



Indiana
Department
of
Health

Bed Bugs and Cockroaches in Healthcare Facilities

Lee Green

Indiana Department of Health

Senior Medical Entomologist

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OUR MISSION:

**To promote, protect, and improve
the health and safety of all Hoosiers.**

OUR VISION:

**Every Hoosier reaches optimal health
regardless of where they live, learn,
work, or play.**



Bed Bug Action Plan for OP Facilities

- **Educate Patient and Staff**
- ID and Response
- Client Inspections
- Cover Chairs/Inspect daily
- Utilize Monitors
- Limit Personal Belongings
- Gown Patient/Clothing Education
- Isolate
- Heating Box
- Regular inspections
 - Waiting room, common areas, laundry rooms, equipment (wheelchairs)
- Limited Treatment
- Staff Protection

Educating Staff

- Dealing with bed bugs is now a part of the job.
- Blood suckers, but not as threatening as mosquitoes or ticks
- Schedule a training program for staff.
- Be able to engage in open dialogue with patients.





Mental

Physical

Well-being is impacted by lack of sleep; social stigma; potential risks from misused pesticides; and costs of treatment.

As bed bugs infestations spread to more people, these impacts affect the health of entire communities.

Societal

Economic

Bed Bugs are a Public Health Pest



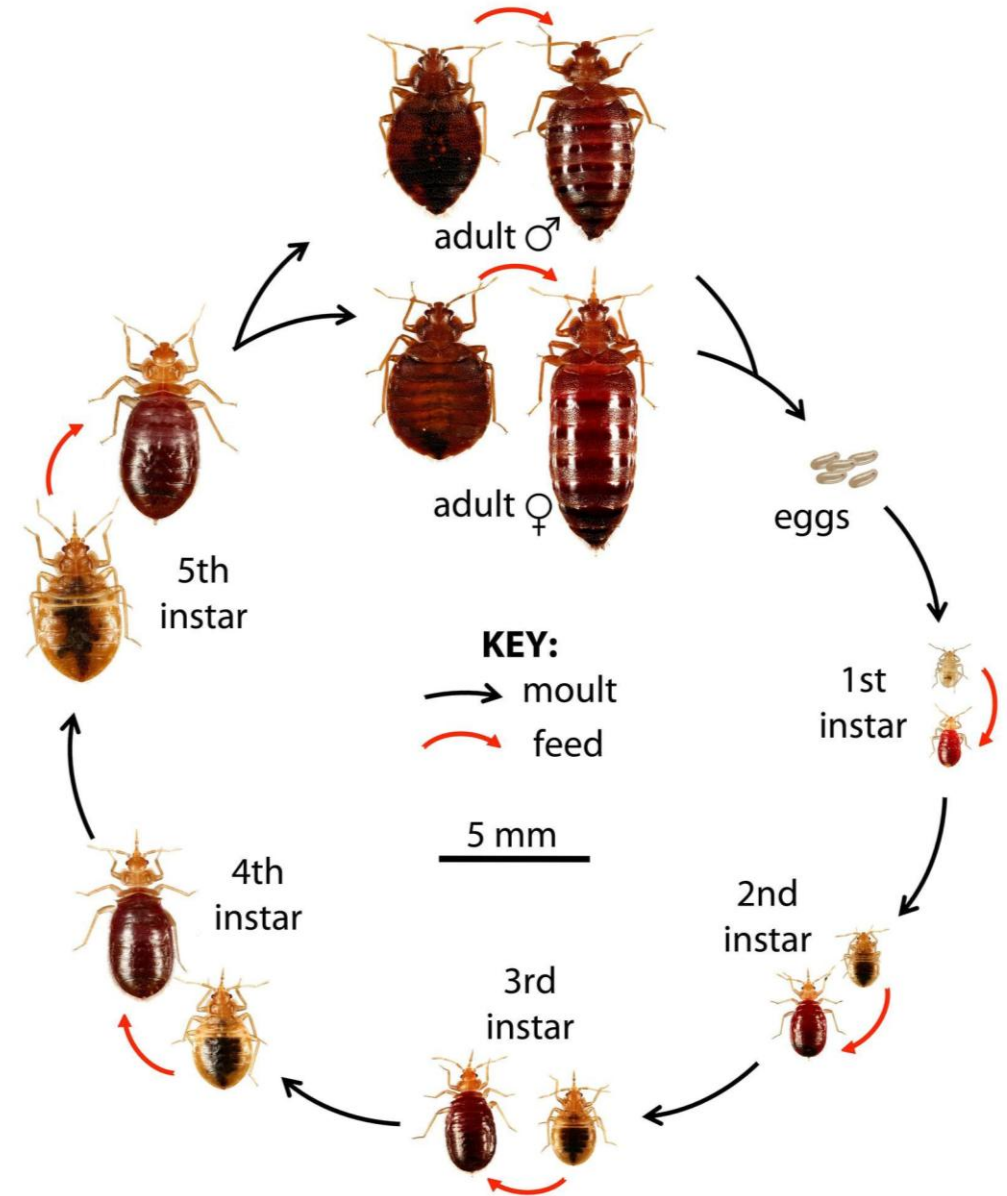
Bed Bug Biology

- True Bug
 - 6 legs, piercing mouthparts
 - Family of blood feeding insects
- Adults 3-4 mm in length
- Common worldwide
- Simple metamorphosis: egg, nymphs, adult
- Crack/crevice harborage; furniture, bedding



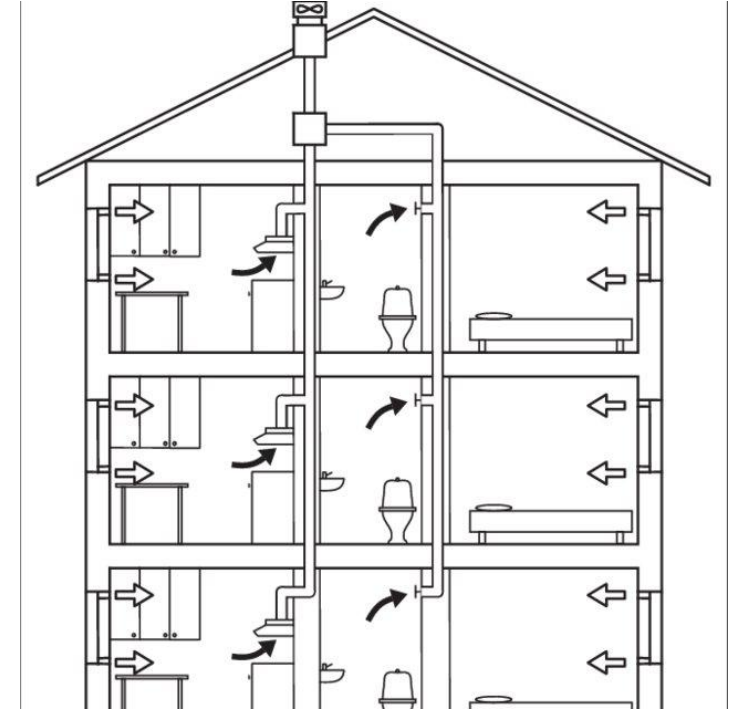
Bed Bug Biology

- Both males and females feed on blood
- Peak feeding time before dawn
 - adaptable
- Take blood meal every 5-10 days
- May survive 18 months without blood meal
- May feed on non-human hosts
- Lay 2-3 eggs daily, glued in place (250/lifetime)



Bed Bug Biology

- Introduced via luggage, furniture, bedding
-2008
- Resurgence as a result of increased travel and changes in cockroach treatment techniques
- May move to adjacent rooms/units to feed



Mahogany Flats



Fed Bed Bug



CDC

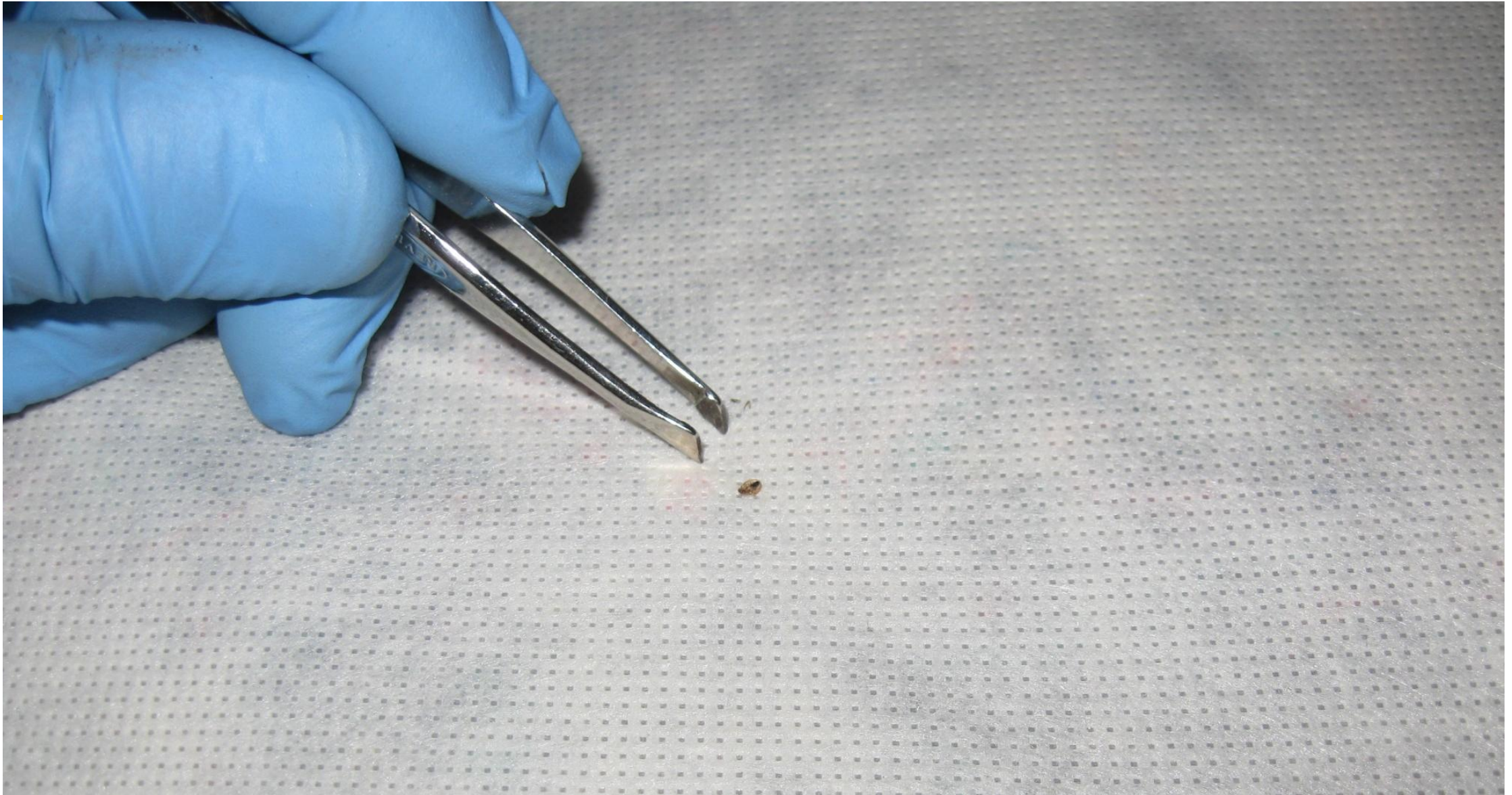
Eggs, Nymphs and Adults



University of New Hampshire



LG, IDOH





Size and Identification



Medical Symptoms

- Bites in rows of three
- Welts, Itchiness, Swelling
- Inflammation, sensitivity over time
- Anxiety, Annoyance, Insomnia, entomophobia
- Overuse of skin care/pesticide products

**Fortunately, there is no disease threat
From bed bug infestation**

Extensive Bite Reactions



Signs of an Infestation

- Fecal spots
- Exuviae (shed skins) in cracks and crevices
- Blood spots on bedding
- Sweet, musty “bug” smell in heavy infestations
- Appearance of the bugs themselves



Fecal Spots



Adults, Nymphs and Exuviae



copyright, 2004 M. Potter University of Kentucky



Fecal spots and bed bugs in box spring



Overlooked Spot



copyright, 2004 M. Potter University of Kentucky

Other Hiding Spots



Photo by B. Ogg, UNL Extension in Lancaster County



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Habitat and Harborage Areas

- Crevices behind mouldings
- Curtain folds
- Behind picture frames
- Joints in bed-frames, furniture
- Behind loose wallpaper
- Behind paneling or joinery
- Mattress seams
- Pillows
- Electrical outlets
- Inside equipment



Identification and Response

- Know how to visually identify bed bugs.
- Have a written bed bug action plan.
- Discuss protocol with patient for bed bug prevention.
 - Freshly laundered clothing for repeat visitors.



Client Inspections

- Inspect patients when entering facility.
- Encourage them to share if dealing with bed bugs at home.
- Remove bed bugs with lint roller
 - Belt, collar, and catheter area.



Morgan Wilson, Virginia Tech

Cover Chairs/Inspect Daily

- Cover chair/table with white paper to easily identify bed bugs.
- Inspect chairs/equipment daily.



Octoclean

Utilize Monitors

- Place monitors around facility to determine if bed bug infestation is present in facility.
 - Place in both treatment areas and waiting areas.
- Bugs that are captured can be evaluated.



Limit Personal Belongings

- Limit items to be brought into facility.



Gown/Clothing Education

- Remove and isolate clothing during visit
- Bed bug-free clothing and shoes during visits.



Isolate

- Use designated “bed bug” chair/exam room for suspected infested patients.
 - End of floor.
 - Extra traps in vicinity



Morgan Wilson, Virginia Tech



Changlu Wang NJAES

Heating Box

- Consider investing in heating box for facility.
- 120°F
 - Wheelchairs, belongings
 - Facility equipment and furniture.



Morgan Wilson, Virginia Tech



Regular Professional Inspections

- Schedule regular PMP inspections.
- Waiting rooms, visitor lounges, common areas, laundry rooms, treatment rooms, and equipment.
- Follow your PMP inspector to ensure that all at risk locations are inspected.



Limited Staff Treatment

- 91% isopropyl alcohol
- Sterifab®
- Dusts?



Staff Protection

- Washer and Dryer is your best friend!
- Keep work uniforms as simple as possible.



Keep your vehicle clean and vacuum weekly



Photo: <http://insider.foxnews.com/2015/04/16/cops-man-set-rental-car-ablaze-while-trying-kill-bed-bugs>



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Cockroaches in Healthcare Facilities

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Principles of Integrated Pest Management

- Identify the pest
- Understand the biology and behavior of the pest and determine if control is needed
- Know the available control measures and evaluate their usage
- Implement safe and effective control tactics
- Evaluate and monitor control efforts



Photo: Lee Green



Photo: Lee Green



Photo: Lee Green



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Cockroach Health Risks

- Mechanical vector of pathogens
 - Carry bacteria on their body
 - Transfer to surrounding environment
- Asthma triggers
 - Excreta
 - Excuviae



German Cockroach

Blatella germanica

Common pest, 8 – 11mm

Very prolific

Dwellings

Restaurants

Commonly infest
kitchens, food
prep areas



Brown - Banded Cockroach

Supella supellectilium

Less common than German

Prefers very hot places

Infests appliances

Often in non – food areas; bedrooms, etc.

Can co – infest w/ German according to microclimate



American Cockroach

Periplaneta americana

Large & nasty, 35 – 40mm

Mostly outdoors in Southern U.S

In Northern U.S., mostly in steam tunnels

Large indoor problems usually a result of filth, very poor sanitation

Very fond of fermenting liquids



Oriental Cockroach

Blatta orientalis

“Water Bug”, 20 – 25mm

Likes moist, cool habitats

Storm sewers

Floor drains, sumps

Mulch

Retaining walls

Under trash cans

Gutters, downspouts

Most common roach in
cool times



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Wood Cockroach

Parcoblatta spp.

Denizens of the woods

Rotten logs, woodpiles

Attracted to lights

Occasionally blunders
into homes

CANNOT INFEST
homes or even survive
long indoors

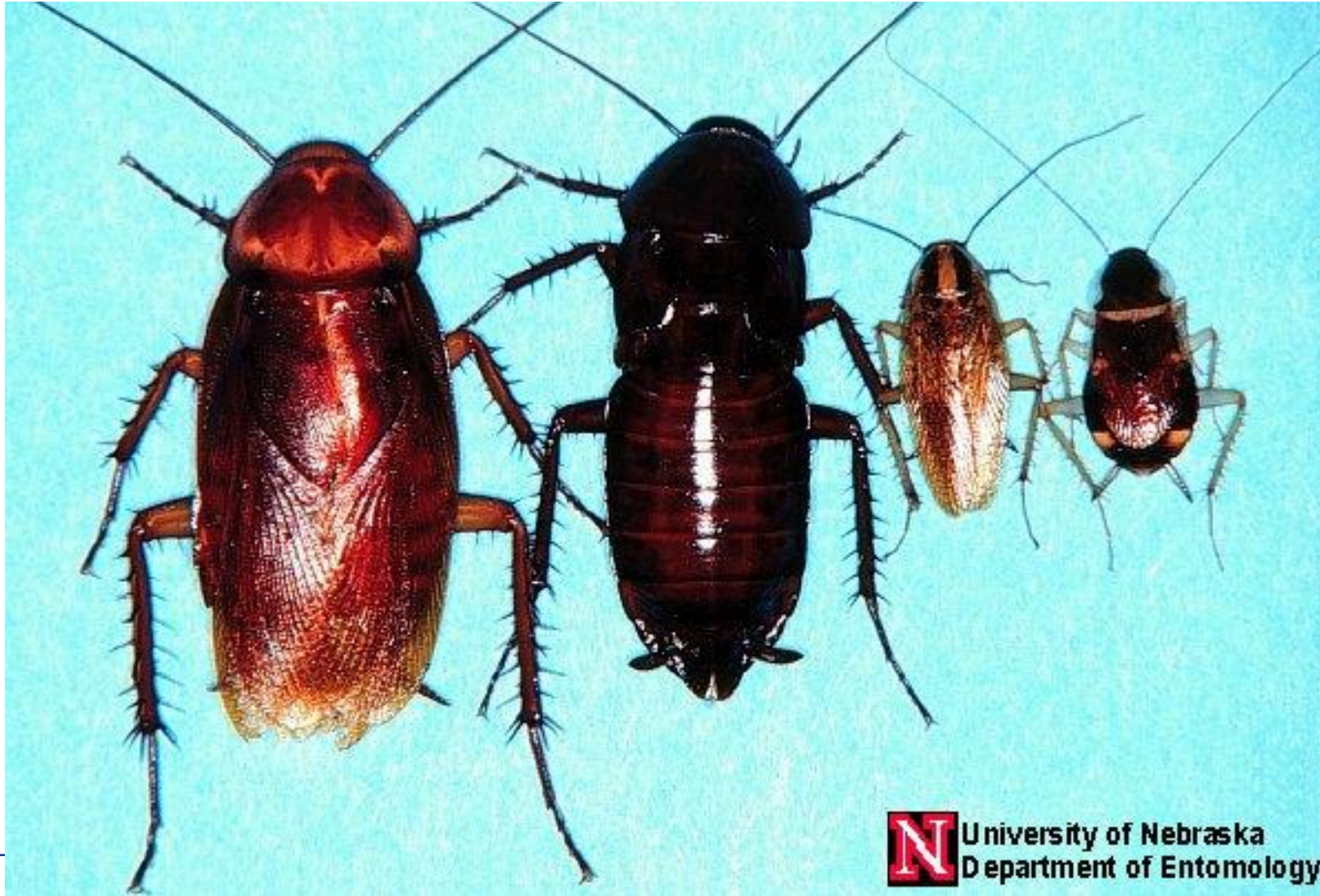
Not really a pest



Photo: Purdue University, John Obermeyer



Relative Sizes of Common Roaches



Comparative Summary

Species	German	American	Brown banded	Oriental
Average # of eggs per capsule	37	15	16	14
Average # of capsules per female	7	58	10	14
# of molts	5-7	10 -13	7- 9	7-10
Nymphal stage (days)	103	468	161	542
Life cycle (days)	40 -251	320-1071	143-379	215-991
Average adult lifespan (days)	140	441	115	96
# of offspring under ideal conditions	<u>35,000</u>	<u>812</u>	<u>677</u>	<u>196</u>



Inspection

Cracks and crevices

Around sinks

backsplashes

Stoves, refrigerators

Baseboards

Boxed papers

Behind pictures

Food prep areas

Furnaces, water heaters

Drawers and cabinets

Toe-kicks under counters

Corrugated boxes

Hollow legs of appliances

Obvious filth, garbage

Dishwashers

Desks/Lockers (food storage)

Wet closets

Waiting rooms



Control Strategies

- Sanitation
- Eliminate or modify harborage
- Utilize baits wherever possible
- Use crack and crevice applications of residual insecticides where needed
- Use only appropriately labeled products in food-handling areas

Questions?

CONTACT:

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legreen@health.in.gov

