

Species Listing PROPOSAL Form:
Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: *Cypripedium parviflorum* var.
makasin

Current Listed Status (if any): E

Common name: Yellow Lady's-slipper

Proposed Action:

Add the species, with the status of: E

Add vars. *pubescens*, and *parviflorum*

Remove the species

Change the species' status to: _____

Change the scientific name to: ***Cypripedium parviflorum*, to include var. *pubescens*, var. *parviflorum*, and var. *makasin***

Change the common name to:

(Please justify proposed name change.)

Proponent's Name and Address:

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Association, Institution or Business represented by proponent: Natural Heritage & Endangered Species Program

Proponent's Signature:



Date Submitted:

5/30/14

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 1 Rabbit Hill Road, Westborough, MA 01581

Justification

Justify the proposed change in legal status of the species by addressing each of the criteria below, as listed in the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00), and provide literature citations or other documentation wherever possible. Expand onto additional pages as needed but make sure you address all of the questions below. The burden of proof is on the proponent for a listing, delisting, or status change.

(1) Taxonomic status. Is the species a valid taxonomic entity? Please cite scientific literature.

Cypripedium parviflorum is a valid taxonomic entity,
Salisbury, Trans. Linn. Soc. London, Bot. 1: 77, plate 2, fig. 2. 1791.

The taxonomic history of *Cypripedium parviflorum* is complex. *Cypripedium parviflorum* formerly was considered part of the circumboreal species *Cypripedium calceolus*. The North American plants are now

considered a separate species with three varieties. Some authors have also treated the varieties as distinct species; most authorities now recognize these entities are variants of the same species. The below excerpt from the Flora of North America discusses the historical name confusion and difficulty of delimiting the varieties of this species:

“*Cypripedium parviflorum* is extremely variable, reflecting individual phenotypic plasticity, infraspecific differentiation, and hybridization with related species. In particular, var. *pubescens* is difficult to delimit. In exposed situations, especially in calcareous soils, plants are low-growing with ascending, often narrow leaves and rather small flowers; in exposed boreal and arctic sites, plants and flowers may be very small with scarcely spiraled to flat petals. Such plants from Newfoundland were originally described as *C. parviflorum* var. *planipetalum*. When transplanted to less severe conditions, those plants often develop into larger plants with larger flowers of more common form; indeed, the holotype sheet of var. *planipetalum* includes a range in habit and floral morphology and includes a plant rather typical of boreal var. *pubescens*. The lips of smaller flowers often are markedly compressed laterally, with parallel sides, but when larger flowers are produced by the same plant, the proportions of the lip often change, the lip then being very broad below and tapering toward the adaxial surface (trapezoidal in cross section) or sometimes dorsiventrally compressed and broader than high.

The southeastern var. *parviflorum* differs from var. *pubescens* primarily in flower size and color, and the two might be merely forms. Most works dealing with *Cypripedium parviflorum* have treated the primarily boreal var. *makasin* as var. *parviflorum*, either including all small-lipped plants within var. *parviflorum*, or in some cases restricting the name to the northern variety and excluding the southeastern plants described by Salisbury as *C. parviflorum*. Fernald’s original publication on *C. calceolus* var. *parviflorum* actually treated var. *makasin*, citing a description of that variety and clearly discussing the northern plant. Additionally, although geographically accommodating Salisbury’s plant, Fernald excluded most of the range of the southeastern var. *parviflorum*, thereby referring most plants of var. *parviflorum* to var. *pubescens*, and further restricted var. *pubescens* to the east, thereby assigning most plants of that variety to his northern var. *parviflorum*, i.e., var. *makasin*. Consequently, most published illustrations of var. *parviflorum* are in fact var. *makasin*. Variety *parviflorum* has been dealt with primarily in publications on the southeastern flora. In the east, var. *makasin* is quite distinct, but in the west it becomes difficult to separate from very small plants of var. *pubescens* that are common there; in that area, fragrance is often the least equivocal character. In the northwest it seems to merge with *C. × columbianum*, and in fact the northwestern elements of the species are only artificially accommodated within the variety. Very rarely plants apparently referable to var. *makasin* or var. *parviflorum* bear white lips. In some cases that may reflect past gene flow, but in others the plants appear to be color forms.”

Because of the difficulty in separating the varieties and the decline of the formerly somewhat common var. *pubescens* the entire species is proposed for listing regardless of subspecific division.

(2) **Recentness of records.** How recently has the species been conclusively documented within Massachusetts?

2013

(3) **Native species status.** Is the species indigenous to Massachusetts?

YES, all three varieties are indigenous to Massachusetts, var. *pubescens* and var. *makasin* are extant, and var. *parviflorum* is thought to be historic (Cullina et al. 2011).

(4) **Habitat in Massachusetts.** Is a population of the species supported by habitat within the state of Massachusetts?

YES, In Massachusetts *Cypripedium parviflorum* var. *makasin* is known from calcareous fens, while *Cypripedium parviflorum* var. *pubescens* is known from moist calcareous or rich woods.

(5) Federal Endangered Species Act status. Is the species listed under the federal Endangered Species Act? If so, what is its federal status (Endangered or Threatened)

NO

(6) Rarity and geographic distribution.

(a) Does the species have a small number of occurrences (populations) and/or small size of populations in the state? Are there potentially undocumented occurrences in the state, and if so, is it possible to estimate the potential number of undocumented occurrences?

Three populations of *Cypripedium parviflorum* var. *makasin* are known from Massachusetts; one of these locations may have been recently extirpated and has not been observed in 18 years. *Cypripedium parviflorum* var. *pubescens* was formerly somewhat common but recently has been in decline; since 2000, this variety has been observed at 11 populations. There is estimated to be about 20 populations combined for all varieties of this species in Massachusetts.

(b) What is the extent of the species' entire geographic range, and where within this range are Massachusetts populations (center or edge of range, or peripherally isolated)? Is the species a state or regional endemic?

Cypripedium parviflorum is globally secure, ranked as a G5 species with a large range from Alaska to the mountains of Arizona, largely absent from the plains states N. Dakota to Texas, then found from Minnesota east to the Canadian Maritime Provinces, south to northern Arkansas, Mississippi, Alabama, Georgia, and South Carolina.

Cypripedium parviflorum is state listed in Connecticut (special concern), Illinois (endangered), Kentucky (threatened), New Hampshire (endangered), New York (endangered), Pennsylvania (endangered), and Washington (endangered).

(7) Trends.

(c) Is the species decreasing (or increasing) in state distribution, number of occurrences, and/or population size? What is the reproductive status of populations? Is reproductive capacity naturally low? Has any long-term trend in these factors been documented?

In Massachusetts this species has been decreasing, *Cypripedium parviflorum* var. *parviflorum* is historic for the state, while *Cypripedium parviflorum* var. *pubescens* was formerly somewhat common but recently has been in decline, this variety has been observed since 2000 at 11 populations, and *Cypripedium parviflorum* var. *makasin* formerly had three populations, but one is likely extirpated.

(8) Threats and vulnerability.

(d) What factors are driving a decreasing trend, or threatening reproductive status in the state? Please identify and describe any of the following threats, if present: habitat loss or degradation; predators, parasites, or competitors; species-targeted taking of individual organisms or disruption of breeding activity.

Cypripedium parviflorum has been decreasing due to several factors. This orchid species is very showy and anecdotal reports of illegal harvesting from the wild by plant poachers are common. Deer browse the foliage and the flowers. Woody plant succession shading the species may also play a role in the decline of this plant.

(e) Does the species have highly specialized habitat, resource needs, or other ecological requirements? Is dispersal ability poor?

This species is habitat specific, the varieties have their own requirements, *C. p.* var. *pubescens* occurs in calcareous or rich woods while *C.p.* var. *makasin* grows in calcareous swamps or fens. Dispersal is unlikely a limitation for this species.

Conservation goals.

What specific conservation goals should be met in order to change the conservation status or to remove the species from the state list? Please address goals for any or all of the following:

- (a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates

The species could be down listed to T if there were 20 populations ranked A-C.

- (b) Amount of protected habitat and/or number of protected occurrences

15 populations on protected land, ranked A-C.

- (c) Management of protected habitat and/or occurrences

Deer fencing and clearing trees and shrubs should be conducted at 10 populations, ranked A-C.

Literature cited, additional documentation, and comments.

Cullina, MD, B Connolly, B Sorrie and P Somers. 2011. The Vascular Plants of Massachusetts: A County Checklist, First Revision. MA NHESP.

Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 16+ vols. New York and Oxford.

The International Plant Names Index [web application]. 2014. Plant Name Query. Published on the Internet <http://www.ipni.org> [accessed 21 March 2014].

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: March 5, 2014).

Wallace, L. E. and M. A. Case. 2000. Contrasting allozyme diversity between northern and southern populations of *Cypripedium parviflorum* (Orchidaceae): Implications for Pleistocene refugia and taxonomic boundaries. *Syst. Bot.* 25: 281–296.