1 State of the Art in Assessing Visual-Cultural Values

RICHARD C. SMARDON

Introduction

Throughout the United States, land-use decisions affecting wetlands are being made without considering many important wetland values. As a result, many valuable wetland areas are rapidly disappearing (Niering, 1970). Aesthetic, educational, and recreational values in particular have been ignored because of the negative mythology that previously were attached to wetlands. This book discusses how these ignored visual-cultural values can be identified and assessed.

Visual-cultural values are the finite natural resources available for human use and perception within or associated with wetland areas. Human uses that treat wetlands as a visual-cultural resource include activities such as canoeing, hiking, and outdoor classes in natural history. In this book, visual-cultural wetland values, which are defined by human individuals or groups, will be explored as they relate to both freshwater and saltwater wetlands. Although heavy emphasis will be placed on visual perception and the visual quality of wetlands and their landscape contexts, educational and recreational uses and values will also be discussed.

Perspective

The author's philosophical perspective is that visual or aesthetic, recreational, and educational values of wetlands are highly interdependent and strongly correlated (Smardon, 1973). Aesthetic perceptions are intertwined with other cultural perceptions. To a canoeist, for instance, a wetland area may have recreational value based on its location along a large stream, scenic value derived from the vistas and features seen while canoeing, and educational value for the wildlife and plants seen and identified.

Knowledge or information about the ecological functions of wetlands alters and transforms traditional values and beliefs into a new aesthetic that is ecologically derived. S. C. Pepper (1937), an aesthetic philosopher, proposes that knowledge of the context and meaning of an object can intensify the emotional aspect of aesthetic appreciation of that object. Continuing this line of reasoning from an ecologist's perspective, Pierre Dansereau (1973) suggests that knowledge of ecological and cultural processes will enhance aesthetic appreciation of the landscape. Thus to individuals who have ecological or informational perspec-

tives, the once-abused backwaters are gradually being perceived as gems in the landscape. Landscapes formerly alien or hostile to human habitation are, in the true wilderness tradition, now becoming appreciated through "ecological aesthetics."

The first corollary to the ecological-aesthetics perspective is that different natural landscape regions, such as the Great Plains, the southwestern canyon lands, and coastal areas, as well as more restricted landscape units, such as wetlands and alpine areas, have different visual-cultural values based on their different physical attributes. The second corollary is that people with different cultural values are likely to perceive and value landscapes differently. Thus landscapes differ not only in their physical attributes, but in the ways that they are valued by people with different cultural backgrounds.

Toward an Evaluative Framework

For the purpose of inventorying or evaluating visual-cultural values, wetlands cannot be separated from their landscape contexts. A wetland situated adjacent to a steep bluff, for instance, will have different scenic, recreational, and educational values than a wetland surrounded by low-lying landforms. In previous publications (Smardon, 1972, 1975) and in Chapter 9, the author outlines an evaluatory framework for assessing visual-cultural values related to individual wetlands, to wetlands and their landscape contexts, or to wetland complexes. This evaluation system assesses wetlands for *exceptional* values first, and then rates *nonexceptional* wetlands by other criteria. For example, a wetland is considered exceptional if it (1) is an outstanding wetland natural area (such as an endangered-species habitat); (2) has general landscape values (for instance, is a scarce wetland type within a region); or (3) has wetland-system value (for example, if one of several significant wetlands are interconnected by rivers and lakes). Detailed criteria for evaluating outstanding wetland areas, general landscape values, and wetland-system values are given in Smardon (1972, 1975) and in Chapter 9.

What are the values of nonexceptional wetlands? Nonexceptional wetlands are the most susceptible to development or modification. Individual wetland areas and their immediate landscape contexts provide for many recreational and educational uses, and visual perception and the quality of the wetland are intertwined with them. Primary recreational uses of wetlands are fishing, hunting, bird watching, and nature study; other recreational uses include hiking, photography, canoeing, boating, and ice skating. Recreational uses of areas adjoining wetlands could include camping, picnicking, and using trails and roads for walking, cycling, horseback riding, cross-country skiing, and pleasure driving. More controversial recreational uses of wetlands might include swamp buggying, snowmobiling, air boating, motor boating, and driving other all-terrain vehicles. Many recreational food-gathering activities, such as clamming on mudflats and berry picking in wetland transitional areas, occur within or adjacent to wetland areas. Educational uses of wetlands include nature classrooms and scientific laboratories.

Beside the natural attributes of wetlands, man-made attributes or cultural variables should be evaluated in relation to visual, educational, and recreational use. Cultural or "extrinsic" variables may be defined as "man-made changes, adaptions, and additions to the natural resources" (Lewis, 1970). Man-made effects can both add to and detract from the natural resource value. Among cultural enhancement variables are:

1. *Educational proximity:* the nearness of elementary schools, high schools, and colleges to a wetland area.
2. *Physical accessibility:* the degree of access to a wetland by trail or road, and accessibility within the wetland by boat, trail, or road.
3. *Ambient quality:* the physical condition of the wetland as indicated by the degree of water pollution, air pollution, noise levels, and presence or absence of visual misfits or incompatible land uses.

The visual-cultural values and attributes of wetlands are identified here in a very general way. Many of these values and attributes are detailed in research on specific wetlands (Smardon, 1972, 1975), but they are generally applicable to wetlands in different ecological

contexts throughout the United States and other parts of the world.

Literature

Sparse literature is available on visual, recreational, and educational values of inland or coastal wetlands. However, four articles discuss visual-cultural values of inland wetlands in some depth (Hammitt, 1978; Lee, 1977; Rodgers, 1970; and Smardon, 1972). Only one article (Rowntree, 1976) discusses visual-cultural values of coastal wetlands in any detail. A few studies assess the scenic quality of wetlands along with other landscape types (Cherem and Traweek, 1977; Palmer, 1978). Marginal treatment of visual values of wetlands can be found in Errington (1957), Haslam (1973), Litton et al. (1972), Niering (1967), and Steinitz et al. (1978). Sources covering wetland recreational values include Cheek and Field (1977), Errington (1957), Haslam (1973), Larson and Foster (1955), and Shaw and Fredine (1956). Sources treating educational values include Niering (1970), Odum (1971), Randall and Brainerd (n.d.), Wharton (1970), and U.S.D.I., Fish and Wildlife Service (1962).

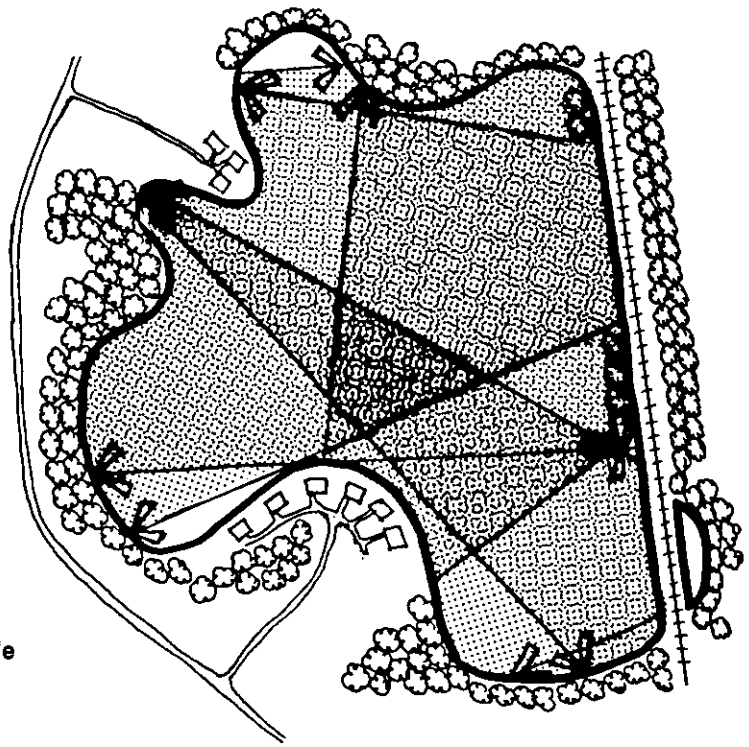
There is also much peripheral material on visual perception of landscapes, landscape assessment, and recreation. The most closely related research is in river recreation. Two recent proceedings contain much of the relevant work in this area (U.S. Forest Service, 1977; Louisiana State University, 1977), and the author has assembled most of the references dealing with visual aspects in a recent paper (Smardon, 1977). Litton et al. (1974) have written a book entitled *Water and the Landscape*, but most of the treatment is not specific to wetlands.

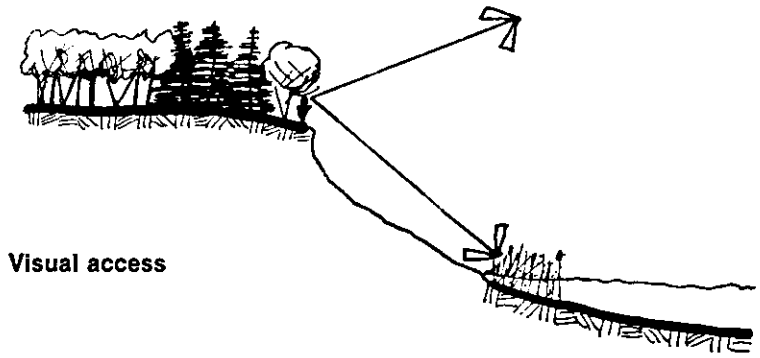
Little work deals directly with evaluation (nonmonetary) or valuation (monetary) of visual-cultural wetland values for environmental decision-making. Lee (1977), Smardon (1972, 1975), and Smardon and Fabos (1976) propose models using rating and ranking systems for evaluating visual-cultural values. Steinitz et al. (1978) have developed fairly sophisticated models for simulating visual impacts from alternative policies for preserving the North River and adjacent tidal wetlands in Massachusetts. Gosselink et al. (1973), Gupta and Foster (1975), and Krutilla and Fisher (1976), propose economic valuation techniques for wetlands. Only Gupta and Foster (1975) consider visual-cultural values, based on the evaluative model of Smardon (1972).

Detailed review of the literature reveals a number of findings about the role that wetlands play in providing visual-cultural values. These findings will be discussed as they pertain to (1) wetlands in comparison with other landscapes, (2) specific types of wetlands (in comparison with each other), (3) wetlands and their immediate surroundings, (4) the micro-landscape within wetlands, and (5) the dynamic aspects of wetlands.

Wetlands vs. Other Landscapes

Tidal marshes, bogs, and freshwater marshes rate fairly high in landscape quality in comparison to other landscape types. Palmer (1978) and Chapter 5 found that photographs of wooded upland and marsh in Dennis, Massachusetts, were preferred over photographs of several other landscape types in the area. Scores for the various landscape types were figured from the means of rank-order sorting of photographs from 1 to 7, with 1 being the most preferred and 7 being the least preferred. Wooded upland and marsh received a score of 2.91, as compared to beach and water with 2.99, suburban development with 3.47, developed open land with 3.52, commercial development with 5.32, and dense residential development with 5.27. In another selected-preference evaluation, Steinitz et al. (1978) found that "meadows" (presumably tidal meadows) were placed in the "most positive" category. In Michigan, Cherem and Traweek (1977) used the novel method of letting hikers photograph the scenes they most preferred or disliked along a trail. The most preferred scene, photographed by 50 percent of the trail hikers, was a freshwater marsh. Finally, Hammitt (1978) and Chapter 6 studied landscape preferences using black-and-white photographs and Likert preference-rating scales, which ranged from 1 (not at all) to 5 (very much). In his study, photographs of bogs were rated considerably higher (3.33–4.58) than river landscapes (2.66–4.13) and seminatural environment (2.52–3.97) in the north central United States.





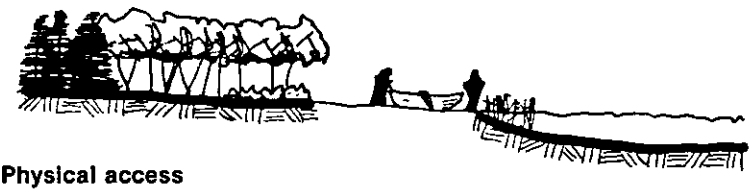


Figure 1.1. Visual and physical access to wetlands.

Thus many wetland landscape types, especially open salt- and freshwater marshes and bogs, tend to rate highly in scenic quality in a landscape continuum.

The high scenic quality of wetlands is not paralleled by high recreational use. Cheek and Field (1977), comparing recreational use of different environments, found fewer types of recreational activities and less activity overall associated with swamp and marsh environments, as opposed to river, lake, ocean, forest/mountain, range/farm, and town/city environments. Based on actual usage, the most significant cluster of recreational activities associated with marsh/swamp environments were nature-study and food-gathering activities. These included visiting interpretative centers and displays, studying nature and observing wildlife, taking photographs, gathering natural food, and collecting objects. According to this study, other recreational activities seem to be much less associated with wetlands than with other environments. This could partially be explained by the difficulty of gaining physical access to or into wetlands.

Wetlands vs. Other Wetlands

Little empirical work has been done on human preferences for one wetland type over another. However, from the fieldwork involved in Smardon's 1972 work, the average recreationist would prefer relatively open freshwater wetlands such as fresh meadows, shallow or deep freshwater marshes, bog mats, or low shrub swamps to thickly vegetated shrub swamps and wooded swamps without visual clearance under the woody canopy. The natural restrictions on visual and physical access (see Figure 1.1) within the latter types of wetlands may reduce their use, and value, for visual and recreational purposes. However, most wetlands are a composite of different vegetational types, and even densely vegetated areas lacking easy physical or visual access may come to be valued as people learn about other desirable characteristics of shrub and wooded wetlands.

A few other studies indicate the value of visually open wetlands. Palmer (1978) and Chapter 5 found through preference testing that people in Dennis, Massachusetts, preferred open saltwater marsh in the marsh/wooded upland perceptual landscape classification type. Litton et al. (1972) noted that the "spaciousness" or openness of saltwater marshes in Tomales Bay, California, was an important attribute of the coastal landscape there.

Most people assume that the larger the wetland, the higher the visual-cultural value. This is not necessarily the case. Small wetlands (below twenty acres) may have high visual and educational values. Litton et al. (1972) pointed out that the small areas of saltwater marsh and meadow in Tomales Bay provided a greater sense of "openness" in the landscape than would be expected from their absolute size. Similar findings were made for freshwater wetlands (Smardon, 1972) and saltwater marshes (Steinitz et al., 1978) in New England. From an educational perspective, one of the most important qualities of wetlands is the diversity of different attributes that can be seen or experienced per unit area (Smardon, 1972). Thus an extremely small wetland with many different species or communities of plants and wildlife may have high educational value. Larger wetlands will have a higher recreational carrying capacity in terms of minimizing (or spreading out) ecological damage from a given amount of recreational use and in terms of allowing different types of recreational users within the same wetland area without conflict (Smardon, 1972). Larger wetland areas may in some cases support more wildlife or a greater variety of wildlife for consumptive or nonconsumptive recreational use.

Wetlands and Their Immediate Surroundings

The enframing element that creates spatial enclosure and edge contrast bordering a wetland is important to the wetland's scenic and recreational quality. In the wetlands study in Massachusetts (Smardon, 1972, 1975), it was found that landforms and contrasting upland vegetation surrounding the wetland were both important in defining a sharp visual image and a feeling of enclosed space (see Figures 1.2, 1.3, 1.4). In the Louisiana River swamp study (Lee, 1977) and in Chapter 4, canopylike woody vegetation took on the major role of definition and enclosure and made the wetland environment attractive, as determined by professional judgment and preference testing. Strong but

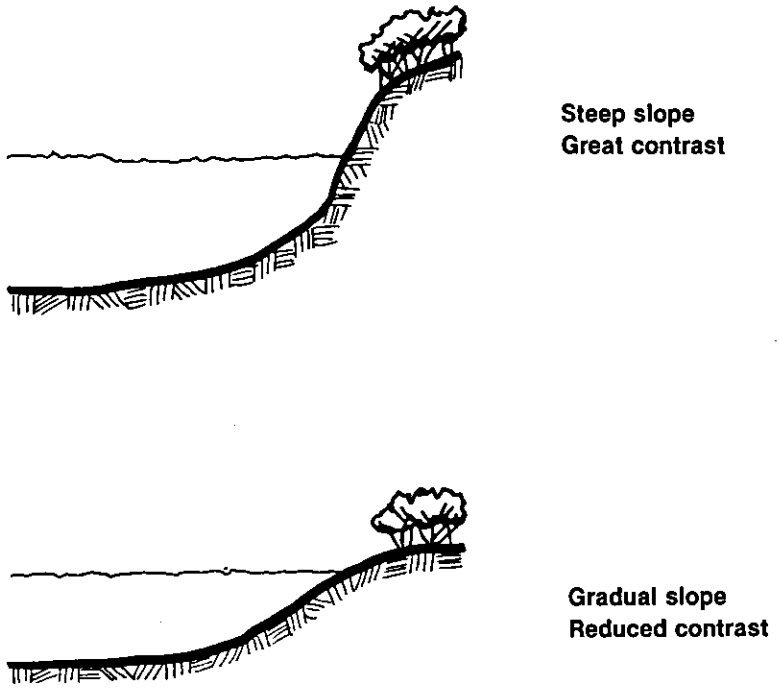


Figure 1.2. Landform contrast.

varied landform edges or vegetative edges also create ideal spatial-sequential experiences for boating or hiking through a wetland area, as pointed out by Lee (1977) and More et al. (1977).

Fabos et al. (1975) found through preference testing that the most visually compatible land uses adjoining wetlands in the Northeast are open water, forest, and agricultural land. Fabos et al. (1975) and Palmer (1978) found that people in general prefer natural or agricultural land uses adjacent to wetland areas, although limited-intensity recreational or residential uses may be aesthetically acceptable. Wetlands adjacent to rivers, small lakes, ponds, and saltwater bays or inlets are optimum environments from a recreational and educational as well as visual perspective.

Wetlands and the Micro-Landscape Within

When viewed in the context of the larger landscape, as in a photograph or from a car window, a wetland may be highly valued for providing openness and contrast in the landscape (Litton et al., 1972; Palmer, 1978; Rodgers, 1970; Smardon, 1972, 1975). As the view shifts to the micro-landscape within the wetland, the perceptual scale shifts, and along with it the values attached to the features of the wetland. Hammitt's (1978) empirical work in Chapter 6 on northern bogs indicates that people like to experience a mixture of open bog mat and wooded screens, which provide "mystery" or intrigue about areas yet to be explored. Hammitt's valuable work suggests that siting and design of boardwalks, channels, or other access enhancements should take advantage of varied spatial experiences and use both restricted and open views of wetland areas. The importance of sequential variance is suggested by More et al. (1977) and Rodgers (1970).

One of the most striking aspects of both freshwater and saltwater marshes is the textual contrast and the patterns formed by open water and aquatic vegetation. Niering (1967) and Rowntree (1976) noted the aesthetic quality of the "uniform bands" of vegetation in saltwater marshes. In his own work, the author has consistently been impressed with the complexity and richness of emergent aquatic-vegetative patterns, in wetlands and the interspersion, in

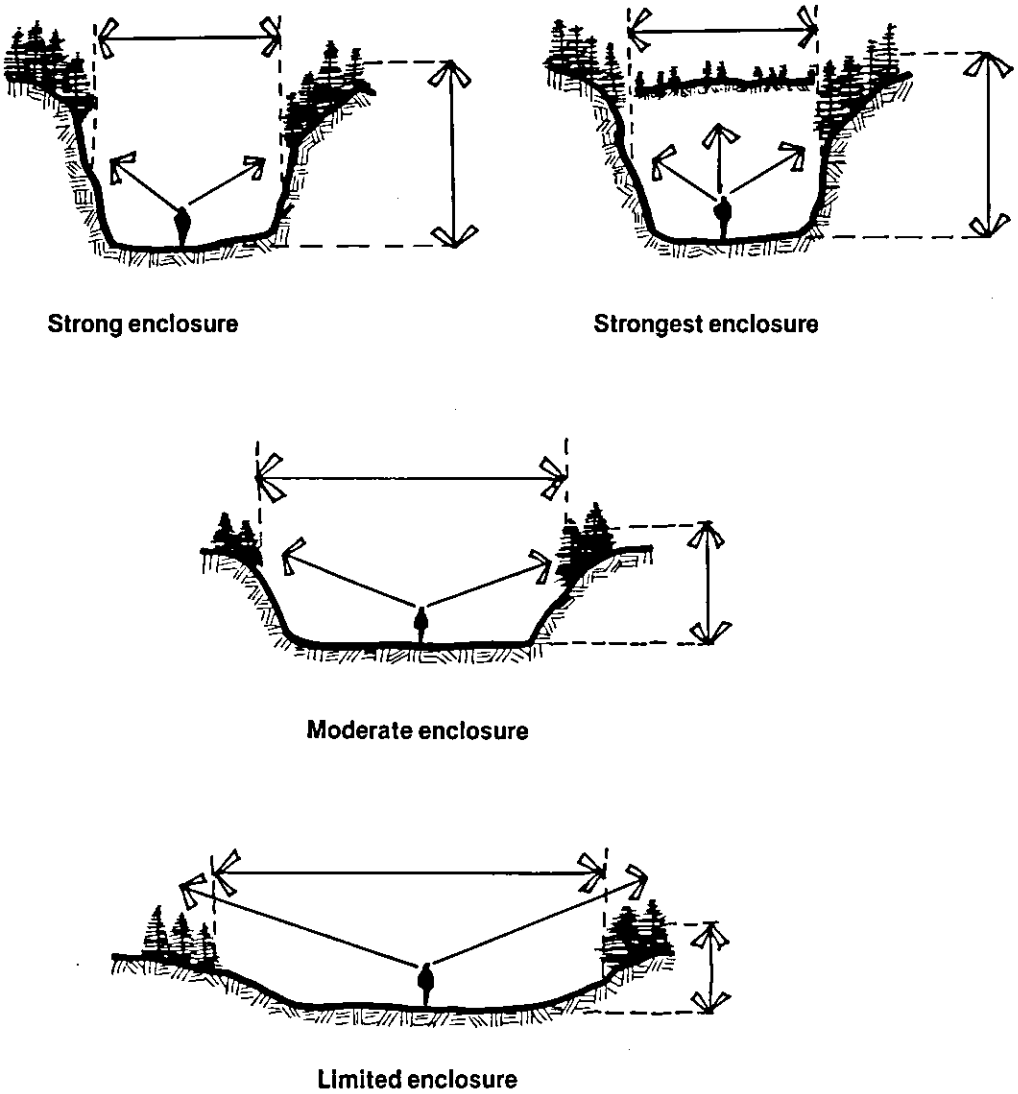


Figure 1.3. Wetland enclosure.

ideal proportions of vegetation and open-water areas (Smardon, 1972, 1975). The striking surface patterns and textures of wetlands are often highly transient and easily altered by changes in water level, vegetation robustness, color, or light conditions. Nevertheless, the water/vegetation surface patterns are clearly a unique attribute of both fresh- and saltwater wetlands (see Figures 1.5, 1.6).

Man-made elements in the wetland microlandscape, such as a boardwalk on a bog mat, may also be accepted as compatible with the natural area (Hammitt, 1978). If sensitively sited and designed, a boardwalk may even promote visual, recreational, and educational values by providing access to an otherwise restricted and extremely delicate area.

Dynamic Aspects of Wetlands

Some of the dynamic aspects of wetlands include seasonal changes and their effects on wetland vegetation (Rodgers, 1970; Smardon, 1972). For example, skunk cabbage often

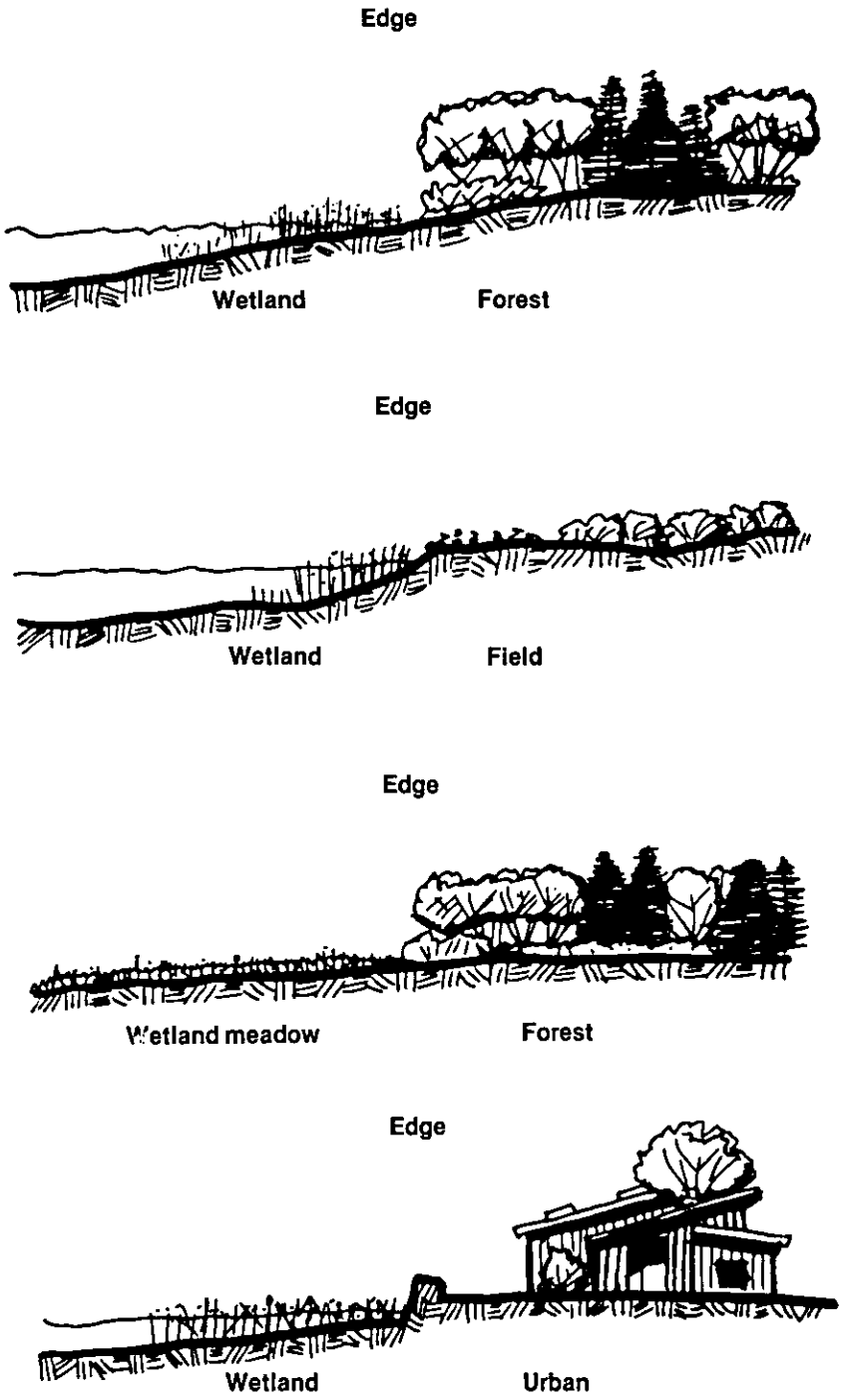


Figure 1.4. Land-use and vegetative contrast.

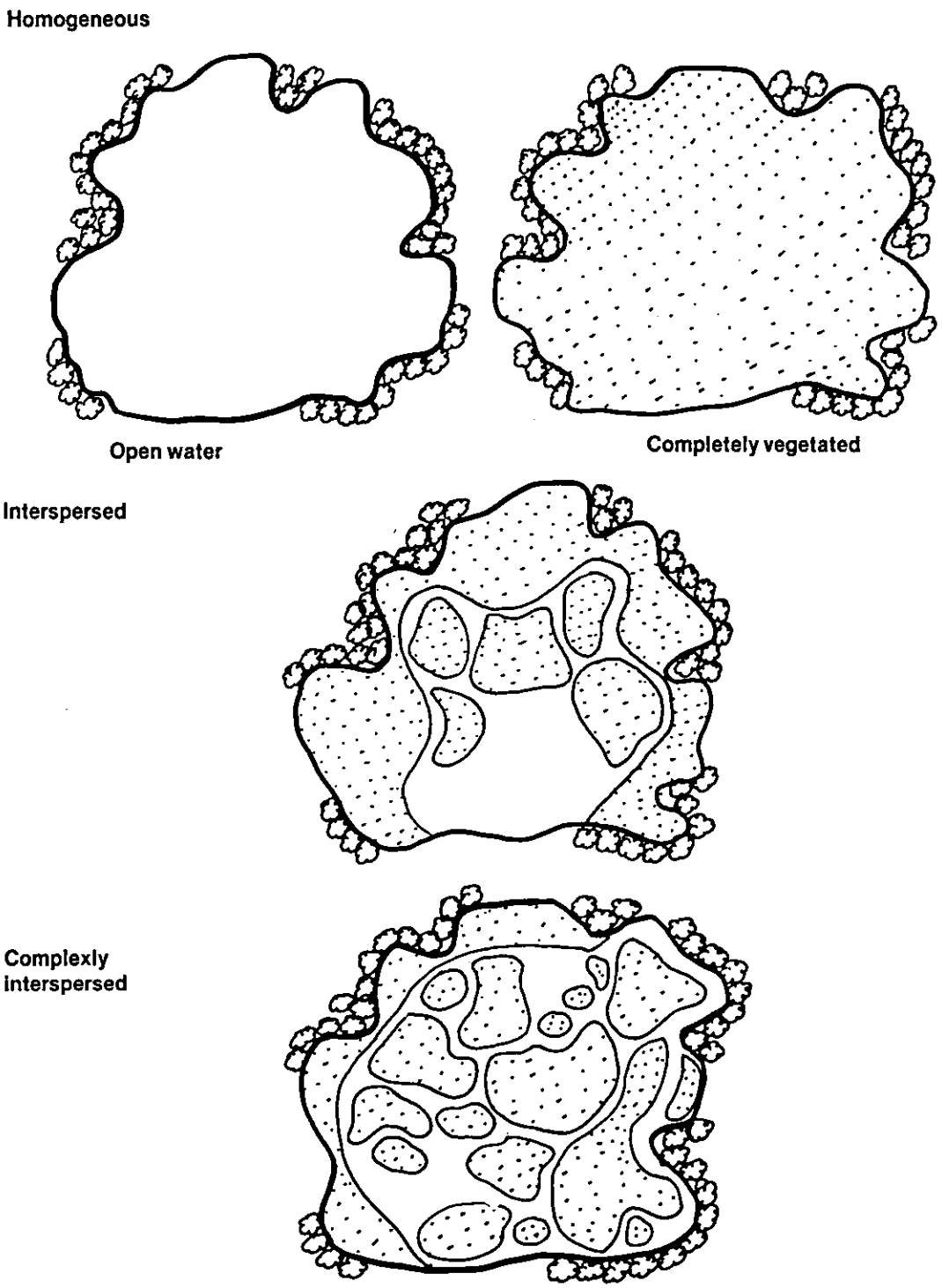


Figure 1.5. Vegetative/water interspersion patterns.

Figure 1.6. Vegetative/water interspersion patterns.

dominates the floor of northeastern wooded swamps in early spring; red maple, with its early fall color, visually dominates the wetland wooded environment in the fall. Early blooming, early greening, and fall color also contribute to the contrast between many northern wetlands and surrounding upland areas.

Probably some of the most important aspects of wetlands in terms of visual-cultural values are those that are the hardest to assess. Rowntree (1976) in Chapter 8 notes the dynamic visual aspects of salt marshes, especially the tidal flow itself and its manifestation in the morphology of the vegetative community. Even more dynamic is wetland wildlife, glimpses of which range from an occasional moose in northern bogs or the American alligator in the Everglades to huge flocks of migrating waterfowl in wetlands along major flyways. Wildlife inevitably steals the show from its habitat. Ironically, little, if any, empirical perceptual or behavioral work exists on the aesthetic aspects of wildlife in wetland environments—the raison d'être behind popular demand for preservation of wetland environments. In view of the increasing emphasis on passive recreation and nonconsumptive values of wildlife, this is truly an overlooked research area.

Summary

Land-use allocation decisions are being made without adequate consideration of visual-cultural and other values of wetlands. From the perspective of ecological aesthetics, it is clear that wetlands are visually and educationally rich environments. Restrictions on recreational access also keep wetlands from being altered or developed for more intensive uses.

Many wetlands are outstanding natural areas harboring unique or rare natural phenomena. Individual wetlands also give visual contrast and diversity to the larger landscape. Wetland systems serve to structure development or provide needed solitude for wilderness or semi-wilderness experiences for urban dwellers. Assessments of composite visual, recreational, and educational values of nonexceptional

wetlands have different evaluative and perceptual frameworks. For all perceptual and experiential modes and at all geographical scales, wetlands have high visual and educational values relative to other types of landscape.

These values can be projected over time to show their relative worth by an economic proxy accounting method (Gupta and Foster, 1975; Smardon, 1975) as shown in Chapter 9. Wetlands can also be rated according to visual, recreational, and educational preferences, as measured with visual stimuli, such as photographs, and various scales, such as Likert's rating scale (Hammitt, 1978) in Chapter 6 and the semantic differential or rank ordering (Lee, 1978) in Chapter 4.

References

Cheek, N. H., Jr., and Field, D. R. 1977. Aquatic resources and behavior. *Leisure Sciences* 1 (1):67–83.

Cherem, J. C., and Traweek, D. E. 1977. Visitor employed photography: A tool for interpretative planning on river environments. In *Proceedings Symposium River Recreation Management and Research.* USDA, Forest Service Gen. Tech. Rep. NC–28, North Central Forest Experiment Station, St. Paul, Minn. Pp. 236–44.

Dansereau, P. 1975. *Inscape and landscape: The human perception of environment.* New York: Columbia University Press. 118 pp.

Errington, P. L. 1957. *Of men and marshes.* Ames: The Iowa State University Press. 150 pp.

Fabos, J. Gy.; Hendrix, W. G.; and Greene, C. T. 1975. Visual and cultural components of the landscape resource assessment model of the METLAND study. In E. H. Zube, R. O. Brush, and J. Gy. Fabos, eds. *Landscape assessment: Value, perceptions, and resources.* Stroudsburg, Pa.: Dowden, Hutchinson and Ross. Pp. 319–43.

Gosselink, J. G.; Odum, E. P.; and Pope, R. M. 1973. *The value of tidal marsh.* Gainesville: Urban and Regional Development Center, University of Florida. 32 pp.

Gupta, T. R., and Foster, J. H. 1975. Economic criteria for freshwater wetland policy in Massachusetts. *American Journal of Agricultural Economics* 57 (1):692–97.

Hammitt, W. E. 1978. Visual and user preference for a bog environment. Ph.D. dissertation, School of Forestry, University of Michigan, Ann Arbor. 159 pp.

Haslam, S. M. 1973. The management of British wetlands 1. Economic and amenity use. *Journal of Environmental Management* 1:303–20.

Krutilla, J. V., and Fisher, A. C. 1975. Chap. 9, Allocations of prairie wetlands. In *The economics of natural environments: Studies in the valuation of commodity and amenity resources.* Baltimore: The Johns Hopkins University Press. Pp. 219–32.

Larson, J. S., and Foster, C.H.W. 1955. Massachusetts marshes . . . and their owners. Boston: Wildlife Conservation, Inc., mimeo.

Lee, M. S. 1977. Visual quality assessment of Louisiana river landscapes: A methodological study. Master's thesis, Department of Landscape Architecture, Louisiana State University, Baton Rouge. 183 pp.

Lewis, P. H., Jr., ed. 1970. Appendix B: Aesthetic and cultural values. In *Upper Mississippi River comprehensive basin study.* Chicago: Upper Mississippi River Comprehensive Basin Study Coordinating Committee 1:1–489.

Litton, R. B., Jr.; Laurie, M.; and Wakeman, N. 1972. The landscape as a visual resource. In R. Corwin, ed., *Tomales Bay Study Compendium of Reports.* Washington, D.C.: Conservation Foundation. Pp. 25–53.

Litton, R. B., Jr.; Tetlow, R. J.; Sorensen, J.; and Beatty, R. A. 1974. *Water and landscape: An aesthetic overview of the role of water in the landscape.* Port Washington, N.Y.: Water Information, Inc. 314 pp.

Louisiana State University. 1977. *Pre-Symposium Compilation of Papers Scenic Rivers Symposium,* June 17–19, Baton Rouge. 157 pp.

More, T. A.; Brush, R. O.; and Wagar, J. A. 1977. Variation and recreation quality in river management. In *Proceedings Symposium River Recreation Management and Research.* USDA, Forest Service Gen. Tech. Rep. NC–28, North Central Forest Station, St. Paul, Minn. Pp. 329–33.

Niering, W. A. 1967. The dilemma of the coastal wetlands: Conflict of local national and world priorities. In P. Dansereau, ed. *The fitness of man's environment.* Washington, D.C.: Smithsonian Annual II, Smithsonian Institution. Pp. 143–56.

———. 1970. The ecology of wetlands in urban areas. In B. F. Thomas, ed. *Preserving our freshwater wetlands.* New London: Connecticut Arboretum, Connecticut College. Pp. 12–19.

Odum, E. P. 1971. *Fundamentals of ecology.* 3rd ed. Philadelphia: W. B. Saunders. 574 pp.

Palmer, J. F. 1978. Citizen assessment of the coastal visual resource. In: Vol. 2, *Coastal Zone '78 Symposium on Technical, Environmental, Socioeconomic and Regulatory Aspects of Coastal Zone Management,* March 14–16, San Francisco. New York: American Society of Civil Engineers. Pp. 1019–37.

Pepper, S. C. 1937. *Aesthetic quality: A contextualistic theory of beauty.* New York: Charles Scribner's Sons. 255 pp.

Randall, W. E., and Brainerd, J. W., n.d. *Educational values of wetlands in Massachusetts.* Boston: Massachusetts Wetlands Commission Fact Sheet 5, Wildlife Conservation, Inc.

Rodgers, W. E. 1970. Design criteria for the visual enhancement of water resources formed or altered during the construction of major highways. M.L.A. thesis, Department of Landscape Architecture and

Regional Planning, University of Massachusetts, Amherst. 113 pp.

Rowntree, R. A. 1976. Visual attributes of the estuary: An emphasis on dynamics. In D. B. Harper and J. D. Warbach, eds. *Visual Quality of the Coastal Zone, Proceedings of a Conference/Workshop* May 29–30, 1975. Sea Grant Project, School of Landscape Architecture, SUNY College of Environmental Science and Forestry, Syracuse, N.Y. Pp. 51–65.

Shaw, S. P., and Fredine, C. G. 1956. *Wetlands of the United States: Their extent and their value to waterfowl and other wildlife.* USDI, Fish and Wildlife Cir. 39. Washington, D.C.: U.S. Government Printing Office. 67 pp.

Smardon, R. C. 1972. Assessing visual-cultural values of inland wetlands in Massachusetts. M.L.A. thesis, Department of Landscape Architecture and Regional Planning, University of Massachusetts, Amherst. 295 pp.

_____. 1975. Assessing visual-cultural values of inland wetlands in Massachusetts. In E. H. Zube, R. O. Brush, and J. Gy. Fabos, eds. *Landscape assessment: Value, perceptions, and resources.* Stroudsburg, Pa.: Dowden, Hutchinson and Ross. Pp. 289–318.

_____. 1977. Research strategy for assessing visual impact from management and land development activities on wild and scenic rivers. In *Pre-Symposim Compilation of Papers Scenic Rivers Symposium,* June 17–19, 1977, Louisiana State University, Baton Rouge. Pp. 79–85.

_____. 1973. Visual-cultural values of wetlands. In J. S. Larson, ed. *A guide to important characteristics and values of fresh-water wetlands in the Northeast.* Water Resources Research Center Pub. No. 31, University of Massachusetts, Amherst. Pp. 9–11.

Smardon, R.C., and Fabos, J. Gy. 1976. Visual-cultural sub-model. In J. S. Larson, ed. *Models for assessment of fresh-water wetlands.* Water Resources Research Center, Pub. No. 32, University of Massachusetts, Amherst. Pp. 35–51.

Steinitz, C.; Brown, H. J.; Wilkins, H.; Sinton, D.; Gillespie, D.; Kilner, S.; and Klinefelter, P. 1978. *Simulating alternative policies for implementing the Massachusetts Scenic and Recreational Rivers Act: The North River demonstration project.* Landscape Architecture Research Office, Graduate School of Design, Harvard University, Cambridge. 103 pp.

USDA, Forest Service. 1977. *Proceedings Symposium River Recreation Management and Research,* January 24–27, Minneapolis. USDA Forest Service Gen. Tech. Rep. NC–28, North Central Forest Experiment Station, St. Paul, Minn. 455 pp.

USDI, Fish and Wildlife Service. 1962. The value of wetlands to modern society. In *Proceedings of the MAR Conference,* November 12–16. IUCN Pub. (new series) 3. Washington, D.C.: U.S. Government Printing Office.

Wharton, C. H. 1970. *The southern river swamp—a multi-use environment.* Bureau of Business and Economic Research School of Business Administration, Georgia State University, Atlanta.

Parts of this chapter appeared in "Visual-Cultural Values of Wetlands" in *Wetland Functions and Values: The State of Our Understanding* (Minneapolis, Minn.: American Water Resources Association, 1979). Reprinted by permission.