New World Screwworm (NWS) Exercise In Florida

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New World screwworm

**Adult**
- Copulation
- Females only mate once
- Males are promiscuous

**Eggs**
- Oviposition on wounds
- Eggs hatch in 8-24 hrs

**Pupa**
- Maturation of pupa temp. dependent, 7-60 days
- Pupa burrow into soil & pupate

**Larval feeding/Myiasis**
- Fully developed L₃ larva drop to ground 5 - 7 days after egg hatch

**IN ENVIRONMENT**

**ON HOST**
- Eggs
- Larvae

Adapted from FAO/IAEA poster “Screwworm”
Approximate Distribution

New World Screwworm Fly
*Cochliomyia hominivorax* (Coquerel)

Old World Screwworm Fly
*Chrysomya bezziana* (Villeneuve)

- **Reported**
- **Eradicated**
New World Screwworm in Florida

- Introduced in infested livestock from the southwest U.S. in 1932/1933

- Was a devastating production-limiting disease of livestock ~ $20 million annually

- Also, major effects on wildlife
  ~20-80% of white-tailed deer fawn crop lost each year due to navel infestation
Eradication

- In 1957-58, with urging from Florida livestock producers, the Florida legislature approved funds for NWS eradication, which were matched with federal funds.

- A sterile fly production plant was built in Sebring, FL in a WWII era airplane hanger.
Eradication

- **1962**: eradication program initiated in Texas
- **1962 – 1976**: mass production of sterile flies in a facility at Mission, TX
Eradication

- Since 1982, the U.S. has been free of New World screwworm
Eradication

1976: Production plant opened in Tuxtla Gutierrez, Mexico

- Joint Mexican – USDA Effort : COMEXA
2006: Production plant and research center opened in Pacora, Panama

- Joint Panamanian – USDA Effort: COPEG
Eradication

NWS has been eradicated from the U.S., Mexico and Central America using the Sterile Fly Technique (SIT)

Panama Barrier
Current Estimated Annual Losses (U.S.$)

- Brazil - $1770 million
- Argentina - $618 million
- Colombia - $264 million
- Uruguay - $210 million
- Venezuela - $199 million
- All others countries - $445 million

NWS in the U.S.

- 12 cases identified since 2000
  - 11 NWS, 1 Old World screwworm
  - 8 horses, 3 dogs, 1 cat
<table>
<thead>
<tr>
<th>YEAR</th>
<th>ANIMAL SPECIES, NWS (New World Screwworm), OWS (Old World Screwworm)</th>
<th>IDENTIFIED BY (PP=Private Practitioner)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000 (Feb.)</td>
<td>Horse imported from Venezuela, NWS</td>
<td>Federal veterinarian, MAIC</td>
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<tr>
<td>2000 (Mar.)</td>
<td>Horse imported from Argentina, NWS</td>
<td>PP, West Palm Beach, FL</td>
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<tr>
<td>2000 (Mar.)</td>
<td>Horse imported from Argentina, NWS</td>
<td>Federal veterinarian, MAIC</td>
</tr>
<tr>
<td>2000 (Dec.)</td>
<td>Domestic cat imported from Cuba, NWS</td>
<td>PP, Jacksonville, FL</td>
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<tr>
<td>2005 (Dec.)</td>
<td>Horse imported from Argentina, NWS</td>
<td>Federal veterinary technician, MAIC</td>
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<tr>
<td>2006 (Feb.)</td>
<td>Horse imported from Argentina, NWS</td>
<td>Federal veterinarian, MAIC</td>
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<tr>
<td>2007 (Sep.)</td>
<td>Domestic dog imported through Miami from Trinidad, NWS</td>
<td>PP, Kiln MS</td>
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<tr>
<td>2007 (Oct.)</td>
<td>Domestic dog imported through Boston from Singapore, OWS</td>
<td>PP, South Weymouth, MA</td>
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<td>2008 (May)</td>
<td>Horse imported from Argentina, NWS</td>
<td>Federal veterinarian, MAIC</td>
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<td>2010 (May)</td>
<td>Domestic dog imported from Venezuela, NWS</td>
<td>PP, Coconut Grove, FL</td>
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<td>2011 (Feb.)</td>
<td>Horse imported from Argentina, NWS</td>
<td>Federal Veterinarian, MAIC</td>
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<tr>
<td>2012 (Jan.)</td>
<td>Horse imported from Argentina, NWS</td>
<td>Federal veterinarian, MAIC</td>
</tr>
</tbody>
</table>
What if an outbreak of NWS was discovered in Florida?

- Are we prepared to respond?
- Can the agencies/groups involved work together effectively?
- What resources would be required?
- How quickly could the outbreak be contained and eradicated?
Screwworm Costs

Annual losses from this pest if reintroduced in the U.S. are estimated to be >$900 million annually.
Screwworm Response Training Exercise

- Initiated by Dr. Tom Holt, Division of Animal Industry, FDACS
- Developed in conjunction with UF CVM
- Funded by USDA
- First training exercise simulating a screwworm outbreak in the U.S.
January 24-25, 2012

State Emergency Operations Center (SEOC)
Goal

To give exercise participants an opportunity to plan, initiate, and evaluate current response concepts and capabilities in a simulated outbreak of New World screwworm (NWS) in Florida

Dr. Thomas Holt
Florida State Veterinarian
> 90 exercise participants
25 Agencies & Organizations Represented
Expert Panel

- Dr. John Welch, USDA/APHIS IS Screwworm Eradication Program
- Dr. Steve Skoda, USDA/ARS Screwworm research unit
- Dr. Alejandro Parra, COMEXA Mexican Agricultural Service
- Dr. Roberto Navarro, COMEXA Mexican Agricultural Service
- Dr. Wendy Gonzalez, Dominican Republic
A website was developed to accompany the exercise.

www.flsart.org/screwworm
Moderator – Dr. Paul Gibbs
Historical Perspective

Dr. Clarence Campbell
Florida State Veterinarian
1953-1991
Exercise Structure

Participants responded to a series of situation reports over 2 days

MAC, IMT and JIC interaction
Screwworm outbreak scenario

Interstate animal movement impacted

Affected livestock, pets, wildlife and human health
Simulated Multiple Press Briefings

Utilized a simulated Joint Information Center (JIC)
Summary

- Overall, state, federal, local and private stakeholder groups worked very well together

- Evident that early recognition, treatment of cases and stop movement of animals all very important in limiting an outbreak

- Sterile fly release is the only means of eradication
  - Dependent on having access to large numbers of sterile flies
Summary

- International cooperation with Mexico (COMEXA) was vital to rapidly supply sterile flies.

- The Mexican plant was able to quickly ramp up production from their normal 10 million flies per week to 100 million flies.
What was achieved?

- Participants (96%) felt that they were much better educated about NWS after the exercise.
- Participants (88%) felt better prepared to respond to a NWS outbreak in Florida.
**What was achieved?**

- Participants (95%) felt that interagency cooperation between federal and state agencies was good.

- Participants (81%) felt that communication with other organizations who participated was effective.
Recent Developments Raise Concern

- USDA ending funding for the plant in Mexico

- Questionable that the Panama plant could meet the added needs for a U.S. NWS outbreak

- It is important to have plans in place for a NWS response in the U.S.
Exercise Planning Team

- Fiona Maunsell, UF CVM
- Dana McDaniel, UF CVM
  - Paul Gibbs, UF CVM
- Kendra Stauffer USDA/APHIS
- Greg Christy, FDACS/DAI
The End

Thank you