

# Coefficient of Conservatism Rankings for the Flora of Georgia: Wetland Indicator Species

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Wetland habitats currently cover about one-fifth of Georgia and have been reduced in acreage by as much as 25% over the past two centuries. Several vegetation-based biological assessment methodologies have been developed to define wetlands and to assess their quality.



One major wetland delineation system incorporates the National Wetland Plant List (NWPL), a classification system ranking plant species in five indicator categories according to fidelity and preference for wetlands or uplands. The 2,262 NWPL species for Georgia represent at least 60% of the state's flora.



Another expert-based indicator system, Coefficients of Conservatism (C), is the foundation of the Floristic Quality Index, a metric used for assessing ecological condition of plant communities. The Coefficients are based on breadth of habitat preference(s) and tolerance to disturbance, with exotic and ruderal species receiving the lowest scores and ecologically conservative species assigned the highest scores.

Background photo: Cypress Swamp (by JRC)

A team of four botanists, proficient with the flora of Georgia, convened to assign Coefficient of Conservatism rankings to the 2,262 NWPL species for the state.

We devised a dichotomous key as a guide for assigning Coefficient rankings:

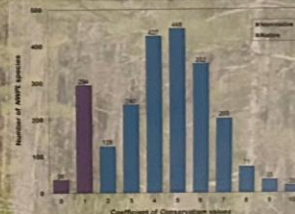
## Dichotomous Key for Coefficient of Conservatism Rankings

- |   |         |
|---|---------|
| (a) Non-native species.....   | (b)     |
| (b) invasive.....   | rank 0  |
| (b) relatively benign.....  | rank 1  |
| (a) Native species.....   | (c)     |
| (c) opportunistic, broad range of ecological tolerance, more or less restricted to areas subject to human disturbance.....  | rank 2  |
| (c) non-opportunistic, intermediate to narrow range of ecological tolerance.....  | (d)     |
| (d) intermediate range of ecological tolerance, typifies a stable phase of some native community, thrives and/or persists under natural or human disturbance.....   | (e)     |
| (e) persists and/or thrives under natural or human disturbance.....   | rank 3  |
| (e) persists but does not thrive under limited natural or human disturbance.....  | (f)     |
| (f) persists with some disturbance.....   | rank 4  |
| (f) persists with a little disturbance.....   | rank 5  |
| (d) narrow range of ecological tolerance, typifies a stable or near climax community (including fire-dependent disclimax communities), tolerates little to no disturbance (unless surrogate for fire or other natural disturbance)..... | (g)     |
| (g) moderate fidelity to a narrow habitat requirement, may or may not tolerate limited disturbance.....   | (h)     |
| (h) more or less narrow range of ecological tolerance, tolerates limited disturbance.....   | rank 6  |
| (h) narrower range of ecological tolerance, does not tolerate disturbance.....  | (i)     |
| (i) somewhat narrow range of ecological tolerance.....  | rank 7  |
| (i) narrow range of ecological tolerance.....   | rank 8  |
| (g) high fidelity to a narrow range of habitat requirement, does not tolerate disturbance.....  | (j)     |
| (j) narrow range of ecological tolerance, relatively high fidelity to a narrow range of habitat requirement.....  | rank 9  |
| (j) very narrow range of ecological tolerance, very high fidelity to a very narrow range habitat requirement.....   | rank 10 |



## Results:

Since the NWPL specifically targets wetland species, we expected higher-end fidelity reflected in the C values. However, rankings 4–6 comprised 63.4 % of the native species.



These results reflect that wetland species may be likely to survive (despite disturbance) as long as sufficient water is available. These species are generally tolerant of a wide range of soil moisture levels, and some wetland habitats e.g., as alluvial floodplains) are maintained by disturbance.

Many wetland species are adapted to exposed sunny areas with reduced competition from taller shading plants. Many species, such as sedges, have characteristics (e.g., rapid growth, vegetative proliferation, extended seed dormancy) that promote population expansion after disturbance and may have originally evolved as colonizers of disturbed habitats.

## Database:

Zomlefer, W.B., L. Chafin, J.R. Carter, & D.E. Giannasi. 2013. *Southeastern Naturalist* 12(4): 790-808.

Supplemental File 1: <http://www.eaglehill.us/SENAonline/suppl-files/s12-4-S1195-Zomlefer-s1>

BioOne subscribers: <http://dx.doi.org/10.1656/S1195.s1>

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The web-accessible database includes regional wetland rankings and conservation status. These Coefficient assignments represent the first such effort for Georgia, and we welcome input and refinement from experts. Our goal is ranking the entire flora of Georgia based on a vouchered checklist compiled from an ongoing collaborative herbarium digitization endeavor supported by the National Science Foundation.

Poster design: CEW & WBZ