

FIRST REPORT OF *CEPHALOTAXUS HARRINGTONIA* (CEPHALOTAXACEAE) SPONTANEOUS IN NORTH AMERICA AND POTENTIALLY INVASIVE

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ABSTRACT

Cephalotaxus harringtonia, Japanese Plum Yew, is escaped from cultivation and naturalizing in Bronx County, New York. This study documented 65 spontaneous individuals within an area of approximately 121 hectares (300 acres). The species is documented with herbarium specimens preserved in the William and Lynda Steere herbarium at the New York Botanical Garden and photographs in the global community science program, iNaturalist. This is the first report of the species naturalized in North America.

Cephalotaxus is a small genus of 8–12 species in the monotypic family Cephalotaxaceae (Fu et al. 1999; Hao et al. 2008). *Cephalotaxus harringtonia* (Forbes) K. Koch is a dioecious, evergreen shrub or small tree native to Japan and northeastern China and Korea (Tripp 1995). The Conifer Society (Conifer Society 2018) reports that the species is hardy in North America to zone 7 (USDA ARS 2018). The species is the most widely-cultivated and variable of the genus (Tripp 1995). It is reported to be deer-resistant (NC State Extension 2018) and shade-tolerant (Missouri Botanical Garden 2018).

Spontaneous plants of *Cephalotaxus harringtonia* were first noted by the author at the New York Botanical Garden (NYBG) about the year 2000. Since then, more spontaneous plants have been noted but were considered waifs since numbers were low and distribution limited (Atha et al. 2016). By 2019, however, the number of individuals had greatly increased and additional plants (Figure 1) were found on adjacent property at the Wildlife Conservation Society (Bronx Zoo), prompting this report.

Voucher specimens. New York. Bronx Co.: New York City, New York Botanical Garden, 40°51'22"N, 73°52'37"W, 10 m elev., 8 Apr 2008, *Nee 59042* (NY); New York Botanical Garden, 40.856977, -73.878288, 10 m elev, 22 Mar 2009, *Atha 6914* (NY).

A total of sixty-five spontaneous plants were found within an area of about 121 hectares (300 acres). The ecological communities in which plants were found include (after Edinger et al. 2014) Floodplain Forest Oak Tulip Tree Forest, and Rich Mesophytic Forest. Not every square meter of the area was surveyed, so there could be more plants within the area as well as outside of it. Spontaneous plants range in age from saplings in the first couple of years of growth to large, mature specimens approximately 10 cm diameter and 3–4 m tall. All of the larger plants are apparently males bearing pollen cones most of the year. No spontaneous females were found.

The species is not reported to spread vegetatively, indicating that the dispersal units are the arillate seeds. As the fruit are quite large, mammals are hypothesized to consume the fruit and defecate the seeds. Shade tolerance, deer resistance, and animal dispersal are common traits of aggressive woodland invaders. Based on the behavior of the plants in the Bronx and the wide geographic tolerance reported in the literature, it appears that the species could spread across wooded areas of eastern North America.



Figure 1. *Cephalotaxus harringtonia*, A–D of a single spontaneous individual photographed in Bronx Park, New York City, January 2019. A. Shrub showing multiple stems. B. Trunk about 5 cm diam. C. Top of branch showing lustrous dark green needles and mostly dichotomous twig branching. D. Underside of branch showing whitened needle abaxials and nearly mature, spherical male cones. A–D., <<https://www.inaturalist.org/observations/19661181>>.

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