Guidelines for Phenology Photography

Updated 1/4/2026

To the reader:
My work in historical documentation allows for a great deal of tolerance. When the weather is poor, it is usually possible to return on a better day; the building will still be there, waiting. Camera settings in that context are often driven primarily by depth of field.

Phenology photography is entirely different. Pointing the camera into a tree canopy almost always includes some portion of sky, with the constant risk of blown highlights. Wind — even the slightest breeze — introduces motion that cannot be ignored and must be managed in the moment. It has been a completely new learning experience for me, and I hope that what I have learned along the way will provide useful insights for you as well.

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1. Purpose & Scope

- **Purpose:** To ensure consistent phenology photography, documenting seasonal and life-cycle changes in selected trees (e.g., bud break, flowering, fruiting, leaf color change, leaf drop) across one year.
- **Scope:** The Horticultural Manager will designate 100 plants in the arboretum to be progressively documented in pursuit of **ArbNet Level II accreditation**.

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2. Photography Schedule

- **Regular Intervals:** Photography events will occur bi-weekly, preferably on Wednesdays and Saturdays.
- **Consistency:** Every effort will be made to photograph the same aspects of each tree, from the same positions and angles, at each visit.

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3. Equipment & Settings

- **Cameras:**
    - Current: Canon R7 Mirrorless
    - Past: Canon M50 Mirrorless, Canon 80D DSLR, Canon 60D DSLR.

- **Lenses:**
    - Current: Sigma 16-300mm Contemporary
    - Past: Sigma 18-125mm, Sigma 17mm–70mm, Canon 70-200mm,
- **Resolution & Format:** All photographs taken in **Camera RAW** at 300 ppi.
- **Camera Settings:**
    - **ISO:** 500–1600
        - Originally ISO 200, but low shutter speeds caused blur in shaded conditions. Adjusted to ISO 400 in July 2025, and ISO 500 in August 2025 and ISO 1600 with the introduction of the Canon R7 which produces minimal ISO noise. Residual noise is reduced effectively in Topaz Photo AI.
    - **Aperture:** Aperture Priority (minimum f/5.6, generally f/8) for sufficient depth of field.
- **Post-Processing Software:** Adobe Camera Raw (ACR), Adobe Photoshop, Topaz Photo AI.
- **Final Output Size:** 4000 px on the longest axis at 300 ppi (approx. 13.3" print size on the major axis).

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4. Standardized Composition

- **Vantage Point & Distance:**
    - Establish repeatable positions for each tree.
    - Photograph from the same vantage point and distance where possible.
    - Some plants may require multiple vantage points.
- **Orientation & Framing:**
    - Choose orientation (landscape or portrait) to capture the most useful information.
    - Aim to capture the full canopy or major portion, with trunk visible for scale.
    - Take detail shots of trunk, leaves, buds, and flowers if present.

- **Reference Objects:**
    - No rulers or physical scales will be used.

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5. Lighting & Weather Conditions

- **Ideal Lighting:** Overcast or lightly cloudy days.
- **Weather Constraints:** Weather may delay or reschedule visits (e.g., rain).

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6. Metadata & Record-Keeping

- **File Naming Conventions:**
    - RAW: Auto-numbered by camera (e.g., IMG_xxxx.CR2).
    - Processed files: Include workflow reference (e.g., IMG_xxxx-Edit-Topaz.jpg).
    - Final images: [TreeName] [Seq#] [YYYYMMDD].jpg
        - Example: Cannonball 2 20240314.jpg
- **Data Storage:**
    - Original processed images stored on my NAS and on a 32GB thumb drive for The Garden.
    - WordPress site (phenology.leeward.vi) hosts resized versions for sharing.
    - Captions follow **YYYYMMDD** format.
    - Gallery order: (1) identity plaque, (2) most recent image, followed by older images in descending order.

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7. Location Data

- When adding a new plant:
    - Photograph the identity plaque using a smartphone (captures GPS metadata).
    - Extract GPS coordinates using Photoshop File Info.
    - This plaque photo serves as the **lead image** in the plant's gallery.

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8. Contact Information

Project Owner:
Caitlin Cofield – Horticultural Manager
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Photographer:
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9. Methodology

- **Plant Collection:**
    - List of 100 plants maintained in a Project Manager spreadsheet.
    - Garden divided into two sections by an imaginary line from Visitor Center to Nursery:
        - **Front:** South section; includes “Palm Garden” (south of Palm Drive).
        - **Back:** North section; includes “Native Garden” (east of parking area along St. George Road).
- **Baseline Photography:**
    - Upon addition of a new plant, capture a broad set of reference images for comparison.
- **Phenology Visits:**
    - Focus on one section (front/back) per visit.
    - For each plant in sequence:
        - Observe carefully for phenological changes (bud break, flowering, fruiting, leaf color change, leaf drop, etc.).
        - If a change is observed, photograph the **plaque first** as a placeholder, then the phenological change itself.

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10. Post-Processing & Upload Workflow

Equipment

- Apple MacBook Pro M4 (48GB RAM, 2TB SSD)
- Synology 420J NAS with 4 × 2TB drives (3.6TB net, high redundancy)
    - Folders: Year-based (e.g., 2025), plus “Phenology” with species subfolders.
- Topaz Photo AI
- Adobe Photoshop

Method

Step 1. Download Photos

- Connect camera via USB.
- Use Apple Image Capture to transfer files into folder **Today Downloads**.

Step 2. Process Each Photo

- Open RAW image in **Topaz Photo AI** → Apply *Super Focus* → denoise → Save.
- Open JPEG in **Photoshop ACR** →
    - If sky is blown out, apply *Filters* → *Adaptive Sky* → *Dark Drama*.
    - Use **Auto Adjustments**, then fine-tune exposure, highlights, shadows , hue to emphasize phenological change.
- Open in **Photoshop** → Crop as needed.
- Resize to **4000 px on longest axis** (Bicubic Smoother).
    - Save as JPEG with naming convention: [Tree Name] [Seq#] [YYYYMMDD].jpg e.g. Autograph Tree 2 20250705.jpg
- Store in correct species folder within folder **Phenology**.

Step 3. Upload to Website

- Log in as Admin at phenology.leeward.vi.
- Navigate to species page → **Edit Page**.
- In Block Editor:

    - Click plaque image → press Return to add gallery space.
    - Upload images → Add **YYYYMMDD** captions → Link each image to file.
- Save → **View Page** → Verify captions and links.

Step 4. Documentation

- Email Project Manager with a list of uploaded images giving plant name and number of images.

Step 5. Archive Files

- On NAS → Year folder (e.g., 2025) → Create dated subfolder (e.g., 20250818).
- Move all images from **Today Downloads** to this dated folder.
