

Carex floridana

Florida Sedge

Cyperaceae



Carex floridana by Alexander de la Paz, 2020

***Carex floridana* Rare Plant Profile**

New Jersey Department of Environmental Protection
State Parks, Forests & Historic Sites
Forests & Natural Lands
Office of Natural Lands Management
New Jersey Natural Heritage Program

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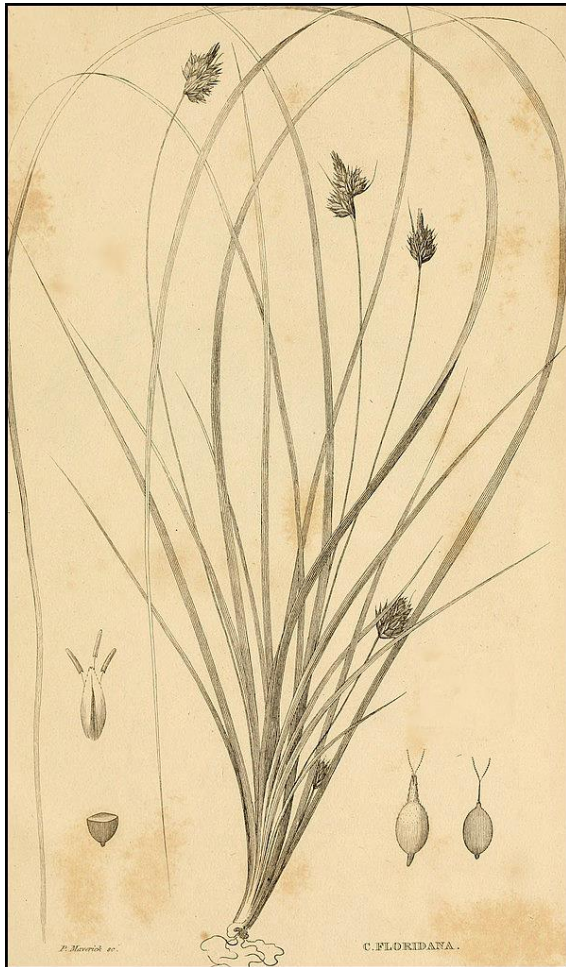
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Life History

Carex floridana (Florida Sedge) has been placed in *Carex* Section *Acrocystis* (formerly *Montanae*). Sedges in that section typically flower early in the spring, producing 2–6 small short-peduncled spikes. The terminal spikes are entirely staminate and the lower ones are subtended by bristle or scale-like bracts. The flowering culms are often (although not always) shorter than the leaves, which are smooth, narrow (< 5 mm wide), and have fibrous basal sheaths (Arsenault et al. 2013, Crins and Rettig 2020). Some of the species in Section *Acrocystis* produce secondary basal spikes that are entirely pistillate but in others—including *Carex floridana*—all of the pistillate spikes are located on the primary culm in close proximity to the staminate spike.



P. Maverick, 1824.



Keith Bradley, 2015.

Carex floridana has long (17–75 mm), thick, red-brown rhizomes that spread horizontally and the species often forms large clonal patches. The leaves are 1.7–3 mm wide, slightly rough, and weakly fibrous: They generally exceed the culms in length. The culms are 5–17 cm in height and rough near the top. In addition to the terminal staminate spike, which is usually about 6–9 mm long, there are 2–3 pistillate spikes that are closely clustered and overlapping. Each pistillate spike has 4–8 papillate, beaked perigynia that are 2.7–4.1 mm long, 0.9–1.4 mm wide,

and subtended by white-edged scales 3.0–3.7 mm in length. Most pistillate florets of *Carex floridana* have two stigmas but some have three, and the achenes can be two or three-sided. See Britton and Brown 1913, Mackenzie 1913, Small 1933, Fernald 1950, Crins and Rettig 2020; also section keys in Werier 2006, Sorrie et al. 2011, Weakley et al. 2024).

Examination of multiple features is needed in order to identify sedges in Section *Acrocystis*. The group has a reputation for being taxonomically difficult. In addition, descriptions of a half dozen new species are currently underway and some of the known taxa are thought to hybridize (Crins and Rettig 2020, Weakley et al. 2024). Eleven species from the section are presently known in New Jersey. *Carex floridana* can be separated from the other ten using a combination of traits that include the absence of basal culms, perigynia that are elongated rather than rounded, long stout horizontal rhizomes, and clonal growth. *C. nigromarginata* and *C. peckii* appear to be among the species that are most closely related to *C. floridana* (Rettig and Giannasi 1990).

In the southern part of its range, the leaves of *Carex floridana* remain green year-round with only the tips turning brown in the winter (Harper 1914, LeGrand et al. 2022). It is not clear if the plants are also evergreen in New Jersey. Flowering may begin as early as February, and mature achenes are usually present between March and May (Faucette 2016, Weakley et al. 2024). In New Jersey fruiting culms have been observed from mid-April through early June (McAvoy 2021, NJNHP 2024).

Pollinator Dynamics

Most sedges are pollinated by wind, although there are a few notable exceptions in scattered genera, including *Carex* (Goetghebeur 1998, Yano et al. 2015). Some typical adaptations to wind pollination in the family include large anthers, long filaments, and prominent stigmas (Zomlefer 1994).

In nearly all sedges, the female flowers develop before the male flowers (protogyny) and the lowest flowers on a spike are the first to mature (Goetghebeur 1998). Both strategies are generally viewed as means of promoting cross-pollination. However, experimentation to test that assumption showed that protogyny was not a particularly effective way of guaranteeing outcrossing in *Carex*, and the species examined—including some in Section *Acrocystis*—displayed a high degree of self-compatibility. It seems that protogyny gives wind-pollinated *Carex* species an opportunity to cross-fertilize while self-pollination assures reproductive success. Self-fertilization could be particularly important in a species like *Carex floridana* because the transmission of pollen by wind is likely to be hampered by the sedge's long leaves and relatively short culms (Friedman and Barrett 2009a, 2009b).

Seed Dispersal and Establishment

The fruit of a *Carex* plant is an achene that forms in a sac-like perigynium in which it is eventually dispersed. The seeds of *Carex floridana* are dispersed by ants. Myrmecochory (ant dispersal) was previously documented in several related sedges (*C. communis*, *C. umbellata*, and

C. nigromarginata) by Handel (1978) and by Gaddy (1986). Those species produce lipid-rich deposits called elaiosomes near the bases of their perigynia, and Poindexter (2019) included a photograph of a similarly-positioned elaiosome on a *Carex floridana* perigynium in his dissertation. Seeds with elaiosomes are usually collected shortly after they fall from the plants. Ants carry them back to their nests, where they consume the appendages without harming the seeds. The majority of ant-dispersed seeds wind up within a few meters of the parent plants. The seeds that are relocated by ants are protected from predation, and the nests are generally favorable sites for germination (Thompson 1981, Handel and Beattie 1990, Ness et al. 2004). Two ant species that are active early in the spring (*Crematogaster lineolata* and *Prenolepis imparis*) were identified as potential dispersers of the closely related *C. nigromarginata* in South Carolina (Gaddy 1986).

Distribution of propagules over longer distances may be facilitated by animals. The fruits of various *Carex* species are consumed by an assortment of birds and mammals (Fassett 1957) and seed viability was documented in a number of sedges that were disseminated by birds or hoofed mammals, including White-tailed Deer (*Odocoileus virginianus*) (Myers et al. 2004, Leck and Schütz 2005).

No information was found regarding the seed longevity or establishment requirements of *Carex floridana*. The majority of sedges can form a seed bank, including at least two other species in Section *Acrocystis* (Leck and Schütz 2005, Sullivan and Ellison 2006). The propagules of most *Carex* species require a period of stratification at either low or high temperatures as well as sufficient light in order to germinate, although in *C. communis* stratification inhibits germination (Bond 1999, Żukowski et al. 2010). *Carex* seeds typically sprout underground, producing their first leaf 4–5 days after germination (Alexeev 1988). It is not clear whether *C. floridana* forms any fungal associations but arbuscular mycorrhizae have been documented in *C. pennsylvanica* (Miller et al. 1999).

Habitat

In New Jersey, *Carex floridana* has been recorded in maritime habitats on dunes and back dunes where typical woody vegetation includes *Juniper virginiana*, *Ilex opaca*, *Quercus phellos* and *Carya* sp. (McAvoy 2021, NJNHP 2024). The plants have been found growing in heavy shade and in more open sites. *C. floridana* is considered a shade-tolerant species (Glitzenstein et al. 2012, Kees 2022) but it is capable of thriving in a wide range of light conditions, including full sun (Crins and Rettig 2020, Weakley et al. 2024). It is often associated with sandy soils, and it has been documented in both alkaline and acidic substrates (Payne 2010, Lynch 2012).

Throughout its range, *Carex floridana* occurs at elevations of 0–200 meters above sea level (Crins and Rettig 2020). Moisture conditions can range from mesic to xeric (Harper 1914, Drew et al. 1998, Sorrie et al. 2006, Majure 2007, Payne 2010, Majure et al. 2011, MacRoberts et al. 2012, Naczi et al. 2015, LeGrand et al. 2022, Weakley et al. 2024). Forested habitats may be dominated by evergreen trees or hardwoods such as oaks (*Quercus* spp.), hickories (*Carya* spp.), *Fagus grandifolia*, and *Magnolia grandiflora* (Carter et al. 2009, Jenkins and McMillan 2009, Branton et al. 2013, Faucette 2016, Sorrie 2021, Kees 2022, LeGrand et al. 2022). Payne (2010)

recorded *C. floridana* on top of a shell midden in South Carolina. Disturbed habitats utilized by the species include road edges and utility right-of-ways (Carter et al. 2009, Faucette 2016, Crins and Rettig 2020, LeGrand et al. 2022).

Wetland Indicator Status

Carex floridana is not included on the National Wetlands Plant List (NWPL). Any species not on the NWPL is usually considered to be Upland (UPL) in all of the regions where it occurs. The UPL designation means that it almost never occurs in wetlands (U. S. Army Corps of Engineers 2020). According to Weakley et al. (2024), however, *C. floridana* may sometimes occur in wetlands in the Great Plains region or on the coastal plain.

USDA Plants Code (USDA, NRCS 2024)

CAFL5

Coefficient of Conservancy (Walz et al. 2020)

CoC = 6. Criteria for a value of 6 to 8: Native with a narrow range of ecological tolerances and typically associated with a stable community (Faber-Langendoen 2018).

Distribution and Range

The global range of *Carex floridana* is restricted to the southeastern United States (POWO 2024). The map in Figure 1 depicts the extent of the species in North America.

Carex floridana has been reported in two New Jersey counties: Cape May and Gloucester (Figure 2). The data include historic reports and do not reflect the confirmed distribution of the species.

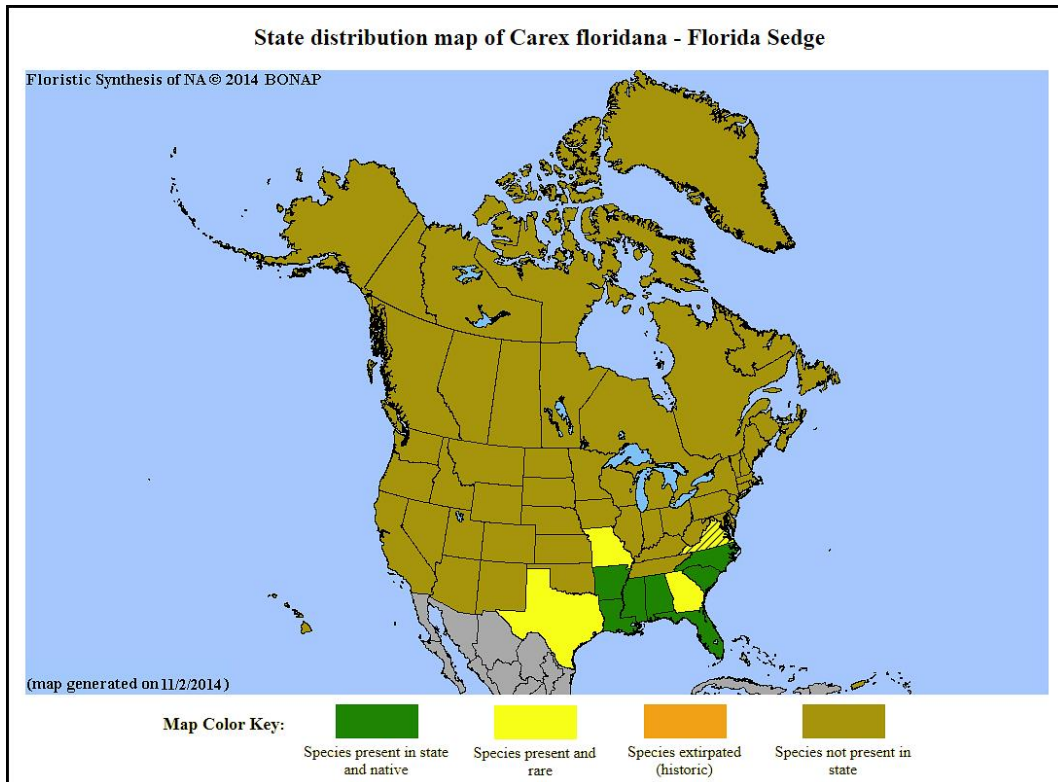


Figure 1. Distribution of *C. floridana* in North America, adapted from BONAP (Kartesz 2015). Cross hatching /// indicates a questionable presence.

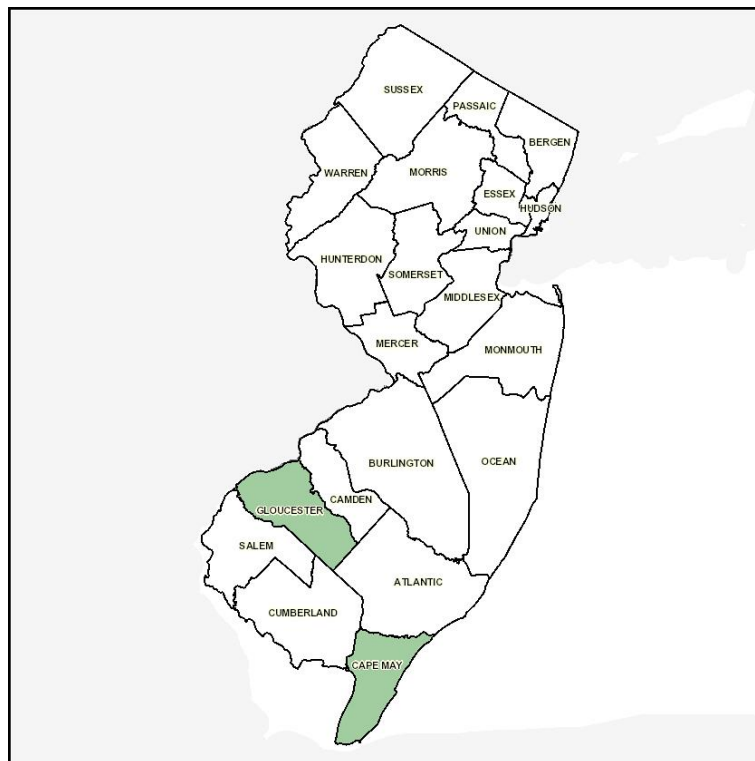


Figure 2. County records of *C. floridana* in New Jersey and vicinity (source data from NJNHP 2024 and Mid-Atlantic Herbaria 2024).

Conservation Status

Carex floridana is considered globally secure. The G5? rank means the sedge has a very low risk of extinction or collapse due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats, although the question mark indicates that the global status of the species is due for a review (NatureServe 2024). The map below (Figure 3) illustrates the conservation status of *C. floridana* throughout its range. Florida Sedge is vulnerable (moderate risk of extinction) in five states, critically imperiled (very high risk of extinction) in three states, and unranked in four states.

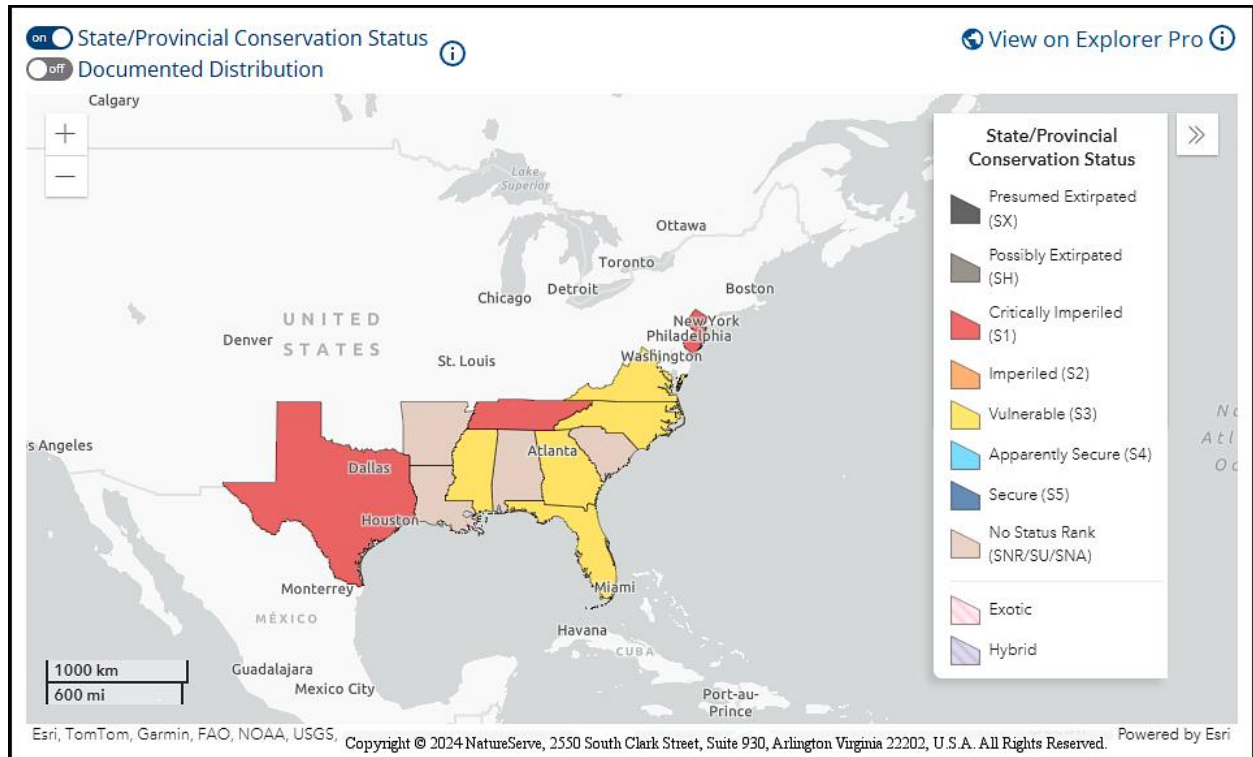


Figure 3. Conservation status of *C. floridana* in North America (NatureServe 2024).

Carex floridana is critically imperiled (S1) in New Jersey (NJNHP 2024). The rank signifies five or fewer occurrences in the state. A species with an S1 rank is typically either restricted to specialized habitats, geographically limited to a small area of the state, or significantly reduced in number from its previous status. *C. floridana* has also been assigned a regional status code of HL, signifying that the species is eligible for protection under the jurisdiction of the Highlands Preservation Area (NJNHP 2010).

Carex floridana was collected from several sites in Cape May County between 1898 and 1932 but the specimens were labeled as *C. nigromarginata*. As a result, the sedge was not recognized as a part of New Jersey's flora until the herbarium sheets were examined by Robert Naczi and a population was located and documented in 2015 (Naczi et al. 2015, McAvoy 2021). A second population was discovered during 2022 (NJNHP 2024).

Threats

The New Jersey population of *Carex floridana* that was discovered in 2015 experienced a rapid decline between 2017 and 2022 due to the spread of a highly invasive plant (*Lonicera japonica*), and without intervention the sedge is likely to be completely eradicated from the site. No threats were identified at the site of the second occurrence (NJNHP 2024). Although *C. floridana* is ranked as vulnerable or imperiled in many of the other states where it occurs (Figure 3), no reports of specific threats to southern populations were found.

Climate Change Vulnerability

Information from the references cited in this profile was used to evaluate the vulnerability of New Jersey's *Carex floridana* populations to climate change. The species was assigned a rank from NatureServe's Climate Change Vulnerability Index using the associated tool (Version 3.02) to estimate its exposure, sensitivity, and adaptive capacity to changing climactic conditions in accordance with the guidelines described by Young et al. (2016) and the state climactic computations by Ring et al. (2013). Based on available data *C. floridana* was assessed as Moderately Vulnerable, meaning that it is likely to show some decrease in abundance or range extent in New Jersey by 2050. The conclusion was only reached with moderate confidence due to gaps in information about some factors with potential impacts and their relative importance to the sedge.

Because all of New Jersey's extant populations of *Carex floridana* are located in close proximity to the coast they are particularly vulnerable to rising sea levels as the climate continues to warm. The sites are likely to become increasingly saline and experience more frequent flooding (NJ Adapt 2025). Other local changes resulting from shifting climactic conditions include rising temperatures and altered precipitation patterns (Hill et al. 2020). *C. floridana* is likely to tolerate warmer temperatures and a longer growing season—in fact, climate change may create an opportunity for the sedge to expand its range northward. Florida Sedge can adapt to a variety of habitat conditions and it appears to have sufficient dispersal capacity to colonize new sites in the state if existing ones become unsuitable. Warmer temperatures could potentially lead to a change in the dominant local ant species, which might either increase or decrease seed dispersal distances and frequency (Ness et al. 2004). Unfortunately the one clear threat to *C. floridana* in New Jersey, *Lonicera japonica*, is likely to be exacerbated by climate change. The invasive vine is expected to expand its range northward as winter temperatures rise (Sasek and Strain 1990) and to spread more aggressively in places where it has already been identified as a problem (Wang et al. 2012, Peterson et al. 2024).

Management Summary and Recommendations

Invasive species control is the management priority for *Carex floridana* in New Jersey. The occurrence that is already imperiled by *Lonicera japonica* might be salvageable if immediate action can be taken to reduce the abundance of the vine. Since *L. japonica* can readily regenerate from root fragments, the use of herbicides is necessary once the species has become

entrenched at a site and multiple applications may be needed (Kaufman and Kaufman 2007). Care should be taken to avoid damage to *C. floridana* and other non-target plants in the vicinity. The second population should be closely monitored in order to prevent *L. japonica* from establishing in that location.

Fire might be favorable for *Carex floridana* but there is insufficient information. In Florida the sedge appeared to benefit from burns that were carried out every 1–2 years (Glitzenstein et al. 2012), and in Texas the species was found in sites that had experienced fires at similar intervals but absent from sites that had not been burned for decades (Keith et al. 2023). At another Texas location, however, *C. floridana* was recorded in a Longleaf Pine community where fires had been suppressed for 30 years (Brown et al. 2006). While more detailed studies are needed to evaluate the effects of fire on *C. floridana*, it is worth noting that prescribed burns can reduce the chances of *Lonicera japonica* gaining a foothold in sites where it is not already present (Wang et al. 2012).

Synonyms and Taxonomy

The accepted botanical name of the species is *Carex floridana* Schwein. Orthographic variants, synonyms, and common names are listed below (ITIS 2024, POWO 2024, USDA NRCS 2024). *C. floridana* is quite similar to *C. nigromarginata* and has frequently been viewed as a variety of the latter species (e.g. Fernald 1950). Weatherby and Griscom (1934) observed that some plants in South Carolina appeared to be transitional between *C. floridana* and *C. nigromarginata*, although Rettig (1990) suggested that the species were distinct based on micromorphological features of the achenes. Some recent evaluations have indicated that the differences between *C. floridana* and *C. nigromarginata* are indistinct and that further study is warranted (Poindexter 2019, Crins and Rettig 2020).

Botanical Synonyms

Carex lucorum var. *floridana* (Schwein.) Chapm.
Carex nigromarginata Schwein. var. *floridana* (Schwein.) Kük.
Vignea floridana (Schwein.) Raf.

Common Names

Florida Sedge

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