ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PMORC1Y130
Data Sensitivity: YES

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Platanthera zothecina* (Higgins & Welsh) Kartesz & Gandhi
COMMON NAME: Alcove Bog-orchid; Alcove bog orchid
SYNONYMS: *Habenaria zothecina* Higgins & Welsh, *Limnorchis zothecina* (Higgins & Welsh) W.A. Weber
FAMILY: Orchidaceae

AUTHOR, PLACE OF PUBLICATION: (L.C. Higgins and S.L. Welsh) Kartesz & Gandhi, Phytologia 69(3): 134. 1990.

TYPE LOCALITY: North of Moab, Grand County, Utah. IT: NY.

TYPE SPECIMEN: HT: BRY. S.L. Welsh and L.C. Higgins 23629, 10 July 1985.

TAXONOMIC UNIQUENESS: There are about 85 species of *Platanthera* worldwide, with approximately 40 of them occurring in the U.S., and 6 in Arizona. Prior to Higgins and Welsh's description (1986) of *P. zothecina*, it had been included within *P. sparsiflora*, although it was often considered a robust form of that species (Coleman 2002).

DESCRIPTION: Herbaceous perennial to 35 cm (14 in) tall; roots few, thick. Welsh et al. (1993) reports plant 15-60 cm (6-24 in) tall. Plants are erect, glabrous, with stem leafy below, reduced upward. Leaves 4-5 mostly basal, oblong-elliptic, 5-25 cm (2-10 in) long and 0.8-6 cm (0.4-2.4 in) wide; one to two bracts between leaves and flowers. Inflorescence laxly 5 to 20 flowered, 4-20 cm (1.6-8 in) long and 1-3 cm (0.4-1.2 in) wide; bracts lanceolate to linear-lanceolate, 9-20 mm long, 1-7 mm wide. Flowers are yellowish green, each subtended by a lanceolate floral bract. The dorsal sepal is orbicular or nearly so, 4-6 mm long and 3.5-4.5mm wide, and forms a hood over the column; lateral sepals are strongly reflexed, 5-8 mm long; petals are triangular-lanceolate to lanceolate, 5-6.5 mm long. The yellowish lip is linear to linear-lanceolate, 7-10 mm long and 2-3 mm wide; cylindrical spur is 1.5-2 times as long as the lip, and curved outward. Seed capsule is ellipsoid, erect, 1-1.8 cm long. (Welsh et al. 1993; Falk, Jenkins et al. 2001; Coleman 2002).

AIDS TO IDENTIFICATION: Emerging plants of *Platanthera zothecina* appear quite distinct from *P. sparsiflora* because of their much more rounded leaves. Leaves on mature plants of *P. zothecina* are clustered at the base of the stem, with the lower one or two nearly ovate. Their flowers can be distinguished from flowers of *P. sparsiflora*, by the shape of the

lip and the length of the spur. The lip of *P. zothecina* is usually linear elliptic and has a distinct horizontal ridge across it about one-third the length of the lip down from the junction with the column. The lip bends downward at this ridge. The lip of *P. sparsiflora* is linear, with a short vertical ridge, and does not bend. Looking at spur length, in *P. zothecina* the spur is longer than the spur in *P. sparsiflora*, from 1.5 to 2.5 times the length of the lip. In *P. sparsiflora* the spur ranges from slightly shorter than the lip to 1.5 times as long. (Higgins and Welsh, 1986; Falk, Jenkins et al. 2001; Coleman 2002). **Note:** Spur lengths are referenced to the lowest flowers on the stem, and to those that have been opened several days. In *P. zothecina*, the spurs lengthen for several days after the flowers open, and spurs are not as long on upper flowers. (Coleman 2002).

Platanthera sparsiflora blooms near *P. zothecina* in the southern part of its range, and plants of intermediate form occur, suggesting hybridization is taking place (Coleman 2002).

ILLUSTRATIONS: Line drawing (*In* Falk, Jenkins et al. 2001)
Color photos of plant, top of flower stalk, and habitat (Ron Coleman, *in* Falk, Jenkins et al. 2001)
Color photo (Coleman 2002: plate 26)
Line drawing (Crawford, *in* Spackman et al. 1997 and http://www.cnhp.colostate.edu/rareplants/PMORC1Y130.html)
Color photos of plant and habitat (B. Jennings, *in* Spackman et al. 1997)
Color photos of plant and habitat (B. Jennings 1999, *in* http://www.cnhp.colostate.edu/rareplants/PMORC1Y130.html)

TOTAL RANGE: Regional endemic of the Colorado and Green rivers and their tributaries in eastern Utah (along canyon walls of the Colorado River), immediately adjacent northwest Colorado (Dinosaur National Monument, Moffat Co.), and northern Arizona.

RANGE WITHIN ARIZONA: Most of the plants occur in the drainage of the Colorado River north of Interstate Highway I-40 and east of Flagstaff, but a few are along the Grand Canyon west of Flagstaff, and one colony occurs south of Flagstaff in Oak Creek Canyon in Coconino County (southern limit). In Navajo County, colonies have been found north of Kayenta in Tseyi hatsosi, Adahchijiyahi, and Betatakin canyons, and on Navajo Mountain. They were also discovered in Apache County by D. Roth and D. Mikesic in 1999; collection made in 2003 by D. Roth and deposited at ARIZ.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Herbaceous perennial.

PHENOLOGY: Leaves appear in late April to early May; spike develops during May and June; flowers from mid-June through July; capsules mature in about a month.

BIOLOGY:

HABITAT: Moist stream banks, seeps, and hanging gardens (Welsh and Higgins 1986); requires constant moisture. More specifically, it occurs in several microsites in hanging garden communities: 1) at bases of alcove face-walls with flowing drip-line or with seepage down wall, 2) in protection of dense vegetation or under rock debris of alcove foot slope, 3) shaded sites along streams, and 4) shaded seeps, at 1204 to 1951 m (3950 to 6400 ft). (NatureServe 2004).

ELEVATION: 5,000 - 9,000 ft (1525-2745 m). Elevation also reported as 5,300-6,600 ft (1617-2013 m) by Spackman et al. (1997), and 4,000-6,213 ft (1220-1895 m) in Welsh et al. (1993).

EXPOSURE: Full to partial sun. Typical sites are shaded for a large portion of the day (Franklin 1992).

SUBSTRATE: Found on Navajo Sandstone Formation in Arizona, in substrates of sand and sandstone.

PLANT COMMUNITY: Found in mixed Great Basin Desertscrub, pinyon-juniper, and oak brush communities. (Welsh et al. 1993). In late June, the seeps can be quite colorful due to yellow columbine (*Aquilegia chrysantha*), red and yellow monkey flower (*Mimulus cardinalis* and *M. guttatus*), and purple monk's hood (*Aconitum columbianum*) cascading down the rocky slopes, all but hiding the orchids. *Epipactis gigantea* (giant helleborine) is a frequent flowering companion in the hanging gardens and seeps. (Coleman 2002).

Other species that may be associated with *P. zothecina* include: *Adiantum capillus-veneris* (Southern maidenhair-fern), *Acer negundo* (box elder), *Apocynum cannabinum* (clasping-leaf dogbane), *Aquilegia micrantha* (Bluff City columbine), *Betula occidentalis* (spring birch), *Carex aurea* (golden-fruited sedge), *Cirsium rydbergii* (Rydberg thistle), *Clematis ligusticifolia* (Western Virgin's-bower), *Epipactis gigantea* (giant helleborine), *Equisetum hyemale* (rough horsetail), *Mahonia fremontii* (Fremont Mahonia), *Mimulus eastwoodiae* (Eastwood monkeyflower), *Muhlengbergia thurberi* (Thurber's muhly), *Oenothera longissima* (long-stem evening-primrose), *Panicum virgatum* (Old Switch panic grass), *Primula specuicola* (Grand Canyon primrose), *Quercus gambelii* (Gambel oak), *Rhamnus* (=*Frangula*) *betulifolia* (beechleaf buckthorn), *Salix exigua* (desert willow), *Smilacina stellata* (=*Maianthemum stellatum*, false Solomons seal), *Toxicodendron rydbergii* (poison ivy), and *Typha* sp. (cattail). (Franklin 1992). Based on unpublished Arizona records in the Heritage Data Management System, also found in association are *Bromus carinatus* (California brome), *Carex specuicola* (Navajo sedge), *Mimulus eastwoodiae*, and *Pseudotsuga menziesii* (Douglas-fir), (AGFD, accessed 2004).

POPULATION TRENDS: Although widely scattered, with low numbers, colonies appear stable, with plants still present in areas where they were reported over 60 years ago (Falk,

Jenkins et al. 2001). There are fewer than 30 sites known and these are small, scattered, and with few individuals (NatureServe 2004).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2, USDI, FWS 1990 under *Habenaria zothecina*]

STATE STATUS: None

OTHER STATUS: Group 3 (NNDFW, NESL 2005)
[Group 3 (NNDFW, NESL 2000)]

MANAGEMENT FACTORS: Hanging garden communities on Bureau of Land Management lands are for the most part isolated from impacts and within the National Park system are protected. Populations in Colorado do not appear threatened by human impacts. (NatureServe 2004).

PROTECTIVE MEASURES TAKEN: Several sites of *P. zothecina* are located within National Park and National Monument boundaries.

SUGGESTED PROJECTS: In the summer of 1999, in order to gather data to understand its conservation needs, the National Park Service initiated a study of *P. zothecina* within the Navajo National Monument in northern Arizona. Four groups of plants were staked, counted, and monitored throughout the growing season. The study, destined to last several years, should yield data on population dynamics and flowering patterns. (Coleman 2002).

LAND MANAGEMENT/OWNERSHIP: BIA - Navajo Nation; NPS – Grand Canyon National Park, Navajo National Monument, along with Canyonlands National Park and Arches and Dinosaur National Monuments; USFS – Coconino National Forest; Private.

SOURCES OF FURTHER INFORMATION

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MAJOR KNOWLEDGEABLE INDIVIDUALS:

Ron Coleman - Tucson, Arizona.

ADDITIONAL INFORMATION:

Revised: 1998-12-17 (RHB)
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