

ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Plant Abstract

Element Code: PPDRY0A020

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Dryopteris arguta*
COMMON NAME: Western Shield Fern, Marginal wood fern, Coastal wood fern
SYNONYMS: *Aspidium argutum*
FAMILY: Dryopteridaceae

AUTHOR, PLACE OF PUBLICATION: Maxon, William Ralph. American Fern Journal 11: 3. 1921.

TYPE LOCALITY: California: Mariposa County: Merced River below Yosemite. 3800 feet. (Isotype.)

TYPE SPECIMEN: Tulane University, NO 109732 (isotype). B. Campbell, #755. June 14, 1929.

TAXONOMIC UNIQUENESS: NatureServe (2016) recognizes at least 32 species of *Dryopteris* in the United States and Canada, with another three subspecies or varieties and 16 named hybrids. *D. arguta* is one of five species that are found in Arizona. Two these species, *D. knoblochii* and *D. rossii*, are found only in Arizona. It is also interesting that 19 of the known 32 species are found only in Hawaii.

DESCRIPTION: Leaves monomorphic, green through winter, 25--90 × 8--30 cm. Petiole 1/4--1/3 length of leaf, scaly at least at base; scales scattered, light brown. Blade green to yellow-green, ovate-lanceolate, pinnate-pinnatifid to 2-pinnate at base, herbaceous, glandular. Pinnae ± in plane of blade, lance-oblong; basal pinnae deltate, not much reduced, basal pinnules ± same length as adjacent pinnules, basal basispic pinnule and basal acroscopic pinnule ± equal, pinnule margins serrate with spreading, spinelike teeth. Sori midway between midvein and margin of segments. Indusia lacking glands. 2 n = 82. Flora of North America 2016.

AIDS TO IDENTIFICATION: Narrow lanceolate scales on costa; very spinulose (Hardy Fern Library 2016).

ILLUSTRATIONS:

Photos and Herbarium Mounts:

<http://swbiodiversity.org/seinet/taxa/index.php?taxon=Dryopteris%20arguta>.

http://ucjeps.berkeley.edu/flora/flora_display.php?tid=23524.

<http://eol.org/pages/597464/media>.

TOTAL RANGE: British Columbia; Washington, Oregon, Montana, California, Arizona; Baja Mexico. Most common in the coastal mountain ranges; the Arizona population is considered to be disjunct.

RANGE WITHIN ARIZONA: Known only from a few (four, within a four mile radius) collections in the Sierra Ancha Mountains, NE of Phoenix and Lake Roosevelt, central Gila County.

SPECIES BIOLOGY AND POPULATION TRENDS

GROWTH FORM: An evergreen, perennial fern.

PHENOLOGY:

BIOLOGY: Plants take 1–5 years to reach maturity and each fertile blade can produce as many as 13.5–15 million wind dispersed spores. Some of the spores are retained on the blades over the winter and released the following spring. Spore viability averages three years or more for other *Dryopteris* species. In other fern species, spore germination, early gametophyte development, and gamete fusion occur when soils are moist in early spring. The coastal wood fern can also reproduce vegetatively by rhizome elongation. Vegetative reproduction appears to be more common in dry, rapidly drained sites that are not ideal for spore germination and gamete fertilization. The plant is difficult to propagate *ex situ* from spores (Garry Oak Team 2010).

The ability of *D. arguta* populations to rebound from disturbances or extirpation may be hampered by a lack of sexual reproduction. There is a low probability this will influence recovery or management potential for the species (Garry Oak Team 2010).

HABITAT: Shaded slopes and open woods. Also found in some California caves (Flora of North America 2016).

ELEVATION: Range-wide: 0 – 6890 feet (0-2100m), Flora of North America 2016. Arizona collections range from 3200 – 5200 feet (975-1585m).

EXPOSURE: At Arizona collection sites, well-shaded to semi-shaded, often north or northwest facing slopes, sometimes 25-30 degrees.

SUBSTRATE: Growing among boulders or ledges; granite, shale, diabase loam; moderately moist.

PLANT COMMUNITY: Evergreen woodland and riparian communities. Associated plant species include: *Alnus oblongifolia*, *Platanus wrightii*, *Acer negundo*, *Vitis arizonica*, *Rhus radicans*, *Juglans*, *Quercus arizonicus*, *Ptelea*, *Agave parryi*, *Quercus turbinella*, *Celtis*.

POPULATION HISTORY AND TRENDS: Unknown for Arizona. Only known from four occurrences in a very small area of the Sierra Ancha Mountains. Collections have been made from 1926 to 1992. Populations have been noted as rare to common to locally abundant. NatureServe currently considers the species to be imperiled in Arizona, but elsewhere as secure.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None.

STATE STATUS: None.

OTHER STATUS: None.

MANAGEMENT FACTORS: In Canada (coastal British Columbia), *D. arguta* is considered to be a Species at Risk and a detailed management plan has been prepared (Parks Canada Agency 2011). Threats noted include habitat loss or degradation (including residential development), recreational activities, and invasive plants. Climate change and a fungus were also considered potential threats (another the particular fungus does not appear to occur in Arizona). The threat analysis conducted in Canada ranked most of these threats to be low (Garry Oak Team 2010).

The primary management objectives were to maintain all known populations at their current level, clarify the distribution of the species, increase public awareness, and to address gaps in knowledge such as population trends, habitat attributes, type of reproduction and dispersal mechanisms, significance of threats, etc (Parks Canada Agency 2011).

It is not known if fire is beneficial or detrimental to the management of the species.

PROTECTIVE MEASURES TAKEN: None specified.

SUGGESTED PROJECTS: The Canadian management plan (Garry Oak Team 2010) identified a number of “information gaps” for the species, including:

- 1) Further studies are required to understand the conditions necessary for successful sexual reproduction, such as spore germination, successful reproduction of gametophytes, sporophyte seedling survival, and whether specific microsite conditions are required for sexual reproduction. Further understanding of dispersal capability and breeding system would be beneficial.
- 2) The genetic composition of the various populations is unknown. This information would help define an understanding of the primary reproduction mode (i.e., via spores or

vegetatively by rhizome divisions) and which stage of the life cycle should be emphasized for the survival of the species.

- 3) Also unknown is the population level impact of natural disturbances, increased exposure, changes in the fire regime, invasive species, etc.
- 4) Essential habitat attributes such as soil moisture, composition and texture, organic matter, associated plant species, slope, aspect, and elevation can all be better defined.
- 5) It would be useful to have a better understanding on why this species has such a limited distribution in some areas. Is this due to specific habitat requirements, spore dispersal barriers, or natural disturbance regimes?
- 6) More systematic surveys should be conducted to identify if there are additional unknown populations.
- 7) Populations should be monitored, at least periodically, to better define population trends,

LAND MANAGEMENT/OWNERSHIP: USDA Forest Service, Tonto National Forest.

SOURCES OF FURTHER INFORMATION

REFERENCES:

- Garry Oak Ecosystems Recovery Team. 2010. Management Plan for the coastal wood fern (*Dryopteris arguta*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 23 pp.
- HardyFernLibrary, accessed 6/23/2016, <http://hardyfernlibrary.com/ferns/listSpecies.cfm?Auto=3>.
- JStor| Global Plants, accessed 6/23/2016, <http://plants.jstor.org/stable/10.5555/al.ap.specimen.no0109732?searchUri=plantName%3D%2522Dryopteris%2Barguta%2522%26syn%3D1>.
- NatureServe Explorer, accessed 6/23/2016, www.natureserve.org.
- Parks Canada Agency. 2011. Management plan for the Coastal Wood Fern (*Dryopteris arguta*) in Canada. Species at Risk Act Management Plan Series. Parks Canada Agency. Ottawa. iii + 35pp.
- Smith, Alan R. 2016. *Dryopteris arguta*, in Jepson Flora Project (eds.) Jepson eFlora, http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=23524, accessed on June 23, 2016.
- Tropicos, accessed 6/23/2016, <http://www.tropicos.org/Name/26603647>.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

ADDITIONAL INFORMATION: “Arguta” means sharply toothed or notched.

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