariaceae	<i>Penstemon cyananthus</i> var. <i>judyae</i>		Judy's penstemon	PerF	LocEn	Type locality is Mt. Timpanogos, ca 1/3 miles NE of Emerald Lake, Utah Co., UT (Atwood 21831 BRY)
Scrophulariaceae	<i>Penstemon leonardii</i> var. <i>leonardii</i>		Leonard's penstemon	PerF	RegEn	Type locality is Diehl's Grove, Wasatch Mountains, Salt Lake Co., UT (Leonard 179 NY)

Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Scrophulariaceae	<i>Penstemon sepalulus</i>		littlecup penstemon	PerF	LocEn	Type locality is Provo Canyon, Utah Co., UT (Watson 786 GH)
Scrophulariaceae	<i>Penstemon subglaber</i>		Utah smooth penstemon	PerF	RegEn	Type locality is Pack's Canyon, Uinta Mountains (Watson 771 GH)
Scrophulariaceae	<i>Penstemon whippleanus</i>		Whipple's penstemon	PerF	Wide	
Scrophulariaceae	<i>Veronica americana</i>		American brooklime	PerF	Wide	
Scrophulariaceae	<i>Veronica anagallis-aquatica</i>		water speedwell	PerF	Intro	Native to Europe
Scrophulariaceae	<i>Veronica peregrina</i> var. <i>xalapensis</i>		purslane speedwell	AnnF	Wide	
Selaginellaceae	<i>Selaginella watsonii</i>		Watson's spike-moss	Fern	Wide	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson 2370 US)
Solanaceae	<i>Nicotiana attenuata</i>		coyote tobacco	AnnF	Wide	
Solanaceae	<i>Physalis longifolia</i>	<i>P. virginiana</i> var. <i>sonorae</i>	long-leaf ground-cherry	PerF	Wide	
Solanaceae	<i>Solanum sarrachoides</i>	<i>S. villosum</i> , <i>S. physalifolium</i> var. <i>nitidibaccatum</i>	ground-cherry nightshade	AnnF	Intro	Native to South America
Solanaceae	<i>Solanum triflorum</i>		cut-leaf nightshade	AnnF	Wide	Native to C North America, may be adventive in UT.
Ulmaceae (Celtidaceae)	<i>Celtis reticulata</i>	<i>C. laevigata</i> var. <i>reticulata</i>	netleaf hackberry	Tree	Wide	
Ulmaceae	<i>Ulmus pumila</i>		Siberian elm	Tree	Intro	Native to Asia
Umbelliferae (Apiaceae)	<i>Angelica pinnata</i>		pinnate angelica	PerF	Wide	Type locality is Uinta Mountains, Summit Co., UT (Watson 458 GH)
Umbelliferae (Apiaceae)	<i>Angelica wheeleri</i>		Utah angelica	PerF	RegEn	Type locality is City Creek Canyon, Salt Lake Co., UT (Garrett 2127 RM). USFWS: 3C.
Umbelliferae (Apiaceae)	<i>Berula erecta</i> var. <i>incisa</i>		cutleaf water-parsnip	PerF	Wide	
Umbelliferae (Apiaceae)	<i>Cicuta maculata</i> var. <i>angustifolia</i>	<i>C. douglasii</i> , <i>C. occidentalis</i>	water-hemlock	PerF	Wide	



**Appendix B. Potential (unconfirmed) taxa of Timpanogos Cave National Monument, cont.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Umbelliferae (Apiaceae)	<i>Heracleum lanatum</i>	<i>H. maximum</i> , <i>H. sphondylium</i> var. <i>lanatum</i> , <i>H. sphondylium</i> ssp. <i>montanum</i>	cow parsnip	PerF	Wide	
Umbelliferae (Apiaceae)	<i>Ligusticum filicinum</i>		fernleaf ligusticum	PerF	Wide	Type locality is Uinta Mountains, Summit Co., UT (Watson 454 GH)
Umbelliferae (Apiaceae)	<i>Lomatium graveolens</i> var.		stinking lomatium	PerF	RegEn	Type locality is Wasatch Mountains, UT (Watson 463 US)
Umbelliferae (Apiaceae)	<i>Lomatium triternatum</i> ssp. <i>platycarpum</i>	<i>L. simplex</i> var. <i>simplex</i>	flat-seed lomatium	PerF	Wide	Type locality is Great Salt Lake (Stansbury s.n. NY)
Umbelliferae (Apiaceae)	<i>Orogenia linearifolia</i>		Indian-potato	PerF	Wide	Type locality is N of Parley's Park, Summit Co., UT (Watson 440 US)
Umbelliferae (Apiaceae)	<i>Osmorhiza occidentalis</i>		western sweet-cicely	PerF	Wide	
Umbelliferae (Apiaceae)	<i>Perideridia montana</i> var. <i>borealis</i>	<i>P. gairdneri</i> ssp. <i>borealis</i>	common yampah	PerF	Wide	
Valerianaceae	<i>Valeriana acutiloba</i>	<i>V. acutiloba</i> var. <i>acutiloba</i> , <i>V. capitata</i> var. <i>acutiloba</i> ; includes var. <i>pubicarpa</i> (Holmgren et al. 1984)	mountain valerian	PerF	Wide	Type locality of var. <i>pubicarpa</i> is Mt. Nebo, Juab Co., UT (Rydberg & Carlton 7717 NY)
Valerianaceae	<i>Valeriana edulis</i>		tobacco-root	PerF	Wide	
Verbenaceae	<i>Verbena bracteata</i>		prostrate vervain	PerF	Wide	
Verbenaceae	<i>Verbena hastata</i>		blue vervain	PerF	Wide	
Violaceae	<i>Viola adunca</i>		hook-spur violet	PerF	Wide	
Violaceae	<i>Viola canadensis</i>	<i>V. canadensis</i> var. <i>rugulosa</i> , <i>V. scopulorum</i> , <i>V. rydbergii</i>	Canadian white violet	PerF	Wide	
Violaceae	<i>Viola nuttallii</i> var. <i>major</i>	<i>V. nuttallii</i> var. <i>praemorsa</i> , <i>V. praemorsa</i> ssp. <i>lingulifolia</i> , <i>V. praemorsa</i> ssp. <i>major</i> , <i>V. praemorsa</i> var. <i>altior</i>	upland yellow violet	PerF	Wide	
Violaceae	<i>Viola purpurea</i> var. <i>venosa</i>		goose-foot violet	PerF	Wide	

The vascular plant species listed here are known from the vicinity of Timpanogos Cave National Monument, Utah County, Utah, but have not previously been reported or confirmed for the monument. Species on this list are derived from a checklist of potential species for NCPN parks prepared by Dr. N. Duane Atwood of Brigham Young University in 2001, the *Atlas of the Vascular Flora of Utah* (Albee et al. 1988), and Allred (1975). Some species from Appendix C could be considered as potentially occurring in the monument, but are not included here.

**Appendix C. Rejected (falsely reported or questionable) taxa of Timpanogos Cave National Monument.**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Park status	Comments
Apocynaceae	<i>Apocynum x floribundum</i>	<i>A. x medium</i>	hybrid dogbane	PerF	Sparse	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>A. androsaemifolium</i> var. <i>androsaemifolium</i> & var. <i>pumilum</i> .
Boraginaceae	<i>Hackelia patens</i> var. <i>harrisonii</i>		Harrison's stickseed	PerF	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>H. patens</i> var. <i>patens</i> . Type locality is Pine Valley, Washington Co., UT (Gentry 2002 NY).
Compositae (Asteraceae)	<i>Ambrosia acanthicarpa</i>	<i>Franseria acanthicarpa</i>	bur ragweed	AnnF	Wide	FalsRep	Report from TICA herbarium based on a misidentified specimen of <i>A. psilostachya</i> .
Compositae (Asteraceae)	<i>Balsamorhiza sagittata</i>		arrowleaf balsamroot	PerF	Wide	FalsRep	Report from TICA herbarium based on a misidentified specimen of <i>Senecio integerrimus</i> var. <i>exaltatus</i> .
Compositae (Asteraceae)	<i>Crepis modocensis</i>	<i>C. modocensis</i> ssp. <i>modocensis</i> , <i>Psilochenia modocensis</i>	Modoc hawksbeard	PerF	Wide	FalsRep	Report from TICA herbarium (Atwood, Tilley, & Cann 27709) is based on a misidentified specimen of <i>C. intermedia</i> (duplicate at BRY).
Compositae (Asteraceae)	<i>Erigeron speciosus</i> var. <i>uintahensis</i>	<i>E. uintahensis</i>	Uinta daisy	PerF	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>E. speciosus</i> var. <i>mollis</i> . Type locality is Mill Creek, Summit Co., UT (Payson 4984 RM).
Compositae (Asteraceae)	<i>Erigeron tener</i>		thin daisy	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>E. arenarioides</i> .
Compositae (Asteraceae)	<i>Haplopappus armerioides</i> var. <i>armerioides</i>	<i>Stenotus armerioides</i> var. <i>armerioides</i>	thrift goldenweed	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>H. acaulis</i> var. <i>acaulis</i> .
Compositae (Asteraceae)	<i>Tetradymia nuttallii</i>		Nuttall's horsebrush	Shrub	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>Haplopappus watsonii</i> var. <i>rydbergii</i> .
Crassulaceae	<i>Sedum stenopetalum</i>		worm-leaf stonecrop	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>S. debile</i> .
Cruciferae (Brassicaceae)	<i>Arabis holboellii</i> var. <i>secunda</i>	<i>A. holboellii</i> var. <i>retrofracta</i> , <i>Boechea holboellii</i> var. <i>secunda</i> , <i>B. retrofracta</i>	Holboell's rockcress	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>A. holboellii</i> var. <i>pinetorum</i> .

**Appendix C. Rejected (falsely reported or questionable) taxa of Timpanogos Cave National Monument, cont..**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Park status	Comments
Cruciferae (Brassicaceae)	<i>Brassica nigra</i>	<i>Sinapsis nigra</i>	black mustard	AnnF	Intro	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>B. campestris</i> . Native to Europe.
Cruciferae (Brassicaceae)	<i>Descurainia incana</i> var. <i>sonnei</i>	<i>D. richardsonii</i> var. <i>sonnei</i> , <i>D. incisa</i> var. <i>incisa</i> , <i>D. incana</i> ssp. <i>incisa</i> , <i>D. incana</i> var. <i>incana</i>	mountain tansy-mustard	AnnF	Wide	FalsRep	Report from TICA herbarium based on a incorrectly annotated collection of <i>D. californica</i> (duplicate correctly confirmed at BRV).
Cruciferae (Brassicaceae)	<i>Draba rectifructa</i>		mountain draba	AnnF	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>D. brachystylis</i> .
Cruciferae (Brassicaceae)	<i>Draba reptans</i>		dwarf draba	AnnF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>Arabis nuttallii</i> .
Cruciferae (Brassicaceae)	<i>Malcolmia africana</i>		African mustard	AnnF	Intro	FalsRep	Report from TICA herbarium based on a misidentified specimen of <i>Chorisporea tenella</i> .
Cyperaceae	<i>Carex pachystachya</i>	<i>C. macloviana</i> var. <i>pachystachya</i>	thick-head sedge	PerG	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>C. hoodii</i> .
Gramineae (Poaceae)	<i>Elymus elymoides</i>	<i>E. elymoides</i> var. <i>elymoides</i> , <i>Sitanion hystrix</i>	squirreltail	PerG	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>Setaria viridis</i> .
Gramineae (Poaceae)	<i>Elymus lanceolatus</i>	<i>E. lanceolatus</i> var. <i>lanceolatus</i> , <i>Agropyron dasystachyum</i> var. <i>dasystachyum</i> , <i>A. albicans</i> var. <i>albicans</i> , <i>A. albicans</i> var. <i>griffithsii</i>	thickspike wheatgrass	PerG	Wide	FalsRep	Report by NCPN vegetation mapping team (in ed.) based on a misidentified specimen of <i>Elymus elongatus</i> .
Gramineae (Poaceae)	<i>Stipa lettermanii</i>	<i>Achnatherum lettermanii</i>	Letterman's needlegrass	PerG	Wide	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>S. nelsonii</i> var. <i>nelsonii</i> .
Labiatae (Lamiaceae)	<i>Mentha arvensis</i> var. <i>glabrata</i>	<i>M. arvensis</i> var. <i>canadensis</i>	field mint	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>Leonurus cardiaca</i> .
Labiatae (Lamiaceae)	<i>Salvia officinalis</i>		garden sage	PerF	Intro	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>Artemisia ludoviciana</i> var. <i>ludoviciana</i> . Native to Europe.

Appendix C. Rejected (falsely reported or questionable) taxa of Timpanogos Cave National Monument, cont..

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Park status	Comments
Liliaceae (Alliaceae)	<i>Allium brandegei</i>	<i>Allium brandegeei</i>	Brandegee's onion	PerF	Wide	FalsRep	Report from TICA herbarium based on a misidentified specimen of <i>A. bisceptrum</i> .
Loasaceae	<i>Mentzelia albicaulis</i>	<i>M. obscura</i> , <i>Acrolasia albicaulis</i> , <i>A. gracilis</i>	white-stem blazingstar	AnnF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>M. dispersa</i> .
Polemoniaceae	<i>Phlox hoodii</i> var. <i>canescens</i>	Includes ssp. <i>glabrata</i> , <i>hoodii</i> , & <i>viscidula</i>	carpet phlox	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>Leptodactylon watsonii</i> . Type locality of var. <i>canescens</i> is S of Great Salt Lake, Tooele Co., UT (Beckwith 4 GH).
Polemoniaceae	<i>Phlox longifolia</i>	Includes vars. <i>longifolia</i> & <i>stansburyi</i>	long-leaf phlox	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>Cryptantha humilis</i> .
Polygonaceae	<i>Eriogonum umbellatum</i> var. <i>aureum</i>	Included in var. <i>umbellatum</i> by Welsh et al. (2003)	golden sulphur wild buckwheat	PerF	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>E. brevicaulis</i> var. <i>brevicaulis</i> .
Polygonaceae	<i>Eriogonum umbellatum</i> var. <i>umbellatum</i>		sulfur wild buckwheat	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>E. umbellatum</i> var. <i>majus</i> .
Ranunculaceae (Helleboraceae)	<i>Aquilegia coerulea</i>	<i>A. caerulea</i> , includes vars. <i>ochroleuca</i> & <i>pinetorum</i>	Colorado columbine	PerF	Wide	FalsRep	Report from TICA herbarium based on a misidentified specimen of <i>A. flavescens</i> lacking petals. Duplicate at BRU confirmed as <i>A. flavescens</i> by W. Fertig in 2007.
Rosaceae	<i>Amelanchier utahensis</i>		Utah serviceberry	Shrub	Wide	FalsRep	Report from TICA herbarium based on a misidentified specimen of <i>A. alnifolia</i> . Type locality is Toquerville, Washington Co., UT (Jones 1716 GH).
Rubiaceae	<i>Galium boreale</i>	<i>G. septentrionale</i>	northern bedstraw	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>G. aparine</i> var. <i>echinospermum</i> and <i>G. multiflorum</i> var. <i>multiflorum</i> .
Saxifragaceae	<i>Lithophragma parviflorum</i>	<i>L. parviflora</i>	smallflower woodlandstar	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>L. glabrum</i> var. <i>ramulosum</i> .
Saxifragaceae (Hydrangeaceae)	<i>Jamesia tetrapetala</i>		basin jamesia	Shrub	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>J. americana</i> var. <i>macrocalyx</i> . USFS: Region 4 Sensitive, UT BLM: Sensitive, USFWS: former C2 candidate.

**Appendix C. Rejected (falsely reported or questionable) taxa of Timpanogos Cave National Monument, cont..**

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Park status	Comments
Scrophulariaceae	<i>Penstemon fruticosus</i>		shrubby penstemon	Shrub	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>P. platyphyllus</i> . Native to Northern Rocky Mountains outside Utah.
Scrophulariaceae	<i>Penstemon montanus</i>		cord-root penstemon	PerF	RegEn	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>P. platyphyllus</i> .
Umbelliferae (Apiaceae)	<i>Lomatium ambiguum</i>		lacy lomatium	PerF	Periph	FalsRep	Report from TICA herbarium based on misidentified specimens of <i>Cymopterus longipes</i> .
Umbelliferae (Apiaceae)	<i>Osmorhiza depauperata</i>		blunt sweet-cicely	PerF	Wide	FalsRep	Report from TICA herbarium based on misidentified specimen of <i>O. chilensis</i> .

The vascular plant species listed here have been reported for Timpanogos Cave National Monument from published and unpublished literature (NGPN in ed.) or from herbarium specimens, but are now believed to be erroneous because of misidentifications (False Reports or FalsRep) or because the monument is well outside the known or expected range of the species (Questionable or Ques?).

**Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes.**

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<b>Trees</b>									
Aceraceae	<i>Acer grandidentatum</i>	bigtooth maple	Native	Pres	Apr–May	X	X		
Aceraceae	<i>Acer negundo</i>	box elder	Native	Pres	Apr–Jun			X	
Betulaceae	<i>Betula occidentalis</i>	water birch	Native	Pres	Apr–May			X	
Cupressaceae	<i>Juniperus scopulorum</i>	Rocky Mountain juniper	Native	Pres	NA	X	X	X	
Fagaceae	<i>Quercus gambelii</i> var. <i>gambelii</i>	Gambel oak	Native	Pres	Apr–Jun	X	X	X	
Juglandaceae	<i>Juglans nigra</i>	black walnut	Intro	Pres	Apr–May		X		Cultivated
Pinaceae	<i>Abies concolor</i>	white fir	Native	Pres	NA	X	X		
Pinaceae	<i>Pinus flexilis</i>	limber pine	Native	Pres	NA		X		
Pinaceae	<i>Pseudotsuga menziesii</i> var. <i>glauca</i>	Douglas-fir	Native	Pres	NA	X	X		
Rosaceae	<i>Malus pumila</i>	common apple	Intro	Pres	May				Cultivated
Rosaceae	<i>Prunus armeniaca</i>	apricot	Intro	Pres	Mar–Apr				Cultivated
Rosaceae	<i>Prunus avium</i>	sweet cherry	Intro	Pres	Apr–May	X			Cultivated
Salicaceae	<i>Populus angustifolia</i>	narrow-leaved cottonwood	Native	Pres	Apr–Jun			X	Rock outcrops
Salicaceae	<i>Populus x intercurrents</i>	lance-leaf cottonwood	Native	Pres	Apr–Jun			X	
<b>Shrubs</b>									
Aceraceae	<i>Acer glabrum</i> var. <i>glabrum</i>	Rocky Mountain maple	Native	Pres	Apr–Jun	X	X	X	
Anacardiaceae	<i>Rhus aromatica</i> var. <i>trilobata</i>	squawbush	Native	Pres	May–Jul			X	
Anacardiaceae	<i>Rhus glabra</i>	smooth sumac	Native	Pres	Jun–Jul	X	X	X	Rock outcrops
Berberidaceae	<i>Mahonia repens</i>	Oregon-grape	Native	Pres	Apr–Jun	X		X	
Caprifoliaceae (Adoxaceae)	<i>Sambucus caerulea</i>	blue elderberry	Native	Pres	May–Jul	X	X	X	
Caprifoliaceae	<i>Symphoricarpos oreophilus</i> var. <i>utahensis</i>	mountain snowberry	Native	Pres	Jun–Aug	X	X		
Celastraceae	<i>Pachystima myrsinites</i>	mountain-lover	Native	Pres	May–Aug	X	X		
Compositae (Asteraceae)	<i>Artemisia tridentata</i> var. <i>vaseyana</i>	mountain big sagebrush	Native	Pres	Jul–Sep	X	X		
Compositae (Asteraceae)	<i>Brickellia californica</i>	California brickellbush	Native	Pres	Aug–Sep	X		X	Rock outcrops
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>gnaphalodes</i>	graystem rabbitbrush	Native	Pres	Aug–Oct	X	X		Rock outcrops

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Shrubs, cont.</i>									
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>viscidiflorus</i>	green rabbitbrush	Native	Pres	Jul-Sep	X	X		
Compositae (Asteraceae)	<i>Gutierrezia sarothrae</i>	broom snakeweed	Native	Pres	Jul-Oct	X	X		
Compositae (Asteraceae)	<i>Haplopappus watsonii</i> var. <i>rydbergii</i>	Wasatch goldenbush	Native	Pres	Jul-Sep	X	X		
Compositae (Asteraceae)	<i>Sphaeromeria diversifolia</i>	differentleaf sphaeromeria	Native	Pres	Jul-Sep	X	X		Rock outcrops
Cornaceae	<i>Cornus sericea</i> var. <i>sericea</i>	red-osier dogwood	Native	Pres	May-Jul			X	
Cupressaceae	<i>Juniperus communis</i> var. <i>depressa</i>	common juniper	Native	Pres	NA	X	X		Rock outcrops
Cupressaceae	<i>Juniperus osteosperma</i>	Utah juniper	Native	Pres	NA	X			
Rosaceae	<i>Amelanchier alnifolia</i>	Saskatoon serviceberry	Native	Pres	May-Jul	X		X	
Rosaceae	<i>Cercocarpus intricatus</i>	dwarf mountain mahogany	Native	Pres	Apr-Jun	X	X		
Rosaceae	<i>Cercocarpus ledifolius</i> var. <i>intermontanus</i>	curl-leaf mountain mahogany	Native	Pres	May-Jun	X			
Rosaceae	<i>Cercocarpus montanus</i>	alder-leaf mountain mahogany	Native	Pres	May-Jun	X	X		
Rosaceae	<i>Holodiscus dumosus</i>	bush oceanspray	Native	Pres	Jun-Aug	X	X		Rock outcrops
Rosaceae	<i>Physocarpus alternans</i>	dwarf ninebark	Native	Pres	May-Aug	X	X		
Rosaceae	<i>Physocarpus malvaceus</i>	mallow-leaved ninebark	Native	Pres	Jun-Jul	X	X		
Rosaceae	<i>Physocarpus monogynus</i>	mountain ninebark	Native	Pres	Jun-Aug	X			
Rosaceae	<i>Prunus virginiana</i> var. <i>melanocarpa</i>	western chokecherry	Native	Pres	May-Jul	X	X	X	
Rosaceae	<i>Rosa woodsii</i>	Woods' rose	Native	Pres	May-Jul	X	X	X	
Rosaceae	<i>Rubus idaeus</i> var. <i>strigosus</i>	common red raspberry	Native	Pres	Jun-Aug	X	X	X	Rock outcrops
Rosaceae	<i>Sorbus scopulina</i>	rock mountain-ash	Native	Pres	Jun-Jul		X		
Saxifragaceae (Hydrangeaceae)	<i>Fendlerella utahensis</i>	Utah fendlerella	Native	Pres	Apr-Sep	X	X		Rock outcrops
Saxifragaceae (Hydrangeaceae)	<i>Jamesia americana</i> var. <i>macrocalyx</i>	Wasatch jamesia	Native	Pres	May-Sep	X	X		
Saxifragaceae (Grossulariaceae)	<i>Ribes aureum</i>	golden currant	Native	Pres	Mar-Jul	X	X	X	

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Shrubs, cont.</i>									
Saxifragaceae (Grossulariaceae)	<i>Ribes cereum</i> var. <i>inebrians</i>	wax currant	Native	Pres	Apr–Aug	X	X		
Saxifragaceae (Grossulariaceae)	<i>Ribes viscosissimum</i> var. <i>viscosissimum</i>	sticky currant	Native	Pres	May–Aug	X	X		
<b>Perennial Forbs</b>									
Apocynaceae	<i>Apocynum androsaemifolium</i> var. <i>androsaemifolium</i>	spreading dogbane	Native	Pres	Jun–Aug	X		X	
Apocynaceae	<i>Apocynum androsaemifolium</i> var. <i>pumilum</i>	spreading dogbane	Native	Pres	Jun–Aug	X	X		
Asclepiadaceae	<i>Asclepias speciosa</i>	showy milkweed	Native	Pres	May–Aug	X	X	X	Disturbed areas
Boraginaceae	<i>Cryptantha humilis</i>	dwarf cryptanth	Native	Pres	Apr–Jun	X			
Boraginaceae	<i>Cynoglossum officinale</i>	common hound's-tongue	Intro	Pres	May–Jul	X	X	X	Disturbed areas
Boraginaceae	<i>Hackelia floribunda</i>	showy stickseed	Native	Pres	Jun–Aug	X	X	X	
Boraginaceae	<i>Hackelia patens</i> var. <i>patens</i>	spotted stickseed	Native	Pres	Jun–Aug	X	X	X	
Boraginaceae	<i>Lithospermum ruderale</i>	western stoneseed	Native	Pres	Apr–Jun	X			
Caryophyllaceae	<i>Dianthus barbatus</i>	sweet William	Intro	Pres	Apr–Jul				Disturbed areas
Caryophyllaceae	<i>Saponaria officinalis</i>	bouncing-bet	Intro	Pres	May–Sep		X		Disturbed areas
Caryophyllaceae (Asteraceae)	<i>Stellaria jamesiana</i>	James' chickweed	Native	Pres	Jun–Aug	X	X		
Compositae (Asteraceae)	<i>Achillea millefolium</i> var. <i>lanulosa</i>	common yarrow	Native	Pres	May–Sep	X	X	X	Disturbed areas
Compositae (Asteraceae)	<i>Agoseris glauca</i> var. <i>laciniata</i>	cutleaf agoseris	Native	Pres	May–Sep	X	X		
Compositae (Asteraceae)	<i>Ambrosia psilostachya</i>	western ragweed	Native	Pres	Aug–Oct	X			Disturbed areas
Compositae (Asteraceae)	<i>Antennaria microphylla</i>	small-leaf pussyoes	Native	Pres	Jun–Aug		X		
Compositae (Asteraceae)	<i>Arctium minus</i>	burdock	Intro	Pres	Jul–Sep		X	X	Disturbed areas
Compositae (Asteraceae)	<i>Arnica cordifolia</i> var. <i>cordifolia</i>	heartleaf arnica	Native	Pres	May–Aug		X		



**Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.**

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Perennial Forbs, cont.</i>									
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>	Louisiana wormwood	Native	Pres	Jul–Oct	X	X	X	Rock outcrops
Compositae (Asteraceae)	<i>Aster ascendens</i>	Pacific aster	Native	Pres	Jul–Oct		X	X	Disturbed areas
Compositae (Asteraceae)	<i>Aster kingii</i> var. <i>kingii</i>	King's aster	Native	Pres	Jul–Aug	X	X	X	
Compositae (Asteraceae)	<i>Brickellia grandiflora</i>	tassel-flower brickellbush	Native	Pres	Jul–Oct	X			
Compositae (Asteraceae)	<i>Centaurea maculosa</i>	spotted knapweed	Intro	Pres	Jul–Sep				Disturbed areas
Compositae (Asteraceae)	<i>Chaenactis douglasii</i>	hoary dusty-maiden	Native	Pres	May–Sep	X	X		
Compositae (Asteraceae)	<i>Cichorium intybus</i>	chicory	Intro	Pres	Jul–Oct		X		Disturbed areas
Compositae (Asteraceae)	<i>Cirsium neomexicanum</i> var. <i>utahense</i>	Utah thistle	Native	Pres	May–Jun	X			
Compositae (Asteraceae)	<i>Cirsium vulgare</i>	bull thistle	Intro	Pres	Jul–Aug	X		X	Disturbed areas
Compositae (Asteraceae)	<i>Crepis acuminata</i>	mountain hawksbeard	Native	Pres	May–Jul	X	X		
Compositae (Asteraceae)	<i>Crepis atribarba</i>	slender hawksbeard	Native	Pres	May–Jul		X	X	
Compositae (Asteraceae)	<i>Crepis intermedia</i>	gray hawksbeard	Native	Pres	May–Jul	X			
Compositae (Asteraceae)	<i>Erigeron arenarioides</i>	Wasatch daisy	Native	Pres	Jun–Sep	X	X		Rock outcrops
Compositae (Asteraceae)	<i>Erigeron speciosus</i> var. <i>mollis</i>	hairy pretty daisy	Native	Pres	Jul–Aug	X			
Compositae (Asteraceae)	<i>Grindelia squarrosa</i> var. <i>serrulata</i>	curly-cup gumweed	Native	Pres	Jul–Sep	X		X	
Compositae (Asteraceae)	<i>Grindelia squarrosa</i> var. <i>squarrosa</i>	curly-cup gumweed	Native	Pres	Jul–Sep		X		Disturbed areas
Compositae (Asteraceae)	<i>Haplopappus acaulis</i> var. <i>acaulis</i>	stemless goldenweed	Native	Pres	May–Jul	X	X		Rock outcrops

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Perennial Forbs, cont.</i>									
Compositae (Asteraceae)	<i>Haplopappus acaulis</i> var. <i>glabratus</i>	glabrate goldenweed	Native	Pres	May-Jul	X			Rock outcrops
Compositae (Asteraceae)	<i>Helianthella uniflora</i>	little sunflower	Native	Pres	Jun-Aug	X	X		
Compositae (Asteraceae)	<i>Machaeranthera canescens</i> var. <i>canescens</i>	hoary aster	Native	Pres	May-Sep	X	X		
Compositae (Asteraceae)	<i>Microseris nutans</i>	nodding microseris	Native	Pres	Apr-Aug	X	X		
Compositae (Asteraceae)	<i>Petradoria pumila</i> var. <i>pumila</i>	rock-goldenrod	Native	Pres	Jul-Sep	X	X		Rock outcrops
Compositae (Asteraceae)	<i>Senecio integerrimus</i> var. <i>exaltatus</i>	western groundsel	Native	Pres	Jun-Aug	X	X		
Compositae (Asteraceae)	<i>Senecio multilobatus</i>	basin groundsel	Native	Pres	Apr-Aug	X	X		
Compositae (Asteraceae)	<i>Senecio serra</i> var. <i>serra</i>	saw-toothed groundsel	Native	Pres	Jul-Sep	X			
Compositae (Asteraceae)	<i>Solidago velutina</i>	three-nerve goldenrod	Native	Pres	Aug-Oct	X	X		
Compositae (Asteraceae)	<i>Taraxacum officinale</i>	common dandelion	Intro	Pres	Apr-Dec	X	X	X	Disturbed areas
Compositae (Asteraceae)	<i>Tragopogon dubius</i>	yellow salsify	Intro	Pres	May-Jul	X		X	Disturbed areas
Compositae (Asteraceae)	<i>Viguiera multiflora</i> var. <i>multiflora</i>	showy goldeneye	Native	Pres	Jun-Sep		X	X	
Convulvulaceae	<i>Convolvulus arvensis</i>	field bindweed	Intro	Pres	Jun-Aug	X			Disturbed areas
Crassulaceae	<i>Sedum debile</i>	weak-stemmed stonecrop	Native	Pres	Jun-Aug	X	X		Rock outcrops
Cruciferae (Brassicaceae)	<i>Arabis hirsuta</i>	hairy rockcress	Native	Pres	Jun-Aug	X			
Cruciferae (Brassicaceae)	<i>Arabis holboellii</i> var. <i>pinetorum</i>	Holboell's rockcress	Native	Pres	May-Jul	X	X		
Cruciferae (Brassicaceae)	<i>Arabis nuttallii</i>	Nuttall's rockcress	Native	Pres	Apr-Jun	X			
Cruciferae (Brassicaceae)	<i>Arabis perennans</i> var. <i>perennans</i>	perennial rockcress	Native	Pres	Mar-Jul	X	X		

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Perennial Forbs, cont.</i>									
Cruciferae (Brassicaceae)	<i>Arabis sparsiflora</i> var. <i>sparsiflora</i>	elegant rockcress	Native	Pres	May–Jul	X			
Cruciferae (Brassicaceae)	<i>Cardaria draba</i>	whitetop	Intro	Pres	May–Aug		X		Disturbed areas
Cruciferae (Brassicaceae)	<i>Draba brachystylis</i>	Wasatch draba	Native	Pres	Jun–Aug	X	X		
Cruciferae (Brassicaceae)	<i>Erysimum asperum</i> var. <i>purshii</i>	sand dune wallflower	Native	Pres	Apr–Aug	X	X		
Cruciferae (Brassicaceae)	<i>Hesperis matronalis</i>	dame's rocket	Intro	Pres	Apr–Jun				Disturbed areas
Cruciferae (Brassicaceae)	<i>Physaria acutifolia</i> var. <i>acutifolia</i>	sharp-leaf twinpod	Native	Pres	May–Jul	X	X		
Hydrophyllaceae	<i>Hydrophyllum capitatum</i> var. <i>capitatum</i>	capitate waterleaf	Native	Pres	Apr–Jul	X			
Labiatae (Lamiaceae)	<i>Agastache urticifolia</i>	nettle-leaf horsemint	Native	Pres	Jun–Aug	X	X		
Labiatae (Lamiaceae)	<i>Leonurus cardiaca</i>	motherwort	Intro	Pres	Jun–Sep	X	X	X	Disturbed areas
Labiatae (Lamiaceae)	<i>Monardella odoratissima</i>	stinking horsemint	Native	Pres	May–Aug	X	X		Rock outcrops
Labiatae (Lamiaceae)	<i>Nepeta cataria</i>	catnip	Intro	Pres	Jun–Sep	X	X	X	Disturbed areas
Leguminosae (Fabaceae)	<i>Lathyrus lanszwertii</i> var. <i>pallezensis</i>	pale sweetpea	Native	Pres	May–Aug		X		
Leguminosae (Fabaceae)	<i>Lathyrus pauciflorus</i> var. <i>utahensis</i>	Utah sweetpea	Native	Pres	Apr–Jul	X			
Leguminosae (Fabaceae)	<i>Lupinus argenteus</i> var. <i>rubicaulis</i>	subalpine lupine	Native	Pres	May–Aug	X		X	
Leguminosae (Fabaceae)	<i>Lupinus sericeus</i> var. <i>sericeus</i>	silky lupine	Native	Pres	May–Aug	X	X		
Leguminosae (Fabaceae)	<i>Medicago sativa</i>	alfalfa	Intro	Pres	May–Sep			X	Disturbed areas
Leguminosae (Fabaceae)	<i>Melilotus officinalis</i>	yellow sweet-clover	Intro	Pres	May–Oct		X		Disturbed areas
Leguminosae (Fabaceae)	<i>Trifolium pratense</i>	red clover	Intro	Pres	May–Oct			X	Disturbed areas
Leguminosae (Fabaceae)	<i>Trifolium repens</i>	white clover	Intro	Pres	Apr–Sep			X	Disturbed areas

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Perennial Forbs, cont.</i>									
Leguminosae (Fabaceae)	<i>Vicia americana</i> var. <i>americana</i>	American vetch	Native	Pres	May-Aug	X	X		
Liliaceae (Alliaceae)	<i>Allium acuminatum</i>	taper-tip onion	Native	Pres	May-Jul	X	X		
Liliaceae (Alliaceae)	<i>Allium bisceptrum</i>	twincrest onion	Native	Pres	May-Jul	X			
Liliaceae (Calochortaceae)	<i>Calochortus nuttallii</i>	sego-lily	Native	Pres	Jun-Jul	X			
Liliaceae (Calochortaceae)	<i>Disporum trachycarpum</i>	rough-fruited fairy-bells	Native	Pres	Jun-Aug	X	X		
Liliaceae (Convallariaceae or Ruscaceae)	<i>Smilacina racemosa</i>	false Solomon's-seal	Native	Pres	Jun-Jul	X	X		
Liliaceae (Melanthiaceae)	<i>Zigadenus paniculatus</i>	foothills death camas	Native	Pres	Mar-Jun	X			
Linaceae	<i>Linum perenne</i> ssp. <i>lewisii</i>	blue flax	Native	Pres	Apr-Aug	X			
Onagraceae	<i>Oenothera biennis</i>	biennial evening-primrose	Intro	Pres	Jun-Aug				Disturbed areas
Onagraceae	<i>Zauschneria latifolia</i> var. <i>garrettii</i>	hummingbird-flower	Native	Pres	Jul-Sep	X	X		
Orchidaceae	<i>Corallorhiza striata</i>	striped coral-root	Native	Pres	Jun-Jul		X		
Plantaginaceae	<i>Plantago lanceolata</i>	English plantain	Intro	Pres	May-Aug	X	X		Disturbed areas
Plantaginaceae	<i>Plantago major</i>	common plantain	Intro	Pres	May-Aug				Disturbed areas
Polemoniaceae	<i>Ipomopsis aggregata</i> var. <i>aggregata</i>	scarlet gilia	Native	Pres	May-Aug	X	X	X	
Polemoniaceae	<i>Leptodactylon watsonii</i>	Watson's prickly-phlox	Native	Pres	May-Aug	X	X		Rock outcrops
Polemoniaceae	<i>Polemonium foliosissimum</i> var. <i>alpinum</i>	white leafy Jacob's-ladder	Native	Pres	Jun-Aug	X			
Polygonaceae	<i>Eriogonum brevicaulis</i> var. <i>brevicaulis</i>	shortstem wild buckwheat	Native	Pres	Jun-Sep	X			Rock outcrops
Polygonaceae	<i>Eriogonum racemosum</i> var. <i>racemosum</i>	redroot wild buckwheat	Native	Pres	Jun-Oct	X	X		
Polygonaceae	<i>Eriogonum umbellatum</i> var. <i>majus</i>	cream wild buckwheat	Native	Pres	Jun-Sep	X	X		
Polygonaceae	<i>Rumex crispus</i>	curly dock	Intro	Pres	May-Sep		X	X	Disturbed areas
Pyrolaceae (Ericaceae)	<i>Pyrola secunda</i>	sidebells pyrola	Native	Pres	Jun-Aug	X	X		

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Perennial Forbs, cont.</i>									
Ranunculaceae (Helleboraceae)	<i>Actaea rubra</i>	red baneberry	Native	Pres	May–Aug	X	X	X	
Ranunculaceae (Helleboraceae)	<i>Aquilegia flavescens</i>	yellow columbine	Native	Pres	Jun–Aug		X	X	Rock outcrops
Ranunculaceae	<i>Clematis hirsutissima</i>	sugar-bowls	Native	Pres	May–Aug	X	X		
Ranunculaceae (Helleboraceae)	<i>Delphinium nuttallianum</i>	Nuttall's larkspur	Native	Pres	Apr–Jul	X	X		
Ranunculaceae (Thalictraceae)	<i>Thalictrum fendleri</i>	Fendler's meadow-rue	Native	Pres	Jun–Aug	X	X	X	
Rosaceae	<i>Petrophyton caespitosum</i>	rock spiraea	Native	Pres	Aug–Sep	X	X		Rock outcrops
Rubiaceae	<i>Galium multiflorum</i> var. <i>multiflorum</i>	shrubby bedstraw	Native	Pres	May–Aug	X	X	X	Rock outcrops
Saxifragaceae	<i>Heuchera parvifolia</i>	littleleaf alumroot	Native	Pres	May–Sep	X	X		
Saxifragaceae	<i>Heuchera rubescens</i> var. <i>rubescens</i>	red alumroot	Native	Pres	Apr–Sep	X	X		Rock outcrops
Saxifragaceae	<i>Lithophragma glabrum</i> var. <i>ramulosum</i>	fringecup woodlandstar	Native	Pres	Mar–Aug	X	X	X	
Saxifragaceae	<i>Mitella stauropetala</i> var. <i>stenopetala</i>	smallflower mitrewort	Native	Pres	Apr–Aug	X	X		
Scrophulariaceae	<i>Castilleja applegatei</i> var. <i>viscida</i>	wavy-leaved Indian-paintbrush	Native	Pres	Jun–Aug		X		
Scrophulariaceae	<i>Castilleja chromosa</i>	desert paintbrush	Native	Pres	Apr–Jun	X	X		
Scrophulariaceae	<i>Castilleja linariifolia</i>	Wyoming paintbrush	Native	Pres	Jul–Aug	X	X		
Scrophulariaceae	<i>Castilleja rhexifolia</i> var. <i>sulphurea</i>	sulphur paintbrush	Native	Pres	Jun–Aug	X	X	X	
Scrophulariaceae	<i>Linaria dalmatica</i>	Dalmatian toadflax	Intro	Pres	Jul–Aug	X	X	X	Disturbed areas
Scrophulariaceae	<i>Linaria vulgaris</i>	butter-and-eggs	Intro	Pres	Jun–Aug	X			Disturbed areas
Scrophulariaceae	<i>Penstemon cyananthus</i> var. <i>cyananthus</i>	Wasatch penstemon	Native	Pres	May–Jul	X	X		
Scrophulariaceae	<i>Penstemon eatonii</i> var. <i>eatonii</i>	Eaton's firecracker	Native	Pres	May–Jul	X	X		
Scrophulariaceae	<i>Penstemon humilis</i> var. <i>brevifolius</i>	shortleaf penstemon	Native	Pres	May–Jun	X			
Scrophulariaceae	<i>Penstemon platyphyllus</i>	broadleaf penstemon	Native	Pres	Jun–Jul	X			

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Perennial Forbs, cont.</i>									
Scrophulariaceae	<i>Scrophularia lanceolata</i>	lance-leaf figwort	Native	Pres	Jun-Jul	X			
Scrophulariaceae	<i>Verbascum thapsus</i>	woolly mullein	Intro	Pres	Jun-Aug	X	X		Disturbed areas
Solanaceae	<i>Solanum dulcamara</i>	European bittersweet	Intro	Pres	May-Sep			X	Disturbed areas
Umbelliferae (Apiaceae)	<i>Cymopterus longipes</i>	long-stalk spring-parsley	Native	Pres	Apr-Jun	X			Rock outcrops
Umbelliferae (Apiaceae)	<i>Lomatium dissectum</i> var. <i>eatonii</i>	giant lomatium	Native	Pres	Apr-Jun	X	X	X	
Umbelliferae (Apiaceae)	<i>Osmorhiza chilensis</i>	Chilean sweet-cicely	Native	Pres	May-Jul	X	X	X	
Urticaceae	<i>Urtica dioica</i> var. <i>occidentalis</i>	stinging nettle	Native	Pres	Jul-Aug	X	X	X	
Valerianaceae	<i>Valeriana occidentalis</i>	western valerian	Native	Pres	May-Jul	X		X	
Violaceae	<i>Viola nephrophylla</i>	northern bog violet	Native	Pres	Apr-Jul			X	
<b>Annual Forbs</b>									
Amaranthaceae	<i>Amaranthus retroflexus</i>	redroot pigweed	Intro	Pres	Jun-Sep				Disturbed areas
Boraginaceae	<i>Cryptantha gracilis</i>	slender cryptanth	Native	Pres	Apr-Jul	X			
Boraginaceae	<i>Cryptantha torreyana</i>	Torrey's cryptanth	Native	Pres	May-Aug	X			Rock outcrops
Caryophyllaceae (Alsinaceae)	<i>Holosteum umbellatum</i> var. <i>umbellatum</i>	holosteum	Intro	Pres	Feb-May	X			
Chenopodiaceae	<i>Bassia scoparia</i>	summer-cypress	Intro	Pres	Aug-Oct	X			Disturbed areas
Chenopodiaceae	<i>Chenopodium fremontii</i> var. <i>fremontii</i>	Fremont's goosefoot	Native	Pres	Aug-Oct	X	X		
Compositae (Asteraceae)	<i>Lactuca serriola</i>	prickly lettuce	Intro	Pres	Jul-Sep		X		Disturbed areas
Cruciferae (Brassicaceae)	<i>Alyssum alyssoides</i>	pale madwort	Intro	Pres	May-Jul	X			Disturbed areas
Cruciferae (Brassicaceae)	<i>Brassica campestris</i>	field mustard	Intro	Pres	May-Jun			X	Disturbed areas
Cruciferae (Brassicaceae)	<i>Capsella bursa-pastoris</i>	shepherd's-purse	Intro	Pres	Apr-Sep	X			Disturbed areas
Cruciferae (Brassicaceae)	<i>Chorispora tenella</i>	blue mustard	Intro	Pres	Apr-Jun	X			Disturbed areas
Cruciferae (Brassicaceae)	<i>Descurainia californica</i>	mountain tansy-mustard	Native	Pres	Jun-Sep	X	X		

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<i>Annual Forbs, cont.</i>									
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>intermedia</i>	western tansy-mustard	Native	Pres	Mar-Aug	X	X		
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>osmiarum</i>	western tansy-mustard	Native	Pres	Mar-Aug	X	X		
Cruciferae (Brassicaceae)	<i>Descurainia sophia</i>	flixweed	Intro	Pres	Mar-Aug				Disturbed areas
Cruciferae (Brassicaceae)	<i>Lepidium campestre</i>	field pepperwort	Intro	Pres	May-Jul		X		Disturbed areas
Cruciferae (Brassicaceae)	<i>Sisymbrium altissimum</i>	tumble mustard	Intro	Pres	May-Aug	X			Disturbed areas
Euphorbiaceae	<i>Chamaesyce glyptosperma</i>	ridge-seeded spurge	Native	Pres	Jun-Aug	X			Disturbed areas
Geraniaceae	<i>Erodium cicutarium</i>	stork's-bill	Intro	Pres	Feb-Oct			X	Disturbed areas
Hydrophyllaceae	<i>Nemophila breviflora</i>	Great Basin nemophila	Native	Pres	Apr-Jul	X			
Leguminosae (Fabaceae)	<i>Medicago lupulina</i>	black medick	Intro	Pres	May-Oct			X	Disturbed areas
Loasaceae	<i>Mentzelia dispersa</i>	Nevada stickleaf	Native	Pres	Apr-Aug	X	X		
Malvaceae	<i>Malva neglecta</i>	common mallow	Intro	Pres	Apr-Oct				Disturbed areas
Onagraceae	<i>Epilobium brachycarpum</i>	autumn willow-herb	Native	Pres	Jul-Sep	X	X		
Onagraceae	<i>Gayophytum ramosissimum</i>	branching groundsmoke	Native	Pres	May-Aug	X	X		
Polemoniaceae	<i>Collomia linearis</i>	small collomia	Native	Pres	May-Aug	X			
Polemoniaceae	<i>Microsteris gracilis</i> var. <i>humilior</i>	slender phlox	Native	Pres	Mar-Jun	X	X		Disturbed areas
Polygonaceae	<i>Polygonum aviculare</i>	yard knotweed	Intro	Pres	May-Oct	X	X		Disturbed areas
Polygonaceae	<i>Polygonum douglasii</i> var. <i>johnstonii</i>	Sawatch knotweed	Native	Pres	Jun-Aug	X			
Portulacaceae	<i>Montia perfoliata</i> var. <i>perfoliata</i>	miner's lettuce	Native	Pres	Apr-Jun	X	X	X	
Ranunculaceae	<i>Ranunculus testiculatus</i>	bur buttercup	Intro	Pres	Mar-Jun	X			Disturbed areas
Rubiaceae	<i>Galium aparine</i> var. <i>echinospermum</i>	cleavers	Native	Pres	Apr-Jun	X		X	Disturbed areas
Rubiaceae	<i>Galium bifolium</i>	twin-leaf bedstraw	Native	Pres	May-Aug	X	X		
Scrophulariaceae	<i>Collinsia parviflora</i>	blue-eyed mary	Native	Pres	Apr-Jun	X	X		
Scrophulariaceae	<i>Orthocarpus tolimiei</i>	Tolmie's owl-clover	Native	Pres	Jul-Sep	X			
Scrophulariaceae	<i>Veronica biloba</i>	two-lobe speedwell	Intro	Pres	May-Jun	X			Disturbed areas

Appendix D. Confirmed, historical, and reported taxa of Timpanogos Cave National Monument, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Oak Brush	Doug-fir	Wet	Comments
<b>Perennial Graminoids</b>									
Cyperaceae	<i>Carex hoodii</i>	Hood's sedge	Native	Pres	May-Jul	X			
Gramineae (Poaceae)	<i>Agropyron cristatum</i>	crested wheatgrass	Intro	Pres	Jun-Aug	X	X		Disturbed areas
Gramineae (Poaceae)	<i>Bromus carinatus</i>	mountain brome	Native	Pres	May-Aug	X			
Gramineae (Poaceae)	<i>Bromus inermis</i> var. <i>inermis</i>	smooth brome	Intro	Pres	Jun-Aug	X	X	X	Disturbed areas
Gramineae (Poaceae)	<i>Dactylis glomerata</i>	orchard grass	Intro	Pres	Jun-Aug	X	X		Disturbed areas
Gramineae (Poaceae)	<i>Elymus elongatus</i>	tall wheatgrass	Intro	Pres	Jun-Aug				Disturbed areas
Gramineae (Poaceae)	<i>Elymus hispidus</i>	intermediate wheatgrass	Intro	Pres	Jun-Aug	X	X		Disturbed areas
Gramineae (Poaceae)	<i>Elymus repens</i>	quackgrass	Intro	Pres	Jun-Aug	X		X	Disturbed areas
Gramineae (Poaceae)	<i>Elymus spicatus</i>	bluebunch wheatgrass	Native	Pres	Jun-Aug	X	X		
Gramineae (Poaceae)	<i>Elymus trachycaulus</i>	slender wheatgrass	Native	Pres	Jun-Aug	X	X	X	
Gramineae (Poaceae)	<i>Leucopoa kingii</i>	spike fescue	Native	Pres	Jun-Aug	X	X		
Gramineae (Poaceae)	<i>Melica bulbosa</i>	oniongrass	Native	Pres	May-Aug	X	X		
Gramineae (Poaceae)	<i>Poa bulbosa</i>	bulbous bluegrass	Intro	Pres	Apr-Jul	X	X	X	Disturbed areas
Gramineae (Poaceae)	<i>Poa compressa</i>	Canada bluegrass	Intro	Pres	Jun-Aug	X	X	X	
Gramineae (Poaceae)	<i>Poa fendleriana</i>	muttongrass	Native	Pres	May-Aug	X	X		
Gramineae (Poaceae)	<i>Poa pratensis</i>	Kentucky bluegrass	Intro	Pres	May-Aug	X	X	X	Disturbed areas
Gramineae (Poaceae)	<i>Poa reflexa</i>	nodding bluegrass	Native	Pres	Jul-Aug		X		
Gramineae (Poaceae)	<i>Poa secunda</i>	Sandberg's bluegrass	Native	Pres	Apr-Sep	X	X	X	
Gramineae (Poaceae)	<i>Puccinellia distans</i>	weeping alkaligrass	Intro	Pres	Jun-Aug			X	Disturbed areas
Gramineae (Poaceae)	<i>Stipa hymenoides</i>	Indian ricegrass	Native	Pres	May-Jul	X	X		
Gramineae (Poaceae)	<i>Stipa nelsonii</i> var. <i>nelsonii</i>	Nelson's needlegrass	Native	Pres	Jun-Sep	X			
<b>Annual Graminoids</b>									
Gramineae (Poaceae)	<i>Aegilops cylindrica</i>	jointed goatgrass	Intro	Pres	May-Jun				Disturbed areas
Gramineae (Poaceae)	<i>Bromus japonicus</i>	Japanese chess	Intro	Pres	Jun-Aug	X		X	
Gramineae (Poaceae)	<i>Bromus tectorum</i>	cheatgrass	Intro	Pres	May-Jul	X			Disturbed areas
Gramineae (Poaceae)	<i>Hordeum murinum</i>	rabbit barley	Intro	Pres	May-Jul	X			Disturbed areas
Gramineae (Poaceae)	<i>Secale cereale</i>	cultivated rye	Intro	Pres	May-Jul	X			Disturbed areas
Gramineae (Poaceae)	<i>Setaria viridis</i>	green bristlegass	Intro	Pres	Jun-Sep				Disturbed areas
<b>Ferns and Allies</b>									
Polyodiaceae (Aspleniaceae)	<i>Cystopteris fragilis</i>	brittle bladder fern	Native	Pres	NA	X	X	X	
Polyodiaceae (Adiantaceae)	<i>Pellaea breweri</i>	Brewer's cliff-brake	Native	Pres	NA	X	X	X	



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**National Park Service**  
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