

**9:00am – Noon**

Understanding and developing the aquatic food chain

Basic pond ecology

Fertilization Phytoplankton bloom measurement

Phytoplankton versus rooted aquatic vegetation

Zooplankton

Detritus and periphyton

Detritivores and their importance

Understanding water quality suitability for most species of aquatic vegetation

Common combinations of aquatic plant species found together

Inability of any single herbicide to treat most aquatic vegetation species

Reasons for aquatic vegetation management

- Reduce water loss – evapotranspiration

Reduce breeding habitat for noxious insects

Improve fish & wildlife habitat

Increase size & condition of fish

Enhances recreational activities

Aquatic plant ecology

Why aquatic plants can be so invasive

Four ways in which aquatic vegetation propagate

Drought and flood tolerance of aquatic vegetation

Unique reproductive physiology of select aquatic plant species

Invasive species

Dangers of excessive aquatic vegetation

- Low dissolved oxygen fish kills
- Fish stunting due to vegetation

Importance of aquatic plant species ID and implications for management methods

- Algae- phytoplankton, filamentous, macroalgae
- Floating

Submerged

Emergent/shoreline (moist soil)

Effective biological, chemical, mechanical/physical, and integrated pest management options for 30 species of aquatic plants

- Control methods that should not be used for more than 15 species of aquatic vegetation

Water use/evapotranspiration issues for more than 10 species of aquatic vegetation

**Noon – 1:00pm – Concurrent with lunch**

Plant identification and treatment challenge

**1:00pm – 5:00pm**

Biological considerations for selecting type of control used

Submerged vegetation treatment issues with fast acting contact herbicides

Aquatic vegetation prevention methods

Issues with dyes and fish food chain

Mechanical and physical control methods, advantages, and drawbacks

Biological control methods, advantages, and drawbacks

- Insects and plants they control
- Triploid grass carp and species they control
- Mozambique tilapia and plants they control

Chemical control methods, advantages, and drawbacks

Laws and regulations

Identified harmful aquatic plants to Texas (Invasive, Prohibited and Exotic Species List)

- 13. Harmful or potentially harmful exotic plants §57.112. General Rules

- Reporting methods and requirements of TDA, TPWD, and Feds after finding prohibited/Exotic listed species

Legality of release into public waters, importation, sale, purchase, transport, propagation, or possession of listed species and potential penalties

Mechanical control method regulations

- TPWD permit requirements to manually remove listed invasive vegetation

Biological control method regulations

- Bacteria and viruses – experimental, not legal for public use
- Insects – many insect species but each controls only one species of vegetation
  - Generally not available for public purchase, but legal to collect and transport from government release sites
- Fish species
  - Triploid grass carp
    - TPWD regulates stocking and use, limits quantity can be legally obtained 10/acre per year
    - Stocking permit and fee due to TPWD before grass carp purchase

Required to be certified triploid – must have blood test to confirm, diploid or normal grass carp are illegal to possess in Texas

- Can only be purchased from TPWD certified triploid grass carp distributors
- Required to install escapement barrier of exact TPWD specifications before legal to stock

Penalties for escapement or illegal release to public water

Number required to control aquatic plant species versus number allowed by stocking permit

Legality of obtaining permit to stock 10/acre in consecutive or over multiple years

- Tilapia
- Only 3 species legal to possess in Texas – Mozambique, Blue, Nile

Blue and Nile require aquaculture business permit from TDA and exotic species facility inspection and exotic species culture permit from TPWD

Blue and Nile illegal to stock in outdoor ponds – must be in enclosed facility

Mozambique tilapia only species legal to stock in outdoor ponds in Texas

All other tilapia species including naturalized species such as redbelly and Nile tilapia illegal to possess unless dead and gutted

Mozambique tilapia no longer require exotic species permit or exotic species transport permit from TPWD to purchase

Mozambique tilapia must be purchased from TPWD certified tilapia dealer

Itemized receipt including sellers address and contact information now serves as the exotic species transport permit for the general public when buying Mozambique tilapia and must be in the vehicle at all times during transport

- Penalties for escapement or illegal release to public water

Chemical control method regulations

The label is the law

- Herbicide classification systems
- Use restrictions
- Legal Applications rates
- Legal applications methods

Understanding water law in Texas and implications for biological and chemical controls

Herbicides legally approved for use in public waters (only 14)

- Herbicides and surfactants that are sometimes applied but illegal to use in aquatic environment and their consequences

Who can legally purchase aquatic herbicides in Texas

Who can legally apply aquatic herbicides in Texas

Who regulates pesticide use in water

NPDES Permits

Can aquatic herbicides be applied by individuals to public waters – legality and TPWD/TCEQ permits required  
TCEQ general permit TXG870000 coverage and qualifications

- Annual thresholds for application

Vegetation & Algae Pests—a treatment area of at least 100 acres in water or 200 linear miles at the water's edge  
Level I Operators, application area restrictions, reporting requirements, and licensing

- Applicator license and reporting requirements

Level II Operators, application area restrictions, reporting requirements, and licensing

- Self-certification requirements

Level III Operators, application area restrictions, reporting requirements, and licensing

No forms required, but application records and self-certification form encouraged in case of spill, accidental fish kill, or legal dispute

**5:00pm – 5:30pm**

Aquatic ecosystem and vegetation management test for those that want to become certified Extension specialist

TMN expert assistants

**9:00am – 12:00pm**

“It’s Like a Whole Different Country:” Tailoring Management to Texas’ Diverse Ecosystems (1:00, MF)

Wildlife Damage Management (2:00, JT)

- Integrated Wildlife Damage Management: Principles and Application
- Managing Urban Wild Pests
- Managing Damage to Livestock
- Managing Damage to Crops

**Noon – 1:00pm – Concurrent with lunch**

Wildlife Field Craft: Identifying Wildlife From Sign

- Track Identification
- Scat Identification
- Other Signs

**1:00pm – 5:00pm**

Wildlife in your backyard (2:00, MF)

- Creating backyard habitat
- Food: responsible bird feeding
- Water: clean, fresh, and safe
- Shelter: a bird’s eye view
- Space: spatial and temporal
- Holistic, realistic backyard management (you don’t get to pick and choose who comes)

Wildlife-Livestock Management (1:00, JT)

- Understanding Use of Space and Habitat Requirements
- Estimating Stocking Rates for Livestock, Complementing Wildlife Occupancy Rates
- Setting Management Goals to Optimize Landscape Features

Wildlife Leopold’s Five Tools (1:00, MF)

- Habitat approach to management
- How the tools can (and in many cases, did) destroy habitat
- How the tools can benefit habitat

**5:00pm – 5:30pm**

Test