ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract **Element Code:** PDEUP0Q290
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Euphorbia aaron-rossii*
COMMON NAME: Marble Canyon spurge, Ross spurge
SYNONYMS: None
FAMILY: Euphorbiaceae

AUTHOR, PLACE OF PUBLICATION: A.H. Holmgren and N.H. Holmgren, Brittonia 40(4): 357-362. 1988.

TYPE LOCALITY: Marble Canyon, Coconino County, Arizona.

TYPE SPECIMEN: HT: NY. A.H. Holmgren 15558 et al., 5 May 1971.

TAXONOMIC UNIQUENESS: There are 48 species of *Euphorbia* in Arizona and approximately 1500 species worldwide. These are distributed throughout tropical to warm-temperate regions. (Lehr 1978, Hickman 1993). *Euphorbia aaron-rossii* belongs to the subgenus *Agaloma* (Raf.) House. This subgenus consists of about 100 species and is restricted to the Americas. Apparently this taxon belongs to the section *Tithymalopsis* (Klotzsch &Garcke) Boiss (Holmgren and Holmgren 1988).

DESCRIPTION: Plants perennial, suffrutescent. Stems erect, 10-18(-24) inches (25-45(60) cm) tall and about as wide, wiry, densely clustered, usually with many dead ones persisting from past seasons. Green stems arise from a woody caudex surmounting a thick taproot, and are longitudinally striate. They are monopodially branched at lower nodes, the internodes exceeding the leaves, the upper nodes sympodially branched with the main axis terminating in a cyanthum and a lateral branch becoming the leader. Herbage ascending-pilose-pubescent, becoming sparsely strigose to glabrous with age. Leaves alternate, the stipules minute glands 0.1-0.25 mm long or occasionally obsolete; petioles short, 0.2-2.2 mm long, soon becoming reflexed, usually pale green to yellowish-green. Leaf blades entire, symmetrical at the base, 1-3.2 cm long, shape variable. The lower leaves are usually broader and shorter, ovate to lanceolate, 2-6.5 mm wide, while the upper leaves are usually lanceolate to linear, 0.5-3 mm wide, acute, the midvein prominulous beneath, impressed above. Inflorescence arising from solitary cyathia at upper leaf nodes, and terminating the branches; peduncles 0.5-2.5(-10) mm long. Cyathium 5-lobed, hemispheric, to campanulate, 2-4 mm high (including appendages), 1.5-2.5 mm wide from just below the appendages, green, often with a brownish tinge. The free lobes of the rim that alternate with the glands within the cup, are rounded to obtuse, lacerate-fimbriate, slightly exceeding the glands, whitish-green, sometimes with a reddish

tinge. Five glands, reniform, depressed in the center, 0.8-1.2 mm wide, erect, dark green, the appendages erect or slightly flaring, subequal to slightly unequal, flabellate, glabrous, veiny, white to pink, 0.5-1.5 mm long, 0.8-2.2 mm wide, the apices rounded, truncate, bifid, or dentate, the bracteoles between the male flowers plumose. Staminate flowers 20-25, on glabrous pedicels about 2 mm long, the anther sacs 2, separated by the broad connective, subspherical, 0.2-0.3 mm wide; pistillate flower solitary, on an elongating gymnophore, the ovary with 3 carpels, strigose, each carpel with one ovary. Three styles, 1-1.3 mm long, connate at the base, forked near the apex, the stigmas capitate; gynophore erect at maturity, 3.5-5 mm long, glabrous. Capsule depressed-globose and roundly 3-lobed when all 3 ovules matured, septicidal, sparingly strigose, 2-3 mm long, up to 4 mm wide, the walls hard. Seed globose-ovoid, 1.8-2.2 mm long, 1.2-1.6 mm wide, with shallow rounded pits in about 10 longitudinal rows, without a caruncle, the apex subacute to rounded, ashy green to ashy brown, pits sometimes darker. (Holmgren and Holmgren 1988).

AIDS TO IDENTIFICATION: Like all species of *Euphorbia*, this one oozes white latex when you break off a leaf or a stem. *Euphorbia aaron-rossii* is most similar to *Euphorbia wrightii* (Wright's spurge) found in Texas and Mexico, and *Euphorbia strictior* (Panhandle spurge) found in northeastern New Mexico. Although the ranges of the latter two species do not overlap the range of *E. aaron-rossii*, it is important to discuss how to tell the three species apart. The leaves of *E. wrightii* and *E. strictior* are sessile, spreading to ascending, and the upper leaves of these 2 species are mostly opposite. The leaves of *E. aaron-rossii* are short petiolate, spreading at first, becoming reflexed, and all alternate. The stems of *E. wrightii* and *E. strictior* are more or less dichotomously branched in the upper nodes. The stems of *E. aaron-rossii* are alternately branched or branchless at the upper nodes. (Holmgren and Holmgren 1988).

ILLUSTRATIONS: Line drawing of habit, cyathium, capsule, seed, etc. (Holmgren and Holmgren 1988: 358).
Scanning electron micrographs of seed coat (Holmgren and Holmgren 1988: 359).
Color photo (Rink *in* Falk et al. 2001).
Color photo (Roth *in* Falk et al. 2001).
Line drawing (Falk et al. 2001).
Color photo of specimen (*In* http://scisunnybg.org:8890/searchdb/owa/wwwcatalog.detail_list?this_id=2975962).

TOTAL RANGE: Marble Canyon, Grand Canyon (along the Colorado River on the east side of the canyon), and the canyon of the Little Colorado River, Coconino County, Arizona.

RANGE WITHIN ARIZONA: See "**Total Range**."

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: Suffrutescent Perennial.

PHENOLOGY: Flowers April to October in response to sufficient moisture.

BIOLOGY: Since it has been observed with flowers throughout the growing season, it is believed that this species blooms readily in response to sufficient moisture (Holmgren and Holmgren 1988).

HABITAT: River canyons, usually in relatively loose, sandy soils of river bars and sand dunes, and occasionally on talus slopes, rock ledges, and on boulders well above the river.

ELEVATION: 2,160 – 4,200 ft (648-1260 m), based on unpublished records in the HDMS (AGFD, accessed 2004). NatureServe (2005) reports elevation range of 640-1000 m (2,100-3,280 ft).

EXPOSURE: Seems to prefer partly shaded sites; never found in full sun conditions.

SUBSTRATE: Found on talus slopes and boulders in Redwall Limestone Formation and in sandy washes and sand dunes derived possibly from deposits of the Coconino Sandstone Formation (Holmgren and Holmgren 1988; AGFD,HDMS unpublished records).

PLANT COMMUNITY: Great Basin Desertscrub and Great Basin Riparian communities (Brown 1994). Associated species in Great Basin Riparian communities include: *Baccharis* spp. (false-willow), *Tamarix* sp. (Tamarisk), and *Sporobolus* sp. (dropseed). (Holmgren and Holmgren 1988).

POPULATION TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None
STATE STATUS: None
OTHER STATUS: None

MANAGEMENT FACTORS: This species is not palatable to native or domestic herbivores. No chance of development occurring in either canyon. Canyons are boundaries on Navajo land.

PROTECTIVE MEASURES TAKEN: None.

SUGGESTED PROJECTS: Monitor existing populations and search areas of suitable habitat for new populations, especially in areas adjacent to known populations.

LAND MANAGEMENT/OWNERSHIP: BIA – Navajo Nation; NPS - Grand Canyon National Park, Glen Canyon National Recreation Area, and Marble Canyon National Monument.

SOURCES OF FURTHER INFORMATION

REFERENCES:

Brown, D.E. ed. 1994. Biotic communities: southwestern United States and northwestern Mexico. University of Utah Press. Salt Lake City, Utah. 342 pp.

Falk, M. & P. Jenkins et al., 2001. Arizona Rare Plant Field Guide. Published by a collaboration of agencies and organizations. Pages unnumbered.

Hickman, J.C., ed. 1993. The Jepson Manual: Higher Plants of California. University of California Press. Berkeley, California. p. 573.

Holmgren, A.H., and N.H. Holmgren. 1988. *Euphorbia aaron-rossii* (Euphorbiaceae), A New Species From Marble and Grand Canyons of The Colorado River, Arizona. Brittonia 40(4): 357-362.

Integrated Taxonomic Information System (ITIS). Retrieved 3/25/2005 from ITIS, http://www.itis.usda.gov.

Lehr, J.H. 1978. A catalogue of the flora of Arizona. Desert Botanical Garden. Phoenix, Arizona. Pp. 88-89.

Missouri Botanical Garden – TROPICOS, Nomenclatural Data Base. *Euphorbia aaron-rossii* A.H. Holmgren & N.F. Holmgren. http://mobot.mobot.org/cgi-bin/search_vast. Accessed: 25 Mar 2005.

NatureServe. 2004. An online encyclopedia of life [web application]. Version 3.1. Arlington, Virginia, USA: NatureServe. Available: http://www.natureserve.org/explorer. (Accessed: September 22, 2004).

NatureServe. 2005. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.2. NatureServe, Arlington, Virginia. Available: http://www.natureserve.org/explorer. (Accessed: March 25, 2005).

Rink. G. *in* Falk, M. & P. Jenkins et al., 2001. Arizona Rare Plant Field Guide. Published by a collaboration of agencies and organizations. Pages unnumbered.

Roth, D. *in* Falk, M. & P. Jenkins et al., 2001. Arizona Rare Plant Field Guide. Published by a collaboration of agencies and organizations. Pages unnumbered.

SEINet. Collections Search Result. Accessed 3/25/2005 at http://seinet.asu.edu/collections/list.jsp.

The New York Botanical Garden. NYBG Specimens Detailed Results. http://scisun.nybg.org:8890/searchdb/owa/wwwcatalog.detail_list. Accessed: 9/22/2004.

USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

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ADDITIONAL INFORMATION:

This species was named for Dr. Aaron B. Ross (1917-1973), a physician from Ogden, Utah. He was an avid boatman and naturalist. It was he who brought a specimen of this species to Arthur Holmgren for positive identification, where he decided it was an unnamed and unusual species. (Holmgren and Holmgren 1988).

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