

# MODEL OF PERCEPTION IN RELATION TO WETLAND VALUES, SCIENCE, AND MANAGEMENT

## INTRODUCTION

Early in the 20<sup>th</sup> century, wetlands were seen as a common enemy and the result was massive drainage. Since that time, our understanding and perception of wetlands has changed and this has caused a corresponding reassessment in the way we value wetlands. The emphasis has shifted from drainage to wildlife habitat and continues to evolve.

Historically “value” has been incorporated in a linear sequence of steps leading to management:

**Structure → Function → Values → Management.**

Eugene Odum, in his 1978 paper, “The Value of Wetlands: A Hierarchical Approach”, noted that there are three levels of wetland values.

1. Population Values: those values specific to the needs of various biological populations (Fish and Wildlife).
2. Ecosystem Values: those values specific to the functioning of an ecosystem. (Hydrological and Productivity Values).
3. Global Values: those values that affect the functioning of the entire planet. (Waste Assimilation, Atmospheric, and Life Support).

A wetland may function within one or any combination of these values at the same time.

Our understanding of structure and function of wetlands is based on science, but wetland values are not strictly science based. Wetland values are a product of science (function) and perceptions. Going from value to management is a policy-based step. Values must be defined before proper regulations can be implemented to manage wetland ecosystems. Wetland management policies are presently incomplete because perceptions, a part of defining wetland values, are not incorporated.

The entire process of valuing wetlands is dynamic. When scientific understanding of functions or public perceptions change, then Values and Management need to change accordingly. This paper presents an expansion of the linear model of:

**Structure → Function → Values → Management.**

## PERCEPTION

The interactions and survival of our biocommunities are dependent on the environment and more importantly how we occupy it. Our society is the first to examine in detail the environmental resources base that will support that survival. The confrontation between societal values and ecological limits ultimately will

change our values. These values are fundamental to everything we do, the way we behave, and what we expect from society and government.

Our understanding of wetland structure and function (science) has changed the way we perceive wetlands by influencing the values we associate with them. Perceived values arise from functional ecological processes but are determined also by human perceptions, the location of a particular wetland, the human population pressures on it, and the extent of the resource (Mitsch, Gosselivk, 1993. pg. 508). Therefore the traditional linear concept of **Structure → Function → Values → Management** is inadequate, and should be revised to include perception as seen in Figure 2.

Perception of wetland values leads to prioritization based on how wetlands benefit society. Priorities can be used to construct an evaluation methodology that would reflect these perceptions. The inherent values of the developed evaluation methodology in turn influence wetland management policies. The policy should revolve both around the community perceptions and the function of the wetland. Perceptions are influenced by our knowledge of how wetlands benefit society and therefore education becomes an important part of wetland policy. If people do not know the benefits of wetlands, their perception will not reflect these benefits.

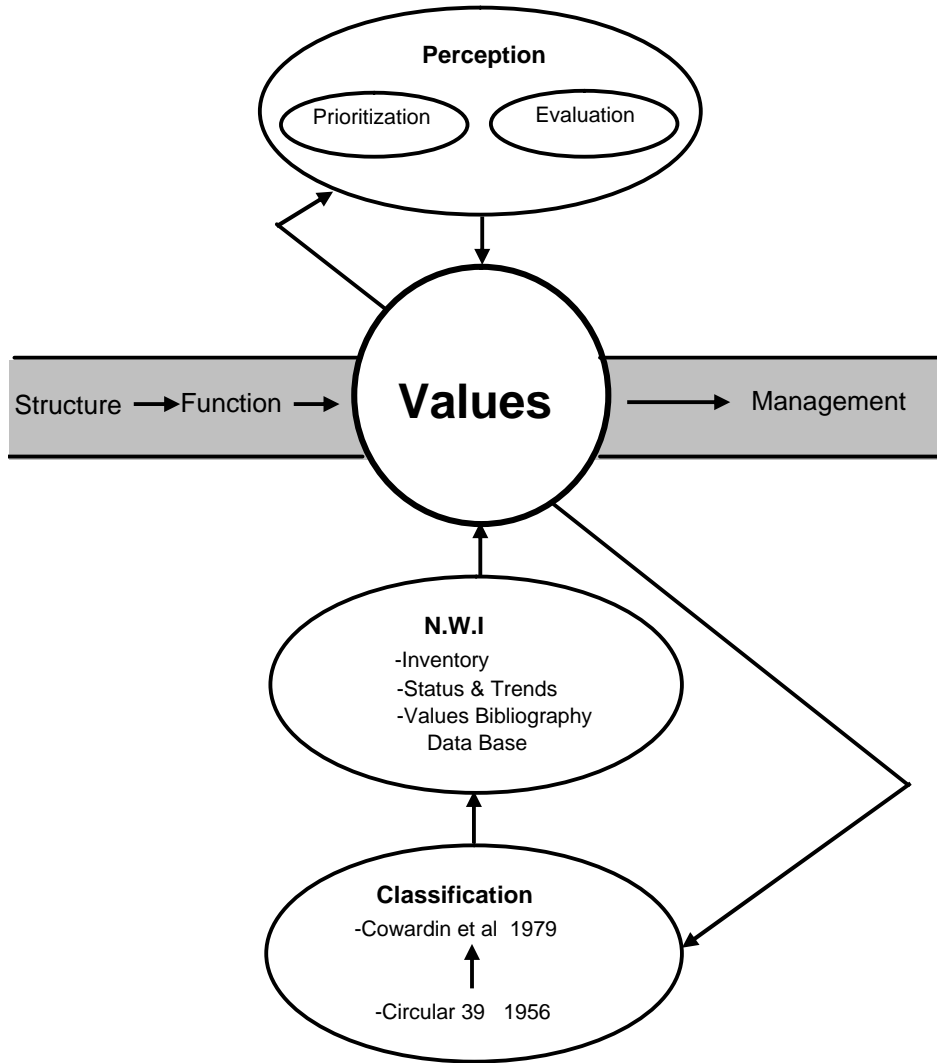
Additionally, incorporating perceptions into wetland policy is difficult because the diversity of wetland values and human perceptions are scale related. Local perceptions lead to prioritization of values based on how they benefit their community. Larger scale values, i.e. global air quality, are of increasing societal concern but difficult for the individual to relate to. Problems arise in the evaluation of values because a decision has to be made on whose priorities are to be utilized.

The current wetland classification system does not incorporate values based on perceptions of scale. Lack of a comprehensive evaluation methodology, based on both wetland function and perception, is not conducive to the formation of a wetland management policy which satisfies all scales from the local to the global level.

## **CLASSIFICATION**

Most classification systems are established as a consequence of the values that are dictated by perception. The classification systems then in turn impact values. The way wetlands are classified dictates how a wetland is perceived and therefore how much value we place on it from that point onward, a self-fulfilling prophecy prevails. The classification is also used in education, which further solidifies how a particular wetland is perceived.

The first classification system, Circular 39, was established to determine the extent and quality of wetlands in relationship to waterfowl. This system had a narrow purpose and when the National Wetlands Inventory was initiated there was a need to develop a system with a broader scope. Cowardin, et al 1974, developed a system for the NWI which classifies all continental aquatic and semi-aquatic ecosystems.



**Figure 2. Context of values in wetland policy**

Cowardin provided the basic mapping units for the NWI. Status and Trends reports documented the wetland gains, losses, and conversions with the third component being a Values Bibliography Data Base to catalog all of the “values” information.

As perception and/or our understanding of functions change, as it has in the past, values will also change and the classification system will need to be altered to reflect those changes (Figure 1). Future classification systems may include, for example, impacts wetlands have on the atmosphere which is a more global concern.

### SUMMARY

- Historically wetland policy has been based on **Structure → Function → Values → Management** with “values” being strictly related to scientific function.
- Wetland management policies are presently incomplete because perceptions are not incorporated into values.
- Priorities should be used to construct an evaluation methodology that would reflect perception which would influence wetland management practices.
- Incorporating perceptions into wetland policy is difficult because of the diversity of wetland values and because human perceptions are scale related.
- As perception and/or our understanding of function change, as it has in the past, values will also change and the classification system will need to be altered to reflect those changes.
- We need to develop a comprehensive evaluation methodology, based on both wetland function and perception determining values which result in management policy that will satisfy all scales from the local to the global level. This will undoubtedly change again our classification system.