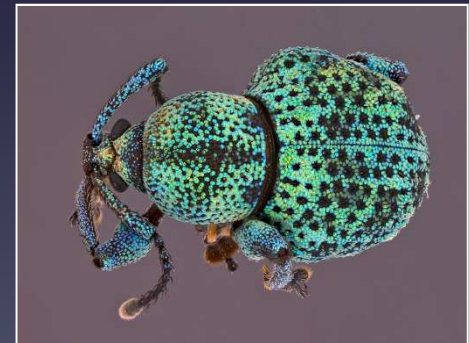# AutoMontage

An imaging tool for entomological specimens

AutoMontage

A system combining a high resolution digital camera, automated microscope, and photo-compositing software

Takes multiple images of a specimen at different focal depths, then combines them to create an image with enhanced depth of field

AutoMontage

Camera system (5 megapixel)

AutoMontage

Microscope Stage

AutoMontage

Computer system

AutoMontage system at Bishop Museum, Honolulu, Hawaii

AutoMontage

Steps in image capture

Select specimen, remove labels

Transfer to stage, align, adjust illumination

Set start and end points, capture images

Use software to generate composite image

Store image on server, clear buffer

Re-attach labels, put specimen away

Digitally edit image as necessary

AutoMontage

Total time involved is 15-30 minutes/specimen

  Faster for skilled users

  But extra care must be taken if handling types

  Dorsal view only, or lateral and/or ventral also?

  Close-ups of key characters?

Best case scenario is probably 4 specimens/hou   Includes specimen handling and post-processing

  Final image edit in Photoshop = 15 min.- ∞

  1000 type specimens would require min. 250 hrs

Higher magnification images take longer

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Other considerations

Background color matters

Photographer's neutral grey card equivalent is good

   Allows unambiguous color correction

For grey specimens, use dark or black background

   Pale background can cause contrast problems

Use automatic white balance correction

Do not use the out-of-focus background feature

   Can cause loss of resolution on appendages

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Examples of images generated

Full-body images

Close-ups of key characters

Ochterus new species, Rurrenabaque, Bolivia

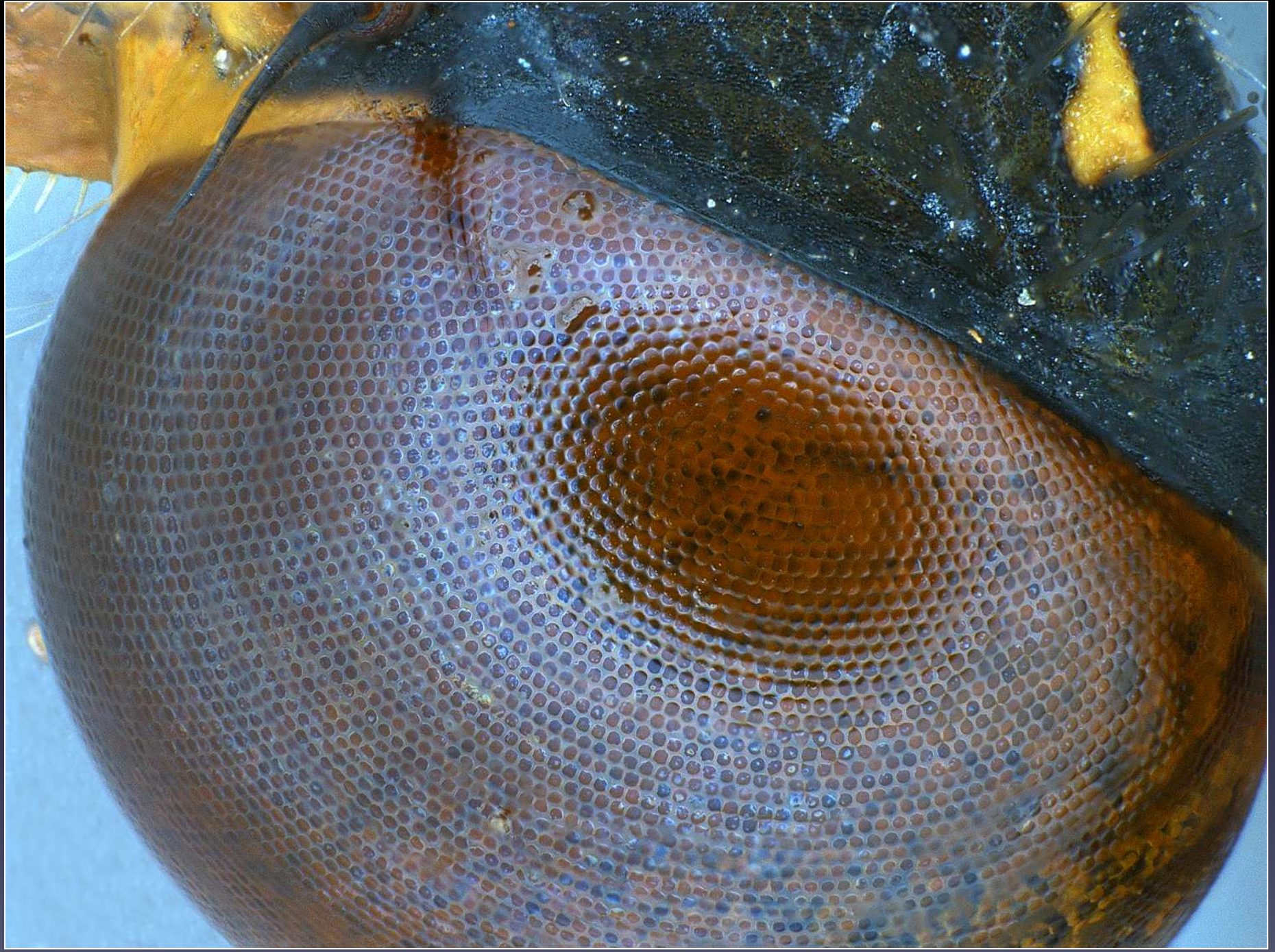*Hermatobates djiboutensis*, Maldive Islands

AutoMontage

Conclusions

A very useful tool for entomological imaging

Can obviate the need for loans of type specimens

Process requires some time: 15-30 min/specimen

Technique is important

Illumination, focus, post-processing

System components are expensive (~$25K)

Need an adequate CPU and RAM

Output files are large (25-30 MB)

Questions?