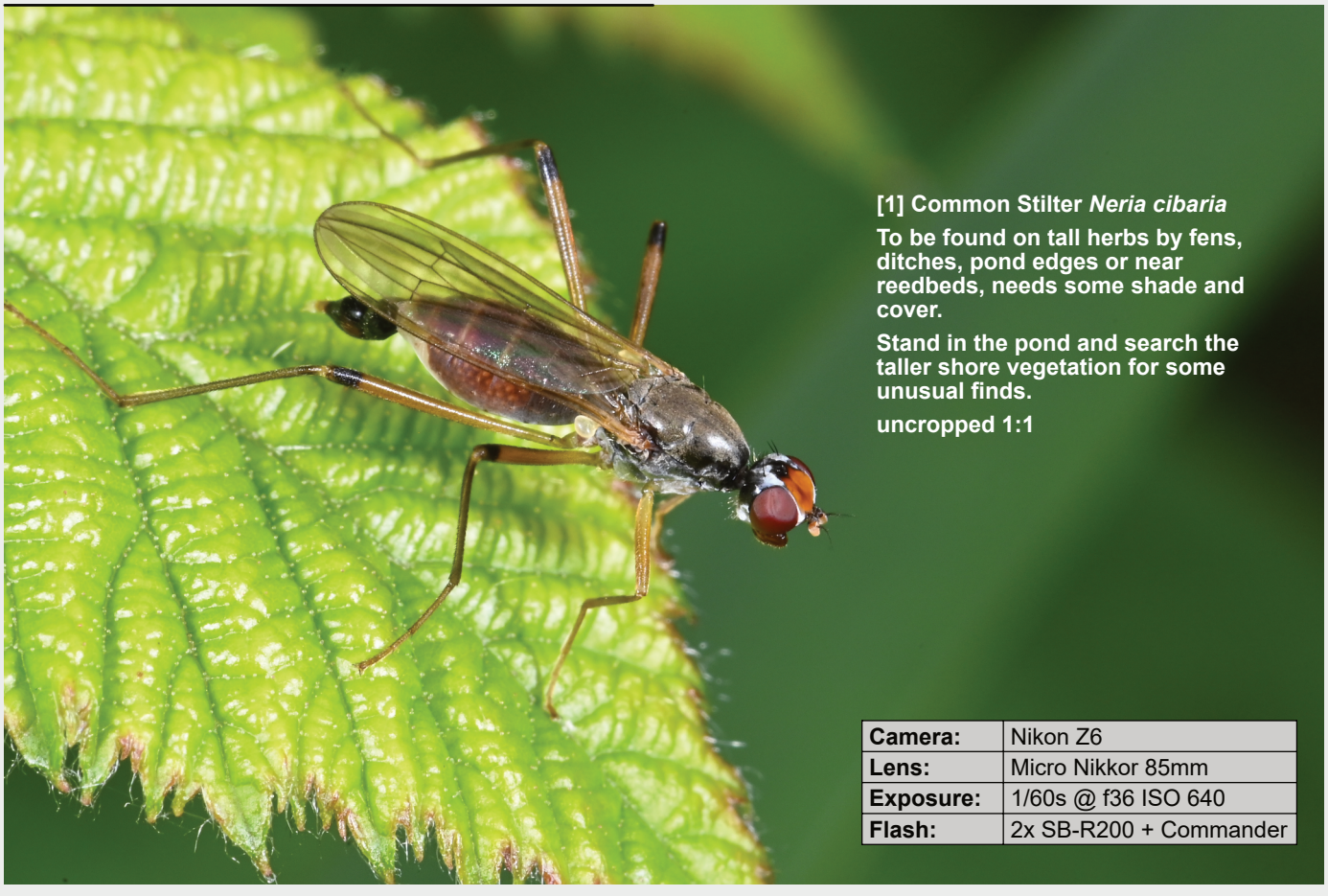


[1] Common Stilter *Neria cibaria*

To be found on tall herbs by fens, ditches, pond edges or near reedbeds, needs some shade and cover.

Stand in the pond and search the taller shore vegetation for some unusual finds.

uncropped 1:1

Camera:	Nikon Z6
Lens:	Micro Nikkor 85mm
Exposure:	1/60s @ f36 ISO 640
Flash:	2x SB-R200 + Commander

Light kit

Small game hunting using macro flash photography in the field - Darwyn Sumner

MISSION: Exploring. Collecting insects and other invertebrates with a camera. Identification & recording
PHOTOGRAPHER: Darwyn Sumner
LOCATION: All over the UK
KIT USED: Nikon D80, D7100, Z6, Z50

AF-S Micro Nikkor 105mm 1:2.8G, AFS Micro Nikkor 85mm 1:3.5 G

Close-up Speedlight Remote Kit R1, Commander SU-800

Flickr: https://www.flickr.com/photos/darwyn-sumner/
iNaturalist: https://www.inaturalist.org/projects/european-micropezids-tanypezids

Trust to the weather patterns of wind and light and the behaviour patterns of small creatures that just will not stay still and you have a formula that enormously restricts the diversity of subjects that can be bagged with macro photography.

Auxiliary lighting of some form is called for. There are several kinds of these, from continuous LED lighting which offers a couple of stops through ring-flashes to small dedicated flash guns. The brief flash freezes movement and permits the narrow aperture necessary for a good depth of field. If you can frame it you can bag it.

Released in late 2005, Nikon's R1 and R1C1 kit was highly significant for small game hunters. It provided the only wireless solution, the small SB-R200 slaves being triggered by the IR light either from camera's built-in flash - Creative Lighting System (CLS) or via an SU-800 Commander which gives TTL control and thus a much shorter recycling time than the 6s using CLS.

Trekking

The chosen location may require a hike, if your full kit is heavy then consider putting it on a cheap shoppers trolley with its bag removed; use ROK straps to secure your kit. Take a Walkstool (e.g. Basic 50) rather than a tripod, choosing a stool height (20") such that when seated your lap is horizontal.

On arrival at your first location, assemble the kit and stalk your quarry. Particular spots may seem more attractive to the small game you are hunting, stake these out by sitting down and waiting.

The question as to how and where to look has been exercising the minds of field naturalists for centuries. Close observation and patience whilst photographing are useful skills which still have the potential to increase our knowledge of some species.

To help you recall your location later, take shots of the trail head (e.g. reserve signpost) and general habitat. Take some form of GPS if you wish to geotag your images.

Field technique

Whilst dragonfly spotters and butterfly hunters tend to use longer lenses they may also carry a second camera for macro, allowing them to record hoverflies as well. So techniques vary; the one I describe works for small fast creatures, right the way down to 1mm or so. It creates a lot of junk images but in some of those the subject may be identifiable, so for naturalist recorders these are not losses.

Preparation

Flash guns: Turn on the SB-R200s and check the Group and Channel settings. Ensure the SU-800 is locked onto the hotshoe. Turn it on and check that it is using the same channel. Apart from keeping an eye on battery indicators there's nothing else to monitor except for the exposure compensation value on the SU-800.

Macro lens: Set the VR on and the focus to manual (on the camera body too.) Preset the focus to between 0.5 & 1m and return it there after every 1:1 session.

Camera: Set to M, dial in a small aperture (performance in macro lenses is good at values f22 to f32) and a shutter speed compatible with the flash (~1/200s.) If set to A (aperture priority) then this may give you some usable shots if you stray beyond the flashes influence on distant shots - a case for using auto-ISO..

Portability

Though the R1 kit looks enormous in its case, the field essentials can pack away quite small:

Currently Nikon's lightest field kit at 2,250g. Shown with a Z50 + pancake, Micro Nikkor 85mm (+FTZ) and SU-800 gun. Spare cards in a small wallet, 3x rechargeable CR-123 batteries under the small flashguns, handstrap by Peak Design. The Tenba BYOB 9 backpack insert shown will take configurations at least up to a D750 and Micro Nikkor 105mm.

The mirrorless kits will fit a bag as small as a ThinkTank Retrospective 5 but you will have to add a side pouch for the Attachment Ring and SB-R200 guns, some filter cases (Tycka) fit the bill.

For those of us lacking the strength and stamina of the athletes we once were, the above is portable for a day in the field.

The Commander and twin SB-R200 setup with a Nikon Z6 (1,740g)

Adjustments

ISO: Set ISO at around 400, raise it if needed. Auto-ISO has the potential to make adjustments that are undesirable unless you set the permissible range.

TTL and flash pulse: Though the shutter is set at 1/200s, the TTL system shortens the pulse of light to ~1/1600s thus freezing the movement. This means that you can shoot hovering insects.

Varying the exposure: Use the exposure compensation on the camera and the SU-800 to adjust exposure. In particular with dark insects on white flower heads you need to over-expose (+0.7 EV) to compensate whilst normal shots of paler insects (orange flies) might work better when under-exposed (-0.7 EV) The TTL system responds to the illuminated background as a whole and you have to judge the relationship of your specific subject to that.

Camera:	Nikon D7100
Lens:	Micro Nikkor 105mm
Exposure:	1/60s @ f32 ISO 500
Flash:	2x SB-R200 + IR panel (CLS)

[2] Hoverfly *Brachyopa insensilis*
Hovering by a sap run on Chestnut
Hand-held

The bigger the bag, the greater the temptation to fill it with non-essentials. Think small and travel light.

Tracking

Viewfinder: I've used this sequence since 1968 (flash since 2007). I thought everyone did until eye detectors tried to stop you doing it.

a. Establish a safe(ish) position and locate your subject in the viewfinder. Focus and shoot when the subject is distant (but maybe identifiable later.) **b.** Slowly bend or lean forwards, keeping the subject central and your eye still at the viewfinder, take a sequence of shots. **c.** As you reach the point close to losing your balance or casting a shadow on the subject, move the camera slightly away from your eye whilst still keeping the subject central and focussed, keep shooting. **d.** Continue to push the camera forwards away from your eye until **e.** you reach the minimum focus or the subject finally realises the threat and takes flight. You should be able to extend the camera quite a long distance away from your eye before losing track of the subject, by this time the viewfinder looks tiny and you are only seeing a fraction of the subject.

The system shines best at the last two stages, where low light, movement and scale would be a barrier to the use of other setups.

The eye sensors on the mirrorless cameras make steps **d.** & **e**. impossible to implement. On the Z50 you can disable the eye sensor by pushing the eyepiece up a notch in its holder. The Z6 eyepiece is constructed differently, I bought a spare and glued an obstruction across the notch, you may prefer paper, tape or chewing gum.

Keep pressing the OK button to keep the focus point central.

f. Take several shots whilst leaning in and out slightly, the focus points you see are on the part of the subject nearest you whereas the optimum focus point is half way into the depth of the subject. The depth of field due to a narrow aperture will do the rest.

If you are wearing a neck strap you've just pulled yourself into a pond. Use a wrist strap instead.

[3] Predatory Asilid fly
Choerades marginata

Camera:	Nikon Z6
Lens:	Micro Nikkor 85mm
Exposure:	1/60s @ f36 ISO 640
Flash:	2x SB-R200 + CLS

Camera:	Nikon D7100
Lens:	Micro Nikkor 105mm
Exposure:	1/250s @ f36 ISO 500
Flash:	SB-R200 + CLS

[4] Hoverfly *Rhingia campestris* (the Heineken Fly) commonly encountered around bluebells

Use of a single SB-R200 flash gave this some modelling - uncropped 1:1

Monitor: The starting point for this method is your minimum focus, the camera held at the same distance you would read a book. Many compact cameras prioritise monitors and so users have become used to tracking with them. Monitor brightness is the problem here, it is competing with the surroundings for your attention, and with the sun shining on the monitor it can be difficult to see and maintain the focus points on the subject.

Again extend the camera forwards whilst maintaining the subject centrally and keeping the focus points registering.

Because the monitor method relies more heavily on the camera's focussing point system rather than one's own visual acuity, step **f.**, where you are looking for focus on non-central parts of the subject, is more difficult to achieve. Using the focus point joystick (Z6) is just one multi-task too far.

On occasion the tiltable screen can be of value in obtaining a different viewpoint of the subject. Insects on water or returning to a rock perch. Arcade game skills are valuable for this technique.

If you can achieve the trick of switching from viewfinder to monitor when the eye sensor kicks in then you are a true magician.

Menu Settings

Mostly in the Photo shooting menu (Z6):

Choose image area: FX (36x24)

[5] Parasitic Conopid fly *Conops flavipes*

Camera:	Nikon D7100
Lens:	Micro Nikkor 105mm
Exposure:	1/250s @ f32 ISO 200
Flash:	2x SB-R200 + CLS

Image quality: JPEG fine

Image size: L

Get the image right in the camera and RAW files just waste space. You will also be likely to crop - hence the largest most detailed JPEGs.

ISO: At least dial in the max and min values for when you use Auto ISO.

White balance: Try either Natural light auto or the cold/warm Auto options. It's just your taste that matters unless it's badly wrong.

Metering: Centre-weighted metering or Spot metering, choice rather depends upon the size of the average subject in the viewfinder.

Focus mode: AF-S but it will shift to MF if you turn off autofocus.

AF-area mode: Pinpoint or Single-point AF

Custom Setting Menu: c3 Power off delay

Standby timer 5min

Setup menu: **Airplane mode** ON or your camera is wasting battery by sending out WiFi signals constantly

Save user settings: to U1.

Positives and negatives

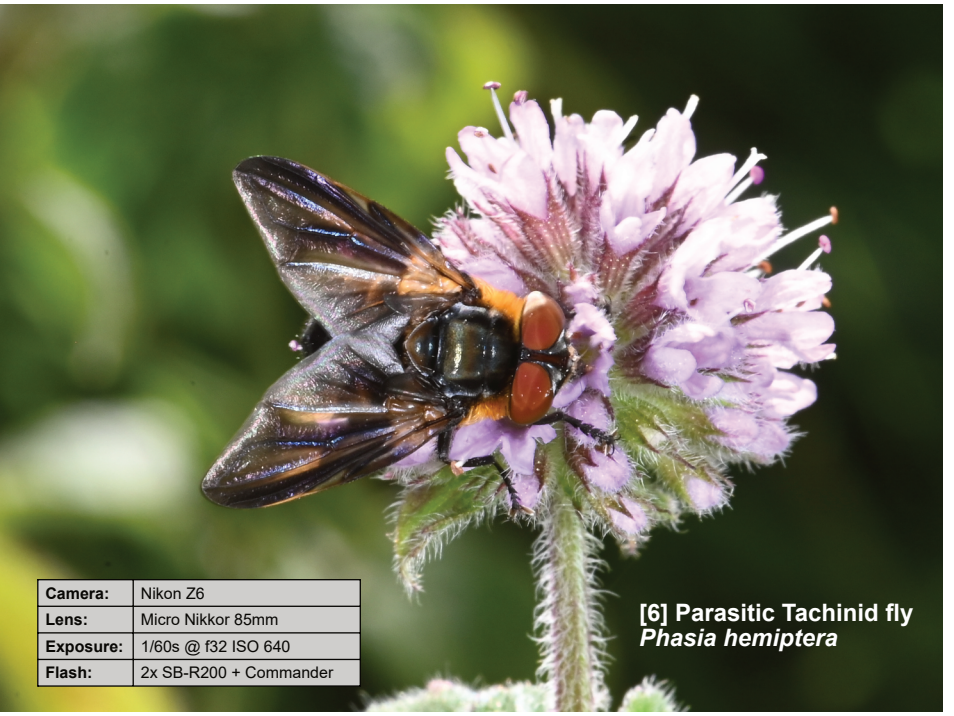
1. Z series macro lenses are at the back of the queue. Will they be lighter than the current combinations using the FTZ?

2. Eye sensors should be disableable via the menu, and saveable in user settings.

3. Nose-operated touch-screen zoom controls on the Z50 for us left-eyed users. So many lost shots.

4. Bulk of the entire system, the Commander being close to the size of the Z50. Transferring the flash control panel to the camera would help.

5. Surely by now high ouput pulsed LED technology has reached the point where we



Camera:	Nikon Z6
Lens:	Micro Nikkor 85mm
Exposure:	1/60s @ f32 ISO 640
Flash:	2x SB-R200 + Commander

[6] Parasitic Tachinid fly
Phasia hemiptera

can use them for short-duration flashes.

6. Bag designs which omit securing tags & straps yet persist with suitcase loops usable only on airport tarmac.

7. Narrow range of matching accessory pouches for popular bags

8. No lugs for carrying straps on the Walkstools

9. Big airport bags & rucksacks. Cram with 2 DSLR bodies and 7 lenses and and they can't even be lifted off the ground.

10. No trekking trolleys designed for photographers to help them get heavy gear across rough terrain to sites. Photography has yet to discover the wheel.

11. Diffusers on the RB-R200 flashguns are insecure, I've lost several and no longer use them.

12. Focus point easily bumped off-centre by the joystick (Z6) during general handling.

+

1. The R1 or R1C1 kit provides much more than macro capability in the field. There are endless possibilities for studio macro work.

2. Good for focus stacking setups

3. Great for wheelchair users who can stake out vegetation on boardwalks or well managed woodland rides.

4. The vibration reduction (VR) in the lenses which improves shake blur by about 4 stops.

5. Surprisingly the flash does not cause insects to suddenly take flight.

6. The stool provides a steady base, access to a large proportion of the nearby vegetation and the opportunity to observe. Far more flexible than a tripod.

Identification

Though books may good enough for the more popular groups, others may be tricky. One useful general purpose identification site is **iSpot**. Simply upload your image, take an identification stab at the nearest you can get ("beetle") and wait until some kind person responds.

Most popular is **iNaturalist** where naturalists throughout the world upload their images. Look for specialist projects in your areas of interest.

Both require you to be specific about where you took the shot so geotagging your image before uploading is useful. Garmin has an easy to use system and the free Geosetter is popular. The photo-organiser iMatch lets you geotag too.

Image communities

The above sites can be searched for images in your chosen area of interest. Top of my list is **Flickr**. It can be searched in several ways but one good means is to use their tags. "Flickr Conops" in your search engine for example will reveal a large number of images of this genus, some of which are astounding. Some top macro photographers hang out here, seek them out and follow them. Join the specialist groups and projects. Take a closer look at a good one for clues about gear and technique.

Recording communities

This sector is huge, the amateur naturalists who explore the natural world with their cameras and use their images to ask questions or just to make personal collections. Insects alone account for over 20,000 different species in the UK (world ~1M), there's a lot of choice and many different recording groups. Recording what you find in the field is one of photography's greatest contributions to Science.

Camera:	Nikon Z6
Lens:	Micro Nikkor 85mm
Exposure:	1/60s @ f32 ISO 640
Flash:	2x SB-R200 + Commander

[7] Sciomyzid (Snail-killing fly)
Elgiva solicita

Macro tips & challenges

1 Garden invertebrates

Choose something of interest such bees, spiders, hoverflies or beetles. Aim to capture every species that visits, get them identified then add that to the image's Title.

2 Join a group

A local Camera Club or Natural History Society; pick their brains for gear, techniques & sites. There are National groups for every kind of wildlife, listed on the Biological Records Centre (BRC) site at www.brc.ac.uk/recording-schemes Learn from them how best to identify what you've shot.

3 Collect

Try for a full set of images of all species in a group. Dragonflies, butterflies, spiders, all 5 *Conops* ... Some might be done in a year, others will take a lifetime.

4 Viewpoint

Many species cannot be easily identified from images. Always try to get a variety of viewpoints (side and top) to improve chances.

5 Focus stacking

Worth a try in the field even if it's only from two images, use a short burst.