

Ecological Period Tables: In Principle and Practice

Steven Ferraro

The chemical periodic table, the Linnaean system of classification and the Hertzsprung-Russell diagram are iconic information organizing structures in chemistry, biology and astronomy, respectively. Ecological periodic tables are information organizing structures for ecology. Their foundational principle is the ecological tenet that the bio-physical environment, that is, habitats, structure biotic communities. In practice, constructing ecological periodic tables begins with operationally defined habitat types. Quantitative field studies conducted on ecologically appropriate temporal and spatial scales for the biotic community of interest are then needed to determine their usage pattern across the habitat types. If the patterns are predictably recurring (periodic), the habitat types have been adequately defined for the epistemological purpose. If not, the original operational definitions of the habitat types were flawed or incomplete and further research is needed to parameterize them. Once periodic biotic patterns have been found, the habitat types and properties of the target biotic community, for example, its species richness, abundance and biomass, can be entered into tables rich in ecological and resource management-relevant information. Ecological periodic tables for nekton and benthic macrofaunal usage of estuarine habitats will be presented and discussed along with a rule set to systematically organize the information on habitat–community relationships in tables. Like the aforementioned iconic information organizing structures, ecological periodic tables are simple, exceptionally useful and they foster the expansion of scientific understanding, inquiry and theory.