Duck “food for thought” in the Mississippi Alluvial Valley

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Sponsors and Partners
- Delta Wildlife
- Delta farmers and landowners
- Ducks Unlimited, Inc.
- Natural Resources Conservation Service
- North American Wetlands Conservation Council
- States of Mississippi and Arkansas
- USFWS, Region 4
- USGS, Patuxent Wildlife Research Center
- Mississippi State University, FWRC
- Monsanto Corporation

Deputy ‘Confusion’ Fife
Objectives

1. Review recent research on waterfowl food availability

2. Review management strategies to increase food availability
10 Reasons to Winter-Flood Rice and Other Croplands

1. Rice is an energy-rich food for waterfowl
2. Decomposes crop residues
3. Reduces winter weeds
4. Reduces herbicide use in spring ($25-30/acre)
5. Replenishes ground water
6. Improves water quality
7. Saves soil
8. Waterfowl hunting and wildlife watching
9. Generates income from hunting leases
10. Benefits local economies

Rice Abundance (kg/ha, dry mass)

Sampling Period

~71% decrease

Duck Use Days (DUDs)
(aka Duck Energy Days)

\[ \text{DUDs} = \text{Food Availability} \times \text{Energy Value} \]

Daily Energy Requirement of Ducks

DUDs index the potential of areas to provide foraging habitat
**Duck Use Days**

![Bar chart showing Duck Use Days](chart)

**Pathways of Loss**

- **Potentially Available**: 20%
- **Germination**: 8%
- **Decomposition**: 58%
- **Granivory**: 14%


**Waste-Rice Abundance (dry mass; SE)**

Monsanto Farm and Wildlife Management Center
Winter 2004-2005 (Havens 2007)

Waste-Rice Abundance (kg/ha)

![Graph showing Waste-Rice Abundance](graph)
1980’s Soybean & Duck Lands

Thickets today!
Mallard Population Indexes (Jan. 1980s vs. 2000s) for Mississippi Delta and Missouri (Jan. 2007)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>( \hat{N} = 362,209 ) (~60% decrease from Reinecke estimate)</td>
<td>( \hat{N} = 150,360 ) (~60% decrease from Pearse estimate)</td>
<td>242,546 (~60% increase from Pearse estimate)</td>
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What have we learned?
1. Less waste rice, soybean, and other “hot” foods, and fewer ducks in the Mississippi Delta
2. How do we mitigate decreased quality of foraging habitats?

Waste Rice (kg/ha, dry mass) (Kross 2006)

- Stubble
- Burn
- Mow
- Roll
- Disk
Mallard Abundance (SE)
Monsanto Farm & Wildlife Management Center, AR
(Havens 2007)

Burn to conserve waste rice, attract ducks, reduce stubble, & Save
“Spring” Rice for “Winter” Ducks

“Refreshing” Food Availability
Post-Harvest

- Over seed harvested crop fields with millets
- Stimulate natural ‘seed bank’ to germinate by flushing fields

Moist-soil Habitat - Summer

Not weeds to waterfowl!
**Energy Values of Duck Foods**


<table>
<thead>
<tr>
<th>Food</th>
<th>Kcal/ g</th>
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<tbody>
<tr>
<td>Corn</td>
<td>3.67</td>
</tr>
<tr>
<td>Rice</td>
<td>3.34</td>
</tr>
<tr>
<td><strong>Moist-Soil Seeds</strong></td>
<td>2.79</td>
</tr>
<tr>
<td>~80% energy value of corn and rice</td>
<td></td>
</tr>
<tr>
<td>Acorns</td>
<td>2.67</td>
</tr>
<tr>
<td>Soybeans</td>
<td>2.65</td>
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**Harvested Rice Field vs. Moist-Soil**

(Stafford et al. 2006, Penny 2003, Kross 2006)

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Mean (kg/ha)</th>
<th>DUDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>78 ± 15%</td>
<td>897</td>
</tr>
<tr>
<td><strong>Moist-Soil</strong></td>
<td>496 ± 13%</td>
<td>4,196</td>
</tr>
</tbody>
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**5-6 times more food and DUDs**

**Moist-soil Habitat - Fall**

“Yellow Grass”

*Indicator of good moist-soil management*

Dr. Brian Davis,
Ducks Unlimited
Fall Mowing & Disking

Heath Hagy's Ph.D. research

Fall Mowing & Disking

“The Gray Way” circa 1994
Making Moist-soil “Hot”

- “Dirty” Rice
- “Grassy” Corn
- “Grassy” Milo

“Dirty Rice”

“Grassy Corn”
The Grassy Corn Difference

Moist-soil alone
~2,320 DUDs/acre

Unharvested Corn
~23,500 DUDs/acre

“Grassy Corn Groceries”

Corn
Seeds
Invertebrates

“Grassy Milo”
Alicia Wiseman’s M.S. research
Can Quail Management “Fledge” Duck Habitat?

Rice- and Soybean-Field Borders or Patches (e.g., CRP, CP33)

**Take-home Messages**

1. Food availability has decreased in harvested MAV croplands.
2. Mallard populations have declined concurrently.
3. Active habitat management can abate food and duck declines.
Habitat is vital!
Actively manage it, and…

they will come!

Be careful tonight and a guardian to your professor!