ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PPDRY070A0
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Cystopteris utahensis* Wingham & Haufler
COMMON NAME: Utah bladder-fern; Utah bladderfern; brittlefern.
SYNONYMS: *Cystopteris fragilis*
FAMILY: Dryopteridaceae

AUTHOR, PLACE OF PUBLICATION: Windham & Haufler, American Fern Journal 81(1): 13-14 (-15), fig. 3. 1991.

TYPE LOCALITY: Base of Morning Glory Arch in tributary of Negro Bill Canyon, 4300 ft., Grand County, Utah, USA.

TYPE SPECIMEN: HT: UT. Windham & Windham 90-282, 2 Jul 1990. IT: ASU, BRY, KANU, MO, UNC, US, UTC.

TAXONOMIC UNIQUENESS: *Cystopteris utahensis* is 1 of 12 species in the genus *Cystopteris*. This also includes 2 hybrids, *C.* x *illinoensis* [*bulbifera* x *tenuis*] and *C.* x *wagneri* [*tennesseensis* x *tenuis*]. Other species in the genus include *C. bulbifera*, *C. douglasii*, *C. fragilis*, *C. laurentiana*, *C. montana*, *C. protrusa*, *C. reevesiana*, *C. tennesseensis*, and *C. tenuis*. *Cystopteris utahensis* is an allopolyploid derived from the diploid species *C. bulbifera* and *C. reevesiana* (C. H. Haufler and M.D. Windham 1991, *in* Flora of North America 1993).

DESCRIPTION: Plants loosely tufted, from short, creeping rhizomes, not cordlike. Internodes short, heavily beset with old petiole bases, hairs absent; scales lanceolate, clathrate, radial walls dark brown, thick, luminae clear. Leaves monomorphic, clustered at stem apex, to 45 cm (18 in), nearly all bearing sori. Sori with cup or hood shaped indusium bearing unicellular, gland-tipped trichomes, attached to leaf on side away from margin. Petiole is green to straw-colored throughout or darker near base, shorter than blade, with a sparsely scaly base. The blade is elongated, deltate to narrowly deltate, 2-pinnate-pinnatifid, usually widest at or near base, apex short-attenuate; rachis and costae with unicellular, gland-tipped hairs, misshapen bulbets present or absent; axils of pinnae usually with multicellular, gland-tipped hairs. Pinnae typically perpendicular to rachis, not curving toward blade apex, margins serrate; proximal pinnae pinnatifid to pinnate-pinnatifid, equilateral, basiscopic pinnules not enlarged; basal basiscopic pinnules sessile or short-stalked, base truncate to obtuse, distal pinnae ovate to oblong. Veins directed into teeth and notches. Spores are spiny, usually 39-48 µm. (FNA 1993+, Spackman et al. 1997, Welsh et al. 1993).

AIDS TO IDENTIFICATION: *Cystopteris utahensis* is distinguished from *C. fragilis* (brittle bladderfern) and its allies by having elongate deltate leaves that are minutely glandular, dark brown subclathrate rhizome scales, and green or straw-colored petioles. It differs from *C. bulbifera* (bulb bladderfern) by having reduced glandularity, abortive scaly bulbets, and a lack of green tissue connecting the basal pinnae to the rachis. (UNPS 2003-2005). *Cystopteris reevesiana* (Reeves' bladderfern) has an ovate blade, long internodes on its rhizomes, and light brown rhizome scales.

ILLUSTRATIONS: Line drawing of plant and sori (Janet Wingate, *in* Spackman et al. 1997).
Color photo of plant (M. Windham *in* Spackman et al. 1997).
Color photo of habitat (B. Jennings *in* Spackman et al. 1997).
Color photo of Isotype (MBG *in* http://mobot.mobot.org/cgi-bin/search_vast)
Color photo of Isotype (US-3419850, *in* http://ravenel.si.edu/botany/types/fullRecords.cfm?myFamily=)
Line drawing (*in* UNPS 2003-2005, http://www.utahrareplants.org)
Color photos of plant and habitat (C. Delmatier *in* UNPS 2003-2005, http://www.utahrareplants.org).
Color photo of specimen (ASU-195179, *in* SEINet accessed 2005 from http://seinet.asu.edu/collections).

TOTAL RANGE: Utah (Grand, Kane, Utah and Washington counties), Arizona, Colorado (Moffat Co., Dinosaur National Monument), and disjunct in western Texas, and New Mexico.

RANGE WITHIN ARIZONA: Canyon del Muerto in Canyon de Chelly National Monument, Apache County. Also collected from Coconino and Yavapai counties.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Allopolypoid. Perennial forb/herb.

PHENOLOGY: Spore-producing period (Sporulating) ranges from June-November (summer-fall).

BIOLOGY:

HABITAT: Calcareous cliffs of the Weber Formation; particularly on sandy ledges and in crevices.

ELEVATION: 4,262 – 8,852 ft (1300-2700 m), particularly 5,500 ft (1678 m). In Utah (UNPS 2003-2005), from 4,000-7,000 feet (1220-2135 m) elevation.

EXPOSURE: Collected on partially shaded to shaded west- to north-facing cliffs.

SUBSTRATE: On calcareous substrates including sandstone, limestone, and dacite.

PLANT COMMUNITY: Associated species include *Aquilegia chrysantha* (golden columbine), *Berberis* (=*Mahonia*) *repens* (creeping barberry), *Cystopteris fragilis*, *Heuchera* (alumroot), *Lithospermum multiflorum* (manyflowered gromwell), and *Verbascum* (mullein). (in SEINet accessed 2005).

POPULATION HISTORY AND TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None
STATE STATUS: None
OTHER STATUS: Group 4 (NNDFW, NESL 2005)
[Group 4 (NNFWD, NESL 2000)]

MANAGEMENT FACTORS:

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS: Formally thought only to range on the Navajo Nation and in Canyon de Chelly in Arizona, but collected from Coconino and Yavapai counties. Thus surveys are needed to determine distribution in state.

LAND MANAGEMENT/OWNERSHIP: NPS – Canyon de Chelly National Monument; possibly BIA – Navajo Nation, and USFS. In Utah: BLM – Moab Field Office; NPS – Arches, Canyonlands and Zion National Parks; USFS – Dixie, Manti LaSal and Uinta National Forests.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION:

Revised: 2003-02-06 (SMS)
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