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BIRDS, BIODIVERSITY, AND THE WORKING LANDSCAPE: A NEW APPROACH TO ENVIRONMENTAL EDUCATION ON COASTAL SEAS' WATERSHEDS

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Nutrient pollution is widely accepted to be the most significant and widespread factor causing the degradation of water quality of coastal seas and their tributaries. Adoption of recent technical advances in wastewater treatment is promising significant reductions in nutrient pollution from point sources. However, non-point sources on coastal watersheds remain not only the largest source of most nutrient loads but also are proving to be the most difficult to control. The nature of the non-point sources reflects the nature of land use: nutrient loss from farmlands, groundwater enrichment by agriculture and septic systems in rural areas, and runoff from impervious surfaces in developed areas

Its pervasive nature has made nutrient pollution a common topic in formal and informal environmental education at all levels. In particular, many schools engage in water quality monitoring that includes periodic measurement of the nitrogen and phosphorus concentrations in local streams on coastal seas watersheds. These measurements may contribute to larger data bases used in water quality models by major coastal seas' restoration and conservation programs. We are concerned, however, that such endeavors may inadvertently substitute for actions that deal more directly with the actual causes of nutrient pollution, especially changes in land use that contribute to pollution from non-point sources. We suggest that environmental education approaches that deliberately involve young people on their local working landscape can createa better understanding how to improve and sustain land uses that create wildlife habitat, contribute to local economy, promote a better sense of community, and, not coincidentally, can contribute to a reduction in nutrient pollution from non-point sources.

The example we present uses field censusing of birds on an agriculturally-dominated working landscape of the Chesapeake Bay watershed as a method of teaching principles of biodiversity using local, familiar examples of species and habitats. We use global position system (GPS) methods to geo-reference the location of breeding species and measure the areas of important habitats, then introduce elementary geographic information systems (GIS) analysis to map and test relationships between breeding birds and various habitats provided by this rural working landscape. Our original goal was to demonstrate the relationship between local biodiversity and the nature of the working landscape itself. But we are finding far deeper insights as students begin to comprehend how loss of productive farmland to urban sprawl and poorly controlled growth is also reducing breeding bird habitat and threatening local biodiversity. They are now considering ways in which farms, forests, and grasslands can be maintained as elements of a sustainable, productive working landscape. They are also learning how these land uses can also reduce nutrient loads from non-point sources. A working landscape should be a true community resource that we should pass to the next generation as a greater environmental asset than the one we inherited. We are finding that this concept is an effective new approach to an education that focuses on the local environment, generates an appreciation for the place of community in that environment, and encourages young people to get "off the sidewalk and into the grass."