

Digital Photography for Diagnostics and DDIS

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Outline

- Photography basics
- Common image problems
- Taking better pictures with microscopes

Why take pictures?

- Diagnostic purposes
 - Faster than mailing specimen
 - Damage present, but no bugs
- Research, extension, or teaching
 - Document pest outbreaks
 - Publications
 - Presentations
- Time vs. quality

Types of Digital Cameras

- Point-and-shoot
 - compact
 - affordable
- Digital single-lens reflex (DSLR)
 - interchangeable lenses
 - more control of settings



Photography Basics

- Shutter speed (exposure time)
 - fractions of a second: 1/30, 1/60, 1/125, etc.
- Lens aperture (f-stop):
 - f8, 11, 16, 22, 32, etc.
 - the larger the f-stop, the smaller the aperture & greater the depth of field



f4



f32

Photography Basics

- ISO setting
- Depth of field



f5

f32

Common Problems with Insect Images

- Subject not in focus
- Subject is washed out (overexposed)
- Image is too dark
- Diagnostic characters not visible
- How big is the bug?

Why isn't my picture in focus?

- Point-and-shoot cameras - too close
- Exposure too long
 - subject moved
 - photographer moved
- Auto-focus problems



Closer than minimum focusing distance



Subject (or photographer) in motion

- Chill subject
- Reduce exposure time
 - Adjust shutter speed & f-stop
 - Increase ISO setting
 - Use flash
 - Tripod



Auto-focus problems



Dealing with auto-focus problems

- Lock the auto-focus and then re-frame subject
- Use manual focus



Getting the proper exposure



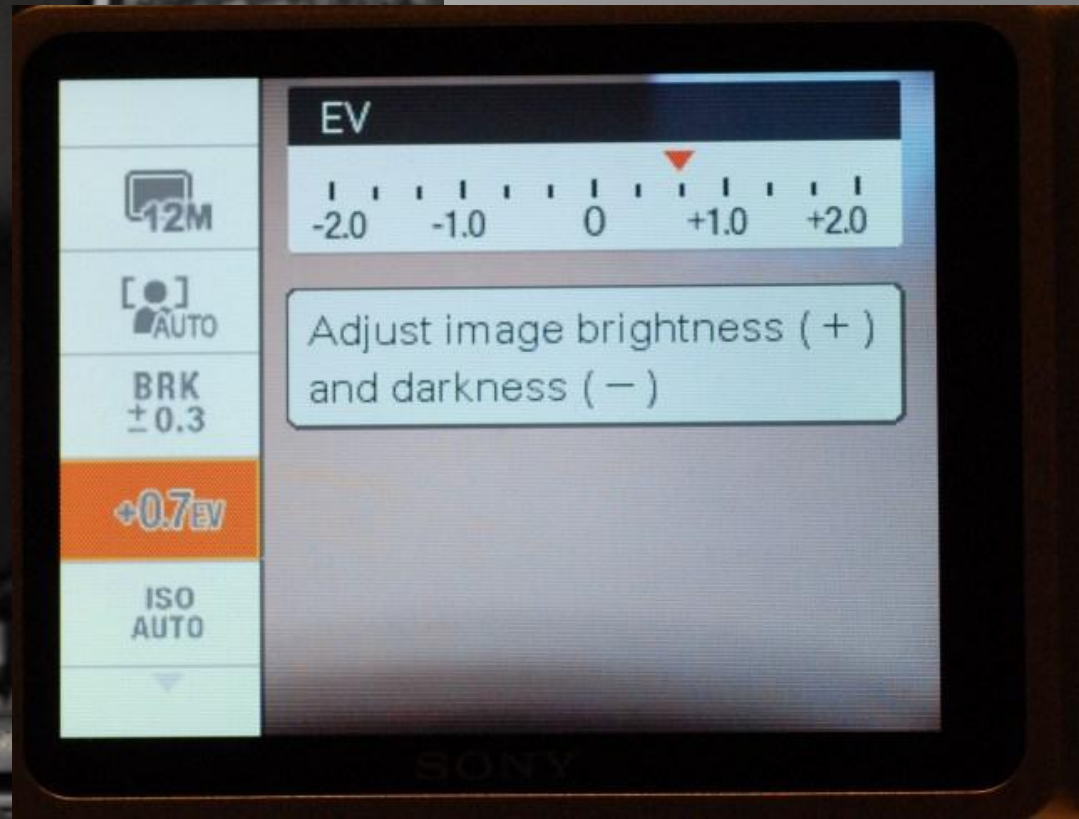
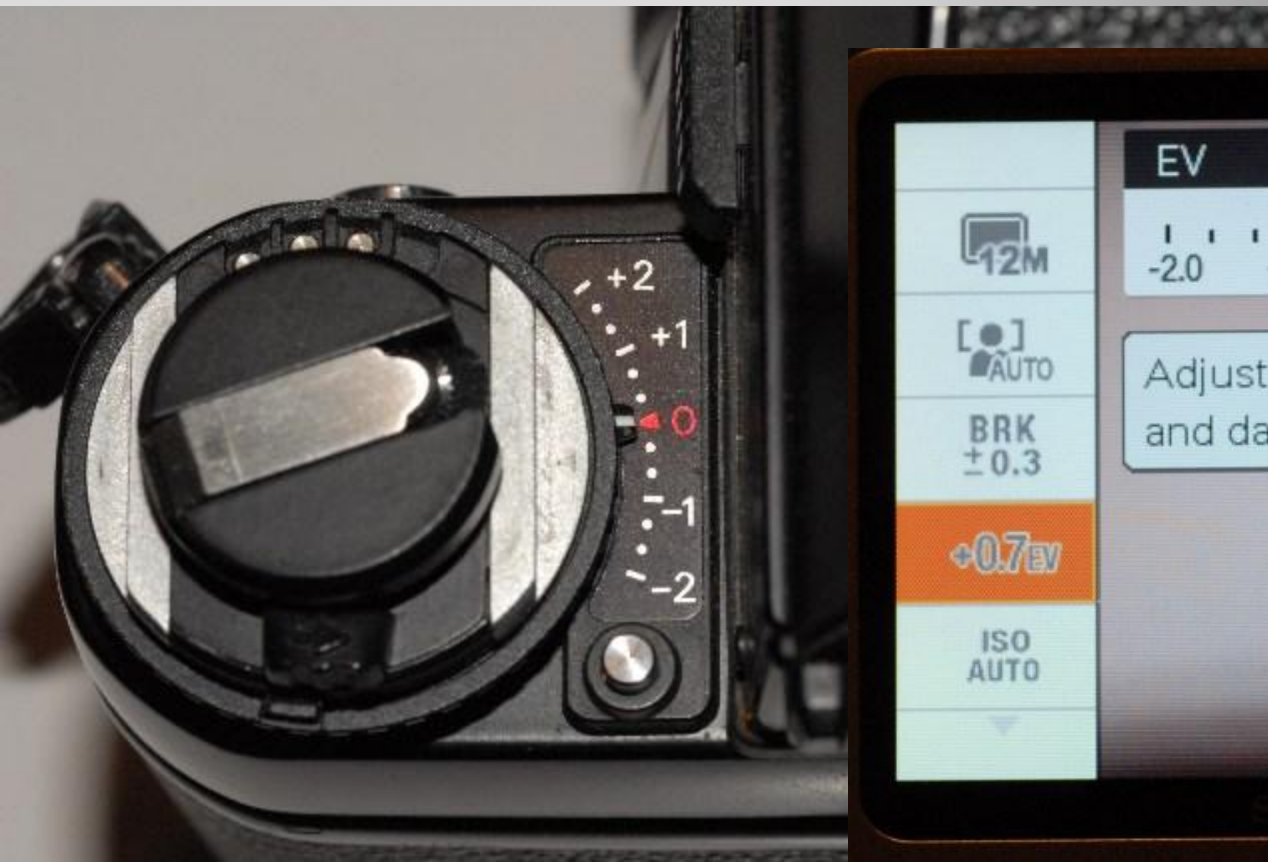
Overexposed subject

- Move farther away
- Use ambient light instead of flash
- Adjust exposure compensation



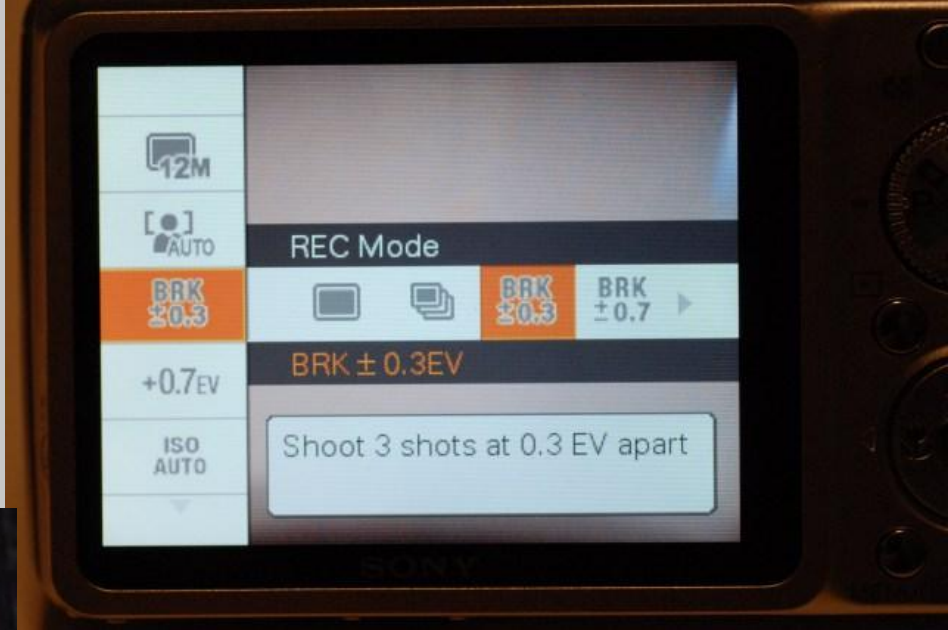
Exposure Compensation

- Especially helpful when:
 - Dark subject on light background
 - Light subject on dark background



Bracketing

- Helpful when in a hurry
- Bright sunlight



Size Reference





Size Reference

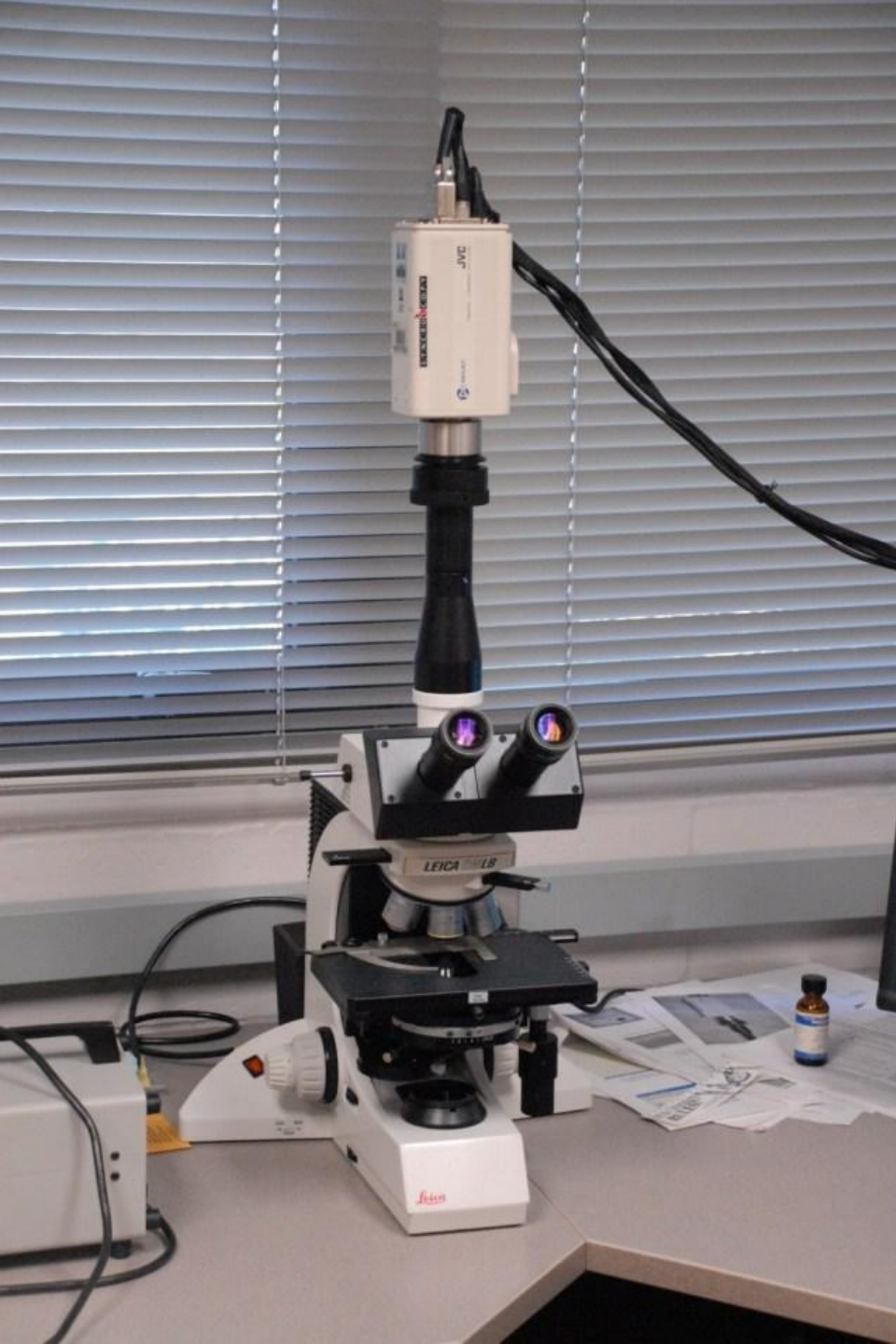


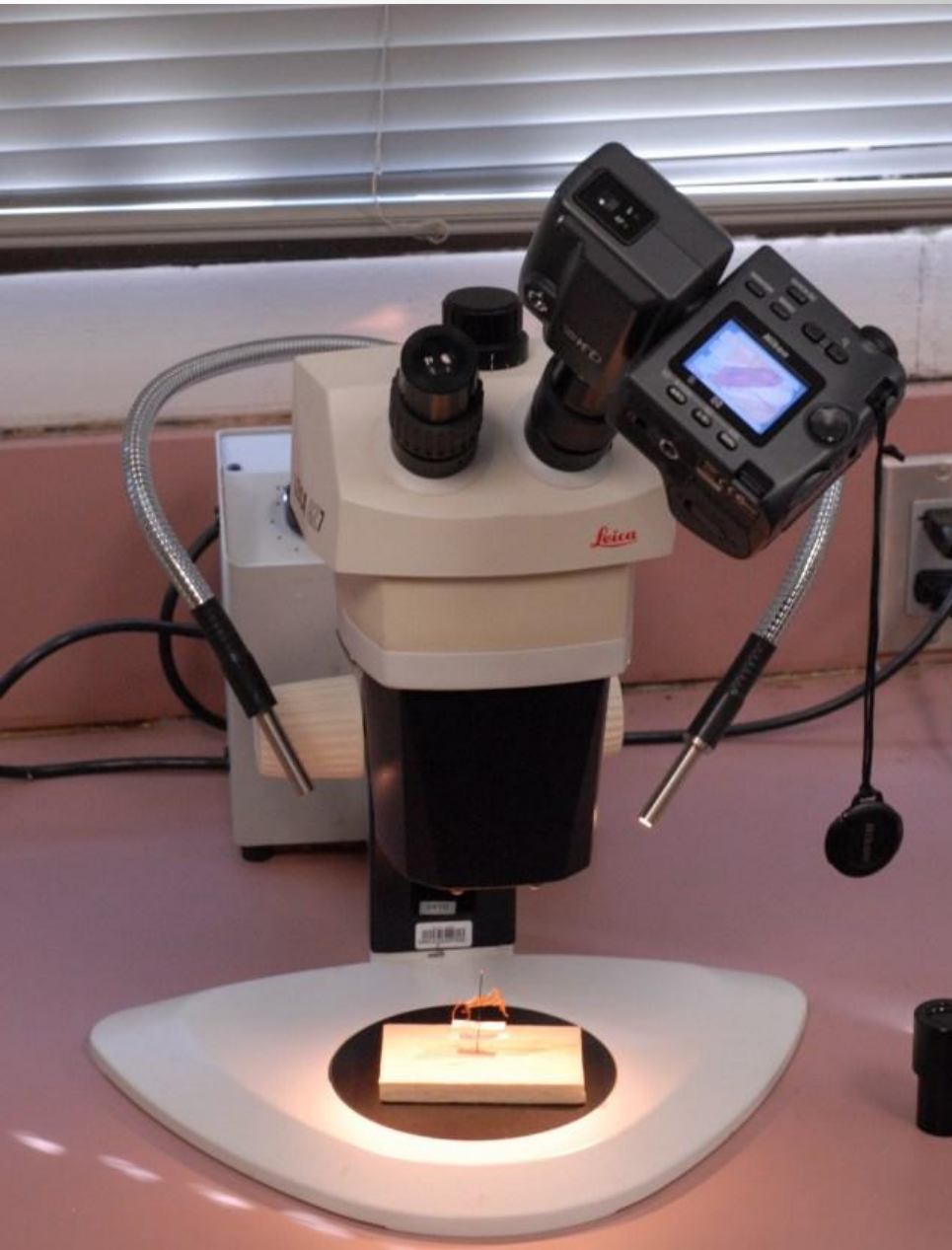


Macro Photography and Microscopes

- Macro lenses
- Extension tubes
- Microscopes







Digital camera mounted in
eyepiece tube





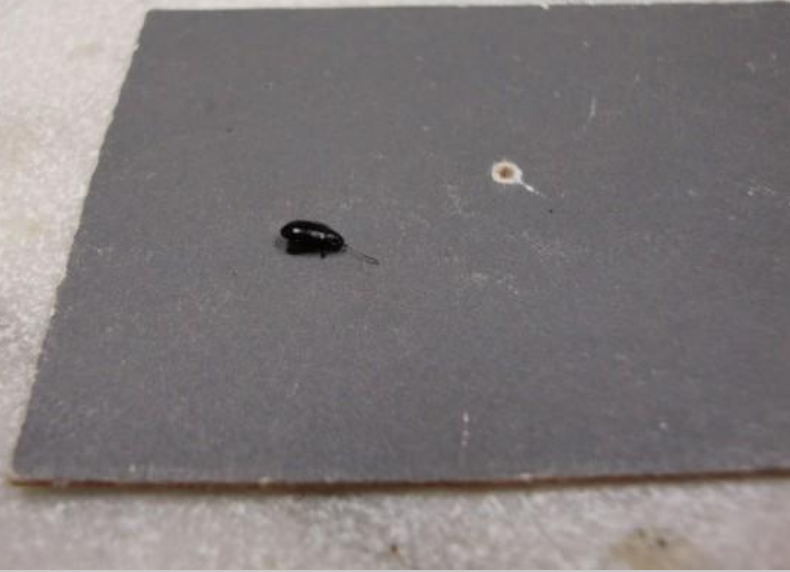
Holding a point-and-shoot
camera next to eyepiece



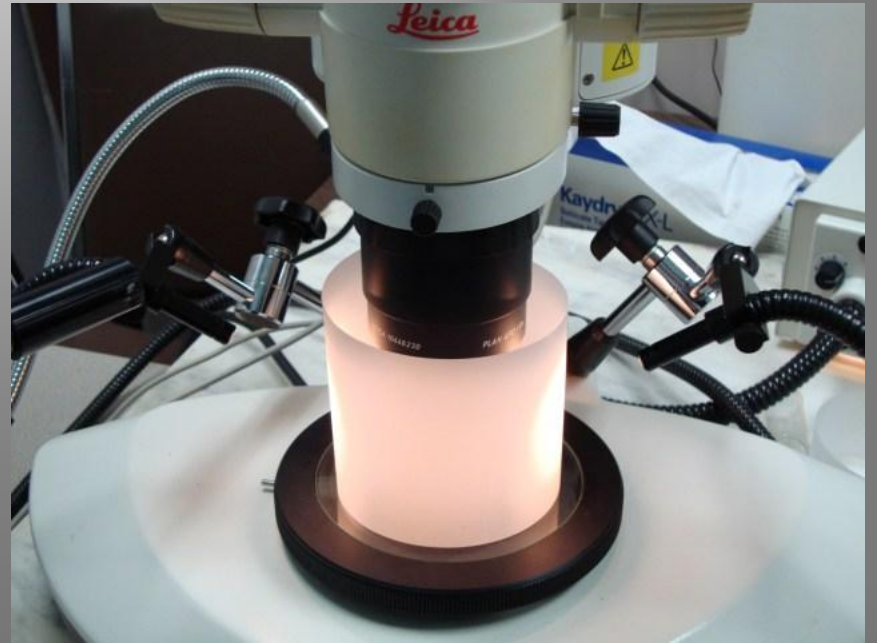
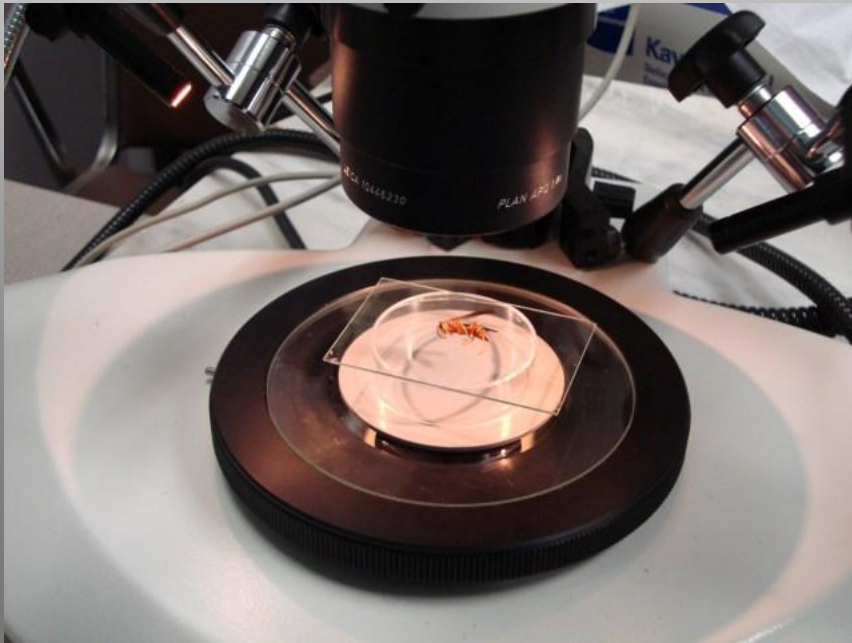
Getting better pictures with your dissecting microscope

- Backgrounds
- Diffusers
- Extended depth of field software

Getting a cleaner background



Diffusers





no diffuser



with diffuser





**on background
no diffuser**



**on background
with diffuser**



**elevated
no diffuser**



**elevated
with diffuser**

Photographing pinned insects





Diffused light
outdoors



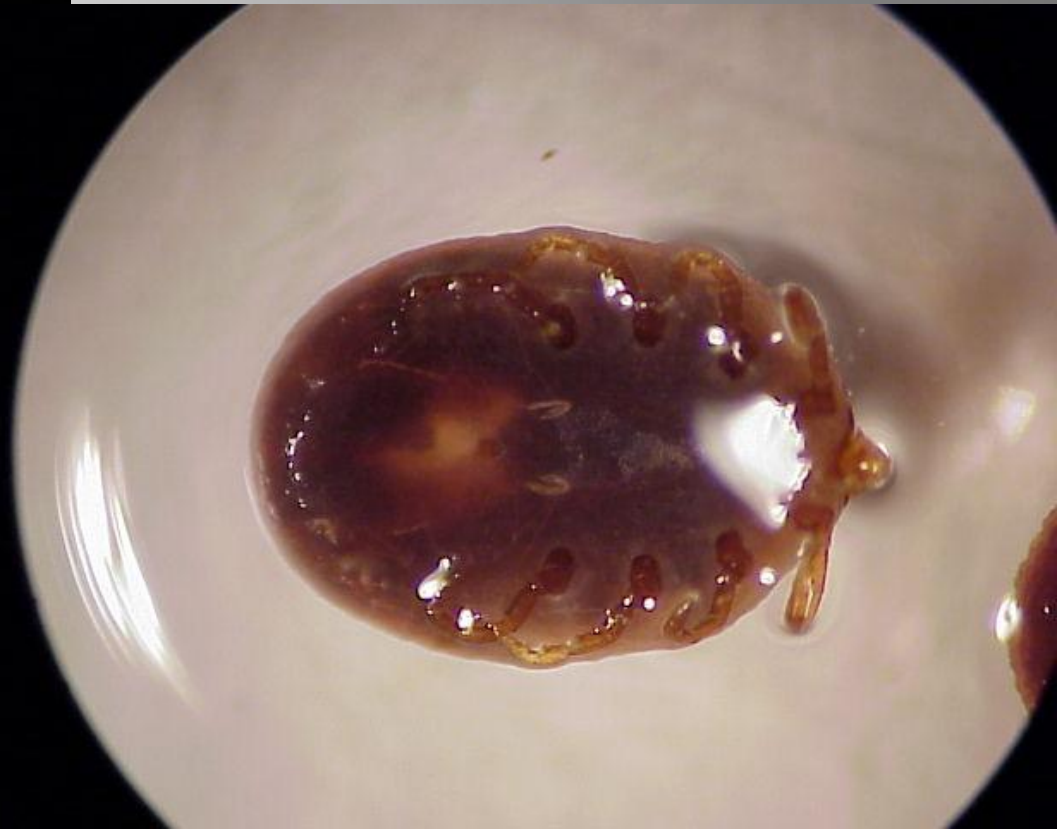
bright sunlight



cloudy day

Photographing in Alcohol

- Some insects can be dried and photographed (ants, beetles, etc.)
- Specimens need to be completely submerged



Extended Depth of Field Photography



**Auto-Montage Pro
Syncroscopy**

Distance Diagnostics for Insects

- What picture quality is needed?



Distance Diagnostics for Insects

- Dorsal and side views
- other characters: antennae, wings, legs, mouthparts, etc.





Distance Diagnostics for Insects

- Ants: antennae, petiole
- Termites: wing veins, other characters depending on caste
- Spiders: eye arrangement
- True bugs: antennae, mouthparts

Image Library

- File size
- External hard drives
- Backups!!

