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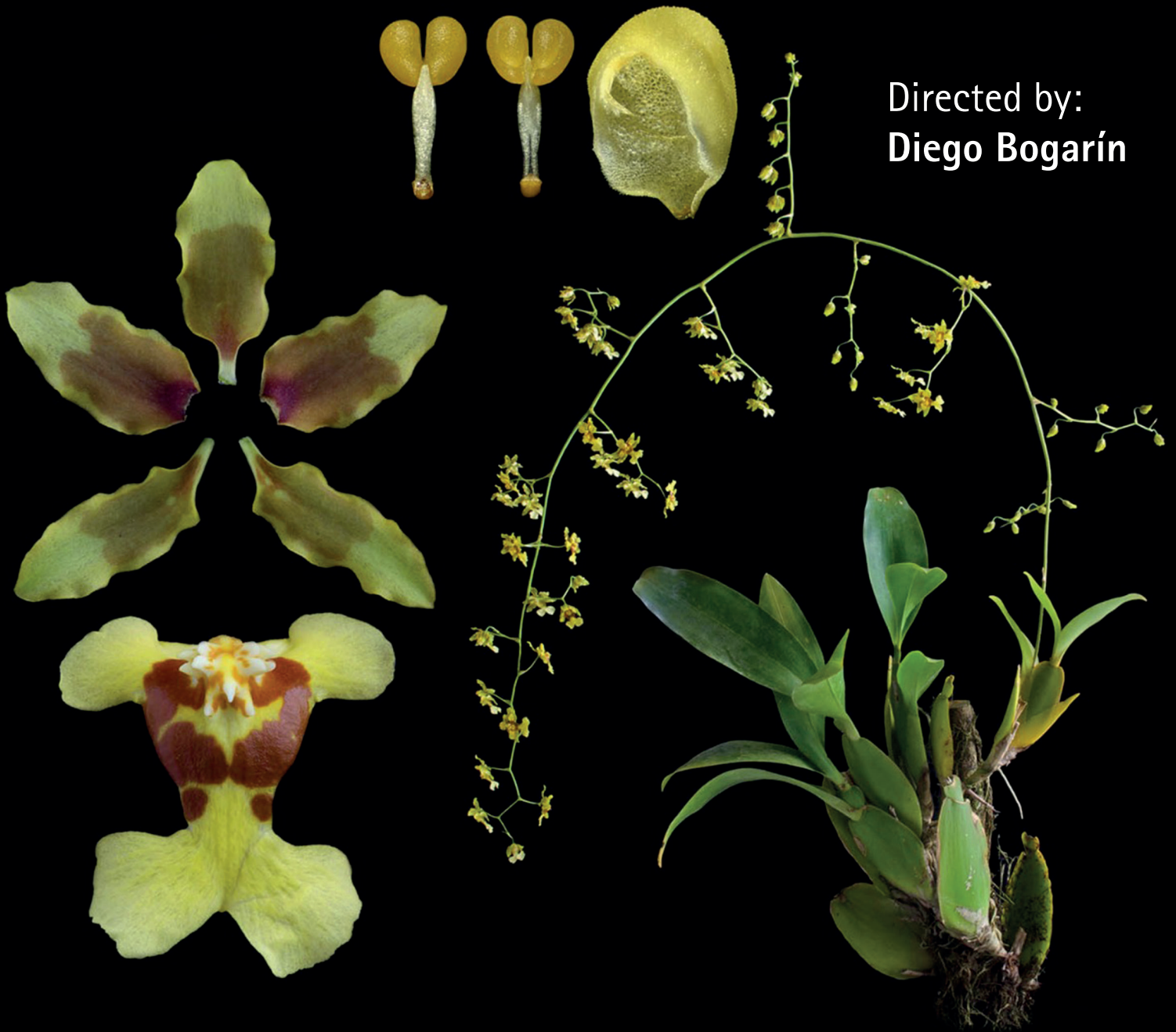
Perú: País de Orquídeas / Country of Orchids

CONFERENCIA CIENTÍFICA DE  
ORQUÍDEAS ANDINAS

Scientific Conference on Andean Orchids | 27-29 Nov, 2023

WORKSHOP ON  
Scientific Digital Documentation  
of *Orchidaceae*

Directed by:  
Diego Bogarín



## WORKSHOP ON

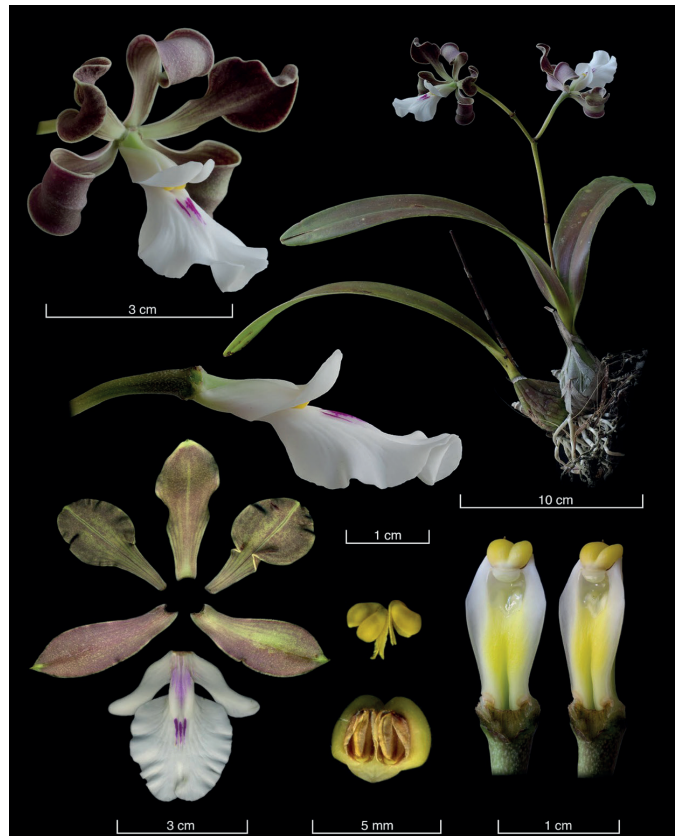
# Scientific Digital Documentation of *Orchidaceae*

Directed by **Diego Bogarín**  
Nov. 30<sup>th</sup> – Dec. 01<sup>st</sup> 2023

## INTRODUCTION

This theoretical-practical workshop offers orchid researchers a unique opportunity to acquire knowledge, methodologies, and techniques for digital documentation of plants, as well as the theoretical foundations to conduct floristic, taxonomic, and systematic research. Digital documentation through scientific photography is an effective and easily applicable method that complements traditional botanical illustration (watercolor and ink plates).

During this workshop, we will explore modern methods for documenting plant morphology through digital photography, utilizing photographic equipment, a digital camera-equipped stereoscope, necessary software for creating Lankester Composite Dissection Plates (LCDP), as well as the theory and proper use of specialized electronic files for storing and sharing images. Through these techniques, we can gather information about color, size, texture, and shape of plant structures. This morphological information can be associated with data on geographic distribution, interpretation of type specimens, and molecular data when available, allowing for more robust conclusions regarding species delimitation and interpretation, phylogenetic relationships, and applications.



## MAIN OBJECTIVE:

To introduce the theoretical and practical foundations of a taxonomic and systematic study system of *Orchidaceae* based on digital documentation of living plants and natural variation within individuals.

## SPECIFIC OBJECTIVES:

- Understand the theoretical foundations and modern methods of plant documentation.
- Know the basic equipment and its correct handling to make digital documentation.
- Properly manipulate electronic image files and their metadata.
- Learn basic notions of Adobe Photoshop for editing and diagramming digital botanical illustrations, Lankester Composite Dissection Plate (LCDP).
- Construct comparative images of morphological structures showing natural variation of individuals.
- Use morphological information derived from these techniques in studies of floristics, taxonomy and systematics.
- Evaluate natural morphological variation in plants using modern plant documentation methods.
- Create digital illustrations with standards suitable for scientific publication.



**Directed by:** Diego Bogarín

**Venue:** Paraninfo of the National University of San Antonio Abad del Cusco, Peru

**Workshop Date:** Nov. 30<sup>th</sup> - Dec. 01<sup>st</sup> 2023

| PROGRAM   |   |
|---|---|
| <p>Date<br/>November 30<sup>th</sup></p> <p>7am.-12pm.</p> <p>1pm.-6pm.</p> | <p>Topic<br/><b>INTRODUCTION</b></p> <ul style="list-style-type: none"> <li>• Introduction and description of the seminar</li> <li>• The orchid study system</li> <li>• Importance of documentation</li> <li>• Documentation techniques</li> <li>• Introduction to macro photography</li> </ul> <ul style="list-style-type: none"> <li>• Documentation techniques</li> <li>• Introduction to macro photography</li> <li>• Botanical illustration (B&amp;W and color).</li> <li>• Basic equipment for documentation.</li> <li>• Computer programs for documentation.</li> <li>• Introduction to digital images (resolution and format).</li> </ul> |
| <p>Date<br/>December 01<sup>st</sup></p> <p>7am.-12pm.</p> <p>1pm.-6pm.</p> | <p>Topic<br/><b>ORCHID DOCUMENTATION</b></p> <ul style="list-style-type: none"> <li>• Introduction to Adobe Photoshop</li> <li>• Concepts of Lankester Plate Layout (LCDP)</li> <li>• Photography and stacking practice</li> </ul> <ul style="list-style-type: none"> <li>• Lankester (LCDP) sheeting practice</li> <li>• Witnesses and reference material</li> <li>• Final conclusions of the seminar</li> </ul>   |

|  |   |
|--|---|
| Materials needed   | 1. Laptop (Mac or PC) with Adobe Photoshop (any version). If you can't get it, you can download a 30-day trial version at: <a href="http://www.adobe.com/downloads.html">http://www.adobe.com/downloads.html</a>  |
| Optional materials<br>(if not available we will provide images to work with) | 1. Office scanner with a resolution of at least 2,400 dpi (optional).<br>2. Digital camera with macro lens (85 or 105 mm) and normal lens (18-55 mm or 18-105 mm) (Nikon or Canon).<br>3. Smartphone with functional camera and tripod for phone.<br>4. Tripod for macro photography.<br>5. Panel (foam) or black, white and blue cloth to place as background in photographs.<br>6. Diffuser of light for photography.<br>7. Live plants with orchid flowers for practice. Preferably medium to large flowers such as <i>Cyrtorchilums</i> , <i>Oncidiums</i> , <i>Cattleyas</i> , <i>Gongoras</i> , <i>Maxillarias</i> , <i>Phragmipediums</i> , etc. No miniatures because of the degree of difficulty.<br>8. Tweezers, metal ruler, scissors and any equipment used to dissect flowers. |

Note: Participants may work in pairs if materials are difficult to obtain.

#### IMAGE EDITING SOFTWARE

|                              |  |
|------------------------------|--|
| Raster images:               | GIMP: <a href="https://www.gimp.org">https://www.gimp.org</a> (free access)<br>Adobe Photoshop: <a href="https://www.adobe.com">https://www.adobe.com</a> (license)  |
| Stacking: temporary license: | Zerene Stacker: <a href="https://zerenesystems.com/cms/stacker">https://zerenesystems.com/cms/stacker</a><br>HeliconFocus: <a href="https://www.heliconsoft.com">https://www.heliconsoft.com</a><br>Adobe Photoshop: <a href="https://www.adobe.com">https://www.adobe.com</a> |
| Vector images:               | Adobe Illustrator: <a href="https://www.adobe.com">https://www.adobe.com</a> (licencia)<br>Inkscape: <a href="https://inkscape.org/es/">https://inkscape.org/es/</a> (libre acceso)  |





**Instructor**  
**Diego Gerardo Bogarín Chaves**  
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University of Costa Rica  
Lankester Botanical Garden

Diego Bogarín is Professor of Biology at the University of Costa Rica and researcher at the Lankester Botanical Garden. He obtained his Ph.D. in botany from the University of Leiden, The Netherlands, with a dissertation entitled "Evolutionary diversification and historical biogeography of Orchidaceae in Costa Rica and Panama". He is currently a Research Associate at the UCH herbarium of the Universidad Autónoma de Chiriquí, Panama and the Naturalis Biodiversity Center in the Netherlands. His orchid research interests include biology, floristics, genomics, evolution, in situ conservation and digital documentation of plants. Together with Franco Pupulin, he works on the development of digital illustration techniques applied to plant taxonomy and systematics. He also leads floristic projects in Panama and other regions of the Neotropics and participates in The Orchid Tree of Life project with Dr. Oscar A. Pérez-Escobar and collaborators at the Royal Botanic Gardens, Kew. With over 150 scientific publications, Diego is editor-in-chief of *Lankesteriana* - International Journal on Orchidology.

**Workshop duration:**

Two days with 10 total hours of practical Workshop-theoretical plus a virtual class to be agreed with the participants to follow up on the objectives.

**Location:**

National University San Antonio Abad del Cusco (UNSAAC)  
 Cusco-Perú

**Certification:**

On behalf of the National University San Antonio Abad del Cusco (UNSAAC) - Lankester Botanical Garden, University of Costa Rica (UCR) and INKATERRA Association.

| Investment    | Early bird rate<br>until September 30 <sup>th</sup><br>USD | After September 30 <sup>th</sup><br>USD |
|---------------|--|---|
| Students      | 65.00  | 80.00                                   |
| Professionals | 85.00  | 100.00                                  |

**Includes:**

Certificate and coffee break

**Spaces:**

25 people

**Contact us:**

[aoc@inkaterra-asociacion.org](mailto:aoc@inkaterra-asociacion.org)



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