

## Wetland Wildlife Habitat Management

### Freshwater Emergent Wetlands



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### Lesson Objectives

- Recognize the different wetland zones that occur within freshwater emergent wetlands
- Understand the basics of moist-soil management
- Understand the factors that affect water bird response to moist-soil management
- Apply management decisions based upon the knowledge gained

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### Freshwater Emergent Wetlands

Open Water → Seasonally Flooded → Saturated Soils



Flooding regime, available foods, cover, and animal groups

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## Open Water

Low animal diversity because of the simple structure of this habitat



**Flood Duration**  
• Usually 12 Months

**Plant Foods**  
• None

**Animal Foods**  
• Fish

**Cover**  
• None

**Wildlife**  
• Fish  
• Turtles  
• Pelicans, Cormorants

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## Aquatic Bed

Slight increase in the structural diversity available for wildlife



**Flood Duration**  
• 11 – 12 Months

**Plant Foods**  
• Seeds, Browse

**Animal Foods**  
• Fish, Snails, Insects

**Cover**  
• None

**Wildlife**  
• Fish, Turtles, Snakes  
• Diving Ducks, Wood Ducks  
• Grebes, Coots  
• Pelicans and Cormorants

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## Emergent Vegetation – Moist Soil

Many wildlife species are adapted to exploit temporarily flooded wetlands



**Flood Duration**  
• Variable, 1 – 6 Months

**Plant Foods**  
• Seeds, Tubers, Browse

**Animal Foods**  
• Diverse invertebrate community

**Cover**  
• Feeding, Roosting, Nesting

**Wildlife**  
• Frogs, Salamanders  
• Turtles, Snakes  
• Dabbling Ducks, Shorebirds  
• Waders, Rails

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## Mud Flats – Moist Soil

Primary feeding area for migrating shorebirds



- Flood Duration**
  - Variable
- Plant Foods**
  - Some seeds
- Animal Foods**
  - Invertebrates
- Cover**
  - Feeding
- Wildlife**
  - Shorebirds

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## Wetland Management 101



- Moist soil management
- Factors that affect water bird response
- Management strategies



Habitat conditions created will benefit many wildlife species

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## Moist Soil Management

Manipulation of soil and water to produce resources for wetland dependent wildlife in seasonally flooded environments



- Create favorable growing conditions for annual seed-producing wetland plants
- Create favorable foraging and feeding conditions for a diversity of wildlife
- To provide spring and fall migration habitat for wetland dependent water birds

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## Water Level Manipulations

Water level manipulation: most effective tool we can use



- Restoration goal: restore original wetland functions/productivity
- Levees, water control structures, water-delivery/discharge system

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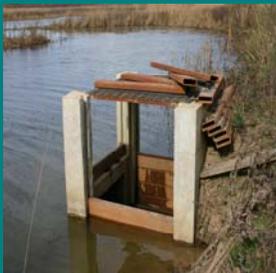
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## Water Control Structures

Essential for precise water level manipulations



### Stoplog Structures

- Plant germination conditions
- Control problem vegetation
- Promote invertebrate production
- Make food resources available

Structures should permit water level manipulations as small as 2 inches

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## Water Level Management

Timing, speed, and duration of drawdowns and flooding



### Influence

- Composition and production
- Avian use

### Timing of Drawdowns

- Early (late April – early May)
- Mid-Season (May – early June)
- Late (June – early July)

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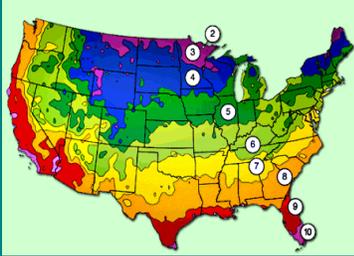
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## Growing Season

Number of days between last winter frost and first fall frost



USDA Zone	Last Frost Date
2	May 15
3	May 15
4	May 15
5	April 15
6	April 15
7	April 15
8	March 15
9	February 15

Growing season info: [www.wcc.nrcs.usda.gov/climate/wetlands.html](http://www.wcc.nrcs.usda.gov/climate/wetlands.html)

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## Response of Moist-Soil Plants

Different plant species will be stimulated by the timing of the drawdown

Family	Species	Drawdown Timing		
		Early	Mid-season	Late
Grass	Crabgrass		+++	+++
	<i>Echinochloa crusgalli</i>	+++	+	+
	<i>E. Walteri</i>	+	+++	++
	<i>E. Muricata</i>	+	+++	+
	Panic grass		+++	++
	Sprangletop		+	+++
Buckwheat	Nodding Smartweed	+++		
	Pennsylvania Smartweed	+++		
Sedge	Chufa	+++	+	
	Spikerush	+++	+	+
	Red-rooted sedge		+++	
Composite	Beggarticks	+	+++	+++

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## Effects of Drawdown Rate

The type of drawdown used will produce different results



**Slow Drawdowns**

- > 2 weeks (1 inch per day)
- Greater diversity of plants
- Higher total seed production
- Optimum foraging conditions



**Fast Drawdowns**

- Drain within a few days
- Stands of similar vegetation
- Forces wildlife from area
- Avoid late-season drawdowns

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## Slow Drawdowns

Better for attracting a diversity of foraging birds



**Increases food availability**

- Concentrates foods
- Provides proper foraging depths



**Wildlife Use**

- Deep → shallow → mud flats
- Species adapted to water depth
- Species gradually shift

**Most effective use of drawdowns**

- Match migration periods
- Vary dates among units

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## Succession over Time

Stage of plant succession will affect the plant species composition



**Frequent Disturbance**

- Predominance of annuals
- Millets and smartweeds
- High seed production

**No Disturbance**

- Perennial plant community
- More woody vegetation
- Seed production declines
- 1800 → 1400 → 950 → 500 (pounds per acre)

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## Need for Disturbance

Create early successional vegetation to maintain a high-productivity marsh

**Disking**

- Promote annuals/seed production
- Rotate – disk once every 3 - 5 years
- Shallow disking preferred
- Timing – wetland invertebrates

**Mowing**

**Create openings**

**Fire**

**Control vegetation**

**Herbicides**

**Least desirable**

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## Keys to Moist Soil Management

Slow drawdowns are better than fast drawdowns



- Maintains soil moisture
- Increases plant diversity
- Extends food availability
- Increases habitat availability



Disturbance required to maintain production of annual plants

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## Factors Affecting Wildlife Response



- Water depth and duration
- Vegetative height and structure
- Food availability
- Migration period



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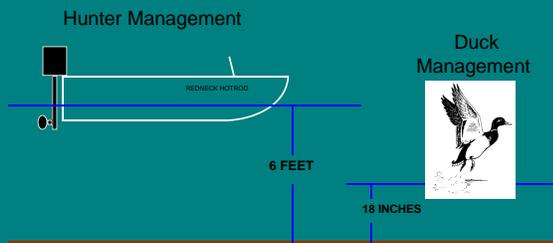
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## Water Level Management

Water depth – single most misused and abused factor



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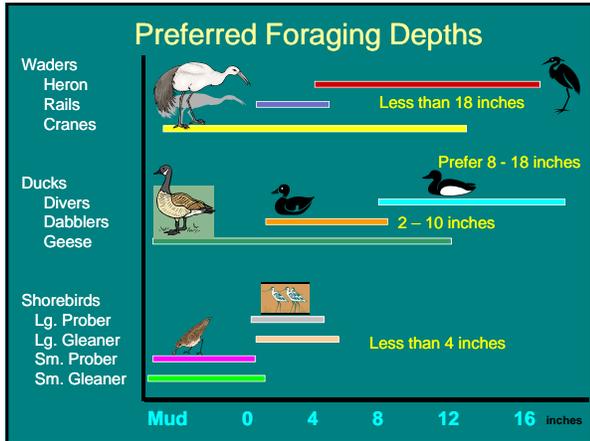
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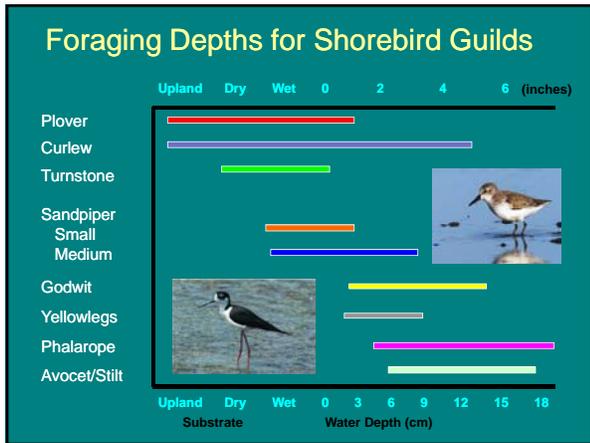
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### Vegetation Height and Structure

Influenced by hydrologic regime and soils

Waterbirds	Height	Cover
Bitterns	Tall	Dense
Rails	Tall	Dense
Dabbling Ducks	Medium	Sparse/Dense
Hérons	Short	Sparse/None
Cranes	Short	Moderate/Sparse
Diving Ducks	Short	Sparse
Geese	Short	Moderate/Sparse
Shorebirds	None/Short	Sparse/None

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## Diets of Waterbird Guilds

Waterbird Guild	Fish	Frogs	Crayfish	Seeds	Tubers	Browse	Invertebrates
Dabbling Ducks				X	X	X	X
Herons	X	X	X				X
Bitterns	X	X	X				X
Diving Ducks				X	X		X
Cranes				X	X		X
Geese				X	X	X	
Rails				X			X
Shorebirds							X

Dabbling ducks most diverse diet; Shorebirds most restrictive

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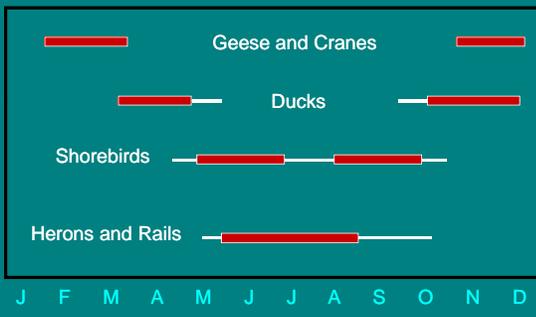
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## Migration Periods of Waterbirds

Food available at appropriate water depth when target species arrive




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## Manipulations to Attract Wildlife

Adjust water levels to provide preferred water depths for foraging



Shallow water is the key!

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## Spring Management

Flood in the fall approximately 1 month before the first heavy freeze




- Allows chironomids and other invertebrates to re-populate
- Assures winter survival of larvae
- Spring migratory period - open water < 50 % emergent vegetation

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## Spring Management

Draw units down slowly to make invertebrates available




- Slow Drawdown: no more than 1- 2 inches per week
- Stagger drawdowns among units to extend habitat availability
- Time drawdowns with peak migration periods

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## Summer/Fall Management

Goal: Make invertebrates available for migrating birds




**Units that Remained Flooded**

- Drawdown slowly
- Allow natural evaporation

**Units that Remained Dry**

- Shallowly disk vegetation
- Converts plant biomass to detritus
- Flood 2 - 3 weeks before migration

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## Summer/Fall Management

Coincide with arrival times and population size of fall migrants




**Fall Flooding**

- Flood gradually; water depth < 4 in.
- Flood additional units as numbers increase
- Peak fall migration – 85% optimum foraging depth




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## Wetland Complexes

Management areas should have several impoundments





- Manipulate to promote production of different foods
- Vary drawdown dates and timing among management units
- Permanent – semi-permanent – shallow water – mudflats

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## Review: putting the pieces together

Water level management is the key



Emergent Wetlands

- Water depth
- Vegetative structure

Determines



Wildlife species




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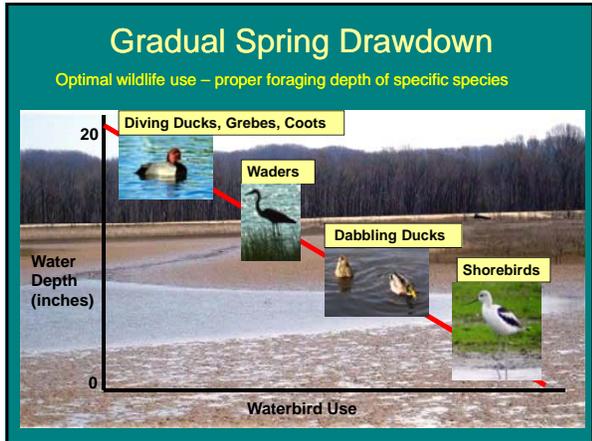
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## Summary

Shallow water management is the key to attracting a diversity of wildlife



- Stop log water control structures
- Slow drawdowns work best
- Maintain water depths < 10 inches
- Time drawdowns with arrival times
- Disturbance will be required
- Maintain wetland complexes

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