

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Plant Abstract

Element Code: PPADI0H0H0

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Pellaea lyngholmii*
COMMON NAME: Lyngholm's Brakefern, Lyngholm's Cliffbrake
SYNONYMS: none
FAMILY: Pteridaceae

AUTHOR, PLACE OF PUBLICATION: Windham, Michael D. Contributions from University of Michigan Herbarium 19: 40 f. 3. 1993.

TYPE LOCALITY: Arizona: Yavapai County: SW side of Fay Canyon, ca. 1.39 km SSE of summit of Bear Mountain, 4775 feet.

TYPE SPECIMEN: UC 1784978. M. Windham and D. Lyngholm (#90.420). Sept. 22, 1986.

TAXONOMIC UNIQUENESS: There are about 40 species of *Pellaea* (15 in the Flora of North America 2015). The majority are found in the western hemisphere, with a smaller number occurring in Asia, Africa, the Pacific Islands and Australia. In a broad sense, the genus is a diverse, poorly defined assemblage of xeric-adapted ferns.

NatureServe (2015) recognizes 16 species, nine subspecies, and one hybrid. Seven of these species, and two subspecies, are found in Arizona. *P. lyngholmii* occurs only in Arizona.

Pellaea lyngholmii is an apogamous tetraploid that arose through hybridization between *P. atropurpurea* and *P. truncata* (M. D. Windham 1993). It is most often confused with *P. atropurpurea*, from which *P. lyngholmii* differs in having sparsely villous rachises, smaller and more numerous ultimate segments, and spores usually more than 62 μm in diameter (Flora of North America 2015).

DESCRIPTION: Stems compact, ascending, stout, 5--10 mm diam.; scales uniformly brown or tan, linear-subulate, 0.1--0.3 mm wide, thin, margins entire to denticulate. Leaves somewhat dimorphic, sterile leaves shorter and less divided than fertile leaves, clustered on stem, 10--30 cm; croziers villous. Petiole dark brown to reddish purple, lustrous, rounded adaxially, without prominent articulation lines. Blade elongate-deltate to ovate, 2-pinnate proximally, 5--15 cm wide; rachis brown or reddish purple throughout, straight, often slightly flattened adaxially, sparsely villous with long, divergent hairs. Pinnae perpendicular to rachis or slightly ascending, not decurrent on rachis, usually with 7--15 ultimate segments; costae straight, 25--80 mm, usually longer than ultimate segments. Ultimate segments oblong-

lanceolate, 7--25 mm, leathery, sparsely villous abaxially near midrib; margins usually recurved on fertile segments, covering less than 1/2 abaxial surface, borders whitish, crenulate; apex slightly mucronate. Veins of ultimate segments obscure. Sporangia long-stalked, containing 32 spores, not intermixed with farina-producing glands (Flora of North America 2015).

AIDS TO IDENTIFICATION: The following summary was taken from the Flora of North America (2015):

- Petioles and rachises dark brown to black, usually lustrous; stem scales linear-subulate, less than 0.3 mm wide.
- Stem scales uniformly reddish brown or tan.
- Ultimate segments sparsely villous on abaxial costae; rachises variously pubescent; pinnae or costae not decurrent on rachis (obscurely so in *Pellaea gastonyi*); blades lanceolate, ovate, or deltate.
- Adaxial surface of rachis densely covered with short, curly, appressed hairs; largest ultimate segments (excluding terminal pinnae) usually more than 30 mm.*P. atropurpurea*
- Adaxial surface of rachis with sparse, long, divergent hairs; largest ultimate segments (excluding terminal pinnae) usually less than 30 mm.
- Proximal pinnae divided into 7–15 ultimate segments, segments shorter than longest pinna costae; fertile leaves usually more than 6 cm wide. *P. lyngholmii*

ILLUSTRATIONS:

Photos: <http://swbiodiversity.org/seinet/taxa/index.php?taxon=Pellaea%20lyngholmii>.

Herbarium Mount: http://160.111.248.28/content/2012/01/30/14/22936_orig.jpg.

TOTAL RANGE: see Range in Arizona

RANGE WITHIN ARIZONA: Occurs only in the NE corner of Yavapai County, approximately 20 miles SW of Flagstaff,

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Perennial herb.

PHENOLOGY: Sporulating: summer to fall.

BIOLOGY:

HABITAT: Rocky (talus) slopes and ledges, usually on sandstone, in pockets of soil between rocks, in evergreen woodland or chaparral plant communities.

ELEVATION: Based on the three Arizona collection sites: 4775 – 4915 feet (1450-1500m).

EXPOSURE: Variable, with possible preference for more mesic exposures. Has been collected from NE, W and NW facing slopes.

SUBSTRATE: Pockets of soil on sandstone bedrock or between boulders on talus slopes.

PLANT COMMUNITY: Evergreen woodland and chaparral, scattered pinyon-juniper, mixed oak-cypress communities. Associated plants: *Juniperus*, *Garrya wrightii*, *Quercus turbinella*, *Rhus trilobata*, *Arctostaphylos pungens*, *Ptelea trifoliata*, *Mimulus guttatus*, *Galium wrightii*, *Pellaea truncata*, *Opuntia engelmannii*, *Layia glandulosa*, *Bouteloua curtipendula*, *Hedeoma oblongifolia*, *Cercocarpus montanus*.

POPULATION HISTORY AND TRENDS: Unknown. Collected from only three sites in Arizona and known only from the State. NatureServe ranks this species as critically imperiled as an endemic and known only from the three sites. The plant was originally collected in 1978, and again from the same area in 1990. This would suggest that the population trend might be stable. No data is available on relative abundance.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.

STATE STATUS: None.

OTHER STATUS: Forest Service Sensitive (USDA FS Region 3 2013)

MANAGEMENT FACTORS: None specified.

PROTECTIVE MEASURES TAKEN: Only the recent (2013) inclusion of this species as a USDA Forest Service Sensitive species in Coconino National Forest in Arizona.

SUGGESTED PROJECTS: Conduct surveys at the original collection sites to verify that the species is still extant, and expand the surveys to similar habitats in the general vicinity to determine if the distribution is more widespread.

LAND MANAGEMENT/OWNERSHIP: All collections were made from USDA Coconino National Forest lands.

SOURCES OF FURTHER INFORMATION**REFERENCES:**

- Flora of North America (eFloras), accessed 05/06/2015,
http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=233500881.
- JStor|Global Plants, accessed 05/05/2015,
<http://plants.jstor.org/stable/10.5555/al.ap.specimen.uc1784978>.
- NatureServe Explorer, and Online Encyclopedia of Life, accessed 05/06/2015,
<http://explorer.natureserve.org/index.htm>.
- Tropicos, accessed 05/06/2015, <http://www.tropicos.org/Name/26608717>.
- Windham, Michael D. 1993. Contributions from University of Michigan Herbarium 19: 40 f. 3.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Michael D. Windham, Curator of Vascular Plants Collection, Duke University, Durham, NC.

ADDITIONAL INFORMATION:

Revised: 2015-05-06 (BDT)

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