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47

EMRICK, VERL R. and GARRETT S. SMATHERS. University of North Carolina Asheville--Phytogeography of the Craggy Mountains:Southern Appalachians.

The goal of this study was to understand the distribution and occurrence of plant communities along an elevational gradient in the Craggy mountains of North Carolina. A series of 34 vegetation plots were sited along the Blue Ridge Parkway, covering a distance of 28 km and an elevational change of 1097 m. As elevation increases, the low elevation successional pine/oak community gives way to extensive oak/hickory forests of the upper slopes and ridgetops. Xeric south facing slopes contain species of the white oak group, whereas mesic north facing slopes have species of the red oak group on them. The mid elevations consist of mesic cove hard wood communities, characterized by deep colluvial soils and a diverse herb layer, interspersed with periglacial boulder field and mesic oak communities. The northern hardwood community type predominates at elevations in excess of 1450 m. The highest elevations of this community exhibit a distinct change in life form structure due to extremes in climate. A small beech (Fagus grandifolia Ehrh.) orchard community occurs around 1600 m elevation, in mountain gaps. The highest peaks of the Craggy mountains are occupied by the inexplicable mountain grassy and heath bald communities, while the typical high elevation spruce/fir community is absent.

43

MOSER, MARY L. and STEVE W. ROSS. Center for Marine Science Research, University of North Carolina at Wilmington --Identification of hard bottom substrate off North Carolina: a protocol for data processing.

Hard bottom substrates on the continental shelf off North Carolina provide critical habitats for commercially and recreationally important reef fishes. Effective reef fish management, particularly designation of marine reserves, is therefore dependent on accurate identification of hard bottom habitat. We analyzed existing databases which contained either direct visual observation of bottom types (by SCUBA or submersible) or fish trawl collections. Presence of obligate reef species in trawl samples provided indirect evidence for hard bottom. We compared two techniques for analyzing the trawl data: discriminate analysis and a simple presence/absence criteria. Discriminate functions, based on 99 pre-classified stations, successfully classified 96% of the reef stations and all of the non-reef stations. The simpler technique, which required the presence of at least two reef species in a catch to indicate a probable hard bottom, gave the same results as discriminate analysis for over 85% of the stations we compared. The simpler technique was adopted by the Southeast Area Monitoring and Assessment Program (SEAMAP) Bottom Mapping Workgroup for identification of hard bottom substrates in the South Atlantic Bight to the 200 m contour. Using the Workgroup protocol, we analyzed 3089 stations off North Carolina and classified 312 as hard bottom or probable hard bottom sites.

49

WATTERS, G. THOMAS. Ohio State University--Towards a standardized qualitative method of collecting freshwater mussels.

The great potential of freshwater mussels as biological indicators for ecological metrics (IBI, etc.) has not been realized. A major problem with implementing such a metric is the lack of a standardized method of collecting mussels over a wide range of habitats. Techniques sufficient for collecting in one habitat, such as large rivers, are not effective or possible in others, such as small creeks. Often, collecting mussels for monitoring does not require complete enumeration of the diversity of the fauna, and the rarest species need not be found. Because the diversity of mussels is related to the drainage area of a system, the number of expected species for a site may be estimated if the river mile or drainage area is known. The diversity at 34 sites in three midwestern river systems was completely enumerated from literature and museum records, and personal collecting. The sites ranged from small creeks to large rivers. Rarefaction curves were fit to each site. These were used to construct similar curves for incremental drainage areas. The resulting plot may be used to calculate the number of specimens needed to be collected for a given percentage of the expected fauna for any drainage area. This allows a worker to collect a specified fraction of the total expected diversity at any site for a given drainage area. The method is independent of habitat, collecting technique, or time spent collecting. Tests of this collecting method are now being conducted. Preliminary results indicate that this may be an efficient tool for standardizing collection procedures for biomonitoring metrics.

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