FOREWORD

The North Carolina Botanical Garden (NCBG) is pleased to offer a Certificate in Botanical Art and Illustration that enables students to explore the relationship of nature and art. The Garden’s mission:

*To inspire understanding, appreciation, and conservation of plants in gardens and natural areas, and to advance a sustainable relationship between people and nature.*

The Certificate in Botanical Art and Illustration program’s mission:

*To provide a well-balanced curriculum of scientific and art theory and practice that enables students to explore the relationship of plants and visual art with botanical proficiency and appreciation of the plant world.*

The NCBG Certificate in Botanical Art and Illustration program began in 2001, and we are grateful for the contributions of Dot Wilbur-Brooks and Karen Wiley-Eberle in making it a reality. This handbook is a collaborative effort by members of the NCBG Certificate in Botanical Art and Illustration Advisory Committee and includes contributions from Sue Aldworth (a former faculty member), Nancy Easterling, NCBG Director of Education, Joanne Lott, Susan Turbak, and Kay Wyche. The illustrations are the work of past and present faculty members Linda Koffenberger, Kate Lagaly, Patricia Savage, Kathy Schermer-Gramm, and Dot Wilbur-Brooks.

**WATERCOLOR, KATHY SCHERMER-GRAMM**

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# TABLE OF CONTENTS

1. **INTRODUCTION**.................................4  
   1.1 Guidelines for Botanical Art and Illustration.....4  
   1.2 Differentiation of Botanical Art and Botanical Illustration.....5  
   1.3 Media Used in Botanical Art and Illustration.....7  
   1.4 Botanical Art and Illustration Foundations.....9  

2. **GENERAL PROGRAM INFORMATION**.....10  
   2.1 Program Policy .....11  
   2.2 Semester Course Calendar .....11  
   2.3 Program Registration .....11  
   2.4 Enrollment Confirmation .....11  
   2.5 Cancellation Policy .....11  
   2.6 Refund Policy .....11  
   2.7 Credit for Previous Classes .....12  
   2.8 Attendance Policy .....12  
   2.9 Transcript .....12  

3. **CURRICULUM**.................................13  
   3.1 Core Courses Listing .....13  
   3.2 Electives Listing .....13  
   3.3 Not for Credit Short Courses and Master Courses .....14  
   3.4 Consolidated Listing .....14  
   3.5 Sample Course Sequence .....15  
   3.6 Homework Assignments .....16  
   3.7 Standards for Grades .....17  

4. **COURSE DESCRIPTIONS**....................18  
   4.1 Core Courses .....18  
   4.2 Electives .....21  
   4.3 Open Studio .....22  

5. **PROGRAM COMPLETION**....................23  
   5.1 Graduation Requirements .....23  
   5.2 Graduation Deadlines .....23  
   5.3 Independent Final Project .....23  
   5.4 Digital Images .....24  
   5.5 Written Statement and Support Material .....24  
   5.6 Exhibit Guidelines .....25  

6. **BECOMING A PROFESSIONAL**.........26  
   6.1 Framing Your Work .....26  
   6.2 Pricing Your Work .....26  
   6.3 Portfolio .....26  

7. **FACULTY AND CORE COURSES LEARNING OBJECTIVES**.....28  
   7.1 Faculty .....28  
   7.2 Core Course Learning Objectives .....29  

8. **ADDENDUM**.................................32  
   8.1 Brief List of Art Suppliers .....32  
   8.2 Additional Botanical Illustration Programs .....32  
   8.3 Professional Associations .....32  
   8.4 Brief History of Botanical Illustration .....32  
   8.5 History and Mission of the North Carolina Botanical Garden .....34
1. INTRODUCTION

The North Carolina Botanical Garden is a university-affiliated botanical garden with an outstanding reputation for integrating a conservation ethic into all of its programs. We are the region’s most comprehensive center of knowledge about plants in North Carolina and the southeastern United States, and we provide a broad audience with inspirational experiences, opportunities for health and wellness through outdoor activities, and educational programs within a science-based institution. It is the Garden’s vision to have a profound influence on how people value and interact with the environment and the biologically diverse world. The Certificate in Botanical Art and Illustration program helps the Garden realize that vision.

This handbook is organized in seven parts. Sections 1 through 7 provide introductory information and outline the details of the NCBG Certificate in Botanical Art and Illustration program. Section 8 consists of additional information relevant to the program.

1.1 GUIDELINES FOR BOTANICAL ART AND ILLUSTRATION

The constant interplay between art and science is what appeals most to many students in the NCBG Certificate in Botanical Art and Illustration program.

Since the 1980s there has been a worldwide resurgence of interest in original botanical illustrations and botanical art, not only for private and public collections but also for use in the wider marketplace, such as for home décor and select stationery lines. Renderings of plants are grouped into three main genres: botanical illustration, botanical art, and floral art. The first two can be said to exist along a continuum rather than in separate camps, because both botanical illustrators and botanical artists are challenged with trying to integrate the utilitarian, scientific function of an image (identification, education, information) with aesthetic and visual considerations.

Scientific botanical illustrations are usually created to accompany descriptive texts such as journal articles, textbooks, field guides, and popular magazines, where the image functions primarily to provide information and educate the viewer. Accuracy of form, color, and size is imperative, because both professionals and novices need to be able to identify the plant or plant parts from the illustration. The plant is traditionally drawn to scale so that all the parts correctly relate to one another in size. The most conventional scientific botanical illustrations generally appear on white backgrounds to favor true color representation for identification purposes, but some illustrations include plant habitat details or colored backgrounds. A typical botanical plate produced for journal publishing usually depicts a single plant specimen, but the scope of an illustration can range from showing one leaf to including various cross-sections, flowering and fruiting bodies, leaves, bark, roots, seasonal variations (such as autumn colors), and even more than one species.

Although a botanist or horticulturist often dictates which parts of the plant will be illustrated, the illustrator must make careful visual choices to determine how those parts will be rendered and composed on the page. An uncolored line drawing (in graphite or pen and ink) provides the most clarity and detail and is still the best way to describe newly discovered species, but botanical illustrations may also be done in color (water media or colored pencil). The illustrator usually has access to live plants, pressed herbarium specimens, and a microscope for viewing small parts such as reproductive structures, capsule chambers, or leaf pubescence.

In botanical art more emphasis may be placed on aesthetic considerations, and the artist has more freedom to make personal visual choices, to draw the viewer in and evoke an emotional response. Although the plant parts in the image may be arranged more pleasingly for compositional reasons, the draftsmanship and final artistic representation must remain true to the character and growth habit of the plant. In botanical art the plant is still drawn to scale, and a botanical professional examining the image should be able to identify the species and find no anatomical inaccuracies.

In the third genre, floral art (also known as flower painting), the image is created primarily for visual impact and is based on the artist’s personal interpretation of the plant, without consideration for accuracy in color, form, size, or
other scientific characteristics. This genre, which may include still life and abstract painting, therefore falls beyond the scope of the core courses of the Certificate in Botanical Art and Illustration program.

1.2 **Differentiation of Botanical Illustration and Botanical Art**

**Example of Botanical Illustration, Pen and Ink, Kathy Schermer-GRAMM**

**Botanical Illustration**

- Plants must be botanically accurate
- Plants are presented against a plain, white background or pale flat wash.
- Plants are floating, with no means of support depicted.
- Plants are not cropped.
- Plants are evenly lit from the upper left.
- No cast shadows.
- No part of the plant is allowed to go out-of-focus.
- Distant or peripheral structures of the plant can be “faded out” to direct the viewer’s eye to the focal point or important botanical structures.
- Plants are usually depicted as a full habit (a full stem or branch of the plant).
- Details are shown as callouts arranged around the habit, at a variety of magnifications that best show off the structures depicted, with scale bars for reference.
- Plants can be “edited” by removing leaves or other structures in the interest of clarifying the illustration, as long as the fact of the editing is made apparent in the piece (i.e. by leaving leaf scars, showing cuts, etc.).
- Painterly qualities such as brushstrokes, tidemarks, spatters etc. are discouraged since these could be interpreted as a plant part.
- Plants are usually painted from live specimens, to allow for maximum study of structures.
- When used, the placement of scientific name should be planned with the composition.
- Student’s signature should be planned with the composition.
• The composition holds together better if one or two species used. Can use disparate subjects, but should have a common theme. For example, a common theme could be pinecones, orchids, variegated foliage, or different types of thorns.

• The attachment points of leaves, flowers, and other plant parts needs to be illustrated. For example, this would include the back and front of a flower.

• Roots, buds, seeds, fruit, dissection, and microscopic view may be included. Generally, but definitely not always, they arranged to reflect how the plant grows. Roots can be at bottom, seeds at top.

• The Garden highly recommends that plants native of Southeastern USA be depicted.

• Under no circumstances will exotic invasive species be allowed. (See http://ncbg.unc.edu/invasive-plants-resources/ for more detail)

Example of Botanical Art, Watercolor, Kate Lagaly
BOTANICAL ART

- Plants must be botanically accurate.
- Plants can be shown against a white or colored background, or in the context of a habitat or landscape.
- Plants can be cropped in any way, cutting off some or much of the botanical context.
- Sections of the plant can go out of focus.
- Plants can be lit from any direction, cast shadows are allowed, and these shadows can obscure the viewer’s ability to make out portions of the plant. The edges of the subject and shadow may be softened and appear to merge together making it difficult to make out.
- Distant or peripheral structures of the plant can be “faded out” to direct the viewer’s eye to the focal point or important botanical structures.
- Artistic effect takes precedent over a simple botanical depiction of a plant.
- Painterly qualities such as brushstrokes, tidemarks, textures, spatters etc. are allowed, and these painterly qualities sometimes constitute the focal point of the piece.
- Colors and values can be exaggerated, overly saturated, or – conversely – underplayed for artistic effect.
- Either live plants or photos can be used as reference for the paintings.
- The Garden highly recommends that plants native of Southeastern USA be depicted.
- Under no circumstances will exotic invasive species be allowed. (See http://ncbg.unc.edu/invasive-plants-resources/ for more detail)

1.3 MEDIA USED IN BOTANICAL ART AND ILLUSTRATION

GRAPHITE

Graphite is another word for the pencil you use every day and is the first medium needed in the production of a botanical illustration. The illustrator prepares a graphite sketch of the specimen before beginning to translate it into pen and ink, watercolor, or colored pencil. Graphite is easy to use, easy to alter, and a great choice for the beginning stages of creating a work of art. Using graphite and an eraser, the artist establishes a basic outline of the plant specimen, determines the shadows and color zones, and resolves the final composition. Graphite can also be used to create beautifully rendered, finished pieces suitable for framing.

Graphite pencils come in a variety of hardness, which are measured on a numerical scale from 9H to 9B. H stands for hard, and B stands for soft (or black). The number preceding the letter H or B denotes the hardness or softness of the pencil. A 9H is very hard, a 2H less hard, a 2B soft, and a 9B very soft. The softer a pencil is, the blacker a line it can draw. A very soft pencil will create a very dark line; a very hard pencil will make only a light gray line. Other media used in the production of graphite drawings are various types of paper, kneaded and vinyl erasers, and blending stumps (also known as tortillon).

PEN AND INK

Pen and ink is the most commonly used medium, as well as the first, for creating scientific botanical illustrations. A drawing rendered in ink is clear, easy to read, and easy to reproduce in printed herbals and field guides. For this reason, it is important that all botanical illustrators master a variety of pen styles and techniques.

There are two basic types of traditional pen-and-ink botanical illustrations: the weighted line drawing and the stippled drawing. A weighted line drawing uses a crow quill pen (the type you dip into a bottle of ink) to produce a variety of line thicknesses. The thickness or thinness of each line helps describe the variations in texture of the plant, the way light falls on the specimen, and how near or far each part of the plant is from the viewer’s eye. A stippled drawing, on the other hand, uses hundreds, if not thousands, of tiny dots drawn with a technical pen. The relative density of these dots shows the plant’s color, shadow, texture, and distance from the viewer.
Pen-and-ink drawings are usually rendered on plate-finish Bristol board using waterproof black ink. The artist uses white ink, acrylic paint, or an X-acto knife for corrections.

**WATERCOLOR**

Watercolor is the medium of choice for many professional botanical illustrators and botanical artists. The qualities of fluidity and transparency make watercolor paints ideal for rendering thin, delicate plant tissue as well as smooth botanical forms. To create effective, realistic botanical watercolor paintings, the artist often applies paint in layers over areas where the paper has first been “primed” (moistened) with clean water. This technique is called wet-in-wet painting and is used to create smooth, graded washes for depicting the form of the plant subject. Final additions of texture, prickles, hairs, and other small details are often applied using a “dry-brush” technique. Available watercolor papers, paints, and brushes vary widely in quality. The materials selected to create a painting have a pronounced effect on the finished piece.

**COLORED PENCIL**

Unlike graphite, pen and ink, and watercolor, which have been available since the Renaissance or earlier, the use of fine art colored pencils is barely 75 years old. This medium is rapidly gaining acceptance in botanical illustration and botanical art because of its versatility, color intensity, and potential for fine detail.

Colored pencils are made like standard graphite pencils with a core and an outer wooden shell, usually of California cedar. The composition of the core, however, differs greatly from a standard pencil. Instead of graphite, the core consists of fine art pigments blended with clay to achieve a desired hardness and then impregnated with a binder, usually wax. The wax holds the pigments in place on the drawing surface. The pigments are highly transparent and can be layered and blended to achieve fine color gradations for naturalistic botanical representation. Because of the high transparency, excellent color matching can be achieved with just red, blue, yellow, white, and black. Several brands of colored pencils comply with standards for lightfastness and, when used on acid-free paper, will maintain true color for decades.

Basic pencil strokes are similar to those used when drawing with graphite, and colored pencils can yield finely rendered drawings. Or, by varying the technique and paper surface, the illustrator can create artwork similar in appearance to watercolor, pastel, or finely glazed oil.

**GOUACHE**

A painting technique of great antiquity, gouache goes back to the time of the Egyptians. In the Middle Ages, it appeared on illuminated manuscripts. In 18th-century Europe, gouache became popular with artists seeking its pearly, pastel tones (it was a popular medium with Rococo artists). Gouache was used in more recent history in Graphic Design and Illustration.

Gouache paint has the same gum arabic binder as watercolor but is modified to make it an opaque painting medium. Gouache differs from watercolor in that the particles are larger, the ratio of pigment to water is much higher, and an additional, inert, white pigment such as chalk is also often present. This makes gouache heavier and more opaque. Gouache is able to be re-wet after it dries, is easier to lift than watercolor, and lends itself to more direct painting techniques than watercolor.

**ACRYLIC**

Acrylic paint is a fast-drying, non-re-wetting paint containing pigment suspended in an acrylic polymer emulsion. It was developed in the late 1940s so it has only a brief history compared to other art media. Acrylic originally entered the market as house paint, but its many benefits brought it to the attention of artists. Artists found that the synthetic paint was very versatile and possessed much potential. Over time manufacturers have improved the formulation of artistic acrylic paints with richer pigments.

Acrylic is very versatile. It can be used on a wide variety of surfaces and can resemble a watercolor painting, an oil painting, or have its own unique characteristics not attainable with other media. It can also be used to build thick layers that are literally sculptural. Acrylic painters can change the appearance, hardness, flexibility, texture, and other
characteristics of the paint or surface using a variety of acrylic media or by simply adding water. The range of acrylic media is great and includes gels, mediums, grounds, additives, varnishes, and pastes.

1.4 Botanical Art and Illustration Foundations

Painting Foundations: Composition and Color Theory

Composition and color theory together provide a skeleton, or framework, from which a painting emerges. A painting begins with the germ of an image. It might be about the drape and fall of a passionflower vine, or a magnolia’s bright red berries against a tan seedpod. The idea begins taking shape as rough pencil and color sketches. Nurtured and developed in black-and-white thumbnail sketches, these compositional “roughs” explore the arrangements and interactions of shapes and spaces. Besides creating a realistic picture, the formal elements of a painting help to capture the characteristics of the plant and direct the viewer’s eye.

Paintings ultimately tell a plant’s story: how it grows, what insects feed on it, or what color its leaves turn in the fall. This requires careful attention to color, even as the composition emerges. Preliminary color sketches help to find the palette of pigments that portray the correct hues of the subject. These pigments, evolving with the composition, begin interacting with each other, creating lively sparks of color or peaceful harmonies. Careful placement of color directs the viewer’s eye and emotionally charges the painting. Color and composition interact with each other and with the compositional spaces they fill.
2. GENERAL PROGRAM INFORMATION

The Certificate in Botanical Art and Illustration is designed to provide comprehensive courses in botanical art and illustration to people who wish to improve their skills in drawing and painting plants, with a focus on southeastern native plants, in an accurate and technically detailed manner. Studies leading to the certificate will enhance the experience of both the professional and the dedicated amateur botanical artist in producing artistic and scientific images. The program is designed to give students a well-balanced curriculum combining basic scientific background, visual arts theory, and practical experience using various media. Classes are taught by NCBG staff and other area art and botany professionals. Successful completion of the program requires passing grades in 13 core courses and three elective courses as well as submission of an Independent Final Project. Course offerings and scheduling are designed for graduation within a three-to-five-year period.

The certificate is a valuable addition to the resumes of students in pursuit of professional work in botanical or scientific illustration.

The Certificate in Botanical Art and Illustration is aligned with another NCBG certificate program, the Certificate in Native Plant Studies, with which it shares some courses.

CONTACT
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North Carolina Botanical Garden, UNC-Chapel Hill, CB 3375, Chapel Hill NC 27599-3375

GRAPHITE, KATHY SCHERMER-GRAMM
2.1 **PROGRAM POLICY**

The NCBG reserves the right to change the course schedule or fees, withdraw or modify a course, substitute faculty, or revise any other part of this handbook as necessary for the efficient administration of the NCBG Certificate in Botanical Art and Illustration program. In order to earn the certificate, participants shall meet the required prerequisites and shall take all core classes and the required number of electives for credit.

2.2 **SEMESTER COURSE CALENDAR**

- Fall Semester: August–December
- Spring/Summer Semester: January–July

Courses will be posted on our Web site at [www.ncbg.unc.edu](http://www.ncbg.unc.edu). Fall Semester courses will be posted each July and Spring/Summer Semester courses posted each December.

2.3 **PROGRAM REGISTRATION**

Students must be at least eighteen years of age to register for the program. A non-refundable registration fee of $100 supports program administrative costs for a five-year period, at which time an additional registration renewal fee will be charged.

On-line registration is on a first-come first-serve basis. It is recommended that students register at least three weeks prior to the first day of a course so that the faculty can plan their schedules and, when applicable, books and/or supplies can be acquired. Maximum enrollment for most courses is 12.

Prior to the start of each course, students will be notified of any supportive materials to be purchased.

2.4 **ENROLLMENT CONFIRMATION**

Confirmation of course registration will be sent upon completion of on-line registration and payment in full. If the course is filled, the student will be placed on a waiting list.

2.5 **CANCELLATION POLICY**

If four or fewer students enroll in a core course and if six or less students enroll in an elective course the course may be cancelled, and students will be notified by e-mail or telephone. A decision with regard to the cancellation of a class due to insufficient enrollment will be made four business days prior to the start of the class.

In case of inclement weather, it is the student’s responsibility to phone the Garden and listen to the voice mail message or speak to staff regarding class cancellation. If a class is cancelled due to inclement weather and unsafe driving conditions, a make-up class will be scheduled by the instructor.

Instructors are responsible for informing students of class cancellations and rescheduling due to illness, after having obtained permission by the Director of Education.

2.6 **REFUND POLICY**

If a class is cancelled due to insufficient enrollment or has been filled prior to receipt of your payment, you will be notified and your payment will be refunded in full. Students who cancel seven or more days in advance of the start of a course will receive an 80 percent refund. Thereafter, the registration fee is forfeited. If there are extenuating circumstances, allowances can be made at the discretion of the Director of Education.
2.7 Credit for Previous Classes

With an official transcript or other supportive documentation and permission from the Director of Education, a student can receive credit for one core course and one elective course taken at another institution or university.

Before seeking credit, be aware that classes are designed for a Certificate in Botanical Art and Illustration. Previously taken classes may not have addressed the skills necessary for this certificate. Our instructors bring to each course a style, technique, and theory that likely differs from any class taken elsewhere. Every course that a student takes is a valuable learning experience.

2.8 Attendance Policy

In order to obtain credit for a course, students may be absent for no more than one class session and must complete the homework assignments for the missed class. If extenuating circumstances require additional absences, allowances can be made at the discretion of the Director of Education in consultation with the course instructor.

2.9 Transcript

Transcripts are maintained through the abcsignup online registration system. You can view your transcript online at any time to see your progress through the certificate program. Please note - the system tracks credits toward the certificate only and does not track grades.

To view your transcript, follow this link and click the tab for “Continuing Education”:

For questions regarding your transcript, please contact:
North Carolina Botanical Garden Registrar
919-843-8524 / ncbgRegistrar@unc.edu
3. CURRICULUM

Successful completion of the program requires passing grades in 13 core courses and 3 elective courses as well as completion of three Independent Final Projects and participation in the NCBG Graduation exhibit. The curriculum is structured so that higher-level courses build upon lower-level ones. This allows a student to acquire the knowledge and skill level necessary to advance to the next level with proficiency. For this reason, some of the core and elective courses have prerequisites.

The Certificate Program has two complimentary watercolor tracks of instruction, one emphasizing techniques for the high detail and accuracy needed for illustrations and the other for techniques for a looser, expressive art while still emphasizing drawing accuracy.

3.1 CORE COURSES LISTING

Of the 13 required core courses, ten are art courses and three are plant science courses. The art courses provide instruction in achieving both finely detailed and highly accurate botanical illustrations and artistic renderings in both black-and-white and color media. The plant science courses instruct the student in plant morphology and identification and provide exposure to the local native flora. The core courses and their instructional hour requirements are listed below.

- Introduction to Botanical Illustration (3.5 hours)
- Beginning Drawing (14 hours)
- Composition (14 hours)
- Botany (18 hours)
- Plant Taxonomy (12 hours)
- One of Local Flora: Spring, Summer, Fall, or Winter (12 hours)
- Beginning Watercolor (14 hours)
- Beginning Colored Pencil (14 hours)
- Intermediate Drawing (14 hours)
- Pen and Ink (14 hours)
- Intermediate Traditional Watercolor (for Illustrators) or Intermediate Expressive Watercolor for Artists (14 hours)
- Integrating Composition and Color Theory (Color Theory) (14 hours)
- Advanced Traditional Watercolor (for Illustrators) or Advanced Expressive Watercolor for Artists (14 hours)

3.2 ELECTIVES LISTING

Elective courses offer opportunities for further development of the skills acquired in the core courses. Specific courses are offered every year or two, with additional options each year through short courses and continuing curriculum development. Elective courses and their instructional hour requirements are listed below.

- Acrylic (14 hours)
- Intermediate Colored Pencil (14 hours)
- Depth and Perspective (14 hours)
- Field Sketching (14 hours)
- Gouache (14 hours)
- Advanced Colored Pencil (14 hours)
- Second Track for Intermediate Traditional Watercolor (for Illustrators) or Intermediate Expressive Watercolor (14 hours)
- Second Track of Advanced Traditional Watercolor (for Illustrators) or Advanced Expressive Watercolor (14 hours)
Botanical in Watercolor, Colored Pencil and Pen & Ink (Mixed Media) (14 hours)
Pen and Ink Media Explorations (14 hours)
Advanced Drawing: Botanical Plate (14 hours)
Graduation Preparation: What You Need to Know (3 ½ hours)

3.3 Not for Credit Short Courses and Master Courses

Additional not-for-credit short courses are offered as preparatory and complimentary classes that supplement core and elective courses. Master non-credit courses are offered to provide a mastery of botanical art and illustration, building on the foundation of learned technique. Master courses generally require prerequisite course work.

3.4 Consolidated Listing

The chart below lists the courses and their prerequisites.

<table>
<thead>
<tr>
<th>Course</th>
<th>Category</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction To Botanical Illustration</td>
<td>Core</td>
<td>None (Effective 9/2011)</td>
</tr>
<tr>
<td>Beginning Drawing</td>
<td>Core</td>
<td>None</td>
</tr>
<tr>
<td>Composition</td>
<td>Core</td>
<td>None</td>
</tr>
<tr>
<td>Botany</td>
<td>Core</td>
<td>None</td>
</tr>
<tr>
<td>Plant Taxonomy</td>
<td>Core</td>
<td>Botany</td>
</tr>
<tr>
<td>One of Local Flora: Spring, Summer, Fall, or Winter</td>
<td>Core</td>
<td>None</td>
</tr>
<tr>
<td>Beginning Watercolor</td>
<td>Core</td>
<td>Beginning Drawing</td>
</tr>
<tr>
<td>Beginning Colored Pencil</td>
<td>Core</td>
<td>Beginning Drawing</td>
</tr>
<tr>
<td>Intermediate Drawing</td>
<td>Core</td>
<td>Beginning Drawing</td>
</tr>
<tr>
<td>Pen and Ink</td>
<td>Core</td>
<td>Intermediate Drawing</td>
</tr>
<tr>
<td>Intermediate Traditional Watercolor (for Illustrators) or Intermediate Expressive Watercolor</td>
<td>Core</td>
<td>Beginning Watercolor, Intermediate Drawing</td>
</tr>
<tr>
<td>Integrating Composition and Color Theory (Color Theory)</td>
<td>Core</td>
<td>Composition, Intermediate Watercolor</td>
</tr>
<tr>
<td>Advanced Traditional Watercolor (for Illustrators) or Advanced Expressive Watercolor</td>
<td>Core</td>
<td>Intermediate Watercolor, Intermediate Drawing</td>
</tr>
<tr>
<td>Field Sketching</td>
<td>Elective</td>
<td>None</td>
</tr>
<tr>
<td>Intermediate Colored Pencil</td>
<td>Elective</td>
<td>Beginning Colored Pencil, Intermediate Drawing</td>
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<tr>
<td>Advanced Colored Pencil</td>
<td>Elective</td>
<td>Integrating Composition and Color Theory, Intermediate Colored Pencil</td>
</tr>
<tr>
<td>Advanced Drawing: Botanical Plates</td>
<td>Elective</td>
<td>Intermediate Drawing, Composition</td>
</tr>
<tr>
<td>Pen and Ink: Media Explorations</td>
<td>Elective</td>
<td>Pen and Ink</td>
</tr>
<tr>
<td>Gouache</td>
<td>Elective</td>
<td>Beginning Drawing, Beginning Watercolor</td>
</tr>
<tr>
<td>Acrylic</td>
<td>Elective</td>
<td>Beginning Drawing</td>
</tr>
<tr>
<td>Botanical in Watercolor, Colored Pencil and Pen &amp; Ink</td>
<td>Elective</td>
<td>Pen &amp; Ink, Beginning Colored Pencil, Intermediate Watercolor</td>
</tr>
<tr>
<td>Graduation Preparation</td>
<td>Elective</td>
<td>None</td>
</tr>
</tbody>
</table>
### 3.5 Sample Course Sequence

Below is one example of a course schedule sequenced so that the student can complete the certificate program graduation requirements in a three-year period.

<table>
<thead>
<tr>
<th>Course</th>
<th>Category</th>
<th>Prerequisite(s)</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Botanical Illustration (short course)</td>
<td>Core</td>
<td>None</td>
<td>3½ hours</td>
</tr>
<tr>
<td>Beginning Drawing</td>
<td>Core</td>
<td>None</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Botany</td>
<td>Core</td>
<td>None</td>
<td>3 hrs x 6 sessions</td>
</tr>
<tr>
<td>Intermediate Drawing</td>
<td>Core</td>
<td>Beginning Drawing</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Beginning Watercolor</td>
<td>Core</td>
<td>Beginning Drawing</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Plant Taxonomy</td>
<td>Core</td>
<td>Botany</td>
<td>3 hrs x 4 sessions</td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate Traditional Watercolor (for Illustrators)</td>
<td>Core</td>
<td>Beginning Watercolor, Intermediate Drawing</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Intermediate Expressive Watercolor (Wet and Wild)</td>
<td>Core</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pen and Ink</td>
<td>Core</td>
<td>Intermediate Drawing</td>
<td>3 ½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Composition</td>
<td>Core</td>
<td>None</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Integrating Composition and Color Theory (Color Theory)</td>
<td>Core</td>
<td>Composition, Intermediate Watercolor</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Beginning Colored Pencil</td>
<td>Core</td>
<td>Beginning Drawing</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Local Flora: Spring, Summer, Fall, or Winter</td>
<td>Core</td>
<td>None</td>
<td>3 hrs x 4 sessions</td>
</tr>
<tr>
<td>Any elective</td>
<td>Elective</td>
<td>Course-dependent</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td><strong>Year 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Traditional Watercolor (for Illustrators)</td>
<td>Core</td>
<td>Intermediate Watercolor, Integrating Composition and Color Theory</td>
<td>3½ hrs x 4 sessions</td>
</tr>
<tr>
<td>Advanced Expressive Watercolor (Wet &amp; Wild)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two electives</td>
<td>Elective</td>
<td>Course-dependent</td>
<td>3½ hrs x 8 sessions</td>
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<tr>
<td>Final Project</td>
<td>Core</td>
<td>All other core classes</td>
<td>As required</td>
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</table>
**3.6 Homework Assignments**

Beginning with their first class, students should, **but are not required to** place all art course materials in a three-ring binder. A section for each core course should be created, with additional divisions for electives and workshops. The appropriate order would be: Beginning Drawing, Composition, Beginning Watercolor, Beginning Colored Pencil, Intermediate Drawing, Pen and Ink, Intermediate Watercolor, Integrating Composition and Color Theory, Advanced Watercolor, Elective 1, Elective 2, and Elective 3. Students should keep track of their course sequencing and schedule. By doing so, students will be able to keep track of when classes were taken and completed.

The amount of time required of students to spend on homework assignments varies and usually ranges from five to 15 hours per week for each course. Actual practice time in class is limited, so additional hours spent at home are both necessary and beneficial. Time invested in homework will result in personal artistic growth, and satisfactory achievement in any course requires both time and commitment.

Instructors may assign homework extending past the fourth class session of a course. All homework must be completed and submitted to the instructor four weeks after the last class, unless an extension is agreed upon. Homework not received by that time will result in a grade of Incomplete. To receive course credit, all Incomplete homework must be finished by a date assigned by the instructor. Students will be given sufficient time to submit missed assignments in order to ensure success in completing the course.
At the time of completion of a course, each homework and class assignment must be labeled on the back, in pencil, with the following information: name of artist, name of instructor, course name, course week number, and date of completion. Where applicable, the botanical specimen must be labeled with both the scientific and common names. This information will help students keep track of completed assignments.

3.7 **STANDARDS FOR GRADES**

All art class assignments and homework will be graded on these three criteria:

- **Botanical Accuracy**—the accurate identification and depiction of botanical structures and plant habits.
- **Botanical Draftsmanship**—the depiction of fine detail and the illusion of three-dimensionality created through accurate and effective use of line, color, value (in both black-and-white and color work), perspective, focal point, and positive and negative space.
- **Artistic Sensitivity**—the development and implementation of basic visual arts concepts as applied to botanical illustration. Students will be evaluated on the development of their own personal creative style and their ability to convey the character and personality of a plant artistically through sensitive compositional choices, textural rendering, color temperature considerations, value range, and competent media application.

Students may not miss more than one class per course. For each course completed, a student will receive a grade of Credit, Incomplete, or No–Credit. A student with an Incomplete cannot progress until required assignments are completed. A No-Credit cannot progress to a higher-level course and may wish to retake the class until they have achieved a satisfactory level of proficiency. Final grades are issued within 30 days of the last day of class.
4. COURSE DESCRIPTIONS

4.1 CORE COURSES

INTRODUCTION TO BOTANICAL ILLUSTRATION
Prerequisite: None
Hours: 3 ½
This half-day class explores the history of botanical illustration, shows examples of various types of botanical illustrations and botanical art, describes the coursework for the Certificate in Botanical Art and Illustration, and introduces the instructors.

BEGINNING DRAWING
Prerequisite: None
Hours: 14 (3½ hours x 4 sessions)
This is an introductory course of drawing for beginners and those wishing to refresh their skills. Includes sketchbook for line drawing exercises on seeing to draw, quick sketching, mapping for accuracy, and other basic principles of drawing. This course may be bypassed with instructor approval and proof of basic drawing proficiency.

COMPOSITION
Prerequisite: None
Hours: 14 (3½ hours x 4 sessions)
This course is a broad study in the elements that formulate a good composition. Students learn how to make visual choices and determine how parts of a plant are arranged on the page to balance botanical accuracy and artistic sensitivity.

BOTANY
Prerequisite: None
Hours: 18 (3 hours x 6 sessions)
This course is introductory in nature and is designed for a broad audience. It is a fundamental core course for students enrolled in either of the NCBG certificate programs. It covers basic principles of botany including taxonomy, anatomy, morphology and physiology. Class time is divided between lectures and examining/dissecting samples. There are also opportunities for making observations of examples in the Garden.

PLANT TAXONOMY
Prerequisite: Botany
Hours: 12 (3 hours x 4 sessions)
This course builds on the fundamentals taught in Botany and prepares students for supplementary material covered in Flowering Plant Families. It is a core course for students enrolled in either of the NCBG certificate programs. Students learn the basic concepts of the taxonomy of vascular plants and how to identify plant families by making observations of selected characteristics. The use of taxonomic keys is introduced. Interesting examples are studied to illustrate current issues in plant taxonomy and nomenclature.

LOCAL FLORA: SPRING, SUMMER, FALL, AND WINTER
Prerequisite: None
Hours: 12 (3 hours x 4 sessions)
There are four separate courses developed to teach students about the common southeastern native plants that are prominent during the respective season. These courses are designed for a broad audience as well as for students who are enrolled in either of the NCBG certificate programs. Field trips and exercises provide experience in the use of identification keys and recognition of plants in a natural setting.

**BEGINNING WATERCOLOR**

Prerequisite: Beginning Drawing  
Hours: 14 (3½ hours x 4 sessions)

In this class, students are introduced to watercolor and learn basics techniques such as flat and graded washes. Students learn to paint simple shapes (spheres and cylinders) and a small botanical subject.

**BEGINNING COLORED PENCIL**

Prerequisite: Beginning Drawing  
Hours: 14 (3½ hours x 4 sessions)

Colored pencil is a next step in advancing from drawing to painting, and introduces the full array of fine art pigments. This course is a hands-on introduction to commonly used materials and techniques such as layering, blending, burnishing and tonal gradation.

**INTERMEDIATE DRAWING**

Prerequisite: Beginning Drawing  
Hours: 14 (3½ hours x 4 sessions)
In this class, students learn the skills needed to produce a clear, accurate pencil drawing. Specifics of the course include; measuring, ellipses in perspective and tonal graduation.

**PEN AND INK**
Prerequisite: Intermediate Drawing
Hours: 14 (3½ hours x 4 sessions)
In this class, students learn to draw pen and ink using standard techniques and conventions. Students work with both “old-fashioned” dip pens and modern technical pens to create accurate botanical drawings.

**INTERMEDIATE TRADITIONAL WATERCOLOR (FOR ILLUSTRATORS)**
Prerequisites: Beginning Watercolor, Intermediate Drawing
Hours: 14 (3½ hours x 4 sessions)
This course builds upon the knowledge and skills of Beginning Watercolor. Using live botanical specimens, students apply basic drawing and watercolor skills to create detailed, realistic watercolor studies of individual plant structures such as stems, twigs, leaves, petals, flowers, pods, and fruit. Classes cover such topics as creating the illusion of depth and volume and portraying shape, color, and textural details accurately.

**INTERMEDIATE EXPRESSIVE WATERCOLOR FOR ARTISTS**
Prerequisites: Beginning Watercolor, Intermediate Drawing
Hours: 14 (3½ hours x 4 sessions)
This course builds upon the knowledge and skills of Beginning Watercolor. The course provides instruction based on a fluid brush style combined with careful observation of plants. It focuses on learning general methods for using a brush to create forms, then adding detail.

**INTEGRATING COMPOSITION AND COLOR THEORY (COLOR THEORY)**
Prerequisites: Composition, Intermediate Watercolor
Hours: 14 (3½ hours x 4 sessions)
In this class students learn the basics of color and the techniques for properly mixing pigments to match a specific color. Concepts of the color wheel and analogous/complementary colors are explored through instruction and numerous exercises. The three attributes of color – hue, value and intensity are also covered.

**ADVANCED TRADITIONAL WATERCOLOR (FOR ILLUSTRATORS)**
Prerequisites: Intermediate Traditional Watercolor, Color Theory
Hours: 14 (3½ hours x 4 sessions)
This course builds upon Intermediate Watercolor for Illustrators. Students independently select a native plant of their choice and design and complete a watercolor painting displaying different aspects of that plant. Instructor is available for consultation and problem solving, as well as in-class critiques. Students prepare a written analysis of their work, explaining their design choices, as well as report describing the botanical details of their selected plant.

**ADVANCED EXPRESSIVE WATERCOLOR FOR ARTISTS**
Prerequisites: Intermediate Watercolor for Artists, Color Theory
Hours: 14 (3½ hours x 4 sessions)
This course builds on Intermediate Watercolor Techniques. Students complete a botanical watercolor painting of native North Carolina plants of her/his own choosing, using the elements learned in Intermediate Watercolor Techniques.
4.2 Electives

FIELD SKETCHING
Prerequisite: None
Hours: 14 (3½ hours x 4 sessions)
Take your sketchbook outdoors and reconnect with plants in their natural environment. In this course, students are encouraged to shed old habits and try new techniques as they travel to a variety of gardens and habitats. Through a combination of guided exercises and free experimentation, students discover new ways of seeing plants, new problem-solving skills, and a refreshing way of thinking about layout and color. Several media are used, from ballpoint pen to watercolor to pencil.

INTERMEDIATE COLORED PENCIL
Prerequisites: Beginning Colored Pencil, Intermediate Drawing
Hours: 14 (3½ hours x 4 sessions)
This course makes use of the techniques and information covered in Beginning Colored Pencil and hones skills in color matching and layering. Students complete an illustration of a botanical subject of choice. This elective is intended for students who choose to develop a strong, more-advanced-level skill in colored pencil.

ADVANCED COLORED PENCIL
Prerequisites: Color Theory, Intermediate Colored Pencil
Hours: 14 (3½ hours x 4 sessions)
Using a live plant and/or reference photograph of their choice, students complete an Independent Final Project consisting of a botanical illustration or botanical painting. One-on-one instruction is offered as desired by students. The class is designed to increase skills and confidence in the use of colored pencils by utilizing the instruction from Beginning and Intermediate Colored Pencil.

GOUACHE
Prerequisites: Prerequisite: Beginning Drawing, Beginning Watercolor
Hours: 14 (3½ hours x 4 sessions)
This four-week course gives the student fundamentals in painting with gouache and provides instruction in using them for botanical art and illustration.

ACRYLIC
Prerequisite: Beginning Drawing
Hours: 14 (3 ½ hours x 4 sessions)
This four-week course gives the student fundamentals in painting with acrylic opaque water media. The course offers a survey of various methods of painting in this media and provides instruction in using the media for botanical art and illustration.

PEN AND INK MEDIA EXPLORATIONS
Prerequisites: Pen and Ink
Hours: 14 (3½ hours x 4 sessions)
This 4-week course is an in-depth exploration of drawing with ink, including exercises in creating texture with pen & ink and scratchboard. It also introduces the student to ink-wash, a bridge between watercolor and ink, stretching a student’s grasp of value. New surfaces, such as drafting film and Yupo are introduced.
BOTANICAL IN WATERCOLOR, COLORED PENCIL AND PEN & INK

Prerequisites: Pen & Ink, Beginning Colored Pencil, Intermediate Watercolor
Hours: 14 (3½ hours x 4 sessions)

Mixed Media explores how to combine the various media to create expressive botanical art and illustrations. The course draws on the student’s knowledge of graphite, pen & ink, colored pencil and watercolor and offers guidelines for using these in various combinations that highlight the advantages of each.

ADVANCED DRAWING: BOTANICAL PLATE

Prerequisites: Intermediate Drawing and Composition
Hours: 14 (3½ hours x 4 sessions)

Students work towards refining drawing skills in creating a plant portrait. Specifics to this class will be to render a tonal botanical plate, work with live plants, study plant anatomy, use microscopes, as well as mapping and cross-contour drawing for accuracy.

GRADUATION PREPARATION: WHAT YOU NEED TO KNOW

Prerequisites: None
Hours: 3 ½ hours

Students will receive guidance on Independent Projects, graduation procedures and requirements, as well as organizing the student exhibit, photographing and framing paintings, and an introduction to marketing work.

4.3 Open Studio

This studio session is intended for students interested in getting together with other botanical artists working in a specific area to learn new techniques and obtain in-depth critiques of their work. Sessions are announced each semester.
5. PROGRAM COMPLETION

5.1. GRADUATION REQUIREMENTS
It is the responsibility of the student to inform the Director of Education with their Statement of Intent to Graduate when he or she has completed the required coursework and is ready to begin work on the Independent Final Project. This should be done in January, before the intended graduation.

5.2 GRADUATION DEADLINES
1.) January, before intended graduation.
   Submit a Statement of Intent to Graduate

2.) Prior to graduation. (Students will be notified of specific date).
   Submit digital images of Independent Final Projects as jpgs,
   Submit written statement about Independent Final Projects as pdf
   Submit black and white value sketch as jpg
   Submit support material as pdfs and jpgs.

3.) Prior to graduation, one week, following submission of digital images. (Students will be notified of specific date).
   Submit Independent Final Projects
   Submit written statement about Independent Final Projects
   Submit black and white value sketch
   Submit support material

4.) Prior to graduation, two weeks following submission of Independent Projects. (Students will be notified of specific date).
   Independent Final Projects returned
   Begin framing pieces for student exhibit

5.) Participate in student graduation and exhibition.

GRADUATION DATES
Graduation ceremonies take place on a to-be-determined Sunday afternoon in the fall.

5.3 INDEPENDENT FINAL PROJECT
The Independent Final Project must be submitted to the Director of Education eight weeks before the graduation date. NCBG Certificate in Botanical Art and Illustration program faculty will evaluate the materials. Evaluation criteria are the same as those for coursework: botanical accuracy, botanical craftsmanship, and artistic sensitivity (see 3.7 STANDARDS FOR GRADES). The faculty will return the Independent Final Project with comments six weeks before graduation. Included with the Independent Final Projects, students should submit the written statement (see below), a black and white value sketch of each piece, and any relevant support material (see below).

The Independent Final Projects consist of three pieces of botanical artwork completed without supervision from any of the instructors. Pieces should represent southeastern native plant species, whenever possible. No exotic invasive species will be allowed. (See http://ncbg.unc.edu/invasive-plants-resources/ for more detail). Students may work in graphite, pen & ink, watercolor, colored pencil, acrylic, gauche, or any mixed media combination, as long as the student has taken classes through the Garden in that media.

Each Independent Final Project must be labeled with the title of the piece, Latin name of the subject (genus, species, cultivar where applicable), common name of the subject, and medium. The artist should sign all pieces unobtrusively on
the front. All paintings and support material should be placed in a protective portfolio. Identification labels should be typed or written on small pieces of paper and attached to each page of the portfolio.

Students have the option of working anywhere on the spectrum between the more traditional style (Botanical Illustration) and non-traditional style (Botanical Art) for each independent study piece. (See 1.2 Descriptions of Botanical Illustration and Botanical Art.) Rather than a hard-and-fast line between the two styles, there is a spectrum of choices as to which conventions the artist chooses to adhere to. For example, Botanical Illustration and Botanical Art have different conventions in terms of lighting, cropping, scale, focus and design.

Each piece should show the student’s mastery of light on form, the conventions of botanical lighting and atmospheric perspective, and display a full tonal range. These pieces should display the student’s mastery of color theory, pigment handling, media application, lighting and atmospheric perspective. Work on the Independent Final Project will be viewed as representing a student’s highest capability in each medium.

All three independent final projects must display the student’s mastery of composition and design. Each Independent Final Project must contain at least three elements. Elements can consist of but are not limited to leaves, twigs, fruit, blossoms, seedpods or associative insects. (A single flower or fruit does not constitute three different elements.) Independent Final Projects must include a focal point. Outer dimensions should be marked with a light pencil line. Students are encouraged to reread their handouts for Composition and Integrating Composition and Color Theory and to study the compositions of professional botanical artists and illustrators for ideas.

Since students work independently (without instructor supervision), they are encouraged to interact with each other for comments and critiques.

Students may also choose to submit two to three additional works they feel represent their mastery in botanical art and illustration.

Students who do not meet the criteria for graduation will receive a letter from the Director of Education informing them of improvements that they need to make, based on faculty comments. Students will be responsible for independently acting on the comments about the Independent Final Project and implementing the suggestions before framing their works for the graduation exhibit. Those unable to complete suggested improvements before graduation will need to resubmit their Independent Final Projects the following year.

5.4 Digital Images

Nine weeks prior to graduation, students must send digital images of their Independent Projects and for positive identification, a photograph of the selected plants to the Director of Education. Included with the digital images of the paintings, students need to submit a written statement about their Independent Final Projects, a black and white value sketch, and support material.

All images MUST be submitted as either jps or tiffs. Images submitted as pdfs will be returned. Any text files may be submitted as pdfs.

Before photo-editing your piece, make sure to resave and rename the original digital image with the “Save As” function. Each digital image needs to be at minimum 1 mg in size and saved as a high-resolution jpg. Rename each image with your Last Name, Title of Painting, Independent Final Project #.

Images can either be scanned or taken with a camera. For images taken with a camera, please note that the image needs to be evenly lit with either sunlight correct bulbs or placed outside in either direct sun or complete shade. The artwork should be taped to a flat surface and camera placed parallel to the painting’s surface. Position the camera as close to the image as possible, including the subject and crop lines. If possible, crop your image to delete any background incursions, i.e. fingers, tablecloth, or spouse. There are many on-line sites and books that can help you learn how to photograph your paintings.

5.5 Written Statements and Support Material

In a written statement, students should list their name, the title of the painting, the Independent Final Project number, and the scientific and common name of the subject. For positive identification, include a photograph of selected plants. Also include a brief statement explaining where on the Illustration-to-Art spectrum they think each of their
Independent Final Projects lies, and what design choices they have made in relation to this placement on the spectrum. Assessment by the review committee of the works’ compositional and media application choices will be based on the student’s self-declared style on the science/art spectrum.

Students should include all supportive material, such as photographs, field sketches, color swatches, thumbnail sketches, and any black and white or color preliminary rough sketches with each Independent Final Project.

### 5.6 Exhibit Guidelines

Students should contact fellow graduates and the Director of Education well in advance of the graduation date to begin planning for the student graduation exhibition.

Graduating students will hang pieces of choice in a student graduation exhibit at the NCBG. **Pieces should represent southeastern native plant species, whenever possible. No exotic invasive species will be allowed.** (See: [http://ncbg.unc.edu/invasive-plants-resources/](http://ncbg.unc.edu/invasive-plants-resources/) for more detail). Usually, each student’s three final pieces are hung in the exhibit, although students are free to decide which artwork they wish to hang. Depending on the size of the graduating class, the student may need to frame one or two additional homework assignments for the student graduation exhibition. If this is necessary, students will be notified by the Director of Education when the final projects are returned after evaluation. Students will have six weeks after the evaluation to get their works framed for the exhibition.

Students may also wish to exhibit a portfolio reflecting some of the work from classes the program. Details of how to put together a portfolio can be found in Section 6.3 below.

It is the responsibility of the artist or group to hang the exhibit. All the artwork must be original (no prints or photocopies). All entries must be identified on the back upper right-hand corner of the frame (this is the standard way art is labeled) with the artist’s name, address, and phone number; title of the piece; medium; date; price (or NFS); and insurance value. Students will receive an exhibition contract that they must sign at least four weeks before the hang date.

Exhibitors must provide a price list for insurance purposes two weeks before the opening of the exhibit. They cannot hang work without this information. The price list should contain each student’s name, address, and contact information; title of each piece to be hung; size (original and framed); medium; price or NFS (not for sale); and insurance value (even if the piece is not for sale). Insurance will be covered by the North Carolina Botanical Garden (The University of North Carolina at Chapel Hill) from the time hanging begins until the show is taken down.

The artists will provide individual foamboard labels to attach to the wall identifying each piece. Each label should include the name of the artist, title of the piece, and medium. Due to state law, price information cannot appear on the label. Labels should be attached to the wall using adhesive putty.

The exhibiting artists must provide compiled and photocopied price sheets for viewers to take with them. The price sheets should include the name of each artist, contact information, title of each piece, and price or NFS.

The exhibit will be open in the Arthur DeBerry Botanical Art and Illustration Gallery on weekdays from 8:00 a.m. to 5:00 p.m., Saturdays from 9:00 a.m. to 6:00 p.m., and Sundays from 1:00 to 6:00 p.m. during Daylight Savings Time. (After Daylight Savings Time ends, weekend hours will change to Saturdays from 9:00 a.m. to 5:00 p.m. and Sundays from 1:00 to 5:00 p.m.)

It is the responsibility of the artists to handle all sales. The NCBG will notify an artist of a request to purchase. The NCBG takes a 40 percent commission of total sales. Commission checks should be made payable to the N.C. Botanical Garden.
6. BECOMING A PROFESSIONAL

6.1 Framing Your Work
Each piece for the exhibit should measure approximately 11 by 14 inches. However, bearing in mind the cost of custom framing, students may choose to vary the size somewhat to fit standard premade frames.

All entries for the student exhibition must be matted, framed (under Plexiglas), wired, and ready to hang. No sawtooth hangers are allowed. Mats must not draw attention from the artwork and therefore should be colored neutral white, ivory, or light gray. All frames should be simple wood without excessive molding. Students may not use metal frames. Frames premade or cut to the required dimensions can be ordered from discount stores, art supply stores, or catalogs. Plan ahead and allow ample time for framers to frame the work. Consult the instructors for further advice.

6.2 Pricing Your Work
Most artists price their work using their own criteria, and there are many ways to decide on price. One way is to total all costs associated with the piece (materials, framing, marketing, general business overhead, and gallery commission fee) and then add an amount as profit. Because most botanical artists spend a great deal of time on their works, it is usually not feasible to base price on the amount of time spent creating a piece.

Another way of pricing art is to calculate the area of the work (in square inches) and multiply by a dollar amount based on the aforementioned factors. Once the price per square inch for one piece is determined, use this value as a standard to price all your work. That way art will be priced consistently based on size. The artist can always charge slightly more for favorite pieces.

Most professional artists price each painting as if it were going into a gallery. Gallery commission charges can range from 40 to 100 percent. Most galleries charge 50 percent. It is inadvisable to price work lower than the gallery charges. Keep prices consistent so that buyers and galleries know what to expect.

It can be helpful to survey local galleries and exhibitions to determine the range of prices charged by established artists working on similar subjects with equivalent media and techniques. Talk to peers about how much they charge and how they price their work, join affiliated artists’ groups, and enter and attend shows.

6.3 Portfolio

GENERAL
Portfolios are an option for students at the Graduation Exhibition.

Presentation portfolios (also called presentation books) can be purchased at office supply or art stores. They are typically, plastic notebooks with page protectors bound within and are available in various sizes. Students may need more than one to contain all their portfolio items.

CONTENT
Portfolios may contain the following items:

- Pieces representing best work, including the Independent Final Projects
- In addition, you may include “bonus material”. These are additional pieces that are created independently, and which display their mastery of Botanical Art and Illustration, but which are not among the three pieces the student has chosen for their final project. These would be clearly labeled “Bonus Material”.

Portfolios are neatly and cleanly assembled. Artworks in the portfolio are originals, not photocopies or prints. The one exception to this rule is that students who have taken Field Sketching will submit four photocopied pages of their sketchbook in lieu of handing in their entire sketchbook.
LABELING AND ORGANIZATION

All artwork in the portfolio should be clearly labeled. Each item in the portfolio must be clearly and visibly labeled with the following information: course name, name of instructor, course week number, and date of completion. Where applicable, the botanical specimen must be labeled with both the scientific and common names. Students do not need to write on their artwork. Instead, labels should be typed or written on small pieces of paper and attached to each page of the portfolio where the teachers can see it. The student’s name must appear clearly on the outside cover of each portfolio.

It is suggested that all portfolios be arranged in the following order: Beginning Drawing, Composition, Beginning Watercolor, Beginning Colored Pencil, Intermediate Drawing, Pen and Ink, Intermediate Watercolor for Illustrators or Intermediate Watercolor Techniques, Color Theory, Advanced Watercolor for Illustrators or Advanced Watercolor Techniques, Elective 1, Elective 2, Elective 3, and if desired, any optional Bonus Material (additional pieces created outside of class).

COLORED PENCIL, LINDA KOFFENBERGER
7. Faculty and Course Objectives

7.1 Faculty

LINDA KOFFENBERGER

Linda Koffenberger is a national award-winning artist who works in colored pencil, egg tempera, and watercolor. She has won numerous awards, including the CIPPY Award (Best-in-Show) in the 14th International Exhibition of the Colored Pencil Society of America. She is a Signature Member and 5-year Merit Member of CPSA.

KATE LAGALY

Kate Lagaly is a freelance artist whose work has been juried into local, regional, national, and international Exhibitions. Her work has been included in two books: “The Colored Pencil Society of America Signature Showcase” and "Best Of Worldwide Artists working in Charcoal, Pastel & Pencil” as well as a several magazines and a calendar. She has earned Signature Artist status from the Colored Pencil Society of America (CPSA and CPX), the Kentucky Watercolor Society (KWS), the Southern Watercolor Society (SW), The Watercolor Society of North Carolina (WSNC), the South Carolina Watermedia Society (SCWS), and the Tennessee Watercolor Society (TnWS). Kate received her B.A. in Art and Art Education K-12 from Xavier University in Cincinnati, Ohio in 1986. She has beenteaching art classes and workshops for the past 20 years. Kate is an involved member of many local, regional, national, and international art groups. See Kate’s art at http://katelagaly.blogspot.com/

OLIVIA LENAHAN

Olivia Lenahan has a Ph.D. in horticultural science from Iowa State University, where she studied the cold hardiness and genetic diversity of a threatened population of Styrax americanus (American snowbell). Prior to that, Olivia worked at the Irrigated Agriculture Research and Extension Center with Washington State University. Her Master’s work focused on crop load management of dwarfing sweet cherry trees. During this experience, she really enjoyed living in the heart of sweet cherry and wine country. But of all the Plant Hardiness Zones Olivia has experienced, she especially loves gardening in North Carolina.

MILO PYNE

Milo Pyne works as the southeastern senior regional ecologist for NatureServe, an offshoot of The Nature Conservancy. He and others at the Durham office are engaged in the development of ecological classification systems and their use and application by conservation partners. A native of Durham and formerly a resident of middle Tennessee, Milo obtained a B.S. degree in botany from N.C. State University in 1991 and worked from 1993 to 1996 as a botanist for the Tennessee Division of Natural Heritage. His other interests include local land conservation issues; natural landscape gardening; ecology of glade-, barren-, and prairie-related vegetation in the Southeast; and taxonomic issues in Physalis and Liatris. He has been a board member of the Eno River Association since 1996.

PATRICIA SAVAGE

Patricia Savage has been a fine artist since 1989. She was awarded Best and Honorable Mention in Wildlife in the Pastel Journal’s Sixth Annual Pastel Top 100. She served as artist-in-residence in Denali National Park and expedition artist for The 1899 Harriman Expedition Retraced. Her work has appeared in Botanical Art: Eden Re-imagined, The Best of Wildlife Art 1 and 2, Focus (Italy), U.S. Art, Wildlife Art, and Wildlife in North Carolina. Patricia has exhibited her work at the Leigh Yawkey Woodson Art Museum, the Bell Museum of Natural History, the National Geographic Society, the U.S. Botanic Garden, and Walt Disney World’s Animal Kingdom. She is a signature member of the Pastel Society of America and the Society of Animal Artists. She also belongs to the Guild of Natural Science Illustrators and GNSI-Carolinas, and the Pastel Society of North Carolina. Patricia also teaches at the NC Museum of Life and Sciences, Raleigh, NC. To see Patricia’s paintings go to http://www.psavageartist.com and friend her on Facebook.
KATHY SCHERMER-GRAMM

Kathy is an artist with a long relationship with NCBG, involved in both the Native Plants and Botanical Illustration Certification programs. From Southern California, she graduated from California State University, Fullerton with a Masters in Illustration where she has taught illustration and drawing and painting as well as at other colleges in the area. In North Carolina for over 20 years, Kathy has had the joy of being a Nature Educator as well as an elementary school art teacher before focusing on Botanical Illustration. Her past illustration work has been exhibited and won awards with the Society of Illustrators. Currently she is a member of ASBA and GNSI with work exhibiting in the ASBA International Exhibition. She also teaches at the Sawtooth School for Visual Arts and out of her studio at the Historic Bethania Mill in Winston-Salem. Follow her on Facebook or visit her at www.kathyschermergramm-artist.com

7.2 CORE COURSES LEARNING OBJECTIVES

BOTANY

Learning Objectives

Upon completion of this course, students will have an understanding of the following:

- General anatomy and morphology of plants and the main tissue types and organs;
- Characteristics of monocots and dicots, primary and secondary growth in flowering plants, and plant reproduction; and
- Diversity in and classification of the plant kingdom including an introduction to basic taxonomy.

LOCAL FLORA (WINTER, SPRING, SUMMER, FALL)

Learning Objectives

Upon completion of this course, students will have an understanding of the following:

- Basic plant morphology;
- Naming conventions for plants and the history of scientific naming;
- How to identify the prominent plants of the season using a dichotomous key and field characteristics; and
- Other information specific to the season.

PLANT TAXONOMY

Learning Objectives

Upon completion of this course, students will have an understanding of the following:

- Procedures used for the identification, naming and classifying a plant;
- Important morphological features of vascular plants;
- Use of a dichotomous key;
- Techniques used to determine plant evolutionary relationships (morphological comparisons, biochemical relationships, genetic analyses, etc.); and
- Diversity of the plant kingdom through direct study of various taxa.

BEGINNING DRAWING

Learning Objectives

Upon completion of this course, students will have a basic understanding of the following:

- Tools for capturing realism in drawing, including use of contour lines, negative space, relative proportions, perspective and foreshortening;
- Conventions of drawing for botanical illustration; and
- Components of a successful critique.
COMPOSITION

Learning Objectives
Upon completion of this course, students will have knowledge/skill of the following:

- How to create a good composition using elements of the artistic process (lines, space, forms, texture, color and value);
- How to draw the viewer’s eye to the point of interest;
- Importance of proportions, repetition, contrast, balance and harmony; and
- Components of a successful critique.

BEGINNING WATERCOLOR

Learning Objectives
Upon completion of this course, students will have knowledge/skills of the following:

- Watercolor, paints brushes and papers;
- Flat and graded washes; and
- Use of light and shadow to create shapes.

BEGINNING COLORED PENCIL

Learning Objectives
Upon completion of this course, students will have knowledge/skill of the following:

- Fine art pencils, papers and other materials;
- Commonly used techniques and tips used for most colored pencil drawing/painting methods;
- Recognizing common mistakes and how to correct them; and
- Basic color theory and color matching.

INTERMEDIATE DRAWING

Learning Objectives
Upon completion of this course, students will have a knowledge/skill of the following:

- Use of mapping and layers to work up from a simple sketch to a finished drawing;
- Ability to create even application of tone;
- Use of lighting to highlight botanical features;
- Use of microscopes and dissection tools;
- Measuring and labeling conventions of basic botanical structures and forms; and
- Composition of a full botanical plate, including habit and plant detail

PEN AND INK

Learning Objectives
Upon completion of this course, students will have a knowledge/skill of the following:

- Control of crow-quill and modern pens;
- Use of varied line weight to depict near and far, light and shadow;
- Pen & ink conventions, including broken lines, line weight, and snodgrassing;
- Stippling and the creation of even gradients using stipple;
- Textural marks, including hatching, scribbling, and parallel lines;
- Correction techniques; and
- Care and cleaning of pens.
INTERMEDIATE TRADITIONAL WATERCOLOR FOR ILLUSTRATORS

Learning Objectives
Upon completion of this course, students will have knowledge/skills of the following:
- Layering and color mixing;
- Detailed, realistic watercolor studies of individual plant structures;
- Botanical accuracy and artistic sensitivity;
- Recognizing common mistakes and how to correct them; and
- The process of creating a painting.

INTERMEDIATE EXPRESSIVE WATERCOLOR (WET AND WILD)

Learning Objectives
Upon completion of this course, students will have knowledge / skill of the following:
- Applying simple and complex washes to quickly create shape and form;
- Observing botanical specimens for accurate rendering;
- Painting in detail; and
- Using elements of design for artistic presentation

INTEGRATING COMPOSITION AND COLOR THEORY (COLOR THEORY)

Learning Objectives
Upon completion of this course, students will have knowledge/skill of the following:
- Concepts of a color wheel;
- Accurately matching colors; and
- Applying color theory to strengthen composition.

ADVANCED TRADITIONAL WATERCOLOR (FOR ILLUSTRATORS)

Learning Objectives
Upon completion of this course, students will have knowledge/skills of the following:
- Full complex botanical illustration in watercolor using compositional elements;
- Working independently;
- Writing of a scientific report; and
- Preparing a formal critique.

ADVANCED EXPRESSIVE WATERCOLOR (WET AND WILD)

Learning Objectives
- Creating and painting botanical compositions;
- Working independently;
- Critiquing paintings for composition and technique; and
- Writing an artist statement about the process and focus of the painting.
8.0 Addendum

8.1 Brief List of Art Suppliers
Askew-Taylor Paints, 110 Glenwood Ave., Raleigh, N.C., 919-834-4497
Cheap Joes, www.cheapjoes.com
Dick Blick Art Materials, www.dickblick.com
Jerry’s Artarama, 3060 Wake Forest Rd., Raleigh, N.C., 919-876-6610
Jerry’s Artarama Web catalog (has many more items than the store), www.jerrysartarama.com

8.2 Additional Botanical Illustration Programs
Brookside Gardens, Maryland: www.montgomeryparks.org/brookside/botanical_art_school.shtm
Denver Botanic Gardens: www.botanicgardens.org/content/botanical-illustration
Morton Arboretum: http://www.mortonarb.org
New York Botanical Garden: www.nybg.org/adulted/

8.3 Professional Associations
American Society of Botanical Artists: www.amsocbotartists.org
Guild of Natural Science Illustrators: www.gnsi.org
Guild of Natural Science Illustrators–Carolinas: http://www.gnsi.org/groups

The Guild of Natural Science Illustrators–Carolinas (GNSI-C) is a local chapter of the national nonprofit Guild of Natural Science Illustrators attracting and serving members throughout the Carolinas and surrounding areas. GNSI-C welcomes anyone interested in scientific illustration. Current membership includes amateur artists, art students, scientific illustrators, botanical artists, wildlife artists, art instructors, book illustrators, authors, and others who have an appreciation of art and nature.

8.4 Brief History of Botanical Illustration
It is interesting to note that humans began to depict plants in earnest only after they had domesticated them. Although Paleolithic people drew images of humans and animals on cave walls, there was little attempt to render plant material. Plants appear in early Egyptian, Greek, and Roman art but mostly as decorations, supplementing art of the human figure. The Great Temple of Thutmose III at Karnak (1450 BC) contained probably the earliest collection of plant images (a “florilegium”), in which—although some were sophisticated drawings of identifiable plants—many of the pictures were highly stylized.

In the first century AD, the purpose of botanical illustration was purely to serve science, and physicians studied plants for their pharmacological properties. Physicians relied on books called herbals for descriptions of healing plants. The oldest known surviving illustrated botanical book, the Codex Vindobonensis (ca. AD 512), was presented to the Byzantine princess Juliana Anicia in Constantinople. An illustrated version of an herbal text originally written by the Greek physician Dioscorides in the first century AD and translated into Latin as De Materia Medica, it contained nearly 400 full-page paintings of plants, many done by the artist Krateus. It became one of the main resources for botanical illustration used throughout the Middle Ages. Because the Middle Ages (ca. AD 500 to 1300) brought a halt to cultural development in Western Europe, botanical illustration went into decline for 1,000 years. During that time, botanical drawings were badly copied and often stylized beyond recognition.
Around 1390 a new naturalism suddenly appeared simultaneously in art in Germany, Italy, France, and Flanders. Prayer books and books of hours were hand-painted for personal use by the wealthy aristocracy. Between 1410 and 1416, three Flemish miniaturists, the Limbourg brothers, painted a book of hours for the duc de Berry, brother of the king of France. This document, for which the Limbourgs carefully observed and painted nature, was done in the International Gothic style. It marked a new realism in painting, and its influence spread throughout Europe.

During the Renaissance (ca. 1300 to 1500), art and science had not yet become separate disciplines. Artists and scientists alike recorded the natural world. Innovative artists such as Leonardo da Vinci (1452–1519) and his contemporary Albrecht Dürer (1471–1528) discarded the old formulas for depicting stylized and idealized plants and instead produced detailed and exact studies of nature.

As technology advanced, artists were able to reproduce and distribute their work. The printing press was developed in Germany soon after 1450, and illustrated herbals became widely available. Botany began to emerge as a separate discipline only in the late 1500s. In 1530 the herbal Living Portraits of Plants, by Otto Brunfels, was published. For it Hans Wieditz, a student of Dürer, created exquisitely detailed wood engravings of plants exactly as they appeared in nature, including natural blemishes. In an ambitious herbal called De Historia Stirpium, published by Leonhart Fuchs in 1542, more than 500 plants appeared life-sized, making Fuchs the first author to regard the image as equal to the text in importance.

In the 1560s an influx of new flowers from the Turkish Empire began, and crocuses, cyclamens, hyacinths, and tulips were subsequently bred and sold in Europe, providing a wealth of subject matter. During the Protestant Reformation in the early 1600s, religious paintings fell out of favor, and artists began to paint flowers and fruit instead of religious images. Still-life painting became popular in the Netherlands and was recognized for its subtle compositions, perfectly rendered objects, and interesting lighting effects.

During the Age of Exploration, which had begun in the 15th century, world trade expanded, and many voyages of discovery required scientific documentation. By the late 17th century, trade routes to the Americas were firmly established, as well as those around the southern tip of Africa. Some American plants had reached Europe as early as the Renaissance period, but the real surge of plants from the New World began in the 1620s.

Although entomology was still in its infancy in the 17th century, Maria Sibylla Merian (1647–1717) became one of the first artists to focus on painting insects with their host plants. At age 29, she published the first of three volumes of engravings showing European insects. She later spent two years in Surinam collecting and painting insects and flowers, and in 1705 she published Metamorphosis of Surinam Insects.

In the 18th century, Carl Linnaeus introduced a new system of scientific classification based on the sexual organs of plants, which changed the focus of botanical illustration away from the medicinal parts of plants to the flowers. During the middle part of that century, George Dionysius Ehret (1708–1770) dominated the botanical art scene because of his single-mindedness and dedication to his subject, and the prolific body of beautiful work he produced for published books. He translated Linnaeus’s classification system into diagrams, which were published and widely distributed. A wealthy physician, Dr. Christoph Jakob Trew (1695–1769), became his lifelong friend and patron, and soon Ehret was giving botanical drawing lessons to members of the aristocracy and receiving painting commissions. He painted on vellum and preferred gouache (opaque watercolor) to transparent watercolor. Ehret produced his best works between the ages of 32 to 42, which pieces are now in the Victoria and Albert Museum in London. His later works are at Kew Gardens.

Pierre-Joseph Redouté (1759–1840) was probably the most popular of botanical artists. Empress Josephine (1763–1814), wife of Napoleon Bonaparte, hired him to be the artist at her estate of Malmaison. The famous volumes of Les Lilacées (1802–1816) and Les Roses (1817–1824) resulted from Josephine’s patronage. Redouté pushed the boundaries of his techniques and sometimes broke with tradition to try new methods. He used watercolor on vellum, which he sometimes touched up with gouache. What made Redouté great, author Wilfrid Blunt suggests, were good luck (which brought him royal patronage), tireless energy, and a team of talented stipple engravers and printers. Other important figures in Western botanical art history include Robert Thornton, Sir Joseph Hooker, Walter Hood Fitch, and the Bauer brothers, Francis and Ferdinand. The “grandmother” of contemporary botanical artists in America was Anne Ophelia Todd Dowden, best known for her intricate watercolors of flowers. In spite of the challenges it brought, she always insisted on working from live plant specimens. Probably the next-most-recognized name in contemporary
botanical art is that of Margaret Mee, who studied art in London and moved to Brazil in the early 1950s, where she made 15 solo trips into the Amazon rain forest to paint plants in their natural habitat.

Many of the artists discussed above became well known because their work was reproduced and made available to a wide audience. Today, with digital printing, archival inks, and personal Web sites, botanical artists have revolutionized the way they approach their art, largely because their audience is now the global community. Working with the challenges presented each day by nature (their favorite subject matter) and art (their passion), they are fortunate to have an ever-expanding repository of historical and contemporary botanical artworks available to them for inspiration, education, and personal enrichment.

**SOURCES**


*Paint as you see nature yourself. If you don't see nature right, with an individual feeling, you will never be a painter and all the teaching cannot make you one. A painter must work out his own problems in his art as everyone must work out his own problems in life.*

—Claude Monet

### 8.5 History and Mission of the North Carolina Botanical Garden

The North Carolina Botanical Garden is a unit of the University of North Carolina at Chapel Hill. We further the University’s mission of teaching, research, and public service through our mission:

*To inspire understanding, appreciation, and conservation of plants in gardens and natural areas and to advance a sustainable relationship between people and nature.*

The concept of the conservation garden was developed at the North Carolina Botanical Garden in the early 1990s to represent the many conservation-related activities that the NCBG is pursuing. The Garden has the following eight program themes within its mission.

1. Conservation through propagation of native plants, which ensures that wild populations are not damaged by direct use.
2. Seed banking and reintroduction, an ex-situ conservation program that protects germplasm reserves as a last resort against extinction in the wild and for use in reintroduction of wild populations.
3. The protection and restoration of natural areas.
4. The elimination of invasive species and replacement with noninvasive alternatives.
5. Gardening in nature’s context, which seeks to promote plants that support native biodiversity.
6. Sustainable gardening, which seeks to promote environmentally friendly gardening practices.
7. Supplying critical information on conservation of the flora of the southeastern United States and on the Garden’s conservation programs.
8. People-nature relations, which describes how important plant diversity and natural areas are to the physical and psychological health of all of us.

The history of the North Carolina Botanical Garden is a history of the people and the botanical legacy of the University of North Carolina at Chapel Hill.

In 1903 William Chambers Coker, the University’s first professor of botany, began planting a teaching collection of trees and shrubs on the central campus. This collection was to become the Coker Arboretum. Starting in the late 1920s, Coker and his student Henry Roland Totten proposed a more complete botanical garden south of the main campus.
Although some plantings were done by the 1940s, it was in 1952 that the trustees dedicated 70 forested acres for botanical garden development. To this tract were added 103 acres of dramatic creek gorge and rhododendron bluffs donated by William Lanier Hunt, a horticulturalist and former student of Coker and Totten.

Hunt also helped to found the garden’s membership support organization, the Botanical Garden Foundation, in 1966. In 1961 Dr. C. Ritchie Bell was appointed the Garden’s first director. The Garden’s first public offering was the Nature Trail, opened on Arbor Day in April 1966. The first state appropriation came five years later, when the first employee, J. Kenneth Moore, was hired.

Director Bell, a professor of botany and tireless promoter of the flora of North Carolina, enlisted the support of the Botanical Garden Foundation and the Garden Club of North Carolina to publish a book of photos by William S. Justice. *Wild Flowers of North Carolina* filled a need among wildflower lovers and students of natural history, and it brought valuable attention to the fledgling North Carolina Botanical Garden. Dr. Bell also enlisted many students to help at the Garden, even before he hired its first employee.

The Garden’s formative period coincided with a surge of interest in plants and conservation fueled by Earth Day celebrations and the environmental movement. The Garden’s early era was characterized by limited resources and unlimited idealism and energy. During the 1970s and 1980s, students, volunteers, and a growing staff under the leadership of superintendent Ken Moore constructed habitat gardens—displays representing the major plant communities of the state and illustrating the theme of botanist B.W. Wells’s *The Natural Gardens of North Carolina* (published by the University of North Carolina Press in 1932 and revised in 2002). The Totten Center, named for UNC botanist Henry R. Totten and his wife, Addie, opened in 1976.

The 1960s saw the initiation of field research on a contiguous 367-acre tract of old farmland and native woodlands dedicated by the UNC trustees in 1984 as the Mason Farm Biological Reserve. Today the reserve provides research facilities (greenhouse, cultivation beds, and natural areas) for diverse projects in disciplines such as ecology, bird behavior, population biology, genetics, and developmental biology.

Encouraged by the North Carolina Wild Flower Preservation Society (now the North Carolina Native Plant Society), whose members had helped start the Garden, superintendent Moore promoted “conservation through propagation” as an alternative to the unethical collection of native plants from their natural habitats. He recruited a growing corps of volunteers who provided valuable assistance to staff in welcoming visitors, leading tours, conducting “plant rescues,” propagating plants, and constructing the Mercer Reeves Hubbard Herb Garden. In partnership with the Botanical Garden Foundation, the Garden became a steward of natural areas near Chapel Hill and elsewhere in the state.

As the Garden matured and added staff with expertise in other areas, it developed programs and collections of national significance, such as the Southeastern Carnivorous Plant Collection. In 1984 the North Carolina Botanical Garden became one of the founding members of the Center for Plant Conservation, a network of gardens and arboretum responsible for the collection of propagules and for research about and protection of our nation’s rarest plants. Staff members and volunteers were motivated to undertake this work by a desire to practice conservation and demonstrate a high standard for all public gardens. The same year, in order to focus their efforts, staff members drafted a long-range plan for the Garden. In 1985 more than 15 years work at the Garden was summarized in the book *Growing and Propagating Wild Flowers*, written and illustrated by NCBG staff and published by UNC Press.

Dr. Bell retired as director in 1986 and was succeeded by Peter White. Dr. White led a review of the 1984 long-range plan, resulting in the “Report on Mission, Goals, and Objectives” (1988). Next came the completion of a new master plan by the firm Jones and Jones, approved by the University trustees in 1990. In 1997 the North Carolina legislature granted funds for design of the Herbarium Botanical Library building, one of two new facilities described in the master plan. Then in 2000, with support from a $2.7 million bequest, the staff launched the design of the master plan’s Education Center by Frank Harmon Architects, approved by the state in 2003. The Education Center, designed as a Platinum-level structure within the Green Building Council’s LEED rating system, opened in November 2009.

In the years since its founding, the Garden has acquired responsibility for the four additional major units described below.
Coker Arboretum (part of the Garden since 1982)
Coker Arboretum, fondly known by many as a quiet haven in the middle of the busy University of North Carolina, lies at the heart of one of the most beautiful campuses in the nation. Managed by the NCBG, it is one of the Garden's oldest tracts.

In 1903 William Chambers Coker, the University's first professor of botany and the first chair of the University Buildings and Grounds Committee, began developing a five-acre boggy pasture into an outdoor classroom for the study of trees, shrubs, and vines native to North Carolina. Beginning in the 1920s and continuing through the 1940s, Dr. Coker added many East Asian trees and shrubs. These species, closely related counterparts to many North Carolina native plants, enhanced the beauty and education value of the arboretum. Today the collection consists of a wide variety of plantings including flowering trees and shrubs as well as bulb and perennial displays. The arboretum has something unique to offer during every season of the year.

In April 2003 the Coker Arboretum celebrated its 100th anniversary with exhibits and activities throughout the University’s campus and Chapel Hill. Part of the celebration was the production of a book, A Haven in the Heart of Chapel Hill: Artists Celebrate the Coker Arboretum, that depicts scenes and specimens one might see on a walking tour of this special garden.

Mason Farm Biological Reserve (1984)
Mason Farm Biological Reserve (MFBR) protects natural areas, supports academic research and public education, and provides a place for contemplation and appreciation of the natural world. Mason Farm Biological Reserve and contiguous undeveloped tracts create an approximately 900-acre natural area that connects with the 41,000-acre New Hope Game Lands to the south. MFBR itself encompasses 367 acres and contains a combination of forests and old fields that support approximately 800 species of plants, 104 species of lichens, 216 species of birds, 29 species of mammals, 28 species of fish, 23 species of amphibians, and 67 species of butterflies. In fact, more different species of animals have been recorded at the reserve than in any other comparable-size area in the entire North Carolina Piedmont.

The University received the Mason Farm land in 1894 through the bequest of Mary Elizabeth Morgan Mason, one of the last descendants of the Morgan family who settled in the southeast corner of Orange County in the 1740s. Much of the area has reverted to woodlands, and some of its forests are at least 150 years old, with some trees exceeding 300 years in age.

During the 1960s and 1970s, several portions of this tract were set aside by the UNC Board of Trustees specifically for biological uses. The Mason Farm Biological Reserve was officially established in 1984, and today it is administered by the North Carolina Botanical Garden as both a natural area and a biological field station.

Battle Park (already a well-loved natural area in the late 1800s and part of the Garden since 2004)
On July 1, 2004, at the request of UNC chancellor James Moeser, the Garden assumed responsibility for Battle Park, a distinctive wooded tract on the east side of the University campus and downhill from Coker Arboretum. The tract includes one of the most awe-inspiring legacies of the University and a symbol of the important connection between nature and art: the stone amphitheater known as Forest Theatre.

Although the tract is not a pristine forest, much of the 93-acre Battle Park consists of woodland that predates European settlement in the area ca.1740. The Garden has restored trails there with funding supplied by the University. The park is named for Kemp Plummer Battle, president of UNC from 1876 to 1891. Battle laid out the original trail system and spent many happy and contemplative hours within the forest.

University of North Carolina Herbarium (founded in 1908 and part of the Garden since 2000)
On June 18, 2000, the Southeast’s premier herbarium, the UNC-Chapel Hill Herbarium, officially became part of the North Carolina Botanical Garden. The facility, used by students, botanists, taxonomists, and other professionals from across the Southeast and the nation, currently contains more than 750,000 specimens of plants, algae, fungi, and fossils. Though some specimens in the collection date back to 1835, the herbarium was actually founded in 1908 by Dr. William Chambers Coker. It resided in Davie Hall from that year until 1957 and then moved to Coker Hall. In 2008, the herbarium celebrated its 100th birthday with a gala in Coker Hall. A herbarium is a museum collection of plant specimens and associated label and research data. Herbaria constitute the fundamental documentation of plant diversity. The herbarium specimen is the unit of botanical knowledge. A herbarium is the only authentic source for
identification of plants and their present and past distribution. It helps us understand the changing landscape and serves as the court of last resort for plant identification and distribution issues, including

- new weeds and their spread;
- species poisonous to people, livestock, and pets;
- hay fever-inducing plants;
- blooming and fruiting times;
- medicinal plants and their availability;
- the historical distribution of endangered plants;
- wildflowers and trees; and
- plants of state parks, national parks, seashores, river ways, and wildlife refuges.

Such information is crucial for planning North Carolina’s future as our state and region continue their fast-paced development.

The UNC Herbarium spearheads the identification and study of the distribution and history of plants in our diverse state and is the largest collection of its kind in the Southeast. The National Science Foundation has designated it one of 25 National Resource Centers and one of 105 National Resource Collections and has ranked it third among university collections. The herbarium holds the results of over 150 years of botanical observation and documents the work of hundreds of collectors and botanists. It is a rich archive of field notebooks, maps, photographs, and illustrations. The facility serves all 16 campuses of the University of North Carolina as well as a wide array of other institutions and users, and it has supported the education of hundreds of students at UNC and elsewhere.

Today the lands of the NCBG have grown to comprise some 700 acres, not including 210 acres of nature preserve held by the Botanical Garden Foundation. The Garden is nationally known for its conservation initiatives, educational collections, and diverse programs, including native plant studies, botanical illustration, and horticultural therapy.