

Tom,
I think the first two questions were covered but could you please provide answers for the others (from Malinda, Ross, and Nancy)? Thank you!

From Leland Searles:

As for other herbaceous taxa, the species names for some sedges seem to switch back and forth, such as for *Carex amphibola*. I'm guessing this is from molecular biological studies, but it presents difficulties for field work. Is the FNA the best means to keep up on these changes for *Carex*?

I did address this question, so to briefly reiterate. There are two main reasons names change: 1) Research, often molecular DNA studies, provide new evidence of the phylogeny, or evolutionary relationships in species. Scientific names reflect evolution. 2) Naming of plants is covered by a set of rules - the International Code of Botanical Nomenclature. For example, the rule of priority of publication states that if a species has been named more than once, the first correctly published name is the one that must be used. A third less common reason for a name change is misidentification. Name changes have affected many plant species. Consider that prairie rose (now *Rosa arkansana*) has changed scientific names at least 4 times, former names include *R. alcea*, *R. conjuncta*, and *R. suffulta* (based on FNA). **This highlights the need for a single authority on plant nomenclature.** In my opinion, Flora of North America should be that authority.

From the FNA website -- Flora of North America builds upon the cumulative wealth of information acquired since botanical studies began in the United States and Canada more than two centuries ago. Recent research has been integrated with historical studies, so that the Flora of North America is a single-source synthesis of North American floristics. FNA has the full support of scientific botanical societies and is the botanical community's vehicle for synthesizing and presenting this information. Species descriptions are written and reviewed by experts from the systematic botanical community worldwide, based on original observations of living and herbarium specimens supplemented by a crucial review of the literature.

FNA provides a list of synonyms for species, so it is a good resource for making those connections. USDA Plants identifies synonyms for some species, but not all. For example, it **does not** identify any synonyms for *Rosa arkansana*. Another source for taxonomy information is the Integrated Taxonomic Information System (ITIS). It identifies 15 synonyms for *Rosa arkansana*.

But even FNA cannot keep up with all the changes, especially after it is published. Case in point, FNA identifies two varieties for *Carex tenera* – *tenera* and *echinodes*. In a paper published after FNA, those two varieties are now considered to be valid species, *Carex tenera* and *Carex echinodes*.

From Nancy Henderson:

general question about the last column on the table; what does the dark green on the map mean? I assume the light green is where that *Carex* is found; what is the yellow?

Kristen provided an answer. Dark green means the species is present in that state, light green means the species is in that county.

From Kristen:

yellow means species present and rare

Here are the color codes for the BONAP maps (which are a great reference for North American plant species presence by county)

<http://www.bonap.org/MapKey.html>

From Malinda:

Do you have any suggested references for learning more?

Sure, there are always resources for learning more. However most of them are Floras, which means that they will be technical floristic treatments. For someone in Iowa, consider:

Flora of Missouri, *Carex* is in Volume 1 -- <https://www.nhbs.com/steyermarks-flora-of-missouri-volume-1-book>

Flora of Nebraska -- <https://www.nhbs.com/the-flora-of-nebraska-book>

Flora of Michigan (online) -- <https://michiganflora.net/>

Flora of Illinois -- https://opensiuc.lib.siu.edu/siupress_flora_of_illinois/

Sedges and Rushes of Minnesota -- <https://www.upress.umn.edu/book-division/books/sedges-and-rushes-of-minnesota>

Field Guide to Wisconsin Sedges -- <https://uwpress.wisc.edu/books/3775.htm>

From Ross, Middleton, WI to Everyone: 08:10 PM

What's the best method for removing reed canary grass in a sedge environment? Will the sedge take over after the reed canary is removed?

Interesting you should ask. I am currently halfway through a 5-year experiment investigating that question in a remnant sedge meadow in Madison County. The research is investigating the use of fire, mowing, and herbicide (clethodim). There are 8 treatments, 1 control and 7 management treatments (late spring burn, late spring burn & clethodim, repeated mow (June, July, August), repeated mow & clethodim in September, fall burn, repeated mow & fall burn, and clethodim applied after spring green). It is too early to make definitive conclusions, but the early results are showing some progress and good results with most treatments. It appears that late spring burn & clethodim may be doing the best job. We know that sedges are tolerant of clethodim and reed canary is not, so it seems like it should be a major player. One of my goals is to see if there is a way to reduce the negative effect of clethodim on blue joint, a native grass in sedge meadows.

From Nancy Henderson to Everyone: 08:10 PM

do you have any non-native invasive carex in Iowa? I'm in mid-atlantic. . .wondering if you're aware of any non-native, invasive carex here?

Currently none in Iowa are considered non-native. However we have *Carex douglasii*, a species native to western North America and an enigma for us in Iowa. There is one voucher collected in 1904 in Jasper County somewhere near or along Sugar Creek. The voucher was verified as *Carex douglasii* by Anton Reznicek, the *Carex* expert who contributed to FNA's treatment. No other populations are known in Iowa. It is listed as Special Concern, but I think it is going to get reclassified as non-native.

These are all species that BONAP shows as non-native to North America. I did not take time to confirm them all in FNA. Those shaded green occur in the Mid-Atlantic region. Those with an X behind them are listed in the Invasive Plant Atlas of the U.S. (species that have been reported to be invasive in natural areas in the U.S.)

Carex acutiformis

Carex breviculmis

Carex brunnea

Carex caryophyllea

Carex distans

Carex distenta

Carex disticha

Carex divisa

Carex divulsa

Carex extensa

Carex flacca

Carex hartmanii

Carex heterostachya

Carex hirta

Carex inversa

Carex kobomugi X

Carex melanostachya

Carex muricata

Carex panicea

Carex pendula X

Carex pumila

Carex schiedeana

Carex secalina

Carex spicata X

Carex sylvatica

Carex vacillans