

ELEMENT STEWARDSHIP ABSTRACT FOR JUNCUS CAESARIENSIS

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Element Stewardship Abstract

Element Stewardship Abstracts (ESA's) are prepared to provide land managers and other conservation workers with current biological and management related information on those species and natural ecosystems that are most important to protect or for which control is most needed. The abstracts organize and summarize data from numerous sources, including the literature and from researchers and managers actively working with the species or ecosystem.

The ESA format was originally developed by The Nature Conservancy as a starting point for the stewardship of the many species and ecosystems, or elements, protected by the Conservancy. The New Jersey Office of Natural Lands Management is developing ESA's for those elements that are of particular importance as components of the biota of the state. This includes globally rare plant species that are also listed on New Jersey's official Endangered Plant Species List. The ESA serves several important functions. It helps to identify information gaps and target future research efforts. It provides a standard format for highlighting specific information about a species or community including its management needs. It also allows information to be readily communicated among various preserves, state offices, regional centers, natural heritage programs and private organizations.

The ESA is a dynamic document that is continuously updated as new information becomes available. Users are encouraged to contribute their information to the abstract. This sharing of information will benefit all land managers by ensuring the availability of up-to-date information on management techniques and knowledgeable contacts.

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The abstract is a compilation of available information and is not an endorsement of particular practices or products.

Element Name: JUNCUS CAESARIENSIS Cov. (Juncaceae)

Element Code: PMJUN010K0

Preparer: Alfred E. Schuyler

Common Name: New Jersey Rush

Description:

Habit: perennial tufted rhizomatous herb with erect stems having narrow elongate sheathing leaves and terminated by a branched inflorescence with clusters of minute flowers.

Stem: culms 1-few in tufts from short (rarely elongate) rhizomes, rigid, up to 0.9 m tall.

Leaves: blades terete, conspicuously septate, scabrous, lower up to 30 cm long, the upper much shorter.

Inflorescence: up to 17 cm long, greatly overtopping short involucre bract (up to 2 cm long), with strongly ascending to divaricate branches. Heads turbinate to hemispherical, about 1 cm wide, with 2-10 flowers.

Spikelets: 5-6 mm long, sepals and petals similar, narrowly ovate to subulate, strongly nerved. Stamens 6. Styles conspicuous in anthesis.

Fruits: capsules narrowly ovate to narrowly elliptic, tapering to acute tip. Seeds 2-3 mm long, subcylindric to narrowly elliptic, with long white to reddish tails.

Distinctions From Related Species: *Juncus caesariensis* resembles four other species that have similar-appearing heads and seeds with tails: *J. canadensis*, *J. subcaudatus*, *J. brevicaudatus*, and *J. brachycephalus*. It is easily distinguished from these species, however, by its 1) scabrous instead of smooth leaves, 2) 6 instead of 3 stamens, and 3) larger seeds that are 2 mm or more long.

Habitat:

Juncus caesariensis occurs on the Atlantic Coastal Plain in New Jersey, Maryland, and Virginia and is disjunct to Cape Breton Island, Nova Scotia (Newell, pers. comm., 1990). It grows in sphagnum bogs and swamps, often with or in close proximity to *Alnus serrulata*, *Chamaecyparis thuyoides*, and *Magnolia virginiana* (Fernald, 1939; Grimes, 1922; NJNHP, 1989a). In Virginia, Grimes

(1922) reported that *J. caesariensis* grew in "heavy, strongly acid soil" and Fernald stated that deciding habitat factors "include cold springs which seep out where the superficial sands and peats meet the impervious clay underneath, with sufficient slope in the background and a great wooded swamp below." Associated herbaceous species listed by Fernald (1939, 1940) for Virginia include: *Chelone cuthbertii*, *Fuirena breviseta*, *Helonias bullata*, *Parnassia asarifolia*, *Sarracenia flava*, *Scirpus purshianus*, and *Solidago elliottii*. More recently, Ware and Wieboldt (1981) described its Virginia habitat as "very acidic, usually sphagnous, extremely wet, springy or seepy areas with perennially reliable flow, but without standing water." At all Virginia stations, they found it growing with or very near *Juncus canadensis*. Most of the New Jersey sites are in the Pine Barrens on wet sandy peaty substrate dominated by *Sphagnum*. Conditions are usually wet enough for people to sink ankle to knee deep (Stasz, pers. comm., 1990). The plants are frequently found in open or somewhat shaded places in or near white cedar swamps (NJNHP, 1989a). A few sites are in areas disturbed by humans: ditch along railroad siding, borders of channelized stream, thicket in powerline opening, and logged cedar swamp (NJNHP, 1989a). Associated herbs listed for New Jersey sites include: *Asclepias rubra*, *Aster nemoralis*, *Calamovilfa brevipilis*, *Drosera intermedia*, *Lophiola aurea*, *Narthecium americana*, *Platanthera cristata*, *Rhynchospora cephalantha*, *Sabatia difformis*, and *Vaccinium macrocarpon* (NJNHP, 1989a; Stasz, pers. comm., 1990).

In Nova Scotia, *J. Caesariensis* is known from bogs near the southern coast of Cape Breton Island. Here it is associated with various bog plants such as *Rhynchospora alba*, *Carex exilis*, *Aster nemoralis*, *Calamagrostis pickeringii*, *Juncus canadensis*, and *Scirpus cespitosus* (Schuyler, pers. obs., 1990).

Biology/Ecology:

Juncus caesariensis fruits from July to October (Fernald, 1950). Pollen transfer is by wind (Knuth, 1909) although the relative amount of self- versus cross-pollination is not known. It is often locally abundant with numerous scattered culms at sites in the New Jersey Pine Barrens (NJNHP, 1989a). Although seed production is high, seedlings are rarely found at field sites (Stasz, pers. comm., 1990).

Judging from its association with *Chamaecyparis thyoides* and *Magnolia virginiana*, *J. Caesariensis* appears to be somewhat shade tolerant. The presence of abundant culm-producing plants at logged sites in New Jersey (NJNHP, 1989a) and Virginia (Ware, pers. comm., 1990) indicates that vegetative plants persist in forested areas and then produce culms when the canopy opens.

Although *J. caesariensis* has been eliminated from a few sites throughout its range, these losses are offset by locations of new sites. In New Jersey there are "Approximately 20 extant occurrences with some 35 additional historical occurrences" (NJNHP, 1989b). Some human disturbances, particularly those that retard succession, appear to be beneficial for the species.

Determination of Element Occurrence (EO) Quality:

Most New Jersey sites are in the Pine Barrens and appear secure.

Many populations, some with thousands of individuals, are scattered over a seven-county area and occur with other characteristic wetland species of the Pine Barrens.

Threats:

The greatest threat to *J. caesariensis* is disruption of its water regime. Anything that substantially alters water flow from seeps will eliminate it. Succession is a potential threat although more information is needed on how vulnerable the habitat is to it. Development is a threat to those sites outside the Pine Barrens.

Land Protection Specifications:

Land protection should be directed to maintaining a stable water regime.

Recovery Potential:

In habitats where the proper water regime is present, recovery potential should be high as long as there is a seed source. The plants produce abundant seeds and offspring presumably would quickly recolonize depleted sites. The capacity to reproduce vegetatively from rhizomes should also enhance recolonization.

Biological Monitoring Needs:

More distributional data is needed, particularly on the presence or absence of plants at historic sites. Information is needed on fluctuations in population sizes and whether the plants are culm-bearing or vegetative.

Biological Monitoring Procedures:

Searches should continue for plants at historic sites as well as at new sites where potential habitat exists. Selected diverse sites should be visited annually to record population sizes and the relative proportions of vegetative and culm-bearing plants.

Biological Monitoring Programs:

New Jersey Natural Heritage Program personnel and local field botanists provide periodic updates on populations at sites known to them.

Research Needs:

More information is needed on the vulnerability of *J. Caesariensis* to succession. The beneficial roles of fire, logging, and other disturbances that retard succession need evaluation.

Management Needs:

Advise landowners of need to maintain water regime necessary for survival of *J. caesariensis*.

Summary of Stewardship Needs:

Juncus caesariensis is restricted to the Atlantic Coastal Plain in New Jersey, Maryland, and Virginia, and is disjunct to Nova Scotia. It grows in sphagnum wet areas with reliable flow and is often associated with woody plants such as *Chamaecyparis thyoides*, *Magnolia virginiana*, and *Alnus serrulata*. Habitat quality in New Jersey is high because there are numerous sites in protected portions of the Pine Barrens. Disruption of its relatively stable water regime is a major threat and land protection should be directed toward maintaining this regime. Recovery potential at depleted sites is presumably high, judging by the large numbers of seeds it produces and its capacity to reproduce from rhizomes. More searching should be conducted for *J. caesariensis* at historic and new sites and research is needed on the possible beneficial effects of disturbances (e.g., fire and logging) on retarding succession in its habitat.

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