DIY Techniques

How to use tools and materials to achieve better results in photographing wet arthropod collections.

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iDigBio
Integrated Digitized Biocollections

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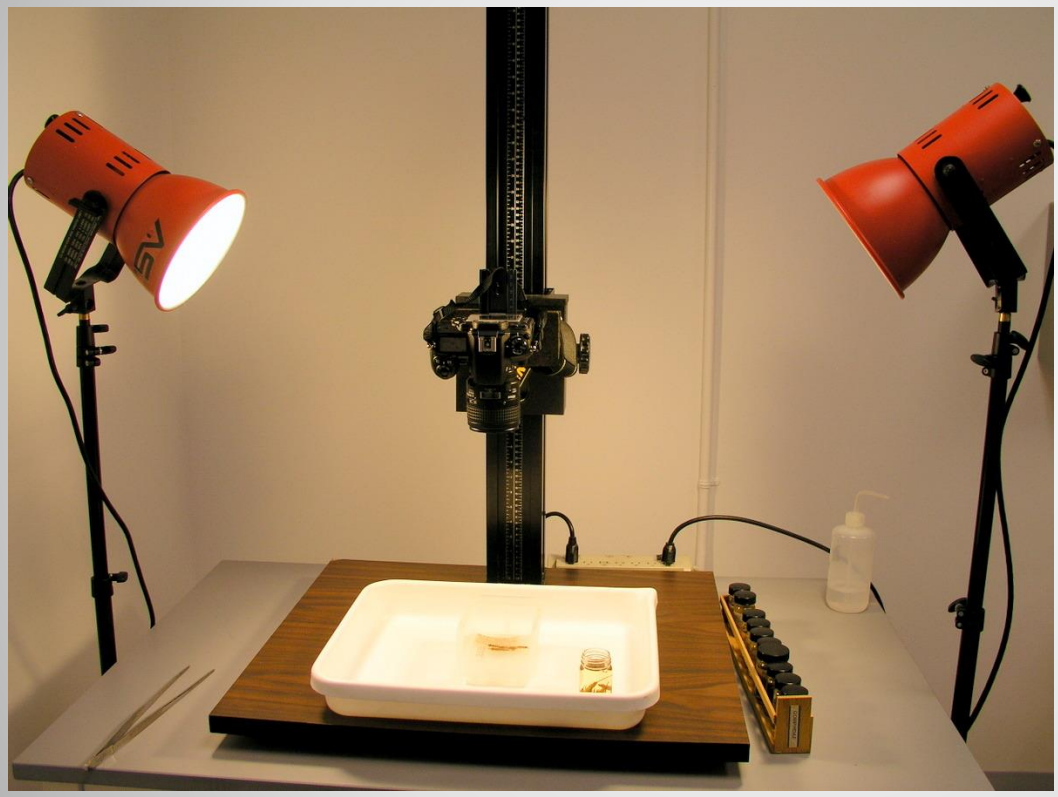
Where to Start?

- DIY vs OTS
- DIY may save $
- OTS may save time
- Ingenuity of DIY often tackles small-scale problems

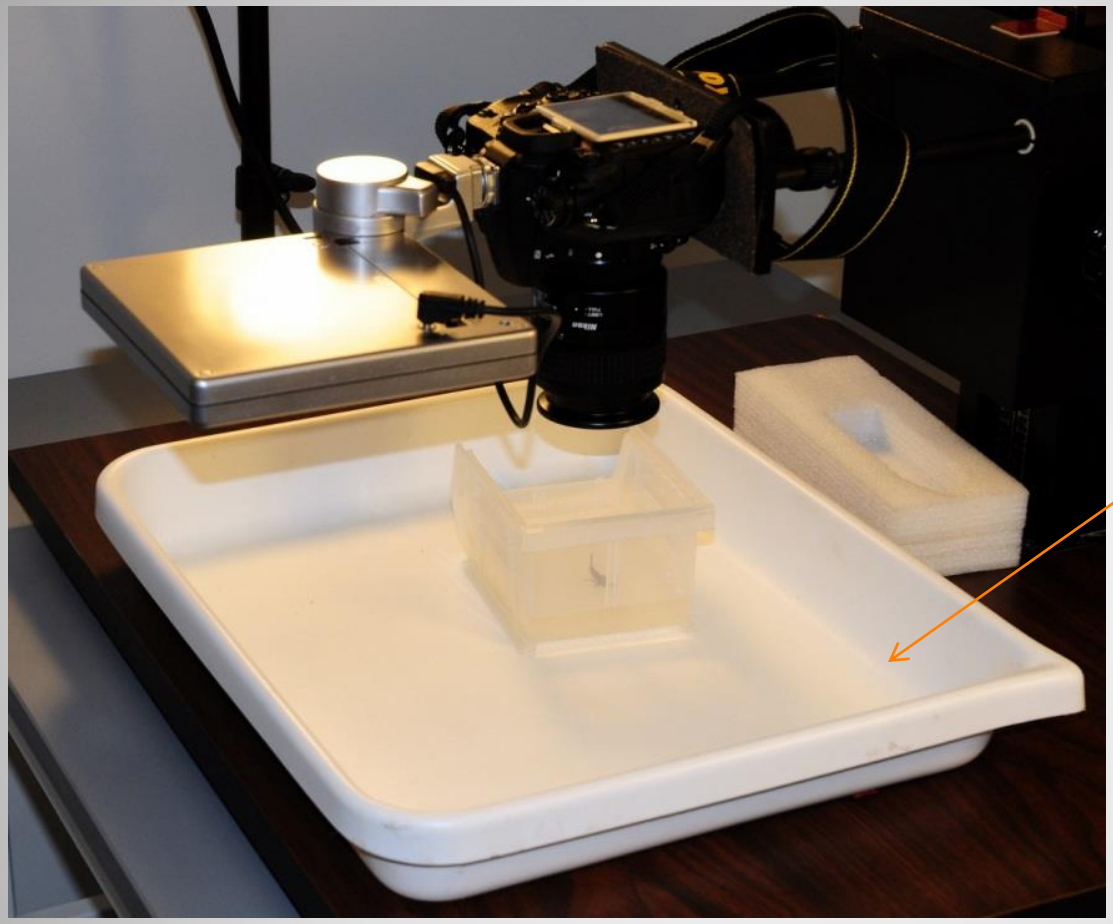
- CHAD= “Cheap And Dirty” = DIY, but not all DIY is CHAD!

Wet Collections

- Macro and closeup photography in wet collections must be done safely.



- Contain spills
- Clean workspace
- Absorbent pads
- Keep tools handy
- Well-ventilated



Contain spills

Rubbermaid white tub

- DSLR with minimum 6 MP, 12 is better
- Mirrorless system w/10MP or more

While P&S cameras can be versatile and useful for many applications, they are less useful for good macro-photography, and lack some of the controls needed for macro work.

Cameras

Lenses

- 50-60mm macro lens for every-day use.
- Working distance is important
- 1:1 maximum magnification– i.e., life size

For greater than 1:1

Diopters for extra magnification

Use a bellows with various lenses for extreme macrophotography instead of a microscope. The results may be superior to using a microscope with a camera tube, especially if used with a computer capture program.

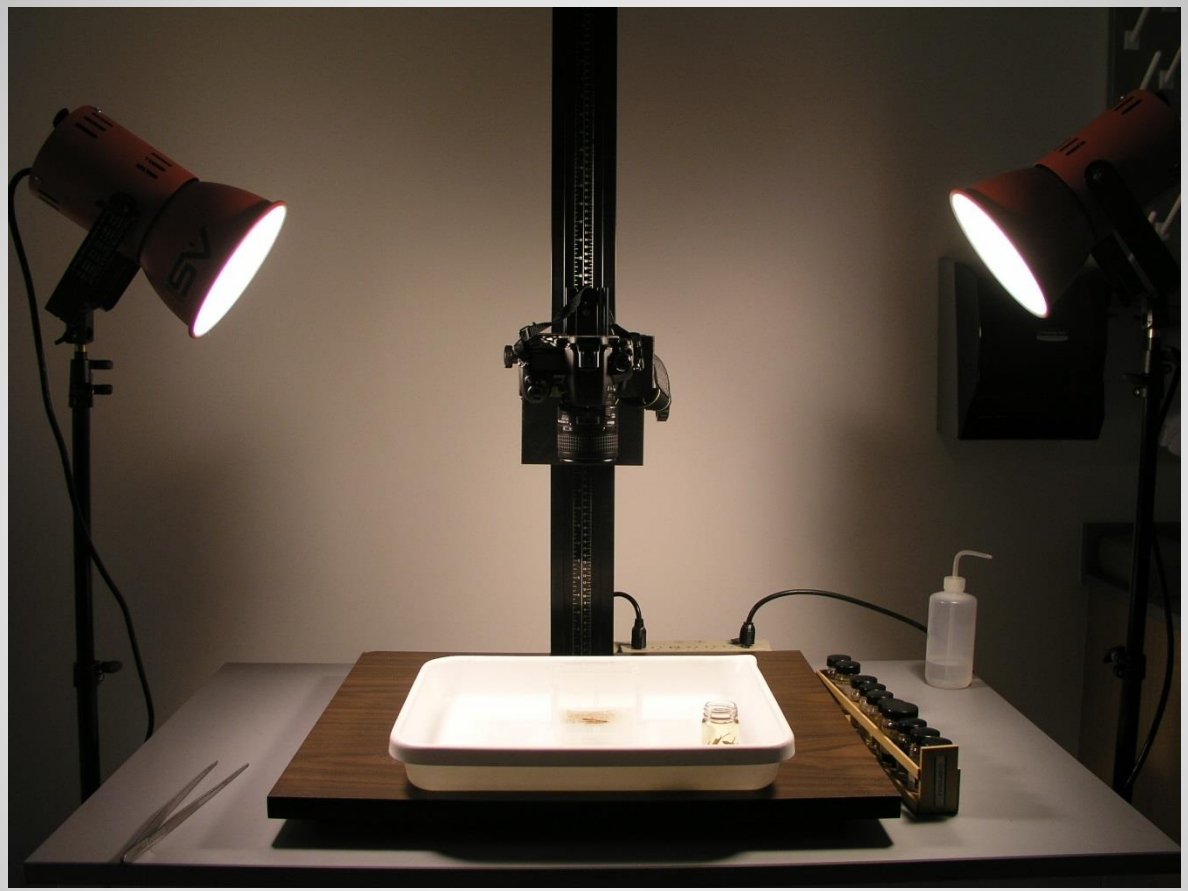
Experiment!

Lighting

- Various types of lighting - results may be similar, but depend on size of subject.
- Constant lighting (CFLs and LEDs)
- Flash – Strobe and LEDs
- A shorter exposure time results in less motion blur and shake at higher magnifications. Flash output is best for most macrophotography.

Compact Florescent Lighting

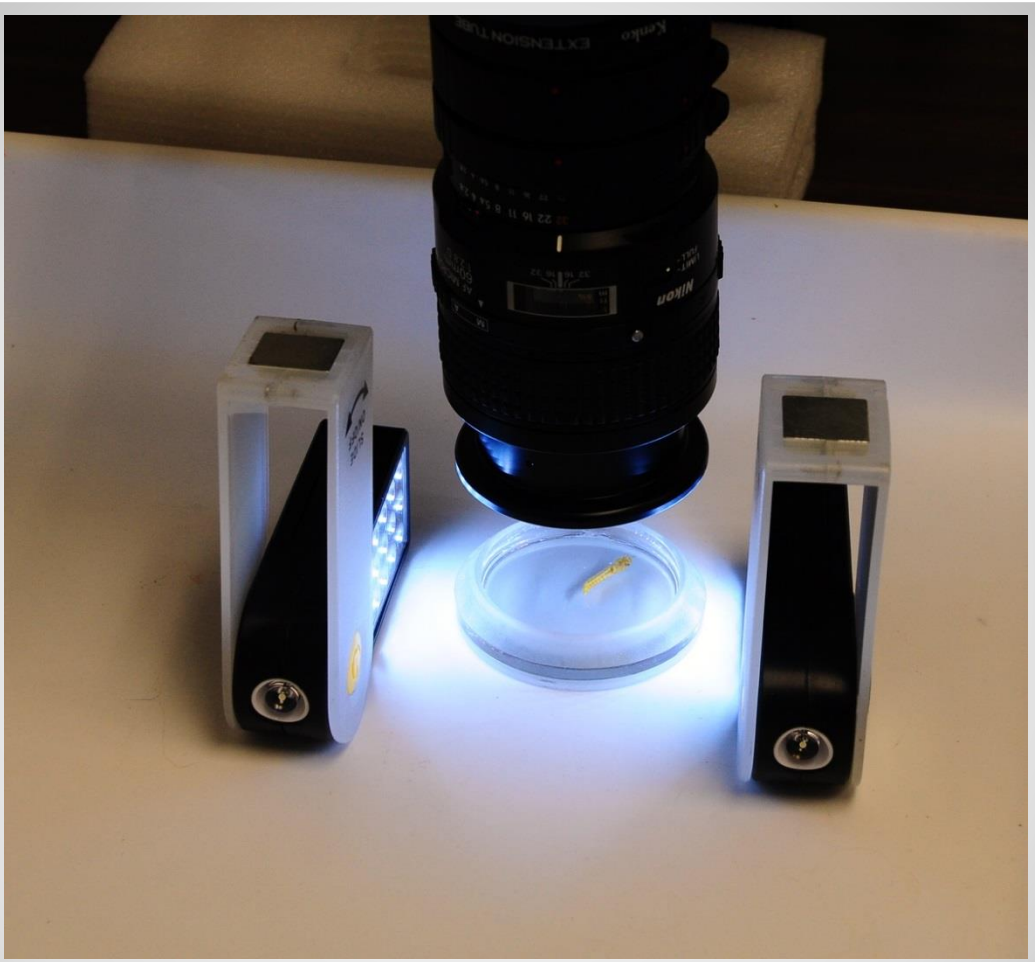
- CFLs are good for replacing those awful hot lights (photofloods), and can be found at various parts of the spectrum, including daylight balanced (5500K)
- Ideal for larger objects
- Can be easily positioned with proper lampholders and supports.
- Even lighting and low energy.



Typical 2-light setup

LED Lighting

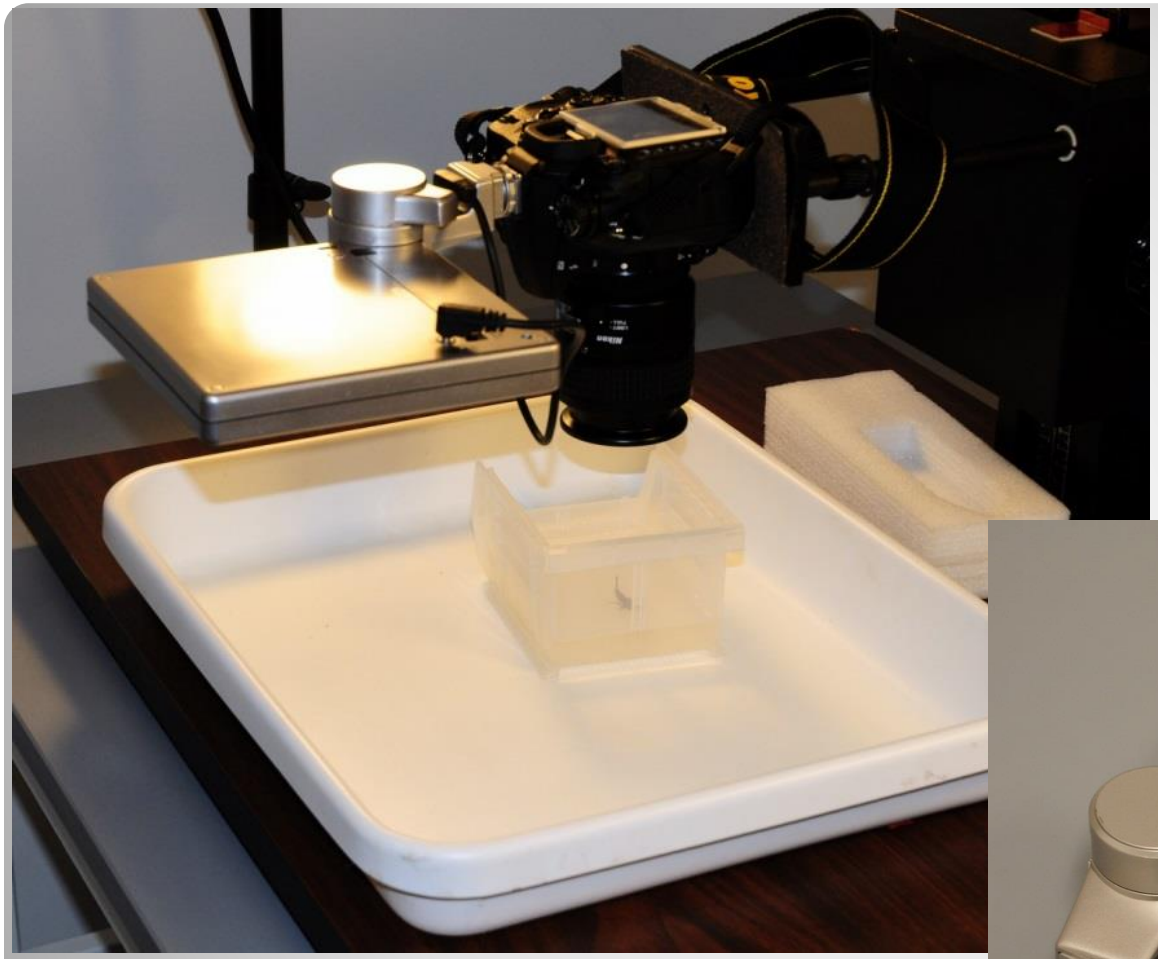
- Full- and limited spectrum
- Low power requirements
- Now fairly inexpensive
- Easily adapted
- Can be placed very close to objects
- Battery or AC power
- Wide variety of applications



Battery-operated LEDs

- Versatile
- Excellent for high magnification work
- Lots of light in a short burst
- Battery-powered
- Requires some knowledge and experimentation for best results
- Inexpensive to pricey

Strobes



Flat-panel flash

Remote triggers & cheap flashes

Nikon R1C1 Wireless Flash

Ringlights

These may be strobes
or LEDs or a combination

Avoid reflective surfaces

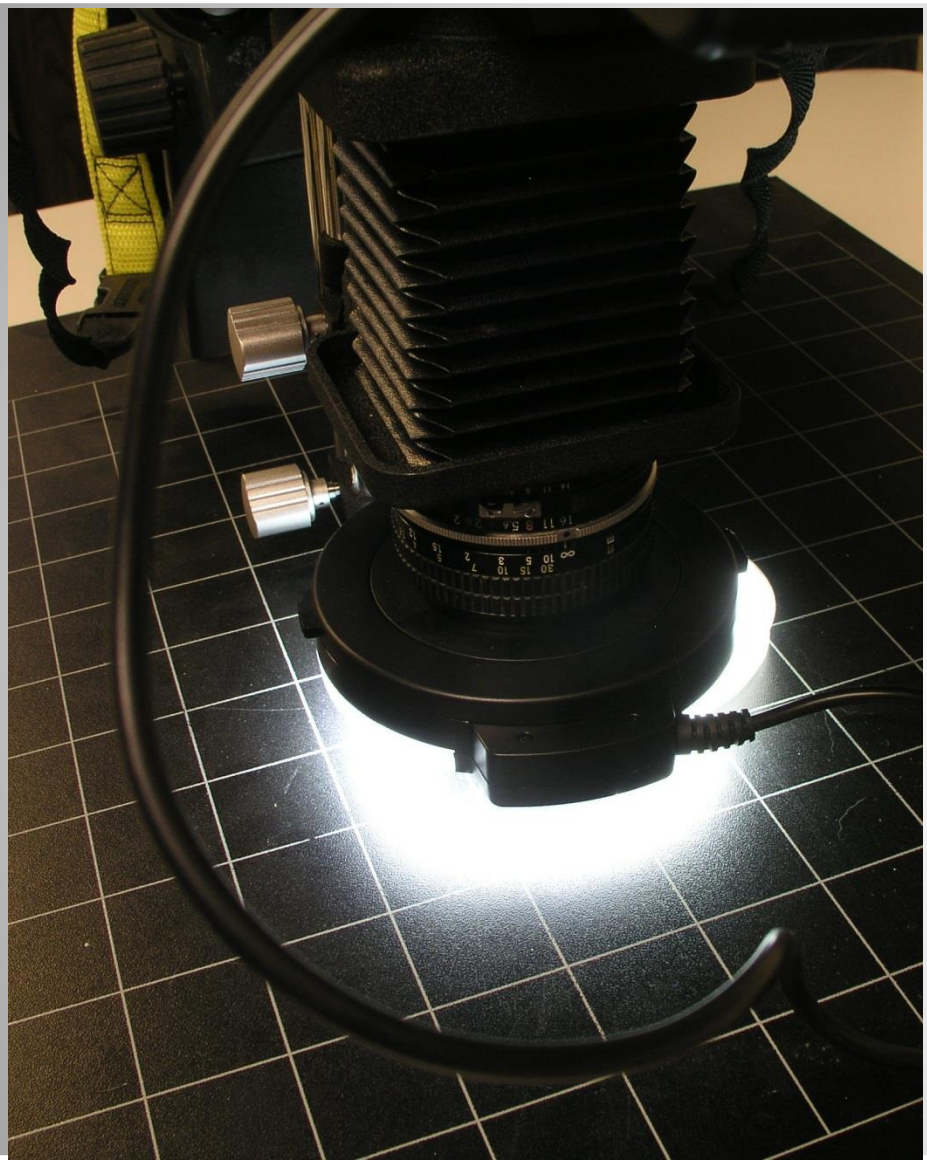
PROS:

- Inexpensive
- Low power requirement
- Bright white light
- Little heat

CONS:

- Individual points of light
- Not as bright as a strobe

LED ring flash

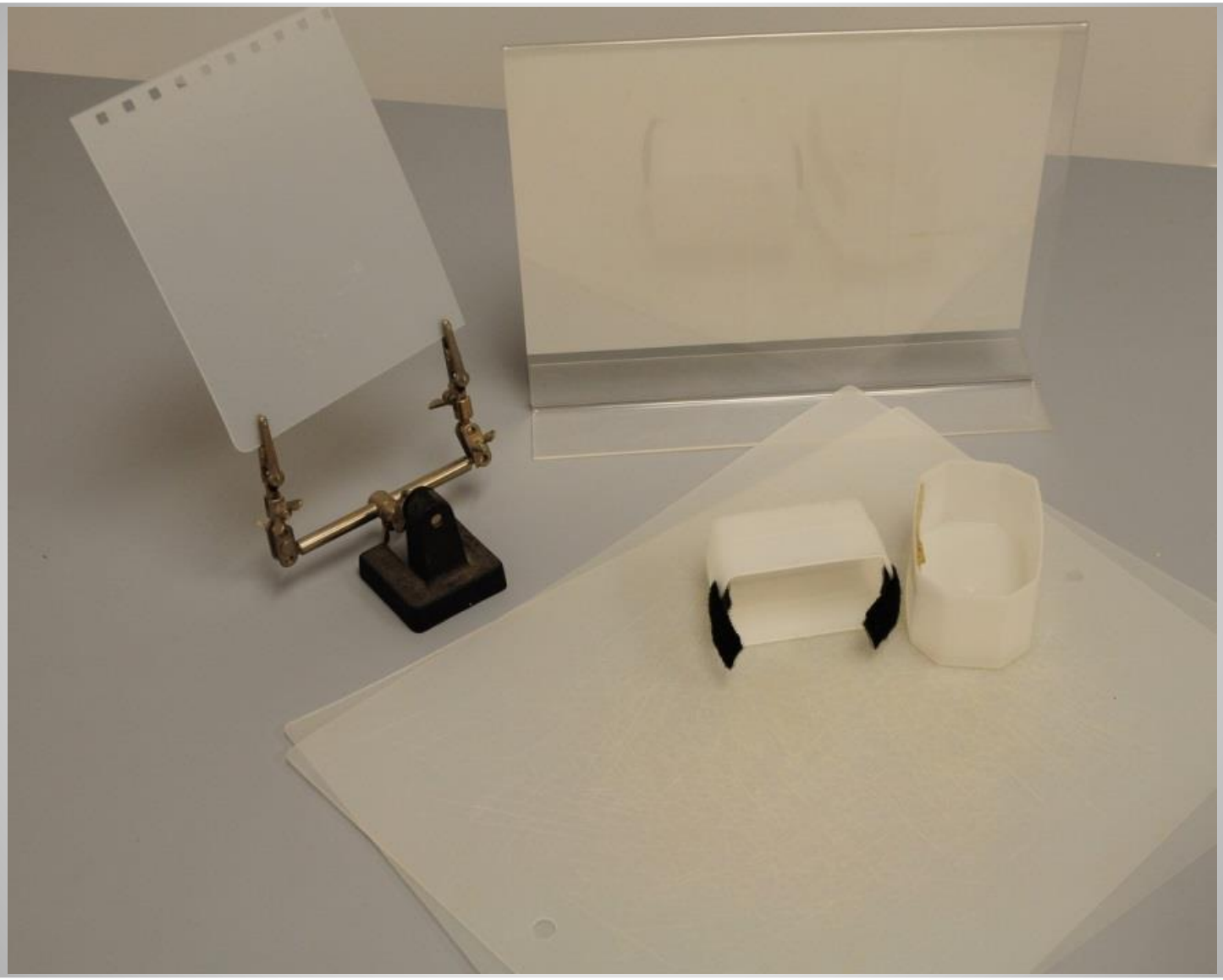


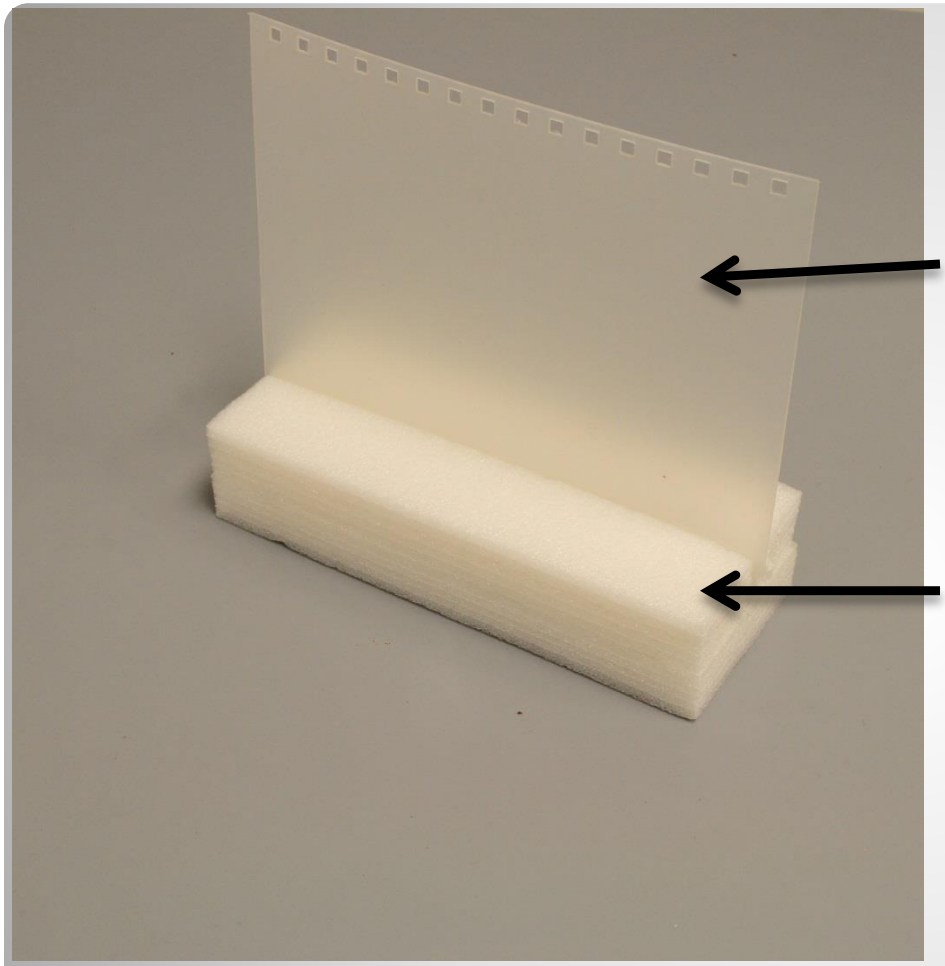
Ring LEDs can really bathe the subject in light at very close distances. Less effective farther away.

What we don't want!

- Soften the light so that it envelops the subject and does not create harsh shadows.
- Most of the solutions are very DIY.
- Most are easily made from found items.

Light modifiers





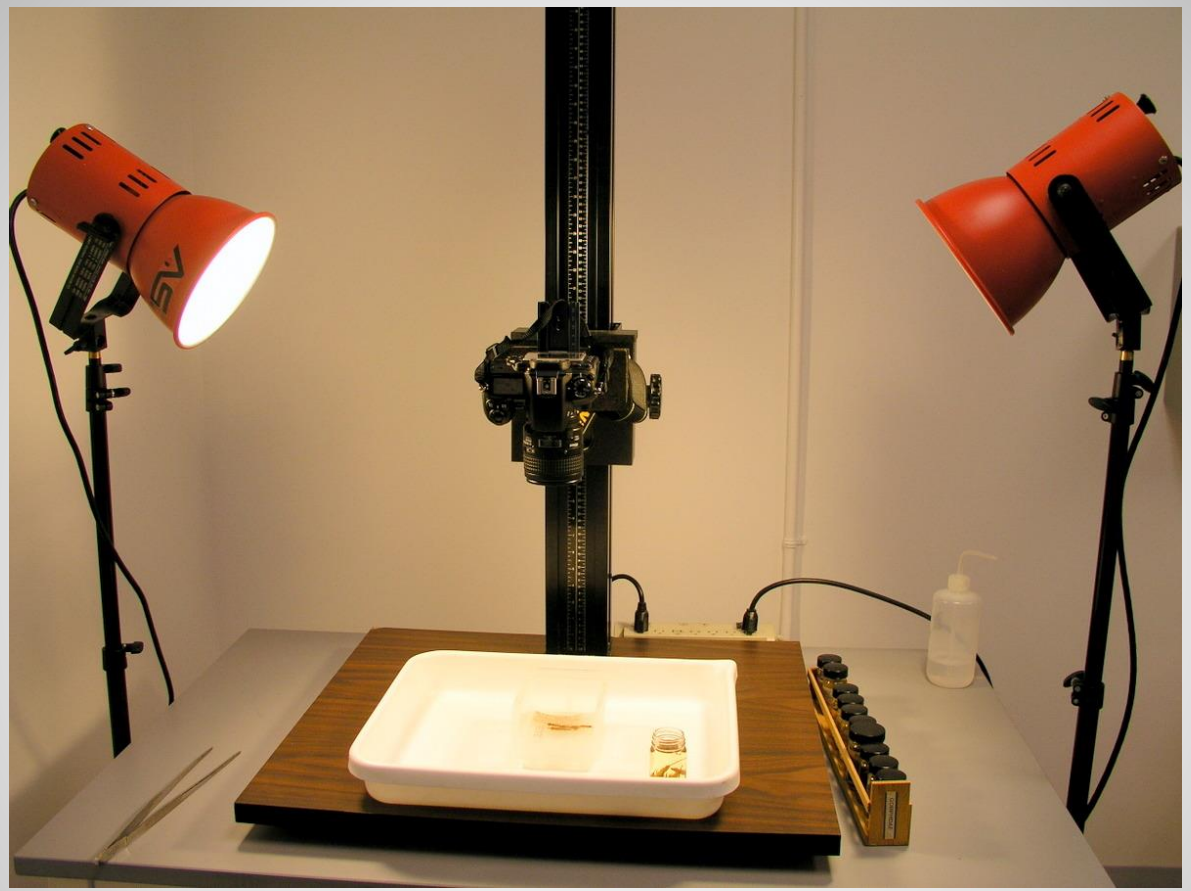
DIY tabletop flash diffuser

Diffusion materials

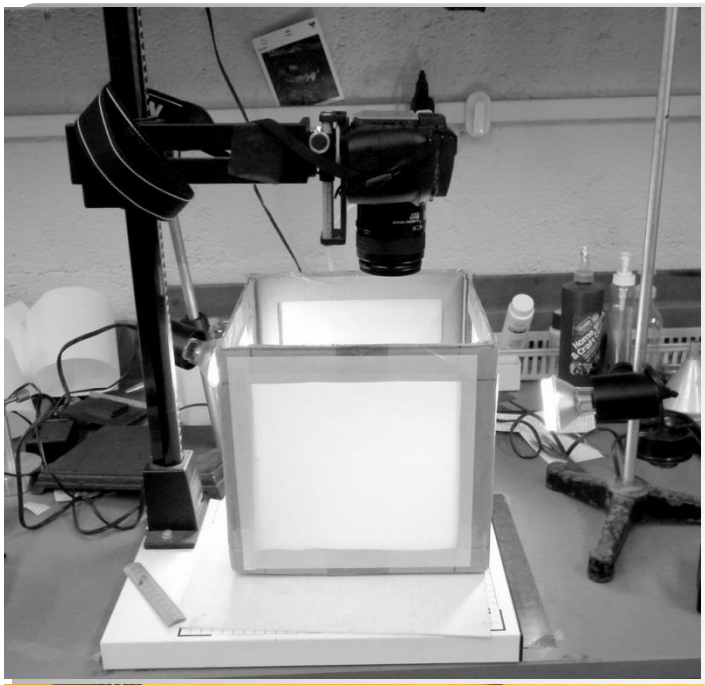
- Matte Drafting Film
- Frosted window applique
- Polyethylene sheeting
- Translucent plexiglas
- Translucent containers
- Avoid using any material that wets

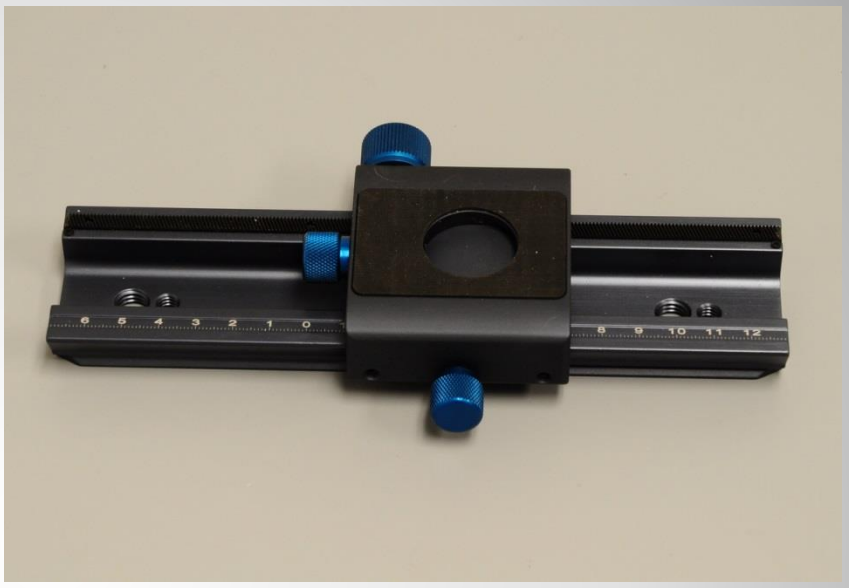
Supports

- The camera should be properly supported for any imaging.
- Allows repeatability
- Hands are free
- No camera shake
- Better control
- Better workflow



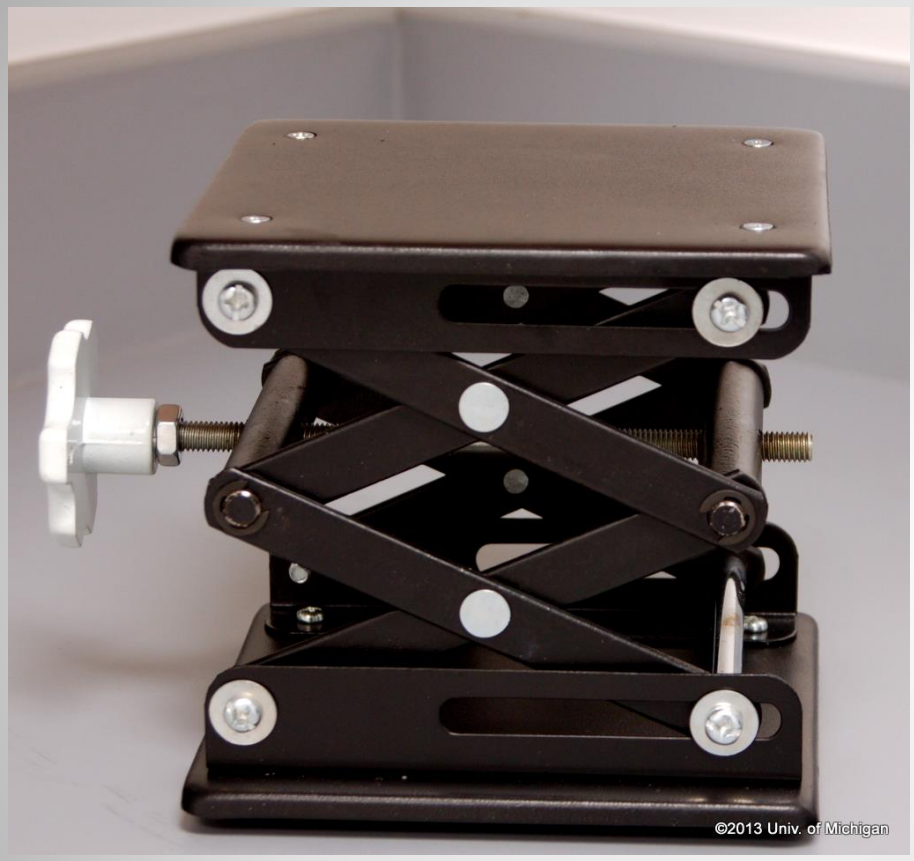
A copystand is very useful for many of the digitization efforts. It should adjust easily and allow a good working distance.





Geared microfocusing rail

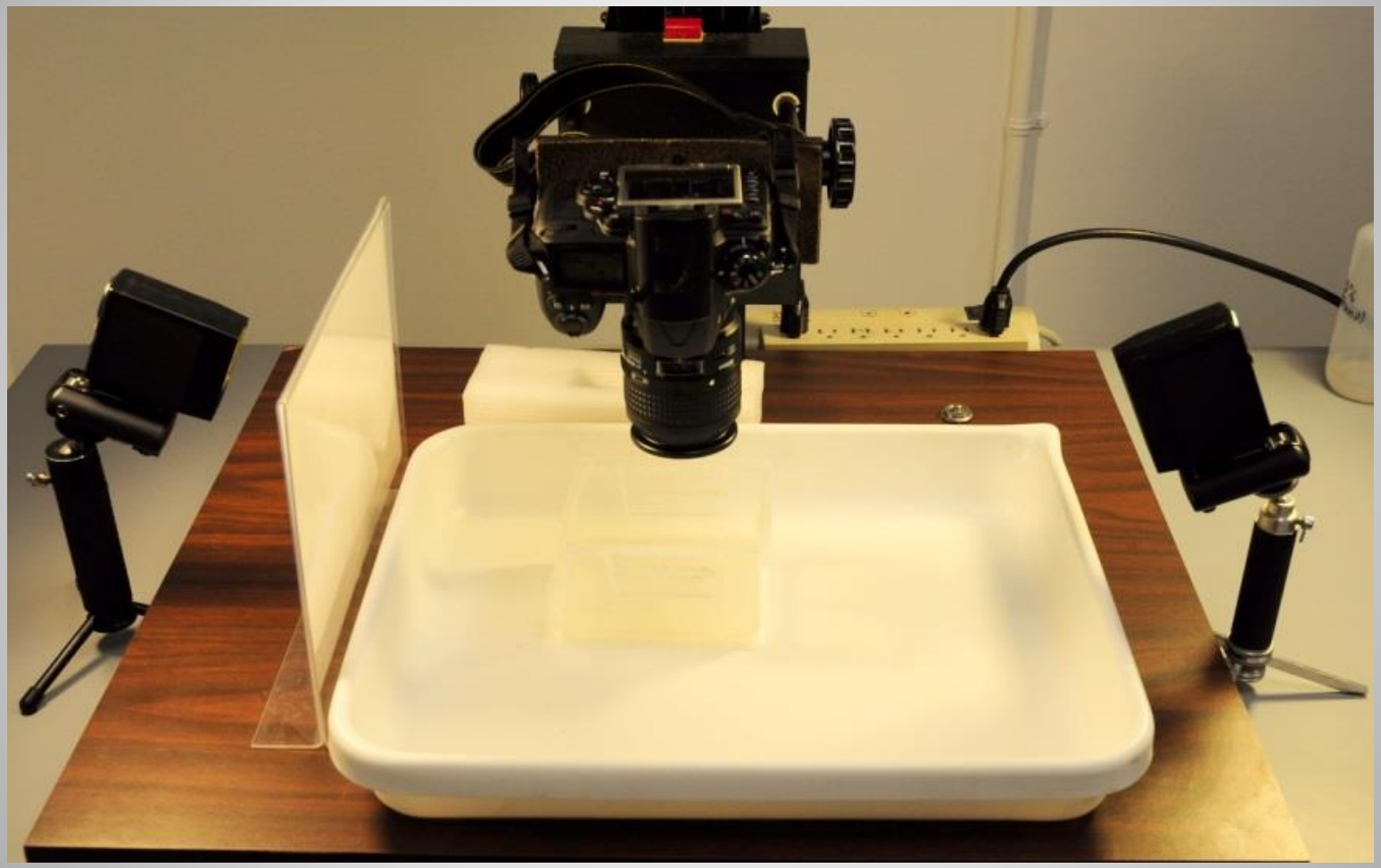
Useful Accessories



Laboratory Scissor Jack

Useful for setting up equipment or subjects on a stable, adjustable platform.

Cost <$50 each.

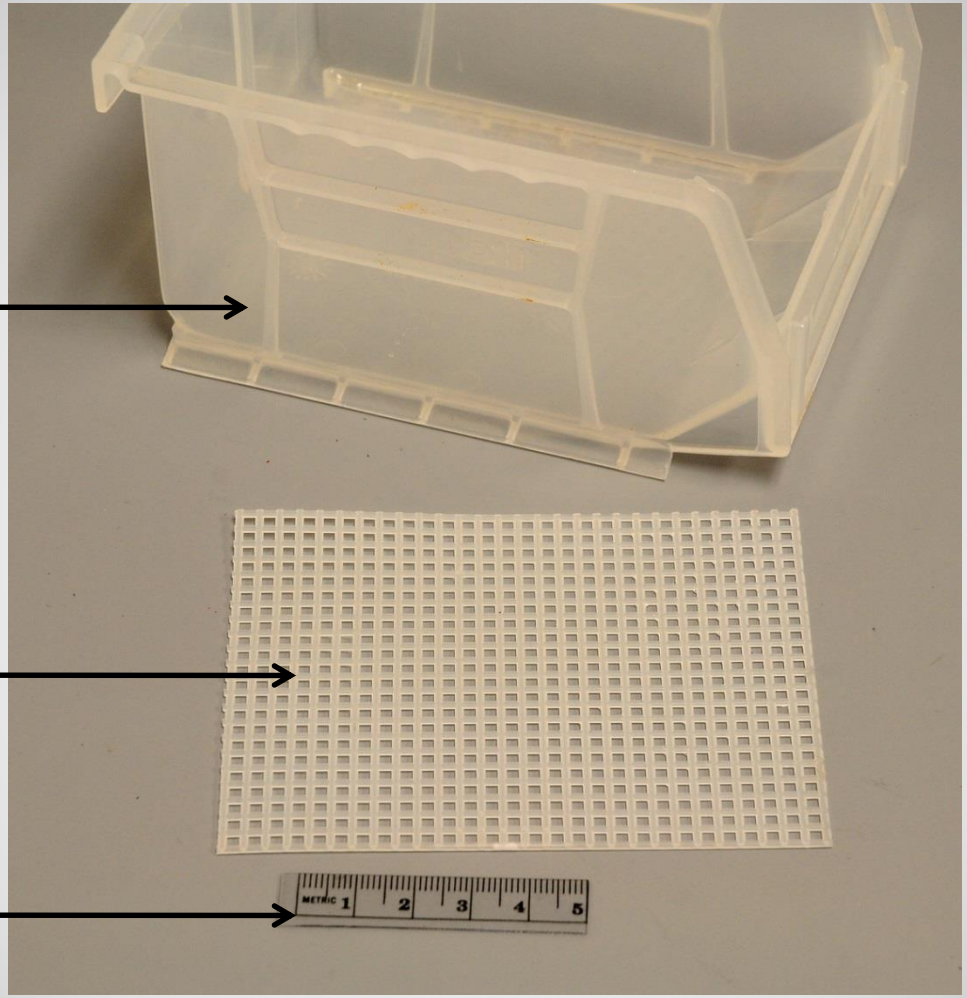


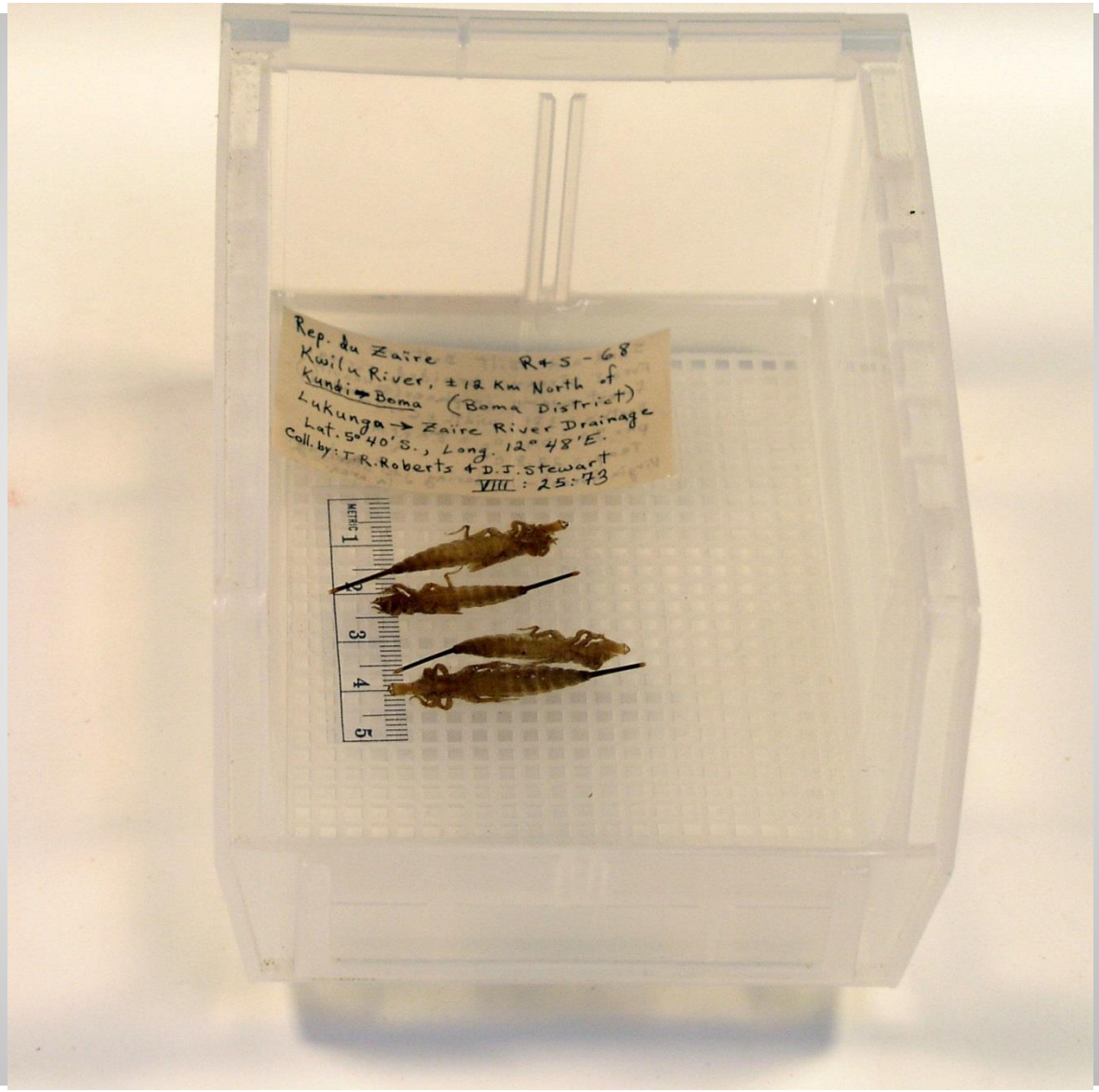
Accessories

Translucent Polyethylene pan

Poly grid from craft store

Clear ruler




Rep. du Zaire R+S-68
Kwilu River, ± 12 Km North of
Kundi → Boma (Boma District)
Lukunga → Zaire River Drainage
Lat. 5°40'S., Long. 12°48'E.
Coll. by: T.R. Roberts & D.J. Stewart
VIII : 25:73

Spreading specimens in a pan works okay for this type of situation.


WYOMING: Sweetwater Co.
Black's Fork of Green River,
ca. 8 mi NE of Lyman at road
just above bridge on US
Hwy. 30S 16-SEP-1934
M34-217 CL Hubbs & family
1
2
3
4
5

Application of photographing bulk samples

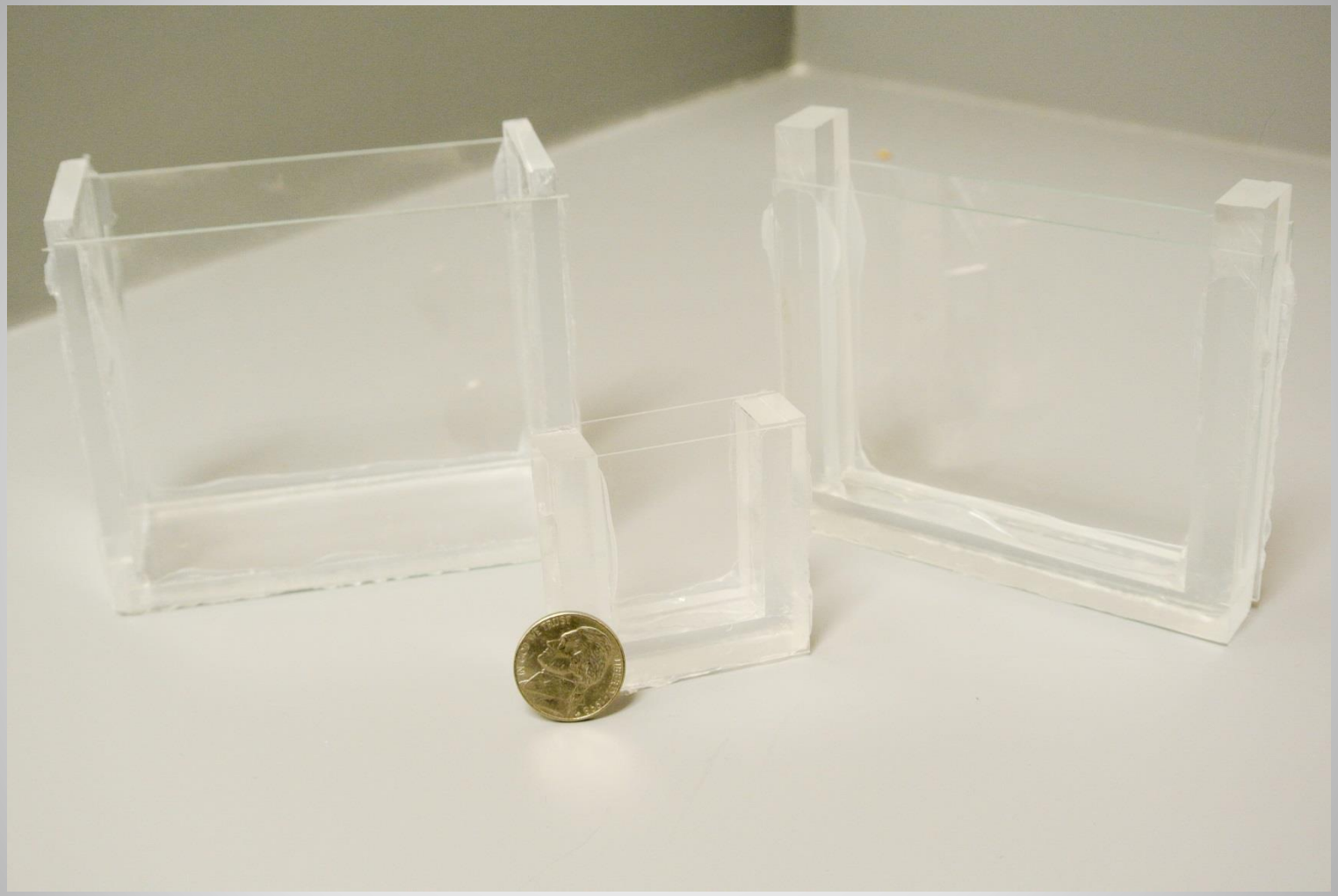
Wet collections are not geared for high photographic throughput, as this Mason jar demonstrates.

Individual specimens require more handling, but how can we avoid the air/fluid interface to get better images than those previously shown?

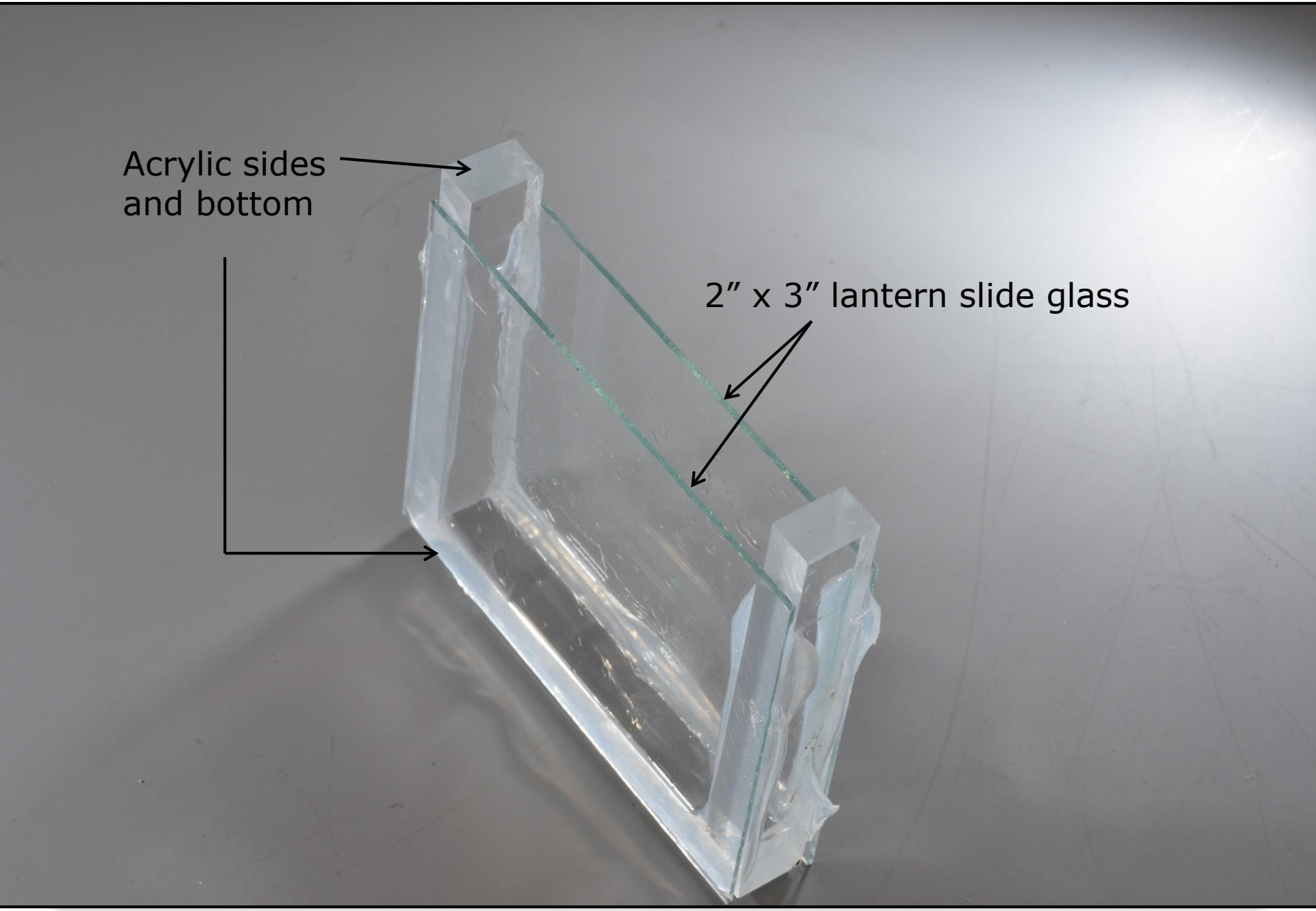
Taking a cue from the fish people…

Specimen Holders

- Wet specimens are particularly difficult to photograph because of the alcohol/air interface.
- Difficult to position specimens in fluid
- Workflow is slower than dry specimens
- A specimen holder of some sort is desirable



Specimen holders


Acrylic sides
and bottom
2” x 3” lantern slide glass


ODO-2502


UMMZODO-2762


UMMZODO-03355


UMMZODO-03510


UMMZODO-03503

Setup using wireless remotes and two LumoPro 180 Flashes, set to 1/16 power.


Matruchus serrifer female
#64

Matruchus serrifer male
MEXICO: Jalisco #64

Acanthorinthes tauriformis male


Oblopteryx catinatus
male
#2

- Try out new ideas and tools for your project(s).
- Get familiar with the controls and adjustments required for your subjects.
- Do a lot of test shots before committing to a workflow.
- Re-use of older equipment saves $
- Document your set-up and the settings.
- Keep a logbook.

Practice, practice.