

Delaware Dept. of Natural Resources and Environmental Control
Division of Fish and Wildlife
Species Conservation and Research Program

Coefficient of Conservatism, C-values

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Coefficient of Conservatism ranks (C-values) for each species are based on the observed behavior of a species within the state of Delaware.

- All non-native plant species were assigned a coefficient rank of **0**.
- Plants with a wide range of ecological tolerances were assigned a low coefficient rank of **1, 2, or 3**. These species are found in a variety of plant communities, are often early colonizers of disturbed sites, and are opportunistic invaders of natural areas.
- Plants with an intermediate range of ecological tolerances were assigned a median coefficient rank of **4, 5, 6, or 7**. These species are usually typical of one or more specific native plant communities, and can tolerate moderate disturbances.
- Plants with a narrow range of ecological tolerances were assigned a high coefficient rank of **8, 9, or 10**. These species are typical of a stable or advanced successional phase of a plant community, exhibit a relatively high degree of reliability to a specific habitat type or native plant community, and have little tolerance to disturbance. In addition, state rare and uncommon plant species are generally given coefficient ranks of 8 to 10.

Floristic Quality Assessment Index

The Floristic Quality Index (FQI) is a quantitative measure to express the relative condition, or ecological "quality" of a natural area or site. The FQI has been shown to be a reliable means of assessing quality with minimal data collection and allows for the comparison of floristic quality among many sites. This method replaces very subjective measures of quality, such as "high," "low" or "best professional judgment" with a quantitative index. Coefficient of Conservatism ranks (C-values) are used to determine the FQI of a specific site or plant community, and C-values have been applied to the full flora of Delaware (see list below). All species, subspecies and varieties are assigned a C-value based on their observed behavior within the state of Delaware. Coefficients of conservatism range from 0 to 10 and represent an estimated probability that a plant is likely to occur in a habitat that is relatively unaltered from what is believed to be a pre-settlement condition. For example, greenbrier (*Smilax rotundifolia*), shows little to no fidelity to any particular plant community and can be found almost anywhere, so a C-value of 1 is applied. A C-value of 10 is applied to plants like the grass-pink orchid (*Calopogon tuberosus*), that is almost always restricted to a high quality, specialized habitat. All non-native species are given a C-value of 0.

An FQI for a site is determined by recording all the native and non-native vascular plants observed. The C-values for each species are applied, and the FQI is calculated by averaging the C-value of all vascular plants recorded: $FQAI = \bar{C}$. The floristic quality index is based on Rooney, T.P. and D.A. Rogers. 2002. The Modified Floristic Quality Index. *Natural Areas Journal* 22(4): 340-344.

The highest FQI that can be achieved is 10, the lowest is 0. Therefore, a range of indices from 0 to 3 = low ecological quality; a range of 3.1 to 6.9 = medium quality; and a range of 7 to 10 = high quality.