

Ninth International Congress of Carboniferous Stratigraphy and Geology
Urbana, Illinois, 1979
Abstracts of Papers, p. 194-195

ECOLOGIC AND TAXONOMIC IMPLICATIONS OF MORPHOLOGIC VARIATION IN
CARBONIFEROUS PTERIDOSPERM FOLIAGE.

*SCHEIHING, Mark H. & PFEFFERKORN, Hermann, W., Department of
Geology, University of Pennsylvania, Philadelphia, PA 19104

A collection of more than 350 pinnae of the pteridosperm form
genus Alethopteris from a single bed at one locality was

investigated to determine the amount of morphologic variation
and to come to a more objective species delineation. On the
basis of qualitative and quantitative study of 22 characters we
could divide the sample population into 4 morphogroups. One
group is distinct from the others by nervation pattern and
assignable to A. pennsylvanica. The 3 remaining morphogroups
were found to be linked to one another by specimens which were
intermediate in morphology among the 3 morphogroups. Hence, a
continuum in pinnule morphology was observed in the majority of
specimens in the collection. This continuum might be the
result of the presence of closely related species. However, no
objective separation of these species is possible. A single
species could also have produced the observed variability in
pinnule morphology. Pinnules differ in their morphology even
within one pinna of the last order. Each of the large compound
leaves of Alethopteris could have borne pinnules and pinnae
which differed in different parts of the leaf by as much as
100%. Individual plants of the same species could have shown
differences from one another depending on the physical and
biological conditions present where they grew. Such variability
is well known in extant plants. The taxonomic treatment of
pteridosperm foliage must take ecologically generated
morphologic variation into consideration to come to a realistic
estimate of diversity.