

## INTRODUCTION

Webster's dictionary defines "value" as something intrinsically valuable or desirable and "valuable" as something of great use or service. "Perception" is defined as quick, acute, and intuitive cognition and "perceptive" as characterized by sympathetic understanding or insight. The two words are related but not synonymous. Further, the definitions indicate that these terms require a great amount of further clarification if and when specifically applied.

Values are fundamental to everything we do and leads to behavior and expectations from society. Milbrath (1989) stated that values are held strongly and are generalized to many situations whereas preferences are held weakly and are not generalized. He feels that valuing is a uniquely human activity as other animals have preferences only. Further, societies do not have values rather individuals hold and conceive values resulting in a consensus or silent majority (Milbrath, 1989).

Science plays a large role when dealing with facts, values and beliefs. Milbrath (1989) emphasized that the scientific method has become the honored way to observe and come to know facts. Facts are not absolutes; they are beliefs that we hold more or less strongly. Beliefs also relate to values in that we tend to believe things that we value and disbelieve things that we do not value. The scientific method facilitates agreement about physically based facts; therefore it is easier to agree about facts than to agree about values.

Within the context of wetlands it should be noted that structure and functions are fact based but values and management are value based. Further, if science attempts to be value free it will serve the values of those who rule the establishment

"The term "value" imposes an anthropocentric (man centered) orientation on a discussion of wetlands. The term is often used in an ecological sense to refer to functional processes....But in ordinary parlance, the word connotate something worthy, desirable, or useful to humans. The reasons that wetlands are legally protected have to do with their value to society, not with the abstruse ecological processes that occur in wetlands. Perceived values arise from the 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 and Gosselink, 1993)

Evaluating the functions and values of wetlands is relatively new. Eugene Odum in his classic 1978 paper "The Value of Wetlands: A Hierarchical Approach" set the stage for the rest of the century. During the last 20 years of the 20<sup>th</sup> century, a considerable amount of research effort was directed at the development of methodologies for evaluating wetland functions and values. My wetlands class at

Mankato State University did a comparison of seven evaluation methodologies from the 1980's (Figure 1). The conclusions of this class study stated the following:



- Wetland evaluation methodologies are necessary. (There are critics of developing evaluation methodologies who note that many wetland functions and values are not well understood hence evaluations might not be reliable. Proponents argue that an evaluation methodology is vital to assure that wetland functions and values are considered in the decision-making process with the assumption that technical information will improve in the future).
- Present evaluation methodologies vary greatly.
- Local citizens and government should be involved in assigning values.
- A single composite functional numerical value for a wetland is not a meaningful method for determining either net loss or net gain.
- The emphasis should be on “no net loss of value” not just “no net loss of acres.” (does “no net loss of function” = “no net loss of value”?)
- This concept should apply to mitigation, banking, restoration and conversions.

Section 404 of the Clean Water Act in its public interest review process has forced consideration of the value of wetland functions:

“In 404, it is necessary to make a clear distinction between wetland functions and the value of wetland functions. This is because the public interest review process requires not only that the loss of wetland function be quantified, but that a value be assigned to those functions that are lost. The 404 permit decision is based on a “balancing” process that compares the value assigned to the benefits, goods, and services resulting from a proposed project to the value assigned to the wetland functions that are lost as a result of the proposed project. This assessment approach is designed to estimate the loss, or gain, of wetland function as a result of a proposed project. It was not designed to assign a value to that loss or gain of wetland function. *Assigning value requires the consideration of a variety of subjective factors beyond the ecosystem and landscape characteristics that are considered in assessing wetland functions.* \*

Value is a term that can be defined or interpreted in several ways. For example, Brown (1984) considered value to be either “held” or “assigned.” He characterized a held value as a precept, belief, or ideal of an individual or group, and an assigned value is the relative importance of something to an individual or group. Throughout this

SETTING Methodology	MWEM E.Q.S. 1988	Wisc. DNR 1983	Michigan DNR 1989	Michigan U of M 1985-89	Ontario Nat. Res. 1984	Deliberation Federal 1989	Army Corps WET 1987
Wetland System (Cowardin 79)	RLP	RLP	RLP	L	RLP	MERLP	MERLP
Geography (Limitations)	Non (N.C.U.S.)	Wisc.	Mich.	Mich. G.L. Coastal	Ont. S. of Shield	National	Conting. U.S.
<b>FUNCTIONAL VALUES</b>							
<b>PHYSICAL</b>							
1. Surface Hydrology	■	■	□□□□	■	■	□□□□	■
2. Groundwater		■	□□□□			□□□□	■
<b>CHEMICAL</b>							
3. Water Quality		■	□□□□	■	□□□□		■
4. Soils In Wetland		□□□□	□□□□	■	■	□□□□	■
5. Soils In Watershed	■	□□□□	□□□□	■	■		□□□□
<b>BIOLOGICAL</b>							
6. Wildlife	□□□□	□□□□	□□□□	■	■		■
7. Fish	□□□□	□□□□	□□□□	■	■		■
8. Shore Anchoring	□□□□	□□□□		■			■
9. Vegetation	□□□□	□□□□	□□□□	■	■	■	■
<b>SOCIAL</b>							
<b>Activities</b>							
10. Consumptive Leisure		□□□□		■	■		□□□□
11. Commercial Non Consumptive Leisure	□□□□	□□□□		■	■		□□□□
12. Commercial		□□□□		■			□□□□
13. Education		□□□□		■	■		□□□□
14. Significance	□□□□	□□□□		■	■		□□□□
<b>COMPOSITE CALCULATION</b>							
Economics				1,3-15			
Ratings	1,5,6,7,8 9,12,15				1,3,4,7,9, 10,11,12, 14,15		

 - Qualitative Observation  
 - Quantitative Measurements

**Wetland System**  
R - Riverine  
L - Lacustrine  
P - Palustrine  
M - Marine  
E - Estuarine

Figure 1. Composite matrix of selected wetlands evaluation methodologies

assessment approach, the term value will be used in the latter sense of assigned value or a measure of the relative importance of a wetland function to an individual or group. Implicit in the concept of assigned value is the recognition that different individuals or groups may assign a different value to wetland functions.

In the wetland literature, the term value has been used in association with wetland functions in at least two ways. Taylor, Cardamone, and Mitch (1990) use the term values to refer to the benefits, goods, and services that result from the functions performed by wetlands. This use is unnecessarily confusing. The benefits, goods, and services, resulting from wetland functions should simply be called benefits, goods, and service, not wetland values. Similarly, Ammann, Franzen, and Johnson (1986) and Ammann and Lindley-Stone (1991) use the term functional values to identify the functions performed by wetlands that are considered to be valuable to society. Again, this is unnecessarily confusing. The subset of wetland functions that are valuable to the public should be called valuable wetland functions, not functional values (R. Daniel Smith et. al., 1995).”

*\*my emphasis*

Minnesota’s Wetland Conservation Act of 1991 chose to amend the often used phrase of “no net loss” to “no net loss of values”. In doing so we were led to examine the whole concept of values. Further, within the act and rules the phrase “at least equal public value” is often used. The question inherent here is who determines “public value” and what is it? This act put increased pressure on defining wetland values (the process of defining them) and set the stage for the work that follows and is reported herein.

What determines our perception of wetlands is controlled by different paradigms that are partially determined by the media. Are the various written media sources presenting one or multiple paradigms when it comes to wetland values? Are the public perceptions of values the same or different from academic, state agency and county technical personnel and what is the level of homogeneity between each of these categories to each other? Is management based on values from top down or bottom up? If media homogeneity doesn’t exist this creates an educational and communication challenge to all four categories. Are we what we read and read what we are?

Obviously the above questions present a huge challenge that can not be answered or understood by a few studies. It requires a joint effort of wetland scientists, public policy-management experts and media-communication people. Utilizing students in my wetlands classes from 1990 thru 1999, I have attempted to take an initial look at the above challenge. In order to accomplish this goal the following tasks were conducted.

- A model of perception relating to wetland values, science and management was developed.
- An examination of wetland values perception in five written media categories was undertaken to document differences in order to determine if individual paradigms exist.
- A South Central Minnesota perception of wetland values survey of the public, utilizing high school students and their parents, was developed, beta tested, given, and assessed.
- The same regional perception of wetland values survey was given to academics, county technical personnel and regional state agency personnel.

The first chapter will present a model of the context of wetland values and the role of perception. The second chapter will look at the results of our perception in the written media paradigm study and the third will present the results of the perception-values surveys.

The context of values in wetland policy continues to be an issue in the 21<sup>st</sup> century. Values must be defined, understood and supported by perception before proper and broadly accepted regulations can be implemented to manage wetland ecosystems. Incorporating perceptions into wetland policy is difficult because of the diversity of wetland values and because human perceptions are scale related. There are many wetland values, however a single wetland does not hold all of them. The values are often in the eye of the beholder (perception) that can differ from person to person and area to area. Further, as wetland science expands our knowledge of structure and function our perceptions and values will also change.

The purpose of the above is to address the extremely complex issue of wetland perception-values in South Central Minnesota. Like it or not, Pandora's Box has been opened with the Federal, Status and Trends component of the National Wetlands inventory and the Minnesota Wetlands Conservation Act, both of which emphasize and require values assigned to different wetland types.