Watershed Education Program for Florida

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Watershed Education Team

- Multidisciplinary
- Agricultural and Biological Engineering
  - Sanjay Shukla
- Soil and Water Science
  - Tom Obreza
  - Mark Clark
  - Chris Wilson
- Fisheries and Aquatic Science
  - Chuck Jacoby
What is a watershed?

- A watershed is a land area whose runoff drains into any stream, river, lake, and ocean

- only 40% of Americans understand what a watershed is

- Which watershed do you live in?
Why worry about watersheds?

- Effects of human activities and natural processes are felt on water quantity and quality
- Watersheds reflects our land use and affects our drinking water supply as well as quality
- Affects our quality of life
Why worry about watersheds?

- Water quantity
  - surface water and ground water (majority of drinking water)
  - land use impacts
    - urbanization - ↓ ground water recharge, ↑ runoff and flooding

- Water quality
  - surface water
    - sediment, pesticides, and nutrients
  - ground water
    - pesticides, nutrients (nitrate), and metals

Watershed concept is important when planning for growth
Watershed Issues

- 36% of the U.S. river not meeting their designated use (1.3 million miles)

- In 1998 states reported 7000 days of beach closings (USEPA)

- Gulf of Mexico
  - dead zone (oxygen depleted) the size of New Jersey

- Florida’s Everglades
  - World’s largest environmental restoration project
  - Regulated incoming concentration 10 ppb P load
Florida’s Watershed
FL Watershed Issues
Water Supply and Management

Florida's Five Water Management Districts

Northwest Florida Water Management District
Suwannee River Water Management District
St. Johns River Water Management District
Southwest Florida Water Management District
South Florida Water Management District
Watershed Issues in Florida

- **Urban**
  - >130,000 acres/yr converted to urban
  - 700 new residents/day
  - 16 million people
  - Increased water needs

- **Agriculture**
  - 2nd largest economy
  - Largest water user
  - Acreage stable or declining

- **Environment**
  - Wetlands
  - Lakes and rivers
  - Estuary

[Bar graph showing water demand and usage in various water management districts (FWMD, SRWMD, SWFWMD, SFWMD, SJRWMD) with data from 1995 and 2020.]
Florida Water Quality Issues

- Sandy soils, High water table – surface or groundwater?
- Urban and agricultural areas
- Impacts of runoff on lakes, rivers, and estuary
- Water bodies of national importance
  - Everglades (10 ppb P concentration limit)
- TMDL Development and implementation
  - Agriculture – Voluntary, presumption of compliance, BMP Manual
    - Water management district
    - Controversial issues
  - Urban – innovative stormwater treatment solutions
UF-IFAS and Watershed Education

Extension areas
- Upland
  - Agriculture (vegetable, citrus, cattle)
  - Urban (Florida Yards and Neighborhood)
  - Natural Resources (Environmental)
- Coastal Environments
  - Sea Grant

Although upland activities impacts the coastal environment, the extension programming is not integrated
March 2001

- Brainstorming session
  - Deans and district extension directors
  - County agents and state specialist
  - Link between agricultural, urban, and coastal programming
- Watershed related issues go beyond the specialties
- Agents needed training in watershed science to better serve clientele
- Agents Training Proposed for 2002
2002 Watershed Water Quality In-service

- East Coast of Florida
- Train agents in basic watershed hydrology/water quality issues

- One day training
  - Morning – in-class
  - Afternoon – water lab and watershed tour

- In-class
  - Basic terminologies in watershed science
  - Upland – streams – river - estuary
  - Land to river - Watershed hydrology and chemical transport
  - Stream - Impacts of chemicals on aquatic environments
Watershed Water Quality In-service

- Water laboratory
  - Impacts of land use on runoff and basic water chemistry

- Watershed tour
  - Upland (Indian river watershed)
    - Agricultural areas
    - Urban areas
  - Coastal systems (Indian River Estuary)
    - Indian River Lagoon
    - Sampling and characterizing aquatic vegetation
    - Affect of light on see grasses and weeds
2002 Watershed Training
Field Tour – Indian River Lagoon
Field Tour – Indian River Lagoon
Evaluation
Agents by Programming Areas

Percent of Total Attendees

Programming Areas
Agriculture  Sea Grant  4-H  Urban  Natural

0  5  10  15  20  25  30  35
Evaluation

What attracted you to program?
- Watershed issues in county 59%
- Application to their programs 35%
- Others 6%

Knowledge gained (1-5) 70%
- Some 35% (2-4)
- A lot 35% (5)
## Evaluation

<table>
<thead>
<tr>
<th>Use of Training</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide educational and training programs</td>
<td>68</td>
</tr>
<tr>
<td>Conduct demonstrations</td>
<td>18</td>
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<tr>
<td>Assist clients with decisions</td>
<td>14</td>
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</tbody>
</table>
## Evaluation

### What are the 3 important issues

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number</th>
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<tbody>
<tr>
<td>Non-point source pollution</td>
<td>18</td>
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<tr>
<td>Water quantity and conservation</td>
<td>9</td>
</tr>
<tr>
<td>Flooding</td>
<td>3</td>
</tr>
<tr>
<td>Boaters</td>
<td>2</td>
</tr>
<tr>
<td>Loss of aquatic vegetation</td>
<td>2</td>
</tr>
<tr>
<td>Water quality</td>
<td>7</td>
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<tr>
<td>Closure of recreation areas</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
</tr>
</tbody>
</table>
2003 Watershed Water Quality In-service
Nonpoint Source Pollution

- 1.5 days (In-class - 1 day; field tour: half day)
- 25 agents
- In-class
  - Nonpoint source (NPS) pollution overview
  - NPS pollution in Florida
  - Impacts on freshwater systems
  - Impacts on estuarine systems
  - Case Study: Tampa Bay Estuary Program
  - Regulations (TMDL)
    - TMDL development and implementation
  - Water lab: Water quality monitoring
2003 Watershed In-service Field Tour - Agriculture
2003 Watershed In-service Field Tour - Agriculture
2003 Watershed In-service Field Tour – Stormwater Impoundments
2003 Watershed In-service
Field Tour - Impoundment
2003 Watershed In-service Field Tour - Urban
Evaluation
Attendees by Programming Areas

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<th>Percent of Total Attendees</th>
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<tr>
<td>Agriculture</td>
<td>30</td>
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<td>Sea Grant</td>
<td>5</td>
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<tr>
<td>Urban</td>
<td>45</td>
</tr>
<tr>
<td>Natural</td>
<td>15</td>
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</table>
Evaluation

- What attracted you to program
  - Application to my programs 38%
  - Watershed issues in county 25%
  - Regulatory (TMDL) issues 19%
  - Others (last year training, etc) 18%
Evaluation
Knowledge Gained

- Self Evaluation (1 – 5 scale) 100%
  - Some 75% (2-4)
  - A lot 25% (5)

- Pre- and post tests 30%
  - Max 85%
  - Min 0%
## Evaluation

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<th>Use of Training</th>
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<tr>
<td>Provide educational and training programs</td>
<td>63</td>
</tr>
<tr>
<td>Increased understanding of nonpoint source pollution</td>
<td>19</td>
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<tr>
<td>Assist clients with decisions</td>
<td>13</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
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Training Material

- Presentation CD for agents

- Extension Publications
  - What is a watershed
  - Watershed functions and management

- Demonstration tools
  - Impact of land use and runoff
Future Activities

- In-service training for 2004
- Explore separate training for storm water management
- Water supply and conservation issues
- Watershed training manual
- Partnership with other states