Integrated Pest Management
IPM

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IPM elements

1. **Prevention**
   - Housekeeping
   - Sealing ingress
   - Removing attractants
   - Isolation, quarantine, or pre-emptive freezing
2. **Monitoring**
   - Blunder traps
   - Recognizing signs
   - Identifying pests
   - Staff training and record keeping
3. **Response**
   - Freezing
   - Traps

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BULLETIN

An Information Source for Alaska's Museum Community

Integrated Pest Management Made Easy

by Ellen Carrlee

Your building has pests. Yes, it really does. So does ours. But are they a threat to your collection? With an Integrated Pest Management (IPM) system, you can be actively prevent infestation and effectively respond if one occurs.

things that attract them, you're preventing the problem in the first place.

Monitoring

Monitoring your pest populations with sticky traps gives you an early warning of trouble afoot. We order our traps through

Insect Identification

Common Heritage Eaters

1. Cigarette beetle
2. Drugstore beetle
3. Confused flour beetle
4. Saw-toothed grain beetle
5. Carpet beetle
6. Common carpet beetle larvae
7. Varied carpet beetle

http://museums.alaska.gov/documents/bulletin_docs/bulletin_29.pdf

Prevention

- Housekeeping
- Food and drink in controlled areas
- Sealing ingress
- Removing attractants
- Isolation, quarantine, or pre-emptive freezing
- Cats and dogs are incompatible with preservation environment

Monitoring

- catch insects before they can be found visually
- catch a wide range of species
- monitor areas which are difficult to inspect
- trap insects for identification and count
- indicate an increase in insect numbers
- Indicate environmental concerns
- highlight any failure of control treatment

http://www.insectslimited.com/

IL-1600-100 box of 100 (300) $67

Clue to environmental conditions

SHELDON JACKSON MUSEUM PEST CHART

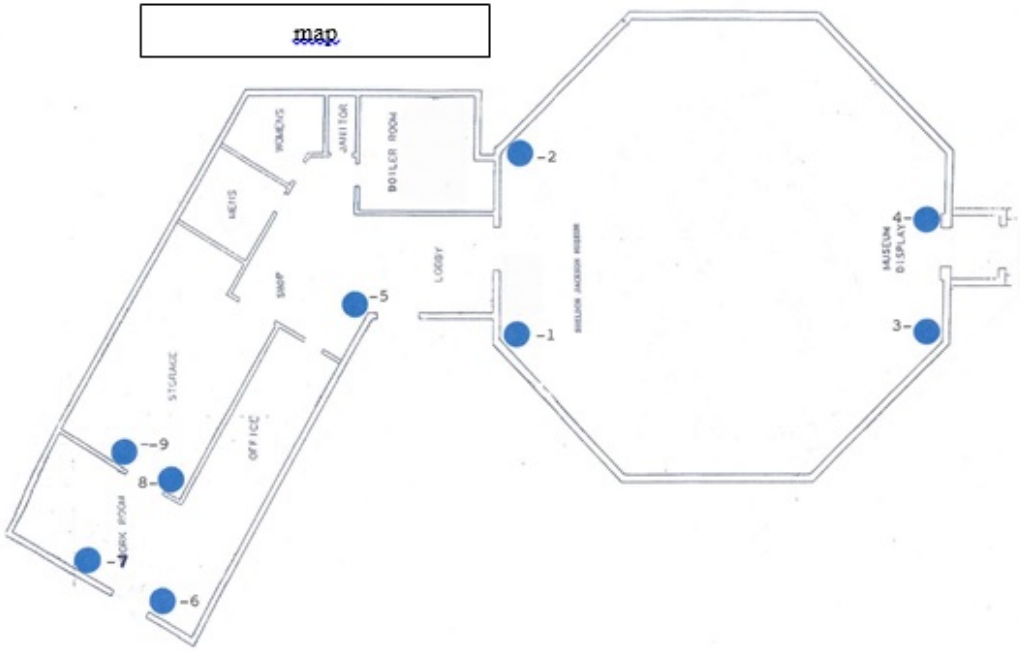
Date: June to Sept, 2012

date set	*trap #*	*LOCATION*	*date picked up*	*type of trap*	*Number of bugs and ANALYSIS*	*please initial*
		GALLERY				
6/3/2012	1	Entrance Corner	8/30/12	*	3 spiders, 1 carabid	Scott
6/3/2012	2	Recent Acquisitions case	8/30/12	*	3 carabids, 4 spiders, 5 sowbugs, 1 fly	Scott
6/3/2012	3	Fire Exit-NWC side*	8/30/12	*	1 carabid, 4 sowbugs, 2 spiders	Scott
6/3/2012	4	Fire Exit-Eskimo side*	8/30/12	*	3 sowbugs, 1 carabid, 4 spiders, 1 moth, 2 millipedes	Scott
		FOYER/OFFICE				
6/3/2012	5	Foyer Entrance*	8/30/12	*	8 sowbugs, 1 carabid, 2 spiders, 1 (outdoor) moth, 1 fly	Scott
6/3/2012	6	Rear cargo door-left*	8/30/12	*	14 sowbugs, 3 carabids, 1 spider	Scott
6/3/2012	7	Curator desk-(right side cargo door)	8/30/12	*	18 sowbugs, 1 centipede, 1 spider	Scott
		COLLECTIONS STORAGE				
6/3/2012	8	Inside Entrance-right	8/30/12	*	2 centipedes, 3 spiders	Scott
6/3/2012	9	Entrance-left under Curator desk	8/30/12	*	1 spider	Scott
		STRATTON LIBRARY				
6/3/2012	10	Hands on storage room to right of door	8/30/12	*	3 centipedes, 16 carabids, 6 spiders, 3 sowbugs	Scott

* *Trapper*-Monitor & Insect Trap

COLLECTIONS STORAGE
Extra 1 : 3 sowbugs
Extra 2: 1 moth, 1 sowbug
Extra 3: 3 sowbugs, 1 carabid

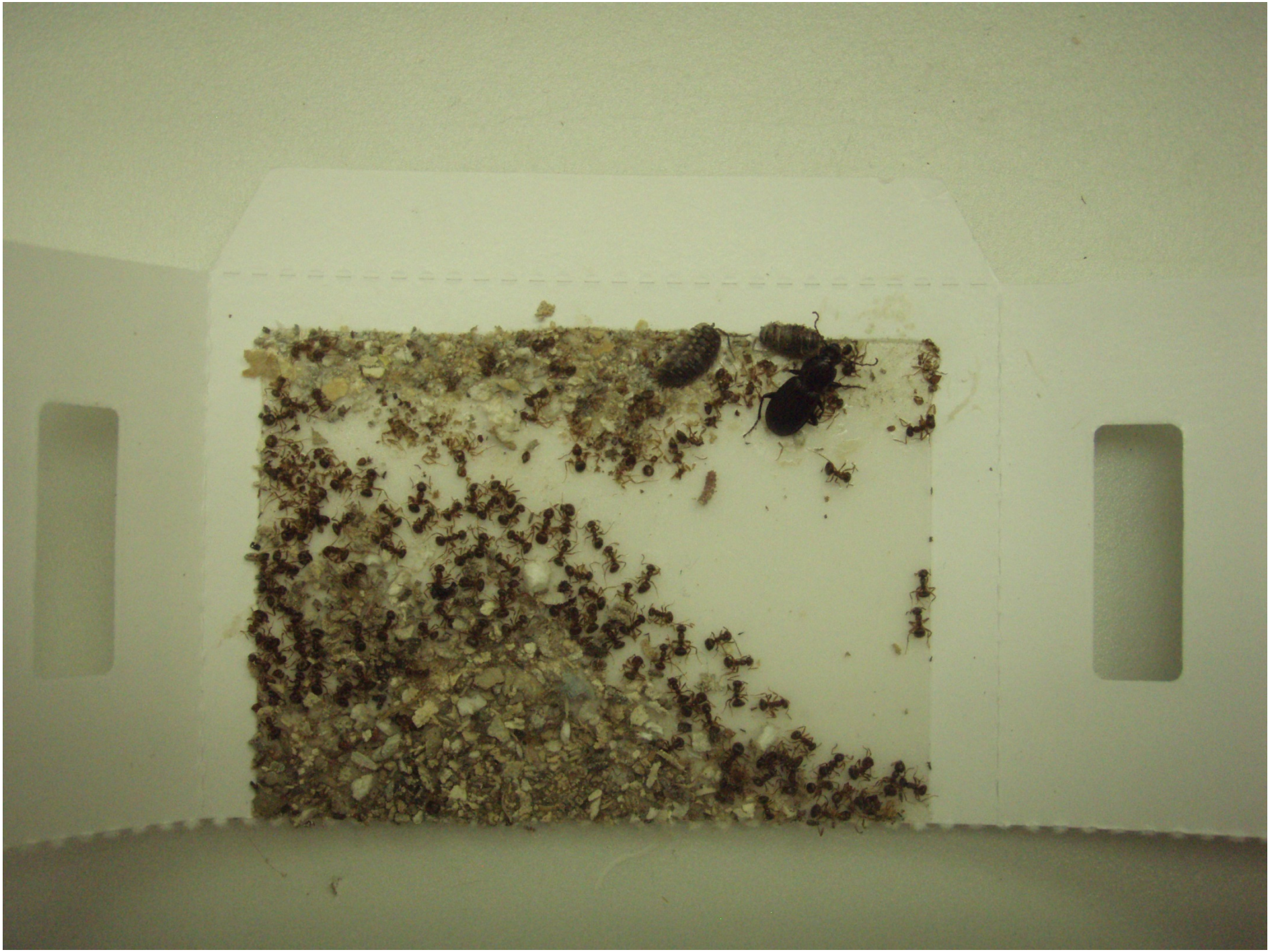
map



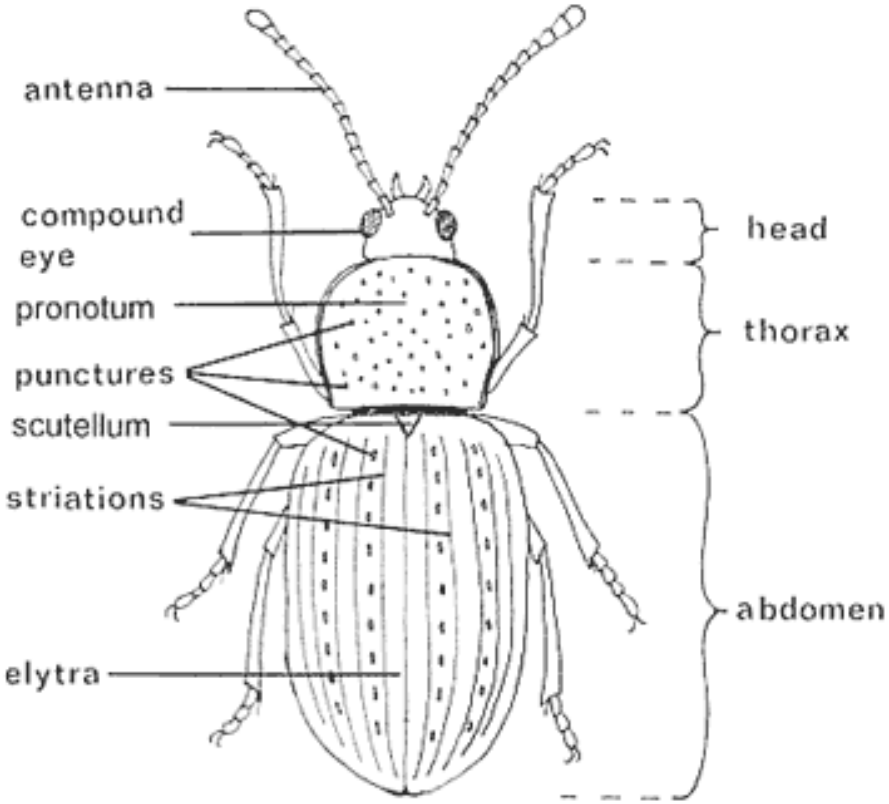
#2

LIBERTY
IN GOD WE TRUST
2000
D

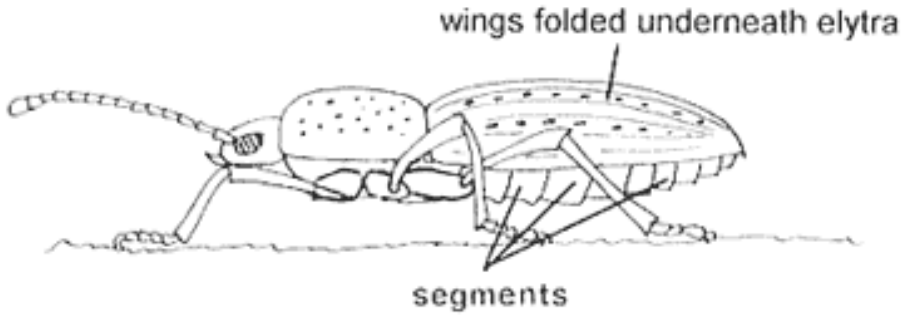
UNITED STATES OF AMERICA
E PLURIBUS UNUM
ONE DIME



TOP VIEW

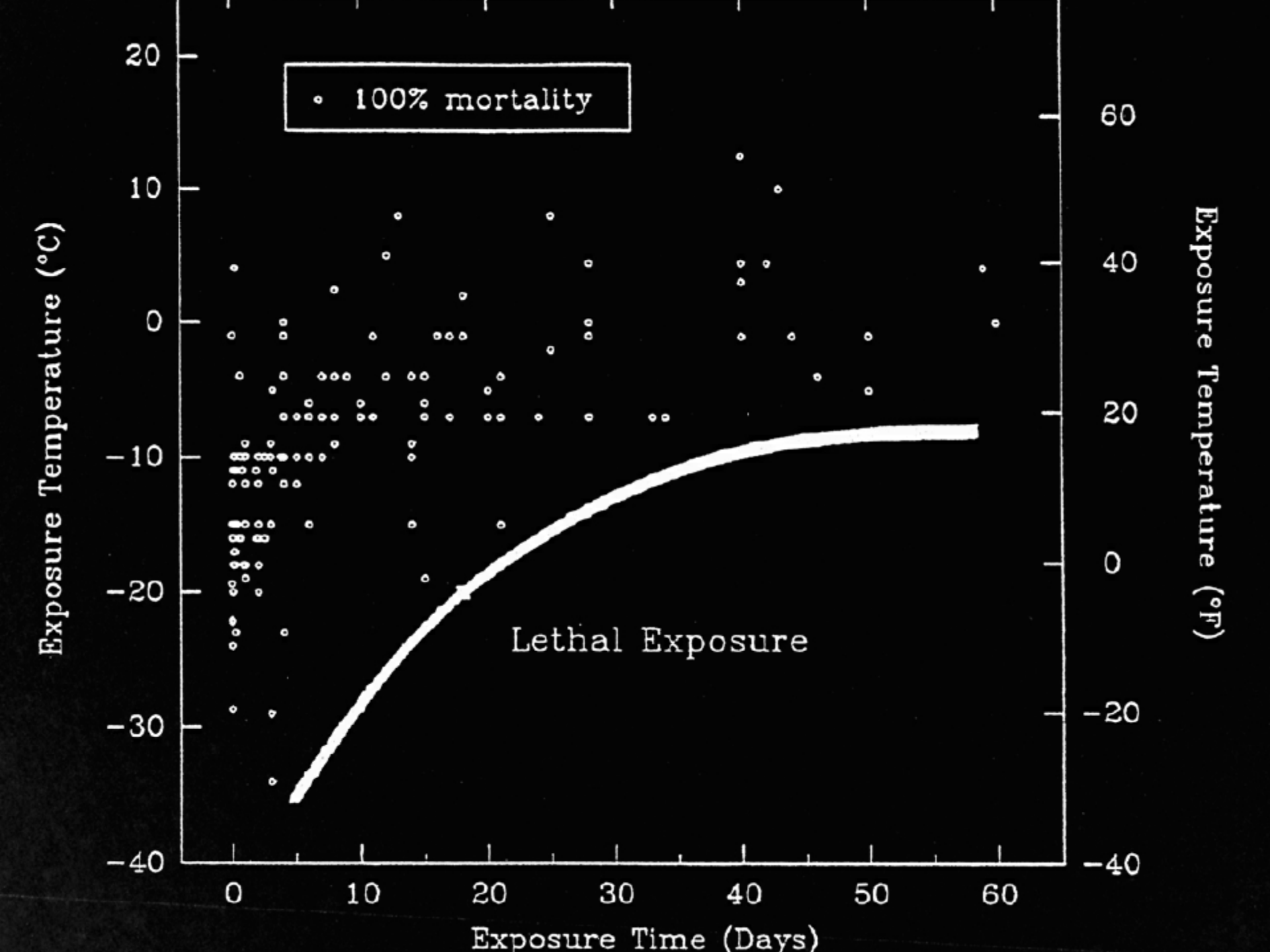


SIDE VIEW



Response

- Freezing
- Chemicals
- Traps
- Anoxic
- Heat
- Lowering RH


100% mortality
Lethal Exposure
Exposure Temperature (°C)
Exposure Temperature (°F)
Exposure Time (Days)
20
10
0
-10
-20
-30
-40
60
40
20
0
-20
-40
0
10
20
30
40
50
60

VICTO
REAM CORP
PA, USA
orpest.com

BREAK FOR QUESTIONS???

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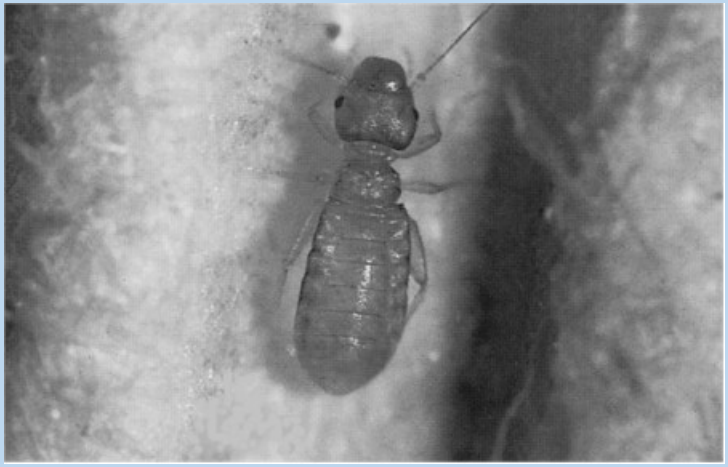
http://museums.alaska.gov/documents/bulletin_docs/bulletin_29.pdf

…more slides of heritage eaters ahead…

BOOKLOUSE
(Psocids)

- feed upon microscopic molds, starch
- found in books and book bindings, storage boxes, paper goods
- usually means that mold is present or that the RH is too high



SILVERFISH
(Lepisma saccharina)

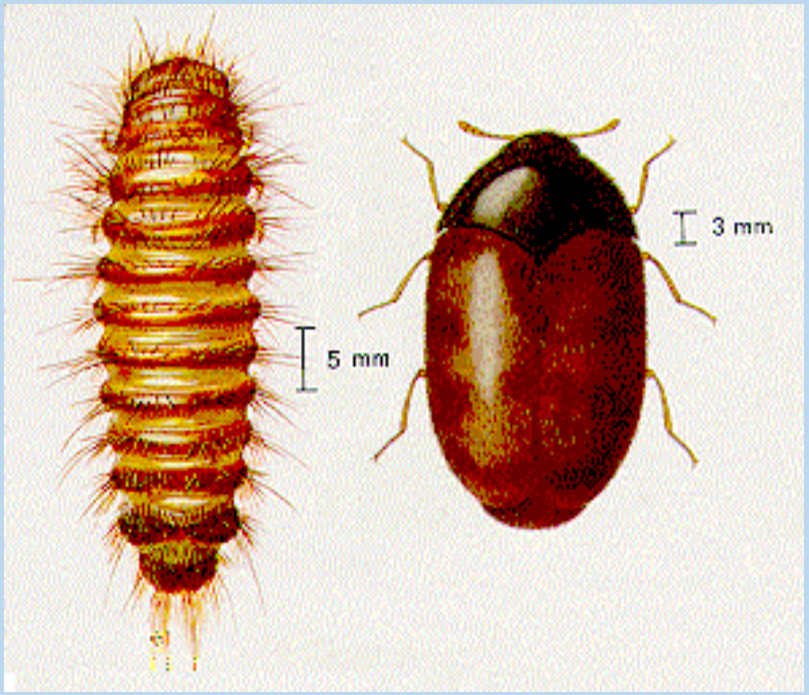
- pests of paper and paper products as well as textiles. They are particularly fond of paper with a glaze (starch) on it. They will also eat the glue backing in wallpaper. They prefer textiles that are cotton to woolens or silk.

CIGARETTE BEETLE
(*Lasioderma serricorne*)

- serious pest of dried plant material.
- can also cause serious damage to books.

WAREHOUSE BEETLE
(*Trogoderma* spp.*)*

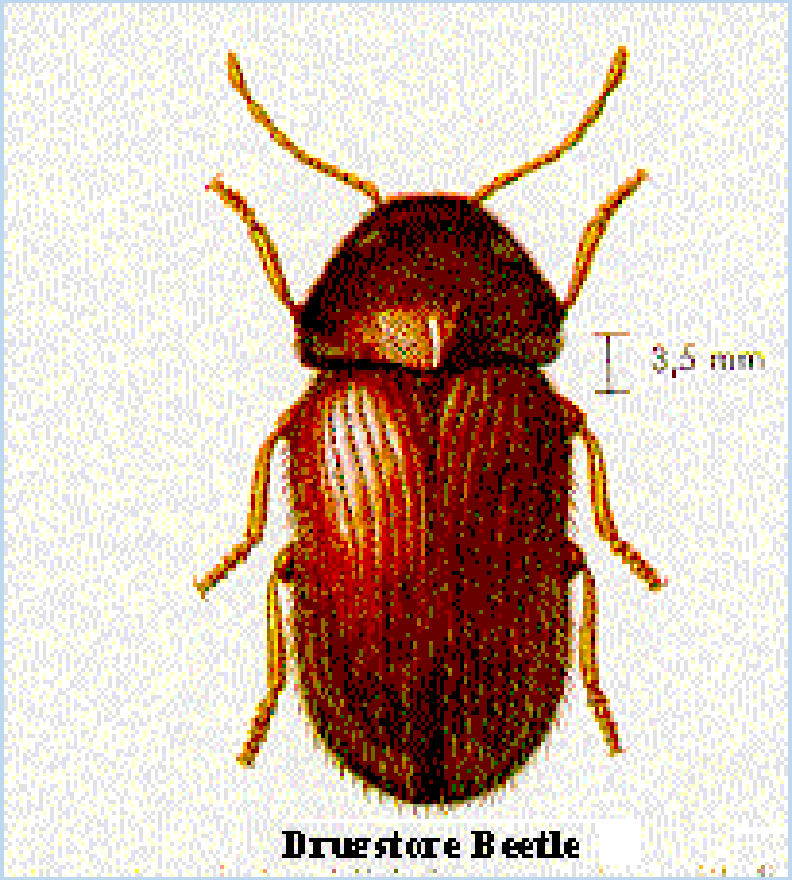
- feeds on seeds, dead animals, cereals, corn, corn meal, nut meats, dried vegetables and plant material
- can cause serious damage to dried plant matter, books and preserved plant material



DRUGSTORE BEETLE

(Stegobium paniceum)

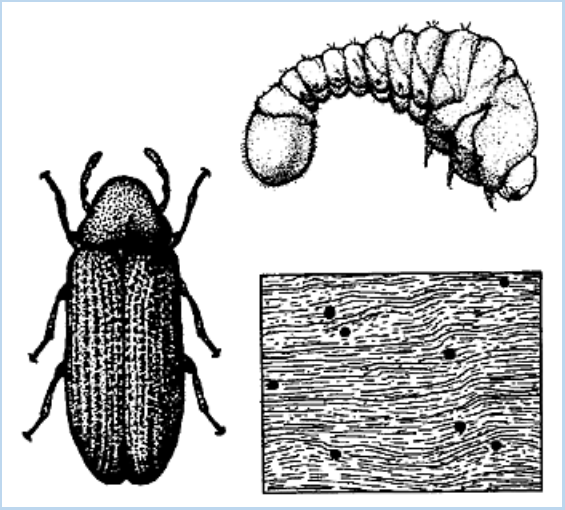
- Similar habits to Cigarette Beetle, but less common



DEATHWATCH BEETLE

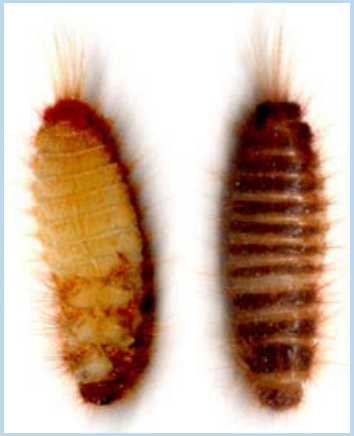
(Anobiidae spp.*)*

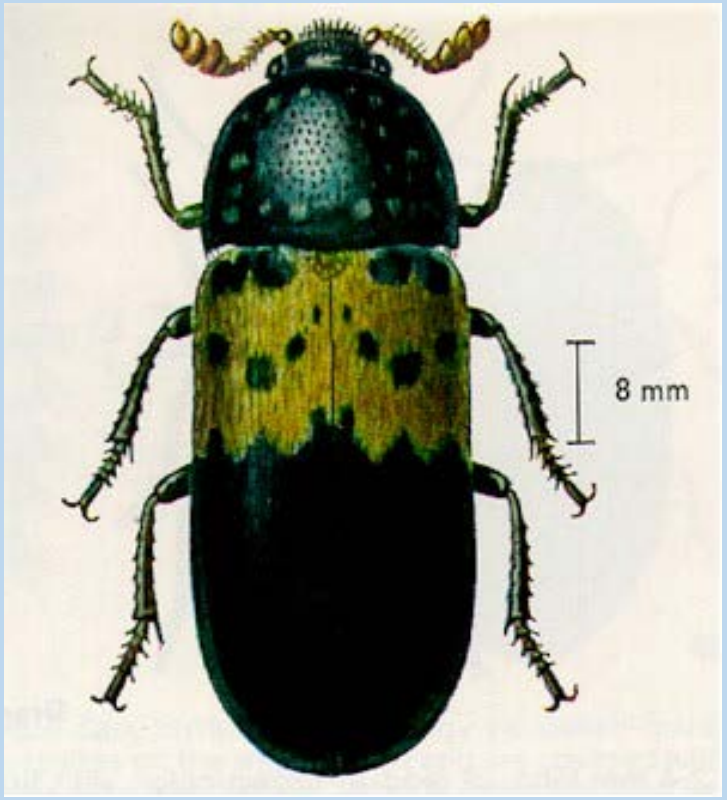
- Most often found in old, moist soft woods, partially decayed wood
- Some species attack books
- leave small pellets of frass



LARDER BEETLE
(Dermestes lardarius)

- meats, cheese, dried pet foods, dried museum specimens of all kinds, stored tobacco, dried fish, and all hides

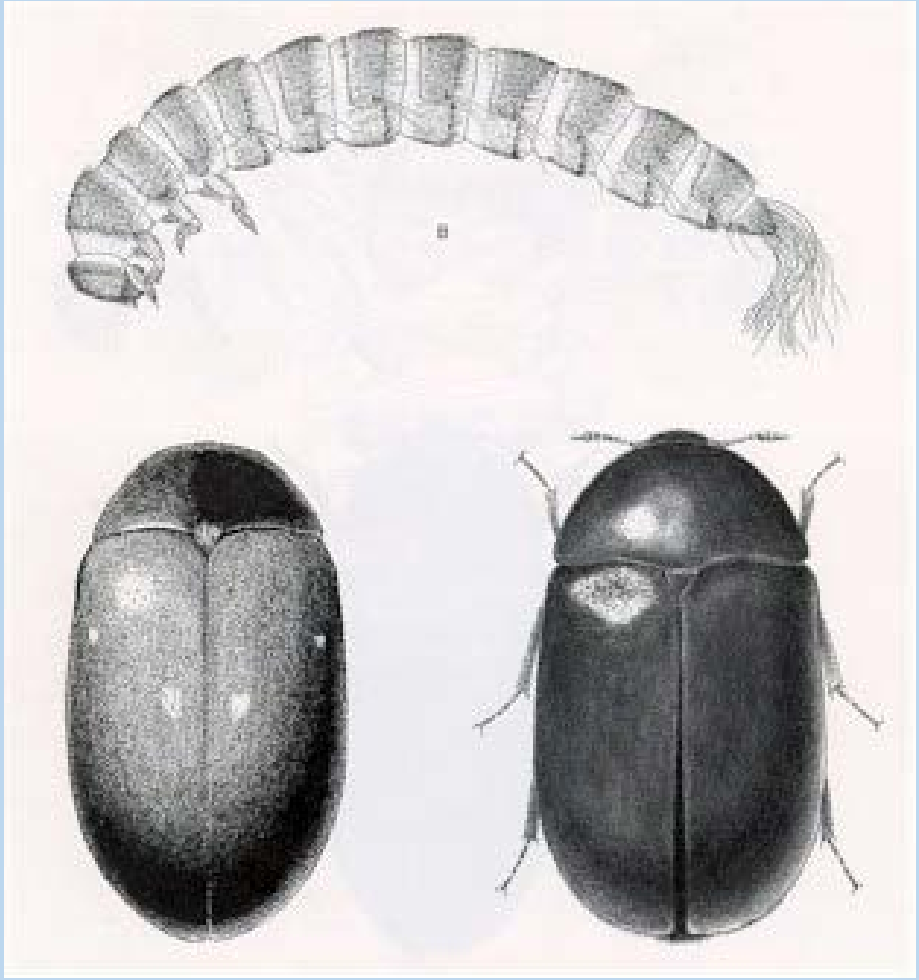




BLACK CARPET BEETLE

(Attagenus spp.*)*

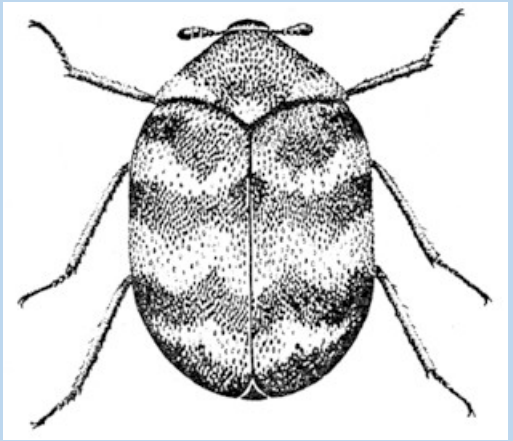
- animal and plant products, such as carpets, felt, woolen goods, skins, furs, taxidermy, leather book bindings, feathers, horn, hair, silk.



VARIED CARPET BEETLE

(Anthrenus verbasci)

- Attacks carpets, woolen goods, skins, furs, stuffed animals, leather book bindings, feathers, horns, whalebone, hair, silk



SPIDER BEETLES

(*Ptinus tectus, Mezium americanum)*

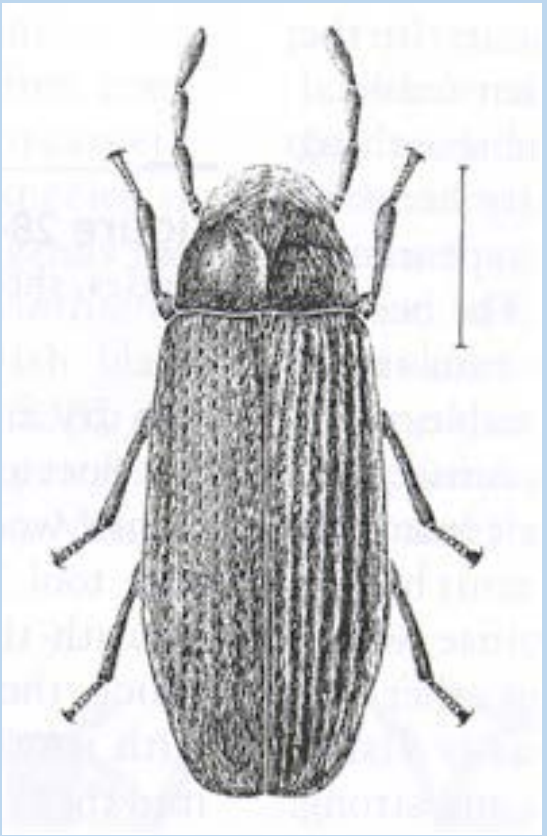
- Australian & American spider beetles
- Infestations can come from bird nests

- general scavengers: cereals, meat, dried fruits, fish food, dead insects, old wood, roots, cocoa, spices.
- Larvae cause a typical "scarring" of the wood in buildings.
- Northern pest: active even during freezing weather

FURNITURE BEETLE

(Anobium punctatum)

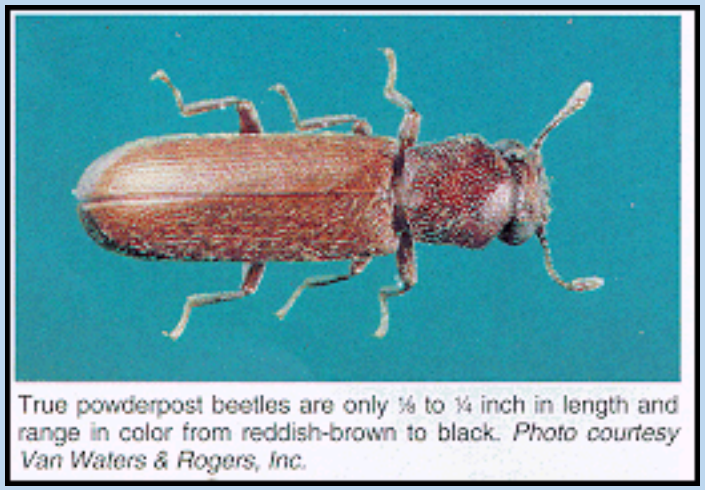
- prefer moist wood
- eggs laid on bare wood, larvae hatch out and tunnel in
- do not thrive in RH below 50%



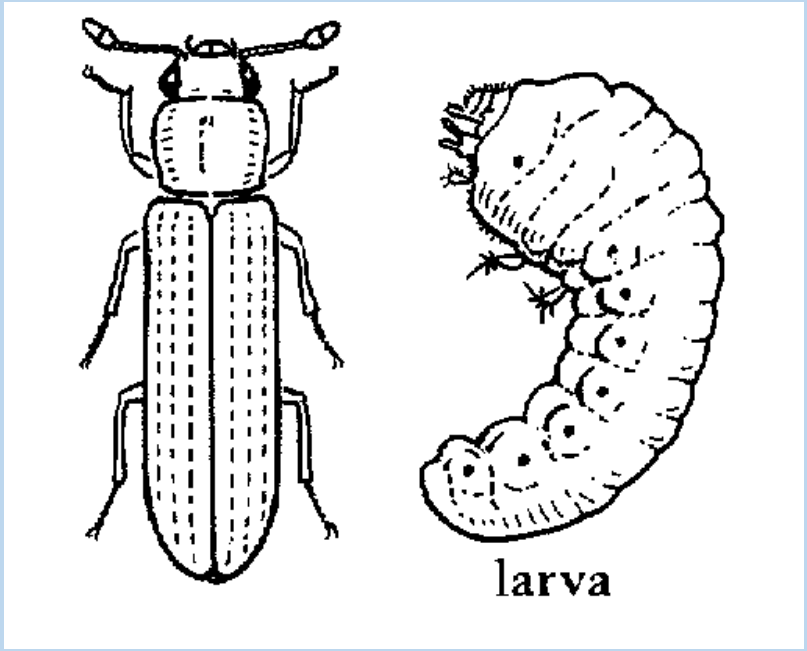
POWDERPOST BEETLE

(Lyctidae spp.*)*

- larvae leave a fine, dustlike powdered frass
- Woods most often attacked by this beetle are oak, ash, hickory, mahogany, and walnut (not softwoods)



True powderpost beetles are only ⅛ to ¼ inch in length and range in color from reddish-brown to black. *Photo courtesy Van Waters & Rogers, Inc.*



WEBBING CLOTHES MOTH
(*Tineola bisselliella)*

- feed on wool, hair, feathers, furs, upholstery of furniture, occasionally on dead insects, dry dead animals, animal and fish meals, milk powders such as casein, and nearly all animal products such as bristles, dried hair and leather. Adults do not eat.

CASE-MAKING CLOTHES MOTH

(Tineola Pellionella)

- Feeds on clothes, carpets, rugs, and upholstered furniture, furs, stored wool, animal bristles of brushes and the felts in pianos. In nature, it feeds on pollen, hair, feathers, wool, fur, dead insects, and dried animal remains

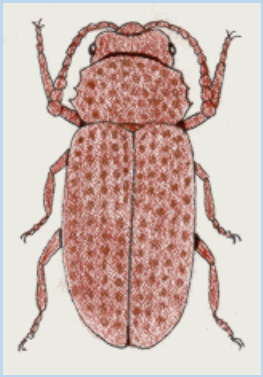
GROUND BEETLE

(Carabids)

- Beetles have hardened front wings called elytra
- Ground beetles have fused elytra, so flightless
- harmless

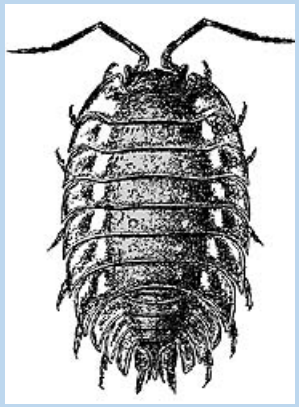
Tooth-necked Fungus Beetles
(Derodontus spp.*)*

- Harmless, eat fungus
- club-end antennae
- scalloped edge of pronotum



SPRINGTAILS
(Collembola)

- Like sowbugs, love moisture and mold
- Live outside and in potting soil
- Not damaging to collections, but indicate high RH

SOWBUGS & PILL BUGS
(Oniscidea)

- Harmless
- thrive around moisture
- not an insect, but a crustacean