



Annotated Checklist of Vascular Flora

Arches National Park

Natural Resource Technical Report NPS/NCPN/NRTR—2009/220



ON THE COVER

Double Arch, Arches National Park, Utah. Photograph by Walter Fertig.

Annotated Checklist of Vascular Flora

Arches National Park

Natural Resource Technical Report NPS/NCPN/NRTR—2009/220

Authors

Walter Fertig
Moenave Botanical Consulting
1117 W. Grand Canyon Dr.
Kanab, UT 84741

Sarah Topp
Northern Colorado Plateau Network
National Park Service
P.O. Box 848
Moab, UT 84532

Mary Moran
Southeast Utah Group
National Park Service
P.O. Box 907
Moab, UT 84532

Editing and Design

Alice Wondrak Biel
Northern Colorado Plateau Network
National Park Service
P.O. Box 848
Moab, UT 84532

June 2009

U.S. Department of the Interior
National Park Service
Natural Resource Program Center
Fort Collins, Colorado

The National Park Service, Natural Resource Program Center publishes a range of reports that address natural resource topics of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Technical Report Series is used to disseminate results of scientific studies in the physical, biological, and social sciences for both the advancement of science and the achievement of the National Park Service mission. The series provides contributors with a forum for displaying comprehensive data that are often deleted from journals because of page limitations.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner. This report received informal peer review by subject-matter experts who were not directly involved in the collection, analysis, or reporting of the data.

Views, statements, findings, conclusions, recommendations, and data in this report are those of the author(s) and do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the National Park Service.

This report is available from the Northern Colorado Plateau Network website, <http://www.nature.nps.gov/im/units/NCPN>, as well as at the Natural Resource Publications Management web site, <http://www.nature.nps.gov/publications/NRPM>.

Please cite this publication as:

Fertig, W., S. Topp, and M. Moran. 2009. Annotated checklist of vascular flora: Arches National Park. Natural Resource Technical Report NPS/NCPN/NRTR—2009/220. National Park Service, Fort Collins, Colorado.

Contents

Figures	v
Tables	v
Abstract	vii
Acknowledgements	ix
1 Introduction	1
1.1 Background and justification.....	1
1.2 Objectives.....	1
1.3 Study area	1
1.3.1 History and setting.....	1
1.3.2 Geology	3
1.3.3 Vegetation.....	3
1.3.4 Previous botanical studies	4
2 Methods.....	7
3 Results.....	9
3.1 Summary of the flora of Arches National Park	9
3.2 Life form and biogeographic diversity.....	10
3.3 Plants of special concern	10
3.4 Non-native and noxious weeds	10
4 Discussion	15
5 Literature Cited	17
Appendices	21
Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, organized by family and scientific name with taxonomic and biogeographic notes.....	23
Appendix B. Potential (unconfirmed) taxa of Arches National Park.	75
Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park.....	85
Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes.....	91

Figures

Figure 1.3.1. Location of Arches National Park, Grand County, Utah. 2

Figure 1.3.4. Increase in the number of plant taxa confirmed as present in Arches National Park, 1940–2006. 6

Tables

Table 1.3.4. Chronology of plant-collecting efforts in Arches National Park..... 5

Table 3.1. Statistical summary of the flora of Arches National Park. 9

Table 3.3. Plant species of conservation concern from Arches National Park..... 11

Table 3.4. Noxious weed species of Arches National Park..... 13

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 Arches National Park. This entailed a thorough review of existing literature, re-examination of specimens from the Arches National Park 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, 522 vascular plant taxa have been confirmed or reliably reported as occurring in the park (485 are known from validated herbarium specimens and 37 from unvouchered literature reports). Another 50 species formerly considered part of the park flora have now been shown to be falsely reported. The current flora of Arches National Park represents 14.5% of the known flora of Utah, and 30.8% of the flora of the Colorado Plateau ecoregion within Utah. At least 30 of these species are considered species of concern by the state natural heritage program. Introduced plants make up 14.4% of the park flora (75 species), of which six species are considered noxious weeds by the State of Utah. Further surveys in Arches National Park are likely to find additional new species (146 are known from similar habitats outside the park boundary), especially among late flowering, weedy, or wetland taxa.

Acknowledgements

We would like to thank the following individuals for their assistance with this project: Dr. Angela Evenden, botanist and former leader of the Northern Colorado Plateau Network (NCPN) program in Moab, Utah, was an active proponent of this project and helped secure funding for field work and herbarium studies in 2006. Vicki Webster, curator of museum collections for the National Park Service Southeast Utah Group (SEUG), provided access to all mounted and unmounted herbarium specimens from Arches National Park, as well as work space within the museum vaults. Charlie Schelz, biologist with SEUG, provided research permits for work in 2005–2006, and shared his unmounted plant collections. Libby Nance, former database specialist with the NCPN, assisted with development and quality control of the park's NPSpecies database. Libby Nance, Janet Coles, and Helen Thomas also provided data from recent vegetation mapping and wetland inventories on the park. Drs. Stanley Welsh and Duane Atwood provided access to herbarium collections at Brigham Young University. 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. Thanks to the technical reviewers (Dr. Angela Evenden, Dr. Dusty Perkins, and Libby Nance) for their comments and suggestions. To any others who we may have inadvertently forgotten, please accept our apologies (and thanks).

Research was conducted under permit # ARCH-2006-SCI-0007 for study number ARCH-00033. Funding was provided by the National Park Service through the University of Wyoming.

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 Arches National Park, in southeastern 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 National Park 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.¹ 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 Arches National Park, based on a review of herbarium collections and past literature.
2. Develop an annotated checklist of the flora of Arches National Park, 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

The slickrock country north of Moab, Utah (Figure 1.3.1) contains the world's largest concentration of natural stone arches, as well as numerous rock spires, balanced rocks, windows, and other geologic features carved by the forces of erosion (Chronic 1988). In the late 1920s, local civic leaders promoted the area for recognition as a national park to encourage tourism to what was then one of the most remote areas of the United States. In April 1929, President Herbert Hoover invoked the Antiquities Act to establish Arches National Monument. Over the ensuing decades, the monument's boundary was expanded on several occasions (most recently growing to 30,979 hectares, with the addition of the Lost Spring area in 1999) and, in 1971, Congress passed legislation

¹Taxa refer to all named species, subspecies, and varieties.

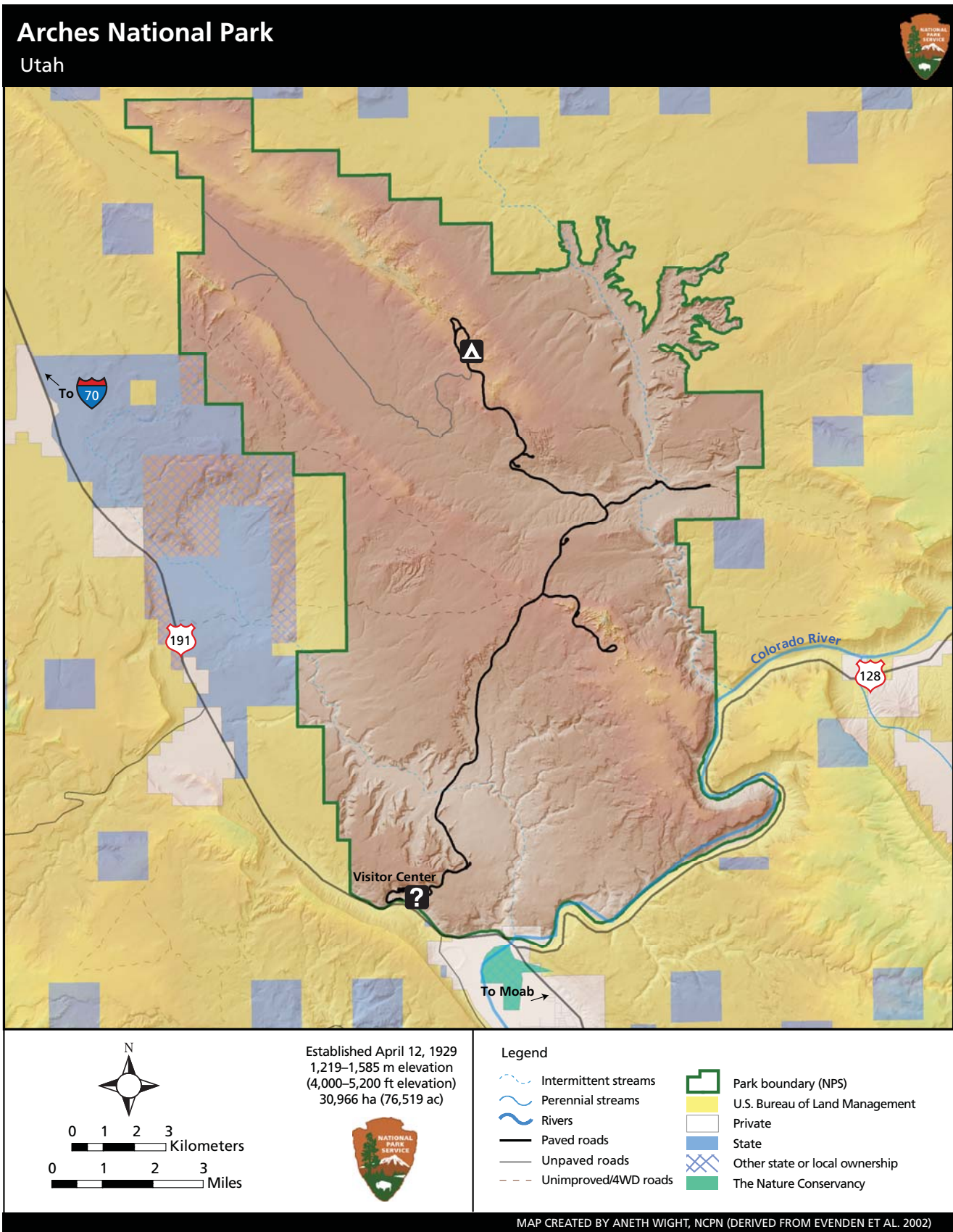


Figure 1.3.1. Location of Arches National Park, Grand County, Utah.

converting it to national park status (Even-den et al. 2002).

In addition to its namesake 200 stone arches, Arches National Park (NP) contains significant archaeological and cultural sites, wildlife habitat, and representative examples of native Colorado Plateau vegetation. The park is characterized by hot, dry summers and cool winters, with average annual precipitation of 202 mm (8 in). Peak precipitation occurs in March and August. Mean annual temperature is 56° F, but can range from -16° F in winter to 112° F in mid-summer (Even-den et al. 2002).

1.3.2 Geology

The geology of Arches NP consists of hundreds of feet of late Paleozoic to Cretaceous-age sedimentary layers deposited over a thick bed of salt and gypsum of the Paradox Formation. These salt deposits originated during the Pennsylvanian Period (about 300 million years ago) through repeated cycles of evaporation of shallow sea water in a landlocked coastal bay (Chronic 1988; Doelling 2003). Over time, the salt beds were buried by sandy limestones of the late Pennsylvanian Honaker Trail Formation, sandstone rubble of the Permian Cutler Formation, floodplain and delta sandstones and shales of the Triassic Moenkopi and Chinle formations, and sand-dune and stream deposits of the Jurassic Wingate, Kayenta, and Navajo formations. In the mid-Jurassic, the Arches area was inundated by a series of sandstone deposits, including the Dewey Bridge Member of the Carmel (sometimes included in the Entrada), the main body of the Entrada, and the Moab member of the Curtis Formation (Doelling 2003). During the late Jurassic, the area was covered by floodplain deposits of the Morrison Formation, followed by Cretaceous beach (Dakota Sandstone) and deep marine shales (Mancos Formation).

The signature arches and other unusual rock features of Arches NP occur primarily within the Jurassic-age Entrada Sandstone and the Dewey Bridge and Moab members of the Carmel and Curtis formations. These massive sandstones became cracked and fissured during the uplift of the Salt Wash anticline along an old fault system. The anticline formed from pressure exerted by the deep Paradox salt deposits, which, under the weight of their overlying sediments, became more

plastic. Ultimately, the upwelling dome of the Paradox layers breached the surface in the Salt Valley and Klondike Hills area (exposing gypsum deposits), as overburden sediments were removed by erosion and faulting. Gradually, cracks in the faulted Entrada sandstone blocks became wider through erosion, forming parallel rock fins. Some of these fins, in turn, were sculpted by wind-borne grit into balanced rocks, or hollowed out to form windows or stone arches (Doelling 2003).² The greatest concentration of arches is located in the Windows and Devils Garden areas of the park. Most of the south end of the park consists of outcrops of Navajo Sandstone, with the Wingate exposed on the cliffs above the Colorado River. Extensive areas of the west and north ends of the park are covered by Quaternary wind-blown sand. Mancos Shale and Dakota Sandstone are exposed mostly in the Salt Wash-Cache Valley Wash area (Doelling 2003).

1.3.3 Vegetation

Harrison and others (1964) recognized five main vegetation types within Arches NP; additional data on the vegetation of the park is available in Allan (1977) and the NCPN (in ed.). Rocky slopes of washes and rims of sandstone ridges are typically occupied by pygmy conifer woodlands of Utah juniper (*Juniperus osteosperma*) and two-needle pinyon (*Pinus edulis*). Commonly associated species include singleleaf ash (*Fraxinus anomala*), Gambel oak (*Quercus gambelii*), shinnery oak (*Q. welshii*), and Utah serviceberry (*Amelanchier utahensis*). Juniper-pinyon forests may also occur in valley bottoms, but usually are restricted to sites with shallow, rocky soils.

Upland valleys and sandy plains support extensive stands of blackbrush (*Coleogyne ramosissima*), green ephedra (*Ephedra viridis*), and Indian ricegrass (*Stipa hymenoides*), especially where soils are relatively shallow to bedrock. Areas with deeper sandy soils may be locally dominated by sparse grasslands or sand sagebrush (*Artemisia filifolia*). Basin big sagebrush communities are prevalent mostly on rocky toeslopes or on alluvial terraces in valley bottoms on moderately deep soils near the water table. Salt desert scrub, dominated by shadscale (*Atriplex confertifolia*), Fremont's mahonia (*Mahonia fremontii*), prince's-plume (*Stanleya pinnata*), and galleta (*Hilaria jamesii*) occurs on outcrops of the Mancos Shale,

² By contrast, stone bridges are formed by the erosion of moving water in a stream or wash.

Paradox, and Morrison formations (Harrison et al. 1964).

Riparian vegetation occurs along the banks of perennial streams and the Colorado River, and may consist of Fremont cottonwood (*Populus fremontii*), yellow willow (*Salix eriocephala* var. *watsonii*), coyote willow (*S. exigua*), Goodding's black willow (*S. gooddingii*), cattails (*Typha domingensis* and *T. latifolia*), sedges, rushes, and five-stamen tamarisk (*Tamarix chinensis*). A small, desert-saltgrass (*Distichlis spicata*) wet meadow occurs in the vicinity of Wolfe Ranch on salt-encrusted soils (Harrison et al. 1964). Hanging gardens occur infrequently in shady alcoves associated with wet seeps or springs, and are locally dominated by Eastwood's monkeyflower (*Mimulus eastwoodiae*), cave primrose (*Primula specuicola*), alcove columbine (*Aquilegia micrantha*), western poison ivy (*Toxicodendron rydbergii*), southern maiden-hair fern (*Adiantum capillus-veneris*), and giant helleborine orchid (*Epipactis gigantea*) (Harrison et al. 1964; Springer et al. 2006).

1.3.4 Previous botanical studies

The earliest known botanical studies in the Arches NP area were conducted by pioneer western taxonomist Alice Eastwood, who collected the type specimens of Wetherill's cryptanth (*Cryptantha wetherillii*), slender cryptanth (*C. tenuis*), and creeping rush-pea (*Caesalpinia repens*) from the Courthouse Wash area, north of Moab, in 1892. Given the remoteness of the future Arches NP site and lack of access roads, it is probable that Eastwood's collections were made outside the modern park boundary (Table 1.3.4). Per Axel Rydberg and Albert O. Garrett collected the types of Eastwood's amsonia (*Amsonia eastwoodiana*, now considered a synonym of *A. tomentosa* var. *stenophylla*) and Garrett's saltbush (*Atriplex garrettii*) from the vicinity of Moab in 1911, but again were probably beyond today's park borders (Welsh 1982). The earliest confirmed collection from Arches National Monument (NM) was in 1940, when plant chemist O.A. Beath and Leslie Goodding documented at least one milkvetch specimen (crescent milkvetch, *Astragalus amphioxys* var. *amphioxys*) as part of their research on selenium-bearing plants (Table 1.3.4).

The first botanist to conduct extensive fieldwork in Arches NM was Bertrand F. Harrison, of Brigham Young University (BYU). From 1941 to 1952, Harrison made several collecting trips to the monument and added at least 96 new species to the local flora (Table 1.3.4, Figure 1.3.4). Harrison returned to Arches NM in 1963, with BYU colleagues Stan Welsh, Glen Moore, and others, to conduct a systematic inventory of the flora. The BYU team added 236 new species to the monument checklist, more than tripling the size of the documented flora (Harrison et al. 1964).

Over the next three decades, collecting efforts within the newly renamed Arches National Park were more sporadic. John Allan, a graduate student from BYU, added seven new species to the flora in 1972–1973, while conducting a study on the composition and distribution of the park's major vegetation types (Allan 1977). In the late 1980s, Jayne Belnap and colleagues established permanent vegetation transects within the park and added nearly 40 new taxa to the flora (Table 1.3.4). Ken Heil and associates from San Juan College conducted a rare plant and floristic survey of Colorado Plateau national parks from 1989 to 1991, and added 19 new species to the park checklist. Fowler and others (2007) added four additional species reports during a survey of hanging-garden flora along the Colorado River.

Since 1997, the flora of Arches NP has increased by 79 taxa through the efforts of Southeast Utah Group (SEUG) biology staff and projects sponsored by the NCPN (Table 1.3.4, Figure 1.3.4). NPS biologists Charlie Schelz and Mary Moran have added 24 new species in the past decade (Schelz et al. 2006). Dewey and Andersen (2005) reported four new noxious and invasive weed species from their inventory of the park. Rebecca Harms collected two new riparian species while conducting a survey of seeps and springs (Springer et al. 2006). Sarah Topp and Lisa Hahn added 32 new species through their efforts with the NCPN vegetation mapping project (NCPN in ed.). Lastly, Walter Fertig added 17 new species in the course of revising the Arches NP checklist in 2006 (Topp 2007).

Table 1.3.4. Chronology of plant-collecting efforts in Arches National Park.

Year	Collector(s)	# of new taxa	Comments
1892	A. Eastwood	0	Alice Eastwood collected the types of Wetherill's cryptanth (<i>Cryptantha wetherillii</i>), slender cryptanth (<i>C. tenuis</i>), and creeping rush-pea (<i>Caesalpinia repens</i>) from "Courthouse Wash, Grand County", probably outside the future boundaries of Arches National Park.
1911	P. A. Rydberg and A. O. Garrett	0	Per Axel Rydberg and Albert Garrett collected the types of Eastwood's amsonia (<i>Amsonia eastwoodiana</i>) and Garrett's saltbush (<i>Atriplex garrettii</i>) from the vicinity of Moab, probably outside the park.
1940	O. A. Beath and L. N. Goodding	1	Beath and Goodding collected crescent milkvetch (<i>Astragalus amphioxys</i> var. <i>amphioxys</i>) in Arches National Monument as part of their work on seleniferous plants of western North America (specimen at NY).
1941	B. F. Harrison	1	Brigham Young University (BYU) botanist Bertrand F. Harrison collected Mormon needlegrass (<i>Stipa arida</i>) from the monument (specimen at BRY).
1947–1949	B. F. Harrison	80	B. F. Harrison and colleagues from BYU collected 80 new species for Arches National Monument over three successive years. C. V. Morton and P. A. Munz also collected specimens in 1949 for the New York Botanical Garden, but apparently did not add any new species to the monument flora.
1952	B. F. Harrison	15	B. F. Harrison added 15 new species, including the paratype of Arnow's ricegrass (<i>Stipa arnowiae</i>) (originally determined as <i>Stipa hymenoides</i> , but later described as a new taxon by Welsh in Welsh et al. 2003).
1955	A. H. Holmgren and L.C. Anderson	1	Arthur Holmgren and Loran Anderson discovered the first population of white-stem blazingstar (<i>Mentzelia albicaulis</i>) for the monument.
1961	C. Hanson	1	Curtis Hanson confirmed the presence of <i>Atriplex garrettii</i> var. <i>garrettii</i> in Arches National Monument (the type is from the Moab area).
1963	S. L. Welsh, G. Moore, G. L. Pyrah, L. M. Pitts, B. F. Harrison, and G. Moore	236	Stan Welsh, B. F. Harrison, and colleagues from BYU conducted a thorough floristic survey of Arches National Monument, more than tripling the number of species known for the area. Harrison and others (1964) lists 320 species for the monument.
1968	J. T. Howell and G. True	3	John Howell and Gordon True collected 3 new species for Arches National Monument for the New York Botanical Garden.
1970	S. L. Welsh	1	Stan Welsh collected the first specimen of spike pappusgrass (<i>Enneapogon desvauxii</i>) from Arches National Monument.
1972–1973	J. Allan	7	John Allan, a BYU graduate student, documented at least 7 new species for Arches National Park in the course of describing and mapping vegetation types (Allan 1977).
1979–1981	K. Forsythe, K. Kitchell, and S. Swanke	9	Kay Forsythe, Kathy Kitchell, and Steve Swanke made 19 collections for the ARCH herbarium and added 9 new species to the park flora.
1984–1988	D. Fagan, J. Belnap, and S. Paspal	37	Damian Fagan, Jayne Belnap, and Sonja Paspal collected more than 130 specimens for the ARCH herbarium and added 37 new species to the park checklist while establishing permanent vegetation monitoring plots across Arches National Park.
1989–1992	K. Heil, R. Fleming, and L. Vermilion	19	Ken Heil, Rich Fleming, and Leo Vermilion, of San Juan College, collected more than 60 specimens for the ARCH herbarium and documented 19 new species for the park.
1993	J. Fowler and C. May	2 (+ 2 reported)	Fowler and others (2007) conducted a floristic survey of hanging gardens in the Colorado River drainage and documented 4 new riparian species in Arches National Park.
1997–1998	C. Schelz	4	Charlie Schelz, biologist with the Southeast Utah Group national parks, added 4 new species to the Arches NP flora.

Table 1.3.4. Chronology of plant-collecting efforts in Arches National Park, cont.

Year	Collector(s)	# of new taxa	Comments
2002–2005	K. Andersen, L. Hahn, C. Schelz, R. Harms, M. Moran, and S. Topp	15 (+ 2 reported)	Dewey and Andersen (2005) documented two new invasive weed species and reported two additional taxa without vouchers. Lisa Hahn and Sarah Topp added 6 new species during vegetation mapping field work (NCPN in ed.). Charlie Schelz and Mary Moran collected 5 new species. Rebecca Harms added two new taxa while conducting an inventory of seeps and springs (Springer et al. 2006).
2006	W. Fertig, S. Topp, M. Moran	53 (+ 5 reported)	Walter Fertig, Sarah Topp, and Mary Moran added 53 new species and reported 5 additional new taxa (without vouchers) for the park (Topp 2007).

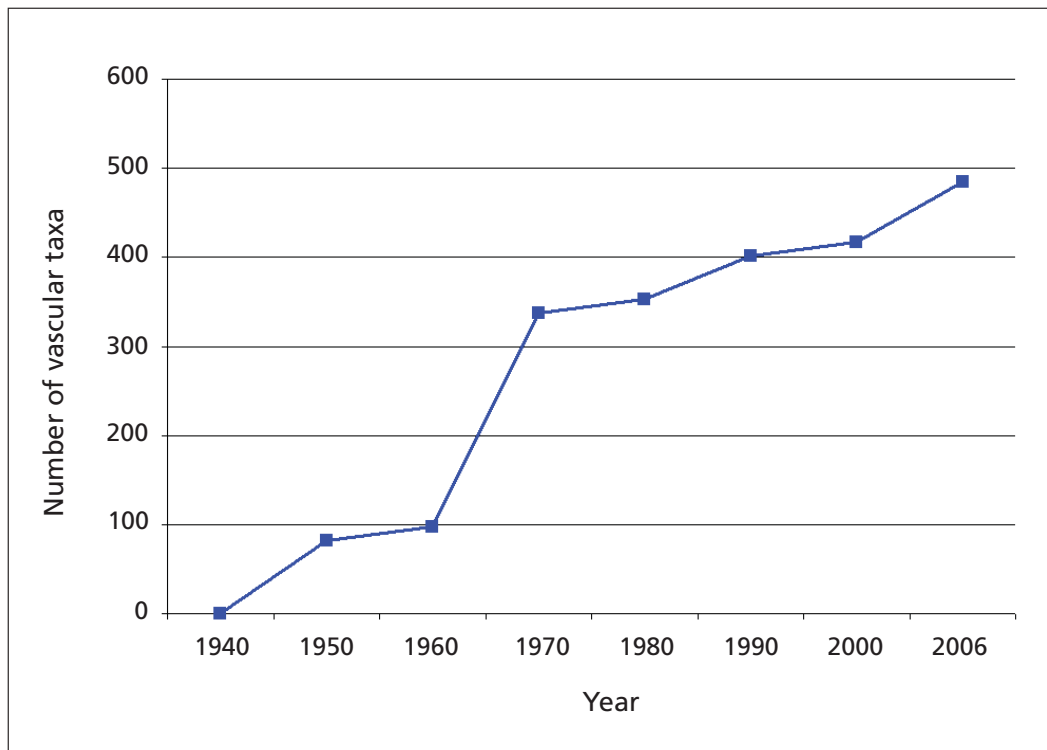


Figure 1.3.4. Increase in the number of plant taxa confirmed as present in Arches National Park, 1940–2006.

2 Methods

In July 2005, we reviewed all mounted specimens in the Arches NP herbarium (ARCH), housed in the SEUG office in Moab, Utah, to determine whether each was correctly identified to species, subspecies, or variety following the nomenclature of Welsh and others (2003). As necessary, we made corrections and annotations to each specimen and to the voucher records in the park's Automated National Cataloging System (ANCS+) and NPSpecies database.

Based on this herbarium work and a review of park references (Harrison et al. 1964; Schelz and Moran 2005; Springer et al. 2006), 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 Arches NP using an unpublished list generated by Dr. N. Duane Atwood of Brigham Young University and Albee and others (1988) (included in 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 park (derived from Harrison et al. 1964; NCPN in ed., and field observations), 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; and Weber and

Wittmann 2001). The annotations to these lists and label data from the ARCH herbarium review were then incorporated into the NPSpecies database for the park.

Work in 2006–2007 focused on confirmation of reported and potential species for the park flora through field surveys and review of collections from state and regional herbaria. We made collecting trips to Arches NP in the summer and fall of 2006 to target missing species, emphasizing undersampled wetland, weedy, and late-flowering taxa. Herbarium studies were undertaken 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 park 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 by SEUG and NCPN researchers and reviewing plot data from recent vegetation mapping and wetland inventories (NCPN in ed.; Springer et al. 2006).

3 Results

3.1 Summary of the flora of Arches National Park

Of the 623 vascular plant vouchers in the ARCH herbarium that we examined in 2005 (excluding 240 specimens on loan), 32 were misidentified (5.1%), 28 were revised to a more current name (4.5%), 122 had variety or subspecies names added (19.6%), and 441 were found to be correctly determined (70.8%). Based solely on these collections, the confirmed flora of Arches NP stood at 365 taxa (Fertig 2006). From 2005 to 2007, we located an additional 64 taxa from collections at Brigham Young University (mostly species reported in Harrison et al. 1964, but without a duplicate voucher deposited in the ARCH her-

barium), Utah State University, the University of Wyoming's Rocky Mountain Herbarium, and the New York Botanical Garden Virtual Herbarium. Field surveys in 2005–2006 netted another 56 new species: 15 from SEUG botanist Mary Moran, 21 by NCPN vegetation mapper Sarah Topp, 17 by Walter Fertig, and 3 by other NPS staff (Topp 2007). Overall, the documented flora of Arches NP has increased by 120 species (24.7%), bringing the total number of taxa to 485 (Table 3.1, Appendices A, D).

Currently, 37 additional taxa have been reported for Arches NP but have yet to be corroborated with a voucher specimen (Table 3.1, Appendix A). Of these, 28 were reported by Schelz and others (2006) and 9 others came from observations by recent vegetation-mapping (NCPN in ed.), wetland-survey (Springer et al. 2006), and weed-

Table 3.1. Statistical summary of the flora of Arches National Park.

Category	Number confirmed in park	Number additionally reported for park	Total
Taxonomic diversity			
Total taxa (including varieties and subspecies)	485	37	522
Full species (excluding varieties and subspecies)	461	33	494
Families	68	2	70
Life form diversity			
Tree taxa	16	0	16
Shrub taxa	72	5	77
Perennial forb taxa	203	21	224
Annual forb taxa	95	7	102
Perennial graminoid taxa	70	2	72
Annual graminoid taxa	21	1	22
Fern taxa	8	1	9
Biogeographic diversity			
Introduced taxa	68	7	75
Native taxa			
Locally endemic taxa	9	0	9
Regionally endemic taxa	65	7	72
Disjunct taxa	0	0	0
Peripheral taxa	8	0	8
Sparse taxa	7	0	7
Widespread taxa	328	23	351
<i>Total native taxa</i>	<i>417</i>	<i>30</i>	<i>447</i>

The number of taxa and families is based on taxonomic concepts of Welsh and others (2003). See appendices for an explanation of the various categories.

mapping crews (Dewey and Andersen 2005). Taken together, the number of confirmed and reported vascular plant taxa in Arches National Park stands at 522 taxa (Table 3.1, Appendix A).

Entering the 2006 field season, we recognized 229 taxa as potentially occurring in Arches NP, based on the proximity of the park to known populations (Albee et al. 1988; Fertig 2006). At least 10 of these species were found to occur in the park based on field collections or relocated herbarium specimens in 2006. Another 73 potential species were eliminated based on their low probability of occurring in the park. Most of these were species of montane coniferous forest or wetland habitats of the La Sal Range. The current number of potential species that we are recognizing for Arches National Park is 146 (Appendix B).

Of the original pool of species documented or reported for Arches NP, we found that 37 taxa were falsely reported based on misidentified voucher specimens in the ARCH and BRY herbaria or literature reports based on collections made outside of the park. We consider an additional 14 species cited (but not vouchered) by Schelz and others (2006), Fowler and others (2007), and Springer and others (2006) to be questionable based on the absence of suitable habitat or the distance of Arches NP to the known or expected range of each species (Appendix C).

The confirmed and reported flora of Arches National Park represents 14.5% of the 3,594 native and naturalized taxa documented for the state of Utah by Welsh and others (2003) and 46.4% of the state's 151 plant families (Table 3.1). Within Grand County, the park flora captures 44.2% of the 1,180 taxa reported by Welsh and others (2003). At the ecoregional scale, Arches NP contains 30.8% of the 1,694 species reported for the Utah portion of the Colorado Plateau (Shultz et al. 2006).

3.2 Life form and biogeographic diversity

Although ecologically dominant, tree and shrub species make up only 17.8% of the confirmed and reported plant taxa of Arches National Park (Table 3.1). Perennial forbs are the most species-rich life form in the park's flora, with 224 known and reported taxa (42.9% of the total flora). Annual forbs and grass-like plants comprise less than 24% of the flora. Like trees and shrubs, perennial graminoids are ecologically important

but relatively species-poor, representing less than 14% of the total flora. The diversity of ferns and fern-allies in Arches NP is especially low (1.7%) (Table 3.1).

Of the park's 447 native taxa, 351 (63.4%) are widespread across Utah and western North America. Only nine species (2.0% of the total native flora) have extremely limited global distributions (local endemics found within an area of less than 1° of latitude × 2° of longitude; see appendices for complete definitions of biogeographic categories). Regional endemics (largely restricted to the Colorado Plateau) comprise an additional 16.1% of the park's native flora (Table 3.1). Another 15 taxa (3.4%) are sparsely distributed across the state or occur in the Arches area at the periphery of their continuous range.

3.3 Plants of special concern

Arches NP has no plants listed as threatened or endangered under the U.S. Endangered Species Act. At least nine park taxa were formerly candidates for potential listing (Category 2 or 3C) under the act (Table 3.3) (UDWR 1998). Schelz and Moran (2007) cited 11 species from Arches NP as NPS "species of concern," but three of these are not presently known to occur within the park: Isely's milkvetch (*Astragalus isleyi*), Cisco milkvetch (*A. sabulosus*), and Trotter oreoxis (*Oreoxis trotteri*). The Utah Conservation Data Center lists 30 species from Arches NP as species of concern (UDWR 1998). Although not currently cited on any agency list, the recently described Moab pepperplant (*Lepidium moabense*) is a narrow endemic of southeastern Utah that may warrant attention as a species of concern due to its apparently limited range and low numbers (Welsh et al. 2003). It should be noted, however, that Moab pepperplant is considered a synonym of *Lepidium eastwoodiae* (or *L. alyssoides* var. *eastwoodiae*) by Holmgren and others (2005).

3.4 Non-native and noxious weeds

Introduced plant species (not historically native to Utah or North America) make up 14.4% of the confirmed and reported flora of Arches NP (Table 3.1). This figure is slightly higher than the state-wide average of 13.5% non-native species (Fertig 2007; Welsh et al. 2003). Of the 75 introduced plant species confirmed or reported for Arches NP (Table 3.4), only 6 are listed as noxious by the State of Utah (SUDAF 2008). Dewey and Andersen (2005) mapped the distribution of 11 noxious

and other invasive weed species within the park from 2003 to 2004, and found extensive populations of five-stamen tamarisk (*Tamarix chinensis*), Russian knapweed (*Centaurea repens*), Russian olive (*Elaeagnus angustifolia*), and halogeton (*Ha-*

logeton glomeratus). Weed species are especially well-developed in upper Salt Wash and Salt Valley. Recent tamarisk control efforts have cleared infestations from much of Courthouse Wash.

Table 3.3. Plant species of conservation concern from Arches National Park.

Family	Species	Common name	TNC global rank	Legal status	UTCDC status
Boraginaceae	<i>Cryptantha longiflora</i>	long-flower cryptanth	G3		Watch, S2
Boraginaceae	<i>Cryptantha wetherillii</i> (R)	Wetherill's cryptanth	G3?		Watch, S3?
Cactaceae	<i>Opuntia phaeacantha</i> var. <i>major</i>	large pricklypear	G5T5		Peripheral, S2S3
Cactaceae	<i>Opuntia polyacantha</i> var. <i>trichophora</i>	slenderspine pricklypear	G5 T3T5Q		Peripheral, S2
Chenopodiaceae	<i>Krascheninnikovia lanata</i> var. <i>ruinina</i>	Ruin Park winterfat	G5 T1?Q		Rare, S1?
Compositae (Asteraceae)	<i>Cirsium rydbergii</i>	Rydberg's thistle	G3	USFWS: former 3C, SEUG: Species of Concern	Watch, S2S3
Compositae (Asteraceae)	<i>Flaveria campestris</i>	marshweed	G4		Peripheral, S1
Compositae (Asteraceae)	<i>Grindelia fastigiata</i>	erect gumweed	G3		Watch, S2
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>entrada</i>	Entrada rush-pink	G1Q	UT BLM: Sensitive, USFWS: former C2 candidate, SEUG: Species of Concern	Rare, S1
Compositae (Asteraceae)	<i>Perityle specuicola</i>	alcove rock-daisy	G1	UT BLM: Sensitive, USFWS: former C2 candidate, SEUG: Species of Concern	Rare, S1
Compositae (Asteraceae)	<i>Xylorhiza glabriuscula</i> var. <i>linearifolia</i>	Moab woody-aster	G4 T1T2		Rare, S1S2
Cruciferae (Brassicaceae)	<i>Lepidium alyssoides</i> var. <i>eastwoodiae</i>	Eastwood's tall pepperplant	G5? T2T4		Add. Data, SR
Cruciferae (Brassicaceae)	<i>Lepidium moabense</i>	Moab pepperplant	GNR		
Euphorbiaceae	<i>Tragia ramosa</i>	noseburn	G5		Peripheral, S1
Gramineae (Poaceae)	<i>Muhlenbergia mexicana</i>	Mexican muhly	G5		Infrequent, S1
Gramineae (Poaceae)	<i>Spartina pectinata</i>	prairie cordgrass	G5		Add. Data, S?
Hydrophyllaceae	<i>Nama retrorsum</i>	Howell's nama	G3	USFWS: former 3C	Watch, S2
Hydrophyllaceae	<i>Phacelia howelliana</i>	Howell's phacelia	G2	USFWS: former 3C, SEUG: Species of Concern	Watch, S2
Leguminosae (Fabaceae or Caesalpinaceae)	<i>Caesalpinia repens</i>	creeping rush-pea	G2		Add. Data, S2

Table 3.3. Plant species of conservation concern from Arches National Park, cont.

Family	Species	Common name	TNC global rank	Legal status	UTCDC status
Leguminosae (Fabaceae)	<i>Psoralidium lanceolatum</i> var. <i>stenophyllum</i> (H)	slenderleaf scurfpea	G5T3?Q		Tax. Prob., S3?
Liliaceae	<i>Zigadenus vaginatus</i>	alcove death-camas	G2	USFWS: former 3C, SEUG: Species of Concern	Rare, S2
Loasaceae	<i>Mentzelia thompsonii</i>	Thompson's stickleaf	G4		Watch, S2
Orchidaceae	<i>Epipactis gigantea</i>	giant helleborine	G3G4	SEUG: Species of Concern	
Orchidaceae	<i>Habenaria zothecina</i> (<i>Platanthera zothecina</i>)	alcove bog-orchid	G2	UT BLM: Sensitive, USFWS: former C2 candidate, SEUG: Species of Concern	Rare, S2
Polypodiaceae	<i>Pellaea glabella</i> var. <i>occidentalis</i>	western cliffbrake	G5T4		Peripheral, S2
Polypodiaceae	<i>Pellaea limitanea</i>	border cloak-fern	G4G5		Peripheral, S1
Primulaceae	<i>Primula specuicola</i>	cave primrose	G4Q	USFWS: former 3C	Watch, S3
Rubiaceae	<i>Galium multiflorum</i> var. <i>coloradense</i>	Colorado bedstraw	G3G4		Watch, S3?
Saxifragaceae (Hydrangeaceae)	<i>Fendlera rupicola</i>	fendlerbush	G5		Peripheral, S2S3
Umbelliferae (Apiaceae)	<i>Lomatium latilobum</i>	Canyonlands lomatium	G1	USFS R4: Sensitive, UT BLM: Sensitive, USFWS: former C2 candidate, SEUG: Species of Concern	Rare, S1
Zygophyllaceae	<i>Kallstroemia californica</i>	yellow kallstroemia	G5		Add. Data, S1
Zygophyllaceae	<i>Kallstroemia parviflora</i>	orange kallstroemia	G5		Peripheral, S1

This list is derived from Schelz and Moran (2007) and Utah Division of Wildlife Resources (1998) for Utah Conservation Data Center (UTCDC) status. All species are confirmed as occurring in Arches NP, except those marked with an **(R)** (reported). Species known only from historic records are marked with an **(H)**.

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. UT BLM = U.S. Bureau of Land Management, Utah office. **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 U.S.), 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).

Table 3.4. Noxious weed species of Arches National Park.

Family	Species	Common name	Park status
Compositae (Asteraceae)	<i>Centaurea maculosa</i>	spotted knapweed	Present
Compositae (Asteraceae)	<i>Centaurea repens</i>	Russian knapweed	Present
Compositae (Asteraceae)	<i>Onopordum acanthium</i>	Scotch thistle	Reported
Convolvulaceae	<i>Convolvulus arvensis</i>	field bindweed	Present
Cruciferae (Brassicaceae)	<i>Lepidium latifolium</i>	broad-leaf pepperplant	Present
Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife	Present

This list is derived from the State of Utah Department of Agriculture and Food (2008) and Dewey and Andersen (2005).

4 Discussion

In the more than 40 years since the publication of Harrison and others (1964), the known flora of Arches NP has increased by more than 40%, from 320 to 522 taxa (Tables 1.3.4, 3.1, Figure 1.3.4, Appendix A). Based on available habitats and proximity, at least another 146 plant taxa may occur within the park (Appendix B). Should all of these potential species be found, the documented flora

of the park would increase by nearly 22%. 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 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).

5 Literature Cited

- Albee, B. J., L. M. Shultz, and S. Goodrich. 1988. Atlas of the vascular plants of Utah. +Occasional Publ. 7, Salt Lake City: Utah Museum of Natural History. 670 pp.
- Allan, J. S. 1977. The plant communities of Arches National Park. Provo, Ut.: Brigham Young University. 98 pp.
- Barkworth, M. E., K. M. Capels, S. Long, and M. B. Piep, eds. 2003. Magnoliophyta: Commelinidae (in part): Poaceae, part 2. Flora of North America north of Mexico, Volume 25. New York: Oxford University Press. 783 pp.
- Barkworth, M. E., K. M. Capels, S. Long, L. K. Anderton, and M. B. Piep, eds. 2007. Magnoliophyta: Commelinidae (in part): Poaceae, part 1. Flora of North America north of Mexico, Volume 24. New York: Oxford University Press. 911 pp.
- Barneby, R. C. 1989. Volume 3, Part B. Fabales. *In* Cronquist, A., A. H. Holmgren, N. H. Holmgren, J. L. Reveal, and P. K. Holmgren, eds., Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Bronx, N.Y.: New York Botanical Garden. 279 pp.
- Chronic, H. 1988. Pages of stone: Geology of western national parks and monuments: Grand Canyon and the Plateau Country. Seattle, Wa.: The Mountaineers. 158 pp.
- Cronquist, A. 1994. Volume 5, Asterales. *In* Cronquist, A., A. H. Holmgren, N. H. Holmgren, J. L. Reveal, and P. K. Holmgren, eds., Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Bronx, N.Y.: New York Botanical Garden. 496 pp.
- Cronquist, A., A. H. Holmgren, N. H. Holmgren, and J. L. Reveal, eds. 1972. Volume 1: Geological and botanical history of the region, its plant geography and a glossary. The vascular cryptogams and the gymnosperms. Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Bronx, N.Y.: New York Botanical Garden. 270 pp.
- Cronquist, A., A. H. Holmgren, N. H. Holmgren, J. L. Reveal, and P. K. Holmgren, eds. 1977. Volume 6: The Monocotyledons. Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Bronx, N.Y.: New York Botanical Garden. 584 pp.
- . 1984. Volume 4, Subclass Asteridae (except Asteraceae). Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Bronx, N.Y.: New York Botanical Garden. 573 pp.
- Cronquist, A., N. H. Holmgren, and P. K. Holmgren, eds. 1997. Volume 3, Part A, Subclass Rosidae (except Fabales). Intermountain flora: Vascular plants of the Intermountain West, U.S.A. Bronx, N.Y.: New York Botanical Garden. 446 pp.
- Dewey, S., and K. Andersen. 2005. An inventory of invasive non-native plants in Arches National Park (2003–2004): Final report. Utah State University, Logan, Ut. Weed Science Research Project Report # SD0510A. 31 pp.
- Doelling, H. 2003. Geology of Arches National Park. Pages 11–36 *in* Sprinkel, D. A., T. C. Chidsey, Jr., and P. B. Anderson, eds., Geology of Utah's parks and monuments. Utah Geological Association Publication 28 (second edition).
- Dorn, R. D. 2001. Vascular plants of Wyoming. Third edition. Cheyenne, Wy.: Mountain West Publishing. 412 pp.
- Evenden, A., M. Miller, M. Beer, E. Nance, S. Daw, A. Wight, M. Estenson, and L. Cudlip. 2002. Northern Colorado Plateau Vital Signs Network and Prototype Cluster plan for natural resources monitoring: Phase I report. October 1. Two volumes. National Park Service, Northern Colorado Plateau Network, Moab, Ut. 138 pp + app.
- Fertig, W. 2006. Herbarium and field studies of vascular plant flora of ARCH for National Park Service Inventory and Monitoring Program. Investigator's Annual Report, National Park Service. 2 pp.
- . 2007. Introduced and naturalized plants of Utah. *Sego Lily* 30(5):7–11.
- Flora of North America Editorial Committee. 1993. Pteridophytes and Gymnosperms. Flora of North America north of Mexico, Volume 2. New York: Oxford University Press. 475 pp.
- . 1997. Magnoliophyta: Magnoliidae and Hamamelidae. Flora of North America north of Mexico, Volume 3. New York: Oxford University Press. 590 pp.

- . 2000. Magnoliophyta: Alismatidae, Arecidae, Commelinidae (in part), and Zingiberidae. *Flora of North America north of Mexico*, Volume 22. New York: Oxford University Press. 352 pp.
- . 2002a. Magnoliophyta: Commelinidae (in part): Cyperaceae. *Flora of North America north of Mexico*, Volume 23. New York: Oxford University Press. 608 pp.
- . 2002b. Magnoliophyta: Liliidae: Liliales and Orchidales. *Flora of North America north of Mexico*, Volume 26. New York: Oxford University Press. 723 pp.
- . 2003. Magnoliophyta: Caryophyllidae, part 1. *Flora of North America north of Mexico*. Volume 4. New York: Oxford University Press. 559 pp.
- . 2005. Magnoliophyta: Caryophyllidae, part 2. *Flora of North America north of Mexico*. Volume 5. New York: Oxford University Press. 656 pp.
- . 2006a. Magnoliophyta: Asteridae, part 6: Asteraceae, part 1. *Flora of North America north of Mexico*. Volume 19. New York: Oxford University Press. 579 pp.
- . 2006b. Magnoliophyta: Asteridae, part 7: Asteraceae, part 2. *Flora of North America north of Mexico*. Volume 20. New York: Oxford University Press. 666 pp.
- . 2006c. Magnoliophyta: Asteridae, part 8: Asteraceae, part 3. *Flora of North America north of Mexico*. Volume 21. New York: Oxford University Press. 616 pp.
- Fowler, J. F., N. L. Stanton, and R. L. Hartman. 2007. Distribution of hanging garden vegetation associations on the Colorado Plateau, USA. *Journal of the Botanical Research Institute of Texas* 1(1):585–607.
- Harrison, B. F., S. L. Welsh, and G. Moore. 1964. Plants of Arches National Monument. *Brigham Young University Science Bulletin* 5(1):1–23.
- Holmgren, N. H., P. K. Holmgren, and A. Cronquist. 2005. Volume 2, Part B, Subclass Dilleniidae. *Intermountain flora: Vascular plants of the Intermountain West, U.S.A.* Bronx, N.Y.: New York Botanical Garden. 488 pp.
- Margules, C. R., and R. L. Pressey. 2000. Systematic conservation planning. *Nature* 405:243–253.
- National Park Service (NPS). 2000. Management policies. U.S. Department of Interior, National Park Service, Washington, DC. Publication # NPS D1416. 137 pp.
- Northern Colorado Plateau Network (NCPN). in ed. Arches National Park vegetation classification and mapping project. Natural Resource Technical Report. National Park Service, Denver, Co.
- Noss, R. F., and A. Y. Cooperrider. 1994. Saving nature's legacy: Protecting and restoring biodiversity. Washington, D.C.: Island Press. 416 pp.
- Schelz, C., and M. Moran. 2005. Southeast Utah Group plants. National Park Service Southeast Utah Group (Arches NP, Canyonlands NP, Hovenweep NM, & Natural Bridges NM), Moab, Ut. 17 pp.
- . 2007. Southeast Utah Group threatened, endangered and species of concern. Southeast Utah Group (Arches NP, Canyonlands NP, Hovenweep NM, & Natural Bridges NM), Moab, Ut. 3 pp.
- Schelz, C., M. Moran, and A. Lavever. 2006. Southeast Utah Group plants. National Park Service Southeast Utah Group (Arches NP, Canyonlands NP, Hovenweep NM, & Natural Bridges NM), Moab, Ut. 16 pp.
- Shultz, L. M., R. D. Ramsey, and W. Lindquist. 2006. Revised atlas of Utah plants. College of Natural Resources, Utah State University, Logan, Ut. <http://earth.gis.usu.edu/plants>.
- Springer, A. E., L. E. Stevens, and R. Harms. 2006. Inventory and classification of selected National Park Service springs on the Colorado Plateau. Northern Arizona University, Flagstaff, Az. NPS Cooperative Agreement # CA 1200-99-009; Task # NAU-118.
- State of Utah Department of Agriculture and Food (SUDAF). 2008. Utah noxious weed list. <http://ag.utah.gov/divisions/plant/noxious/documents/noxUtah.pdf>.
- Topp, S. 2007. Veg mappers find “new” plants for Utah National Parks. *Sego Lily* 30(2):8–9.
- Utah Division of Wildlife Resources (UDWR). 1998. Inventory of sensitive species and ecosystems in Utah. Endemic and rare plants of Utah: An overview of their distribution and status. Report prepared for the Utah Reclamation Mitigation and Conservation

Commission and U.S. Department of the Interior. 566 pp + app.

Weber, W. A., and R. C. Wittmann. 2001. Colorado flora: Western Slope. Third edition. Boulder: University Press of Colorado. 488 pp.

Welsh, S. L. 1982. Utah plant types: Historical perspective, 1840–1981, annotated list, and bibliography. *Great Basin Naturalist* 42(2):129–195.

Welsh, S. L., N. D. Atwood, S. Goodrich, and L. C. Higgins. 2003. A Utah flora. Third edition, revised. Provo, Ut.: Brigham Young University. 912 pp.

Appendices

The following appendices contain annotated checklists of the vascular flora of Arches National Park.

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 park in the literature (Harrison et al. 1964; NCPN in ed.; Schelz et al. 2006; Springer et al. 2006). Vouchers were examined from the ARCH 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 Arches NP based on the proximity of the park to other populations or the presence of suitable habitat.

Appendix C lists species that have been previously reported for Arches NP 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 and others (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 and others (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 which 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 km² (ca 6,370 mi², 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 km² (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 km² 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 Arches NP. Species are considered Present if a confirmed voucher or documented observation has been made within park boundaries since 1970. Historical species have been confirmed with a voucher from the park but have not been relocated since before 1970. Reported species are listed for the park in the literature (Dewey and Andersen 2005; Harrison et al. 1964; NCPN in ed.; Schelz et al. 2006; Springer et al. 2006), but have not been corroborated with a voucher specimen. Species that may potentially occur in Arches NP 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 Arches NP. Abundance data are derived from Dewey and Andersen (2005), Harrison and others (1964), NCPN (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 park. Common (**Com**) taxa have large local populations but may be restricted to a single vegetation type or do not occur across the entire park. 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 park. **Rare** taxa usually have low population numbers and are restricted to a single location within the park. 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 park. Specimen repositories include the Arches National Park herbarium (**ARCH**), 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 Arches NP. 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 park, 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 Arches NP is indicated by an “x” in the columns **BlckBr** through **Wet** and is derived from the Arches NP vegetation classification (NCPN in ed.), Harrison and others (1964), and Welsh and others (2003). **BlckBr** = Blackbrush shrub (including sagebrush communities). **SaltDes** = Salt desert shrub dominated by *Atriplex* spp. **PinJun** = Pinyon-juniper woodlands. **Wet** = Wetlands (including hanging gardens). 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 Arches National Park, 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 negundo</i>	<i>A. negundo</i> var. <i>interius</i> , <i>Negundo aceroides</i> ssp. <i>interius</i>	box elder	Tree	Wide	Pres	Rare	Welsh & Moore 2750 (ARCH)	1963	
Agavaceae	<i>Yucca angustissima</i>	<i>Y. angustissima</i> var. <i>angustissima</i>	narrowleaved yucca	Shrub	RegEn	Rep	?	Schelz et al. (2006)	NA	
Agavaceae	<i>Yucca harrimaniae</i> var. <i>harrimaniae</i>	<i>Y. harrimaniae</i>	Harriman's yucca	Shrub	Wide	Pres	Com	Welsh & Moore 1920 (ARCH)	1949	Type locality is Helper, Carbon Co., UT (Trelease s.n. MO)
Amaranthaceae	<i>Amaranthus albus</i>		tumble pigweed	AnnF	Intro	Pres	Unc	Belnap 443 (ARCH)	1987	Native to tropical America
Amaranthaceae	<i>Amaranthus blitoides</i>	<i>A. graecizans</i>	prostrate pigweed	AnnF	Wide	Pres	Unc	Belnap 444 (ARCH)	1987	
Amaranthaceae	<i>Amaranthus retroflexus</i>		redroot pigweed	AnnF	Intro	Pres	Rare	Fertig 22998 (ARCH)	2006	Native to Central America
Anacardiaceae	<i>Rhus aromatica</i> var. <i>simplicifolia</i>	<i>R. trilobata</i> var. <i>simplicifolia</i>	squawbush	Shrub	Wide	Pres	Unc	Welsh & Moore 2019 (ARCH)	1963	
Anacardiaceae	<i>Rhus aromatica</i> var. <i>trilobata</i>	<i>R. trilobata</i> var. <i>trilobata</i>	squawbush	Shrub	Wide	Pres	Com	Welsh, Harrison, & Moore 2338b (ARCH)	1963	
Anacardiaceae	<i>Rhus glabra</i>		smooth sumac	Shrub	Wide	Pres	Rare	Welsh, Harrison, & Moore 2308 (ARCH)	1963	
Anacardiaceae	<i>Toxicodendron rydbergii</i>	<i>Rhus radicans</i> , <i>T. radicans</i>	western poison ivy	Shrub	Wide	Pres	Unc	Welsh 1913 (ARCH)	1963	
Apocynaceae	<i>Amsonia tomentosa</i> var. <i>stenophylla</i>	<i>A. eastwoodiana</i>	tomentose amsonia	PerF	Wide	Pres	Unc	Paspal 59 (ARCH)	1985	Type locality of <i>A. eastwoodiana</i> is Moab vicinity, Grand Co., UT (Rydberg & Garrett 8468 NY)

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Apocynaceae	<i>Apocynum cannabinum</i>	Includes vars. <i>cannabinum</i> , <i>glaberrimum</i> , & <i>angustifolium</i>	common dogbane	PerF	Wide	Pres	Unc	Fagan 28 (ARCH)	1963	
Asclepiadaceae	<i>Asclepias asperula</i> var. <i>asperula</i>		spider milkweed	PerF	Wide	Rep	Rare	Northern Colorado Plateau Network (in ed.)	2006	
Asclepiadaceae	<i>Asclepias cryptoceras</i> var. <i>cryptoceras</i>	<i>A. cryptoceras</i>	pallid milkweed	PerF	Wide	Pres	Unc	Barnett 55 (ARCH)	1947	
Asclepiadaceae	<i>Asclepias latifolia</i>		broadleaf milkweed	PerF	Wide	Pres	Unc	Fleming 824 (ARCH)	1964	
Asclepiadaceae	<i>Asclepias macrosperma</i>	Included in <i>A. involucrata</i> by some authors	bigseed milkweed	PerF	RegEn	Pres	Unc	Pitts 76 (ARCH)	1947	
Asclepiadaceae	<i>Asclepias ruthiae</i>	<i>A. uncialis</i> ssp. <i>ruthiae</i>	Ruth's milkweed	PerF	RegEn	Pres	Rare	Topp ST05180601 (ARCH)	2006	Type locality is Calif Spring Canyon SE of Castledale, Emery Co., UT (Maguire 18310 UTC)
Asclepiadaceae	<i>Asclepias speciosa</i>		showy milkweed	PerF	Wide	Pres	Rare	Fagan 14 (ARCH)	1963	
Asclepiadaceae	<i>Asclepias subverticillata</i>	<i>A. galioides</i>	whorled milkweed	PerF	Wide	Pres	Unc	Topp ST08220606 (ARCH)	2006	
Berberidaceae	<i>Mahonia fremontii</i>	<i>Berberis fremontii</i>	Fremont's mahonia	Shrub	Wide	Pres	Unc	Barnett 60 (ARCH)	1963	
Berberidaceae	<i>Mahonia repens</i>	<i>Berberis repens</i>	Oregon-grape	Shrub	Wide	Pres	Unc	Forsythe & Swanke 16 (ARCH)	1981	
Bignoniaceae	<i>Catalpa bignonioides</i>		common catalpa	Tree	Intro	Pres	Rare	Welsh & Moore 1998 (BRY)	1963	Native to E North America

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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 crassispala</i> var. <i>elachantha</i>		thick-sepaled cryptanth	AnnF	Wide	Pres	Com	Pyr 64 (ARCH)	1947	
Boraginaceae	<i>Cryptantha flava</i>	<i>Oreocarya flava</i>	plateau yellow cryptanth	PerF	Wide	Pres	Com	Barnett 44 (ARCH)	1947	
Boraginaceae	<i>Cryptantha flavoculata</i>	<i>Oreocarya flavoculata</i>	yellow-eye cryptanth	PerF	Wide	Pres	Unc	Fleming 762 (ARCH)	1989	
Boraginaceae	<i>Cryptantha fulvocanescens</i>	<i>Oreocarya fulvocanescens</i> , includes vars. <i>fulvocanescens</i> & <i>echinoides</i>	plateau cryptanth	PerF	RegEn	Pres	Unc	Pyr 48 (ARCH)	1947	
Boraginaceae	<i>Cryptantha kelseyana</i>		Kelsey's cryptanth	AnnF	Wide	Pres	Unc	Allan 477 (BRY)	1972	
Boraginaceae	<i>Cryptantha longiflora</i>	<i>Oreocarya longiflora</i>	long-flower cryptanth	PerF	RegEn	Pres	Unc	Barnett 41 (ARCH)	1963	Type locality is Palisades, Mesa Co., CO (Crandall s.n. RM)
Boraginaceae	<i>Cryptantha osterhoutii</i>	<i>Oreocarya osterhoutii</i>	Osterhout's cryptanth	PerF	RegEn	Pres	Rare	Fleming 972 (ARCH)	1990	Type locality is Monument Park [Colorado National Monument], near Grand Junction, Mesa Co., CO (Osterhout 6138 RM)
Boraginaceae	<i>Cryptantha pterocarya</i> var. <i>pterocarya</i>		wing-nut cryptanth	AnnF	Wide	Pres	Unc	Fleming 779 (ARCH)	1989	
Boraginaceae	<i>Cryptantha recurvata</i>		recurved cryptanth	AnnF	Wide	Pres	Unc	Allan 33 (BRY)	1972	
Boraginaceae	<i>Cryptantha tenuis</i>		slender cryptanth	PerF	RegEn	Pres	Rare	Weish & Moore 2801 (ARCH)	1964	Type locality is Courthouse Wash, Grand Co., UT (Eastwood s.n. CAS)

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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 wetherillii</i>		Wetherill's cryptanth	PerF	RegEn	Rep	?	Schelz et al. (2006)	1892 ?	Type locality is Courthouse Wash, Grand Co., UT (Eastwood s.n. CAS)
Boraginaceae	<i>Cynoglossum officinale</i>		common hound's-tongue	PerF	Intro	Rep	?	Schelz et al. (2006)	NA	Native to Eurasia
Boraginaceae	<i>Heliotropium convolvulaceum</i>	<i>Euploca convolvulacea</i> ssp. <i>californica</i>	bindweed heliotrope	AnnF	Wide	Pres	Unc	Welsh & Moore 2771 (ARCH)	1952	
Boraginaceae	<i>Heliotropium curassavicum</i> var. <i>obovatum</i>		salt heliotrope	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	
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	Pres	Com	Pyrah 54 (ARCH)	1963	
Boraginaceae	<i>Lithospermum incisum</i>		showy stoneseed	PerF	Wide	Pres	Rare	Fagan 13 (ARCH)	1963	
Boraginaceae (Ehretiaceae)	<i>Tiquilia latior</i>	<i>Coldenia hispidissima</i>	matted tiquilia	PerF	RegEn	Pres	Unc	Welsh & Moore 1989 (ARCH)	1963	
Cactaceae	<i>Echinocereus triglochidiatus</i> var. <i>melanacanthus</i>	Includes var. <i>inermis</i> . Vars. not recognized in <i>Flora of North America</i> (2003).	claretcup	PerF	Wide	Pres	Unc	Welsh & Moore 2013 (BRY)	1963	
Cactaceae	<i>Opuntia erinacea</i> var. <i>erinacea</i>	<i>O. polyacantha</i> var. <i>erinacea</i>	common pricklypear	PerF	Wide	Pres	Unc	Welsh & Moore 2022 (ARCH)	1963	
Cactaceae	<i>Opuntia erinacea</i> var. <i>utahensis</i>	<i>O. polyacantha</i> var. <i>hystricina</i> . Var. not recognized in <i>Flora of North America</i> (2003)	Utah pricklypear	PerF	Wide	Pres	Com	Welsh & Moore 2020 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Cactaceae	<i>Opuntia phaeacantha</i> var. <i>major</i>	Vars. not recognized in <i>Flora of North America</i> (2003)	large pricklypear	PerF	Wide	Pres	Unc	Belnap 415 (ARCH)	1987	
Cactaceae	<i>Opuntia polyacantha</i> var. <i>polyacantha</i>	<i>Flora of North America</i> (2003) includes vars. <i>rufispina</i> & <i>trichophora</i>	plains pricklypear	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	
Cactaceae	<i>Opuntia polyacantha</i> var. <i>rufispina</i>	Included with <i>O. polyacantha</i> var. <i>polyacantha</i> in <i>Flora of North America</i> (2003)	rufous-spine pricklypear	PerF	Wide	Pres	Unc	Welsh & Moore 2002 (ARCH)	1963	
Cactaceae	<i>Opuntia polyacantha</i> var. <i>trichophora</i>	Included with <i>O. polyacantha</i> var. <i>polyacantha</i> in <i>Flora of North America</i> (2003)	slenderspine pricklypear	PerF	Periph	Pres	Com	Welsh & Moore 2001 (ARCH)	1963	
Cactaceae	<i>Opuntia whipplei</i>	<i>Cylindropuntia whipplei</i>	Whipple's cholla	Shrub	RegEn	Rep	?	Schelz et al. (2006)	NA	
Cactaceae	<i>Sclerocactus whipplei</i> var. <i>roseus</i>	<i>S. parviflorus</i> , <i>S. whipplei</i> var. <i>intermedius</i> . Includes <i>S. contortus</i> & <i>S. terrae-canyonae</i>	small-flower fishhook cactus	PerF	Wide	Pres	Unc	Fleming 744 (ARCH)	1963	Type locality is Glen Canyon, San Juan Co., UT (Clover & Jotter 2398 US)
Capparaceae (Cleomaceae)	<i>Cleome lutea</i>		yellow beeplant	AnnF	Wide	Pres	Unc	Barnett 45 (ARCH)	1963	
Caprifoliaceae	<i>Symphoricarpos longiflorus</i>		long-flower snowberry	Shrub	Wide	Pres	Unc	Welsh & Moore 2018 (ARCH)	1949	
Caryophyllaceae (Aisinaceae)	<i>Arenaria fendleri</i> var. <i>eastwoodiae</i>	<i>Eremogone eastwoodiae</i> var. <i>eastwoodiae</i> , <i>A. eastwoodiae</i>	Eastwood's sandwort	PerF	Wide	Pres	Unc	Fleming 968 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Silene antirrhina</i>		sleepy catchfly	AnnF	Wide	Pres	Unc	Welsh & Moore 2015 (ARCH)	1963	
Chenopodiaceae	<i>Allenrolfea occidentalis</i>		iodine bush	Shrub	Wide	Pres	Unc	Welsh & Moore 2714 (ARCH)	1963	
Chenopodiaceae	<i>Atriplex canescens var. canescens</i>	<i>A. canescens</i> var. <i>occidentalis</i>	four-wing saltbush	Shrub	Wide	Pres	Com	Welsh & Moore 1985 (ARCH)	1963	
Chenopodiaceae	<i>Atriplex confertifolia</i>		shadscale	Shrub	Wide	Pres	Com	Welsh & Moore 2047 (ARCH)	1963	
Chenopodiaceae	<i>Atriplex corrugata</i>		mat saltbush	Shrub	RegEn	Pres	Unc	Belnap 505 (ARCH)	1987	
Chenopodiaceae	<i>Atriplex gardneri var. cuneata</i>	<i>A. cuneata</i>	Castle Valley saltbush	Shrub	RegEn	Pres	Com	Welsh & Moore 3017 (ARCH)	1964	Type locality is near Emery, Emery Co., UT (Jones 5443 RM)
Chenopodiaceae	<i>Atriplex garrettii var. garrettii</i>	<i>A. garrettii</i>	Garrett's saltbush	Shrub	LocEn	Pres	Unc	Hanson 343 (BRY)	1961	Type locality is vicinity of Moab, Grand Co., UT (Rydberg & Garrett 8465 NY)
Chenopodiaceae	<i>Bassia americana</i>	<i>Kochia americana</i>	greenmolly	PerF	Wide	Rep	Unc	Scholz et al. (2006), Northern Colorado Plateau Network (in ed.)	2006	
Chenopodiaceae	<i>Bassia hyssopifolia</i>	<i>Echinopsilon hyssopifolium</i>	five-horn smotherweed	AnnF	Intro	Pres	Unc	Welsh, Harrison, & Moore 2274 (ARCH)	1963	Native to Eurasia
Chenopodiaceae	<i>Bassia scoparia</i>	<i>Kochia scoparia</i> , <i>B. sieversoniana</i>	summer-cypress	AnnF	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Chenopodiaceae	<i>Chenopodium album</i> var. <i>album</i>	<i>C. album</i>	lambsquarter	AnnF	Intro	Pres	Unc	Welsh, Harrison, & Moore 2328 (BRY)	1963	Native to Eurasia
Chenopodiaceae	<i>Chenopodium album</i> var. <i>berlandieri</i>	<i>C. berlandieri</i> var. <i>zschackei</i>	pitseed goosefoot	AnnF	Wide	Pres	Unc	Welsh & Moore 2824 (ARCH)	1963	
Chenopodiaceae	<i>Chenopodium desiccatum</i>	<i>C. pratericola</i>	desert goosefoot	AnnF	Sparse	Pres	Unc	Howell & True 44908 (NY)	1968	
Chenopodiaceae	<i>Chenopodium fremontii</i> var. <i>fremontii</i>	<i>C. fremontii</i>	Fremont's goosefoot	AnnF	Wide	Pres	Unc	Welsh & Moore 2723 (ARCH)	1963	
Chenopodiaceae	<i>Chenopodium glaucum</i> var. <i>salinum</i>	<i>C. salinum</i>	oakleaf goosefoot	AnnF	Wide	Rep	?	Schelz et al. (2006)	NA	
Chenopodiaceae	<i>Chenopodium leptophyllum</i>		narrow-leaf goosefoot	AnnF	Wide	Rep	?	Schelz et al. (2006)	NA	
Chenopodiaceae	<i>Corispermum americanum</i>	Includes vars. <i>americanum</i> & <i>rydbergii</i>	American bugseed	AnnF	Wide	Pres	Rare	Allan 251 (BRY)	1972	
Chenopodiaceae	<i>Cycloloma atriplicifolia</i>	<i>C. atriplicifolium</i>	winged pigweed	AnnF	Wide	Pres	Unc	Belnap 452 (ARCH)	1987	
Chenopodiaceae	<i>Grayia spinosa</i>	<i>Atriplex spinosa</i> , <i>A. grayi</i>	spiny hopsage	Shrub	Wide	Pres	Unc	Pitts 66 (ARCH)	1963	
Chenopodiaceae	<i>Halogeton glomeratus</i>		halogeton	AnnF	Intro	Pres	Unc	Welsh & Moore 1986 (BRY)	1963	Native to Eurasia
Chenopodiaceae	<i>Krascheninnikovia lanata</i> var. <i>lanata</i>	<i>Ceratoides lanata</i> , <i>Eurotia lanata</i> . Vars. not recognized in <i>Flora of North America</i> (2003).	winterfat	Shrub	Wide	Pres	Unc	Pyrah 33 (ARCH)	1963	

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

Family	Species name	Synonymic/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Chenopodiaceae	<i>Krascheninnikovia lanata</i> var. <i>ruinina</i>	<i>Ceratoides lanata</i> var. <i>ruinina</i> . Vars. not recognized in <i>Flora of North America</i> (2003).	Ruin Park winterfat	Shrub	LocEn	Pres	Unc	Welsh & Moore 2763 - paratype (ARCH)	1963	Type locality is Ruin Park, Beef Basin, San Juan Co., UT (Welsh & Welsh 22377 BRY)
Chenopodiaceae	<i>Monolepis nuttalliana</i>		Nuttall's poverty-weed	AnnF	Wide	Pres	Unc	Belnap 522 (ARCH)	1988	
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	Pres	Unc	Welsh & Moore 1978 (ARCH)	1963	Native to Asia
Chenopodiaceae (Sarcobataceae)	<i>Sarcobatus vermiculatus</i>		greasewood	Shrub	Wide	Pres	Unc	Welsh & Moore 2036 (ARCH)	1963	
Chenopodiaceae	<i>Suaeda calceoliformis</i>	<i>S. depressa</i>	broom seepweed	AnnF	Wide	Pres	Unc	Welsh & Moore 2715 (ARCH)	1963	
Chenopodiaceae	<i>Suaeda occidentalis</i>	Included in <i>S. calceoliformis</i> by some authors	western seepweed	AnnF	Wide	Pres	Unc	Welsh & Moore 2722 (ARCH)	1963	
Chenopodiaceae	<i>Suaeda torreyana</i> var. <i>torreyana</i>	<i>S. moquinii</i> , <i>S. nigra</i> , <i>S. fruticosa</i>	Torrey's seepweed	AnnF	Wide	Pres	Unc	Hahn LAH05210303 (ARCH)	2003	
Chenopodiaceae	<i>Zuckia brandegeei</i> var. <i>brandegeei</i>	<i>Z. brandegeei</i> var. <i>brandegeei</i> , <i>Atriplex brandegei</i>	Brandegee's siltbush	Shrub	RegEn	Pres	Unc	Welsh & Moore 3018 (ARCH)	1964	Type locality is San Juan River, San Juan Co., UT (Brandegee s.n. GH)
Compositae (Asteraceae)	<i>Ambrosia acanthicarpa</i>	<i>Franseria acanthicarpa</i>	bur ragweed	AnnF	Wide	Pres	Com	Welsh & Moore 2712 (ARCH)	1963	
Compositae (Asteraceae)	<i>Arctium minus</i>		burdock	PerF	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	Native to Eurasia
Compositae (Asteraceae)	<i>Artemisia bigelovii</i>		Bigelow's sagebrush	Shrub	Wide	Pres	Unc	Welsh & Moore 2732 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Artemisia campestris</i> var. <i>scouleriana</i>	<i>Oligosporus campestris</i> ssp. <i>pacificus</i> , <i>O. pacificus</i> , <i>A. campestris</i> ssp. <i>pacifica</i>	sand wormwood	Perf	Wide	Pres	Com	Welsh & Moore 2739 (ARCH)	1963	
Compositae (Asteraceae)	<i>Artemisia dracunculus</i> ssp. <i>glauca</i>	<i>Oligosporus dracunculus</i> . Vars. not recognized in Cronquist (1994) and <i>Flora of North America</i> (2006)	tarragon	Perf	Wide	Pres	Com	Welsh & Moore 2772 (ARCH)	1963	
Compositae (Asteraceae)	<i>Artemisia filifolia</i>	<i>Oligosporus filifolius</i>	sand sagebrush	Shrub	Wide	Pres	Com	Welsh & Moore 2719 (BRY)	1963	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>albula</i>		Louisiana wormwood	Perf	Wide	Pres	Unc	Welsh & Moore 2728 (ARCH)	1963	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>		Louisiana wormwood	Perf	Wide	Pres	Unc	Fowler & May 1671 (RM)	1993	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>mexicana</i>		Louisiana wormwood	Perf	Wide	Pres	Unc	Hahn LAH05220305 (ARCH)	1963	
Compositae (Asteraceae)	<i>Artemisia nova</i> var. <i>nova</i>	<i>A. arbuscula</i> var. <i>nova</i> , <i>Seriphidium novum</i> . Vars. not recognized in <i>Flora of North America</i> (2006).	black sagebrush	Shrub	Wide	Rep	?	Scheiz et al. (2006)	NA	
Compositae (Asteraceae)	<i>Artemisia spinescens</i>	<i>Picrothamnus desertorum</i>	budsage	Shrub	Wide	Pres	Unc	Fagan 7 (ARCH)	1963	
Compositae (Asteraceae)	<i>Artemisia tridentata</i> var. <i>tridentata</i>	<i>Seriphidium tridentatum</i> ssp. <i>tridentatum</i>	basin big sagebrush	Shrub	Wide	Pres	Com	Welsh & Moore 2737 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Aster ascendens</i>	<i>A. chilensis</i> sp. adscendens, <i>A. adscendens</i> , <i>Symphotrichum ascendens</i> , <i>Virgulastrer ascendens</i>	Pacific aster	PerF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2299 (BRY)	1963	
Compositae (Asteraceae)	<i>Aster brachyactis</i>	<i>Symphotrichum ciliatum</i> , <i>Brachyactis ciliata</i> ssp. <i>angusta</i>	rayless alkali aster	AnnF	Wide	Pres	Unc	Allan 443 (BRY)	1973	
Compositae (Asteraceae)	<i>Aster hesperius</i>	<i>A. lanceolatus</i> var. <i>hesperius</i> , <i>Symphotrichum lanceolatum</i> var. <i>hesperium</i>	Siskiyou aster	PerF	Wide	Pres	Unc	Fertig 22992 (ARCH)	2006	
Compositae (Asteraceae)	<i>Baccharis salicina</i>	Includes <i>B. emoryi</i>	Rio Grande seepwillow	Shrub	Wide	Pres	Rare	Welsh & Moore 2762 (ARCH)	1963	
Compositae (Asteraceae)	<i>Bidens frondosa</i>		devil's-beggarsticks	PerF	Wide	Pres	Unc	Moran s.n. (ARCH)	2006	
Compositae (Asteraceae)	<i>Brickellia longifolia</i>	<i>B. longifolia</i> var. <i>longifolia</i>	longleaf brickellbush	Shrub	Wide	Pres	Unc	Welsh & Moore 2731 (ARCH)	1963	
Compositae (Asteraceae)	<i>Brickellia microphylla</i> var. <i>scabra</i>		rough brickellbush	Shrub	Wide	Pres	Unc	Welsh, Harrison, & Moore 2298 (ARCH)	1963	
Compositae (Asteraceae)	<i>Brickellia oblongifolia</i> var. <i>limifolia</i>		Mohave brickellbush	Shrub	Wide	Pres	Rare	Hahn LAH05140310 (ARCH)	2003	
Compositae (Asteraceae)	<i>Centaurea maculosa</i>	<i>Centaurea biebersteinii</i> , <i>Acosta maculosa</i>	spotted knapweed	PerF	Intro	Pres	Unc	Torrence s.n. (ARCH)	2002	UT state noxious weed. Native to Europe
Compositae (Asteraceae)	<i>Centaurea repens</i>	<i>Acroptilon repens</i>	Russian knapweed	PerF	Intro	Pres	Unc	Andersen ARCH V-1 (ARCH)	2003	UT state noxious weed. Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Chaenactis stevioides</i>		stevia dusty-maiden	AnnF	Wide	Pres	Unc	Forsythe 4 (ARCH)	1979	
Compositae (Asteraceae)	<i>Chaetopappa ericoides</i>	<i>Leucelene ericoides</i> , <i>Aster arenosus</i>	rose-heath	PerF	Wide	Pres	Unc	Welsh & Moore 2010 (ARCH)	1963	
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	Pres	Com	Welsh & Moore 2740 (ARCH)	1947	
Compositae (Asteraceae)	<i>Chrysothamnus linifolius</i>	<i>Lorandersonia linifolia</i>	spear-leaf rabbitbrush	Shrub	Wide	Pres	Unc	Hahn LAH05230307 (ARCH)	1963	
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>consimilis</i>	<i>Ericameria nauseosa</i> var. <i>consimilis</i> , <i>E. nauseosa</i> var. <i>oreophila</i> . Included in <i>C. nauseosus</i> var. <i>oreophilus</i> by some authors	greenish rabbitbrush	Shrub	Wide	Pres	Com	Fertig 22993 (ARCH)	2006	
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	Welsh & Moore 2711 (ARCH)	1963	
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> , <i>C. nauseosus</i> ssp. <i>pinifolius</i>	glabrate rabbitbrush	Shrub	Wide	Pres	Com	Welsh & Moore 2765 (BRY)	1963	
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>junceus</i>	<i>Ericameria nauseosa</i> var. <i>juncea</i>	rush rabbitbrush	Shrub	RegEn	Pres	Unc	Belnap 455 (ARCH)	1987	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Chrysothamnus nauseosus</i> var. <i>leiospermus</i>	<i>Ericameria nauseosa</i> var. <i>leiosperma</i>	smoothseed rabbitbrush	Shrub	RegEn	Pres	Rare	Welsh & Moore 2768 (BRY)	1963	
Compositae (Asteraceae)	<i>Chrysothamnus parryi</i> var. <i>howardii</i>	<i>C. parryi</i> var. <i>attenuatus</i> , <i>Ericameria parryi</i> var. <i>howardii</i>	longbract rabbitbrush	Shrub	Wide	Pres	Rare	Welsh & Moore 2764 (ARCH)	1963	
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>lanceolatus</i>		lanceleaf rabbitbrush	Shrub	Wide	Rep	?	Schelz et al. (2006)	NA	
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>stenophyllus</i>	Included in var. <i>viscidiflorus</i> by some authors. Vars. not recognized in <i>Flora of North America</i> (2006).	slenderleaf rabbitbrush	Shrub	Wide	Pres	Com	Welsh, Harrison, & Moore 2294 (ARCH)	1963	
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>viscidiflorus</i>		green rabbitbrush	Shrub	Wide	Pres	Unc	Welsh, Harrison, & Moore 2285 (ARCH)	1963	
Compositae (Asteraceae)	<i>Cirsium calcareum</i> var. <i>pulchellum</i>	Var. not recognized in Cronquist (1994), included in <i>C. arizonicum</i> var. <i>bipinnatum</i> in <i>Flora of North America</i> (2006)	pretty thistle	Perf	Wide	Pres	Unc	Fagan 41 (ARCH)	1985	
Compositae (Asteraceae)	<i>Cirsium neomexicanum</i> var. <i>neomexicanum</i>	Vars. not recognized in <i>Flora of North America</i> (2006)	New Mexico thistle	Perf	Wide	Pres	Unc	Fleming 852 (ARCH)	1989	
Compositae (Asteraceae)	<i>Cirsium rydbergii</i>		Rydberg's thistle	Perf	RegEn	Pres	Rare	Fowler & May 1732 (ARCH)	1989	Type locality is along San Juan River near Bluff, San Juan Co., UT (Rydberg & Garrett 10001 NY). USFWS: 3C

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Cirsium undulatum</i> var. <i>undulatum</i>	<i>C. undulatum</i>	wavy-leaved thistle	PerF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2281 (ARCH)	1963	
Compositae (Asteraceae)	<i>Cirsium vulgare</i>		bull thistle	PerF	Intro	Rep	?	Schelz et al. (2006)	NA	Native to Europe
Compositae (Asteraceae)	<i>Conyza canadensis</i> var. <i>glabrata</i>	Vars. not recognized in <i>Flora of North America</i> (2006)	Canadian horseweed	AnnF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2261 (BRY)	1963	
Compositae (Asteraceae)	<i>Crepis runcinata</i> var. <i>glauca</i>		glaucous hawksbeard	PerF	Wide	Pres	Rare	Welsh & Moore 2044 (ARCH)	1963	
Compositae (Asteraceae)	<i>Dicoria brandegei</i>	<i>D. canescens</i> ssp. <i>brandegei</i> . Includes var. <i>wetherillii</i> . Vars. not recognized in <i>Flora of North America</i> (2006)	Brandegee's sandplant	AnnF	RegEn	Pres	Com	Welsh & Moore 2713 (ARCH)	1963	
Compositae (Asteraceae)	<i>Encelia frutescens</i> var. <i>resinosa</i>	<i>E. frutescens</i> var. <i>frutescens</i> , <i>E. resinifera</i>	bush encelia	Shrub	Wide	Pres	Unc	Welsh & Moore 1994 (ARCH)	1963	
Compositae (Asteraceae)	<i>Enceliopsis nudicaulis</i> var. <i>nudicaulis</i>		nakedstem	PerF	Wide	Rep	Rare	Northern Colorado Plateau Network (in ed.)	2006	Type locality is "Southern Utah" (Bishop s.n. GH)
Compositae (Asteraceae)	<i>Enceliopsis nutans</i>	<i>Encelia nutans</i>	noddinghead	PerF	RegEn	Pres	Unc	Barnett 54 (ARCH)	1947	
Compositae (Asteraceae)	<i>Erigeron aphanactis</i> var. <i>aphanactis</i>	<i>E. concinnus</i> var. <i>aphanactis</i>	hairy daisy	PerF	Wide	Pres	Rare	Fleming 974 (ARCH)	1990	
Compositae (Asteraceae)	<i>Erigeron bellidiastrum</i>	<i>E. bellidiastrum</i> var. <i>bellidiastrum</i>	pretty daisy	AnnF	Wide	Pres	Unc	Pyrh 65 (ARCH)	1963	
Compositae (Asteraceae)	<i>Erigeron divergens</i> var. <i>cinereus</i>	<i>E. colomexicanus</i> , <i>E. tracyi</i>	spreading daisy	PerF	Wide	Pres	Unc	Welsh & Moore 2043 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Erigeron divergens</i> var. <i>divergens</i>		spreading daisy	PerF	Wide	Pres	Unc	Belnap 458 (ARCH)	1987	
Compositae (Asteraceae)	<i>Erigeron pulcherrimus</i>		basin daisy	PerF	Wide	Pres	Unc	Belnap 77 (ARCH)	1987	
Compositae (Asteraceae)	<i>Erigeron pumilus</i> var. <i>concinus</i>	<i>E. concinnus</i> var. <i>concinus</i> , includes var. <i>subglaber</i> according to some authors	Navajo fleabane	PerF	Wide	Pres	Unc	Schelz s.n. (ARCH)	2003	
Compositae (Asteraceae)	<i>Erigeron utahensis</i> var. <i>sparsifolius</i>	<i>E. sparsifolius</i>	slenderleaf daisy	PerF	RegEn	Pres	Rare	Moore 246 (BRY)	1964	Type locality is Willow Creek, San Juan Co., UT (Eastwood 48 CAS)
Compositae (Asteraceae)	<i>Erigeron utahensis</i> var. <i>utahensis</i>	<i>E. utahensis</i>	Utah daisy	PerF	RegEn	Pres	Unc	Welsh & Moore 1992 (ARCH)	1963	Type locality is Kanab, Kane Co., UT (Thompson s.n. GH)
Compositae (Asteraceae)	<i>Euthamia occidentalis</i>	<i>Solidago occidentalis</i>	western goldenrod	PerF	Wide	Pres	Unc	Welsh & Moore 2720 (ARCH)	1963	
Compositae (Asteraceae)	<i>Flaveria campestris</i>		marshweed	AnnF	Sparse	Pres	Rare	Welsh & Moore 2751 (BRY)	1963	
Compositae (Asteraceae)	<i>Gaillardia pinnatifida</i>		Hopi blanketflower	PerF	Wide	Pres	Com	Fagan 23 (ARCH)	1949	
Compositae (Asteraceae)	<i>Gaillardia pulchella</i>	Includes reports of <i>G. aristata</i>	pretty blanketflower	AnnF	Intro	Pres	Unc	Fertig 22996 (ARCH)	2006	Probably escaped from highway planting.
Compositae (Asteraceae)	<i>Gaillardia spathulata</i>		basin blanketflower	PerF	RegEn	Pres	Unc	Welsh & Moore 2049 (ARCH)	1963	Type locality is Rabbit Valley, Wayne Co., UT (Ward 401 GH)
Compositae (Asteraceae)	<i>Grindelia fastigiata</i>	Included in <i>G. hirsutula</i> in <i>Flora of North America</i> (2006)	erect gumweed	PerF	RegEn	Pres	Unc	Welsh & Moore 2730 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Gutierrezia microcephala</i>		thread snakeweed	Shrub	Wide	Pres	Com	Welsh, Harrison, & Moore 2259 (ARCH)	1963	
Compositae (Asteraceae)	<i>Gutierrezia sarothrae</i>		broom snakeweed	Shrub	Wide	Pres	Abun	Welsh & Moore 2716 (ARCH)	1963	
Compositae (Asteraceae)	<i>Haplopappus armerioides</i> var. <i>armerioides</i>	<i>Stenotus armerioides</i> var. <i>armerioides</i>	thrift goldenweed	Perf	Wide	Pres	Unc	Belnap 83 (ARCH)	1949	
Compositae (Asteraceae)	<i>Haplopappus rusbyi</i>	<i>H. drummondii</i> , <i>Isocoma rusbyi</i> , <i>I. drummondii</i>	Rusby's goldenbush	Shrub	Wide	Pres	Unc	Belnap 440 (ARCH)	1963	Cited as " <i>Haplopappus</i> sp." in Harrison et al. (1964)
Compositae (Asteraceae)	<i>Helianthus annuus</i> ssp. <i>lenticularis</i>	Ssp. not recognized in <i>Flora of North America</i> (2006).	common sunflower	AnnF	Wide	Pres	Unc	Welsh & Moore 2725 (ARCH)	1963	
Compositae (Asteraceae)	<i>Helianthus anomalus</i>	Includes <i>H. deserticola</i>	sand sunflower	AnnF	RegEn	Pres	Unc	Welsh & Moore 2759 (ARCH)	1963	Type locality is desert S of Hanksville, Wayne Co., UT (Stanton 328 US).
Compositae (Asteraceae)	<i>Helianthus petiolaris</i> ssp. <i>fallax</i>	Includes var. <i>petiolaris</i>	prairie sunflower	AnnF	Wide	Pres	Unc	Welsh & Moore 2050 (ARCH)	1963	
Compositae (Asteraceae)	<i>Heterotheca subaxillaris</i>	<i>H. psammophila</i> , <i>H. latifolia</i> , <i>H. subaxillaris</i> var. <i>latifolia</i>	sand goldenaster	Perf	Periph	Pres	Rare	Welsh & Moore 2744 (ARCH)	1963	May be introduced from SW USA
Compositae (Asteraceae)	<i>Hymenopappus filifolius</i> var. <i>cinereus</i>	<i>H. filifolius</i> var. <i>lugens</i> , <i>H. filifolius</i> var. <i>pauciflorus</i> , <i>H. filifolius</i> var. <i>megacephalus</i> , <i>H. filifolius</i> var. <i>tomentosus</i>	common hyalineherb	Perf	Wide	Pres	Com	Welsh & Moore 2008 (ARCH)	1963	
Compositae (Asteraceae)	<i>Hymenoxys acaulis</i> var. <i>arizonica</i>	<i>Tetranneuris acaulis</i> var. <i>arizonica</i>	Arizona hymenoxys	Perf	Wide	Pres	Unc	Fleming 959 (ARCH)	1987	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Hymenoxys acaulis</i> var. <i>ivesiana</i>	<i>H. argentea</i> var. <i>ivesiana</i> , <i>Tetranneuris ivesiana</i>	Canyonlands hymenoxys	PerF	Wide	Pres	Com	Pyrh 63 (ARCH)	1947	
Compositae (Asteraceae)	<i>Lactuca serriola</i>		prickly lettuce	AnnF	Intro	Pres	Unc	Topp ST05200602 (ARCH)	2006	Native to Europe
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	Pres	Unc	Paspal 65 (ARCH)	1988	
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>arizonica</i>	<i>L. arizonica</i>	Arizona rush-pink	PerF	RegEn	Rep	?	Schelz et al. (2006)	NA	
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>entrada</i>	<i>L. entrada</i> , considered a synonym of var. <i>dianthopsis</i> by some authors	Entrada rush-pink	PerF	LocEn	Pres	Rare	Welsh & Moore 2006 (BRY)	1963	Type locality is Tusher Canyon, 15 mi WNW of Moab, Grand Co., UT (Welsh & Welsh 16725 BRY). UT BLM: Sensitive, USFWS: former C2 candidate.
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>grandiflora</i>		showy rush-pink	PerF	Wide	Pres	Com	Fagan 38 (ARCH)	1985	
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	Welsh & Moore 2718 (ARCH)	1963	
Compositae (Asteraceae)	<i>Machaeranthera grindelioides</i> var. <i>grindelioides</i>	<i>Haplopappus nuttallii</i> , <i>Xanthisma grindelioides</i> var. <i>grindelioides</i>	gumweed aster	PerF	Wide	Pres	Unc	Paspal 58 (ARCH)	1963	
Compositae (Asteraceae)	<i>Machaeranthera tanacetifolia</i>		tansyleaf aster	AnnF	Wide	Pres	Unc	Welsh & Moore 1976 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Malacothrix sonchoides</i>		sowthistle desert-dandelion	AnnF	Wide	Pres	Unc	Welsh & Moore 1916 (ARCH)	1948	
Compositae (Asteraceae)	<i>Onopordum acanthium</i>		Scotch thistle	PerF	Intro	Rep	Rare	Dewey & Anderson (2005)	2004	Utah state noxious weed. Native to Eurasia
Compositae (Asteraceae)	<i>Oxytenia acerosa</i>	<i>Iva acerosa</i>	copperweed	Shrub	Wide	Pres	Unc	Fertig 23000 (ARCH)	2006	
Compositae (Asteraceae)	<i>Perityle specuicola</i>		alcove rock-daisy	PerF	LocEn	Pres	Rare	Schelz s.n. (ARCH)	1998	Type locality is 2 mi NE of Moab, Grand Co., UT (Welsh 16283 BRY). UT BLM: Sensitive, USFWS: former C2 candidate.
Compositae (Asteraceae)	<i>Petradoria pumila</i> var. <i>pumila</i>	<i>Solidago petradoria</i>	rock-goldenrod	PerF	Wide	Pres	Unc	Paspal 56 (ARCH)	1963	
Compositae (Asteraceae)	<i>Platyschkuhria integrifolia</i> var. <i>desertorum</i>	<i>Bahia nudicaulis</i> var. <i>desertorum</i>	desert bahia	PerF	RegEn	Pres	Unc	Welsh & Moore 2007 (ARCH)	1949	Type locality is Cisco, Grand Co., UT (Jones s.n. US)
Compositae (Asteraceae)	<i>Senecio douglasii</i> var. <i>longilobus</i>	<i>S. longilobus</i> , <i>S. flaccidus</i> var. <i>douglasii</i> , <i>S. flaccidus</i> var. <i>flaccidus</i>	Douglas' groundsel	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	
Compositae (Asteraceae)	<i>Senecio multilobatus</i>	<i>Packera multilobata</i>	basin groundsel	PerF	Wide	Pres	Unc	Forsythe 15 (ARCH)	1963	
Compositae (Asteraceae)	<i>Senecio spartioides</i> var. <i>multicapitatus</i>	<i>S. multicapitatus</i> ; vars. not recognized in <i>Flora of North America</i> (2006)	many-headed groundsel	PerF	Wide	Pres	Unc	Welsh & Moore 2724 (ARCH)	1963	
Compositae (Asteraceae)	<i>Senecio spartioides</i> var. <i>spartioides</i>	Vars. not recognized in <i>Flora of North America</i> (2006)	broom groundsel	PerF	Wide	Pres	Unc	Welsh & Moore 2754 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>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	Pres	Rare	Allan 66 (BRY)	1972	
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	Pres	Unc	Fleming 839 (ARCH)	1963	
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	Fowler & May 1694 (ARCH)	1989	
Compositae (Asteraceae)	<i>Sonchus asper</i>		spiny-leaf sow-thistle	AnnF	Intro	Pres	Unc	Welsh & Moore 2035 (ARCH)	1963	Native to Europe
Compositae (Asteraceae)	<i>Sonchus oleraceus</i>		common sow-thistle	AnnF	Intro	Pres	Unc	Moran s.n. (ARCH)	2003	Native to Eurasia
Compositae (Asteraceae)	<i>Stephanomeria exigua</i>	<i>S. exigua</i> ssp. <i>exigua</i>	white-plume wire-lettuce	AnnF	Wide	Pres	Com	Welsh & Moore 1981 (ARCH)	1963	
Compositae (Asteraceae)	<i>Stephanomeria pauciflora</i>		brown-plume wire-lettuce	PerF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2263 (ARCH)	1963	
Compositae (Asteraceae)	<i>Stephanomeria tenuifolia</i> var. <i>tenuifolia</i>	<i>S. minor</i> var. <i>minor</i> . Vars. not recognized in <i>Flora of North America</i> (2006)	slender wirelettuce	PerF	Wide	Pres	Unc	Welsh & Moore 1991 (ARCH)	1963	
Compositae (Asteraceae)	<i>Taraxacum officinale</i>		common dandelion	PerF	Intro	Pres	Unc	Fagan 34 (ARCH)	1964	Native to Eurasia
Compositae (Asteraceae)	<i>Tetradymia spinosa</i>	<i>T. spinosa</i> var. <i>spinosa</i>	shortspine horsebrush	Shrub	Wide	Pres	Unc	Fleming 969 (ARCH)	1947	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Thelesperma subnudum</i> var. <i>subnudum</i>	Vars. not recognized in <i>Flora of North America</i> (2006).	scapose greenthread	PerF	Wide	Pres	Unc	Paspal 55 (ARCH)	1987	Type locality is "Southern Utah" (Parry 109 GH)
Compositae (Asteraceae)	<i>Townsendia annua</i>		annual townsendia	AnnF	Wide	Pres	Unc	Schelz s.n. (ARCH)	2005	Type locality is Cottonwood Wash, N of Bluff, San Juan Co., UT (Maguire 13509 GH)
Compositae (Asteraceae)	<i>Townsendia incana</i>		hoary townsendia	PerF	Wide	Pres	Unc	Pitts 74 (ARCH)	1949	
Compositae (Asteraceae)	<i>Tragopogon dubius</i>	<i>T. dubius</i> var. <i>major</i>	yellow salsify	PerF	Intro	Pres	Unc	Welsh & Moore 2813 (ARCH)	1964	Native to Europe
Compositae (Asteraceae)	<i>Vandervea stylosa</i>	<i>Chrysothamnus stylosa</i>	resinbush	Shrub	RegEn	Pres	Com	Welsh & Moore 2717 (ARCH)	1963	Type locality is near Epsom Creek [between Bluff and Mexican Hat], San Juan Co., UT (Eastwood 36 CAS)
Compositae (Asteraceae)	<i>Wyethia scabra</i>	<i>Scabrethia scabra</i> ssp. <i>scabra</i>	rough mule's-ears	PerF	Wide	Pres	Com	Barnett 71 (ARCH)	1947	
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	Pres	Unc	Welsh, Harrison, & Moore 2286 (ARCH)	1963	
Compositae (Asteraceae)	<i>Xylorhiza glabruscula</i> var. <i>linearifolia</i>	<i>Machaeranthera linearifolia</i> , <i>X. linearifolia</i>	Moab woodyaster	PerF	LocEn	Pres	Rare	Belnap 94 (ARCH)	1987	Type locality is 6 miles NW of Moab, Grand Co., UT (Watson 679 TEX)

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Xylorhiza tortifolia</i> var. <i>imberbis</i>	<i>Machaeranthera tortifolia</i> var. <i>imberbis</i>	hurtleaf woodyaster	PerF	RegEn	Pres	Rare	Welsh & Moore 2803 (ARCH)	1964	Type locality is E bank of Green River W of Moab (Cronquist 8994 NY)
Compositae (Asteraceae)	<i>Xylorhiza venusta</i>	<i>Machaeranthera venusta</i>	Cisco woodyaster	PerF	RegEn	Pres	Unc	Pyrah 50 (ARCH)	1947	Type locality is Cisco, Grand Co., UT (Jones s.n. POM)
Convolvulaceae	<i>Convolvulus arvensis</i>		field bindweed	PerF	Intro	Pres	Unc	Fagan 33 (ARCH)	1985	Utah state noxious weed. Native to Eurasia
Convolvulaceae (Cuscutaceae)	<i>Cuscuta pentagona</i>		field dodder	AnnF	Wide	Pres	Rare	Welsh, Harrison, & Moore 2345 (BRY)	1963	
Convolvulaceae	<i>Evolvulus nuttallianus</i>		evolvulus	PerF	Wide	Pres	Unc	Fleming 755 (ARCH)	1989	
Convolvulaceae	<i>Ipomoea purpurea</i>		morning-glory	AnnF	Intro	Pres	Rare	Moran s.n. (ARCH)	2006	Native to tropical America
Cornaceae	<i>Cornus sericea</i> var. <i>sericea</i>	<i>C. stolonifera</i> , <i>Swida sericea</i>	red-osier dogwood	Shrub	Wide	Pres	Rare	Fagan 39 (ARCH)	1985	
Cruciferae (Brassicaceae)	<i>Arabis perennans</i> var. <i>perennans</i>	<i>Boechea perennans</i>	perennial rockcress	PerF	Wide	Pres	Unc	Fagan 26 (ARCH)	1947	
Cruciferae (Brassicaceae)	<i>Arabis pulchra</i> var. <i>pallens</i>	<i>Boechea pulchra</i> var. <i>pallens</i>	desert rockcress	PerF	Wide	Pres	Com	Pyrah 56 (ARCH)	1947	Type locality is Westwater, Grand Co., UT (Jones s.n. US)
Cruciferae (Brassicaceae)	<i>Chorispora tenella</i>		blue mustard	AnnF	Intro	Pres	Unc	Topp ST05070603 (ARCH)	2006	Native to Asia
Cruciferae (Brassicaceae)	<i>Conringia orientalis</i>		hare's-ear mustard	AnnF	Intro	Rep	?	Schelz et al. (2006)	NA	Native to Europe

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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 californica</i>		California tansy-mustard	PerF	Wide	Rep	Rare	Schelz et al. (2006), Northern Colorado Plateau Network (in ed.)	2006	
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	Pres	Com	Pyrh 52 (ARCH)	1963	
Cruciferae (Brassicaceae)	<i>Descurainia sophia</i>		flixweed	AnnF	Intro	Pres	Unc	Topp ST05070601 (ARCH)	2006	Native to Europe
Cruciferae (Brassicaceae)	<i>Dithyrea wislizeni</i>	<i>Dimorphocarpa wislizenii</i>	spectacle-pod	AnnF	Wide	Pres	Com	Pitts 65 (ARCH)	1947	
Cruciferae (Brassicaceae)	<i>Draba cuneifolia</i> var. <i>cuneifolia</i>		wedgeleaf draba	AnnF	Wide	Pres	Unc	Welsh & Moore 2774 (ARCH)	1964	
Cruciferae (Brassicaceae)	<i>Draba reptans</i>		dwarf draba	AnnF	Wide	Rep	?	Schelz et al. (2006)	NA	
Cruciferae (Brassicaceae)	<i>Erysimum asperum</i> var. <i>purshii</i>	<i>E. asperum</i> var. <i>arkansanum</i> , <i>E. capitatum</i> var. <i>purshii</i> , included in var. <i>capitatum</i> by some authors	sand dune wallflower	PerF	Wide	Pres	Unc	Pitts 40 (ARCH)	1963	Type locality is near the Great Salt Lake, Salt Lake Co., UT (Carrington s.n.)
Cruciferae (Brassicaceae)	<i>Lepidium alyssoides</i> var. <i>eastwoodiae</i>	<i>L. montanum</i> var. <i>spathulatum</i> , <i>L. eastwoodiae</i>	Eastwood's tall pepperwort	PerF	RegEn	Pres	Rare	Harms s.n. (ARCH)	2005	
Cruciferae (Brassicaceae)	<i>Lepidium densiflorum</i> var. <i>ramosum</i>	Includes var. <i>macrocarpum</i>	prairie pepperwort	AnnF	Wide	Pres	Unc	Welsh & Moore 2773 (ARCH)	1964	
Cruciferae (Brassicaceae)	<i>Lepidium latifolium</i>	<i>Cardaria latifolia</i>	broad-leaf pepperwort	PerF	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	Utah state noxious weed. Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Lepidium moabense</i>	Included in <i>L. eastwoodiae</i> by some authors	Moab pepperplant	PerF	LocEn	Pres	Rare	Moran s.n. (ARCH)	2006	Type locality is 2 miles NNE of Moab, Grand Co., UT (Welsh 16351 BRY)
Cruciferae (Brassicaceae)	<i>Lepidium montanum</i> var. <i>jonesii</i>		Jones' pepperwort	PerF	Wide	Pres	Com	Pyrah 55 (ARCH)	1948	
Cruciferae (Brassicaceae)	<i>Lepidium perfoliatum</i>		clasping pepperwort	AnnF	Intro	Pres	Rare	Fagan 17 (ARCH)	1985	Native to Europe
Cruciferae (Brassicaceae)	<i>Malcolmia africana</i>		African mustard	AnnF	Intro	Pres	Unc	Welsh & Moore 2808 (ARCH)	1964	Native to Africa
Cruciferae (Brassicaceae)	<i>Nasturtium officinale</i>	<i>Rorippa nasturtium-aquaticum</i>	watercress	PerF	Intro	Pres	Rare	Welsh, Harrison, & Moore 2279 (ARCH)	1963	Native to Europe
Cruciferae (Brassicaceae)	<i>Physaria acutifolia</i> var. <i>acutifolia</i>	<i>P. australis</i>	sharp-leaf twinpod	PerF	Wide	Pres	Unc	Barnett 42 (ARCH)	1947	
Cruciferae (Brassicaceae)	<i>Sisymbrium altissimum</i>		tumble mustard	AnnF	Intro	Pres	Unc	Belnap 49 (ARCH)	1979	Native to Europe
Cruciferae (Brassicaceae)	<i>Stanleya pinnata</i>	<i>S. pinnata</i> var. <i>pinnata</i>	prince's-plume	PerF	Wide	Pres	Com	Barnett 65 (ARCH)	1949	
Cruciferae (Brassicaceae)	<i>Streptanthella longirostris</i>		long-beak fiddle-mustard	AnnF	Wide	Pres	Com	Pitts 62 (ARCH)	1949	
Cruciferae (Brassicaceae)	<i>Streptanthus cordatus</i>	<i>S. cordatus</i> var. <i>cordatus</i>	heart-leaf jewelflower	PerF	Wide	Pres	Unc	Forsythe 13 (ARCH)	1947	
Cruciferae (Brassicaceae)	<i>Thelypodopsis elegans</i>		elegant thelypody	PerF	RegEn	Pres	Rare	Fagan 10 (ARCH)	1985	Type locality is Westwater, Grand Co., UT (Jones s.n. POM)
Cruciferae (Brassicaceae)	<i>Thelypodium integrifolium</i> var. <i>gracilipes</i>		Moab thelypody	PerF	RegEn	Pres	Unc	Welsh, Harrison, & Moore 2337 (ARCH)	1963	
Cupressaceae	<i>Juniperus osteosperma</i>	<i>Sabina osteosperma</i>	Utah juniper	Shrub	Wide	Pres	Abun	Pitts 73 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Cyperaceae	<i>Juniperus scopulorum</i>	<i>Sabina scopulorum</i>	Rocky Mountain juniper	Tree	Wide	Pres	Rare	Fertig 22646 (ARCH)	2006	
Cyperaceae	<i>Carex aurea</i>	<i>C. garberi</i>	golden sedge	PerG	Wide	Pres	Unc	Fleming 767 (ARCH)	1947	Cited as <i>C. garberi</i> in Harrison et al. (1964)
Cyperaceae	<i>Carex hystericina</i>	<i>C. hystericina</i>	bottlebrush sedge	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2300 (ARCH)	1963	
Cyperaceae	<i>Carex nebrascensis</i>		Nebraska sedge	PerG	Wide	Pres	Unc	Pitts 52 (ARCH)	1963	
Cyperaceae	<i>Carex praegracilis</i>		blackcreeper sedge	PerG	Wide	Pres	Unc	Pyrach 42 (ARCH)	1963	Cited as <i>C. foena</i> in Harrison et al. (1964)
Cyperaceae	<i>Cyperus erythrorhizos</i>		redroot flat-sedge	AnnG	Wide	Pres	Unc	Schelz s.n. (ARCH)	1997	
Cyperaceae	<i>Cyperus esculentus</i>	Includes vars. <i>leptostachys</i> , & <i>heermannii</i>	chufa flat-sedge	PerG	Periph	Pres	Rare	Fertig 23008 (ARCH)	2006	Native to North America, UT material may be introduced
Cyperaceae	<i>Eleocharis palustris</i>	Includes <i>E. macrostachya</i> , <i>E. erythropoda</i> , & <i>E. uniglumis</i>	common spikerush	PerG	Wide	Pres	Unc	Barnett 49 (ARCH)	1963	
Cyperaceae	<i>Scirpus acutus</i>	<i>Schoenoplectus acutus</i> var. <i>occidentalis</i> , <i>Schoenoplectus lacustris</i> ssp. <i>acutus</i>	hardstem bulrush	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2276 (ARCH)	1963	Cited as <i>S. validus</i> in Harrison et al. (1964).
Cyperaceae	<i>Scirpus maritimus</i>	<i>Scirpus maritimus</i> var. <i>paludosus</i> , <i>Schoenoplectus maritimus</i> , <i>Bolboschoenus maritimus</i> var. <i>paludosus</i>	alkali bulrush	PerG	Wide	Pres	Unc	Topp 5T08220603 (ARCH)	2006	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Cyperaceae	<i>Scirpus pungens</i> var. <i>longispicatus</i>	<i>Scirpus pungens</i> var. <i>polyphyllus</i> , <i>Schoenoplectus pungens</i> var. <i>longispicatus</i> , <i>Schoenoplectus pungens</i> var. <i>polyphyllus</i>	three-square bulrush	PerG	Wide	Pres	Unc	Barnett 72 (ARCH)	1963	
Elaeagnaceae	<i>Elaeagnus angustifolia</i>		Russian-olive	Tree	Intro	Pres	Unc	Welsh & Moore 2748 (ARCH)	1963	Native to Europe
Ephedraceae	<i>Ephedra torreyana</i>		Torrey's ephedra	Shrub	Wide	Pres	Com	Pyrar 59 (ARCH)	1948	
Ephedraceae	<i>Ephedra viridis</i> var. <i>viridis</i>	<i>E. viridis</i>	green ephedra	Shrub	Wide	Pres	Com	Pyrar 32 (ARCH)	1949	
Ephedraceae	<i>Ephedra viridis</i> var. <i>viscida</i>	<i>E. cutleri</i>	Cutler's ephedra	Shrub	RegEn	Pres	Unc	Welsh & Welsh 21166 (BRY)	1952	
Equisetaceae	<i>Equisetum arvense</i>		field horsetail	Fern	Wide	Pres	Unc	Welsh, Harrison, & Moore 2282 (ARCH)	1963	
Equisetaceae	<i>Equisetum hyemale</i> var. <i>affine</i>	<i>Hippochaete hyemalis</i> ssp. <i>affinis</i> , <i>E. prealtium</i>	tall scouring-rush	Fern	Wide	Pres	Unc	Welsh, Harrison, & Moore 2293 (ARCH)	1963	
Equisetaceae	<i>Equisetum laevigatum</i>	<i>Hippochaete laevigata</i> , <i>E. kansanum</i>	smooth scouring-rush	Fern	Wide	Pres	Unc	Barnett 51 (BRY)	1963	
Euphorbiaceae	<i>Chamaesyce fendleri</i>	<i>Euphorbia fendleri</i>	Fendler's spurge	PerF	Wide	Pres	Unc	Pyrar 61 (ARCH)	1963	
Euphorbiaceae	<i>Chamaesyce glyptosperma</i>	<i>Euphorbia glyptosperma</i>	ridge-seeded spurge	AnnF	Wide	Pres	Unc	Fertig 22991 (ARCH)	2006	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Euphorbiaceae	<i>Chamaesyce parryi</i>	<i>Euphorbia parryi</i>	Parry's spurge	AnnF	Wide	Pres	Com	Welsh & Moore 2710 (ARCH)	1963	Type locality is St. George, Washington Co., UT (Parry 247 MO)
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	Pres	Com	Fleming 766 (ARCH)	1947	
Euphorbiaceae	<i>Tragia ramosa</i>	<i>T. stylaris</i>	noseburn	PerF	Sparse	Pres	Unc	Fleming 854 (ARCH)	1989	
Fagaceae	<i>Quercus gambelii</i> var. <i>gambelii</i>	<i>Q. gambelii</i>	Gambel oak	Tree	Wide	Pres	Com	Barnett 48 (ARCH)	1947	
Fagaceae	<i>Quercus turbinella</i>		turbinella live-oak	Shrub	Wide	Pres	Rare	Forsythe 17 (ARCH)	1981	
Fagaceae	<i>Quercus welshii</i>	<i>Q. havardii</i> var. <i>tuckeri</i> , <i>Q. undulata</i>	shinnery oak	Shrub	RegEn	Pres	Com	Pyrarh 66 (ARCH)	1947	Type locality of <i>Q. havardii</i> var. <i>tuckeri</i> is Low Pass E of Kens Lake, San Juan Co., UT (Welsh & Higgins 23630 BRY)
Fumariaceae	<i>Corydalis aurea</i> var. <i>occidentalis</i>	<i>C. curvisiliqua</i> ssp. <i>occidentalis</i>	golden corydalis	PerF	Wide	Pres	Unc	Belnap 74 (ARCH)	1987	
Gentianaceae	<i>Centaurium exaltatum</i>		Great Basin centaury	PerF	Wide	Pres	Unc	Paspal 77 (ARCH)	1991	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Gentianeaceae	<i>Swertia utahensis</i>	<i>Frasera paniculata</i>	Utah swertia	PerF	RegEn	Pres	Unc	Welsh, Harrison, & Moore 2343 (ARCH)	1963	Cited as <i>S. albomarginata</i> in Harrison et al. (1964). Type locality is Buckskin Mountains, Kaibab Plateau "on the S edge of Utah", Kane Co., UT (Jones s.n. POM)
Geraniaceae	<i>Erodium cicutarium</i>		stork's-bill	AnnF	Intro	Pres	Com	Welsh & Moore 2016 (ARCH)	1963	Native to Europe
Gramineae (Poaceae)	<i>Aegilops cylindrica</i>	<i>Cylindropyrum cylindricum</i>	jointed goatgrass	AnnG	Intro	Pres	Rare	Fertig 22651 (ARCH)	2006	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	Rare	Welsh & Moore 2052 (ARCH)	1963	Native to Eurasia.
Gramineae (Poaceae)	<i>Agrostis stolonifera</i>	<i>A. alba</i> , <i>A. gigantea</i>	redtop	PerG	Intro	Pres	Unc	Welsh, Harrison, & Moore 2295 (ARCH)	1963	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Aristida purpurea</i>	<i>A. glauca</i> , <i>A. purpurea</i> var. <i>fendleriana</i> , <i>A. purpurea</i> var. <i>longiseta</i>	purple three-awn	PerG	Wide	Pres	Com	Welsh, Harrison, & Moore 2330 (ARCH)	1948	
Gramineae (Poaceae)	<i>Bothriochloa ischaemum</i>	<i>B. ischaemum</i> var. <i>songarica</i>	yellow bluestem	PerG	Intro	Pres	Rare	Moran s.n. (ARCH)	2006	Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Bouteloua barbata</i>	<i>Chondrosium barbatum</i> , includes vars. <i>barbata</i> & <i>rothrockii</i>	sixweeks grama	AnnG	Wide	Pres	Com	Welsh & Moore 2531 (ARCH)	1963	
Gramineae (Poaceae)	<i>Bouteloua curtipendula</i>	Includes vars. <i>curtipendula</i> & <i>caespitosa</i>	sideoats grama	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2313 (ARCH)	1949	
Gramineae (Poaceae)	<i>Bouteloua gracilis</i>	<i>Chondrosium gracile</i>	blue grama	PerG	Wide	Pres	Rare	Topp SET10130301 (ARCH)	2003	
Gramineae (Poaceae)	<i>Bromus carinatus</i>	<i>B. marginatus</i> , <i>B. polyanthus</i> , <i>Ceratochloa carinata</i>	mountain brome	PerG	Wide	Pres	Unc	Welsh & Moore 2818 (BRY)	1963	
Gramineae (Poaceae)	<i>Bromus diandrus</i>	<i>B. rigidus</i> , <i>Anisantha diandra</i>	ripgut brome	AnnG	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	Native to Eurasia
Gramineae (Poaceae)	<i>Bromus japonicus</i>	<i>B. arvensis</i> , Includes <i>B. commutatus</i>	Japanese chess	AnnG	Intro	Pres	Unc	Topp ST08080602 (ARCH)	2006	Native to Eurasia
Gramineae (Poaceae)	<i>Bromus tectorum</i>	<i>Anisantha tectorum</i>	cheatgrass	AnnG	Intro	Pres	Com	Pitts 44 (ARCH)	1963	Native to Eurasia
Gramineae (Poaceae)	<i>Calamagrostis scopulorum</i>		Jones' reedgrass	PerG	Wide	Pres	Rare	Fertig 22994 (ARCH)	2006	Type locality is Springdale, Washington Co., UT (Jones 6075 POM)
Gramineae (Poaceae)	<i>Cenchrus longispinus</i>		field sandbur	AnnG	Wide	Pres	Unc	Welsh & Moore 2756 (ARCH)	1963	
Gramineae (Poaceae)	<i>Chloris virgata</i>		feather finger grass	AnnG	Wide	Pres	Unc	Moran s.n. (ARCH)	2006	
Gramineae (Poaceae)	<i>Dactylis glomerata</i>		orchard grass	PerG	Intro	Pres	Rare	Welsh, Harrison, & Moore 2315 (ARCH)	1963	Native to Eurasia and Africa

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Digitaria sanguinalis</i>		hairy crabgrass	AnnG	Intro	Pres	Unc	Fertig 22999 (ARCH)	2006	Native to Eurasia
Gramineae (Poaceae)	<i>Distichlis spicata</i>	<i>D. spicata</i> var. <i>stricta</i> , <i>D. stricta</i>	desert saltgrass	PerG	Wide	Pres	Unc	Welsh & Moore 2031 (ARCH)	1963	
Gramineae (Poaceae)	<i>Echinochloa crus-galli</i>	Includes <i>E. microstachya</i> & <i>E. muricata</i> var. <i>microstachya</i>	barnyard-grass	AnnG	Intro	Pres	Unc	Welsh & Moore 2745 (BRY)	1963	Native to Eurasia
Gramineae (Poaceae)	<i>Elymus canadensis</i>	<i>E. canadensis</i> var. <i>canadensis</i>	Canada wildrye	PerG	Wide	Pres	Unc	Fleming 830 (ARCH)	1963	
Gramineae (Poaceae)	<i>Elymus cinereus</i>	<i>Leymus cinereus</i>	Great Basin wildrye	PerG	Wide	Pres	Unc	Topp ST08080606 (ARCH)	2006	
Gramineae (Poaceae)	<i>Elymus elymoides</i>	<i>E. elymoides</i> var. <i>elymoides</i> , <i>Sitanion hystrix</i>	squirreltail	PerG	Wide	Pres	Unc	Pitts 53 (ARCH)	1949	
Gramineae (Poaceae)	<i>Elymus salinus</i>	<i>E. salina</i> , <i>E. ambiguus</i> , <i>Leymus salinus</i> , <i>L. salina</i> , <i>L. ambiguus</i>	Salina wildrye	PerG	Wide	Pres	Com	Welsh, Harrison, & Moore 2297 (BRY)	1963	Type locality is top of Salina Pass, Sevier Co., UT (Jones 5447 POM)
Gramineae (Poaceae)	<i>Elymus smithii</i>	<i>Agropyron smithii</i> , <i>Pascopyrum smithii</i> , includes vars. <i>smithii</i> & <i>palmeri</i>	western wheatgrass	PerG	Wide	Pres	Unc	Welsh & Moore 2809 (ARCH)	1964	
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	Com	Welsh & Moore 2003 (ARCH)	1963	
Gramineae (Poaceae)	<i>Enneapogon desvauxii</i>		spike pappusgrass	PerG	Sparse	Pres	Rare	Welsh 10933 (BRY)	1970	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Eragrostis hypnoides</i>		teal lovegrass	AnnG	Periph	Pres	Rare	Hahn LAH08180301 (ARCH)	2003	
Gramineae (Poaceae)	<i>Eragrostis pectinacea</i>		tufted lovegrass	AnnG	Wide	Pres	Unc	Moran s.n. (ARCH)	2006	
Gramineae (Poaceae)	<i>Eremopyrum triticeum</i>	<i>Agropyron triticeum</i>	annual wheatgrass	AnnG	Intro	Pres	Rare	Topp ST04210602 (ARCH)	2006	Native to Asia
Gramineae (Poaceae)	<i>Erioneuron pilosum</i>		hairy tridens	PerG	Wide	Pres	Unc	Harrison 11155 (BRY)	1947	
Gramineae (Poaceae)	<i>Erioneuron pulchellum</i>	<i>Dasyochloa pulchella</i>	fluffgrass	PerG	Wide	Pres	Unc	Harrison 11368 (BRY)	1949	
Gramineae (Poaceae)	<i>Festuca octoflora</i>	Includes vars. <i>glauca</i> , <i>hirtella</i> , & <i>octoflora</i> , <i>Vulpia octoflora</i>	six-weeks fescue	AnnG	Wide	Pres	Abun	Barnett 62 (ARCH)	1947	
Gramineae (Poaceae)	<i>Festuca pratensis</i>	<i>Lolium pratense</i> , <i>Schedonorus pratensis</i>	meadow fescue	PerG	Intro	Pres	Unc	Fertig 22653 (ARCH)	2006	Native to Eurasia
Gramineae (Poaceae)	<i>Glyceria striata</i>	Includes <i>G. elata</i>	fowl mannagrass	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2317 (ARCH)	1963	
Gramineae (Poaceae)	<i>Hilaria jamesii</i>	<i>Pleuraphis jamesii</i>	galleta	PerG	Wide	Pres	Com	Pyrar 60 (ARCH)	1947	
Gramineae (Poaceae)	<i>Hordeum jubatum</i>	<i>Critesion jubatum</i>	foxtail barley	PerG	Wide	Pres	Rare	Welsh, Harrison, & Moore 2314 (ARCH)	1963	
Gramineae (Poaceae)	<i>Hordeum murinum</i>	<i>H. murinum ssp. leporinum</i> , <i>H. leporinum</i> , <i>Critesion glaucum</i>	rabbit barley	AnnG	Intro	Pres	Unc	Belnap 521 (ARCH)	1988	Native to Europe
Gramineae (Poaceae)	<i>Muhlenbergia andina</i>		foxtail muhly	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2311 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Muhlenbergia asperifolia</i>		scratchgrass	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2273 (ARCH)	1952	
Gramineae (Poaceae)	<i>Muhlenbergia mexicana</i>		Mexican muhly	PerG	Sparse	Pres	Unc	Welsh, Harrison, & Moore 2302 (ARCH)	1963	
Gramineae (Poaceae)	<i>Muhlenbergia pungens</i>		sandhill muhly	PerG	Wide	Pres	Com	Welsh, Harrison, & Moore 2329 (ARCH)	1963	
Gramineae (Poaceae)	<i>Muhlenbergia thurberi</i>	Includes <i>M. curtifolia</i>	Thurber's muhly	PerG	Wide	Pres	Rare	Welsh & Moore 2755 (ARCH)	1963	
Gramineae (Poaceae)	<i>Munroa squarrosa</i>	<i>Monroa squarrosa</i>	false buffalograss	AnnG	Wide	Pres	Unc	Fertig 22997 (ARCH)	2006	
Gramineae (Poaceae)	<i>Panicum acuminatum</i>	<i>P. occidentale</i> , <i>P. tennesseense</i> , <i>P. huachucae</i> , <i>Dichantherium acuminatum</i> ssp. <i>fasciculatum</i> , <i>D. lanuginosum</i> var. <i>fasciculatum</i>	bundle panicgrass	PerG	Wide	Pres	Unc	Welsh & Moore 2042 (ARCH)	1952	
Gramineae (Poaceae)	<i>Panicum capillare</i>	<i>P. capillare</i> var. <i>occidentale</i>	witchgrass	AnnG	Wide	Pres	Unc	Moran s.n. (ARCH)	2006	
Gramineae (Poaceae)	<i>Panicum obtusum</i>		vine mesquite	PerG	Wide	Pres	Rare	Topp ST08220607 (ARCH)	2006	
Gramineae (Poaceae)	<i>Panicum virgatum</i>		switchgrass	PerG	Wide	Pres	Unc	Fertig 22648 (ARCH)	2006	
Gramineae (Poaceae)	<i>Phleum pratense</i>		timothy	PerG	Intro	Pres	Rare	Welsh, Harrison, & Moore 2316 (ARCH)	1963	Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Phragmites australis</i>	<i>P. communis</i>	common reed	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2291 (ARCH)	1963	
Gramineae (Poaceae)	<i>Poa fendleriana</i>	<i>P. longiligula</i> , <i>P. fendleriana</i> ssp. <i>longiligula</i> , includes reports of <i>P. cusickii</i> & <i>P. epilis</i>	muttongrass	PerG	Wide	Pres	Com	Pyrah 30 (ARCH)	1949	
Gramineae (Poaceae)	<i>Poa pratensis</i>	<i>P. agassizensis</i>	Kentucky bluegrass	PerG	Intro	Pres	Unc	Welsh & Moore 2816 (BRY)	1964	Native to Europe
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	Pitts 46 (ARCH)	1963	
Gramineae (Poaceae)	<i>Polygonum monspeliensis</i>		rabbitfoot-grass	AnnG	Intro	Pres	Unc	Welsh & Moore 2034 (ARCH)	1963	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Puccinellia distans</i>		weeping alkaligrass	PerG	Intro	Pres	Unc	Welsh & Moore 2030 (ARCH)	1963	Native to Eurasia
Gramineae (Poaceae)	<i>Schizachyrium scoparium</i>	<i>Andropogon scoparius</i> , <i>S. scoparium</i> var. <i>neomexicanum</i>	little bluestem	PerG	Wide	Pres	Unc	Welsh & Moore 2736 (ARCH)	1963	
Gramineae (Poaceae)	<i>Secale cereale</i>		cultivated rye	AnnG	Intro	Rep	?	Schelz et al. (2006)	NA	Native to Eurasia
Gramineae (Poaceae)	<i>Setaria glauca</i>	<i>S. pumila</i> ssp. <i>pumila</i> , <i>Pennisetum glaucum</i>	yellow bristlegrass	AnnG	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	Native to Eurasia

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Setaria viridis</i>		green bristlegrass	AnnG	Intro	Pres	Rare	Welsh, Harrison, & Moore 2346 (ARCH)	1963	Native to Eurasia
Gramineae (Poaceae)	<i>Spartina gracilis</i>		alkali cordgrass	PerG	Wide	Pres	Unc	Topp 5T08070601 (ARCH)	2006	
Gramineae (Poaceae)	<i>Spartina pectinata</i>		prairie cordgrass	PerG	Sparse	Pres	Rare	Topp 5T08220605 (ARCH)	2006	
Gramineae (Poaceae)	<i>Sphenopholis obtusata</i>	<i>S. obtusata</i> var. <i>obtusata</i>	prairie wedgrass	PerG	Wide	Pres	Rare	Topp 5ET08040301 (ARCH)	1963	
Gramineae (Poaceae)	<i>Sporobolus airoides</i> var. <i>airoides</i>	<i>S. airoides</i>	alkali sacaton	PerG	Wide	Pres	Unc	Welsh & Moore 2041 (ARCH)	1963	
Gramineae (Poaceae)	<i>Sporobolus contractus</i>		spike dropseed	PerG	Wide	Pres	Unc	Welsh & Moore 1984 (BRY)	1952	
Gramineae (Poaceae)	<i>Sporobolus cryptandrus</i>		sand dropseed	PerG	Wide	Pres	Com	Fagan 20 (ARCH)	1963	
Gramineae (Poaceae)	<i>Sporobolus flexuosus</i>		mesa dropseed	PerG	Wide	Pres	Com	Belnap 437 (ARCH)	1952	
Gramineae (Poaceae)	<i>Sporobolus giganteus</i>		giant dropseed	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2270 (ARCH)	1963	
Gramineae (Poaceae)	<i>Stipa arida</i>	<i>Achnatherum aridum</i>	Mormon needlegrass	PerG	Wide	Hist	NA	Harrison, Marshal, & Nielson s.n. (BRY)	1941	Type locality is near Milford, Beaver Co., UT (Jones 2106)

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Stipa arnowiae</i>	<i>Achnatherum arnowiae</i> . Hybrid of <i>S. hymenoides</i> x <i>S. comata</i> .	Arnow's ricegrass	PerG	RegEn	Pres	Rare	Harrison 12001 - paratype (BRY)	1952	Cited as <i>S. x bloomeri</i> in Harrison et al. (1964). Type locality is ca 9 miles E of Johnson Canyon, Kane Co., UT (Welsh & O'Dell 28062 BRY)
Gramineae (Poaceae)	<i>Stipa comata</i> var. <i>comata</i>	<i>Hesperostipa comata</i> var. <i>comata</i>	needle-and-thread	PerG	Wide	Pres	Com	Welsh & Moore 2028a (ARCH)	1952	
Gramineae (Poaceae)	<i>Stipa hymenoides</i>	<i>Oryzopsis hymenoides</i> , <i>Achnatherum hymenoides</i>	Indian ricegrass	PerG	Wide	Pres	Abun	Pitts 77 (ARCH)	1963	
Gramineae (Poaceae)	<i>Stipa speciosa</i>	<i>Achnatherum speciosum</i> , <i>Jarava speciosa</i>	desert needlegrass	PerG	Wide	Pres	Unc	Hahn LAH05260301 (ARCH)	1952	
Gramineae (Poaceae)	<i>Tridens muticus</i>	<i>T. muticus</i> var. <i>elongatus</i>	slim tridens	PerG	Wide	Pres	Rare	Topp ST08220608 (ARCH)	2006	
Gramineae (Poaceae)	<i>Triticum aestivum</i>		wheat	AnnG	Intro	Pres	Unc	Welsh & Moore 1979 (ARCH)	1963	Native to Eurasia
Hydrophyllaceae	<i>Nama densum</i> var. <i>parviflorum</i>		leafy fiddleleaf	AnnF	Wide	Rep	?	Schelz et al. (2006)	NA	
Hydrophyllaceae	<i>Nama retrorsum</i>		Howell's nama	AnnF	RegEn	Pres	Rare	Welsh & Moore 2026 (ARCH)	1963	USFWS: 3C
Hydrophyllaceae	<i>Phacelia crenulata</i> var. <i>corrugata</i>	<i>P. corrugata</i>	corrugate phacelia	AnnF	Wide	Pres	Unc	Fleming 955 (ARCH)	1948	
Hydrophyllaceae	<i>Phacelia demissa</i> var. <i>demissa</i>		brittle phacelia	AnnF	RegEn	Rep	?	Schelz et al. (2006)	NA	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Hydrophyllaceae	<i>Phacelia howelliana</i>	Included in <i>P. crenulata</i> by some authors	Howell's phacelia	AnnF	RegEn	Pres	Rare	Pitts 71 (ARCH)	1963	Type locality is 0.4 miles N of Bluff, San Juan Co., UT (Atwood 2454 BRY). USFWS: 3C
Hydrophyllaceae	<i>Phacelia ivesiana</i>		Ives' phacelia	AnnF	Wide	Pres	Com	Barnett 66 (ARCH)	1963	
Juncaceae	<i>Juncus arcticus</i>	<i>J. balticus</i> var. <i>montanus</i> , <i>J. arcticus</i> var. <i>balticus</i> & ssp. <i>ater</i> , includes var. <i>mexicanus</i>	Baltic rush	PerG	Wide	Pres	Com	Pyrah 67 (ARCH)	1963	
Juncaceae	<i>Juncus articulatus</i>		jointed rush	PerG	Sparse	Pres	Rare	Schelz s.n. (ARCH)	1997	
Juncaceae	<i>Juncus ensifolius</i> var. <i>brunnescens</i>	<i>J. saximontanus</i> forma <i>brunnescens</i> . Included in <i>J. ensifolius</i> var. <i>montanus</i> by some authors	Tracy's rush	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2321 (ARCH)	1963	
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	Rep	Rare	Fowler et al. (2007)	1993	
Juncaceae	<i>Juncus longistylus</i>		longstyle rush	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2301 (ARCH)	1963	
Juncaceae	<i>Juncus nevadensis</i>	Includes var. <i>badius</i> & <i>nevadensis</i>	Nevada rush	PerG	Wide	Rep	?	Schelz et al. (2006)	NA	
Juncaceae	<i>Juncus tenuis</i>	Includes vars. <i>dudleyi</i> , <i>congestus</i> , & <i>tenuis</i> . <i>J. dudleyi</i>	poverty rush	PerG	Wide	Pres	Rare	Welsh, Harrison, & Moore 2305 (ARCH)	1963	
Juncaceae	<i>Juncus torreyi</i>		Torrey's rush	PerG	Wide	Pres	Unc	Schelz s.n. (ARCH)	1997	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Juncaginaceae	<i>Triglochin maritima</i>	<i>T. maritima</i> var. <i>elata</i> , includes <i>T. concinnum</i>	seaside arrowgrass	PerG	Wide	Pres	Unc	Welsh & Moore 2033 (ARCH)	1963	
Labiatae (Lamiaceae)	<i>Hedeoma drummondii</i>		mock pennyroyal	PerF	Wide	Pres	Unc	Welsh & Moore 2040 (ARCH)	1963	
Labiatae (Lamiaceae)	<i>Marrubium vulgare</i>		common horehound	PerF	Intro	Rep	?	Scholz et al. (2006)	NA	Native to Eurasia
Labiatae (Lamiaceae)	<i>Poliomintha incana</i>		purple sage	Shrub	Wide	Pres	Com	Welsh & Moore 1980 (ARCH)	1952	
Leguminosae (Fabaceae)	<i>Astragalus amphioxys</i> var. <i>amphioxys</i>		crescent milkvetch	PerF	Wide	Pres	Com	Welsh & Moore 1910 (ARCH)	1940	
Leguminosae (Fabaceae)	<i>Astragalus amphioxys</i> var. <i>vespertinus</i>		Sheldon's milkvetch	PerF	RegEn	Hist	NA	Harrison 11399 (BRY)	1949	
Leguminosae (Fabaceae)	<i>Astragalus ceramicus</i> var. <i>ceramicus</i>		painted milkvetch	PerF	Wide	Pres	Rare	Holmgren 10926 (NY)	1952	
Leguminosae (Fabaceae)	<i>Astragalus coltonii</i> var. <i>moabensis</i>		Moab milkvetch	PerF	RegEn	Pres	Unc	Welsh & Moore 1902 (ARCH)	1947	Type locality is near Monticello, San Juan Co., UT (Eastwood 9 POM)
Leguminosae (Fabaceae)	<i>Astragalus cymboides</i>		canoe milkvetch	PerF	LocEn	Pres	Unc	Belnap 55 (ARCH)	1949	Type locality is Huntington, Emery Co., UT (Jones 5464j POM)
Leguminosae (Fabaceae)	<i>Astragalus desperatus</i> var. <i>desperatus</i>		rimrock milkvetch	PerF	RegEn	Pres	Unc	Welsh & Moore 1911 (ARCH)	1947	Type locality is near Cisco, Grand Co., UT (Jones s.n. POM)
Leguminosae (Fabaceae)	<i>Astragalus flavus</i> var. <i>flavus</i>	<i>A. flavus</i> var. <i>candicans</i>	yellow milkvetch	PerF	Wide	Pres	Rare	Welsh & Moore 1905 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Astragalus geyeri</i>	<i>A. geyeri</i> var. <i>geyeri</i>	Geyer's milkvetch	AnnF	Wide	Pres	Unc	Allan 277 (BRY)	1973	
Leguminosae (Fabaceae)	<i>Astragalus lentiginosus</i> var. <i>palans</i>		straggling milkvetch	PerF	RegEn	Pres	Com	Welsh & Moore 1908 (ARCH)	1947	Type locality is Montezuma Canyon, San Juan Co., UT (Eastwood s.n. POM)
Leguminosae (Fabaceae)	<i>Astragalus moencoppensis</i>		Moenkopi milkvetch	PerF	RegEn	Rep	?	Schelz et al. (2006)	NA	
Leguminosae (Fabaceae)	<i>Astragalus mollissimus</i> var. <i>thompsoniae</i>		woolly milkvetch	PerF	Wide	Pres	Unc	Welsh & Moore 1909 (ARCH)	1947	Type locality is Kanab, Kane Co., UT (Thompson s.n. GH)
Leguminosae (Fabaceae)	<i>Astragalus praelongus</i> var. <i>ellisae</i>		Ellis' milkvetch	PerF	Wide	Pres	Unc	Welsh & Moore 1904 (ARCH)	1949	
Leguminosae (Fabaceae)	<i>Astragalus preussii</i> var. <i>latus</i>	Included in var. <i>preussii</i> by some authors	Preuss' milkvetch	PerF	RegEn	Pres	Com	Welsh & Moore 1912 (ARCH)	1947	Type locality is Green River, Emery Co., UT (Jones s.n. POM)
Leguminosae (Fabaceae)	<i>Astragalus sabulonum</i>		gravel milkvetch	AnnF	Wide	Pres	Rare	Allan 402 (BRY)	1973	
Leguminosae (Fabaceae or Caesalpinaceae)	<i>Caesalpinia repens</i>	<i>Hoffmanseggia repens</i>	creeping rush-pea	PerF	RegEn	Pres	Rare	Paspal 61 (ARCH)	1988	Type locality is Courthouse Wash, Grand Co., UT (Eastwood s.n. CAS)
Leguminosae (Fabaceae)	<i>Dalea flavescens</i> var. <i>flavescens</i>		Kanab prairie-clover	PerF	RegEn	Pres	Unc	Welsh & Moore 2004 (ARCH)	1963	Type locality is "Kanab" (Thompson s.n. GH)
Leguminosae (Fabaceae)	<i>Dalea oligophylla</i>	<i>D. candida</i> var. <i>oligophylla</i> , <i>Petalostemon candidum</i> , <i>P. occidentale</i> ,	white prairie-clover	PerF	Wide	Pres	Unc	Fowler & May 1695 (ARCH)	1952	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Glycyrrhiza lepidota</i>	<i>G. lepidota</i> var. <i>lepidota</i>	Nuttall's licorice	PerF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2344 (ARCH)	1963	
Leguminosae (Fabaceae)	<i>Hedysarum boreale</i> var. <i>boreale</i>	Includes var. <i>pabulare</i>	northern sweetvetch	PerF	Wide	Pres	Unc	Welsh & Moore 1903 (ARCH)	1963	
Leguminosae (Fabaceae)	<i>Lathyrus brachycalyx</i> var. <i>zionis</i>		Zion sweetpea	PerF	RegEn	Pres	Unc	Fagan s.n. (ARCH)	1988	Type locality is 10 miles E of Zion NP, Kane Co., UT (Hitchcock 19013 isotype NY)
Leguminosae (Fabaceae)	<i>Lupinus argenteus</i> var. <i>argenteus</i>		silvery lupine	PerF	Wide	Pres	Rare	Welsh & Moore 2028 (ARCH)	1949	
Leguminosae (Fabaceae)	<i>Lupinus brevicaulis</i>		shortstem lupine	AnnF	Wide	Pres	Rare	Fagan 32 (ARCH)	1985	
Leguminosae (Fabaceae)	<i>Lupinus pusillus</i> var. <i>pusillus</i>		dwarf lupine	AnnF	Wide	Pres	Abun	Welsh & Moore 1906 (ARCH)	1948	
Leguminosae (Fabaceae)	<i>Medicago sativa</i>	<i>M. sativa</i> var. <i>sativa</i>	alfalfa	PerF	Intro	Pres	Unc	Fagan s.n. (ARCH)	1988	Native to Europe
Leguminosae (Fabaceae)	<i>Melilotus alba</i>	<i>M. albus</i> . Included in <i>M. officinalis</i> by some authors	white sweet-clover	AnnF	Intro	Pres	Unc	Fleming 827 (ARCH)	1963	Native to Europe
Leguminosae (Fabaceae)	<i>Melilotus officinalis</i>		yellow sweet-clover	PerF	Intro	Pres	Unc	Welsh & Moore 3015 (ARCH)	1964	Native to Europe
Leguminosae (Fabaceae)	<i>Pediomelum megalanthum</i>	<i>Pediomelum megalanthum</i> var. <i>megalanthum</i> , <i>Psoralea megalantha</i>	large-flowered breadroot	PerF	RegEn	Pres	Rare	Hahn LAH05140305 (ARCH)	2003	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Psoraleidium lanceolatum</i> var. <i>stenophyllum</i>	Vars. not recognized in Barneby (1989)	slenderleaf scurfpea	PerF	RegEn	Hist	NA	Harrison 11367 (BRY)	1949	Type locality is near Wilson Mesa, Grand Co., UT (Rydberg & Garrett 8367 NY)
Leguminosae (Fabaceae)	<i>Robinia pseudoacacia</i>		black locust	Tree	Intro	Pres	Unc	Welsh & Moore 1996 (ARCH)	1963	Native to E North America
Leguminosae (Fabaceae)	<i>Sophora stenophylla</i>		silvery sophora	PerF	Wide	Pres	Rare	Fleming 781 (ARCH)	1963	
Liliaceae (Alliaceae)	<i>Allium macropetalum</i>		San Juan onion	PerF	Wide	Pres	Unc	Barnett 53 (ARCH)	1963	
Liliaceae (Alliaceae)	<i>Allium nevadense</i>	Includes <i>A. atrorubens</i> var. <i>crisatum</i> by Welsh et al. (2003)	Nevada onion	PerF	Wide	Pres	Rare	Fagan s.n. (ARCH)	1988	
Liliaceae (Alliaceae)	<i>Allium textile</i>		textile onion	PerF	Wide	Pres	Unc	Fleming 967 (ARCH)	1990	
Liliaceae (Alliaceae, Themidaceae)	<i>Androstephium breviflorum</i>		pink funnel-lily	PerF	Wide	Pres	Rare	Pyrah 31 (ARCH)	1963	Type locality is near Kanab, Kane Co., UT (Thompson s.n.)
Liliaceae (Asparagaceae)	<i>Asparagus officinalis</i>		asparagus	PerF	Intro	Pres	Unc	Welsh & Moore 2828 (BRY)	1964	Native to Eurasia
Liliaceae (Calochortaceae)	<i>Calochortus nuttallii</i>		sego-lily	PerF	Wide	Pres	Unc	Welsh & Moore 2051 (ARCH)	1949	
Liliaceae (Anthericaceae)	<i>Eremocrinum albomarginatum</i>		sand lily	PerF	RegEn	Pres	Rare	Welsh 7025 (BRY)	1968	Type locality is near Green River, Emery Co., UT (Jones s.n. POM)
Liliaceae (Convallariaceae)	<i>Smilacina stellata</i>	<i>Maianthemum stellatum</i>	starry false Solomon's-seal	PerF	Wide	Pres	Unc	Pyrah 44 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Liliaceae (Melanthiaceae)	<i>Zigadenus vaginatus</i>	<i>Anticlea vaginatus</i>	alcove death camas	PerF	LocEn	Pres	Unc	Welsh, Harrison, & Moore 2335 (ARCH)	1963	Type locality is Natural Bridges NM, San Juan Co., UT (Rydberg & Garrett 9407 NY). USFWS: 3C
Linaceae	<i>Linum aristatum</i>	<i>Mesynium aristatum</i>	broom-flax	AnnF	Wide	Pres	Unc	Welsh & Moore 2767 (ARCH)	1963	
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	Fagan 24 (ARCH)	1985	
Loasaceae	<i>Mentzelia albicaulis</i>	<i>M. obscura</i> , <i>Acrolasia albicaulis</i> , <i>A. gracilis</i>	white-stem blazingstar	AnnF	Wide	Pres	Unc	Fagan 16 (ARCH)	1955	
Loasaceae	<i>Mentzelia multiflora</i>	<i>M. multiflora</i> var. <i>multiflora</i> , <i>Nuttallia multiflora</i>	desert stickleaf	PerF	Wide	Pres	Unc	Welsh & Moore 1982 (ARCH)	1949	
Loasaceae	<i>Mentzelia pterosperma</i>	<i>Nuttallia pterosperma</i>	wing-seed stickleaf	PerF	Wide	Pres	Unc	Pitts 75 (ARCH)	1963	Type locality is Willow Creek, San Juan Co., UT (Eastwood 31 CAS)
Loasaceae	<i>Mentzelia thompsonii</i>	<i>Acrolasia humilis</i> , <i>Mentzelia humilis</i> , <i>Nuttallia humilis</i>	Thompson's stickleaf	AnnF	RegEn	Pres	Rare	Heil & Heil 7028 (ARCH)	1992	Type locality is 7 miles E of Montrose, Montrose Co., CO (Weber 7470)
Lythraceae	<i>Lythrum salicaria</i>		purple loosestrife	PerF	Intro	Pres	Rare	Topp ST08220601 (ARCH)	2006	Utah state noxious weed. Native to Europe
Malvaceae	<i>Hibiscus trionum</i>		flower-of-an-hour	AnnF	Intro	Pres	Rare	Fertig 23006 (ARCH)	2006	Native to Africa
Malvaceae	<i>Sphaeralcea coccinea</i>	Includes ssp. <i>coccinea</i> , <i>elata</i> , & <i>dissecta</i>	scarlet globe-mallow	PerF	Wide	Pres	Unc	Pitts 58 (ARCH)	1947	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Sphaeralcea leptophylla</i>		slenderleaf globemallow	PerF	Wide	Pres	Rare	Welsh & Moore 2011 (ARCH)	1963	
Malvaceae	<i>Sphaeralcea parvifolia</i>		small-leaf globemallow	PerF	Wide	Pres	Com	Welsh & Moore 1915 (ARCH)	1952	
Moraceae	<i>Morus alba</i>		white mulberry	Tree	Intro	Pres	Unc	Welsh & Moore 3014 (ARCH)	1963	Native to China
Nyctaginaceae	<i>Abronia fragrans</i>	<i>A. elliptica</i> , <i>A. fragrans</i> var. <i>elliptica</i> , <i>A. nana</i> var. <i>harrisii</i>	fragrant sand-verbena	PerF	Wide	Pres	Com	Pyrah 27 (ARCH)	1947	
Nyctaginaceae	<i>Mirabilis linearis</i> var. <i>linearis</i>	<i>Oxybaphus linearis</i> , <i>O. decumbens</i> , Includes <i>M. glabra</i>	narrow-leaf four-o'clock	PerF	Wide	Pres	Unc	Welsh & Moore 1977 (ARCH)	1963	
Nyctaginaceae	<i>Mirabilis multiflora</i>	Includes vars. <i>multiflora</i> , <i>pubescens</i> , & <i>glandulosa</i>	showy four-o'clock	PerF	Wide	Pres	Rare	Welsh & Moore 3016 (BRY)	1964	
Nyctaginaceae	<i>Tripterocalyx micranthus</i>	<i>Abronia micrantha</i> , <i>T. pedunculatus</i>	small-flower sandpuffs	AnnF	Wide	Pres	Unc	Welsh & Moore 2819 (ARCH)	1963	
Oleaceae	<i>Forestiera pubescens</i>	<i>F. neomexicana</i>	desert olive	Shrub	Wide	Pres	Rare	Hahn LAH08270302 (ARCH)	2003	
Oleaceae	<i>Fraxinus anomala</i>		singleleaf ash	Shrub	Wide	Pres	Com	Pitts 42 (ARCH)	1947	Type locality is Labyrinth Canyon, San Juan Co., UT (Newberry s.n. NY)
Onagraceae	<i>Camissonia eastwoodiae</i>		Eastwood's camissonia	AnnF	RegEn	Pres	Rare	Welsh 7023 (BRY)	1968	
Onagraceae	<i>Camissonia scapoidea</i> var. <i>scapoidea</i>	<i>O. scapoidea</i>	Paiute suncup	AnnF	Wide	Pres	Unc	Paspal 76 (ARCH)	1991	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
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	Pres	Unc	Welsh, Harrison, & Moore 2318 (ARCH)	1963	
Onagraceae	<i>Gaura parviflora</i>	<i>G. mollis</i>	small-flowered gaura	AnnF	Wide	Pres	Unc	Welsh & Moore 2814 (ARCH)	1964	
Onagraceae	<i>Oenothera caespitosa</i> var. <i>marginata</i>		long-tube evening-primrose	PerF	Wide	Pres	Com	Pitts 47 (ARCH)	1949	
Onagraceae	<i>Oenothera caespitosa</i> var. <i>navajoensis</i>		Paria evening-primrose	PerF	RegEn	Pres	Unc	Pitts 59 (ARCH)	1963	Type locality is Paria River, Kane Co., UT (Cronquist 10202 MO)
Onagraceae	<i>Oenothera longissima</i>		Bridges evening-primrose	PerF	RegEn	Pres	Unc	Welsh, Harrison, & Moore 2332 (BRY)	1963	Type locality is Armstrong & White canyons [Natural Bridges NM], San Juan Co., UT (Rydberg & Garrett 9410 NY)
Onagraceae	<i>Oenothera pallida</i> var. <i>pallida</i>	Includes var. <i>runcinata</i>	pale evening-primrose	PerF	Wide	Pres	Com	Fleming 846 (ARCH)	1948	
Orchidaceae	<i>Epipactis gigantea</i>		giant helleborine	PerF	Wide	Pres	Unc	Welsh & Moore 2038 (ARCH)	1948	
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	Pres	Rare	Welsh & Moore 2735 (ARCH)	1963	Cited as <i>H. sparsiflora</i> in Harrison et al. (1964)

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

Family	Species name	Synonymic/ Taxonomic notes	Common name	Life form	Range	Park status	Pop. size	Source	Year doc.	Comments
Orchidaceae	<i>Habenaria zothecina</i>	<i>Platanthera zothecina</i> , <i>Limnorchis zothecina</i>	alcove bog-orchid	PerF	RegEn	Pres	Unc	Fleming 835 (ARCH)	1989	Type locality is ca 1 mile N of Moab, Grand Co., UT (Welsh & Higgins 23269 BRY). UT BLM: Sensitive, USFWS: former C2 candidate.
Orobanchaceae	<i>Orobancha fasciculata</i>	<i>Aphyllon fasciculatum</i>	clustered broomrape	PerF	Wide	Pres	Rare	Welsh & Moore 2023 (BRY)	1963	
Orobanchaceae	<i>Orobancha ludoviciana</i> var. <i>cooperi</i>	Includes <i>O. multiflora</i> , <i>O. cooperi</i>	Cooper's broomrape	PerF	Wide	Pres	Rare	Franklin 3821 (BRY)	1986	
Pinaceae	<i>Pinus edulis</i>		two-needle pinyon	Tree	Wide	Pres	Com	Pitts 60 (ARCH)	1963	
Plantaginaceae	<i>Plantago major</i>	Includes var. <i>pachyphylla</i>	common plantain	PerF	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	Mostly native to Europe. Type locality of the var. <i>pachyphylla</i> is Salt Lake City, Salt Lake Co., UT (Jones 1030 POM)
Plantaginaceae	<i>Plantago patagonica</i>	Includes vars. <i>patagonica</i> , <i>gnaphaloides</i> , <i>spinulosa</i> , & <i>breviscapa</i>	woolly plantain	AnnF	Wide	Pres	Abun	Pyrah 2 (ARCH)	1963	
Polemoniaceae	<i>Eriastrum diffusum</i>		spreading eriastrum	AnnF	Wide	Rep	?	Schelz et al. (2006)	NA	
Polemoniaceae	<i>Gilia inconspicua</i>	Includes var. <i>inconspicua</i> & <i>sinuata</i> , <i>G. ophthalmoides</i> , <i>G. sinuata</i> , <i>G. clokeyi</i>	shy gilia	AnnF	Wide	Pres	Unc	Pitts 57 (ARCH)	1963	If recognized, park material is all var. <i>sinuata</i>
Polemoniaceae	<i>Gilia leptomeria</i> var. <i>leptomeria</i>		common gilia	AnnF	Wide	Pres	Unc	Fleming 951 (ARCH)	1948	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Polemoniaceae	<i>Gilia subnuda</i>	<i>Aliciella subnuda</i>	carmine gilia	PerF	RegEn	Rep	?	Schelz et al. (2006)	NA	
Polemoniaceae	<i>Ipomopsis aggregata</i> var. <i>aggregata</i>	<i>Gilia aggregata</i> var. <i>aggregata</i>	scarlet gilia	PerF	Wide	Pres	Unc	Fagan 37 (ARCH)	1985	
Polemoniaceae	<i>Ipomopsis gunnisonii</i>	<i>Gilia gunnisonii</i>	Gunnison's gilia	AnnF	RegEn	Pres	Com	Welsh & Moore 1983 (ARCH)	1963	Type locality is "sand banks of the Green River", UT (Cruetzfeldt s.n. NY)
Polemoniaceae	<i>Ipomopsis polycladon</i>	<i>Gilia polycladon</i>	spreading gilia	AnnF	Wide	Pres	Unc	Fagan 15 (ARCH)	1985	
Polemoniaceae	<i>Ipomopsis roseata</i>	<i>Gilia roseata</i>	San Rafael gilia	PerF	RegEn	Pres	Unc	Welsh & Moore 1995 (ARCH)	1963	
Polemoniaceae	<i>Leptodactylon watsonii</i>	<i>Linanthus watsonii</i>	Watson's prickly-phlox	PerF	Wide	Pres	Unc	Fagan 22 (ARCH)	1949	Type locality is Cottonwood Canyon, Salt Lake Co., UT (Watson s.n. GH)
Polemoniaceae	<i>Phlox austromontana</i> var. <i>austromontana</i>	Var. not recognized in Cronquist et al. (1984)	desert phlox	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	Type locality is Beaver Dam Mts, Washington Co., UT (Fremont 447 US)
Polygalaceae	<i>Polygala subspinosa</i>	<i>P. subspinosa</i> var. <i>subspinosa</i>	cushion milkwort	PerF	Wide	Pres	Rare	Welsh, Harrison, & Moore 2306 (BRY)	1963	
Polygonaceae	<i>Eriogonum alatum</i>	<i>E. alatum</i> var. <i>alatum</i> , <i>Pterogonum alatum</i>	winged wild buckwheat	PerF	Wide	Pres	Unc	Welsh & Moore 2046 (ARCH)	1952	
Polygonaceae	<i>Eriogonum bicolor</i>		pretty wild buckwheat	PerF	RegEn	Pres	Unc	Fleming 961 (ARCH)	1947	Type locality is Thompson's Springs, Grand Co., UT (Jones s.n. POM)

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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 corymbosum</i> var. <i>corymbosum</i>	Includes var. <i>velutinum</i> and <i>E. lancifolium</i>	crisp-leaf wild buckwheat	Shrub	Wide	Pres	Com	Welsh & Moore 2709 (ARCH)	1963	
Polygonaceae	<i>Eriogonum corymbosum</i> var. <i>orbiculatum</i>		rimrock wild buckwheat	Shrub	RegEn	Pres	Unc	Welsh, Harrison, & Moore 2260 (ARCH)	1963	Type locality is Green River, Emery Co., UT (Jones s.n. POM)
Polygonaceae	<i>Eriogonum gordonii</i>		Gordon's wild buckwheat	AnnF	Wide	Pres	Unc	Howell 44866 (NY)	1963	
Polygonaceae	<i>Eriogonum inflatum</i> var. <i>fusiforme</i>	<i>E. fusiforme</i>	Grand Valley desert trumpet	AnnF	RegEn	Pres	Unc	Fertig 22658 (ARCH)	2006	
Polygonaceae	<i>Eriogonum inflatum</i> var. <i>inflatum</i>	<i>E. inflatum</i>	desert trumpet	PerF	Wide	Pres	Unc	Pyrah 47 (ARCH)	1963	
Polygonaceae	<i>Eriogonum leptocladon</i> var. <i>leptocladon</i>		sand wild buckwheat	Shrub	RegEn	Pres	Unc	Welsh, Harrison, & Moore 2265 (ARCH)	1963	Reported as " <i>Eriogonum</i> sp." in Harrison et al. (1964). Type locality is Green River, Emery Co., UT (Cruzeffeldt s.n. NY)
Polygonaceae	<i>Eriogonum microthecum</i> var. <i>laxiflorum</i>		slender wild buckwheat	Shrub	Wide	Pres	Unc	Welsh & Moore 2733 (ARCH)	1963	
Polygonaceae	<i>Eriogonum microthecum</i> var. <i>simpsonii</i>	<i>E. microthecum</i> var. <i>foliosum</i>	slender wild buckwheat	PerF	Wide	Pres	Com	Welsh & Moore 1993 (ARCH)	1963	
Polygonaceae	<i>Eriogonum ovalifolium</i>	<i>E. ovalifolium</i> var. <i>ovalifolium</i> , <i>E. ovalifolium</i> var. <i>purpureum</i> ; vars. not recognized by Welsh et al. (2003)	cushion wild buckwheat	PerF	Wide	Pres	Unc	Fleming 743 (ARCH)	1989	
Polygonaceae	<i>Eriogonum salsuginosum</i>	<i>Stenogonum salsuginosum</i>	smooth wild buckwheat	AnnF	Wide	Pres	Unc	Schelz s.n. (ARCH)	2003	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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 wetherillii</i>		Wetherill's wild buckwheat	AnnF	RegEn	Pres	Unc	Forsythe 7 (ARCH)	1964	Type locality is along the San Juan River, San Juan Co., UT (Eastwood 124 CAS)
Polygonaceae	<i>Polygonum lapathifolium</i>	<i>Persicaria lapathifolia</i>	willow-weed	AnnF	Intro	Pres	Rare	Topp ST08080605 (ARCH)	2006	Native to Eurasia
Polygonaceae	<i>Rumex crispus</i>		curly dock	PerF	Intro	Rep	Unc	Dewey & Anderson (2005)	2003	Native to Eurasia
Polygonaceae	<i>Rumex hymenosepalus</i>		canaigre dock	PerF	Wide	Pres	Com	Barnett 61 (ARCH)	1948	
Polygonaceae	<i>Rumex venosus</i>		veiny dock	PerF	Wide	Pres	Unc	Fagan 27 (ARCH)	1979	
Polypodiaceae (Adiantaceae)	<i>Adiantum capillus-veneris</i>		southern maidenhair fern	Fern	Wide	Pres	Unc	Pyrach 41 (ARCH)	1947	
Polypodiaceae (Asplenaceae)	<i>Cystopteris fragilis</i>	Includes <i>C. utahensis</i> , <i>C. reevesiana</i> , & <i>C. tenuis</i>	brittle bladder fern	Fern	Wide	Pres	Unc	Welsh, Harrison, & Moore 2320 (ARCH)	1963	Schelz et al. (2006) report <i>C. utahensis</i> , but ARCH specimen in currently on loan and could not be verified.
Polypodiaceae (Adiantaceae, Sinopteridaceae)	<i>Pellaea breweri</i>		Brewer's cliff-brake	Fern	Wide	Rep	Rare	Fowler et al. (2007)	1993	Report in Harrison et al. (1964) is based on a misidentified specimen of <i>P. glabella</i> var. <i>occidentalis</i> .
Polypodiaceae (Adiantaceae, Sinopteridaceae)	<i>Pellaea glabella</i> var. <i>occidentalis</i>	<i>P. occidentalis</i>	western cliffbrake	Fern	Periph	Pres	Rare	Welsh, Harrison, & Moore 2341 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Polypodiaceae (Adiantaceae, Sinopteridaceae)	<i>Pellaea limitanea</i>	<i>Argyrochosma limitanea</i> ssp. <i>limitanea</i> , <i>Notholanea limitanea</i>	border cloak-fern	Fern	Periph	Pres	Rare	Welsh & Moore 2757 (BRY)	1963	
Polypodiaceae (Dennstaedtiaceae, Hypolepidiaceae)	<i>Pteridium aquilinum</i> var. <i>pubescens</i>	<i>P. aquilinum</i> var. <i>lanuginosum</i>	bracken fern	Fern	Wide	Pres	Unc	Pitts 54 (ARCH)	1963	
Portulacaceae	<i>Portulaca oleracea</i>		common purslane	AnnF	Intro	Pres	Unc	Moore 41 (BRY)	1963	Native to E North America.
Portulacaceae	<i>Talinum brevifolium</i>	<i>Pheimeranthus brevifolius</i>	sausageleaf talinum	PerF	Wide	Pres	Rare	Topp ST05200601 (ARCH)	2006	
Primulaceae	<i>Primula specuicola</i>		cave primrose	PerF	RegEn	Pres	Unc	Barnett 50 (ARCH)	1947	Type locality is along San Juan River near Bluff, San Juan Co., UT (Rydberg 9882 NY). USFWS: 3C
Ranunculaceae (Helleboraceae)	<i>Aquilegia micrantha</i>		alcove columbine	PerF	RegEn	Pres	Unc	Pyrah 45 (ARCH)	1947	Type locality is Bluff, San Juan Co., UT (Wetherill s.n. CAS)
Ranunculaceae	<i>Clematis ligusticifolia</i>		white virgin's-bower	PerF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2322 (ARCH)	1963	
Ranunculaceae (Helleboraceae)	<i>Delphinium andersonii</i> var. <i>scaposum</i>	<i>D. scaposum</i>	pale larkspur	PerF	Wide	Pres	Unc	Welsh & Moore 1924 (ARCH)	1949	
Ranunculaceae (Helleboraceae)	<i>Delphinium nuttallianum</i>	<i>D. nelsonii</i>	Nuttall's larkspur	PerF	Wide	Pres	Unc	Forsythe 9 (ARCH)	1979	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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	<i>Ranunculus cymbalaria</i>	<i>R. cymbalaria</i> var. <i>cymbalaria</i> , <i>Halerpestes cymbalaria</i> sp. <i>saximontana</i> . Vars. not recognized in <i>Flora of North America</i> (1997)	marsh buttercup	PerF	Wide	Pres	Unc	Belnap 525 (ARCH)	1979	
Ranunculaceae	<i>Ranunculus testiculatus</i>	<i>Ceratocephala orthoceras</i> , <i>C. testiculata</i>	bur buttercup	AnnF	Intro	Pres	Unc	Paspal 75 (ARCH)	1991	Native to Eurasia
Rhamnaceae	<i>Rhamnus betulifolia</i>	<i>Frangula betulifolia</i>	birchleaf buckthorn	Shrub	Wide	Pres	Unc	Welsh & Moore 2760 (ARCH)	1963	
Rosaceae	<i>Amelanchier utahensis</i>		Utah serviceberry	Shrub	Wide	Pres	Unc	Barnett 58 (ARCH)	1947	Type locality is Toquerville, Washington Co., UT (Jones 1716 GH)
Rosaceae	<i>Cercocarpus intricatus</i>	<i>C. ledifolius</i> var. <i>intricatus</i>	dwarf mountain mahogany	Shrub	Wide	Pres	Com	Pitts 39 (ARCH)	1948	Type locality is American Fork Canyon, Utah Co., UT (Watson 314 US)
Rosaceae	<i>Cercocarpus montanus</i>		alder-leaf mountain mahogany	Shrub	Wide	Pres	Com	Pyrah 58 (ARCH)	1947	
Rosaceae	<i>Coleogyne ramosissima</i>		blackbrush	Shrub	Wide	Pres	Abun	Barnett 64 (ARCH)	1947	
Rosaceae	<i>Holodiscus dumosus</i>	<i>H. discolor</i>	bush oceanspray	Shrub	Wide	Pres	Unc	Fleming 770 (ARCH)	1988	
Rosaceae	<i>Petrophyton caespitosum</i>	<i>Spiraea caespitosa</i>	rock spiraea	PerF	Wide	Pres	Unc	Welsh & Moore 2829 (BRY)	1964	
Rosaceae	<i>Physocarpus alternans</i>		dwarf ninebark	Shrub	Wide	Pres	Unc	Fleming 771 (ARCH)	1979	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Purshia mexicana</i> var. <i>stansburyana</i>	<i>P. stansburiana</i> , <i>Cowania mexicana</i>	cliff-rose	Shrub	Wide	Pres	Com	Barnett 39 (ARCH)	1963	Type locality is Great Salt Lake, Davis Co., UT (Stansbury s.n. NY)
Rosaceae	<i>Purshia tridentata</i>		antelope bitterbrush	Shrub	Wide	Rep	Rare	Schelz et al. (2006), Northern Colorado Plateau Network (in ed.)	2006	
Rosaceae	<i>Rosa woodsii</i>	<i>R. woodsii</i> var. <i>ultramontana</i> , Welsh et al. (2003) include <i>R. manca</i>	Woods' rose	Shrub	Wide	Pres	Unc	Welsh, Harrison, & Moore 2309 (ARCH)	1963	
Rubiaceae	<i>Galium aparine</i> var. <i>echinospermon</i>	<i>G. spurium</i>	cleavers	AnnF	Wide	Pres	Rare	Topp ST05020602 (ARCH)	2006	
Rubiaceae	<i>Galium multiflorum</i> var. <i>coloradoense</i>	<i>G. coloradoense</i>	Colorado bedstraw	PerF	RegEn	Pres	Unc	Welsh & Moore 2741 (BRY)	1963	
Rubiaceae	<i>Galium multiflorum</i> var. <i>multiflorum</i>	<i>G. multiflorum</i>	shrubby bedstraw	PerF	Wide	Pres	Rare	Topp ST08080601 (ARCH)	2006	
Rubiaceae	<i>Galium triflorum</i>		sweet-scented bedstraw	PerF	Wide	Pres	Unc	Welsh, Harrison, & Moore 2319 (BRY)	1963	
Salicaceae	<i>Populus alba</i>		white poplar	Tree	Intro	Pres	Unc	Welsh & Moore 1997 (ARCH)	1963	Native to Eurasia
Salicaceae	<i>Populus fremontii</i> var. <i>fremontii</i>	<i>P. deltoides</i> var. <i>fremontii</i>	Fremont cottonwood	Tree	Wide	Pres	Com	Barnett 68 (ARCH)	1947	
Salicaceae	<i>Populus x canadensis</i>	Hybird of <i>P. deltoides</i> x <i>P. nigra</i>	Carolina poplar	Tree	Intro	Pres	Unc	Welsh & Moore 2747(ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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
Salicaceae	<i>Populus x intercurrents</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	Topp ST05020604 (ARCH)	2006	Type locality is Jesse Ewing Canyon, Daggett Co., UT (Goodrich 24441 BRY)
Salicaceae	<i>Salix amygdaloides</i>		peach-leaf willow	Tree	Wide	Pres	Unc	Welsh & Moore 2820 (ARCH)	1964	
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	Pres	Unc	Harms s.n. (ARCH)	1963	
Salicaceae	<i>Salix exigua</i> var. <i>stenophylla</i>	<i>S. exigua</i> var. <i>exigua</i>	coyote willow	Shrub	Wide	Pres	Unc	Harms s.n. (ARCH)	2005	
Salicaceae	<i>Salix gooddingii</i>	<i>S. nigra</i> var. <i>vallicola</i>	Goodding's black willow	Tree	Wide	Pres	Unc	Schelz s.n. (ARCH)	1963	
Salicaceae	<i>Salix lucida</i> ssp. <i>caudata</i>	<i>S. lasiandra</i> var. <i>caudata</i>	whiplash willow	Shrub	Wide	Pres	Unc	Barnett 70 (ARCH)	1963	
Santalaceae	<i>Comandra umbellata</i> var. <i>pallida</i>	<i>C. pallida</i>	bastard toadflax	PerF	Wide	Pres	Unc	Barnett 63 (ARCH)	1947	
Saxifragaceae (Hydrangeaceae)	<i>Fendlera rupicola</i>	<i>F. falcata</i>	fendlerbush	Shrub	Wide	Pres	Unc	Welsh & Moore 2752 (ARCH)	1963	
Saxifragaceae (Hydrangeaceae)	<i>Philadelphus microphyllus</i>	<i>P. microphyllus</i> var. <i>occidentalis</i> , <i>P. occidentalis</i> var. <i>occidentalis</i>	littleleaf mock-orange	Shrub	Wide	Pres	Rare	Topp ST05150602 (ARCH)	2006	
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	Hist	NA	Harrison 11131 (BRY)	1947	
Scrophulariaceae	<i>Castilleja exilis</i>	<i>C. minor</i> ssp. <i>minor</i>	annual paintbrush	AnnF	Wide	Pres	Unc	Fowler & May 1652 (ARCH)	1993	
Scrophulariaceae	<i>Castilleja linariifolia</i>	<i>C. linariaefolia</i>	Wyoming paintbrush	PerF	Wide	Pres	Unc	Welsh & Moore 2039 (ARCH)	1947	
Scrophulariaceae	<i>Castilleja scabrida</i> var. <i>scabrida</i>		Eastwood's paintbrush	PerF	RegEn	Pres	Unc	Heil 5791 (ARCH)	1963	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Cordylanthus wrightii</i>		Wright's bird's-beak	AnnF	Wide	Pres	Unc	Belnap 449 (ARCH)	1963	
Scrophulariaceae	<i>Linaria dalmatica</i>	<i>L. genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	PerF	Intro	Pres	Unc	Welsh & Moore 2804 (ARCH)	1964	Native to Europe
Scrophulariaceae	<i>Mimulus eastwoodiae</i>		Eastwood's monkey-flower	PerF	RegEn	Pres	Unc	Welsh & Moore 2037 (ARCH)	1963	Type locality is San Juan River near Bluff, San Juan Co., UT (Rydberg 9883 NY)
Scrophulariaceae	<i>Mimulus glabratus</i> var. <i>utahensis</i>	<i>M. glabratus</i> var. <i>glabratus</i>	glabrous monkeyflower	PerF	Wide	Pres	Rare	Fagan 36 (ARCH)	1985	Type locality is Preuss Lake, Millard Co., UT (Tidestrom 11180)
Scrophulariaceae	<i>Penstemon barbatus</i> var. <i>barbatus</i>	Welsh et al. (2003) include var. <i>torreyi</i>	beardlip penstemon	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	
Scrophulariaceae	<i>Penstemon cyanocaulis</i>		bluestem penstemon	PerF	RegEn	Pres	Rare	Fleming 958 (ARCH)	1952	
Scrophulariaceae	<i>Penstemon eatonii</i> var. <i>undosus</i>		undulate penstemon	PerF	Wide	Pres	Unc	Pitts 72 (ARCH)	1963	Type locality is St. George, Washington Co., UT (Jones 5110h US)
Scrophulariaceae	<i>Penstemon ophianthus</i>		Loa penstemon	PerF	RegEn	Pres	Unc	Fleming 960 (ARCH)	1979	Type locality is Thurber, Wayne Co., UT (Jones 5708 US)
Scrophulariaceae	<i>Penstemon utahensis</i>		Utah penstemon	PerF	Wide	Pres	Rare	Pitts 50 (ARCH)	1947	Type locality is between Hatch's Wash & Monticello, San Juan Co., UT (East-wood s.n. CAS)
Scrophulariaceae	<i>Verbascum thapsus</i>		woolly mullein	PerF	Intro	Pres	Unc	Moran s.n. (ARCH)	2006	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Veronica anagallis-aquatica</i>		water speedwell	PerF	Intro	Pres	Rare	Fleming 954b (ARCH)	1990	Native to Europe
Solanaceae	<i>Datura wrightii</i>	<i>D. meteloides</i>	angel's trumpet	AnnF	Wide	Pres	Rare	Topp ST05080601 (ARCH)	2006	
Solanaceae	<i>Physalis hederifolia</i> var. <i>fendleri</i>	<i>P. fendleri</i> , <i>P. hederifolia</i> var. <i>cordifolia</i> , <i>P. hederifolia</i> var. <i>fendleri</i>	Fendler's ground-cherry	PerF	Wide	Pres	Unc	Welsh & Moore 2815 (ARCH)	1964	
Solanaceae	<i>Physalis longifolia</i>	<i>P. virginiana</i> var. <i>sonorae</i>	long-leaf ground-cherry	PerF	Wide	Pres	Unc	Fertig 23007 (ARCH)	2006	
Tamaricaceae	<i>Tamarix chinensis</i>	<i>T. pentandra</i> , <i>T. ramosissima</i>	five-stamen tamarisk	Shrub	Intro	Pres	Com	Welsh & Moore 2729 (ARCH)	1963	Native to Eurasia
Typhaceae	<i>Typha domingensis</i>		southern cattail	PerG	Wide	Pres	Unc	Welsh, Harrison, & Moore 2280 (BRY)	1963	Cited as <i>T. latifolia</i> in Harrison et al. (1964).
Typhaceae	<i>Typha latifolia</i>		broad-leaved cattail	PerG	Wide	Pres	Unc	Fleming 840 (ARCH)	1989	
Ulmaceae (Celtidaceae)	<i>Celtis reticulata</i>	<i>C. laevigata</i> var. <i>reticulata</i>	netleaf hackberry	Tree	Wide	Pres	Unc	Welsh & Moore 2045 (ARCH)	1963	
Ulmaceae	<i>Ulmus pumila</i>		Siberian elm	Tree	Intro	Pres	Unc	Welsh & Moore 2746 (BRY)	1963	Native to Asia
Umbelliferae (Apiaceae)	<i>Cymopterus acaulis</i> var. <i>fendleri</i>	<i>C. fendleri</i> , <i>C. glomeratus</i>	Fendler's cymopterus	PerF	Wide	Pres	Unc	Fleming 975 (ARCH)	1988	
Umbelliferae (Apiaceae)	<i>Cymopterus bulbosus</i>		onion spring-parsley	PerF	Wide	Pres	Unc	Fagan 21 (ARCH)	1985	
Umbelliferae (Apiaceae)	<i>Cymopterus newberryi</i>		sticky spring-parsley	PerF	RegEn	Pres	Unc	Fleming 957 (ARCH)	1948	
Umbelliferae (Apiaceae)	<i>Cymopterus purpurascens</i>		basin white-cup spring-parsley	PerF	Wide	Pres	Unc	Belnap 504 (ARCH)	1988	

Appendix A. Confirmed, historical, and reported vascular plant taxa of Arches National Park, 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>Cymopterus purpureus</i> var. <i>purpureus</i>	<i>C. purpureus</i>	Colorado Plateau spring-parsley	PerF	RegEn	Pres	Unc	Hahn LAH05140309 (ARCH)	1990	
Umbelliferae (Apiaceae)	<i>Lomatium latilobum</i>	<i>Aletes latilobus</i>	Canyonlands lomatium	PerF	LocEn	Pres	Unc	Heil 5794 (ARCH)	1947	Type locality is Wilson Mesa, Grand Co., UT (Rydberg & Garrett 8371 NY). USFS: Region 4 Sensitive, UT BLM: Sensitive, USFWS: former C2 candidate
Umbelliferae (Apiaceae)	<i>Lomatium parryi</i>		Parry's lomatium	PerF	Wide	Pres	Unc	Pyrah 61 (ARCH)	1949	Type locality is "Southern Utah" (Parry 85)
Verbenaceae	<i>Verbena bracteata</i>		prostrate vervain	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	
Violaceae	<i>Viola nephrophylla</i>	<i>Viola sororia</i> var. <i>affinis</i>	northern bog violet	PerF	Wide	Pres	Rare	Beinap 524 (ARCH)	1988	
Viscaceae	<i>Arceuthobium divaricatum</i>		pinyon dwarf-mistletoe	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	Typically parasitic on <i>Pinus edulis</i> and <i>P. monophylla</i>
Viscaceae	<i>Phoradendron juniperinum</i>		juniper mistletoe	PerF	Wide	Rep	?	Schelz et al. (2006)	NA	Typically parasitic on <i>Juniperus osteosperma</i>
Zygophyllaceae	<i>Kallstroemia californica</i>		yellow kallstroemia	AnnF	Periph	Pres	Rare	Schelz s.n. (ARCH)	2002	
Zygophyllaceae	<i>Kallstroemia parviflora</i>		orange kallstroemia	AnnF	Periph	Pres	Rare	Moran s.n. (ARCH)	2006	
Zygophyllaceae	<i>Tribulus terrestris</i>		puncture vine	AnnF	Intro	Pres	Unc	Welsh & Moore 2532 (ARCH)	1963	Native to Eurasia

Appendix B. Potential (unconfirmed) taxa of Arches National Park.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Agavaceae	<i>Yucca baccata</i>	<i>Y. baccata</i> var. <i>baccata</i>	datil yucca	Shrub	Wide	
Agavaceae	<i>Yucca baileyi</i>		Bailey's yucca	Shrub	Periph	
Aizoaceae	<i>Sesuvium verrucosum</i>		sea purslane	PerF	Wide	
Alismataceae	<i>Sagittaria cuneata</i>		northern arrowhead	PerF	Wide	
Apocynaceae	<i>Amsonia jonesii</i>		Jones' amsonia	PerF	RegEn	
Apocynaceae	<i>Apocynum androsaemifolium</i> var. <i>androsaemifolium</i>		spreading dogbane	PerF	Wide	
Apocynaceae	<i>Cycladenia humilis</i> var. <i>jonesii</i>	<i>C. jonesii</i>	Jones' cycladenia	PerF	RegEn	USFWS: Threatened. Type locality is San Rafael Swell, Emery Co., UT (Jones s.n. CAS)
Asclepiadaceae	<i>Asclepias cutleri</i>		Cutler's milkweed	PerF	RegEn	
Asclepiadaceae	<i>Asclepias rusbyi</i>	<i>A. engelmanniana</i> var. <i>rusbyi</i>	Rusby's milkweed	PerF	RegEn	
Berberidaceae	<i>Berberis fendleri</i>		Fendler's barberry	Shrub	RegEn	
Betulaceae	<i>Ostrya knowltonii</i>		western hop-hornbeam	Tree	RegEn	
Boraginaceae	<i>Cryptantha ambigua</i>		obscure cryptanth	AnnF	Sparse	
Boraginaceae	<i>Cryptantha circumscissa</i>		cushion cryptanth	AnnF	Wide	
Boraginaceae	<i>Cryptantha elata</i>	<i>Oreocarya elata</i>	tall cryptanth	PerF	LocEn	Type locality is Grand Junction, Mesa Co., CO
Boraginaceae	<i>Cryptantha gracilis</i>		slender cryptanth	AnnF	Wide	
Boraginaceae	<i>Cryptantha humilis</i>	Includes var. <i>nana</i> , <i>Oreocarya humilis</i> ssp. <i>nana</i>	dwarf cryptanth	PerF	Wide	
Boraginaceae	<i>Lithospermum multiflorum</i>		southwestern stoneseed	PerF	Wide	
Boraginaceae	<i>Mertensia arizonica</i>	<i>M. arizonica</i> var. <i>grahamii</i>	aspen bluebell	PerF	Wide	
Cannabaceae	<i>Cannabis sativa</i>		hemp	PerF	Intro	Native to Eurasia
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	
Capparaceae (Cleomaceae)	<i>Cleomea palmeriana</i> var. <i>palmeriana</i>		Palmer's stinkweed	AnnF	RegEn	Type locality is Green River, Emery Co., UT (Jones s.n. POM)

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Capparidaceae (Cleomaceae)	<i>Polanisia dodecandra</i> var. <i>trachysperma</i>	<i>P. trachysperma</i>	clammy-weed	AnnF	Wide	
Caprifoliaceae	<i>Symphoricarpos oreophilus</i> var. <i>utahensis</i>	<i>S. rotundifolius</i> . Includes vars. <i>parishii</i> & <i>oreophilus</i> in Cronquist et al. (1984)	mountain snowberry	Shrub	Wide	
Caryophyllaceae (Alsiniaceae)	<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	<i>Lychnis drummondii</i>	<i>Silene drummondii</i> ssp. <i>drummondii</i> , <i>S. drummondii</i> ssp. <i>striata</i> , includes vars. <i>striata</i> , <i>kruckebergii</i> , & <i>drummondii</i> , <i>Gastrolychnis drummondii</i>	Drummond's catchfly	PerF	Wide	
Chenopodiaceae	<i>Atriplex gardneri</i> var. <i>welshii</i>	<i>A. welshii</i>	Welsh's saltbush	Shrub	LocEn	Type locality is 4 miles S of Cisco along UT Hwy 128, Grand Co., UT (Hanson 322 BRY)
Chenopodiaceae	<i>Atriplex powellii</i> var. <i>minuticarpa</i>	<i>A. minuticarpa</i>	Green River orach	AnnF	LocEn	Type locality is 3 miles E of Green River, Grand Co., UT (Stutz 9547 BRY)
Chenopodiaceae	<i>Atriplex powellii</i> var. <i>powellii</i>	<i>A. powellii</i>	Powell's orach	AnnF	Wide	
Chenopodiaceae	<i>Atriplex prostrata</i>	<i>A. patula</i> var. <i>triangularis</i>	thinleaf orach	AnnF	Wide	
Chenopodiaceae	<i>Chenopodium atrovirens</i>	<i>C. fremontii</i> var. <i>atrovirens</i>	mountain goosefoot	AnnF	Wide	
Chenopodiaceae	<i>Salsola paulsenii</i>		barbwire Russian thistle	AnnF	Intro	Native to Eurasia
Chenopodiaceae	<i>Zuckia brandegei</i> var. <i>arizonica</i>	<i>Z. brandegeei</i> var. <i>arizonica</i>	Arizona siltbush	Shrub	RegEn	
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	

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Compositae (Asteraceae)	<i>Agoseris aurantiaca</i> var. <i>aurantiaca</i>		orange agoseris	PerF	Wide	
Compositae (Asteraceae)	<i>Agoseris glauca</i> var. <i>laciniata</i>	<i>A. parviflora</i>	cutleaf agoseris	PerF	Wide	
Compositae (Asteraceae)	<i>Ambrosia tomentosa</i>	<i>Franseria tomentosa</i>	skeleton-leaf bursage	PerF	Wide	
Compositae (Asteraceae)	<i>Artemisia frigida</i>		fringed sagebrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Artemisia tridentata</i> var. <i>wyomingensis</i>	<i>Seriphidium tridentatum</i> ssp. <i>wyomingense</i>	Wyoming 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 frondosus</i>	<i>Symphotrichum frondosum</i> , <i>Brachyactis frondosa</i>	leafy aster	AnnF	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 pansus</i>	<i>A. ericoides</i> var. <i>pansus</i> , <i>Symphotrichum ericoides</i> var. <i>pansum</i> , <i>Virgulus ericoides</i>	white heath aster	PerF	Wide	
Compositae (Asteraceae)	<i>Aster pauciflorus</i>	<i>Almutaster pauciflorus</i>	alkali aster	PerF	Wide	
Compositae (Asteraceae)	<i>Aster spathulatus</i>	<i>A. occidentalis</i> , <i>Symphotrichum spathulatum</i>	western aster	PerF	Wide	
Compositae (Asteraceae)	<i>Baccharis viminea</i> var. <i>atwoodii</i>	Included in <i>B. salicifolia</i> in <i>Flora of North America</i> (2006)	Atwood's mule-fat	Shrub	LocEn	Known from vicinity of park (S of Potash plant). Type locality is 1 mi E of San Juan River, San Juan Co., UT (Atwood et al. 22406 BRY).
Compositae (Asteraceae)	<i>Brickellia californica</i>		California brickellbush	Shrub	Wide	
Compositae (Asteraceae)	<i>Brickellia grandiflora</i>		tassel-flower brickellbush	PerF	Wide	
Compositae (Asteraceae)	<i>Chaenactis douglasii</i>	includes var. <i>douglasii</i> & var. <i>montana</i>	hoary dusty-maiden	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Compositae (Asteraceae)	<i>Chrysothamnus greenei</i>		Greene's rabbitbrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Chrysothamnus vaseyi</i>		Vasey's rabbitbrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>puberulus</i>		puberulent rabbitbrush	Shrub	Wide	
Compositae (Asteraceae)	<i>Cichorium intybus</i>		chicory	PerF	Intro	Native to Eurasia
Compositae (Asteraceae)	<i>Cirsium undulatum</i> var. <i>tracyi</i>	<i>C. tracyi</i>	Tracy's thistle	PerF	RegEn	Type locality is Mancos, Colorado (Baker, Earle, & Tracy 90)
Compositae (Asteraceae)	<i>Erigeron eatonii</i>	<i>E. eatonii</i> var. <i>eatonii</i>	Eaton's daisy	PerF	Wide	
Compositae (Asteraceae)	<i>Erigeron flagellaris</i>		trailing daisy	PerF	Wide	
Compositae (Asteraceae)	<i>Eupatorium herbaceum</i>	<i>Ageratina herbacea</i>	white thoroughwort	PerF	Wide	
Compositae (Asteraceae)	<i>Grindelia squarrosa</i> var. <i>serrulata</i>	Vars. not recognized in Flora of North America (2006)	curly-cup gumweed	PerF	Wide	
Compositae (Asteraceae)	<i>Haplopappus clementis</i>	<i>Pyrrocoma clementis</i> var. <i>clementis</i>	Clement's goldenweed	PerF	Wide	
Compositae (Asteraceae)	<i>Helianthella microcephala</i>		purpledisk sunflower	PerF	RegEn	Type locality is Abajo Mountains, San Juan Co., UT (Newberry s.n. GH)
Compositae (Asteraceae)	<i>Helianthus nuttallii</i>	<i>Helianthus nuttallii</i> ssp. <i>nuttallii</i>	Nuttall's sunflower	PerF	Wide	Specimen on loan - cannot be verified
Compositae (Asteraceae)	<i>Iva axillaris</i>	<i>Iva axillaris</i> var. <i>axillaris</i> . Vars. not recognized in Flora of North America (2006).	poverty-weed	PerF	Wide	
Compositae (Asteraceae)	<i>Machaeranthera canescens</i> var. <i>aristata</i>	<i>M. linearis</i> , <i>M. rigida</i> , <i>M. canescens</i> var. <i>vacans</i> , <i>Dieteria canescens</i> var. <i>aristata</i>	aristate aster	PerF	RegEn	Type locality is Willow Creek, San Juan Co., UT (Eastwood 45 CAS)
Compositae (Asteraceae)	<i>Malacothrix torreyi</i>		Torrey's desert-dandelion	AnnF	Wide	Type locality is shores of Great Salt Lake, UT (Stansbury s.n. GH)

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Compositae (Asteraceae)	<i>Prenanthes exigua</i>	<i>Lygodesmia exigua</i>	prenanthella	AnnF	Wide	
Compositae (Asteraceae)	<i>Psathyrotes pilifera</i>		piliferous turtleback	AnnF	RegEn	Specimen at ARCH herbarium was collected outside the park. Type locality is near Kanab, Kane Co., UT (Thompson s.n. G)
Compositae (Asteraceae)	<i>Ratibida columnifera</i>		prairie coneflower	PerF	Sparse	
Compositae (Asteraceae)	<i>Sonchus uliginosus</i>	<i>S. arvensis</i> var. <i>glabrescens</i> , <i>S. arvensis</i> ssp. <i>uliginosus</i>	marsh sow-thistle	PerF	Intro	Native to Europe
Compositae (Asteraceae)	<i>Verbesina encelioides</i> var. <i>exauriculata</i>	<i>Ximenesia encelioides</i>	golden crownbeard	AnnF	Wide	
Compositae (Asteraceae)	<i>Viguiera multiflora</i> var. <i>multiflora</i>	<i>Heliomeris multiflora</i> var. <i>multiflora</i>	showy goldeneye	PerF	Wide	
Compositae (Asteraceae)	<i>Viguiera multiflora</i> var. <i>nevadensis</i>	<i>Heliomeris multiflora</i> var. <i>nevadensis</i>	showy goldeneye	PerF	Wide	
Compositae (Asteraceae)	<i>Wyethia arizonica</i>		Arizona mulesears	PerF	RegEn	
Cruciferae (Brassicaceae)	<i>Arabis lignifera</i>	<i>Boechea lignifera</i>	Sweetwater rockcress	PerF	Sparse	
Cruciferae (Brassicaceae)	<i>Capsella bursa-pastoris</i>		shepherd's-purse	AnnF	Intro	Native to Europe
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>intermedia</i>	Included in <i>D. pinnata</i> var. <i>osmiarium</i> by some authors	western tansy-mustard	AnnF	Wide	
Cruciferae (Brassicaceae)	<i>Descurainia pinnata</i> var. <i>osmiarium</i>	<i>D. pinnata</i> ssp. <i>halictorum</i>	western tansy-mustard	AnnF	Wide	
Cruciferae (Brassicaceae)	<i>Draba nemorosa</i>		Woods draba	AnnF	Intro	Native to Eurasia
Cruciferae (Brassicaceae)	<i>Draba rectifruca</i>		mountain draba	AnnF	RegEn	
Cruciferae (Brassicaceae)	<i>Lepidium densiflorum</i> var. <i>densiflorum</i>	Includes var. <i>macrocarpum</i> in Welsh et al. (2003)	prairie pepperwort	AnnF	Wide	
Cruciferae (Brassicaceae)	<i>Schoenocrambe linifolia</i>	<i>Sisymbrium linifolium</i>	flax-leaved plainsmustard	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Cruciferae (Brassicaceae)	<i>Stanleya integrifolia</i>	<i>S. pinnata</i> var. <i>integrifolia</i>	smoothleaf prince's-plume	Perf	Wide	
Cyperaceae	<i>Cyperus squarrosus</i>	<i>C. aristatus</i>	bearded flat-sedge	AnnG	Wide	
Elaeagnaceae	<i>Shepherdia argentea</i>		silver buffaloberry	Shrub	Wide	
Elaeagnaceae	<i>Shepherdia rotundifolia</i>		roundleaf buffaloberry	Shrub	RegEn	Type locality is upper valley of the Virgin, Kane Co., UT (Siler s.n. ISC)
Ephedraceae	<i>Ephedra nevadensis</i>		Nevada ephedra	Shrub	Wide	
Geraniaceae	<i>Geranium caespitosum</i> var. <i>marginale</i>	<i>G. caespitosum</i> var. <i>atropurpureum</i> , <i>G. atropurpureum</i> , <i>G. atropurpureum</i> var. <i>cowenii</i>	small-leaf geranium	Perf	Wide	Type locality of var. <i>marginale</i> is Aquarius Plateau, head of Poison Creek, Garfield Co., UT (Rydberg & Carlton 7401 NY)
Gramineae (Poaceae)	<i>Bothriochloa springfieldii</i>		Springfield's bluestem	PerG	Sparse	
Gramineae (Poaceae)	<i>Eragrostis cilianensis</i>		stinkgrass	AnnG	Intro	Native to Eurasia
Gramineae (Poaceae)	<i>Leptochloa fascicularis</i>	<i>Diplachne fascicularis</i> , <i>L. fusca</i> var. <i>fascicularis</i>	bearded sprangletop	AnnG	Wide	
Gramineae (Poaceae)	<i>Muhlenbergia racemosa</i>		green muhly	PerG	Wide	
Gramineae (Poaceae)	<i>Polygonum semiverticillatum</i>	<i>Agrostis semiverticillata</i> , <i>P. viridis</i>	water polygomon	PerG	Intro	Native to Eurasia and Africa
Gramineae (Poaceae)	<i>Sorghastrum nutans</i>	<i>S. avenaceum</i>	Indiangrass	PerG	Wide	
Gramineae (Poaceae)	<i>Sporobolus asper</i>	<i>S. compositus</i>	tall dropseed	PerG	Sparse	
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 compressus</i>		compressed rush	PerG	Intro	Native to Europe
Labiatae (Lamiaceae)	<i>Dracocephalum parviflorum</i>	<i>Moldavica parviflora</i>	smallflower dragonhead	Perf	Wide	
Labiatae (Lamiaceae)	<i>Lycopus americanus</i>		American bugleweed	Perf	Wide	
Leguminosae (Fabaceae)	<i>Astragalus bisulcatus</i> var. <i>haydenianus</i>	<i>A. haydenianus</i>	Hayden's milkvetch	Perf	Wide	
Leguminosae (Fabaceae)	<i>Astragalus eastwoodiae</i>		Eastwood's milkvetch	Perf	RegEn	Type locality is Westwater, Grand Co., UT (Jones s.n. POM)
Leguminosae (Fabaceae)	<i>Astragalus flexuosus</i> var. <i>diehlii</i>		Diehl's milkvetch	Perf	RegEn	Type locality is Farnham, Carbon Co., UT (Jones s.n. POM)

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Leguminosae (Fabaceae)	<i>Astragalus flexuosus</i> var. <i>flexuosus</i>		pliant milkvetch	PerF	Periph	
Leguminosae (Fabaceae)	<i>Astragalus nuttallianus</i> var. <i>micranthiformis</i>		small-flowered milkvetch	AnnF	RegEn	
Leguminosae (Fabaceae)	<i>Astragalus piscator</i>		Fisher milkvetch	PerF	LocEn	Type locality is Salt Canyon above The Jump, Canyonlands NP, San Juan Co., UT (Welsh, Moore, & Canter 2979 BRY)
Leguminosae (Fabaceae)	<i>Astragalus sabulosus</i> var. <i>sabulosus</i>		Cisco milkvetch	PerF	LocEn	Type locality is Cisco, Grand Co., UT (Jones s.n. POM). UTM BLM: Sensitive, USFWS: former C2 candidate
Leguminosae (Fabaceae)	<i>Lathyrus lanszwertii</i> var. <i>leucanthus</i>	<i>L. leucanthus</i>	whiteflower sweetpea	PerF	RegEn	
Leguminosae (Fabaceae)	<i>Lupinus argenteus</i> var. <i>moabensis</i>		Moab lupine	PerF	RegEn	Type locality is Professor Valley Ranch, Grand Co., UT (Welsh & Taylor 14632 BRY)
Leguminosae (Fabaceae)	<i>Lupinus kingii</i> var. <i>kingii</i>	<i>L. kingii</i>	King's lupine	AnnF	Wide	Type locality is Heber Valley, Wasatch Co., UT (Watson 234 GH)
Leguminosae (Fabaceae)	<i>Vicia americana</i> var. <i>americana</i>		American vetch	PerF	Wide	
Liliaceae (Calochortaceae)	<i>Calochortus gunnisonii</i>	<i>C. gunnisonii</i> var. <i>gunnisonii</i>	Gunnison's mariposa	PerF	Wide	
Loasaceae	<i>Mentzelia marginata</i>	<i>M. marginata</i> var. <i>cronquistii</i> , <i>M. cronquistii</i> , <i>Nuttallia cronquistii</i>	Colorado stickleaf	PerF	RegEn	Type locality is 75 miles W of Blanding and 10 miles E of Hite, San Juan Co., UT (Cronquist 9030 NY)
Loasaceae	<i>Mentzelia shultziorum</i>		Shultz' stickleaf	PerF	LocEn	Type locality is Fisher Valley, 11 miles NE of Moab, Grand Co., UT (Shultz & Shultz 2070 UTC). UT BLM: Sensitive, USFWS: former C2 candidate
Malvaceae	<i>Sphaeralcea grossulariifolia</i>	<i>S. grossulariifolia</i> var. <i>grossulariifolia</i>	gooseberry-leaf globemallow	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Malvaceae	<i>Sphaeralcea janeae</i>	<i>Sphaeralcea leptophylla</i> var. <i>janeae</i>	Jane's globemallow	PerF	LocEn	Type locality is along White Rim Road, Canyonlands National Park, San Juan Co., UT (Welsh 7064 BRY). UT BLM: Sensitive, USFWS: former C2 candidate
Malvaceae	<i>Sphaeralcea psoraloides</i>		scurfpea globemallow	PerF	LocEn	Type locality is Salt Wash, ca 17 miles WNW of Hanksville, Wayne Co., UT (Welsh 13348 BRY). UT BLM: Sensitive, USFWS: former C2 candidate
Nyctaginaceae	<i>Abronia argillosa</i>		clay sand-verbena	PerF	RegEn	Type locality is 6 miles S of Cisco, Grand Co., UT (Welsh, Welsh, & Welsh 16689 BRY)
Onagraceae	<i>Calylophus lavandulifolius</i>	<i>C. hartwegii</i> ssp. <i>lavandulifolius</i>	lavender-leaf sundrops	PerF	Wide	
Onagraceae	<i>Camissonia walkeri</i>		Walker's camissonia	AnnF	Wide	Type locality is Paradox Valley, Montrose Co., CO
Onagraceae	<i>Epilobium brachycarpum</i>	<i>E. paniculatum</i> var. <i>paniculatum</i>	autumn willow-herb	AnnF	Wide	
Onagraceae	<i>Gayophytum ramosissimum</i>		branching groundsmoke	AnnF	Wide	
Onagraceae	<i>Oenothera albicaulis</i>		white-stem evening-primrose	AnnF	Wide	
Onagraceae	<i>Oenothera coronopifolia</i>		hairy-throat evening-primrose	PerF	Wide	
Onagraceae	<i>Oenothera flava</i> var. <i>flava</i>	<i>O. flava</i>	yellow evening-primrose	PerF	Wide	
Papaveraceae	<i>Argemone corymbosa</i> var. <i>arenicola</i>		San Rafael prickly-poppy	PerF	RegEn	Type locality is 37.9 miles SW of Green River, Emery Co., UT (Ownbey & Ownbey 2146)
Papaveraceae	<i>Argemone corymbosa</i> var. <i>parva</i>		San Rafael prickly-poppy	PerF	LocEn	Type locality is bluffs along Colorado River along Hwy 129, Grand Co., UT (Welsh 6857 BRY)
Polemoniaceae	<i>Ipomopsis pumila</i>	<i>Gilia pumila</i>	dwarf gilia	AnnF	Wide	
Polemoniaceae	<i>Phlox longifolia</i>	Includes vars. <i>longifolia</i> & <i>stansburyi</i>	long-leaf phlox	PerF	Wide	

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Polygonaceae	<i>Eriogonum cernuum</i> var. <i>cernuum</i>	Vars. not recognized in <i>Flora of North America</i> (2005)	nodding wild buckwheat	AnnF	Wide	Report for ARCH from Barnett (67) is <i>E. gordonii</i> .
Polygonaceae	<i>Eriogonum contortum</i>		Grand Valley wild buckwheat	Shrub	RegEn	
Polygonaceae	<i>Eriogonum palmerianum</i>		Palmer's wild buckwheat	AnnF	Wide	
Polygonaceae	<i>Eriogonum racemosum</i> var. <i>racemosum</i>	<i>E. racemosum</i>	redroot wild buckwheat	PerF	Wide	
Polygonaceae	<i>Eriogonum umbellatum</i> var. <i>umbellatum</i>	Includes var. <i>aureum</i> from <i>Flora of North America</i> (2005)	sulfur wild buckwheat	PerF	Wide	
Polygonaceae	<i>Polygonum aviculare</i>	<i>P. arenastrum</i> , <i>P. aviculare</i> ssp. <i>aviculare</i>	yard knotweed	AnnF	Intro	Native to Eurasia
Polypodiaceae	<i>Cheilanthes feei</i>		slender lip-fern	Fern	Wide	
Polypodiaceae	<i>Woodsia oregana</i>	<i>W. oregana</i> ssp. <i>oregana</i>	Oregon woodsia	Fern	Periph	
Primulaceae	<i>Androsace septentrionalis</i>	Includes ssp. <i>puberulenta</i> , <i>subumbellata</i> , & var. <i>subulifera</i>	pygmy-flower rock-jasmine	AnnF	Wide	
Ranunculaceae	<i>Ranunculus sceleratus</i> var. <i>multifidus</i>	<i>Hecatonia scelerata</i>	blister buttercup	AnnF	Wide	
Rhamnaceae	<i>Ceanothus greggii</i> var. <i>franklinii</i>		Franklin's desert-lilac	Shrub	LocEn	Type locality is Muley Point, San Juan Co., UT (Welsh, Welsh, & Welsh 22244 BRY)
Rosaceae	<i>Cercocarpus ledifolius</i> var. <i>intermontanus</i>	<i>C. ledifolius</i> var. <i>intercedens</i>	curl-leaf mountain mahogany	Shrub	Wide	Type locality is ca 10 km E of Oak City, Millard Co., UT (Holmgren & Holmgren 11298 NY)
Salicaceae	<i>Populus fremontii</i> var. <i>wisizenii</i>	<i>P. deltoides</i> var. <i>wisizenii</i>	Rio Grande cottonwood	Tree	Periph	
Scrophulariaceae	<i>Collinsia parviflora</i>		blue-eyed Mary	AnnF	Wide	
Scrophulariaceae	<i>Mimulus floribundus</i>		seep monkeyflower	AnnF	Wide	
Selaginellaceae	<i>Selaginella mutica</i>	<i>S. mutica</i> var. <i>mutica</i>	blunt-leaf spike-moss	Fern	Wide	
Solanaceae	<i>Nicotiana attenuata</i>		coyote tobacco	AnnF	Wide	
Solanaceae	<i>Solanum elaeagnifolium</i>		silverleaf nightshade	PerF	Intro	Native to C North America

Appendix B. Potential (unconfirmed) taxa of Arches National Park, cont.

Family	Species name	Synonyms/Taxonomic notes	Common name	Life form	Range	Comments
Umbelliferae (Apiaceae)	<i>Cymopterus terebinthinus</i> var. <i>petraeus</i>	<i>C. petraeus</i> , <i>Aletes petraea</i> , <i>Pteryxia petraea</i>	rock spring-parsley	PerF	Wide	
Umbelliferae (Apiaceae)	<i>Ligusticum porteri</i>		southern ligusticum	PerF	Wide	

The vascular plant species shown in this table are known from the vicinity of Arches National Park in Grand County, Utah, but have not previously been reported or confirmed for the park. 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 Schelz et al. (2006). Some species from Appendix C could be considered as potentially occurring in the park, but are not included here.

Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Comments
Asclepiadaceae	<i>Asclepias involuocrata</i>		dwarf milkweed	PerF	Periph	Ques?	Reported by Schelz et al. (2006) & Northern Colorado Plateau Network (in ed.), but park is well outside the known range of this species. Reports may be based on <i>A. macrosperma</i>
Betulaceae	<i>Betula occidentalis</i>	<i>B. fontinalis</i>	water birch	Tree	Wide	FalsRep	Report from Schelz et al. (2006) based on specimen from ARCH herbarium collected from just outside the park.
Boraginaceae	<i>Cryptantha confertiflora</i>		basin yellow cryptanth	PerF	Wide	Ques?	Report from ARCH herbarium is based on a collection (Vermilion # 40) on loan. Specimen is from outside the known range of this species and identification may be erroneous.
Caryophyllaceae (Alsinaceae)	<i>Arenaria fendleri</i> var. <i>fendleri</i>	<i>Eremogone fendleri</i>	Fendler's sandwort	PerF	Periph	Ques?	Reported by Schelz et al. 2006 (without a voucher in ARCH herbarium), but suitable habitat is lacking in ARCH.
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>latiloba</i>	<i>Artemisia ludoviciana</i> ssp. <i>candicans</i>	Louisiana wormwood	PerF	Sparse	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>A. ludoviciana</i> var. <i>mexicana</i> . Also reported (without voucher) by NCPN (in ed.)
Compositae (Asteraceae)	<i>Centaurea diffusa</i>	<i>Acosta diffusa</i>	Diffuse knapweed	PerF	Intro	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>Centaurea maculosa</i> . Utah state noxious weed. Native to Mediterranean.
Compositae (Asteraceae)	<i>Dicoria canescens</i> var. <i>canescens</i>	Vars. not recognized in <i>Flora of North America</i> (2006).	gray sandplant	AnnF	Periph	FalsRep	Report from Harrison et al. (1964) based on a misidentified specimen of <i>D. brandegei</i> .
Compositae (Asteraceae)	<i>Erigeron argentatus</i>		silver daisy	PerF	Wide	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>E. pulcherrimus</i> .
Compositae (Asteraceae)	<i>Erigeron kachinensis</i>		Kachina daisy	PerF	LocEn	Ques?	Reported by Springer et al. (2006) without a voucher, but ARCH is outside the known range of the species. Type locality is Kachina Bridge, Natural Bridges NM, San Juan Co., UT (Welsh & Moore 2398 BRY). USFS: Region 4 Sensitive, UT BLM: Sensitive, USFWS: former C2 candidate

Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Comments
Compositae (Asteraceae)	<i>Grindelia aphanactis</i>	<i>Grindelia nuda</i> var. <i>aphanactis</i> . Included in <i>G. squarrosa</i> in <i>Flora of North</i> <i>America</i> (2006)	Rydberg's gumweed	PerF	Periph	FalsRep	Reports from Harrison et al. (1964) and ARCH herbarium based on misidentified specimens of <i>G. fastigiata</i> .
Compositae (Asteraceae)	<i>Machaeranthera commixta</i>	<i>M. bigelovii</i> var. <i>commixta</i> , <i>Dieteria bigelovii</i> var. <i>commixta</i>	Bigelow's aster	PerF	RegEn	FalsRep	Report from Harrison et al. (1964) is based on a misidentified specimen of <i>M. canescens</i> var. <i>canescens</i> . Type locality is Bromide Pass, Henry Mountains, Garfield Co., UT (Jones 5695y US)
Compositae (Asteraceae)	<i>Platyschkuhria integrifolia</i> var. <i>oblongifolia</i>	<i>Bahia nudicaulis</i> var. <i>oblongifolia</i>	San Juan bahia	PerF	RegEn	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>P. integrifolia</i> var. <i>desertorum</i> .
Compositae (Asteraceae)	<i>Psathyrotes annua</i>		mealy rosettes	AnnF	Wide	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>P. pilifera</i> .
Compositae (Asteraceae)	<i>Pseudognaphalium microcephalum</i>	<i>Gnaphalium canescens</i> var. <i>microcephalum</i>	San Diego rabbit-tobacco	PerF	LocEn	Ques?	Reported by Fowler et al. (2007), but according to <i>Flora of North America</i> (2007) this species is endemic to southern California.
Compositae (Asteraceae)	<i>Thelesperma megapotamicum</i>		Hopi-tea	PerF	Periph	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>T. subnudum</i> var. <i>subnudum</i> .
Compositae (Asteraceae)	<i>Xylorhiza confertifolia</i>	<i>Machaeranthera confertifolia</i>	Henrieville woodyaster	PerF	LocEn	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>X. glabriuscula</i> var. <i>linearifolia</i> . Type locality is 11 miles NE of Henrieville, Garfield Co., UT (Cronquist 9164 NY). USFWS: 3C.
Cruciferae (Brassicaceae)	<i>Lepidium fremontii</i>		Fremont's pepperwort	PerF	Periph	Ques?	Reported by Schelz et al. 2006 (without a voucher in ARCH herbarium), but ARCH is well outside the known range of this species in Utah.
Cruciferae (Brassicaceae)	<i>Physaria newberryi</i>	<i>P. newberryi</i> var. <i>racemosa</i>	Newberry's twinpod	PerF	RegEn	FalsRep	Reports from ARCH based on misidentified specimens of <i>P. acutifolia</i> var. <i>acutifolia</i> .
Cyperaceae	<i>Carex aquatilis</i>	<i>C. aquatilis</i> var. <i>aquatilis</i>	water sedge	PerG	Wide	FalsRep	Report from Harrison et al. (1964) is based on a misidentified specimen of <i>C. nebrascensis</i> .
Cyperaceae	<i>Carex garberi</i>	Included in <i>C. aurea</i> by Welsh et al. (2003).	Garber's sedge	PerG	Wide	FalsRep	Reports from Harrison et al. (1964) are based on misidentified specimens of <i>C. aurea</i> .

Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Comments
Cyperaceae	<i>Carex siccata</i>	<i>C. foenea</i>	silvertop sedge	PerG	Wide	FalsRep	Report from Harrison et al. (1964) under the name <i>C. foenea</i> is based on a misidentified specimen of <i>C. praegracilis</i> .
Cyperaceae	<i>Carex subfusca</i>		rusty sedge	PerG	Sparse	Ques?	Reported by Schelz et al. 2006 (without a voucher in ARCH herbarium), but suitable habitat is lacking in ARCH.
Cyperaceae	<i>Scirpus americanus</i>	<i>Scirpus olneyi</i> , <i>Schoenoplectus americanus</i>	American bulrush	PerG	Wide	FalsRep	Report in Harrison et al. (1964) is based on a misidentified specimen of <i>S. pungens</i> var. <i>longispicatus</i> .
Cyperaceae	<i>Scirpus validus</i>	<i>Schoenoplectus tabernaemontani</i> , <i>Schoenoplectus lacustris</i> ssp. <i>validus</i>	soft-stem bulrush	PerG	Wide	FalsRep	Report in Harrison et al. (1964) is based on a misidentified specimen of <i>S. acutus</i> .
Gentianaceae	<i>Swertia albomarginata</i>	<i>Frasera albomarginata</i>	white-margined swertia	PerF	Wide	FalsRep	Report from Harrison et al. (1964) is based on a misidentified specimen of <i>S. utahensis</i>
Gramineae (Poaceae)	<i>Stipa coronata</i> var. <i>depauperata</i>	<i>Achnatherum coronatum</i> , <i>A. parishii</i> ssp. <i>depauperatum</i>	depauperate needlegrass	PerG	RegEn	Ques?	Reported by Schelz et al. 2006 (without a voucher in ARCH herbarium), but ARCH is well outside the known range of this species in Utah.
Gramineae (Poaceae)	<i>Stipa x bloomeri</i>	<i>Stiporyzopsis x bloomeri</i> , <i>Achnatherum x bloomeri</i> . Hybrids between <i>S. hymenoides</i> and other <i>Stipa</i> species except <i>S. comata</i> .	Bloomer's ricegrass	PerG	Wide	FalsRep	Report from Harrison et al. (1964) is based on a paratype of <i>Stipa arnowiae</i> in BRY herbarium.
Hydrophyllaceae	<i>Nama demissum</i>		purple-mat	AnnF	Wide	FalsRep	Report from BRY herbarium is based on a misidentified specimen of <i>N. retrorsum</i>
Hydrophyllaceae	<i>Nama hispidum</i>		hairy nama	AnnF	Periph	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>N. retrorsum</i> .
Leguminosae (Fabaceae)	<i>Astragalus iselyi</i>		Isely's milkvetch	PerF	LocEn	FalsRep	Report from Schelz et al. (2006) based on specimen from ARCH herbarium collected outside the park. Type locality is Brumley Ridge, San Juan Co., UT (Welsh 10970 BRY). USFWS: Category 3C.

Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Comments
Leguminosae (Fabaceae)	<i>Astragalus monumentalis</i>	<i>A. monumentalis</i> var. <i>monumentalis</i>	Monument milkvetch	Perf	LocEn	Ques?	Report from ARCH herbarium is based on a collection (Heil # 1614) on loan. Specimen is from outside the known range of this species and identification may be erroneous. Type locality is White Canyon, San Juan Co., UT (Harrison 11595 US). USFWS: 3C
Leguminosae (Fabaceae)	<i>Astragalus praelongus</i> var. <i>lonchopus</i>		longstipe milkvetch	Perf	RegEn	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>A. praelongus</i> var. <i>ellisiae</i> .
Leguminosae (Fabaceae)	<i>Astragalus praelongus</i> var. <i>praelongus</i>		stinking milkvetch	Perf	Wide	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>A. praelongus</i> var. <i>ellisiae</i> .
Leguminosae (Fabaceae)	<i>Astragalus sabulosus</i> var. <i>vehiculus</i>		stage milkvetch	Perf	LocEn	FalsRep	Report from Schelz et al. (2006) based on specimens from ARCH herbarium collected from outside the park. Type locality is Courthouse Wash, Grand Co., UT (Welsh 22709 BRY). UT BLM: Sensitive.
Leguminosae (Fabaceae)	<i>Dalea flavescens</i> var. <i>epica</i>	<i>D. epica</i> . Var. not recognized in Barneby (1989).	Hole-in-the-Rock prairie-clover	Perf	LocEn	FalsRep	Report from UT Conservation Data Center based on Welsh & Moore # 2004, which represents var. <i>flavescens</i> . Type locality is 10 mi E of Halls Crossing, San Juan Co., UT (Welsh 5205 BRY). UT BLM: Sensitive, USFWS: former C2 candidate
Leguminosae (Fabaceae)	<i>Lathyrus eucoismus</i>	<i>Lathyrus brachycalyx</i> var. <i>eucoismus</i>	seemly sweetpea	Perf	Sparse	FalsRep	Report from BRY based on a misidentified specimen of <i>L. brachycalyx</i> var. <i>zionis</i> .
Leguminosae (Fabaceae)	<i>Parryella filifolia</i>		narrow-leaf dunebroom	Shrub	RegEn	FalsRep	Report from Schelz et al. (2006) based on a specimen from ARCH herbarium collected from outside the park.
Leguminosae (Fabaceae)	<i>Psoralidium lanceolatum</i> var. <i>lanceolatum</i>	<i>Psoralea lanceolata</i> . Vars. not recognized in Barneby (1989)	lemon scurf-pea	Perf	Wide	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>P. lanceolatum</i> var. <i>stenophyllum</i>
Liliaceae (Melanthiaceae)	<i>Zigadenus elegans</i>	<i>Anticlea elegans</i>	mountain death camas	Perf	Wide	FalsRep	Report from Harrison et al. (1964) is based on a misidentified specimen of <i>Z. vaginatus</i> .
Loasaceae	<i>Mentzelia pumila</i> var. <i>lagarosa</i>	Included in <i>M. pumila</i> or <i>M. multiflora</i> by some authors	lax stickleaf	Perf	RegEn	FalsRep	Report from Harrison et al. (1964) is based on a misidentified specimen of <i>M. multiflora</i> .

Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Comments
Moraceae	<i>Morus rubra</i>		red mulberry	Tree	Intro	FalsRep	Native to E North America. Report from Harrison et al. (1964) is based on a misidentified specimen of <i>M. alba</i> .
Onagraceae	<i>Oenothera pallida</i> var. <i>trichocalyx</i>		pale evening-primrose	PerF	RegEn	Ques?	Reported by Schelz et al. 2006 (without a voucher in ARCH herbarium), but ARCH is well outside the known range of this species in Utah.
Orchidaceae	<i>Habenaria sparsiflora</i> var. <i>sparsiflora</i>	<i>Platanthera sparsiflora</i> . Vars. not recognized in <i>Flora of North America</i> (2002)	slender bog orchid	PerF	Wide	FalsRep	Report in Harrison et al. 1964 is based on a misidentified <i>Habenaria dilatata</i> var. <i>leucostachys</i> .
Polemoniaceae	<i>Ipomopsis congesta</i> var. <i>frutescens</i>	<i>Gilia congesta</i> var. <i>frutescens</i>	shrubby gilia	PerF	RegEn	FalsRep	Report from Harrison et al. (1964) is based on a misidentified specimen of <i>I. roseata</i> . Type locality is Springdale, Washington Co., UT (Jones 5247 NY).
Polygonaceae	<i>Eriogonum corymbosum</i> var. <i>smithii</i>	<i>E. smithii</i>	flat top wild buckwheat	Shrub	LocEn	Ques?	Reported by Schelz et al. (2006) without a voucher, but ARCH is well outside the known range of this taxon. Type locality is The Big Flat Top, Emery Co., UT (Holmgren & Reveal 3012 UTC). UT BLM: Sensitive, USFWS: former C2 candidate
Saxifragaceae (Grossulariaceae)	<i>Ribes inerme</i>		whitestem gooseberry	Shrub	Wide	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>Physocarpus alternans</i> .
Scrophulariaceae	<i>Mimulus guttatus</i>		yellow monkeyflower	PerF	Wide	FalsRep	Report from ARCH herbarium is based on a misidentified specimen of <i>Mimulus glabratus</i> var. <i>utahensis</i> .
Scrophulariaceae	<i>Penstemon fremontii</i>	<i>P. fremontii</i> var. <i>fremontii</i>	Fremont's penstemon	PerF	RegEn	Ques?	Reported by Schelz et al. 2006 (without a voucher in ARCH herbarium), but ARCH is well outside the known range of this species in Utah.
Scrophulariaceae	<i>Penstemon pachyphyllus</i> var. <i>congestus</i>		Rockville penstemon	PerF	Wide	Ques?	Report from ARCH herbarium is based on a collection (Heil # 5792) on loan. Specimen is from outside the known range of this species and identification may be erroneous. Type locality is near Canaan Ranch, Rockville, Washington Co., UT (Jones 5262 POM)

Appendix C. Rejected (falsely reported or questionable) taxa of Arches National Park, cont.

Family	Species name	Synonyms/ Taxonomic notes	Common name	Life form	Range	Park status	Comments
Scrophulariaceae	<i>Penstemon strictiformis</i>		Natural Bridges penstemon	PerF	RegEn	Ques?	Report from ARCH herbarium is based on a collection (Fleming # 774) on loan. Specimen is from outside the known range of this species and identification may be erroneous. Type locality is Mancos, Montezuma Co., CO (Baker, Earle, & Tracy 76 NY).
Umbelliferae (Apiaceae)	<i>Oreoxis trotteri</i>	<i>Cymopterus trotteri</i>	Trotter's spring- parsley	PerF	LocEn	FalsRep	Report by Schelz et al. (2006) based on a collection in ARCH herbarium from outside the park. Type locality is 20 km NW of Moab, Grand Co., UT (Welsh & Trotter 22729 BRY). UT BLM: Sensitive, USFWS: former C2 candidate.

The vascular plant species shown in this table have been reported for Arches National Park from published and unpublished literature (Harrison et al. 1964; Schelz et al. 2006) or from herbarium specimens, but are now believed to be erroneous because of misidentifications (False Reports or FalsRep) or because the park is well outside the known or expected range of the species (Questionable or Ques?).

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
Trees										
Aceraceae	<i>Acer negundo</i>	box elder	Native	Pres	Apr–Jun				x	
Bignoniaceae	<i>Catalpa bignonioides</i>	common catalpa	Intro	Pres	Jun–Jul					Cultivated
Cupressaceae	<i>Juniperus scopulorum</i>	Rocky Mountain juniper	Native	Pres	NA			x	x	
Elaeagnaceae	<i>Elaeagnus angustifolia</i>	Russian-olive	Intro	Pres	May–Jul				x	Disturbed
Fagaceae	<i>Quercus gambelii</i> var. <i>gambelii</i>	Gambel oak	Native	Pres	Apr–Jun			x	x	
Leguminosae (Fabaceae)	<i>Robinia pseudoacacia</i>	black locust	Intro	Pres	May–Jun				x	Cultivated
Moraceae	<i>Morus alba</i>	white mulberry	Intro	Pres	Apr–Jun					Disturbed
Pinaceae	<i>Pinus edulis</i>	two-needle pinyon	Native	Pres	NA			x		
Salicaceae	<i>Populus alba</i>	white poplar	Intro	Pres	Mar–Jun					Cultivated
Salicaceae	<i>Populus fremontii</i> var. <i>fremontii</i>	Fremont cottonwood	Native	Pres	Mar–Jun				x	
Salicaceae	<i>Populus x canadensis</i>	Carolina poplar	Intro	Pres	Apr–Jun					Cultivated
Salicaceae	<i>Populus x intercurrents</i>	lance-leaf cottonwood	Native	Pres	Apr–Jun				x	
Salicaceae	<i>Salix amygdaloides</i>	peach-leaf willow	Native	Pres	Apr–Jun				x	
Salicaceae	<i>Salix gooddingii</i>	Goodding's black willow	Native	Pres	Apr–May				x	
Ulmaceae (Celtidaceae)	<i>Celtis reticulata</i>	netleaf hackberry	Native	Pres	Apr–May	x			x	
Ulmaceae	<i>Ulmus pumila</i>	Siberian elm	Intro	Pres	Mar–Apr			x		Cultivated
Shrubs										
Agavaceae	<i>Yucca angustissima</i>	narrowleaved yucca	Native	Rep	May–Jul			x		Sandy soils
Agavaceae	<i>Yucca harrimaniae</i> var. <i>harrimaniae</i>	Harriman's yucca	Native	Pres	Apr–May	x		x		
Anacardiaceae	<i>Rhus aromatica</i> var. <i>simplicifolia</i>	squawbush	Native	Pres	May–Jul	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	
Anacardiaceae	<i>Toxicodendron rydbergii</i>	western poison ivy	Native	Pres	May–Jun				x	
Berberidaceae	<i>Mahonia fremontii</i>	Fremont's mahonia	Native	Pres	Apr–Jul	x	x	x		
Berberidaceae	<i>Mahonia repens</i>	Oregon-grape	Native	Pres	Apr–Jun			x		
Cactaceae	<i>Opuntia whipplei</i>	Whipple's cholla	Native	Rep	May–Jul	x		x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Shrubs, cont.</i>										
Caprifoliaceae	<i>Symphoricarpos longiflorus</i>	long-flower snowberry	Native	Pres	May-Jul		x	x		
Chenopodiaceae	<i>Allenrolfea occidentalis</i>	iodine bush	Native	Pres	Jul-Sep		x		x	
Chenopodiaceae	<i>Atriplex canescens</i> var. <i>canescens</i>	four-wing saltbush	Native	Pres	May-Sep	x	x	x		Sandy soils
Chenopodiaceae	<i>Atriplex confertifolia</i>	shadscale	Native	Pres	May-Sep		x	x		Clayey to gravelly soils
Chenopodiaceae	<i>Atriplex corrugata</i>	mat saltbush	Native	Pres	Apr-Sep		x			Mancos & Morrison formations
Chenopodiaceae	<i>Atriplex gardneri</i> var. <i>cuneata</i>	Castle Valley saltbush	Native	Pres	May-Sep		x	x		Saline clays
Chenopodiaceae	<i>Atriplex garrettii</i> var. <i>garrettii</i>	Garrett's saltbush	Native	Pres	May-Sep	x	x			
Chenopodiaceae	<i>Grayia spinosa</i>	spiny hopsage	Native	Pres	Apr-Jul	x	x	x		
Chenopodiaceae	<i>Krascheninnikovia lanata</i> var. <i>lanata</i>	winterfat	Native	Pres	May-Jul		x	x		
Chenopodiaceae	<i>Krascheninnikovia lanata</i> var. <i>ruinina</i>	Ruin Park winterfat	Native	Pres	May-Jul			x		
Chenopodiaceae (Sarcobataceae)	<i>Sarcobatus vermiculatus</i>	greasewood	Native	Pres	May-Aug		x			
Chenopodiaceae	<i>Zuckia brandegei</i> var. <i>brandegei</i>	Brandegee's siltbush	Native	Pres	Jun-Aug		x			Saline or seleniferous soils
Compositae (Asteraceae)	<i>Artemisia bigelovii</i>	Bigelow's sagebrush	Native	Pres	Aug-Oct			x		Rocky areas
Compositae (Asteraceae)	<i>Artemisia filifolia</i>	sand sagebrush	Native	Pres	Aug-Oct	x		x		Sandy soils
Compositae (Asteraceae)	<i>Artemisia nova</i> var. <i>nova</i>	black sagebrush	Native	Rep	Sep-Oct		x	x		
Compositae (Asteraceae)	<i>Artemisia spinescens</i>	budsage	Native	Pres	Apr-Jun		x	x		Clayey to gravelly saline soils
Compositae (Asteraceae)	<i>Artemisia tridentata</i> var. <i>tridentata</i>	basin big sagebrush	Native	Pres	Jul-Sep			x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Bkck Br	Salt Des	PinJun	Wet	Comments
<i>Shrubs, cont.</i>										
Compositae (Asteraceae)	<i>Baccharis salicina</i>	Rio Grande seepwillow	Native	Pres	May–Nov				x	
Compositae (Asteraceae)	<i>Brickellia longifolia</i>	longleaf brickellbush	Native	Pres	Aug–Sep				x	
Compositae (Asteraceae)	<i>Brickellia microphylla</i> var. <i>scabra</i>	rough brickellbush	Native	Pres	Aug–Oct	x		x		Sandstone
Compositae (Asteraceae)	<i>Brickellia oblongifolia</i> var. <i>linifolia</i>	Mohave brickellbush	Native	Pres	Jun–Aug	x	x	x		
Compositae (Asteraceae)	<i>Chrysothamnus linifolius</i>	spear-leaf rabbitbrush	Native	Pres	Jul–Sep				x	Sandy to saline soils
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>consimilis</i>	greenish rabbitbrush	Native	Pres	Aug–Oct		x	x	x	
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>gnaphalodes</i>	graystem rabbitbrush	Native	Pres	Aug–Oct		x	x		
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>graveolens</i>	glabrate rabbitbrush	Native	Pres	Aug–Oct	x	x		x	
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>junceus</i>	rush rabbitbrush	Native	Pres	Aug–Oct	x	x	x		
Compositae (Asteraceae)	<i>Chrysothamnus nauseosus</i> var. <i>leiospermus</i>	smoothseed rabbitbrush	Native	Pres	Aug–Oct	x	x	x		
Compositae (Asteraceae)	<i>Chrysothamnus parryi</i> var. <i>howardii</i>	longbract rabbitbrush	Native	Pres	Jul–Sep			x		
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>lanceolatus</i>	lanceleaf rabbitbrush	Native	Rep	Jul–Sep			x		
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>stenophyllus</i>	slenderleaf rabbitbrush	Native	Pres	Jul–Sep	x	x	x		
Compositae (Asteraceae)	<i>Chrysothamnus viscidiflorus</i> var. <i>viscidiflorus</i>	green rabbitbrush	Native	Pres	Jul–Sep		x	x		
Compositae (Asteraceae)	<i>Encelia frutescens</i> var. <i>resinosa</i>	bush encelia	Native	Pres	Apr–Jun	x	x			
Compositae (Asteraceae)	<i>Gutierrezia microcephala</i>	thread snakeweed	Native	Pres	Jul–Oct	x	x	x		
Compositae (Asteraceae)	<i>Gutierrezia sarothrae</i>	broom snakeweed	Native	Pres	Jul–Oct	x		x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Shrubs, cont.</i>										
Compositae (Asteraceae)	<i>Haplopappus rusbyi</i>	Rusby's goldenbush	Native	Pres	Aug-Sep		x		x	
Compositae (Asteraceae)	<i>Oxytenia acerosa</i>	copperweed	Native	Pres	Jun-Oct				x	Saline soils
Compositae (Asteraceae)	<i>Tetradymia spinosa</i>	shortspine horsebrush	Native	Pres	Apr-Jun		x	x		
Compositae (Asteraceae)	<i>Vandervea stylosa</i>	resinbush	Native	Pres	Jul-Sep	x		x		
Cornaceae	<i>Cornus sericea</i> var. <i>sericea</i>	red-osier dogwood	Native	Pres	May-Jul				x	
Cupressaceae	<i>Juniperus osteosperma</i>	Utah juniper	Native	Pres	NA	x		x	x	
Ephedraceae	<i>Ephedra torreyana</i>	Torrey's ephedra	Native	Pres	NA	x	x	x		
Ephedraceae	<i>Ephedra viridis</i> var. <i>viridis</i>	green ephedra	Native	Pres	NA	x	x	x		
Ephedraceae	<i>Ephedra viridis</i> var. <i>viscida</i>	Cutler's ephedra	Native	Pres	NA	x	x	x		Sandy soils
Fagaceae	<i>Quercus turbinella</i>	turbinella live-oak	Native	Pres	Apr-Jun			x		
Fagaceae	<i>Quercus welshii</i>	shinnery oak	Native	Pres	Apr-Jun	x		x		
Labiatae (Lamiaceae)	<i>Poliomintha incana</i>	purple sage	Native	Pres	May-Jun	x		x		
Oleaceae	<i>Forestiera pubescens</i>	desert olive	Native	Pres	Apr-May				x	
Oleaceae	<i>Fraxinus anomala</i>	singleleaf ash	Native	Pres	Apr-May			x		
Polygonaceae	<i>Eriogonum corymbosum</i> var. <i>corymbosum</i>	crisp-leaf wild buckwheat	Native	Pres	Jul-Oct		x	x		
Polygonaceae	<i>Eriogonum corymbosum</i> var. <i>orbiculatum</i>	rimrock wild buckwheat	Native	Pres	Aug-Oct		x	x		Sandstone
Polygonaceae	<i>Eriogonum leptocladon</i> var. <i>leptocladon</i>	sand wild buckwheat	Native	Pres	Jun-Oct	x		x		
Polygonaceae	<i>Eriogonum microthecum</i> var. <i>laxiflorum</i>	slender wild buckwheat	Native	Pres	Jun-Oct		x	x		
Rhamnaceae	<i>Rhamnus betulifolia</i>	birchleaf buckthorn	Native	Pres	May-Jun				x	Rock crevices
Rosaceae	<i>Amelanchier utahensis</i>	Utah serviceberry	Native	Pres	Apr-Jun			x	x	
Rosaceae	<i>Cercocarpus intricatus</i>	dwarf mountain mahogany	Native	Pres	Apr-Jun		x	x		Rock crevices
Rosaceae	<i>Cercocarpus montanus</i>	alder-leaf mountain mahogany	Native	Pres	May-Jun			x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Shrubs, cont.</i>										
Rosaceae	<i>Coleogyne ramosissima</i>	blackbrush	Native	Pres	Apr–Jun	x				Shallow sandy to clay soil
Rosaceae	<i>Holodiscus dumosus</i>	bush oceanspray	Native	Pres	Jun–Aug			x		Rock crevices
Rosaceae	<i>Physocarpus alternans</i>	dwarf ninebark	Native	Pres	May–Aug		x	x		Rock crevices
Rosaceae	<i>Purshia mexicana</i> var. <i>stansburyana</i>	cliff-rose	Native	Pres	May–Jun	x		x		
Rosaceae	<i>Purshia tridentata</i>	antelope bitterbrush	Native	Rep	Apr–Jul			x		
Rosaceae	<i>Rosa woodsii</i>	Woods' rose	Native	Pres	May–Jul				x	
Salicaceae	<i>Salix eriocephala</i> var. <i>watsonii</i>	yellow willow	Native	Pres	Apr–Jun				x	
Salicaceae	<i>Salix exigua</i> var. <i>stenophylla</i>	coyote willow	Native	Pres	Apr–Aug				x	
Salicaceae	<i>Salix lucida</i> ssp. <i>caudata</i>	whiplash willow	Native	Pres	Apr–Jun				x	
Saxifragaceae (Hydrangeaceae)	<i>Fendlera rupicola</i>	fendlerbush	Native	Pres	Apr–Jun	x	x	x		
Saxifragaceae (Hydrangeaceae)	<i>Philadelphus microphyllus</i>	littleleaf mock-orange	Native	Pres	May–Sep			x		
Tamaricaceae	<i>Tamarix chinensis</i>	five-stamen tamarisk	Intro	Pres	Apr–Sep				x	
Perennial Forbs										
Apocynaceae	<i>Amsonia tomentosa</i> var. <i>stenophylla</i>	tomentose amsonia	Native	Pres	Apr–May	x	x			
Apocynaceae	<i>Apocynum cannabinum</i>	common dogbane	Native	Pres	Jun–Aug				x	
Asclepiadaceae	<i>Asclepias asperula</i> var. <i>asperula</i>	spider milkweed	Native	Rep	May–Jul	x		x		
Asclepiadaceae	<i>Asclepias cryptoceras</i> var. <i>cryptoceras</i>	pallid milkweed	Native	Pres	Apr–Jun	x	x	x		
Asclepiadaceae	<i>Asclepias latifolia</i>	broadleaf milkweed	Native	Pres	Jun–Aug		x	x	x	
Asclepiadaceae	<i>Asclepias macroserma</i>	bigseed milkweed	Native	Pres	Apr–Jul	x	x	x		
Asclepiadaceae	<i>Asclepias ruthiae</i>	Ruth's milkweed	Native	Pres	Apr–Jun		x	x		
Asclepiadaceae	<i>Asclepias speciosa</i>	showy milkweed	Native	Pres	May–Aug				x	Disturbed
Asclepiadaceae	<i>Asclepias subverticillata</i>	whorled milkweed	Native	Pres	May–Sep	x	x	x		Disturbed
Boraginaceae	<i>Cryptantha flava</i>	plateau yellow cryptanth	Native	Pres	Apr–Jun		x	x		
Boraginaceae	<i>Cryptantha flavoculata</i>	yellow-eye cryptanth	Native	Pres	Apr–Jun			x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Boraginaceae	<i>Cryptantha fulvocanescens</i>	plateau cryptanth	Native	Pres	May–Jun	x	x	x		Mancos Shale
Boraginaceae	<i>Cryptantha longiflora</i>	long-flower cryptanth	Native	Pres	May–Jun		x	x		
Boraginaceae	<i>Cryptantha osterhoutii</i>	Osterhout's cryptanth	Native	Pres	May–Jun	x	x	x		
Boraginaceae	<i>Cryptantha tenuis</i>	slender cryptanth	Native	Pres	May–Jun	x	x	x		
Boraginaceae	<i>Cryptantha wetherillii</i>	Wetherill's cryptanth	Native	Rep	Apr–Jun		x	x		
Boraginaceae	<i>Cynoglossum officinale</i>	common hound's-tongue	Intro	Rep	May–Jul			x	x	Disturbed
Boraginaceae	<i>Heliotropium curassavicum</i> var. <i>obovatum</i>	salt heliotrope	Native	Rep	May–Oct		x			
Boraginaceae	<i>Lithospermum incisum</i>	showy stoneseed	Native	Pres	Apr–Jul			x		
Boraginaceae (Ehretiaceae)	<i>Tiquilia latior</i>	matted 'tiquilia	Native	Pres	May–Aug		x	x		
Cactaceae	<i>Echinocereus triglochidiatus</i> var. <i>melanacanthus</i>	claretcup	Native	Pres	Apr–Jun	x		x		
Cactaceae	<i>Opuntia erinacea</i> var. <i>erinacea</i>	common pricklypear	Native	Pres	May–Jun	x	x			
Cactaceae	<i>Opuntia erinacea</i> var. <i>utahensis</i>	Utah pricklypear	Native	Pres	May–Jun	x		x		
Cactaceae	<i>Opuntia phaeacantha</i> var. <i>major</i>	large pricklypear	Native	Pres	Apr–Jul	x		x		
Cactaceae	<i>Opuntia polyacantha</i> var. <i>polyacantha</i>	plains pricklypear	Native	Rep	May–Jun		x	x		
Cactaceae	<i>Opuntia polyacantha</i> var. <i>rufispina</i>	rufous-spine pricklypear	Native	Pres	May–Jun	x	x	x		
Cactaceae	<i>Opuntia polyacantha</i> var. <i>trichophora</i>	slenderspine pricklypear	Native	Pres	May–Jun	x	x	x		
Cactaceae	<i>Sclerocactus whipplei</i> var. <i>roseus</i>	small-flower fishhook cactus	Native	Pres	Apr–May		x	x		
Caryophyllaceae (Alsiniaceae)	<i>Arenaria fendleri</i> var. <i>eastwoodiae</i>	Eastwood's sandwort	Native	Pres	May–Sep		x	x		
Chenopodiaceae	<i>Bassia americana</i>	greenmolly	Native	Rep	Aug–Oct		x	x		
Compositae (Asteraceae)	<i>Arctium minus</i>	burdock	Intro	Pres	Jul–Sep				x	Disturbed
Compositae (Asteraceae)	<i>Artemisia campestris</i> var. <i>scouleriana</i>	sand wormwood	Native	Pres	Jul–Sep		x	x		Sandy soils

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Bk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Compositae (Asteraceae)	<i>Artemisia dracunculus</i> ssp. <i>glauca</i>	tarragon	Native	Pres	Jul-Oct		x	x	x	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>albula</i>	Louisiana wormwood	Native	Pres	Jul-Oct				x	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>ludoviciana</i>	Louisiana wormwood	Native	Pres	Jul-Oct			x	x	
Compositae (Asteraceae)	<i>Artemisia ludoviciana</i> var. <i>mexicana</i>	Louisiana wormwood	Native	Pres	Jul-Oct			x	x	
Compositae (Asteraceae)	<i>Aster ascendens</i>	Pacific aster	Native	Pres	Jul-Oct			x	x	
Compositae (Asteraceae)	<i>Aster hesperius</i>	Siskiyou aster	Native	Pres	Jul-Sep				x	
Compositae (Asteraceae)	<i>Bidens frondosa</i>	devil's-beggarsticks	Native	Pres	Jun-Aug				x	
Compositae (Asteraceae)	<i>Centaurea maculosa</i>	Spotted knapweed	Intro	Pres	Jul-Sep					Disturbed
Compositae (Asteraceae)	<i>Centaurea repens</i>	Russian knapweed	Intro	Pres	Jun-Sep				x	Disturbed
Compositae (Asteraceae)	<i>Chaetopappa ericoides</i>	rose-heath	Native	Pres	May-Sep	x	x	x		
Compositae (Asteraceae)	<i>Chrysopsis villosa</i> var. <i>minor</i>	hispid golden-aster	Native	Pres	May-Sep		x	x		
Compositae (Asteraceae)	<i>Cirsium calcareum</i> var. <i>pulchellum</i>	pretty thistle	Native	Pres	Jun-Sep			x	x	
Compositae (Asteraceae)	<i>Cirsium neomexicanum</i> var. <i>neomexicanum</i>	New Mexico thistle	Native	Pres	May-Jun	x	x	x		
Compositae (Asteraceae)	<i>Cirsium rydbergii</i>	Rydberg's thistle	Native	Pres	May-Aug				x	
Compositae (Asteraceae)	<i>Cirsium undulatum</i> var. <i>undulatum</i>	wavy-leaved thistle	Native	Pres	Jun-Sep		x	x		
Compositae (Asteraceae)	<i>Cirsium vulgare</i>	bull thistle	Intro	Rep	Jul-Aug				x	Disturbed
Compositae (Asteraceae)	<i>Crepis runcinata</i> var. <i>glauca</i>	glaucous hawkbeard	Native	Pres	May-Aug				x	

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Compositae (Asteraceae)	<i>Enceliopsis nudicaulis</i> var. <i>nudicaulis</i>	nakedstem	Native	Rep	May–Jun	x		x		
Compositae (Asteraceae)	<i>Enceliopsis nutans</i>	noddinghead	Native	Pres	May–Jun		x			
Compositae (Asteraceae)	<i>Erigeron aphanactis</i> var. <i>aphanactis</i>	hairy daisy	Native	Pres	May–Jul		x	x		
Compositae (Asteraceae)	<i>Erigeron divergens</i> var. <i>cinereus</i>	spreading daisy	Native	Pres	May–Sep				x	
Compositae (Asteraceae)	<i>Erigeron divergens</i> var. <i>divergens</i>	spreading daisy	Native	Pres	May–Sep			x	x	
Compositae (Asteraceae)	<i>Erigeron pulcherrimus</i>	basin daisy	Native	Pres	May–Jun		x	x		
Compositae (Asteraceae)	<i>Erigeron pumilus</i> var. <i>concinus</i>	Navajo fleabane	Native	Pres	May–Aug		x	x		
Compositae (Asteraceae)	<i>Erigeron utahensis</i> var. <i>sparsifolius</i>	slenderleaf daisy	Native	Pres	Jun–Sep		x	x		Sandstone
Compositae (Asteraceae)	<i>Erigeron utahensis</i> var. <i>utahensis</i>	Utah daisy	Native	Pres	Apr–Jun	x		x		
Compositae (Asteraceae)	<i>Euthamia occidentalis</i>	western goldenrod	Native	Pres	Jul–Oct				x	
Compositae (Asteraceae)	<i>Gaillardia pinnatifida</i>	Hopi blanketflower	Native	Pres	Apr–Aug	x	x	x		
Compositae (Asteraceae)	<i>Gaillardia spathulata</i>	basin blanketflower	Native	Pres	May–Oct		x			
Compositae (Asteraceae)	<i>Grindelia fastigiata</i>	erect gumweed	Native	Pres	Aug–Sep		x			Disturbed
Compositae (Asteraceae)	<i>Haplopappus armerioides</i> var. <i>armerioides</i>	thrift goldenweed	Native	Pres	May–Jun	x	x	x		
Compositae (Asteraceae)	<i>Heterotheca subaxillaris</i>	sand goldenaster	Native	Pres	May–Oct					Disturbed
Compositae (Asteraceae)	<i>Hymenopappus filifolius</i> var. <i>cinereus</i>	common hyalineherb	Native	Pres	May–Oct	x	x	x		
Compositae (Asteraceae)	<i>Hymenoxys acaulis</i> var. <i>arizonica</i>	Arizona hymenoxys	Native	Pres	Apr–Jun		x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Bkck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Compositae (Asteraceae)	<i>Hymenoxys acaulis</i> var. <i>ivesiana</i>	canyonlands hymenoxys	Native	Pres	Apr–Jun			x		
Compositae (Asteraceae)	<i>Lactuca tatarica</i> var. <i>pulchella</i>	blue lettuce	Native	Pres	Jun–Sep				x	
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>arizonica</i>	Arizona rush-pink	Native	Rep	May–Jun	x		x		
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>entrada</i>	Entrada rush-pink	Native	Pres	Jun			x		
Compositae (Asteraceae)	<i>Lygodesmia grandiflora</i> var. <i>grandiflora</i>	showy rush-pink	Native	Pres	May–Jun		x	x		
Compositae (Asteraceae)	<i>Machaeranthera canescens</i> var. <i>canescens</i>	hoary aster	Native	Pres	May–Sep		x	x		
Compositae (Asteraceae)	<i>Machaeranthera grindelioides</i> var. <i>grindelioides</i>	gumweed aster	Native	Pres	May–Jul	x	x	x		
Compositae (Asteraceae)	<i>Onopordum acanthium</i>	Scotch thistle	Intro	Rep	Jun–Sep					Disturbed
Compositae (Asteraceae)	<i>Perityle specuicola</i>	alcove rock-daisy	Native	Pres	Jul–Sep				x	
Compositae (Asteraceae)	<i>Petrorhiza pumila</i> var. <i>pumila</i>	rock-goldenrod	Native	Pres	Jul–Sep		x	x		
Compositae (Asteraceae)	<i>Platyschukhria integrifolia</i> var. <i>desertorum</i>	desert bahia	Native	Pres	May–Jun		x	x		
Compositae (Asteraceae)	<i>Senecio douglasii</i> var. <i>longilobus</i>	Douglas' groundsel	Native	Rep	May–Oct	x	x	x		
Compositae (Asteraceae)	<i>Senecio multilobatus</i>	basin groundsel	Native	Pres	Apr–Aug	x	x	x		
Compositae (Asteraceae)	<i>Senecio spartioides</i> var. <i>multicapitatus</i>	many-headed groundsel	Native	Pres	Jun–Oct	x		x	x	
Compositae (Asteraceae)	<i>Senecio spartioides</i> var. <i>spartioides</i>	broom groundsel	Native	Pres	Jun–Oct	x		x		
Compositae (Asteraceae)	<i>Senecio streptanthifolius</i> var. <i>streptanthifolius</i>	Rocky Mountain groundsel	Native	Pres	Jun–Aug			x		
Compositae (Asteraceae)	<i>Solidago canadensis</i> var. <i>salebrosa</i>	Canadian goldenrod	Native	Pres	Aug–Oct				x	

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Compositae (Asteraceae)	<i>Solidago velutina</i>	three-nerve goldenrod	Native	Pres	Aug–Oct			x		
Compositae (Asteraceae)	<i>Stephanomeria pauciflora</i>	brown-plume wire-lettuce	Native	Pres	May–Oct	x	x	x		Sandy soils
Compositae (Asteraceae)	<i>Stephanomeria tenuifolia</i> var. <i>tenuifolia</i>	slender wirelettuce	Native	Pres	Jun–Sep		x	x	x	
Compositae (Asteraceae)	<i>Taraxacum officinale</i>	common dandelion	Intro	Pres	Apr–Dec			x	x	Disturbed
Compositae (Asteraceae)	<i>Thelesperma subnudum</i> var. <i>subnudum</i>	scapose greenthread	Native	Pres	May–Aug		x	x		
Compositae (Asteraceae)	<i>Townsendia incana</i>	hoary townsendia	Native	Pres	Apr–Jul	x	x	x		
Compositae (Asteraceae)	<i>Tragopogon dubius</i>	yellow salsify	Intro	Pres	May–Jul				x	Disturbed
Compositae (Asteraceae)	<i>Wyethia scabra</i>	rough mule's-ears	Native	Pres	May–Aug			x		Sandy soils
Compositae (Asteraceae)	<i>Xylorhiza glabriuscula</i> var. <i>linearifolia</i>	Moab woodyaster	Native	Pres	Apr–May	x	x			Chinle, Shinarump, & Moenkopi formations
Compositae (Asteraceae)	<i>Xylorhiza tortifolia</i> var. <i>imberbis</i>	hurtleaf woodyaster	Native	Pres	Apr–Jun	x		x		
Compositae (Asteraceae)	<i>Xylorhiza venusta</i>	Cisco woodyaster	Native	Pres	Apr–Jun		x			
Convulvulaceae	<i>Convolvulus arvensis</i>	field bindweed	Intro	Pres	Jun–Aug					Disturbed
Convulvulaceae	<i>Evolvulus nuttallianus</i>	evolvulus	Native	Pres	May–Jun		x			
Cruciferae (Brassicaceae)	<i>Arabis perennans</i> var. <i>perennans</i>	perennial rockcress	Native	Pres	Mar–Jul	x	x	x		
Cruciferae (Brassicaceae)	<i>Arabis pulchra</i> var. <i>pallens</i>	desert rockcress	Native	Pres	Mar–Jun		x	x		
Cruciferae (Brassicaceae)	<i>Descurainia californica</i>	California tansy-mustard	Native	Rep	Jun–Sep			x		
Cruciferae (Brassicaceae)	<i>Erysimum asperum</i> var. <i>purshii</i>	sand dune wallflower	Native	Pres	Apr–Aug	x		x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Cruciferae (Brassicaceae)	<i>Lepidium alyssoides</i> var. <i>eastwoodiae</i>	Eastwood's tall pepperwort	Native	Pres	Jul-Oct		x	x	x	
Cruciferae (Brassicaceae)	<i>Lepidium latifolium</i>	broad-leaf pepperwort	Intro	Pres	Jun-Oct			x	x	Disturbed
Cruciferae (Brassicaceae)	<i>Lepidium moabense</i>	Moab pepperplant	Native	Pres	Aug-Oct				x	
Cruciferae (Brassicaceae)	<i>Lepidium montanum</i> var. <i>jonesii</i>	Jones' pepperwort	Native	Pres	Apr-Sep	x	x	x		
Cruciferae (Brassicaceae)	<i>Nasturtium officinale</i>	watercress	Intro	Pres	May-Sep				x	
Cruciferae (Brassicaceae)	<i>Physaria acutifolia</i> var. <i>acutifolia</i>	sharp-leaf twinpod	Native	Pres	May-Jul		x	x		
Cruciferae (Brassicaceae)	<i>Stanleya pinnata</i>	prince's-plume	Native	Pres	Apr-Sep		x	x		Often on seleniferous soils
Cruciferae (Brassicaceae)	<i>Streptanthus cordatus</i>	heart-leaf jewelflower	Native	Pres	Apr-Jul		x	x		
Cruciferae (Brassicaceae)	<i>Thelypodopsis elegans</i>	elegant thelypody	Native	Pres	Apr-Jul		x	x		
Cruciferae (Brassicaceae)	<i>Thelypodium integrifolium</i> var. <i>gracilipes</i>	Moab thelypody	Native	Pres	Jun-Sep				x	
Euphorbiaceae	<i>Chamaesyce fendleri</i>	Fendler's spurge	Native	Pres	May-Sep	x	x	x		
Euphorbiaceae	<i>Euphorbia brachycera</i>	shorthorn spurge	Native	Pres	May-Jun			x	x	
Euphorbiaceae	<i>Tragia ramosa</i>	noseburn	Native	Pres	May-Aug		x	x		
Fumariaceae	<i>Corydalis aurea</i> var. <i>occidentalis</i>	golden corydalis	Native	Pres	Apr-Sep	x		x		
Gentianaceae	<i>Centaurium exaltatum</i>	Great Basin centaury	Native	Pres	Jun-Sep				x	
Gentianaceae	<i>Swertia utahensis</i>	Utah swertia	Native	Pres	Jun-Jul	x	x	x		Sandy soils
Labiatae (Lamiaceae)	<i>Hedeoma drummondii</i>	mock pennyroyal	Native	Pres	May-Aug			x		
Labiatae (Lamiaceae)	<i>Marrubium vulgare</i>	common horehound	Intro	Rep	May-Oct					Disturbed
Leguminosae (Fabaceae)	<i>Astragalus amphioxys</i> var. <i>amphioxys</i>	crested milkvetch	Native	Pres	Mar-Jun	x	x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Leguminosae (Fabaceae)	<i>Astragalus amphioxys</i> var. <i>vespertinus</i>	Sheldon's milkvetch	Native	Hist	Mar–Jun		x	x		
Leguminosae (Fabaceae)	<i>Astragalus ceramicus</i> var. <i>ceramicus</i>	painted milkvetch	Native	Pres	Apr–Jun		x	x	x	Sandy soils
Leguminosae (Fabaceae)	<i>Astragalus coltonii</i> var. <i>moabensis</i>	Moab milkvetch	Native	Pres	Apr–Jun			x		
Leguminosae (Fabaceae)	<i>Astragalus cymboides</i>	canoe milkvetch	Native	Pres	Apr–Jun		x	x		
Leguminosae (Fabaceae)	<i>Astragalus desperatus</i> var. <i>desperatus</i>	rimrock milkvetch	Native	Pres	May–Jul		x	x		
Leguminosae (Fabaceae)	<i>Astragalus flavus</i> var. <i>flavus</i>	yellow milkvetch	Native	Pres	Apr–Jul		x	x		
Leguminosae (Fabaceae)	<i>Astragalus lentiginosus</i> var. <i>palans</i>	straggling milkvetch	Native	Pres	Apr–Jun	x	x	x		
Leguminosae (Fabaceae)	<i>Astragalus moencoppensis</i>	Moenkopi milkvetch	Native	Rep	May–Jul		x	x		
Leguminosae (Fabaceae)	<i>Astragalus mollissimus</i> var. <i>thompsoniae</i>	woolly milkvetch	Native	Pres	Feb–Jun		x	x		
Leguminosae (Fabaceae)	<i>Astragalus praelongus</i> var. <i>ellisiae</i>	Ellis' milkvetch	Native	Pres	Apr–Jul	x	x	x		
Leguminosae (Fabaceae)	<i>Astragalus preussii</i> var. <i>latus</i>	Preuss' milkvetch	Native	Pres	Apr–Jun		x	x		
Leguminosae (Fabaceae or Caesalpinaceae)	<i>Caesalpinia repens</i>	creeping rush-pea	Native	Pres	Apr–Jun	x	x			Sandy soils
Leguminosae (Fabaceae)	<i>Dalea flavescens</i> var. <i>flavescens</i>	Kanab prairie-clover	Native	Pres	May–Jun	x	x	x		Sandy soils
Leguminosae (Fabaceae)	<i>Dalea oligophylla</i>	white prairie-clover	Native	Pres	May–Sep	x	x	x	x	Sandy soils
Leguminosae (Fabaceae)	<i>Glycyrrhiza lepidota</i>	Nuttall's licorice	Native	Pres	May–Jul				x	
Leguminosae (Fabaceae)	<i>Hedysarum boreale</i> var. <i>boreale</i>	northern sweetvetch	Native	Pres	May–Aug			x		
Leguminosae (Fabaceae)	<i>Lathyrus brachycalyx</i> var. <i>zionis</i>	Zion sweetpea	Native	Pres	Apr–Jun			x	x	Sandy soils

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Bk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Leguminosae (Fabaceae)	<i>Lupinus argenteus</i> var. <i>argenteus</i>	silvery lupine	Native	Pres	May–Aug	x	x	x		
Leguminosae (Fabaceae)	<i>Medicago sativa</i>	alfalfa	Intro	Pres	May–Sep					Disturbed
Leguminosae (Fabaceae)	<i>Melilotus officinalis</i>	yellow sweet-clover	Intro	Pres	May–Oct					Disturbed
Leguminosae (Fabaceae)	<i>Pedimelum megalanthum</i>	large-flowered breadroot	Native	Pres	Apr–Jun	x		x		
Leguminosae (Fabaceae)	<i>Psoraleidium lanceolatum</i> var. <i>stenophyllum</i>	slenderleaf scurfpea	Native	Hist	Apr–Aug		x	x		Sandy soils
Leguminosae (Fabaceae)	<i>Sophora stenophylla</i>	silvery sophora	Native	Pres	Jul–Aug	x		x		
Liliaceae (Alliaceae)	<i>Allium macropetalum</i>	San Juan onion	Native	Pres	May–Jun		x	x		
Liliaceae (Alliaceae)	<i>Allium nevadense</i>	Nevada onion	Native	Pres	Apr–Jul	x	x	x		
Liliaceae (Alliaceae)	<i>Allium textile</i>	textile onion	Native	Pres	May–Jun		x	x		
Liliaceae (Alliaceae, Themidaceae)	<i>Androstephium breviflorum</i>	pink funnel-lily	Native	Pres	Apr–May	x	x	x		Saline to seleniferous soils
Liliaceae (Asparagaceae)	<i>Asparagus officinalis</i>	asparagus	Intro	Pres	Jun–Jul					Disturbed
Liliaceae (Calochortaceae)	<i>Calochortus nuttallii</i>	sego-lily	Native	Pres	Jun–Jul		x	x		
Liliaceae (Anthericaceae)	<i>Eremocrinum albomarginatum</i>	sand lily	Native	Pres	Apr–Jun	x	x			
Liliaceae (Convallariaceae)	<i>Smilacina stellata</i>	starry false Solomon's-seal	Native	Pres	Apr–Jun			x	x	
Liliaceae (Melanthiaceae)	<i>Zigadenus vaginatus</i>	alcove death camas	Native	Pres	Jul–Aug				x	
Linaceae	<i>Linum perenne</i> ssp. <i>lewisii</i>	blue flax	Native	Pres	Apr–Aug			x		
Loasaceae	<i>Mentzelia multiflora</i>	desert stickleaf	Native	Pres	Apr–Sep	x	x			
Loasaceae	<i>Mentzelia pterosperma</i>	wing-seed stickleaf	Native	Pres	Mar–Aug	x	x	x		
Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife	Intro	Pres	Jul–Aug				x	
Malvaceae	<i>Sphaeralcea coccinea</i>	scarlet globe-mallow	Native	Pres	Apr–Oct	x	x	x		
Malvaceae	<i>Sphaeralcea leptophylla</i>	slenderleaf globemallow	Native	Pres	May–Sep	x	x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Malvaceae	<i>Sphaeralcea parvifolia</i>	small-leaf globemallow	Native	Pres	Mar-Oct	x	x	x		
Nyctaginaceae	<i>Abronia fragrans</i>	fragrant sand-verbena	Native	Pres	Apr-Sep	x	x	x		
Nyctaginaceae	<i>Mirabilis linearis</i> var. <i>linearis</i>	narrow-leaf four-o'clock	Native	Pres	May-Aug		x	x	x	
Nyctaginaceae	<i>Mirabilis multiflora</i>	showy four-o'clock	Native	Pres	Apr-Jul	x		x		
Onagraceae	<i>Epilobium ciliatum</i>	northern willow-herb	Native	Pres	Jun-Aug				x	
Onagraceae	<i>Oenothera caespitosa</i> var. <i>marginata</i>	long-tube evening-primrose	Native	Pres	Apr-Jun			x		
Onagraceae	<i>Oenothera caespitosa</i> var. <i>navajoensis</i>	Paria evening-primrose	Native	Pres	Apr-Jun	x	x	x		
Onagraceae	<i>Oenothera longissima</i>	Bridges evening-primrose	Native	Pres	Jul-Sep				x	
Onagraceae	<i>Oenothera pallida</i> var. <i>pallida</i>	pale evening-primrose	Native	Pres	May-Jul	x	x	x		
Orchidaceae	<i>Epipactis gigantea</i>	giant helleborine	Native	Pres	Apr-Aug				x	
Orchidaceae	<i>Habenaria dilatata</i> var. <i>leucostachys</i>	Lindley's white bog-orchid	Native	Pres	Jun-Aug				x	
Orchidaceae	<i>Habenaria zothecina</i>	alcove bog-orchid	Native	Pres	Jul-Aug				x	
Orobanchaceae	<i>Orobanche fasciculata</i>	clustered broomrape	Native	Pres	Jun-Jul	x	x	x		
Orobanchaceae	<i>Orobanche ludoviciana</i> var. <i>cooperi</i>	Cooper's broomrape	Native	Pres	May-Jul	x	x	x		
Plantaginaceae	<i>Plantago major</i>	common plantain	Intro	Pres	May-Aug		x			Disturbed
Polemoniaceae	<i>Gilia subnuda</i>	carmine gilia	Native	Rep	May-Jun	x		x		
Polemoniaceae	<i>Ipomopsis aggregata</i> var. <i>aggregata</i>	scarlet gilia	Native	Pres	May-Aug			x	x	
Polemoniaceae	<i>Ipomopsis roseata</i>	San Rafael gilia	Native	Pres	May-Jun	x	x	x		
Polemoniaceae	<i>Leptodactylon watsonii</i>	Watson's prickly-phlox	Native	Pres	May-Aug	x		x		
Polemoniaceae	<i>Phlox austromontana</i> var. <i>austromontana</i>	desert phlox	Native	Rep	Apr-Jun		x	x		
Polygalaceae	<i>Polygala subspinosa</i>	cushion milkwort	Native	Pres	May-Jun		x	x		
Polygonaceae	<i>Eriogonum alatum</i>	winged wild buckwheat	Native	Pres	Jun-Oct			x		Sandy soils
Polygonaceae	<i>Eriogonum bicolor</i>	pretty wild buckwheat	Native	Pres	Apr-Jul		x	x		
Polygonaceae	<i>Eriogonum inflatum</i> var. <i>inflatum</i>	desert trumpet	Native	Pres	Mar-Oct	x	x	x		Sandy or gravelly soils

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Polygonaceae	<i>Eriogonum microthecum</i> var. <i>simpsonii</i>	slender wild buckwheat	Native	Pres	Jun-Oct		x	x		
Polygonaceae	<i>Eriogonum ovalifolium</i>	cushion wild buckwheat	Native	Pres	Apr-Aug		x	x		
Polygonaceae	<i>Rumex crispus</i>	curly dock	Intro	Rep	May-Sep				x	Disturbed
Polygonaceae	<i>Rumex hymenosepalus</i>	canaigre dock	Native	Pres	Apr-Jun	x				
Polygonaceae	<i>Rumex venosus</i>	veiny dock	Native	Pres	Apr-Jun		x	x		
Portulacaceae	<i>Talinum brevifolium</i>	sausageleaf talinum	Native	Pres	Jun-Oct			x		Navajo & Cedar Mesa sandstone
Primulaceae	<i>Primula specuicola</i>	cave primrose	Native	Pres	Feb-Jul				x	
Ranunculaceae (Helleboraceae)	<i>Aquilegia micrantha</i>	alcove columbine	Native	Pres	May-Jun				x	
Ranunculaceae	<i>Clematis ligusticifolia</i>	white virgin's-bower	Native	Pres	Jul-Aug				x	
Ranunculaceae (Helleboraceae)	<i>Delphinium andersonii</i> var. <i>scaposum</i>	pale larkspur	Native	Pres	Apr-Jun	x	x	x		
Ranunculaceae (Helleboraceae)	<i>Delphinium nuttallianum</i>	Nuttall's larkspur	Native	Pres	Apr-Jul	x		x		
Ranunculaceae	<i>Ranunculus cymbalaria</i>	marsh buttercup	Native	Pres	May-Sep				x	
Rosaceae	<i>Petrophyton caespitosum</i>	rock spiraea	Native	Pres	Aug-Sep			x		Rock crevices
Rubiaceae	<i>Galium multiflorum</i> var. <i>coloradoense</i>	Colorado bedstraw	Native	Pres	May-Aug	x	x	x		
Rubiaceae	<i>Galium multiflorum</i> var. <i>multiflorum</i>	shrubby bedstraw	Native	Pres	May-Aug	x		x	x	
Rubiaceae	<i>Galium triflorum</i>	sweet-scented bedstraw	Native	Pres	Jul-Aug				x	
Santalaceae	<i>Comandra umbellata</i> var. <i>pallida</i>	bastard toadflax	Native	Pres	Apr-Aug	x	x	x		
Scrophulariaceae	<i>Castilleja chromosa</i>	desert paintbrush	Native	Hist	Apr-Jun	x	x	x		
Scrophulariaceae	<i>Castilleja linariifolia</i>	Wyoming paintbrush	Native	Pres	Jul-Aug			x		
Scrophulariaceae	<i>Castilleja scabrata</i> var. <i>scabrata</i>	Eastwood's paintbrush	Native	Pres	May-Jul		x	x		Sandstone
Scrophulariaceae	<i>Linaria dalmatica</i>	Dalmatian toadflax	Intro	Pres	Jul-Aug				x	Disturbed
Scrophulariaceae	<i>Mimulus eastwoodiae</i>	Eastwood's monkey-flower	Native	Pres	May-Sep				x	Sandstone
Scrophulariaceae	<i>Mimulus glabratus</i> var. <i>utahensis</i>	glabrous monkeyflower	Native	Pres	Jun-Aug				x	

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Forbs, cont.</i>										
Scrophulariaceae	<i>Penstemon barbatus</i> var. <i>barbatus</i>	beardlip penstemon	Native	Rep	Jun-Jul			x		Sandy soils
Scrophulariaceae	<i>Penstemon cyanocaulis</i>	bluestem penstemon	Native	Pres	May-Jun	x		x		Sandy soils
Scrophulariaceae	<i>Penstemon eatonii</i> var. <i>undusus</i>	undulate penstemon	Native	Pres	May-Jul	x		x		
Scrophulariaceae	<i>Penstemon ophianthus</i>	Loa penstemon	Native	Pres	May-Jun			x		
Scrophulariaceae	<i>Penstemon utahensis</i>	Utah penstemon	Native	Pres	Apr-Jun	x		x		
Scrophulariaceae	<i>Verbascum thapsus</i>	woolly mullein	Intro	Pres	Jun-Aug			x		Disturbed
Scrophulariaceae	<i>Veronica anagallis-aquatica</i>	water speedwell	Intro	Pres	Jun-Aug				x	
Solanaceae	<i>Physalis hederifolia</i> var. <i>fendleri</i>	Fendler's ground-cherry	Native	Pres	May-Oct			x		
Solanaceae	<i>Physalis longifolia</i>	long-leaf ground-cherry	Native	Pres	Apr-Aug			x	x	
Umbelliferae (Apiaceae)	<i>Cymopterus acaulis</i> var. <i>fendleri</i>	Fendler's cymopterus	Native	Pres	Apr-May	x	x	x		Sandy soils
Umbelliferae (Apiaceae)	<i>Cymopterus bulbosus</i>	onion spring-parsley	Native	Pres	Apr-May			x		
Umbelliferae (Apiaceae)	<i>Cymopterus newberryi</i>	sticky spring-parsley	Native	Pres	Apr-May	x	x	x		
Umbelliferae (Apiaceae)	<i>Cymopterus purpurascens</i>	basin white-cup spring-parsley	Native	Pres	Mar-May	x	x	x		Sandy to heavy clay soils
Umbelliferae (Apiaceae)	<i>Cymopterus purpureus</i> var. <i>purpureus</i>	Colorado Plateau spring-parsley	Native	Pres	Apr-Jun	x	x	x		Sandy to heavy clay soils
Umbelliferae (Apiaceae)	<i>Lomatium latilobum</i>	Canyonlands lomatium	Native	Pres	Apr-Jun			x		Entrada Sandstone
Umbelliferae (Apiaceae)	<i>Lomatium parryi</i>	Parry's lomatium	Native	Pres	Apr-Jun	x	x	x		
Verbenaceae	<i>Verbena bracteata</i>	prostrate vervain	Native	Rep	May-Sep			x		Disturbed
Violaceae	<i>Viola nephrophylla</i>	northern bog violet	Native	Pres	Apr-Jul				x	
Viscaceae	<i>Arceuthobium divaricatum</i>	pinyon dwarf-mistletoe	Native	Rep	Aug-Sep			x		
Viscaceae	<i>Phoradendron juniperinum</i>	juniper mistletoe	Native	Rep	Jul-Sep			x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Bkck Br	Salt Des	PinJun	Wet	Comments
Annual Forbs										
Amaranthaceae	<i>Amaranthus albus</i>	tumble pigweed	Intro	Pres	Jun-Oct					Disturbed
Amaranthaceae	<i>Amaranthus blitoides</i>	prostrate pigweed	Native	Pres	Jun-Sep					Disturbed
Amaranthaceae	<i>Amaranthus retroflexus</i>	redroot pigweed	Intro	Pres	Jun-Sep					Disturbed
Boraginaceae	<i>Cryptantha crassispala</i> var. <i>elachantha</i>	thick-sepaled cryptanth	Native	Pres	Apr-Jun	x		x		
Boraginaceae	<i>Cryptantha kelseyana</i>	Kelsey's cryptanth	Native	Pres	Jun-Jul		x	x		
Boraginaceae	<i>Cryptantha pterocarya</i> var. <i>pterocarya</i>	wing-nut cryptanth	Native	Pres	Apr-Jul	x	x	x		
Boraginaceae	<i>Cryptantha recurvata</i>	recurved cryptanth	Native	Pres	Apr-Jun	x	x	x		
Boraginaceae	<i>Heliotropium convolvulaceum</i>	bindweed heliotrope	Native	Pres	May-Sep	x	x			Sandy soils
Boraginaceae	<i>Lappula occidentalis</i> var. <i>cupulata</i>	cupseed stickseed	Native	Pres	Apr-Jun	x		x		Disturbed
Capparaceae (Cleomaceae)	<i>Cleome lutea</i>	yellow beeplant	Native	Pres	Apr-Sep	x	x	x		
Caryophyllaceae	<i>Silene antirrhina</i>	sleepy catchfly	Native	Pres	May-Aug	x		x		
Chenopodiaceae	<i>Bassia hyssopifolia</i>	five-horn smotherweed	Intro	Pres	Aug-Oct		x		x	Saline soils. Disturbed
Chenopodiaceae	<i>Bassia scoparia</i>	summer-cypress	Intro	Pres	Aug-Oct			x	x	Disturbed
Chenopodiaceae	<i>Chenopodium album</i> var. <i>album</i>	lambsquarter	Intro	Pres	Jun-Sep					Disturbed
Chenopodiaceae	<i>Chenopodium album</i> var. <i>berlandieri</i>	pitseed goosefoot	Native	Pres	Jul-Sep		x	x		Disturbed
Chenopodiaceae	<i>Chenopodium denticatum</i>	desert goosefoot	Native	Pres	Jun-Sep		x	x	x	
Chenopodiaceae	<i>Chenopodium fremontii</i> var. <i>fremontii</i>	Fremont's goosefoot	Native	Pres	Aug-Oct	x	x	x		
Chenopodiaceae	<i>Chenopodium glaucum</i> var. <i>salinum</i>	oakleaf goosefoot	Native	Rep	Aug-Sep		x		x	
Chenopodiaceae	<i>Chenopodium leptophyllum</i>	narrow-leaf goosefoot	Native	Rep	Jul-Sep		x			
Chenopodiaceae	<i>Corispermum americanum</i>	American bugseed	Native	Pres	Aug-Oct			x		Sandy soils
Chenopodiaceae	<i>Cycloloma atriplicifolia</i>	winged pigweed	Native	Pres	Aug-Oct	x		x		
Chenopodiaceae	<i>Halogeton glomeratus</i>	halogeton	Intro	Pres	Jul-Aug		x	x		Disturbed
Chenopodiaceae	<i>Monolepis nuttalliana</i>	Nuttall's poverty-weed	Native	Pres	Apr-Jul	x	x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Annual Forbs, cont.</i>										
Chenopodiaceae	<i>Salsola tragus</i>	Russian thistle	Intro	Pres	Jun-Sep					Disturbed
Chenopodiaceae	<i>Suaeda calceoliformis</i>	broom seepweed	Native	Pres	Jul-Sep				x	
Chenopodiaceae	<i>Suaeda occidentalis</i>	western seepweed	Native	Pres	Jun-Sep				x	
Chenopodiaceae	<i>Suaeda torreyana</i> var. <i>torreyana</i>	Torrey's seepweed	Native	Pres	Jun-Sep		x		x	
Compositae (Asteraceae)	<i>Ambrosia acanthicarpa</i>	bur ragweed	Native	Pres	Jul-Oct	x	x	x	x	Sandy soils
Compositae (Asteraceae)	<i>Aster brachyactis</i>	rayless alkali aster	Native	Pres	Aug-Sep				x	
Compositae (Asteraceae)	<i>Chaenactis stevioides</i>	stevia dusty-maiden	Native	Pres	Apr-Jul	x	x	x		
Compositae (Asteraceae)	<i>Conyza canadensis</i> var. <i>glabrata</i>	Canadian horseweed	Native	Pres	Jul-Sep				x	
Compositae (Asteraceae)	<i>Dicoria brandegei</i>	Brandegee's sandplant	Native	Pres	Aug-Oct	x		x		Sandy soils
Compositae (Asteraceae)	<i>Erigeron bellidiastrum</i>	pretty daisy	Native	Pres	May-Aug	x		x		
Compositae (Asteraceae)	<i>Flaveria campestris</i>	marshweed	Native	Pres	Sep				x	
Compositae (Asteraceae)	<i>Gaillardia pulchella</i>	pretty blanketflower	Intro	Pres	Jul-Sep					Disturbed
Compositae (Asteraceae)	<i>Helianthus annuus</i> ssp. <i>lenticularis</i>	common sunflower	Native	Pres	Jun-Sep		x	x		Disturbed
Compositae (Asteraceae)	<i>Helianthus anomalus</i>	sand sunflower	Native	Pres	May-Sep	x		x		
Compositae (Asteraceae)	<i>Helianthus petiolaris</i> ssp. <i>fallax</i>	prairie sunflower	Native	Pres	Jun-Sep		x	x	x	
Compositae (Asteraceae)	<i>Lactuca serriola</i>	prickly lettuce	Intro	Pres	Jul-Sep			x		Disturbed
Compositae (Asteraceae)	<i>Machaeranthera tanacetifolia</i>	tansyleaf aster	Native	Pres	May-Sep		x	x		
Compositae (Asteraceae)	<i>Malacothrix sonchoides</i>	sowthistle desert-dandelion	Native	Pres	Apr-Jun	x	x	x		
Compositae (Asteraceae)	<i>Sonchus asper</i>	spiny-leaf sow-thistle	Intro	Pres	Jul-Oct				x	Disturbed

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Annual Forbs, cont.</i>										
Compositae (Asteraceae)	<i>Sonchus oleraceus</i>	common sow-thistle	Intro	Pres	Jul-Oct				x	Disturbed
Compositae (Asteraceae)	<i>Stephanomeria exigua</i>	white-plume wire-lettuce	Native	Pres	May-Sep	x	x	x		
Compositae (Asteraceae)	<i>Townsendia annua</i>	annual townsendia	Native	Pres	Apr-Jun	x	x			
Compositae (Asteraceae)	<i>Xanthium strumarium</i> var. <i>canadense</i>	rough cocklebur	Native	Pres	Apr-Oct				x	Disturbed
Convolvulaceae (Cuscutaceae)	<i>Cuscuta pentagona</i>	field dodder	Native	Pres	Jul-Sep		x	x		
Convolvulaceae	<i>Ipomoea purpurea</i>	morning-glory	Intro	Pres	Jul-Sep					Disturbed
Cruciferae (Brassicaceae)	<i>Chorisporea tenella</i>	blue mustard	Intro	Pres	Apr-Jun					Disturbed
Cruciferae (Brassicaceae)	<i>Conringia orientalis</i>	hare's-ear mustard	Intro	Rep	Apr-Aug		x	x		Disturbed
Cruciferae (Brassicaceae)	<i>Descurainia incana</i> var. <i>sonnei</i>	mountain tansy-mustard	Native	Pres	Apr-Jul	x		x		
Cruciferae (Brassicaceae)	<i>Descurainia sophia</i>	flixweed	Intro	Pres	Mar-Aug		x	x		Disturbed
Cruciferae (Brassicaceae)	<i>Dithyrea wislizeni</i>	spectacle-pod	Native	Pres	Apr-Sep	x		x		Sandy soils
Cruciferae (Brassicaceae)	<i>Draba cuneifolia</i> var. <i>cuneifolia</i>	wedgeleaf draba	Native	Pres	Feb-Jul	x	x	x		
Cruciferae (Brassicaceae)	<i>Draba reptans</i>	dwarf draba	Native	Rep	Apr-Jul		x	x		
Cruciferae (Brassicaceae)	<i>Lepidium densiflorum</i> var. <i>ramosum</i>	prairie pepperwort	Native	Pres	May-Jul	x	x	x		
Cruciferae (Brassicaceae)	<i>Lepidium perfoliatum</i>	clasping pepperwort	Intro	Pres	May-Jul	x	x	x		Disturbed
Cruciferae (Brassicaceae)	<i>Malcolmia africana</i>	African mustard	Intro	Pres	Apr-Jul					Disturbed
Cruciferae (Brassicaceae)	<i>Sisymbrium altissimum</i>	tumble mustard	Intro	Pres	May-Aug					Disturbed
Cruciferae (Brassicaceae)	<i>Streptanthella longirostris</i>	long-beak fiddle-mustard	Native	Pres	Mar-Jun	x	x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Annual Forbs, cont.</i>										
Euphorbiaceae	<i>Chamaesyce glyptosperma</i>	ridge-seeded spurge	Native	Pres	Jun-Aug	x	x	x		Disturbed
Euphorbiaceae	<i>Chamaesyce parryi</i>	Parry's spurge	Native	Pres	May-Sep	x		x		
Geraniaceae	<i>Erodium cicutarium</i>	stork's-bill	Intro	Pres	Feb-Oct	x	x	x		Disturbed
Hydrophyllaceae	<i>Nama densum</i> var. <i>parviflorum</i>	leafy fiddleleaf	Native	Rep	May-Aug			x		
Hydrophyllaceae	<i>Nama retrorsum</i>	Howell's nama	Native	Pres	May-Aug	x				
Hydrophyllaceae	<i>Phacelia crenulata</i> var. <i>corrugata</i>	corrugate phacelia	Native	Pres	May-Jun		x	x		
Hydrophyllaceae	<i>Phacelia demissa</i> var. <i>demissa</i>	brittle phacelia	Native	Rep	May-Jun		x	x		Mancos Shale
Hydrophyllaceae	<i>Phacelia howelliana</i>	Howell's phacelia	Native	Pres	Apr-Jun	x	x	x		
Hydrophyllaceae	<i>Phacelia ivesiana</i>	ives' phacelia	Native	Pres	Apr-Jun	x	x	x		
Leguminosae (Fabaceae)	<i>Astragalus geyeri</i>	Geyer's milkvetch	Native	Pres	Apr-Jul		x			
Leguminosae (Fabaceae)	<i>Astragalus sabulorum</i>	gravel milkvetch	Native	Pres	Feb-Jul		x	x		
Leguminosae (Fabaceae)	<i>Lupinus brevicaulis</i>	shortstem lupine	Native	Pres	May-Jul	x	x	x		
Leguminosae (Fabaceae)	<i>Lupinus pusillus</i> var. <i>pusillus</i>	dwarf lupine	Native	Pres	Apr-Jul	x	x	x		Sandy soils
Leguminosae (Fabaceae)	<i>Melilotus alba</i>	white sweet-clover	Intro	Pres	May-Oct				x	Disturbed
Linaceae	<i>Linum aristatum</i>	broom-flax	Native	Pres	Apr-Jun	x		x		Sandy soils
Loasaceae	<i>Mentzelia albicaulis</i>	white-stem blazingstar	Native	Pres	Apr-Aug	x	x	x		
Loasaceae	<i>Mentzelia thompsonii</i>	Thompson's stickleaf	Native	Pres	Apr-Jun		x			Mancos Shale
Malvaceae	<i>Hibiscus trionum</i>	flower-of-an-hour	Intro	Pres	May-Oct					Disturbed
Nyctaginaceae	<i>Tripterocalyx micranthus</i>	small-flower sandpuffs	Native	Pres	Apr-Sep	x				
Onagraceae	<i>Camissonia eastwoodiae</i>	Eastwood's camissonia	Native	Pres	Apr-Jun	x	x	x		
Onagraceae	<i>Camissonia scapoidea</i> var. <i>scapoidea</i>	Paiute suncup	Native	Pres	May-Jun		x	x		
Onagraceae	<i>Gaura parviflora</i>	small-flowered gaura	Native	Pres	May-Aug				x	
Plantaginaceae	<i>Plantago patagonica</i>	woolly plantain	Native	Pres	Mar-Aug	x	x	x		
Polemoniaceae	<i>Eriastrum diffusum</i>	spreading eriastrum	Native	Rep	May-Jun	x	x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Annual Forbs, cont.</i>										
Polemoniaceae	<i>Gilia inconspicua</i>	shy gilia	Native	Pres	Apr-Jul	x	x	x		
Polemoniaceae	<i>Gilia leptomeria</i> var. <i>leptomeria</i>	common gilia	Native	Pres	May-Jun	x	x	x		
Polemoniaceae	<i>Ipomopsis gunnisonii</i>	Gunnison's gilia	Native	Pres	May-Jun		x	x		Sandy soils
Polemoniaceae	<i>Ipomopsis polycladon</i>	spreading gilia	Native	Pres	Apr-Jun	x	x	x		
Polygonaceae	<i>Eriogonum gordonii</i>	Gordon's wild buckwheat	Native	Pres	May-Oct		x	x		
Polygonaceae	<i>Eriogonum inflatum</i> var. <i>fusiforme</i>	Grand Valley desert trumpet	Native	Pres	Apr-Jul		x			Clay soils
Polygonaceae	<i>Eriogonum salsuginosum</i>	smooth wild buckwheat	Native	Pres	Apr-Sep		x	x		
Polygonaceae	<i>Eriogonum wetherillii</i>	Wetherill's wild buckwheat	Native	Pres	Apr-Oct	x	x	x		
Polygonaceae	<i>Polygonum lapathifolium</i>	willow-weed	Intro	Pres	Jul-Nov				x	
Portulacaceae	<i>Portulaca oleracea</i>	common purslane	Intro	Pres	Jun-Sep					Disturbed
Ranunculaceae	<i>Ranunculus testiculatus</i>	bur buttercup	Intro	Pres	Mar-Jun		x	x		Disturbed
Rubiaceae	<i>Galium aparine</i> var. <i>echinospermon</i>	cleavers	Native	Pres	Apr-Jun	x		x	x	
Scrophulariaceae	<i>Castilleja exilis</i>	annual paintbrush	Native	Pres	Jun-Aug				x	
Scrophulariaceae	<i>Cordylanthus wrightii</i>	Wright's bird's-beak	Native	Pres	Jul-Sep	x	x	x		Sandy soils
Solanaceae	<i>Datura wrightii</i>	angel's trumpet	Native	Pres	Apr-Oct	x		x		
Zygophyllaceae	<i>Kallstroemia californica</i>	yellow kallstroemia	Native	Pres	Jun-Oct			x		
Zygophyllaceae	<i>Kallstroemia parviflora</i>	orange kallstroemia	Native	Pres	Jul-Sep					Disturbed
Zygophyllaceae	<i>Tribulus terrestris</i>	puncture vine	Intro	Pres	May-Sep					Disturbed
Perennial Graminoids										
Cyperaceae	<i>Carex aurea</i>	golden sedge	Native	Pres	Apr-Aug				x	
Cyperaceae	<i>Carex hystericina</i>	bottlebrush sedge	Native	Pres	May-Jun				x	
Cyperaceae	<i>Carex nebrascensis</i>	Nebraska sedge	Native	Pres	May-Jul				x	
Cyperaceae	<i>Carex praegracilis</i>	blackcreeper sedge	Native	Pres	May-Aug				x	
Cyperaceae	<i>Cyperus esculentus</i>	chufa flat-sedge	Native	Pres	May-Sep					Disturbed
Cyperaceae	<i>Eleocharis palustris</i>	common spikerush	Native	Pres	May-Aug				x	
Cyperaceae	<i>Scirpus acutus</i>	hardstem bulrush	Native	Pres	Jun-Aug				x	
Cyperaceae	<i>Scirpus maritimus</i>	alkali bulrush	Native	Pres	Jun-Sep				x	
Cyperaceae	<i>Scirpus pungens</i> var. <i>longispicatus</i>	three-square bulrush	Native	Pres	May-Aug				x	

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Graminoids, cont.</i>										
Gramineae (Poaceae)	<i>Agropyron cristatum</i>	crested wheatgrass	Intro	Pres	Jun-Aug		x	x		
Gramineae (Poaceae)	<i>Agrostis stolonifera</i>	redtop	Intro	Pres	Jun-Sep				x	
Gramineae (Poaceae)	<i>Aristida purpurea</i>	purple three-awn	Native	Pres	Mar-Sep	x	x	x		
Gramineae (Poaceae)	<i>Bothriochloa ischaemum</i>	yellow bluestem	Intro	Pres	Jun-Sep					Disturbed
Gramineae (Poaceae)	<i>Bouteloua curtipendula</i>	sideoats grama	Native	Pres	Jul-Sep		x	x		
Gramineae (Poaceae)	<i>Bouteloua gracilis</i>	blue grama	Native	Pres	Jul-Sep	x	x	x		
Gramineae (Poaceae)	<i>Bromus carinatus</i>	mountain brome	Native	Pres	May-Aug			x		
Gramineae (Poaceae)	<i>Calamagrostis scopulorum</i>	Jones' reedgrass	Native	Pres	Jul-Aug				x	
Gramineae (Poaceae)	<i>Dactylis glomerata</i>	orchard grass	Intro	Pres	Jun-Aug					Disturbed
Gramineae (Poaceae)	<i>Distichlis spicata</i>	desert saltgrass	Native	Pres	Jun-Sep		x		x	
Gramineae (Poaceae)	<i>Elymus canadensis</i>	Canada wildrye	Native	Pres	Jul-Aug				x	
Gramineae (Poaceae)	<i>Elymus cinereus</i>	Great Basin wildrye	Native	Pres	Jun-Aug			x	x	
Gramineae (Poaceae)	<i>Elymus elymoides</i>	squirreltail	Native	Pres	May-Aug	x	x	x	x	
Gramineae (Poaceae)	<i>Elymus salinus</i>	Salina wildrye	Native	Pres	Jun-Jul	x	x	x		
Gramineae (Poaceae)	<i>Elymus smithii</i>	western wheatgrass	Native	Pres	Jun-Aug		x	x		
Gramineae (Poaceae)	<i>Elymus trachycaulus</i>	slender wheatgrass	Native	Pres	Jun-Aug				x	
Gramineae (Poaceae)	<i>Enneapogon desvauxii</i>	spike pappusgrass	Native	Pres	Aug-Sep			x		Slickrock

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Graminoids, cont.</i>										
Gramineae (Poaceae)	<i>Erioneuron pilosum</i>	hairy tridens	Native	Pres	May-Jul	x	x	x		
Gramineae (Poaceae)	<i>Erioneuron pulchellum</i>	fluffgrass	Native	Pres	Apr-Aug	x	x	x		
Gramineae (Poaceae)	<i>Festuca pratensis</i>	meadow fescue	Intro	Pres	Jun-Aug				x	
Gramineae (Poaceae)	<i>Glyceria striata</i>	fowl mannagrass	Native	Pres	Jul-Aug				x	
Gramineae (Poaceae)	<i>Hilaria jamesii</i>	galleta	Native	Pres	May-Aug	x	x	x		
Gramineae (Poaceae)	<i>Hordeum jubatum</i>	foxtail barley	Native	Pres	Jun-Aug		x	x	x	
Gramineae (Poaceae)	<i>Muhlenbergia andina</i>	foxtail muhly	Native	Pres	Jul-Sep				x	
Gramineae (Poaceae)	<i>Muhlenbergia asperifolia</i>	scratchgrass	Native	Pres	Jul-Aug				x	
Gramineae (Poaceae)	<i>Muhlenbergia mexicana</i>	Mexican muhly	Native	Pres	Aug-Sep				x	
Gramineae (Poaceae)	<i>Muhlenbergia pungens</i>	sandhill muhly	Native	Pres	Jul-Sep			x		
Gramineae (Poaceae)	<i>Muhlenbergia thurberi</i>	Thurber's muhly	Native	Pres	Jul-Sep			x	x	
Gramineae (Poaceae)	<i>Panicum acuminatum</i>	bundle panicgrass	Native	Pres	Jul-Sep				x	Sandy soils
Gramineae (Poaceae)	<i>Panicum obtusum</i>	vine mesquite	Native	Pres	Aug-Sep				x	
Gramineae (Poaceae)	<i>Panicum virgatum</i>	switchgrass	Native	Pres	Jun-Sep			x	x	
Gramineae (Poaceae)	<i>Phleum pratense</i>	timothy	Intro	Pres	Jun-Sep			x	x	
Gramineae (Poaceae)	<i>Phragmites australis</i>	common reed	Native	Pres	Jul-Sep				x	
Gramineae (Poaceae)	<i>Poa fendleriana</i>	muttongrass	Native	Pres	May-Aug		x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Graminoids, cont.</i>										
Gramineae (Poaceae)	<i>Poa pratensis</i>	Kentucky bluegrass	Intro	Pres	May–Aug		x	x	x	Disturbed
Gramineae (Poaceae)	<i>Poa secunda</i>	Sandberg’s bluegrass	Native	Pres	Apr–Sep	x	x	x	x	
Gramineae (Poaceae)	<i>Puccinellia distans</i>	weeping alkaligrass	Intro	Pres	Jun–Aug		x		x	
Gramineae (Poaceae)	<i>Schizachyrium scoparium</i>	little bluestem	Native	Pres	Jul–Sep			x	x	
Gramineae (Poaceae)	<i>Spartina gracilis</i>	alkali cordgrass	Native	Pres	Jun–Sep				x	
Gramineae (Poaceae)	<i>Spartina pectinata</i>	prairie cordgrass	Native	Pres	Jun–Sep				x	
Gramineae (Poaceae)	<i>Sphenopholis obtusata</i>	prairie wedgegrass	Native	Pres	Jul–Sep				x	
Gramineae (Poaceae)	<i>Sporobolus airoides</i> var. <i>airoides</i>	alkali sacaton	Native	Pres	Jun–Aug	x	x	x	x	
Gramineae (Poaceae)	<i>Sporobolus contractus</i>	spike dropseed	Native	Pres	Jun–Sep			x		
Gramineae (Poaceae)	<i>Sporobolus cryptandrus</i>	sand dropseed	Native	Pres	Jun–Aug			x		
Gramineae (Poaceae)	<i>Sporobolus flexuosus</i>	mesa dropseed	Native	Pres	Jun–Sep		x	x		
Gramineae (Poaceae)	<i>Sporobolus giganteus</i>	giant dropseed	Native	Pres	Jun–Sep		x	x		
Gramineae (Poaceae)	<i>Stipa arida</i>	Mormon needlegrass	Native	Hist	May–Jul		x	x		
Gramineae (Poaceae)	<i>Stipa arnowiae</i>	Arnow’s ricegrass	Native	Pres	Jun–Aug			x		
Gramineae (Poaceae)	<i>Stipa comata</i> var. <i>comata</i>	needle-and-thread	Native	Pres	May–Jul	x	x	x		
Gramineae (Poaceae)	<i>Stipa hymenoides</i>	Indian ricegrass	Native	Pres	May–Jul	x	x	x		
Gramineae (Poaceae)	<i>Stipa speciosa</i>	desert needlegrass	Native	Pres	Apr–Jun	x	x	x		

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blck Br	Salt Des	PinJun	Wet	Comments
<i>Perennial Graminoids, cont.</i>										
Gramineae (Poaceae)	<i>Tridens muticus</i>	slim tridens	Native	Pres	May-Sep	x	x	x		
Juncaceae	<i>Juncus arcticus</i>	Baltic rush	Native	Pres	May-Jul				x	
Juncaceae	<i>Juncus articulatus</i>	jointed rush	Native	Pres	Jun-Aug				x	
Juncaceae	<i>Juncus ensifolius</i> var. <i>brunnescens</i>	Tracy's rush	Native	Pres	Jun-Aug				x	
Juncaceae	<i>Juncus ensifolius</i> var. <i>montanus</i>	mountain rush		Rep	Jun-Aug				x	
Juncaceae	<i>Juncus longistylus</i>	longstyle rush	Native	Pres	Jun-Aug				x	
Juncaceae	<i>Juncus nevadensis</i>	Nevada rush	Native	Rep	Jun-Aug				x	
Juncaceae	<i>Juncus tenuis</i>	poverty rush	Native	Pres	Jun-Aug				x	
Juncaceae	<i>Juncus torreyi</i>	Torrey's rush	Native	Pres	Jun-Aug				x	
Juncaginaceae	<i>Triglochin maritima</i>	seaside arrowgrass	Native	Pres	May-Aug				x	
Typhaceae	<i>Typha domingensis</i>	southern cattail	Native	Pres	Jul-Aug				x	
Typhaceae	<i>Typha latifolia</i>	broad-leaved cattail	Native	Pres	Jun-Aug				x	
<i>Annual Graminoids</i>										
Cyperaceae	<i>Cyperus erythrorhizos</i>	redroot flat-sedge	Native	Pres	Jun-Sep				x	
Gramineae (Poaceae)	<i>Aegilops cylindrica</i>	jointed goatgrass	Intro	Pres	May-Jun					Disturbed
Gramineae (Poaceae)	<i>Bouteloua barbata</i>	sixweeks grama	Native	Pres	Aug-Sep	x	x			
Gramineae (Poaceae)	<i>Bromus diandrus</i>	ripgut brome	Intro	Pres	Apr-Jun	x		x		Disturbed
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	x	x		Disturbed
Gramineae (Poaceae)	<i>Cenchrus longispinus</i>	field sandbur	Native	Pres	Jul-Sep					Disturbed
Gramineae (Poaceae)	<i>Chloris virgata</i>	feather finger grass	Native	Pres	Aug-Sep				x	Disturbed
Gramineae (Poaceae)	<i>Digitaria sanguinalis</i>	hairy crabgrass	Intro	Pres	Jul-Sep					Disturbed

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Annual Graminoids, cont.</i>										
Gramineae (Poaceae)	<i>Echinochloa crus-galli</i>	barnyard-grass	Intro	Pres	Aug-Sep				x	Disturbed
Gramineae (Poaceae)	<i>Eragrostis hypnoides</i>	teal lovegrass	Native	Pres	Jul-Aug				x	
Gramineae (Poaceae)	<i>Eragrostis pectinacea</i>	tufted lovegrass	Native	Pres	Jul-Aug					Disturbed
Gramineae (Poaceae)	<i>Eremopyrum triticeum</i>	annual wheatgrass	Intro	Pres	May-Jul		x	x		Disturbed
Gramineae (Poaceae)	<i>Festuca octoflora</i>	six-weeks fescue	Native	Pres	Apr-Jun	x	x	x		
Gramineae (Poaceae)	<i>Hordeum murinum</i>	rabbit barley	Intro	Pres	May-Jul					Disturbed
Gramineae (Poaceae)	<i>Munroa squarrosa</i>	false buffalograss	Native	Pres	Jun-Sep		x	x		
Gramineae (Poaceae)	<i>Panicum capillare</i>	witchgrass	Native	Pres	Jun-Sep		x		x	Disturbed
Gramineae (Poaceae)	<i>Polygonum monspeliensis</i>	rabbitfoot-grass	Intro	Pres	Jun-Aug				x	
Gramineae (Poaceae)	<i>Secale cereale</i>	cultivated rye	Intro	Rep	May-Jul		x			Disturbed
Gramineae (Poaceae)	<i>Setaria glauca</i>	yellow bristlegrass	Intro	Pres	Jul-Sep					Disturbed
Gramineae (Poaceae)	<i>Setaria viridis</i>	green bristlegrass	Intro	Pres	Jun-Sep					Disturbed
Gramineae (Poaceae)	<i>Triticum aestivum</i>	wheat	Intro	Pres	Apr-Jul					Disturbed
Ferns and Allies										
Equisetaceae	<i>Equisetum arvense</i>	field horsetail	Native	Pres	NA				x	
Equisetaceae	<i>Equisetum hyemale</i> var. <i>affine</i>	tall scouring-rush	Native	Pres	NA				x	
Equisetaceae	<i>Equisetum laevigatum</i>	smooth scouring-rush	Native	Pres	NA				x	
Polypodiaceae (Adiantaceae)	<i>Adiantum capillus-veneris</i>	southern maidenhair fern	Native	Pres	NA				x	

Appendix D. Confirmed, historical, and reported taxa of Arches National Park, organized by life form with ecological notes, cont.

Family	Species name	Common name	Nativity	Park status	Flower time	Blk Br	Salt Des	PinJun	Wet	Comments
<i>Ferns and Allies, cont.</i>										
Polypodiaceae (Adiantaceae, Sinopteridaceae)	<i>Pellaea breweri</i>	Brewer's cliff-brake		Rep	NA				x	Rock crevices
Polypodiaceae (Adiantaceae, Sinopteridaceae)	<i>Pellaea glabella</i> var. <i>occidentalis</i>	western cliffbrake	Native	Pres	NA					Rock crevices
Polypodiaceae (Adiantaceae, Sinopteridaceae)	<i>Pellaea limitanea</i>	border cloak-fern	Native	Pres	NA					Rock crevices
Polypodiaceae (Aspleniaceae)	<i>Cystopteris fragilis</i>	brittle bladder fern	Native	Pres	NA				x	
Polypodiaceae (Dennstaedtiaceae, Hypolepidiaceae)	<i>Pteridium aquilinum</i> var. <i>pubescens</i>	bracken fern	Native	Pres	NA				x	

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 100065, June 2009

National Park Service
U.S. Department of the Interior



Natural Resource Program Center
1201 Oak Ridge Drive, Suite 150
Fort Collins, Colorado 80525

www.nature.nps.gov