

***PODOCARPUS MACROPHYLLUS* (PODOCARPACEAE):
A NEW SPECIES, GENUS, AND FAMILY FOR THE ARKANSAS FLORA**

BRETT E. SERVISS

Biology Department
Box H-7570
Henderson State University
1100 Henderson Street
Arkadelphia, Arkansas 71999
servisb@hsu.edu

KEENAN B. SERVISS

Sylvia Street
Arkadelphia, Arkansas 71923

JAMES H. PECK

P.O. Box 705
Cedar Key, Florida 32625
james.peckck@gmail.com

ABSTRACT

Podocarpus macrophyllus (Thunb.) Sweet is reported here as new to the Arkansas flora. This record also is the first documentation of the Podocarpaceae family outside of cultivation in the state. One or two spontaneous plants of *P. macrophyllus* were discovered growing in disturbed, urban woods along a riparian zone in Clark County. Photographs of plants of the species in habitat are provided.

Podocarpus is a genus of about 100 species of dioecious or rarely monoecious, evergreen shrubs and trees widely distributed over subtropical and tropical regions worldwide, with a few species also occurring in warm-temperate zones (Bailey & Bailey 1976; Krüssmann 1972; Fu et al. 1999; Byng 2015). It is the largest genus in the Podocarpaceae, which itself is the second largest family of conifers after the Pinaceae (Mill 2014). A number of *Podocarpus* species are cultivated; however, relatively few are cold-hardy (Bailey & Bailey 1976; Krüssmann 1972), which limits their use as ornamentals in much of the USA. Species of *Podocarpus* are characterized by their alternate, spirally arranged or sometimes subopposite to opposite, usually linear-lanceolate or linear-elliptic, simple leaves, typically solitary ovulate cones, which often have the basal bracts fused to form a “receptacle” that becomes swollen, fleshy, and brightly colored at maturity, and seeds that are enclosed in an epimatium that is sometimes fleshy (Fu et al. 1999; Byng 2015).

Podocarpus macrophyllus (Thunb.) Sweet (big-leaf podocarp, yew plum pine) is a large, evergreen shrub or small tree to 20 meters tall that is native to China and Japan (Bailey & Bailey 1976; Krüssmann 1972; Fu et al. 1999). This species is grown in the southern USA, including Arkansas, as an ornamental for its glossy, tightly clustered, evergreen foliage, conspicuous blue to blue-green-colored ovulate cones that at maturity become red to purplish-red in color with a purplish-black-colored seed at the apex, attractive growth form, and ease of cultivation. It prefers well-drained, acidic soil in full sun to partial shade, but it also is tolerant of high shade conditions.

Podocarpus macrophyllus has been reported previously as a component of the naturalized floras of Alabama and Florida (Wunderlin & Hansen 2011; Barger et al. 2012; Kartesz 2015; Weakley 2015; USDA, NRCS 2016) — our record from Arkansas marks only the third state from which *P. macrophyllus* has been documented outside of cultivation. The presence of naturalized *P.*

macrophyllus in Arkansas also is the first occurrence of the genus *Podocarpus* and the Podocarpaceae family in the state's flora.

In 2016, one to two spontaneous plants of *Podocarpus macrophyllus* were documented within a highly disturbed, urban woods/greenbelt along a riparian zone in Clark County (Fig. 1). The site is surrounded on all sides by residential areas. In addition to *P. macrophyllus*, a number of other non-native species were present and naturalized, including *Albizia julibrissin* (mimosa), *Hedera helix* (English ivy), *Ilex cornuta* (Chinese holly), *Ligustrum lucidum* (glossy privet), *Ligustrum sinense* (Chinese privet), *Liriodendron tulipifera* (yellow poplar—native in Arkansas but only to Crowley's Ridge—naturalized elsewhere in the state), *Liriope muscari* (blue lilyturf), *Lonicera japonica* (Japanese honeysuckle), *Lycoris radiata* (surprise lily), *Magnolia grandiflora* (southern magnolia—apparently native west of the Mississippi River), *Nandina domestica* (heavenly bamboo), *Photina serratifolia* (Chinese photina), and *Triadica sebifera* (Chinese tallow tree). The larger of the two *P. macrophyllus* plants was a sapling (juvenile) ca. 1.4 meters tall (Fig. 2). The “second” plant was smaller, ca. 58 cm tall, and immediately adjacent to the larger plant. We could not unequivocally ascertain if the smaller plant was a distinct plant or merely a root sucker originating from the larger individual.

Voucher specimen: **Arkansas**. Clark Co.: One to two spontaneous plants growing along bank of small stream in disturbed, urban woods/greenbelt along riparian zone, off of O'Connell Street, adjacent to the intersection of O'Connell Street and 18th Street, Arkadelphia, 14 May 2016, Serviss 8337 (HEND).



Figure 1. Spontaneous plant of *P. macrophyllus* in disturbed, urban woods in Clark County, Arkansas (this plant was ca. 1.4 m tall). (A) Plant and habit. (B) Close-up of base of plant showing branching pattern and main stem.



Figure 2. Close-up photographs of leaves and bark from the larger spontaneous plant of *P. macrophyllus*. (A–B) Leaves. (C) Young bark.

No cultivated plants of *Podocarpus macrophyllus* were observed in the immediate vicinity of the location of the spontaneous plant(s); however, both microsporangiate and megasporangiate/ovulate plants of the species are cultivated in the Arkadelphia area, some of which are present no more than 3.5 km from the location. Dispersal of seeds (possibly via birds) from cultivated megasporangiate plants provides a plausible explanation as to the origin of the spontaneous plant(s). The seeds of *Podocarpus* species, in general, are animal-dispersed (Buchholz & Gray 1948; Givnish 1980; Geldenhuys 1993).

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