

# ***PHYLLOPHAGA AND OTHER GRUB MANAGEMENT***



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[www.entomology.umn.edu/cues](http://www.entomology.umn.edu/cues)**

# Japanese beetle is no longer a quarantine pest in Minnesota

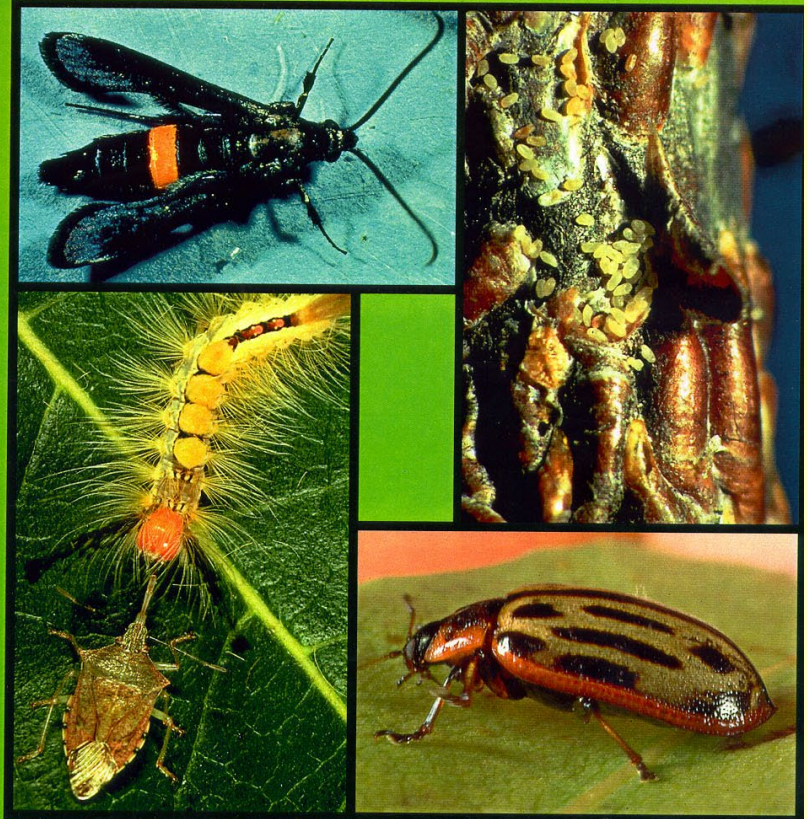


**UMES/MDA bulletin on managing Japanese beetle**

# Spring 2003: IPM of Midwest landscapes



## IPM (Integrated Pest Management) of Midwest Landscapes



Cooperative Project of NCR 193, North Central Committee on Landscape IPM  
Vera Kruschik, University of Minnesota  
John Davidson, University of Maryland

# Japanese beetle



**Five tufts of white hairs along the wing margins.**

# False Japanese beetle



**False Japanese beetles lack the 5 tufts of white hair along the wing margin.**

# *Phyllophaga*, May/June beetle



**These May/June beetles are attracted to lights.  
The largest species has a three year life cycle.**

# Northern masked chafer



**Northern masked chafer has dark areas in a circular patch behind the head.**

# Rose chafer

Clemson University  
USDA Cooperative Extension Slide Series  
[www.forestryimages.org](http://www.forestryimages.org)



**Note the long legs and pale color.**

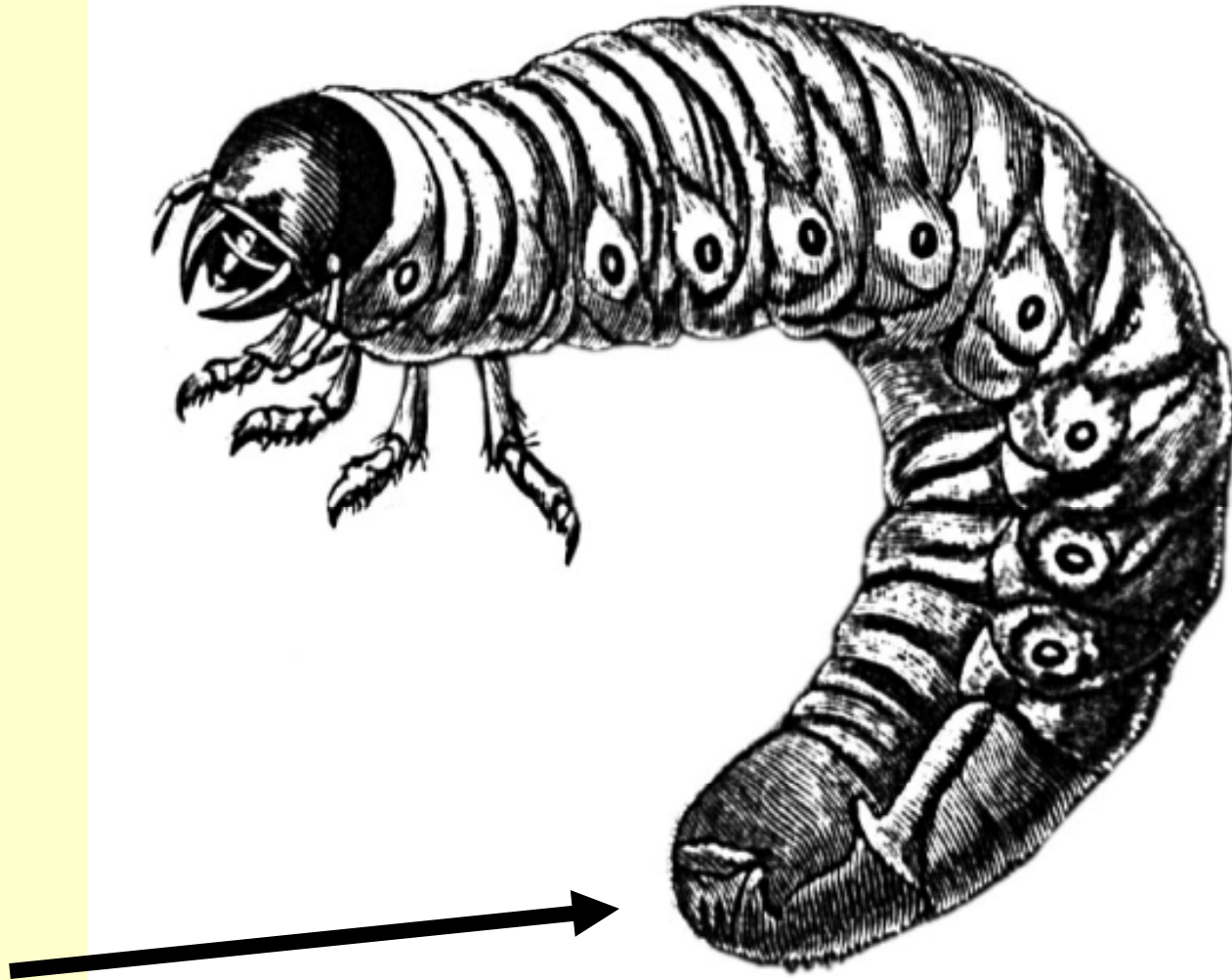


# Black turfgrass *Ataenius*

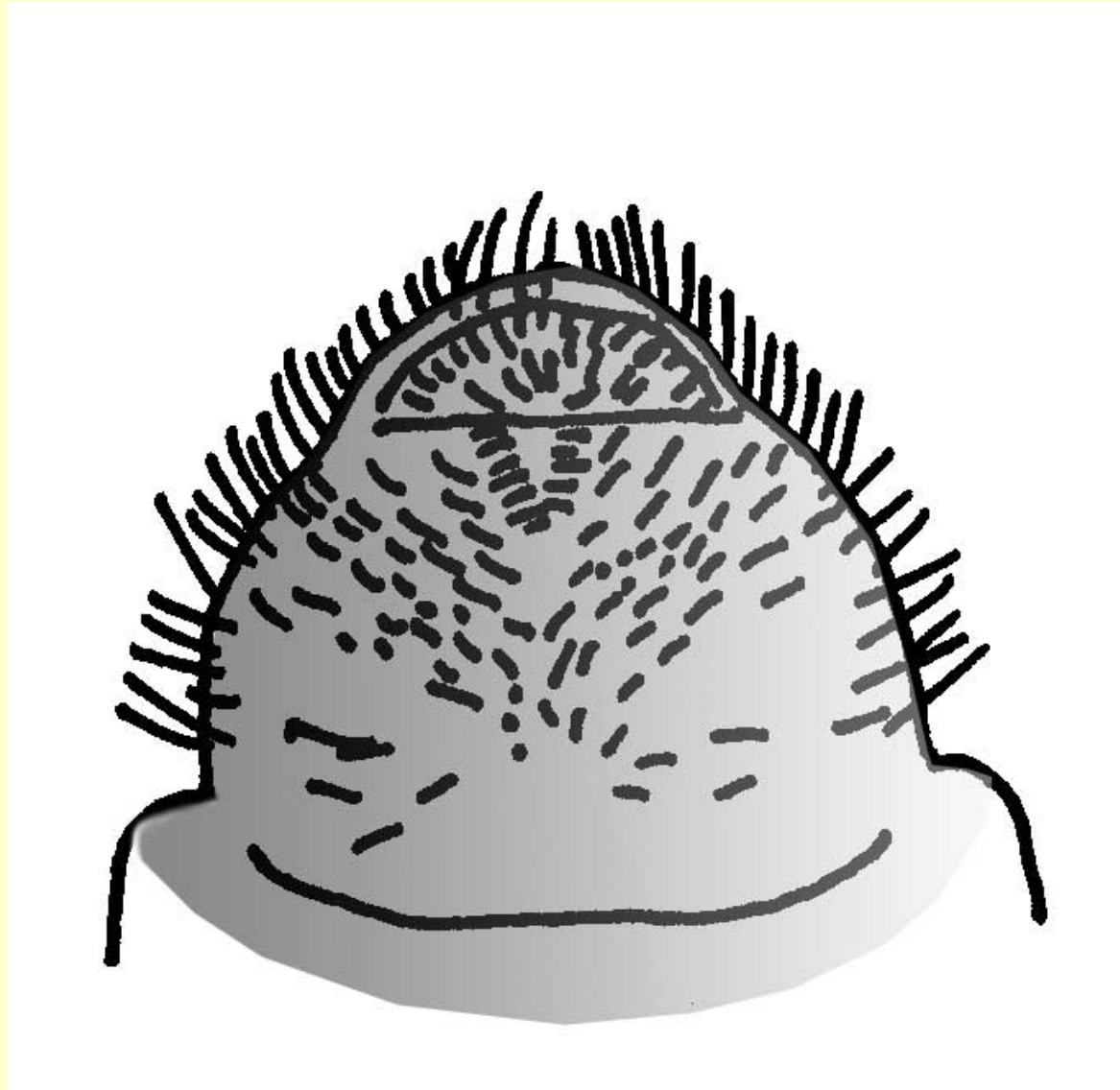


**Smallest scarab beetle in turf.**

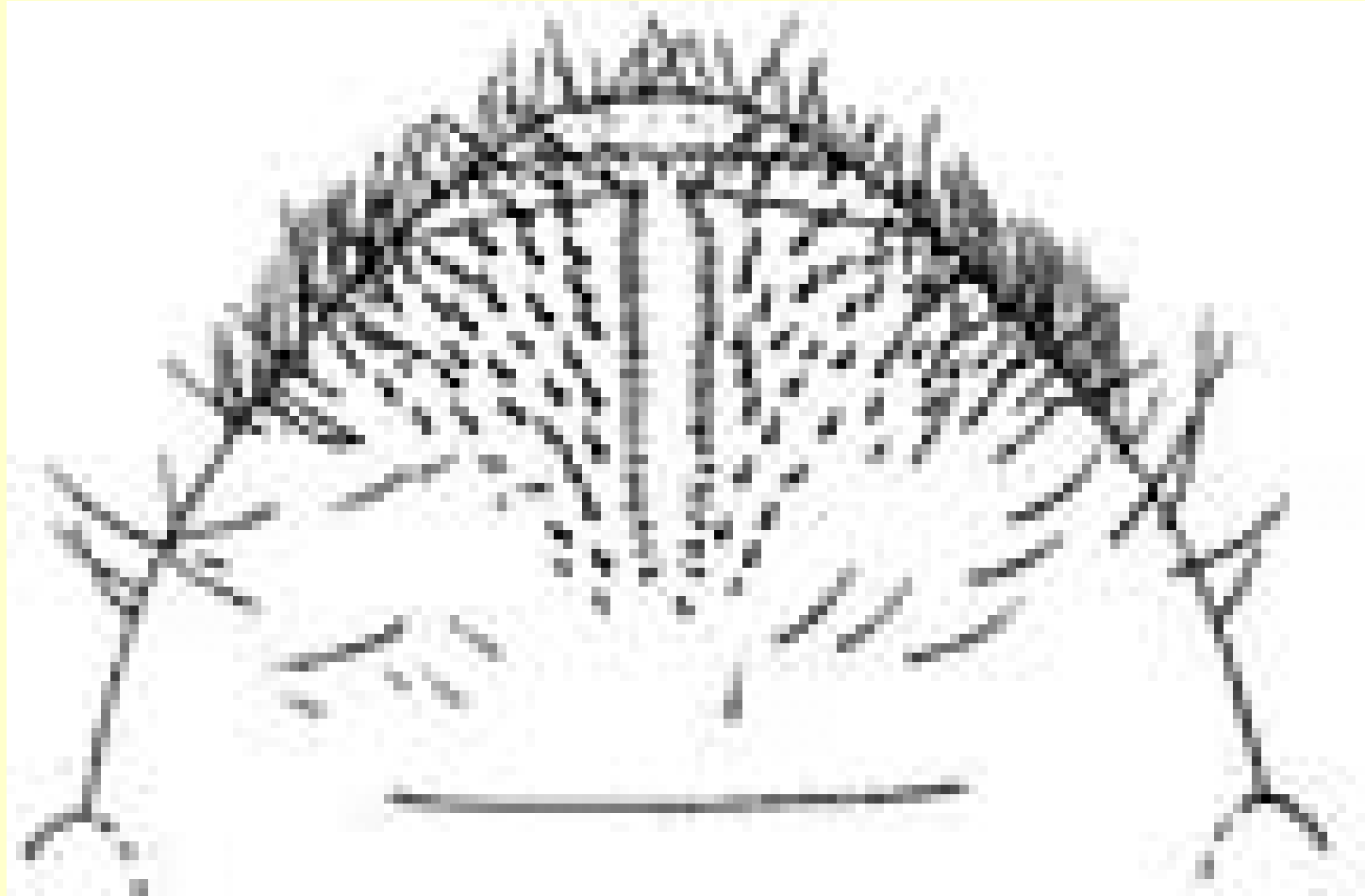
# Raster



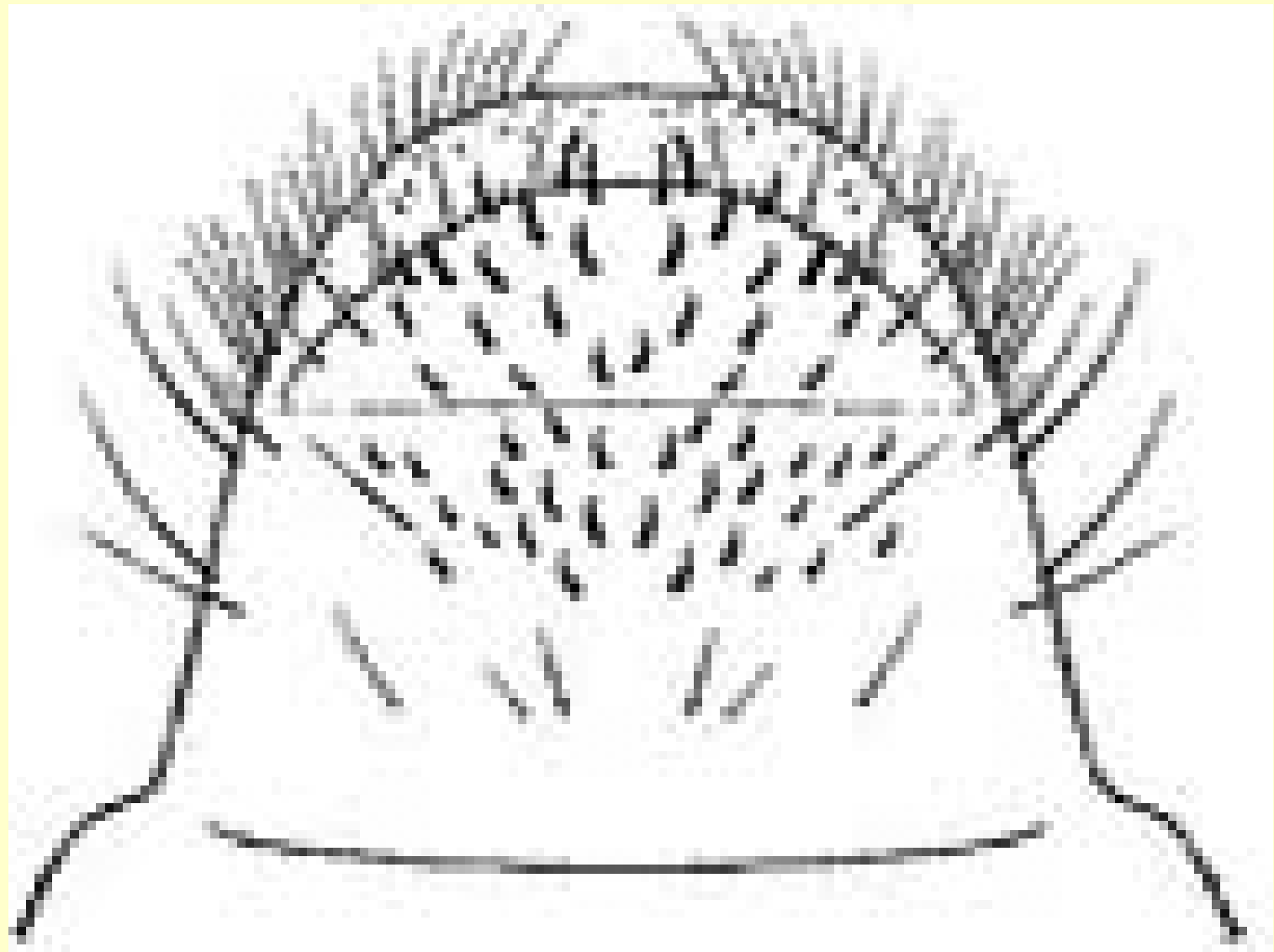
# Raster of Japanese beetle



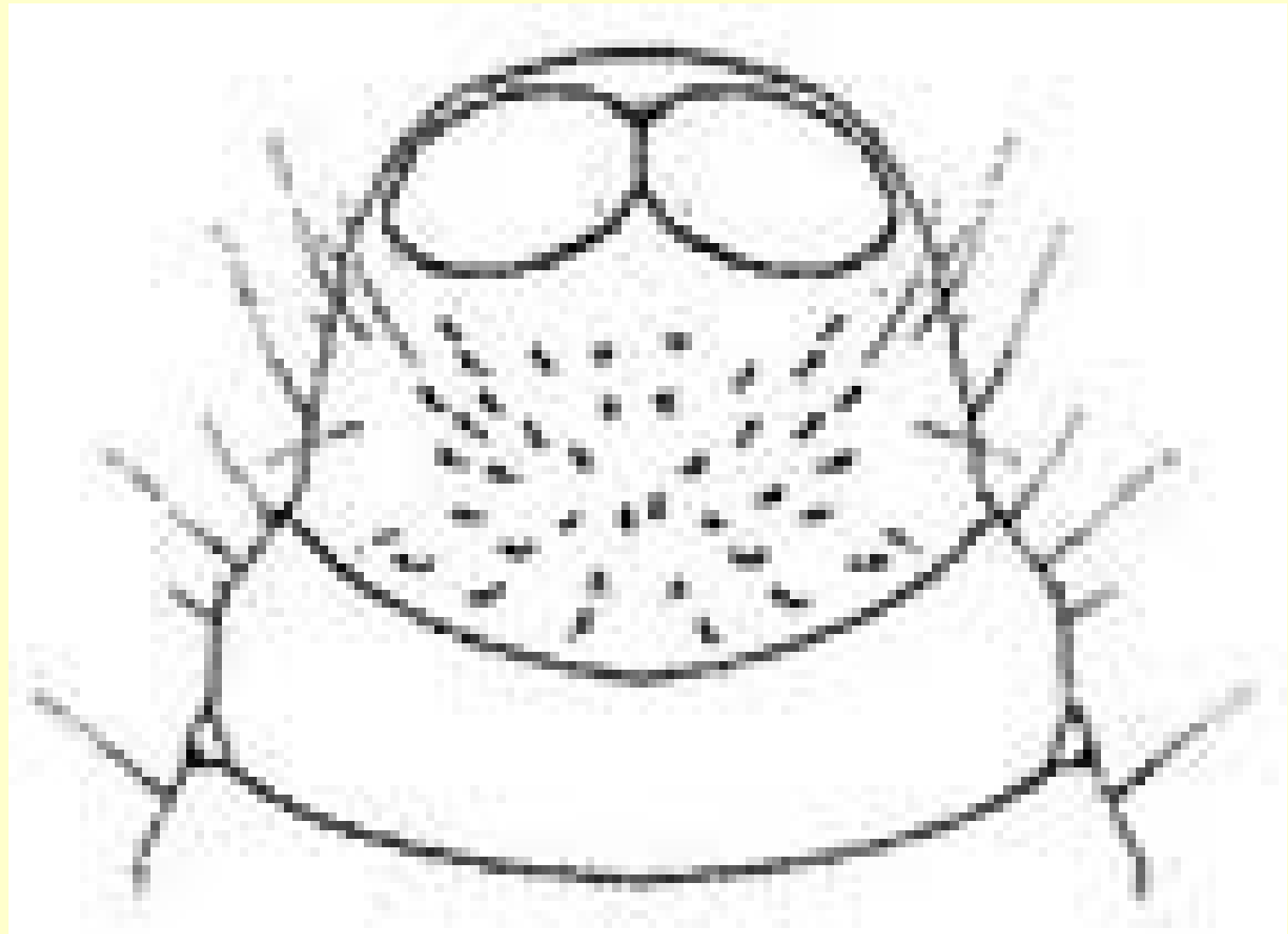
# Raster of *Phyllophaga*, May/June beetle



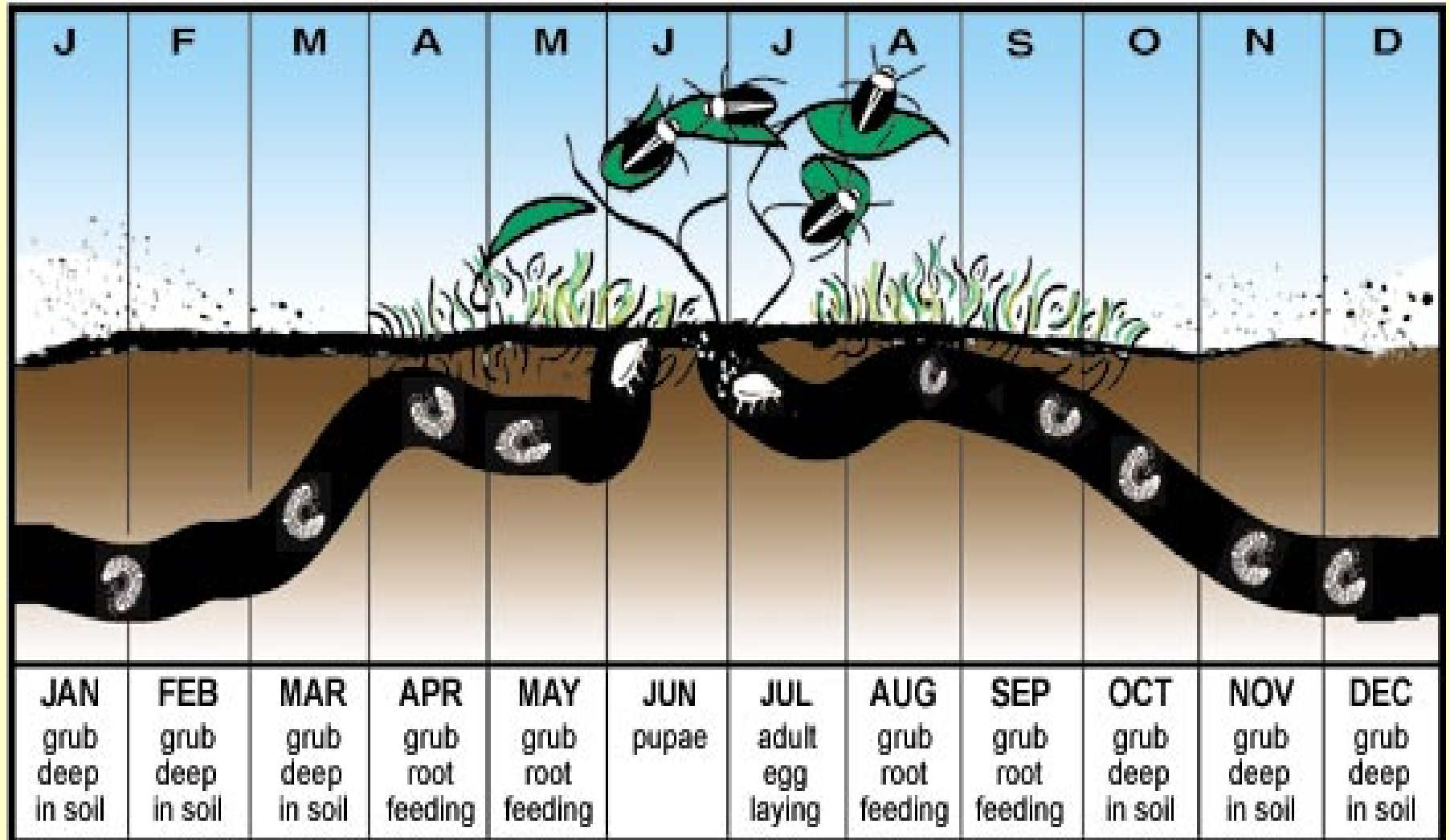
# Raster of masked chafer beetle



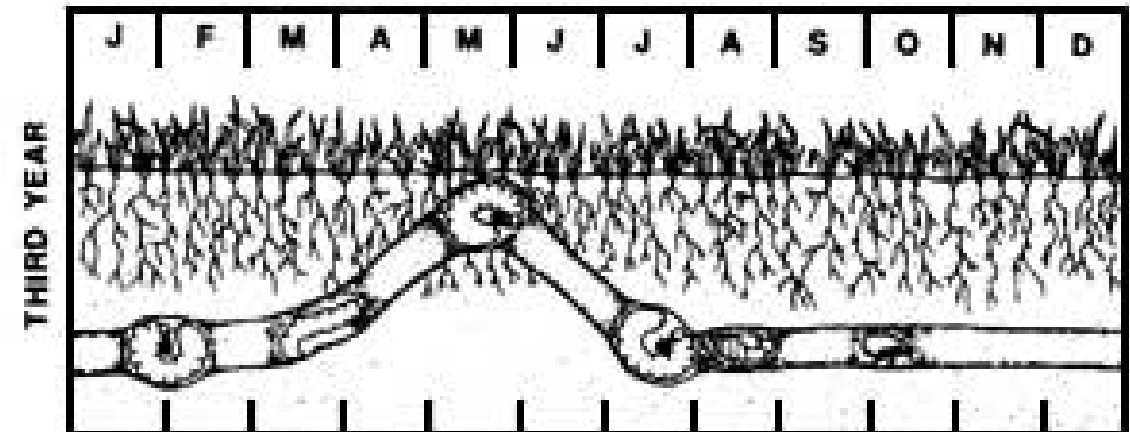
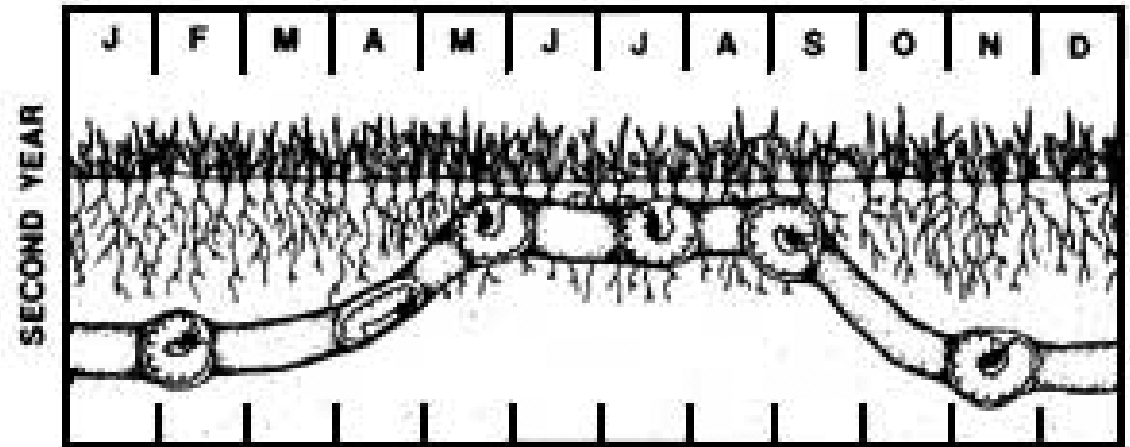
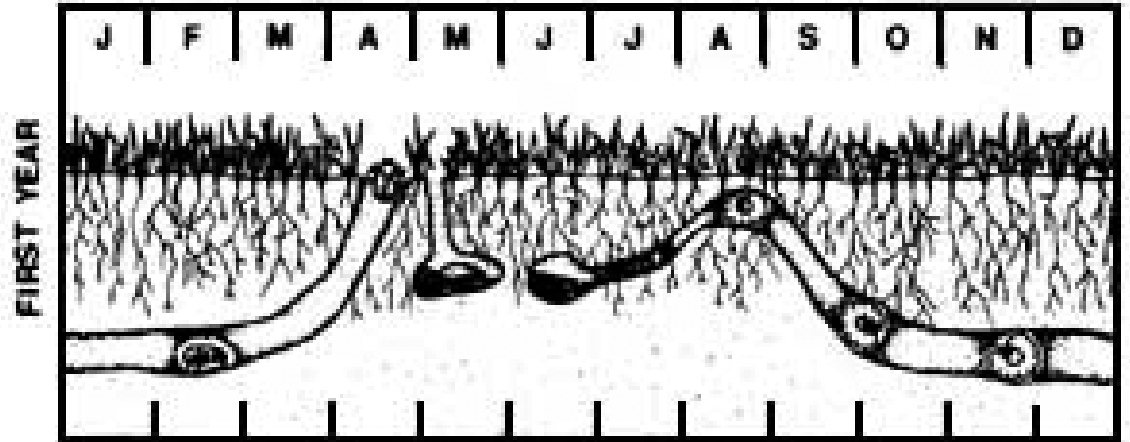
# Raster of black turfgrass *Ataenius*



# Life cycle of Japanese beetle



**Three year cycle  
of *Phyllophaga*  
May/ June beetle**





# **Pesticide choice: Preventative**

**Imidacloprid - is NOT fast acting, so use as a preventative control, not as a rescue treatment.**

**Apply imidacloprid after May 15 and before August 15. It has minimal risk to birds and fish.**

## **Pesticide choice: Preventative**

**Halofenzide - is NOT fast acting, so use as a preventative control, not as a rescue treatment. Halofenzide mimics an insect hormone and is best applied when adults are active and laying eggs from June to the beginning of August. Minimize thatch since it will prevent the insecticide from penetrating to the roots.**

## **Pesticide choice: Rescue**

**No longer available for turf:  
bendiocarb, chlorpyrifos,  
diazinon, isofenophos, oftanol**

## **Pesticide choice: Rescue**

**Trichlorfon - is a fast-acting material, but is susceptible to alkaline hydrolysis. One-half of the active ingredients will be degraded in 30 minutes at a pH of 9. Trichlorfon can be used as a rescue treatment when damage is observed.**

# **Ecosystem Management**

## **AVOID**

**Norway maple**

**gray birch**

**hollyhock**

**black walnut**

**mountain ash**

**flowering fruits:**

**crabapple, apple**

**cherry, black cherry,**

**plum**

**horse chestnut**

**roses**

**linden**

**grapes**

**elm**

# **Ecosystem Management**

## **BETTER CHOICE**

**red maple**

**boxelder**

**red oak**

**white ash**

**lilac**

**spruce**

**silver maple**

**white oak**

**poplar**

**green ash**

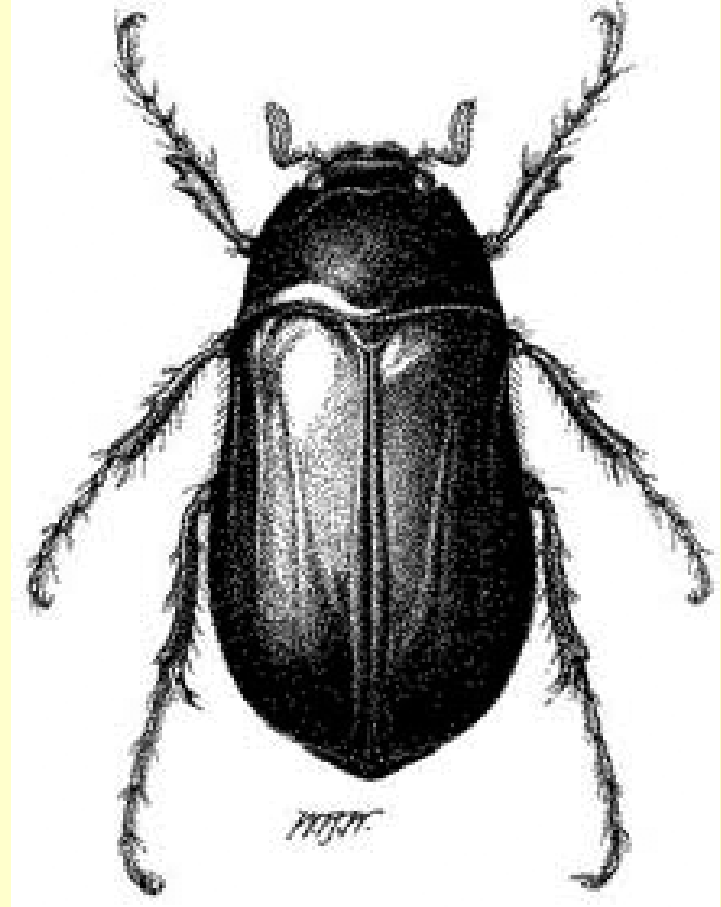
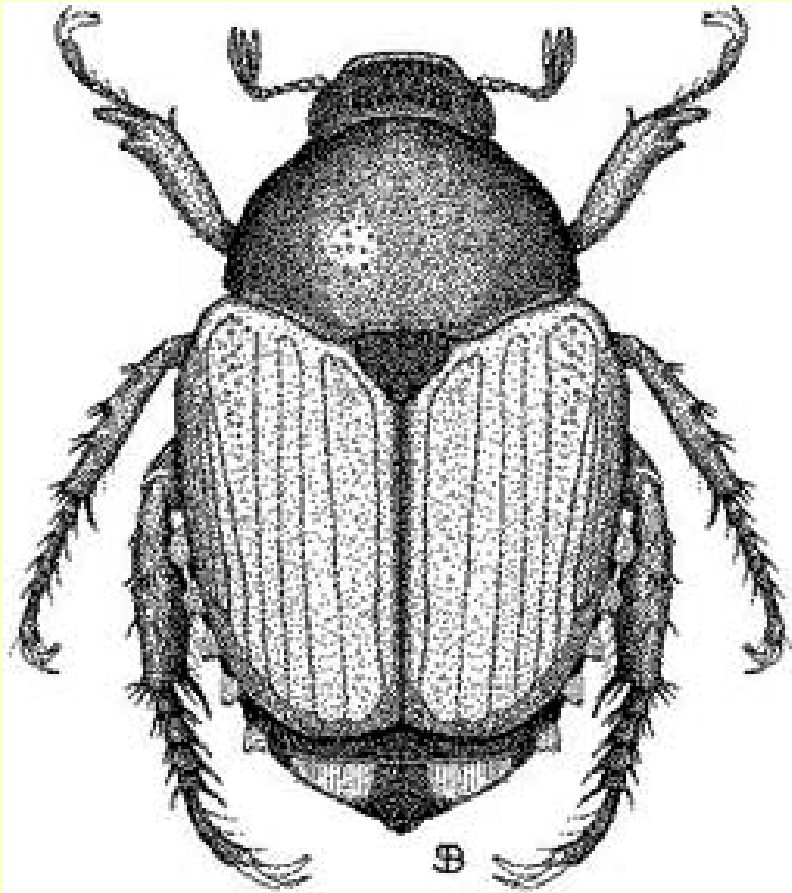
**euonymus**

**yew**

**QUIZ**

**A**

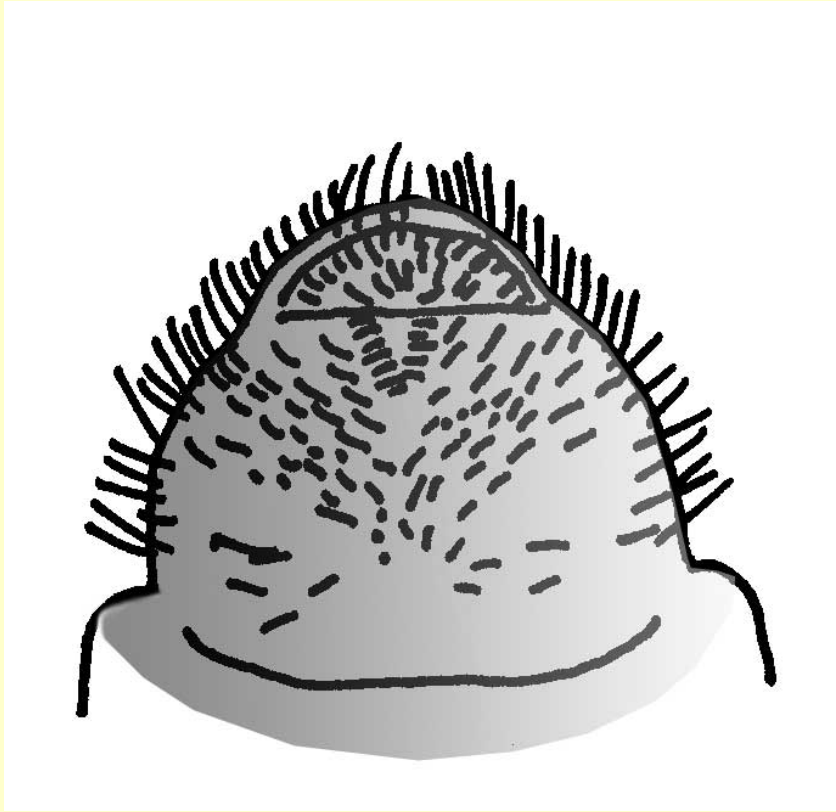
**B**



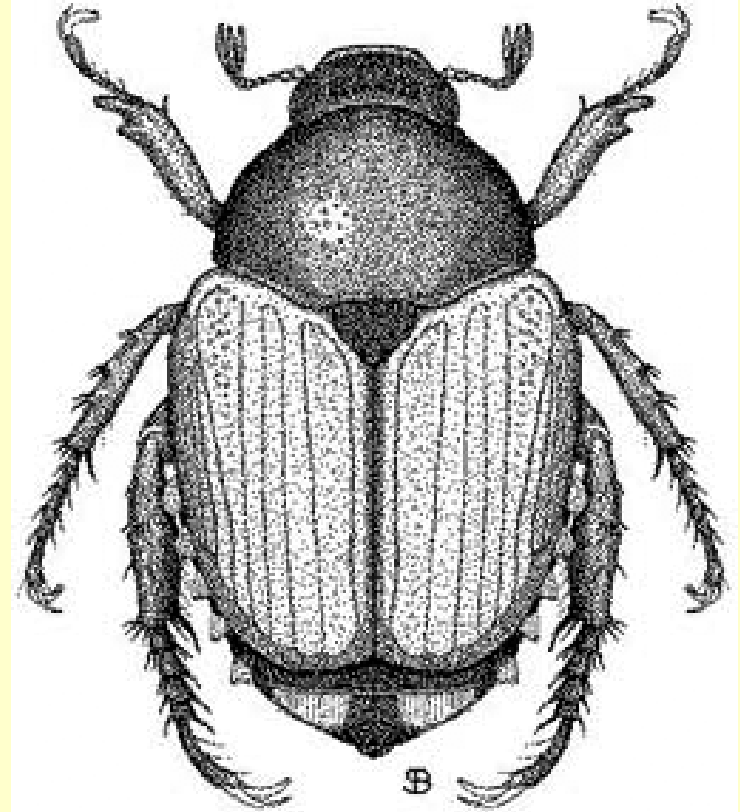
**What species?**

# QUIZ

## A



## B

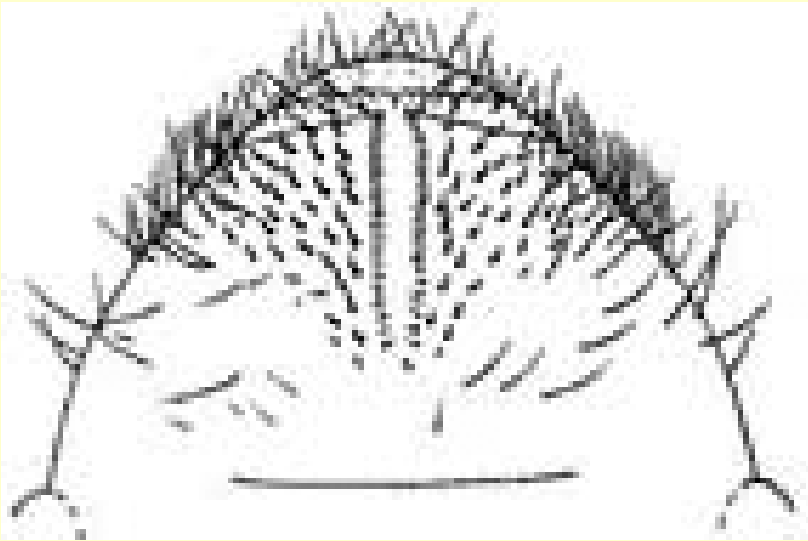


**What species?**

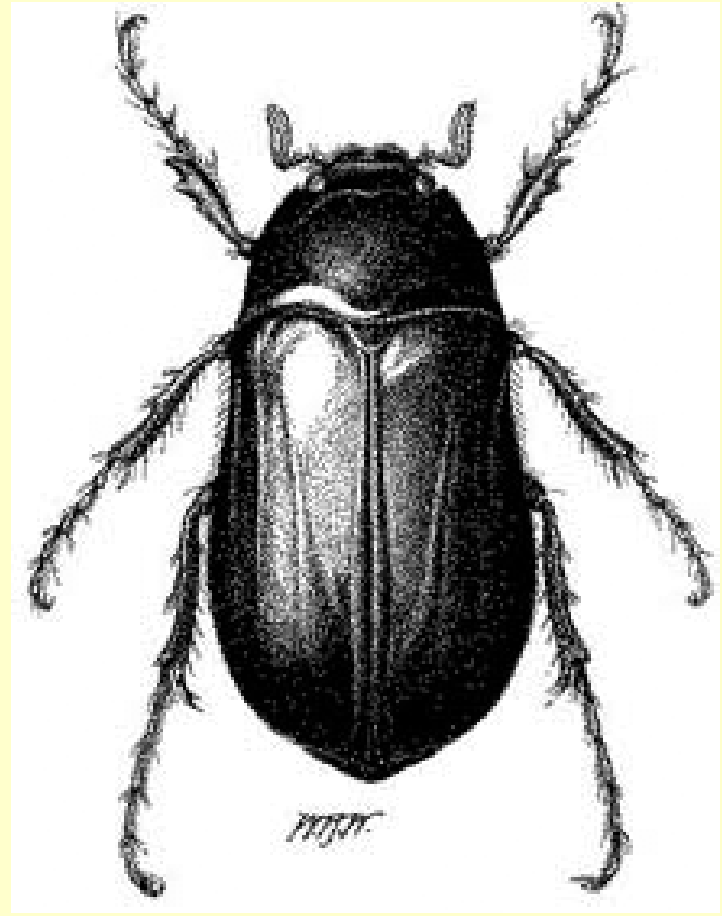


# QUIZ

# A



# B



# What species?

# **Black vine weevil**

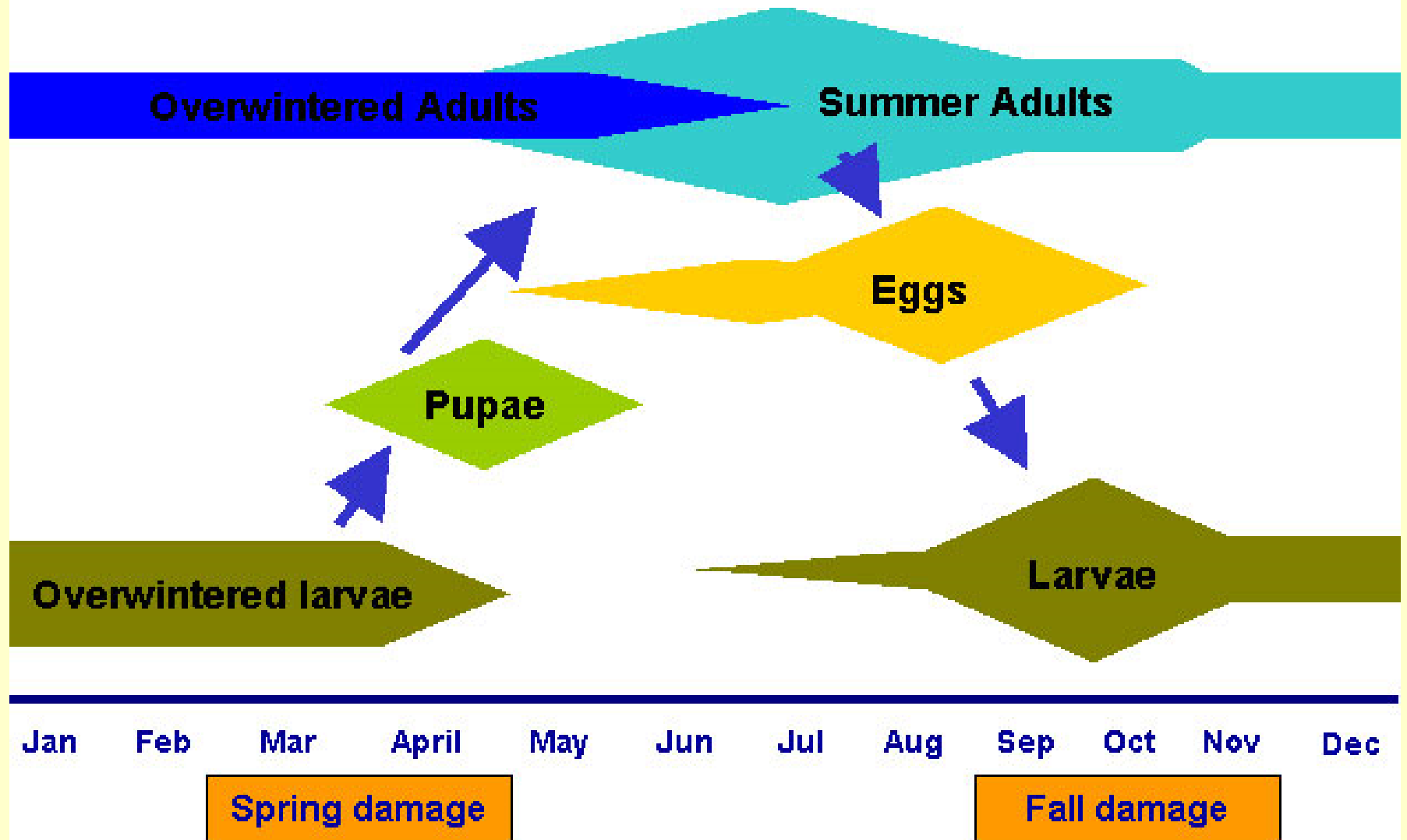
## **Strawberry root weevil**



# Black vine weevil adult



# Life Cycle of Black Vine Weevil (Moorhouse et al., 1992)



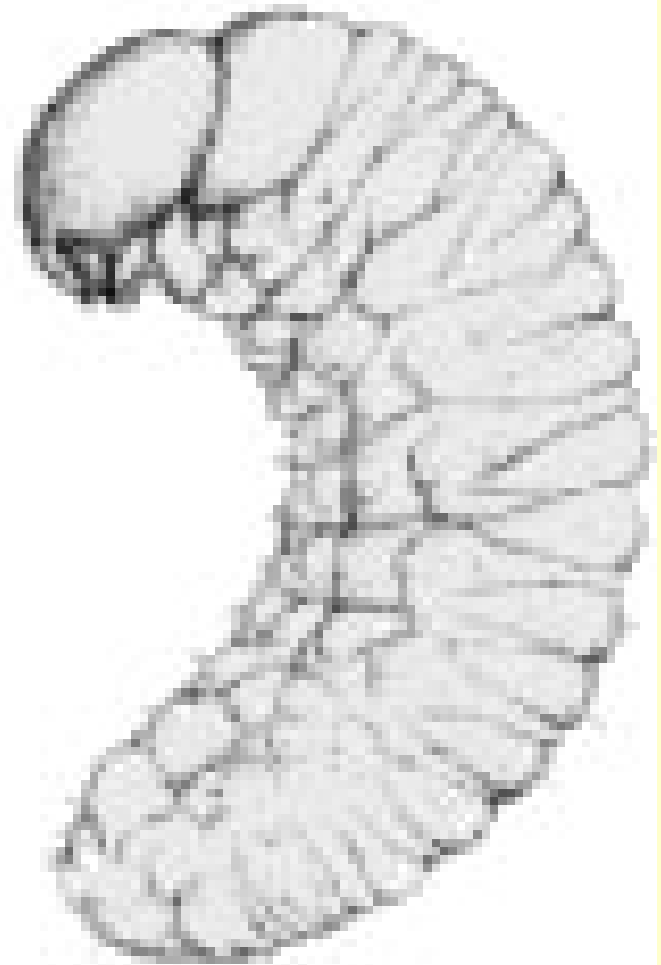
# Black vine weevil larva

Peggy Greb  
USDA Agricultural Research Service  
[www.forestryimages.org](http://www.forestryimages.org)



# Weevil larva

# Scarab beetle grub



# Pesticides for black vine weevil

<b>Common name</b>	<b>Trade name</b>	<b>Class</b>
<b>Acephate</b>	<b>Orthene</b>	<b>organophosphate</b>
<b><i>Beauveria bassiana</i></b>	<b>Botanigard</b>	<b>biological</b>
<b>Bifenthrin</b>	<b>Talstar</b>	<b>pyrethroid</b>
<b>Cyfluthrin</b>	<b>Tempo</b>	<b>pyrethroid</b>
<b>Nematodes</b>	<b>Nemasys H</b>	<b>biological</b>
<b>Imidacloprid</b>	<b>Marathon</b>	<b>chloronicotinyl</b>
<b>Permethrin</b>	<b>Astro</b>	<b>pyrethroid</b>

# ***Beauveria bassiana*** **attacks black vine weevil**



Elm Leaf Beetle Pupae Infected With *Beauveria*



**Parasitic nematodes**  
***Steinernema carpocapsae***  
***Heterorhabditis bacteriophora***  
**attack black vine weevil**



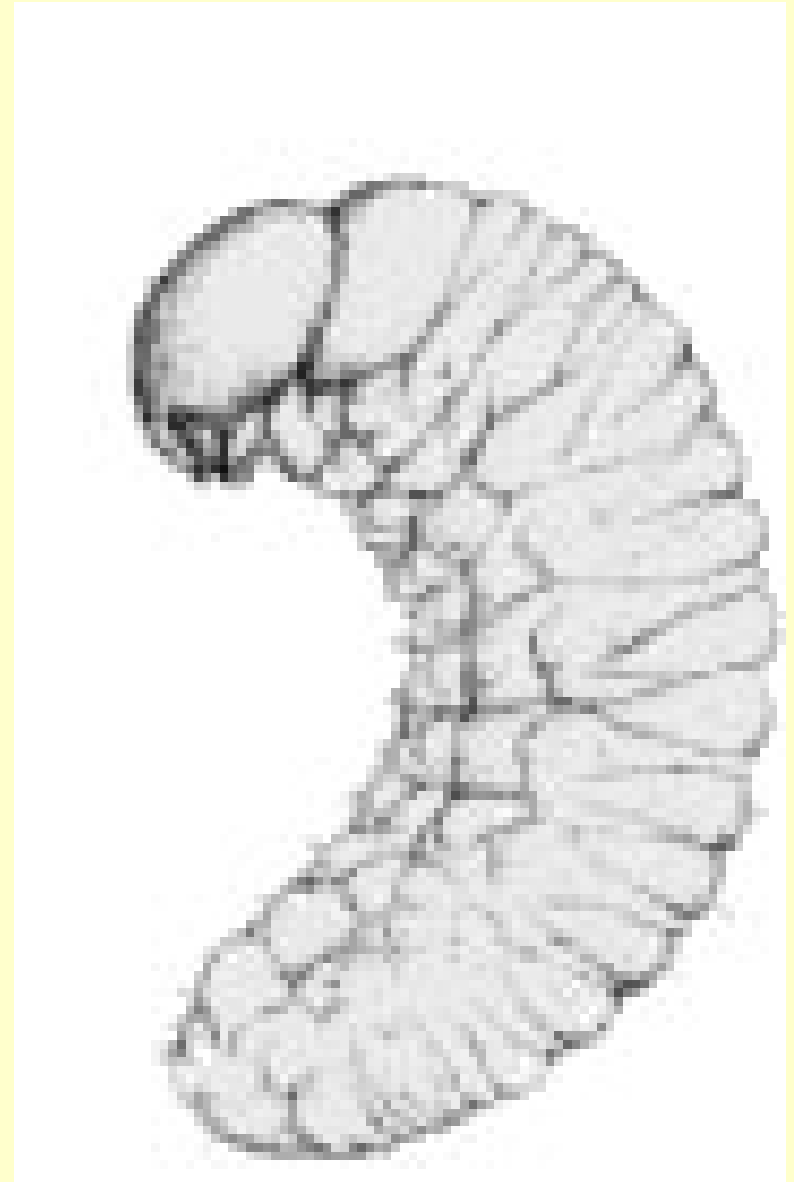
Elm Leaf Beetle Pupa Infected With Nematodes

**QUIZ**

**A**



**B**



**What species?**