



Using Your Smartphone for Botanical Imaging

By Rich Wilson

SCOTTISH BOTANISTS'
CONFERENCE

November 2024

Equipment to consider for the Smartphone



Software

PHOTO APPS: [e.g. Default Camera App, CameraPixels, ProCam, AuraHDR,....]

ENHANCEMENT: [e.g. Brand-specific, PhotoShop, Lightroom, Color Splash, PicCollage, eZy Watermark, Picolay, AffinityPhoto 2, EXIF data....]

ORGANISATION: [e.g. EXIF, Google, Adobe, Flickr, Amazon, What3Words,

Hardware

Lenses: Close-Up, clip-on, filters

Measurement: Colour card, ruler, fingers, coins

Light Control: Reflectors, Background cards

Stabilisers: Monopod/Walking stick, Stabilisers (gimbal), mount for pod

Smartphone Accessories





*More
Accessories*

Lens Examples

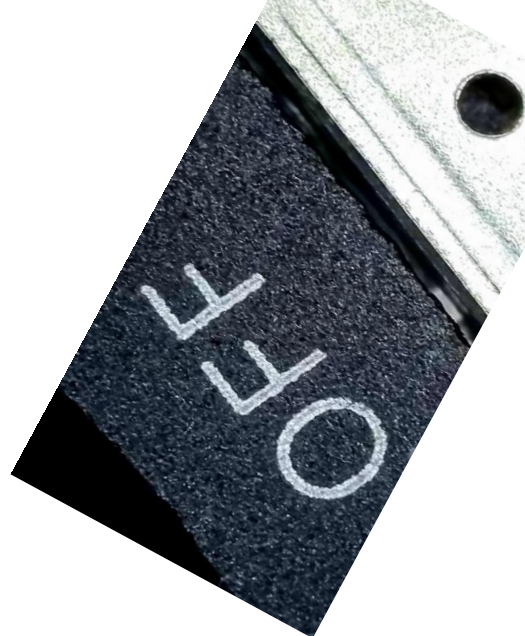


Filter Mag Lens x8

Hand Magnifier



10x Loupe/light

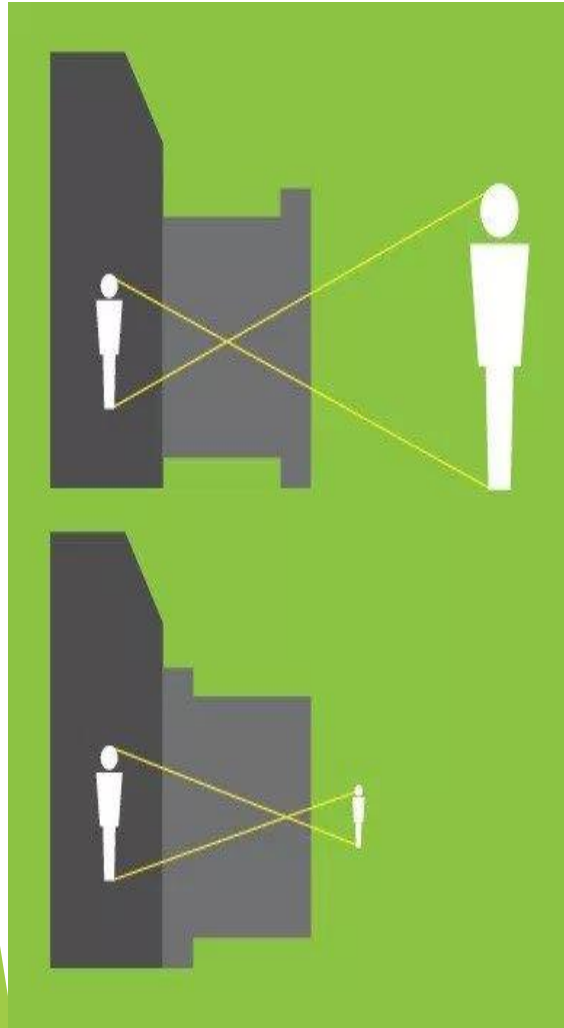
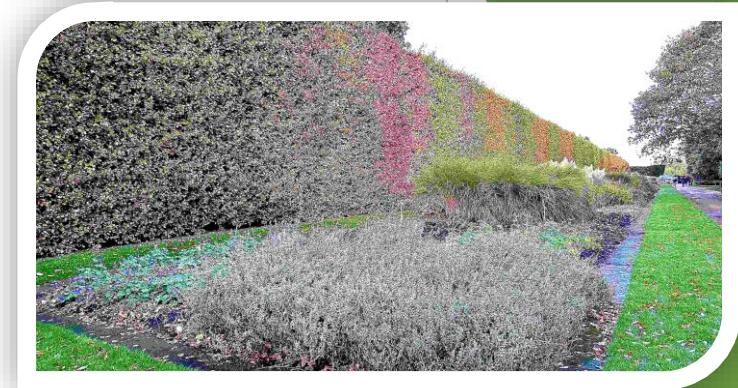


Field Microscope /
various magnifications

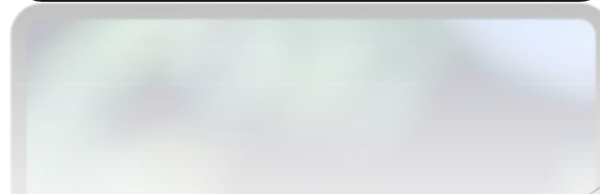
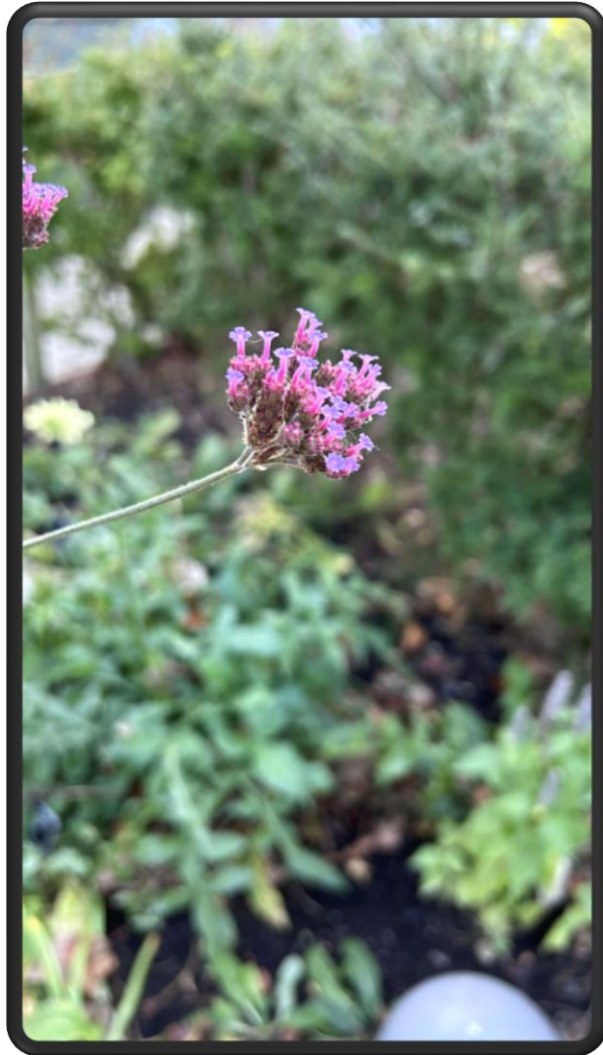
Copyright and Your EXIF Data

- ▶ EXIF - Exchangeable Information File Format
- ▶ Metadata for your images (data about data)
- ▶ Viewing
- ▶ Updating
- ▶ Adding
- ▶ Applications
- ▶ **Action: *Add your © info***

Normal vs Close-up



Normal vs Close-Up vs Macro



Black & White



Colour &



& Colour





Stereo
Pair



Polarization

Imaging Considerations

- ▶ Clean Lens
- ▶ App choice
- ▶ Settings
- ▶ Lighting
- ▶ Background
- ▶ *Focus - Stabalise*
- ▶ Frame
- ▶ Take the shot
- ▶ Take another !

Depth of Field

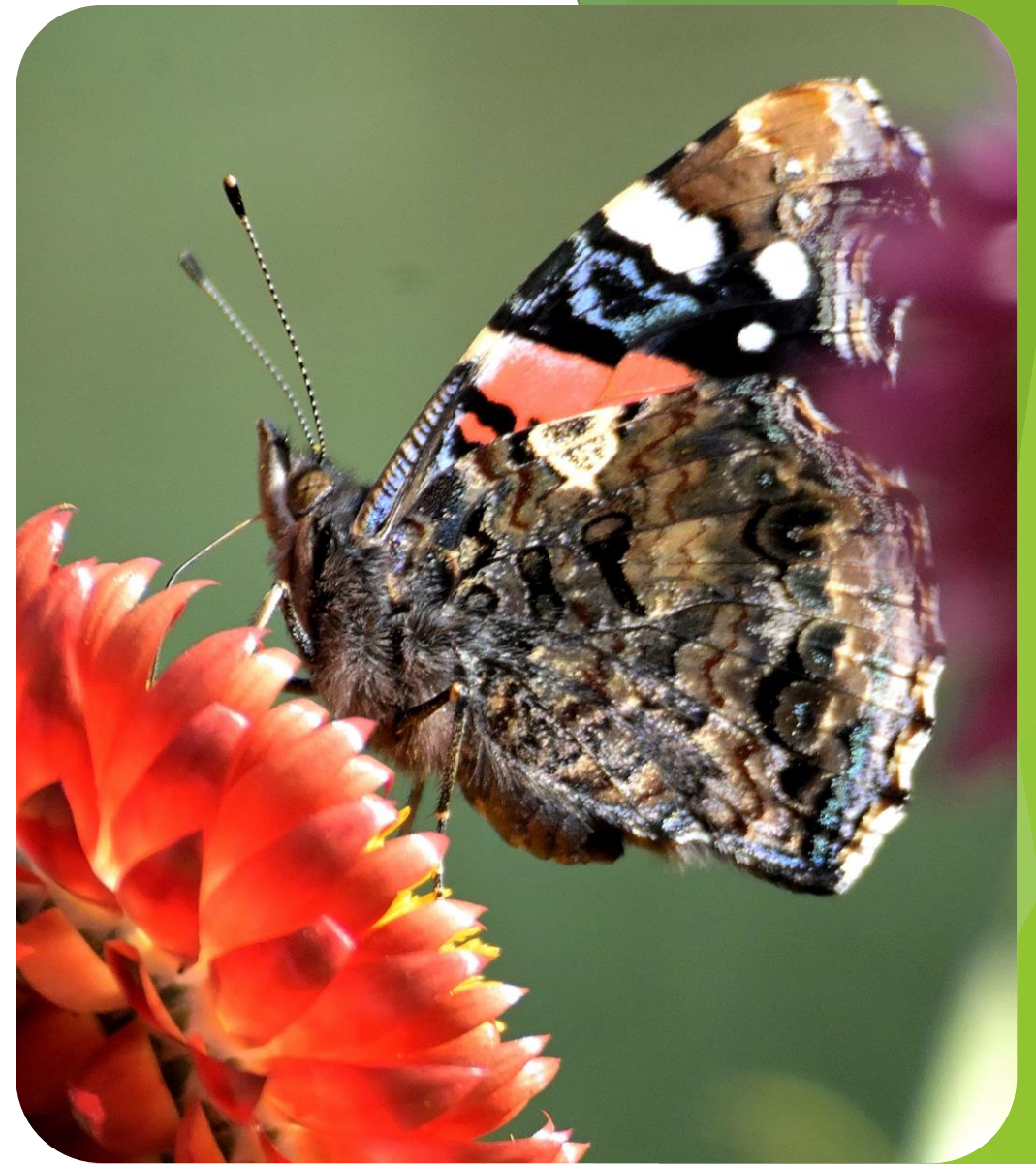


Higher F/stop



Lower F/stop

Get Close



Get Closer

Hand-Stabilising in the Field



For Right-handed:

Rest Camera on left forearm
Hold object with left hand
Take the shot - stabilising
flower, left arm and camera.

This minimizes wind, and
camera shake.

Task 1

Know your Equipment

- ▶ Select subject
- ▶ Use ruler to measure a finger or segment that is 25mm (1 inch)

Using Steady-Arm Technique...

- ▶ Photo 1 - to get as close as possible (NO ZOOMING) and still sharp include ruler
- ▶ Photo 2 - use your measured finger segment and USE ZOOM

Focus-Bracketed and Stacked Photo

Picolay Focus Stack

Nikon Z50 w/ NIKKOR Z MC 105mm f/2.8 VR S



Single shot f/10 1/3 sec ISO 500



17 jpeg images stacked in Picolay [focus rail stack 1mm advance]

Focus-Bracketed Sequence & Stacked Result



High Dynamic Range (HDR)

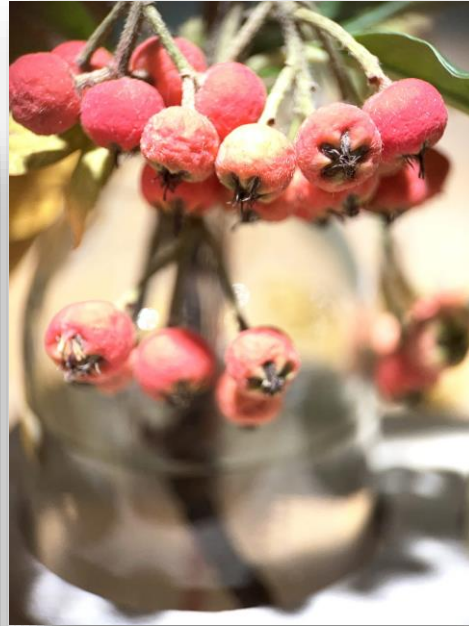
3 EXPOSURES



UNDEREXPOSE for
HIGHLIGHTS



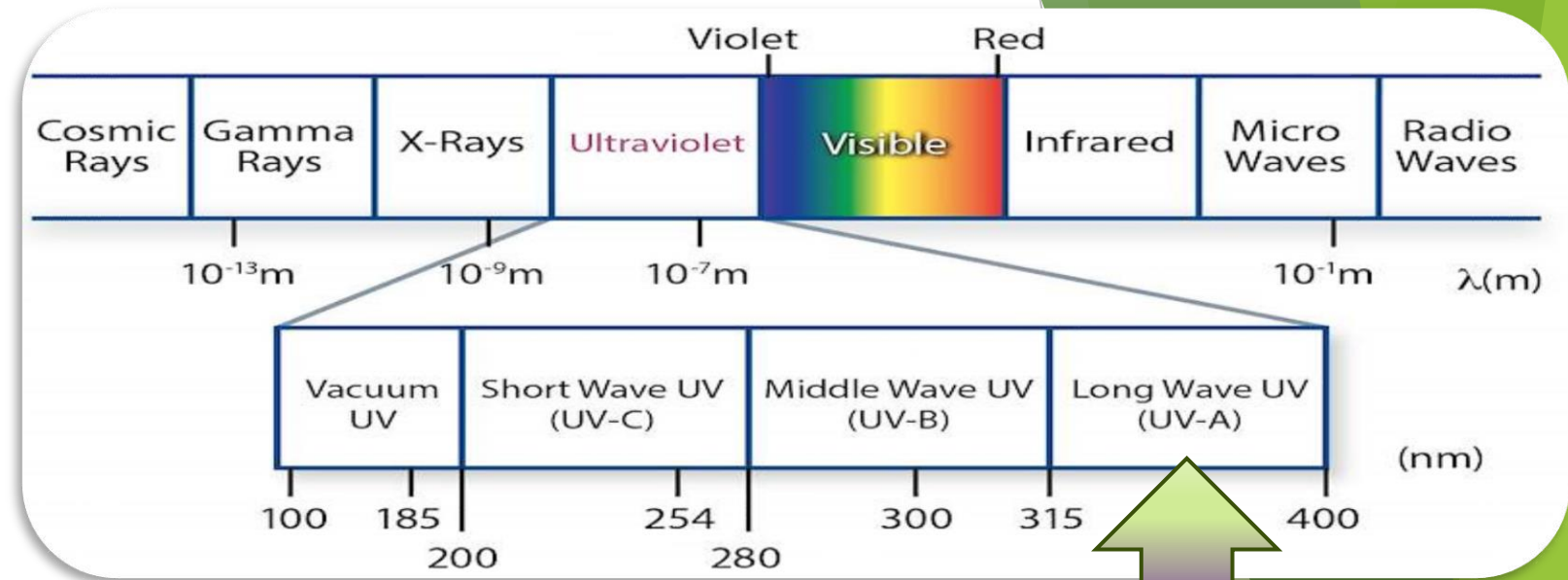
AVERAGE
EXPOSURE for
MID-TONES



OVEREXPOSE for
SHADOWS



UltraViolet (UV)



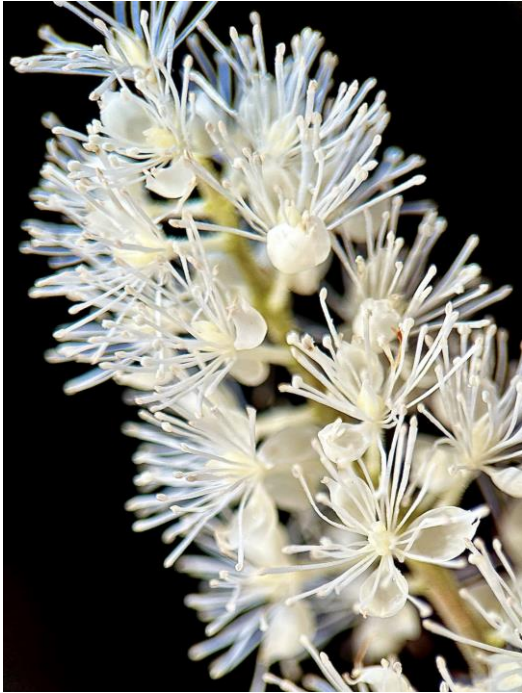
~365nm UV light

<https://adapталux.com/ultraviolet-lichen-macro-photography/>

Google Images of various flowers under UV light

Using a Background Card

Black Background



White Background



Task 2

Background Control

- ▶ Select subject and focus point
- ▶ Photo 1 – w/ NO background card
 - ▶ Frame subject, background busy with colours and shapes
- ▶ Photo 2 - w/ Black background card
 - ▶ Frame subject, Black Background only (background should be black NOT grey)
- ▶ Photo 3 – w/ White background card
 - ▶ Frame subject, White Background only (background should be white NOT grey)

Tips to Minimize Angst

Tip Number ONE - ONLY use a clean lens

Topic	Key Points
Lighting	Source of main light, Contrast
Foreground	Include/exclude
Background	Simple/complex, distracting/supportive
Perspective	Can be from more than one
Composition	Portrait/Landscape/Square, subject Focus, flow
Focus / Stabilisation	The Plane/Depth of Field, Point of Focus / Keep as Steady as Possible
Review/Edit	Review all shots / Remove bad ones

The Apps List et al.

PHOTO APPS: (mobile)

Default Camera App|(e.g. Canon, Nikon, Hasselblad, etc.)

CameraPixels – Focus and Exposure Bracketing, JPEG,HEIC,TIFF, DNG (raw)

AuraHDR - Focus and HDR Bracketing

ProCam - framing, DNG, Copyright, interval timer,

ENHANCEMENT: (some mobile, some computer)

Brand-specific - Canon, Nikon, Hasselblad, etc.

Adobe - PhotoShop, Lightroom

Color Splash – paints original colour on colour photo rendered in B&W

PicCollage – collage maker – there are many to choose from

eZy Watermark – Adds a Watermark or logo to your image

Stacking - PhotoShop, Zerene, Helicon Focus, DeepSkyStacker, Picolay, AffinityPhoto2

ORGANISATION (some mobile, some computer)

EXIF – there are many EXIF apps – select one that suits your needs

Google – Storage and some organisation

Adobe – Image Storage/Organisation

Flickr – Image Storage/Organisation

Amazon – Image Storage/Organisation

What3Words – Location app

IPTC METADATA User Guide

- ▶ (<https://iptc.org/standards/photo-metadata/>)
- ▶ IPTCPhoto Metadata UserGuide(<https://iptc.org/standards/photo-metadata/>)