

Introducción/Razonamiento del Taller

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Manejo de humedales para técnicos
en México II

LAGUNA MEXICANOS, CHIHUAHUA

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OUR DESIRE IS TO SHAPE YOUR **THINKING** ABOUT WETLAND MANAGEMENT

- WHETHER YOUR FOCUS IS DUCKS, SHOREBIRDS, RAILS, FISH, BUGS, OR PLANTS
- TO DIRECT YOUR FOCUS TO **NATURAL PROCESSES** THAT **DRIVE SYSTEM FUNCTIONS** AND **SHAPE THE ADAPTATIONS** OF SPECIES RATHER THAN ON **SPECIES, POPULATIONS, OR TECHNIQUES**
- TO RECOGNIZE THE IMPORTANCE OF TIME AND SPACE (TEMPORAL, SPATIAL, and TAXONOMIC SCALE)
- TO **EMBRACE VARIABILITY**
- TO EMPOWER YOU TO GAIN MORE **SELF CONFIDENCE**, TO BE A **SCEPTIC**, AND TO HAVE THE **PATIENCE AND PERSERVERANCE** TO BE SUCCESSFUL

We hope to convince you

- Your **BRAIN** is your most important tool and asset
- WETLANDS are dynamic and **MUST DRY**
- ECOLOGICAL THINKING is far superior to AGRICULTURAL THINKING in successful and sustainable Wetland Management
- VARIABILITY should be embraced
- DECISIONS must be made with limited knowledge
- ENUMERATING is not management
- PATIENCE is required

ECOLOGICAL VS AGRICULTURAL THINKING

- We use agricultural tools to meet ecological goals
 - The precepts of agricultural approaches were driven by thinking developed in the old world prior to colonization
- The tools are expensive, costly to operate and maintain, and their use may cause management problems such as plow pans, soil compaction, and fossil fuels are used extensively.
- Use of invasives is often embraced.
- There is greater opportunity for wetland success when variability is embraced

A COMPARISON OF THINKING

ECOLOGICAL

- Recognition of and a dependence on natural variability
- Actions often for future growing seasons
- Enhance or work with natural processes
- Limited energy inputs

AGRICULTURAL

- Control of variability
- Actions primarily for the current growing season
- Attempt to control natural processes
- Massive energy inputs

US Dogma of the 1930s remains alive and well

*“It is proposed that a dam be constructed at the lower end of the unit by which a **constant water level can be maintained which is essential to the breeding of ducks**”.*

A statement written by an early manager at Red Rock Lakes National Wildlife Refuge

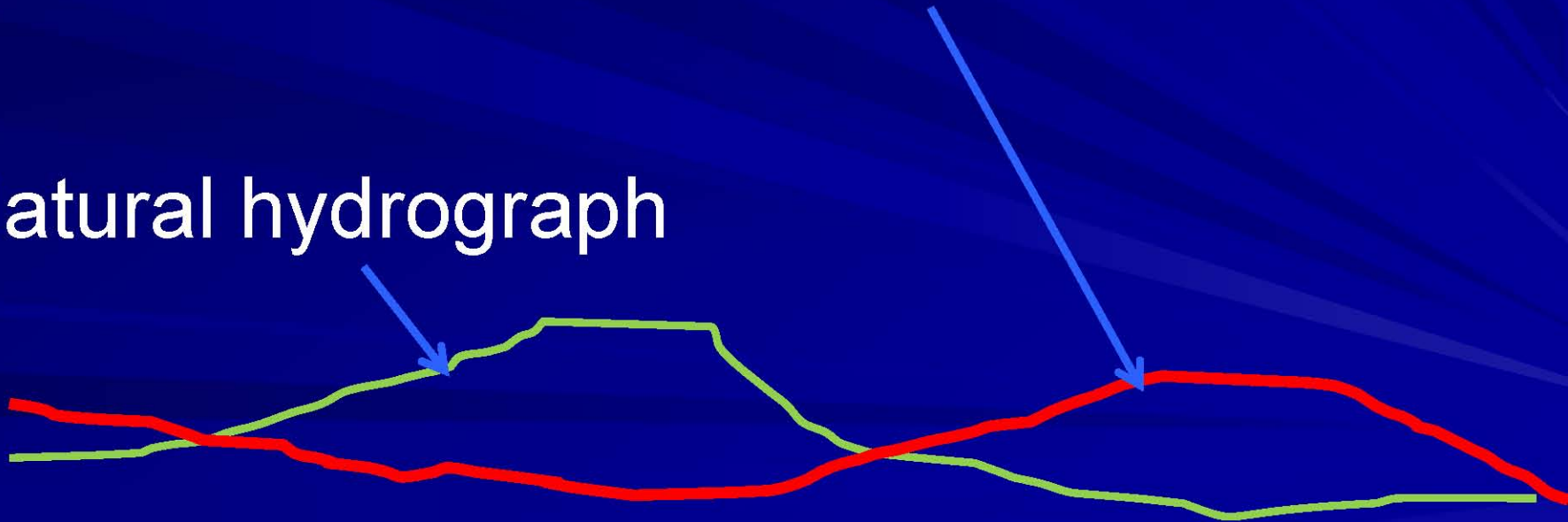
STABLE DOGMA

- Promotes monotypic vegetation
- Compromises wetland processes
- Compromises wetland food production
- Opens the door for invasives
- Increases management costs and challenges

A KEY ISSUE
In many places

Management Wish Hydrograph

Natural hydrograph



Emphasize why hydrologic conditions are important for maintaining productive wetland communities

- THE KEY TO SUCCESSFUL MANIPULATIONS IS THE CORRECT TIMING, DURATION, AND DEPTH OF FLOODING FOR FOOD PRODUCTION, FOOD AVAILABILITY, AND WILDLIFE USE BUT SUCH ACTIONS HAVE NOT BEEN OR ARE POORLY IMPLEMENTED AT MANY LOCATIONS FOR DECADES.
- WE WILL ADDRESS ALL THREE: Timing Depth and Duration

Emphasize why hydrologic conditions are important

- Daily variability
- Seasonal variability
- Annual variability
- Long-term variability

OUR FOCUS WILL BE ON WETLAND ECOLOGY

- One must gain an appreciation for spatial variation within and among sites on large and small scales
- Even more challenging is to gain an appreciation for **TEMPORAL VARIATION**, easy for an old man but **NOT** so easy for the young, enthusiastic, and impatient.
- Water is in the definition of wetland but **DRY** is a driving factor that **MUST** occur even though the number or **WETLAND DEPENDENT WATERBIRDS** we desire are not necessarily present when dry!!!!

IT IS IMPORTANT FOR YOU TO UNDERSTAND THE BASIS OF WHAT WE HAVE TO SAY

- MY COMMENTS ARE BASED ON MY UNIQUE EXPERIENCES FOR THE PAST 7 DECADES
 - **ACROSS THE NORTH AMERICAN CONTINENT** THAT REPRESENT MANY DIFFERENT GEOMORPHIC AND HYDROLOGIC SETTINGS
 - FROM WATCHING **MANY WET AND DRY CYCLES** ALONG DIFFERENT TEMPORAL SCALES AT MANY PLACES
 - FROM WORKING WITH **THE BEST AND THE WORST** IN WETLAND MANAGEMENT ARENA FROM THE ADMINISTRATIVE TO THE MAINTENANCE LEVEL
 - FROM **A WIDE SUITE OF EXPERIENCES** AT MANY LEVELS INCLUDING THE CONTINENTAL, THE WASHINGTON OFFICE, THE FLYWAY, THE REGIONAL OFFICE, STATE OFFICES, THE REFUGE OR MANAGEMENT AREA, AND THE UNIT LEVEL.
 - FROM A VAST EXPOSURE AT THE ACADEMIC, THE AGENCY, THE NONPROFIT/PRIVATE, THE PROFESSIONAL SOCIETY, AND THE INDIVIDUAL LEVEL

THE CONSTANTLY CHANGING LANDSCAPE DRIVES WETLAND MANAGEMENT CHALLENGES

- A Lack of history with the landscape and its changes
 - Changes from historical condition
 - Physical, hydrological, climatic
 - Economic and social factors
 - Staff less closely connected with the land as urbanization occurs
 - Technology helps keep us in our comfort zone
- Too many different factors requiring special information from many disciplines
 - Geomorphic, climatic, geologic, soils, hydrologic, microbial, biogeochemical, botanical, zoological, ecological
- Too much variability across each unit, area, and region up to the continental landscape for any one to fully grasp
 - Formative processes, topographic, soils, climatic, hydrologic, botanic, zoologic, ecologic
- Inappropriate use of information
 - Information inappropriately described
 - Terminology inappropriate, misused, and/or confusing

ART VS SCIENCE

- Good management based on Evidence
 - From the scientific method
 - Formal studies that have been peer reviewed
 - Consistent on-site observations based on staged and unstaged experiments across sites with great variability
- So much variability across large and small scales that published evidence represents what happens at unique locations at unique times which often results from inexperienced graduate student studies

Terminology of importance

- **Flood up:** The addition of water to an intensively managed site. Flood ups may occur naturally because of seasonal or unique weather events. On intensively managed sites flood ups are scheduled for specific times in a particular way to optimize the availability of food resources for wetland dependent species.

Terminology of importance

- **Drawdown:** The removal of water from a managed site. In some cases this may occur naturally through evaporation, transpiration, or seasonal variation and water levels related to stream flow or groundwater levels. We commonly use this term to describe the management action of water removal through a water control structure. The timing, type, and duration of the drawdown is at the core of the actions taken to promote plant communities to meet wetland management objectives.

Terminology of importance

- **Hydroperiod:** Describes the timing and duration of wetness on a wetland site. The term as commonly used by wetland managers refers to the condition of surface flooding.

Terminology of importance

Water-control structure: Refers to a man-made feature that provides some means of manipulation for water inputs or water discharge from an intensively managed wetland site. Structures can be of many different types that provide a variety of different options for manipulations. The most common are referred to as stop-log, screw gate, sliding gate, or radial gate structures.

Terminology of importance

Stop-logs: Devices made of different materials (wood, plastic, stainless steel, etc.) and widths that obstruct water movement in stop-log water control structures that determine the rate of discharge from a wetland.

You must deal with GIMMAS

- GREED
- IGNORANCE
- MYTH
- MIS-INFORMATION
- ARROGANCE
- STUPIDTY

WHY DO I MAKE THESE STATEMENTS

- I COME WITH A UNIQUE SET OF EXPERIENCES BECAUSE OF THE PLACE AND TIME IN WHICH I HAD OPPORTUNITIES
- THEY ARE REFLECTED IN MY COLLABORATION WITH AND MY EXPOSURE TO MANY OF THE MOST TALENTED NATURAL RESOURCE INDIVIDUALS WITH RESPONSIBILITIES FROM THE CONTINENTAL TO THE UNIT LEVEL
- THEY ARE SHAPED BY A LONG TENURE AT A SINGLE LOCATION WHERE I HAD THE OPPORTUNITY TO EXPERIENCE SYSTEM DYNAMICS AND POPULATION RESPONSES THAT WERE TESTED ACROSS A VERY LARGE SPATIAL AND LONG TEMPORAL SCALE

BUT BEWARE

- I REALLY KNOW VERY LITTLE
- MY THINKING IS REFLECTED IN WHERE AND WHEN I WAS BORN, MY FAMILY BACKGROUND, MY FORMAL EDUCATION, MY FAR MORE IMPORTANT INFORMAL EDUCATION, MY PROFESSIONAL CAREER, AND MANY YEARS OF UNIQUE EXPERIENCES

MY CHALLENGE IN DEALING WITH LIMITED INFORMATION



These small areas represent my limited knowledge about birds, bugs, plants, soils, biogeochemistry and hydrology in a sea of unknowns after over 70 years or curiosity



WHAT YOU MUST RECOGNIZE

- I HAVE MADE PLENTY OF MISTAKES
- I HAVE FAILED TO ARTICULATE INFORMATION IN A MANAGEMENT CONTEXT CONSISTENTLY
- MANY WILL LIKELY DISAGREE WITH SOME OR MAYBE A LOT OF WHAT I HAVE TO SAY
- I NOR ANYONE ELSE HAS ALL THE RIGHT ANSWERS
- I CHALLENGE YOU TO THINK WITHIN A DIFFERENT CONTEXT THAT MAY DIFFER FROM YOUR AGENCY, YOUR SUPERVISOR, THE ACADEMIC AND/OR RESEARCH COMMUNITY, AND THE PUBLIC. HOWEVER BY DOING SO COULD WELL MAKE YOUR LIFE HELL
- OUR CHALLENGE IS TO GIVE YOU SOMETHING OTHER THAN A BOLUS OF INFORMATION BY ATTEMPTING TO PUT THIS INFORMATION BACK INTO A SYSTEMS APPROACH

WHAT WE PLAN TO PURSUE

- Processes in herbaceous wetlands in modified systems
 - Geomorphic, hydrologic, and climatic setting
 - Nutrient cycling
- The diversity and abundance of bugs in wetlands
 - Taxons, habitat structure, abiotics, and predation
- Life history strategies
 - Connections with abiotic and biotic variables
 - Within wetland cycles
 - Protein sources especially for molt and reproduction
- What stages serve as food
 - Eggs, larvae, or adults?

WE HOPE TO STIMULATE YOU TO CONSIDER
HABITAT FOR WETLAND DEPENDENT WILDLIFE IN
YOUR WETLAND MANAGEMENT DECISION-MAKING
PROCESS

- Do you provide migration, wintering, and/or breeding habitat for one or more species?
- What habitat features must be considered?
- Do you know how to establish and maintain the plant species that create habitat?

MOST OF ALL

- WE WANT YOU TO BE SUCCESSFUL
FOR THE LAND
FOR THE HABITAT
FOR THE BIRDS
FOR A RICH PERSONAL LIFE