# Forest Pest Invaders : How to Protect our Forests

**New Jersey Department of Agriculture**
**Plant Industry**

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# Asian Longhorned Beetle

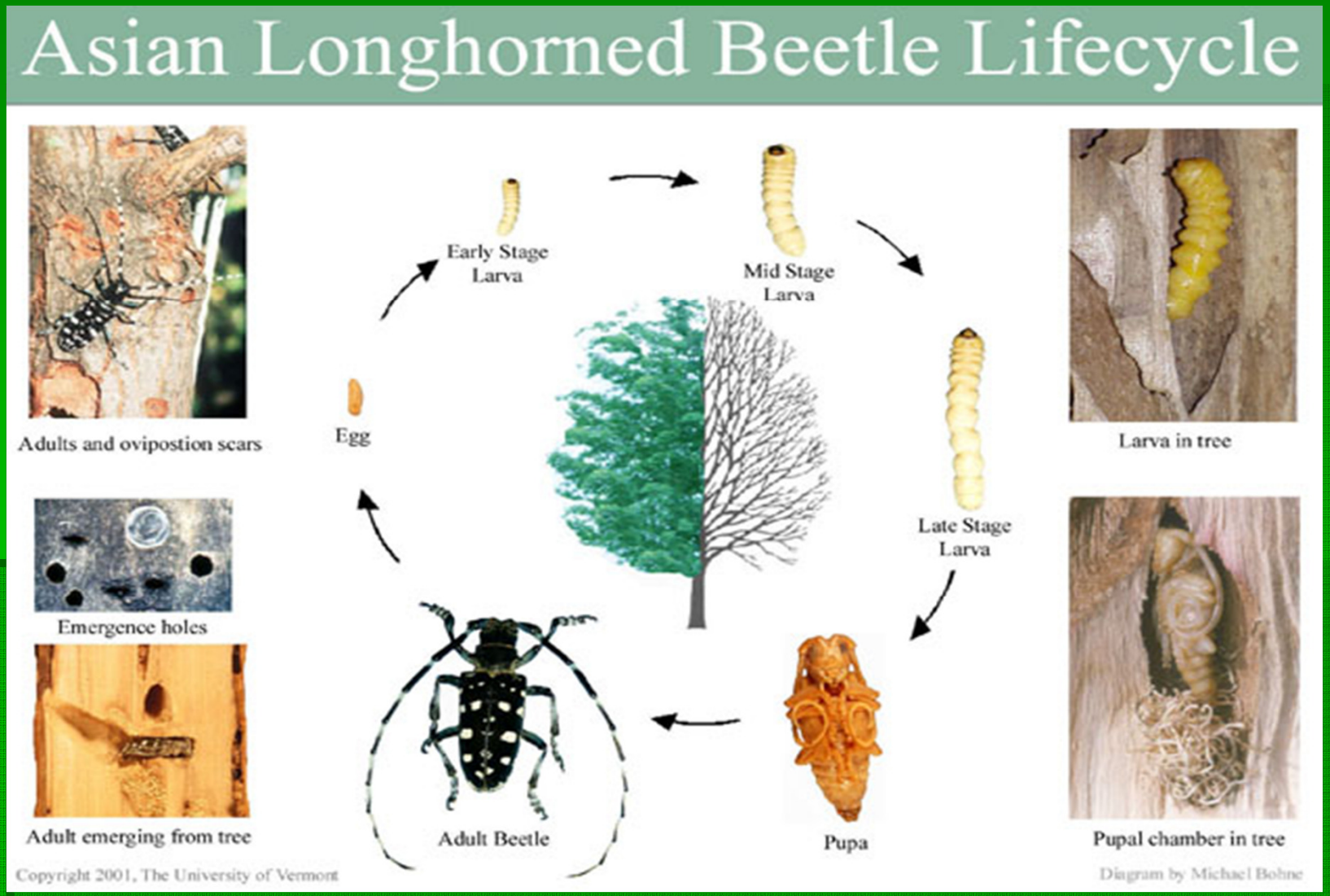
*Anoplophora glabripennis*

- In 1996 Asian Longhorned Beetle (ALB) was first discovered in Brooklyn, NY.
- ALB came over from Asia on SWPM.
- The Beetle attacks many of our native hardwood trees.
- In 2002 ALB was discovered in Jersey City and again in 2004 in Union and Middlesex Counties near Carteret.
- An Eradication program was established in both of these locations to stop the spread of ALB.

# Asian Longhorned Beetle

- Adult ALB are about 1”-1 1/2” in length.
- Primary Host: Maple, Birch, Willow, Ash, Horse Chestnut, Elm.
- Adult Beetles feed on the foliage and new twig growth of the tree. The larvae feed on cambium layer and the hardwood of the tree creating large galleries (tunnels).
- An adult female beetle will lay up to 90 eggs under the bark. Adults emerge from June through the first killing frost.
- An estimate of $669 billion in industry loss is at risk if ALB is left unchecked. These industries include maple syrup, timber, nursery stock, and tourism.

# ALB Lifecycle



# Asian Longhorned Beetle Symptoms


Oviposition Site


Exit Holes


Frass


Exit Holes

# ALB Symptoms (Cont.)


Frass and Adult at the Base of the tree


Larvae eating at wood


Canopy Die Back

# ALB Eradication Efforts:
## Tree removal and chemical treatment

# Emerald Ash Borer

*Agrilus planipennis*


- **Emerald Ash Borer (EAB) is an invasive insect from Asia originally discovered in 2002 in Michigan.**
- **EAB arrived in the US on solid wood packaging material (SWPM) carried on ships and planes.**
- **In relation to NJ, EAB has been found as close as New York, Maryland and Pennsylvania.**

# EAB Lifecycle

# Emerald Ash Borer

- Emerald Ash Borer larvae (top-right) feed on the cambium layer of the tree.
- Feeding and damage begins in the upper canopy of the tree.
- This feeding stops the flow of nutrients and water causing the tree to die.
- The Adult beetles (bottom-right) feed on the foliage of the tree.
- Adult EAB are 1/2 inch in length and 1/8 inch wide.
- Adults are active from May to August

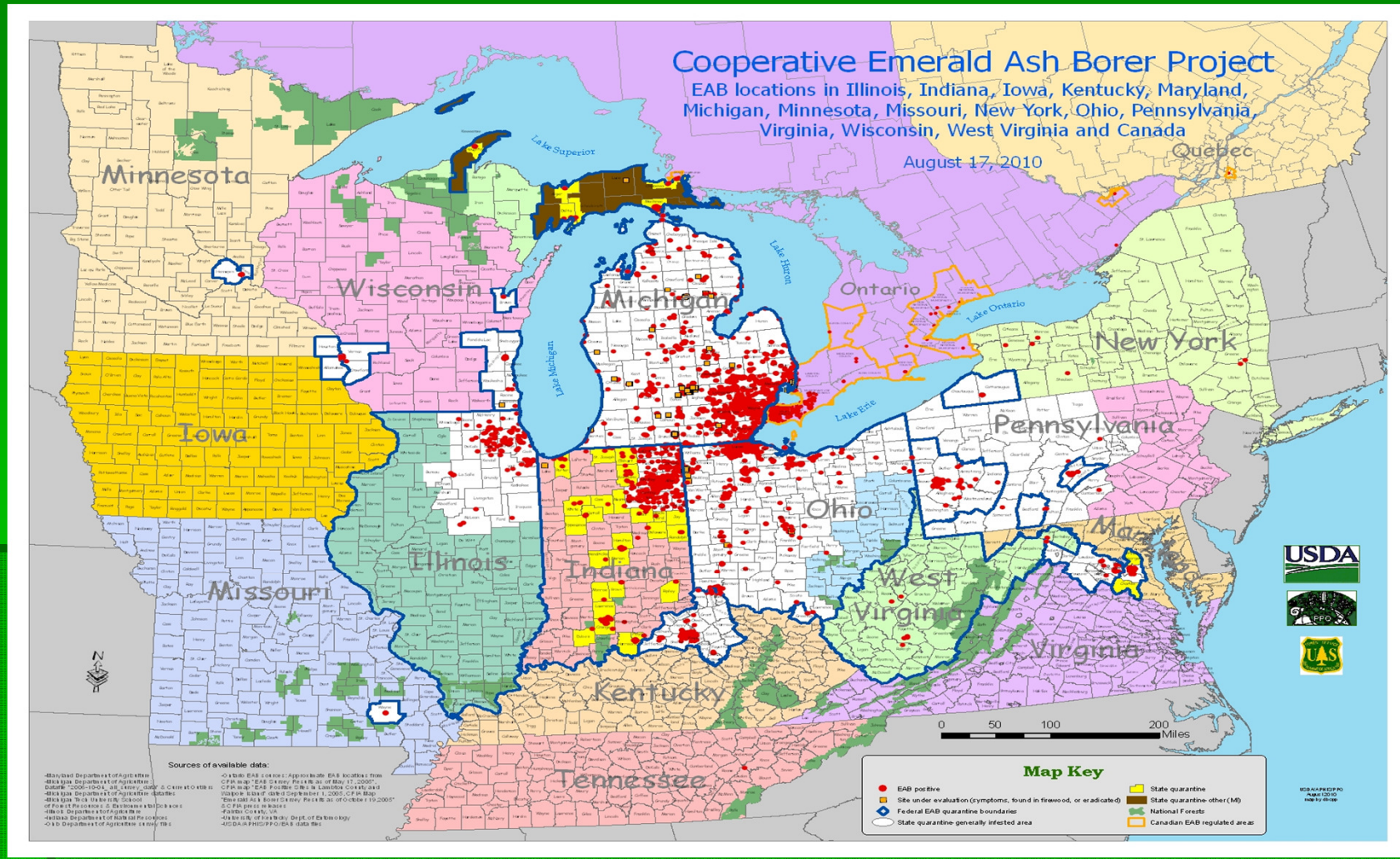
# Emerald Ash Borer Damage

D-Shaped Exit Holes

Canopy Dieback

Larvae galleries in the cambium layer

# US EAB Infestations



# EAB Traps and treatment

"A purple panel sticky trap in an ash tree that was hung by an Emerald Ash Borer Survey Team. These traps will be inspected for the presence of emerald ash borer adults in mid-summer and will be removed in mid- to late August."

# Sirex Woodwasp

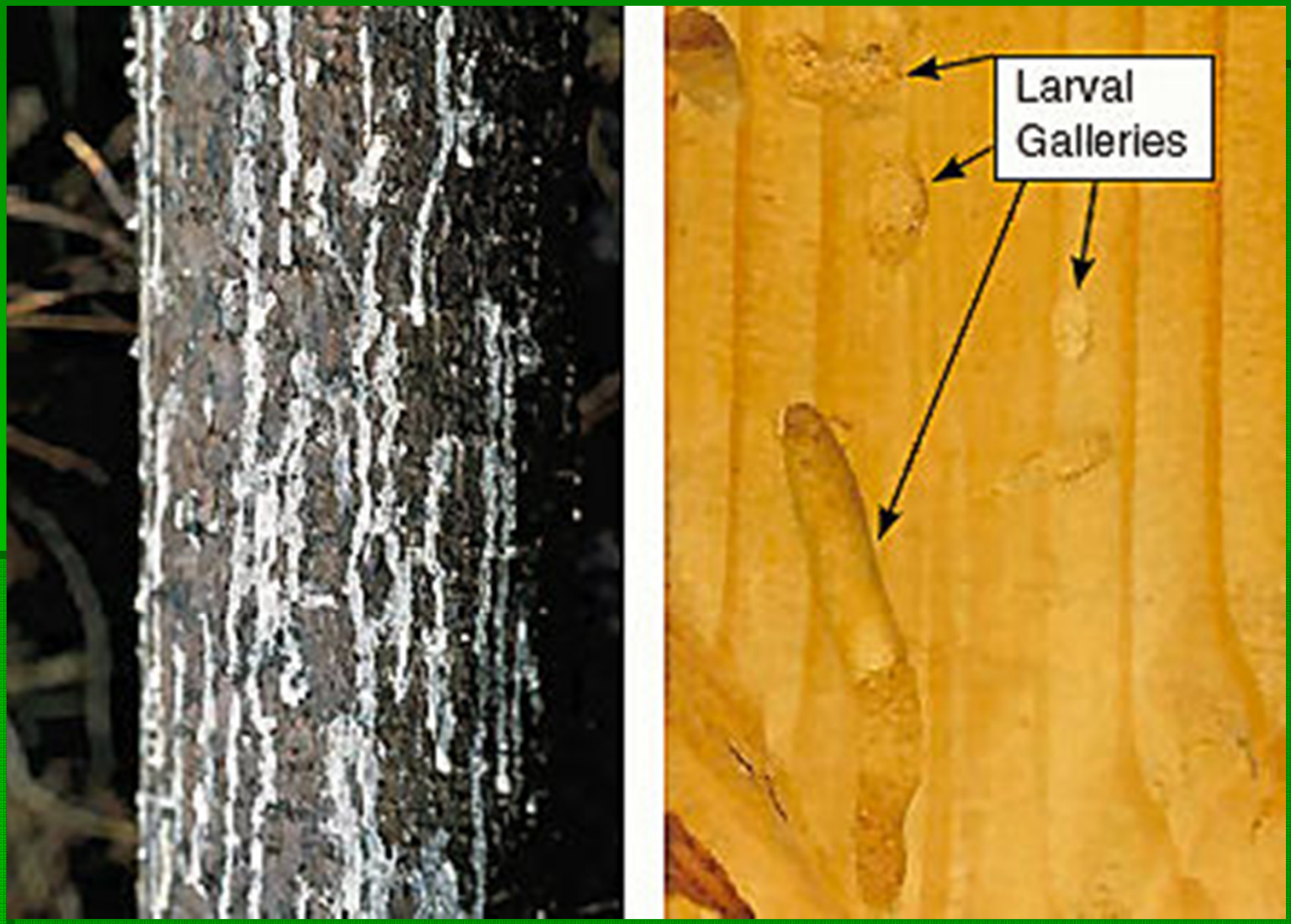
*Sirex noctilio*

- Native to Eastern Europe and were first brought over to the US on solid wood packing material (SWPM).
- Sirex adults are about a inch in length and will emerge from June until September
- Sirex will attack healthy long-needled pines such as White, Red and Pitch.
- Closest known infestation is in New York state.

# Sirex Woodwasp

- Female Sirex will seal up an oviposition hole with a phytotoxic mucus to help weaken the tree. This will cause a symbiotic fungus to grow in the cambium layer for the larvae to feed on.
- Larvae make “U” shaped galleries under the bark .
- Damage caused by the larvae stage of Sirex Woodwasp. (Right)

# Sirex Woodwasp Symptoms

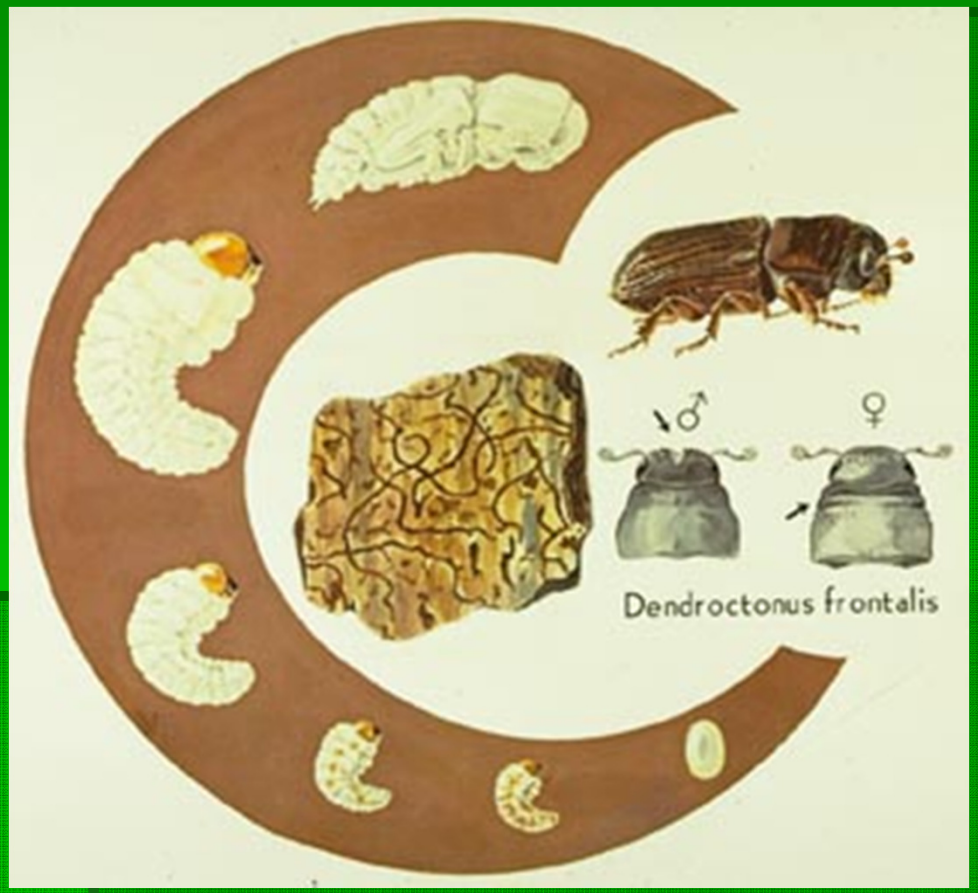


# Southern Pine Beetle

*Dendroctonus frontalis*

- Southern Pine Beetle (SPB) are native to southern United States but the range has expanded due to climatic warming to include New Jersey.
- SPB are 2mm to 4mm in size.
- Attacks two and three needle pines that include Shortleaf, Loblolly, Virginia and Pitch Pines. SPB targets mature pine trees.
- SPB are a major threat to the Pine Barrens because they are primarily composed of Pitch Pines.
- Adults emerging from April through September.

# Southern Pine Beetle Symptoms/Lifecycle




Lifecycle

Pitch tubes

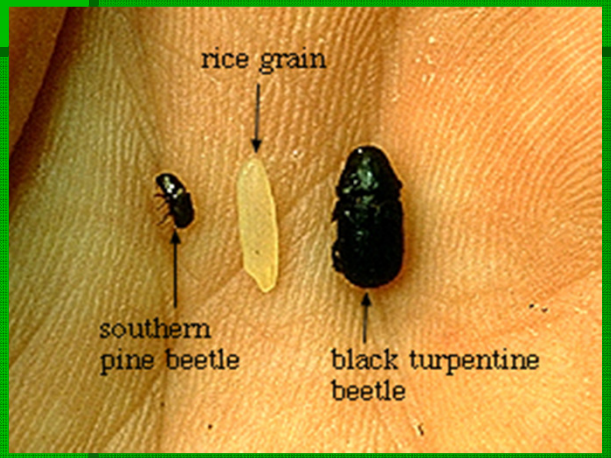
# Blue-stain Fungus

- SPB carry a symbiotic fungus on them call blue-stain fungi.
- This fungus inhibits water transport to the canopy causing the tree to die.

# Southern Pine Beetle

- Aerial photograph of the SPB damage. (top right)
- Pine Needles will change color (reds and yellows) and drop once the trees are infested.
- Bottom Left is a picture of “S” shaped galleries made by the larval stage of the beetle.
- Forests are susceptible to wildfire due to the increase of dead needles and limbs in the understory.

# Before and After SPB




# Thousand Cankers Disease

*Geosmithia morbida*

- Fungal Pathogen transmitted by the native walnut twig borer
- Only affects walnut species

# Buy and Burn Locally!

# Protect our Forests!

# Questions?

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