

Both Sides at Once

Macro Lockdown Project

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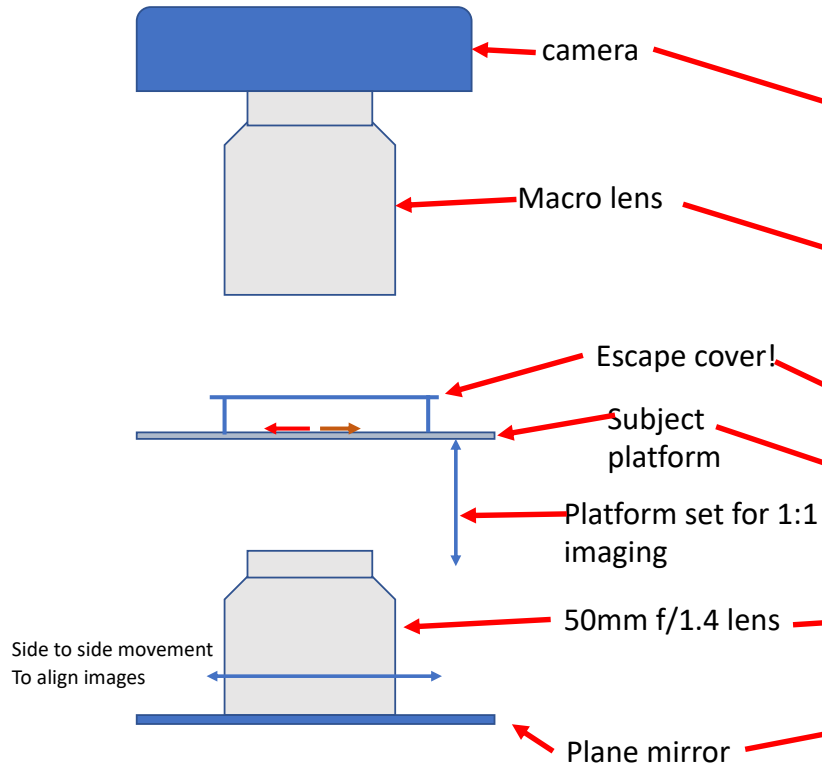
Northampton Camera Club

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The Challenge

- We see many great macro shots – pin sharp, focus stacked, in flight etc... what can we do that might be a bit different?
- Idea was to come up with a macro set up to photograph BOTH SIDES of a subject at the same time...
- So we can image mouthparts of insects as well as their eyes
- Potential for interesting composition...
- All to be done with simple bits and bobs!

Set Up



The top half of the set up is a conventional macro configuration.

Here I am using an EOS R and a Canon 100mm f/2.8 macro lens

The lower part, which provides the image of the other side of the subject, uses a plane mirror and a fast prime lens, with the 'camera' side of the lens facing the subject. An inverted 'aerial' image of the subject is then formed in the plane of the subject, and can be displaced relative to the subject by moving the lower lens, enabling composition.

The 'aerial' image has to be set to the same plane as the subject, by moving the platform up and down. The camera lens then has to be focused on the subject and its reflection. So two focus steps are needed, and it is iterative to get both in focus, so patience needed!

Results!

- I first tried this with a simple lens element removed from an old pair of binoculars, but it had too much aberration – the lower lens has to be camera quality – and fast – otherwise the reflected image will be much dimmer than the main image. My best results were with a 50mm f/1.4 or 85mm f/1.2. Canon lenses work but Nikon lenses will not, as they default to closing the aperture when off camera (I believe!)



- Initial image with simple lens
- Dead fly gave time for set up!
- Reflected image is slightly blurred and shows chromatic aberration
- Move on to the camera lens set up...



- Woodlice!
- Surprisingly elegant from both sides!
- The reflected side is always inverted with respect to the prime image
- At the top and bottom of the frame is another woodlouse, a different species... see next image





- Snails can be quite beautiful when not eating your plants!
- At this magnification, they are really speedy though!



- Wasp! Had to calm this one down with a bit of jam. She was released unharmed though.



- Moth! This was calmed by a spell in the fridge... but revived quickly... filled up on grape juice and again released unharmed (after signing the model release form)

Conclusion and limitations

- This was an interesting and exciting project, but the imaging had some limitations...
- Field size was only around 25mm diameter, so won't work with large subjects (maybe ways around this with different relay lens)
- Lighting was challenging – flare was really hard to suppress from the lower half of the set up
- Dust on the platform was really difficult to remove. Plenty of work needed in post processing – but I quite liked a bit of dust to define the image plane
- Focus stacking should work, and simplify the need to get both images in exact focus, but will be difficult to stop the subjects moving!
- Get in touch if you are interested in more details! Also send me comments on our FB page!