

The W.J. Beal Botanical Garden



Volunteer Handbook
2022 Edition

MICHIGAN STATE
UNIVERSITY

MISSION STATEMENT

W.J. BEAL BOTANICAL GARDEN

Michigan State University



Established in 1873 by Professor William James Beal as an outdoor laboratory for the study of plants, the W. J. Beal Botanical Garden is one of the oldest continuously-operated botanical garden of its kind in the United States. With consideration for Professor Beal's own words, "Students should themselves become discerning observers and investigators rather than mere reservoirs of previously accumulated knowledge," the Garden operates with the following mission:

Reflecting the philosophy of a land-grant institution, the W. J. Beal Botanical Garden is an outdoor laboratory engaged in teaching, collection development, research, conservation and public service. These activities focus on a theme of natural plant diversity, economic botany, ecology and plant conservation with emphasis on the Great Lakes region.

To preserve the usefulness and beauty of the displays, Garden visitors are asked to observe the "no picking" rules of the campus ordinance dealing with plant materials.

MICHIGAN STATE
U N I V E R S I T Y

April 30, 2022

Dear Volunteers,

I would like to personally thank you for your contributions to W. J. Beal Botanical Garden. Your efforts and time are critical to our mission of bringing the joy of plants to students, employees, neighbors, and visitors alike. Throughout its 149-year history the Garden has been an oasis in the heart of this bustling campus. Our world is full of crises and uncertainties and only with your help can we continue to provide a beautiful place of tranquility and beauty for everyone, and hopefully educate folks along the way.

When we treat everyone with kindness and respect, and open our hearts to them, they'll come to enjoy the Garden as much as we do. This is no small task that we ask of you, but together hopefully we can make the world a better place for those that visit. Our goal is to make everyone feel like the Garden is theirs—to give them a sense of belonging. With your help, let's make this wonderful place feel like home for everyone.

I want to be sure you know that I appreciate your efforts on behalf of the Garden, and so do Ron and the entire Garden Staff. Please let us know how we can help you or if there is anything you need. Don't hesitate to contact me directly, my door is open. Grow Green!

Yours truly,



Alan Prather
Interim Director of WJ Beal Botanical Garden



W. J. Beal
Botanical Garden

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Beal Garden Web page address:
<http://www.cpa.msu.edu/beal/index.htm>
(Currently under re-construction)

Beal Garden Volunteer Orientation Checklist

After Beal Garden orientation, volunteers should:

Have a volunteer information manual which contains answers to most questions about the Garden and volunteering

Have a general orientation to the locations of various collections in the Garden

Know where the volunteer access box is located and what it contains

Know how to set up and take down for Ambassador evenings or weekends in Beal

Know how to find a plant in beds numbered 1-92 and how to forward questions ambassadors are unable to answer

Know where parking is available (even during football games) and where buses can park

Know that the only dress code requirement for Garden volunteer labor is to wear work boots that includes heavy duty hiking boots or other leather boot; this is a safety requirement

Volunteers will be issued a name tag to identify them as a volunteer. While waiting for a permanent name tag please wear a stick-on label or your Master Gardener name tag if you have one. The Master Gardener name tag may be worn with the Beal Garden name tag or substituted for it. Access box keys are issued on a limited basis.

Beal Garden Volunteer Benefits

- 1) Learning more about Beal Garden and its inner workings.
- 2) Interacting with and engaging the general public and learning from Garden visitors.
- 3) Accessing the human and other resources of Beal Garden.
- 4) Feeling good knowing you are making a contribution to MSU
- 5) Attending the annual recognition dinner, spring and fall potlucks and occasional plant/seed giveaways.
- 6) Accessing information and other events through the Beal Volunteer E-mail list.
- 7) Being part of a larger group of people with similar interests (All MSU gardens volunteers).
- 8) Attending with free or reduced admission the other Gardens participating in the Reciprocal Gardens Program.

HISTORY AND DESCRIPTION OF THE W.J. BEAL BOTANICAL GARDEN

The W. J. Beal Botanical Garden is one of the principal centers of plant interest within the arboretum-like campus of Michigan State University.

Started in 1873 by Professor W. J. Beal, the Garden ranks as one of the oldest continuously operated botanical garden of its kind in the United States. Befitting an installation of the pioneer land grant college was the practical character of the first display, consisting of 140 species of forage grasses and clovers for use by students of agronomy.

In its long history, the Garden has naturally undergone many changes in design and function. Records of the State Board of Agriculture reveal that one of Professor Beal's first projects was to assemble plants native to the state. By 1912, several hundred of these had been brought together to form a rustic garden, arranged systematically by family, occupying about one-third acre. Described as "*a favorite resort for all lovers of nature,*" this Garden was traversed by a brook and nestled amid shaded ponds and bogs. It was greatly disrupted in 1914 when the brook, by then polluted, was channeled underground and the ponds and bogs drained.

In 1950 the Garden was transferred to what was then the Division of Campus Park and Planning, later the Division of Campus Planning and Administration. At that time it was completely redesigned to increase accessibility and aesthetic appeal, and to permit greater circulation and ease of maintenance.

Later development was associated with nearby building activity. Site construction of the Library, completed in 1956, permitted development and incorporation of considerable new area to the east. Similar expansion to the west was made possible when the Women's Intramural building, now IM Circle, was enlarged in 1958.

Following construction activities in the 1950s, the west-facing slope of the area known as Sleepy Hollow was modified to meet the special growth requirements of acid soil plants. Sleepy Hollow is located in the small depression east of the Music building, on the north side of West Circle Drive.

THE GARDEN TODAY

In 1993, a mission statement, collection policy, and list of goals and objectives were written and adopted to help direct and focus the operation of the Garden. The mission statement was drafted with consideration for Professor Beal's own words: "*Students should themselves become discerning observers and investigators rather than mere reservoirs of previously accumulated knowledge.*" Education and research remain significant aspects of the Garden's mission.

As currently organized, the Garden is a display of more than 2,500 accessioned plant specimens occupying some five acres of floodplain and adjacent slopes along the Red Cedar River. The displays are divided into six different collections. The flowering plant systematic collection or plant families collection displays a diversity of plants grouped by family in beds 1 through 40. Currently 162 flowering plant families are arranged according to the newly revised APG (Angiosperm Phylogeny Group) system ac-

ording to the 2009 version, with some fine-tuning yet to come.

The Angiosperm Phylogeny Group (APG) is a large collective of plant taxonomists from many institutions that have devoted themselves to updating the endeavor known as plant taxonomy of the flowering plants. Even though the basic descriptions of plant parts and characteristics as the basis for classifying plants, have been in various levels of adjustment since the time modern plant nomenclature was established (officially designated the publication of Linnaeus's *Species Plantarum*, 1753) many groups have been suspected of ending up with plants designated there that don't technically belong. The APG is the first (and there have been four progressive versions) effort to use all the modern tools at hand to improve our system of plant classification, called taxonomy. Genetic sequencing, secondary chemical products, many signs of evolutionary affinity, and the original

morphological features are all used to assess plant relationships. Part of our effort to re-engage a large number of labels, is to incorporate these well considered changes into our role as presenters of accurate plant information. Someone may interpret a legitimate change as a mistake, but it is not.

The economic plant collection also called useful plants, displays plants in beds 41 through 90 according to how they are used by humans. The plant use categories follow the sequence resembling the chapter organization of an economic botany textbook. Group labels serve to subdivide the major categories into smaller and more cohesive units as do the chapter sections of the textbook.

The ecological collections located on the slopes just north and west of the Main Library include components of Michigan's natural plant communities and plants found in the southeastern U.S. (beneath the yellow buckeye), western U.S. (beneath the Douglas fir) and Europe (beneath the Norway spruce). There is much activity in this area as Volunteers and Staff continue to rehabilitate the herbaceous layer.

The landscape collection contains plants valued for their ornamental qualities. This collection is located mostly on the south and east side of the IM Circle building (formerly the women's gym) and along the northwest border of the Garden. It includes the cork tree (*Phellodendron amurense*) in the lawn south of the brick sidewalk and the katsura tree (*Cercidophyllum japonicum*) in the lawn north of the brick sidewalk. It is said (but not verified by collection records) that the katsura tree was planted by professor Beal. Many people have been married beneath this tree and it continues to be a popular wedding ceremony location today. Another early introduction is the dawn redwood (*Metasequoia glyptostroboides*), the tallest deciduous conifer in the Garden, located on the west edge of the systematic section. It was known only from the fossil record prior to World War II when it was discovered living in China. The specimen in Beal came to us as a young sapling and was planted in Beal in 1952. It is from the original Chinese seed collection brought to the U.S. and grown by the Arnold Arboretum, one of the world's most revered woody plant collections, located near Boston, Massachusetts.

The Michigan native wetland plants collection located in and around the pond (bed 92) consists of species native to Michigan and found in various wetland communities. New interpretive labels were installed in 2001 and an introductory pane is planned for this area.

The endangered and threatened species in Michigan collection located on the south facing slope below the West Circle drive Gazebo contains approximately 11% of the state's rare flora. There is a free brochure associated with this collection and a \$3.00 booklet providing in depth information about the plants and their habitat, available upon request. This collection also has new format labels installed in 2009.

A NOTEWORTHY PLANT:

There are numerous noteworthy plants in the Beal Garden collections, however this one is a relatively recent addition with an interesting story that demonstrates one of the many important purposes of botanical gardens. Stern's medlar (*Mespilus canescens*) is an Arkansas endemic newly described to science in 1990. It was obtained from the Natural Resources Conservation Service (formerly Soil Conservation Service) in Booneville, Arkansas and planted in February of 1997. It has survived the Michigan winters since planting and first flowered in 2000. The discovery and rarity of this plant is so significant that the Missouri Botanical Garden (home of the Center for Plant Conservation - CPC) provided it with its own Web page: <http://www.centerforplantconservation.org/>. In Beal it is located on the east side of the steps down from the Gazebo and behind the Astera-ceae of the families section. Mid Michigan is considered zone 4 by Arnold Arboretum standards and zone 5 by U.S.D.A. standards. Testing hardiness of plants is one historically important aspect of botanical gardens that continues today in Beal.

The final collection that has been initiated is the non-flowering vascular plant collection which will include gymnosperms (conifers, cycads, ginkgo etc.) and pteridophytes (ferns and their allies). The non-flowering vascular plant collection, the sequel to the present systematic families collection of flowering plants, is located along the south and east side of the IM Circle building.

OTHER SUBJECTS TO BE FAMILIAR WITH

The A. Gordon Adams Jr. Shade Arbor was constructed in 1996, then refurbished in 2009, to better accommodate 2 families of flowering plants that were intended for the systematic or plant families collection since the classification system (i.e. order in which the families are presented starting with bed # 1) was changed in the early 1990s. This interesting architectural feature also provides a more inviting entrance at the northeast corner of the Garden. It is constructed of western red cedar (*Thuja plicata*) and is periodically coated with a protective sealer. Sand and acid soil amendments were made and several new plants were planted under it in 1997. Some of these new plants include oconee bells (*Shortia galicifolia*), alpine violet or hardy cyclamen (*Cyclamen hederifolium*) and wandflower (*Galax aphylla*). A new map case, brick work and plantation teak wood benches were also installed. All of these new features were made possible by a gift from A. Gordon Adams, Jr.

The Beal logo is based on the flower of the longest lived seed in the Beal seed experiment. The logo was designed in 1997, slightly modified in 2008, and may be seen on the large map case at the northeast end of the Garden. The staff picked the flower of moth mullein (*Verbascum blattaria*) as the center of the logo design. This species is significant to Beal Botanical Garden since it is the only plant which has consistently germinated in Professor Beal's long term seed viability study, the longest continuously running experiment in the country, if not the world. This species represents one of Professor Beal's significant contributions to botany and also symbolizes the longevity of his work. Beal's seed experiment was most recently updated at MSU's Department of Plant Biology in 2021 and several (141 year old) seeds of the biennial moth mullein germinated. The descendants of these experimental plants will be found in bed 69, on the slope near the Stern's medlar behind bed 40, and east of the Johnny Appleseed tree east of the Beal shed.

The white shelter on the cut stone foundation at the top of the stairs on west circle drive is known as the Gazebo. The roof and wood of this shelter was moved in the 1940s from the Cowles (pronounced 'coals') House (home to MSU presidents). The Beal shed is the structure in the southeast corner of the Garden near the pond. It was built in the 1960s and

houses maintenance tools, equipment and the volunteer access box around the back. The Garden has an additional storage area.

The storage area indicated by a door under the bridge support, at the north bank of the Red Cedar, is the Library storage area or "bus stop," used by Staff and Garden Labor Volunteers. This is where garden carts, sandwich board signs and other Beal equipment are stored. A key to it is stored in the Volunteer Access Box.

BEAL GARDEN SAFETY AND SECURITY

During Spring Garden Orientation, we will review safety and security concerns on campus and in the Garden. To be prepared, if you have a cell phone, we recommend that you carry it while working in the Garden, especially in the evening or on weekends. In an emergency, dial 911, to contact Campus Department of Public Safety (DPPS) dial 355-2222. Maybe add this to your speed dial group. It is also important to know that the green light phone is located south of the vegetable beds next to the sidewalk near the Red Cedar River. This phone can be used to dial any campus numbers (using the last 5 digits). To call 911 push the red button. You will be directly connected with DPPS. When in doubt or if you feel in danger or threatened by any one or in any situation, call DPPS! If you see anything that should be reported to the police that is not an emergency (i.e. vandalism or stealing plant material) call the campus police number above. Be a good observer and be prepared to give the officer a description of what the person looks like, was wearing, and what direction they were heading.

REMEMBER: It is NOT the duties of the Beal Volunteer to enforce the law. That is the job of the campus police. If you see someone breaking one of the campus regulations such as picking plants, damaging labels, or littering, and they ignore your warning, back off and report it to a Garden employee, or if an employee is not around, call DPPS. If you feel threatened by anyone, don't confront them. Retreat to the Library or somewhere where there are other people, and call 911 for help. Your safety is very important. We have had very little trouble in the Garden, but we need you to be aware of the potential or possibility that anything can happen at any time. Stay alert for weather warnings as shown by tornado sirens, or lightning strikes as reasons to withdraw to safety.

FREQUENTLY ASKED QUESTIONS

Parking is a major concern for everyone!

FOR VOLUNTEERS WORKING DURING REGULAR HOURS, parking cards are available for faculty staff lots SOUTH of the Red Cedar River. Please let Frank or Katie know if you need one or pick one up in the Volunteer Access Box. Be sure to sign out for the permit. DURING FOOTBALL GAMES parking is very restricted and expensive. Volunteer parking cards are invalid on game days. Please consider being dropped off, riding a bike into campus and (or) arriving for Ambassador shifts extra early.

1. “Where is the closest place to park?” There is metered parking on West Circle Drive and a gated pay parking lot south of the Red Cedar River, near the stadium. Volunteers may receive a parking card for the gated lot 62W, just north of the stadium (not valid on football home-game days). On weekends and after 6:00 p.m. most lots on campus have no parking restrictions.
2. “Where is the butterfly house?” The butterfly house is located in the Horticulture Greenhouses at the Plant and Soil Science Building on the corner of Bogue and Wilson Road. It is open from March 16 to April 30, 2015. The hours are from 2:00 to 4:00 weekdays, and 10 to 4 on weekends. It was moved from the old botany greenhouses, located on north campus in 1997 and most of those greenhouses were torn down in 1998; the rest in 2013.
3. “Where is the bathroom!?” The closest facilities are located in the Main Library, first floor and the IM Circle Building (formerly called the women’s gym).
4. “How do I get to _____?” Please use the goldenrod colored brochure called “Things to See and Do at MSU”. This brochure contains a simplified map of the campus, with the Horticultural Demonstration Gardens, Dairy Store, Butterfly House and more clearly marked.
5. “How deep is the pond?” The Beal pond is about 3.5’ deep.
6. “Do the goldfish live over winter?” Yes, most do. The goldfish are able to survive under a thick layer

of ice (up to 8”) that forms on the surface. The water level is lowered before freezing temperatures set in so that the coping (cement lip) around the pond does not break off.

7. “What do you do with the plants in the winter? I know some of them are not hardy here.” Although most of the Garden contains herbaceous perennials, there are tropical plants, tender bulbs and cuttings that are held over in the Beaumont Nursery greenhouse during the winter months.
8. “How many people does it take to manage this Garden?” There are 6 full time staff responsible for curating and maintaining the Garden, the director, the curator/collections manager, a plant recorder, a database manager, and 2 botanical technicians. During the growing season additional labor hours are provided by seasonal employees including part-time students.
9. “How many plants are in the Garden?” At the moment there are over 2,500 accessioned plants growing in the beds; we have not finished recording and mapping every single plant on the nearly 6 acres that Beal Garden covers, but the estimate has been 5,000.
10. “When does the Garden look its best?” The Garden contains a huge diversity of plants that bloom from March to November. Spring is one of the best seasons in Beal Garden as well as autumn. Most plants bloom sometime over the late spring and summer months. The Garden contains plants that are valuable in the winter landscape as well.
11. “I’m looking for _____ (common name). Do you have it growing in the Garden?” Finding the Latin name when given a common name is challenging at first and can be the most rewarding aspect of volunteering in Beal. Please refer to Helping Visitors Locate a Plant of Particular Interest in this manual (p. 14).
12. “Why are you growing weeds here?” A section of the economic collection is devoted to maintaining

different weedy species for a number of reasons: as an identification resource, because they are of economic concern (we spend millions on their eradication annually), and many have useful attributes and are grown elsewhere in the Garden because of those attributes.

13. “Do you have any problem with animals in the Garden?” Frequently rabbits, woodchucks and (or) muskrats eat existing or newly planted plants. They are discouraged by wire cages placed around their favorite plants. Cages of various sizes are also used as plant supports.

14. “Can I have a cutting/seed of this plant?” The short answer is a polite “no,” however, this answer is usually better understood when one explains that Beal is a public garden and if everyone who wanted a cutting of plant X could have one, there would be nothing left for the public to enjoy. You can help them by suggesting commercial firms where they might obtain plant X, or use the Andersen Horticultural Library’s Source List of Plants & Seeds, located in the Volunteer Access Box, also available right next door at the Main Library.

15. “Do you ever divide or throw away any plants in the Garden?” Yes. Even though perennials are divided occasionally; this material, discarded in a refuse pile, cannot be taken. [MSU Property Removal Ordinance # 29.01]

16. “Do you ever sell any of the plants growing in the Garden?” No. We have not investigated the procedures for having a W. J. Beal Botanical Garden plant sale. The Horticulture Gardens on South Campus have a perennial sale in the spring.

17. “What do you do in the winter?” The full time staff have various winter duties. It is a time to catch up on computerized records, produce the International Seed Exchange list, fill orders based on the list, select seed from other institutions seed lists, write and install interpretive labels for Beal and Campus Woody Plants and plan for the following year.

18. “Are there other Gardens on campus?” Yes! On North Campus there is a park-like area south of the Old Horticulture building, west of the Student

Services building and north of the Natural Science building. This area used to be the horticultural gardens. In the mid 1990s it was redesigned and planted; the focal point of this garden is a shallow pool with a fountain. On South Campus, the Horticultural Demonstration Gardens (dedicated in 1993) are located around the Plant and Soil Science and Plant Biology buildings. There one can see a riot of color in annuals, a continuously blooming perennial garden, the 4-H Children’s Garden and many others, including the Clancey E. Lewis Arboretum.

19. “I’ve never been here before. Is there a map of the garden?” One can either direct an individual to the general brochure box (this brochure includes a map) or give them a brief introduction to the Garden and help orient them according to their specific interest. Also the goldenrod colored brochure called “Things to See and Do at MSU” can and should be handed out to visitors needing a map. Volunteers usually have a handout map for both Beal and the other great MSU gardens.

TEN STEPS TO AMBASSADOR SUCCESS IN BEAL GARDEN

1. Arrive 5 to 10 minutes early and sign in the time you arrived and the activity you are participating in (ambassador or tour guide). Please review the Ambassador schedule in order to know who the other volunteer(s) are during your shift and who is coming in after you. Be sure to pick up your name tag. If you do not yet have a name tag please use a temporary “Hello My Name Is” one. If you need another one leave a note on the board for me (Frank). Take time to talk with and learn from Ambassadors who are ending their shift.

2. If you are the first to arrive please check for vandalism and (or) broken glass. Plastic bags are available in the Volunteer Access Box to collect broken glass. If there are other signs of vandalism (i.e. broken labels, trellises, plant cages strewn about etc.) please set them out of the way, behind the shed. A quick run through the Garden and its perimeter at any time of year will acquaint you with what is currently in bloom and help you direct visitors to interesting areas. Please be sure (if checking for vandalism) to check a) the pond b) the gazebo, c) any areas with benches d) sidewalks along Kalamazoo Street

and West Circle Drive and the Red Cedar River, d) pools with fountain on the north side of the Library.

3. Check the brochure boxes: the general brochure box is located just south of the sidewalk near the stairs leading up to the gazebo; the Endangered & Threatened (ET) Species brochure box is at the south end of that collection which is on the slope just south of the gazebo; the main map case is located next to the shade arbor in the families section. Brochures are located on the bottom shelf of the right hand side of the Volunteer access box. If we run out of brochures please leave a message by calling 5-9582 (the Curator's office) on the green light phone located near the Red Cedar River.

4. Set up card table and chairs near the pond or in some shade, wherever you like, so visitors can see your presence. Stroll the Garden and talk with visitors.

5. Ambassadors should walk through the Garden, welcome and (or) chat with visitors and direct them to points of interest (plants currently in bloom or plants of special interest to you). Please note that some visitors may want to be left alone (e.g. young couples etc.). You will get a sense of this prior to or when you approach them.

6. Materials that visitors can take with them include "How many Latin names of plants do you already know?" and "Things to See and Do at MSU" (which contains a good campus map). Handouts for visitors are located in a file folder called Visitor Handouts in the plastic wall shelf inside the Volunteer Access Box. If you run out of any call my office (5-9582) on the green light phone or leave me a note on the Volunteer access box bulletin board. Please do not hand out Beal brochures or ET brochures. You may direct visitors to those areas and let them decide whether to take a brochure.

Call 911 for any emergency. If you feel threatened, LEAVE and call 911.

7. Visitor question cards should be filled out by Volunteers or at least have the Volunteer's name on it (so we can call you if we don't understand the question, your handwriting etc.).

8. If for any reason, you cannot complete your shift please let other volunteers know AND call the curator and/or the volunteer coordinator with the details.

9. Garden Volunteers are not responsible for enforcement of ANY Campus ordinance (example: "no picking"), however, if you do see people picking or collecting seed in the Garden, please inform them of the campus ordinance prohibiting plant collection of ANY kind without a permit. Permits may be obtained through the Curator. If visitors continue to pick or collect seed you may call 5-2221 on the green light emergency phone (press 2 as soon as the recording is heard). This is the number for Police and Public Safety, the department that is responsible for enforcement. Dogs occasionally appear in the Garden and they are allowed. One may offer the owner a plastic bag (from Volunteer Access Box) to clean up after their pet and take with them. However tempting, do not attempt or allow any weed pulling from the beds.

10. Closing down the Volunteer Ambassador station: After placing card tables, chairs, etc. back into the Access Box please be sure to latch the 2 hinges on the inside of the left door so the left door is secured. Please lock the pad lock when leaving and be sure to sign out.

A NOTE FROM

MIKE JONES,

FORMER BEAL GARDEN BOTANICAL TECHNICIAN (21 YEARS)

Visitors seem to be impressed with the scope and level of care that exists in the Garden. They seem to seek more of a general orientation. Especially in the evenings when we have been working late, people really enjoy coming up and talking with us. They don't necessarily want a guided tour, but a point of contact during their visit to the Garden. They like to feel connected with someone in the Garden. A few minutes spent talking with a visitor makes their visit more memorable.

One of the frequently asked questions in the Garden is “Do you have _____ growing here?” Most often the visitor will give you a common name which can vary so much that it can become as frustrating as some feel scientific names appear initially.

The way to find the scientific name is to use one or both of the references¹ on the 2nd from top shelf in the Volunteer Access Box. The light green one is *Bailey’s Manual of Cultivated Plants*, the dark green one is Gleason & Cronquist’s *Manual of Vascular Plants*. Both have an index at the back including common names and will in most cases contain the common names of plants grown in Beal. These two are the most inclusive references, however, there is a common name index the Andersen Horticultural Libraries Source List of Plants and Seeds which also provides sources of plant material. *Botanica* is another encyclopedic reference which has color pictures.

Once you have found the common name you can look it up in one of the references and find out the Latin or scientific name. The scientific name is needed to find where the plant is located in the Garden. The Beal Plant List contains all acces-

sioned plants located in Beal Garden and surrounding areas including labeled plants in beds 1 - 92 and unlabeled plants in beds 93 - 99. They are listed in alphabetical order by scientific name. You can refer the visitor to plant locations in bed number(s) 1-92, however plants in areas numbered above 92 are not labeled. Please familiarize yourself with the Beal Plant List (and Bailey, Gleason & Cronquist, and Voss & Reznicek) by practicing looking up plants by common name. There is a Guide to using the Alphabetical listing of Plants in the W. J. Beal Botanical Garden located at the front of the alphabetical list for a thorough explanation.

Please feel free to bring and use your own references and keep in mind the volunteer access box is for you to protect your belongings while volunteering in the Garden.

If you take the references out to the card table during your volunteer time please be sure to keep your eye on them. Take them with you or lock them in the access box when you visit the rest rooms or stroll throughout the Garden.

European snow drops,
Galanthus nivalis, near the
Metasequoia glyptostroboides,
Dawn redwood, is probably
our earliest spring flower at
the Beal Botanical Garden,
usually appearing in early
to mid-March; is also in the
Medicinal Collection.



VISITOR QUESTION (Available on cards)

W. J. Beal Botanical Garden, Michigan State University

If a visitor desires additional information regarding some aspect of the Garden or plant(s) growing here, please jot it down here and leave it in the Volunteer Access Box behind the shed. Please include the visitor's contact information to allow receiving a reply.

Date & Question:

Name:

Address:

Phone number:

Fax or E-mail:

Office use

Date request completed

Time spent

This form, available on cards or in the volunteer access box at the back (north side) of the Garden shed, can be used for visitor's questions. It is intended to assist volunteers in answering questions. It's always O.K. to say, "I don't know the answer to that" usually preceded by "That's a good question." If a visitor really wants to know the answer to a question that cannot be answered immediately, they will be willing to write it down. The written questions can be deposited into the question box provided in the volunteer access box. They will be answered by Beal Staff.

GUIDELINES FOR BEAL GARDEN TOUR GUIDES

Group tours should be arranged at least two weeks in advance by calling (517) 355-9582, ask for Dr. Peter Carrington or Dr. Alan Prather, or by emailing Ron Overton (bealgarden_volunteer@msu.edu). Fees for guided tours are: \$2.00 per adult and 1.00 per student/child. There is a minimum charge of \$20.00 for tours. An average tour of Beal Garden will last up to 1 hour. Tour fees are used to cover Volunteer program expenses and to purchase references for the Garden.

BUSES MAY DROP OFF TOUR GROUPS at the Garden and should be directed to the Mt. Hope Avenue/Farm Lane Commuter Lot.

- 1. Preparation:** Arrive 15 to 20 minutes before scheduled tour to:
 - sign in on volunteer hours log sheet located

in the Volunteer Access Box.

- pick up your name tag and tour confirmation letter that you will complete.
- review what tour participants will see (plants in bloom) and what you might highlight during the tour.
- meet with other guides (if it's a large group) to coordinate tour paths so different groups don't run into each other.
- wait in the designated area for the group's arrival; if they do not arrive within one half hour of their scheduled arrival time, you may record "no show" on the tour confirmation letter and leave it in the Volunteer Access Box.

- 2. Welcome:** This is a 5 to 10 minute period when the group leader(s) offer an explanation of what the purpose of the particular collection is (mission statement/history),

what the group(s) will see in the given time and what they might be back to see during another part of the season.

If it is raining or the sun is unbearable, find some cover or shade to deliver your welcome. Be sure to mention:

- where they can find restroom facilities (hopefully they will have used these already).
- how long the tour will last (you might check with group to verify the amount of time they have to spend).
- other areas of botanical/horticultural interest on the Campus.

3. Assess the group: During your welcome you should look over and make note of very young or old individuals or anyone less able than yourself. Be sure all participants can hear you and if you want them to stay in a group, tell them. This is a time also to tell teachers/parents that you expect and appreciate their supervision of the group during the entire tour period. Don't be afraid to ask the students or teacher(s) what they've been studying or what they might be interested in seeing in order to get an idea of their understanding of gardens or plants in general.

4. A few pointers for an effective tour:

When you stop to offer explanation of an area or particular plant, address the entire group. Wait for stragglers if you must, but try to hold the interest of those who follow you closely.

As you lead a group through the garden, "sign-post" the next part of the tour by telling them where they are headed next and (or) what they will see next.

Face the group as you speak to them; try not to mask what you are showing them. Sometimes you can accomplish this by stepping in or on the other side of a bed but do not encourage others to step in the beds.

Speak clearly and do not give too much detail; chances are your audience knows very little about plants or gardens.

Be kind and compassionate to rude or unthinking people. If there is a disciplinary problem among school children ask the teacher(s) to

control his/her class.

5. Have fun! People generally can't help but get excited and be interested when they see that you like what you are doing. If you are asked a question you cannot answer don't worry because it's perfectly acceptable to say "I don't know." I say it all the time! You might direct them to the appropriate staff or the volunteers at Horticulture's Visitor Information Center on the southwest side of the Plant & Soil Science building.

6. End of Tour: Invite all participants to linger or come back to see something of interest at another time of year and thank them for their interest. Tell them of any additional theme tours you have available and about other areas ("the commercial") of horticultural/botanical interest on Campus. If a handout such as Campus Attractions is available, you might let them know about other points of interest listed on that sheet. Complete any forms relating to the tour group (tour confirmation letter or tour request form) and offer brief comments regarding problems, how handled, and how they might be better handled in the future.



Common knotgrass,
Polygonum aviculare.

A LIVING ENCYCLOPEDIA OF PLANTS

There are about 250,000 known species of flowering plants in the world. In order to understand the patterns of diversity and evolutionary relationships in such a large number of species, a special branch of biology, called taxonomy, has been developed. Taxonomists arrange or classify species into a system of groups according to a hierarchy. The classification of moth mullein, *Verbascum blattaria* (the symbol for Beal Garden) is shown next page:

Kingdom	Plantae	the plant kingdom
Division	Magnoliophyta	the flowering plants
Class	Eudicota	the dicot flowering plants
Subclass	Asteridae	one of 6 subclasses of eudicots
Order	Lamiales	one of 14 orders in the Asteridae
Family	Scrophulariaceae	one of 16 families in this order
Genus	<i>Verbascum</i>	one of 87 genera in this family
Species	<i>blattaria</i>	one of 360 species in this genus

This section of the Garden showcases the 3 classes of flowering plants: magnoliads, eudicotyledons and monocotyledons. These terms refer to the number of seed leaves (cotyledons) best seen at the seedling stage (except for few primitive angiosperms). A number of features that distinguish eudicots from monocots are listed in the table.

Monocots are considered derived from primitive dicots, initially aquatic types. Although monocots are predominantly herbaceous plants, tree forms do occur in

warmer regions and the tropics; bamboo and palm are examples. Even though most dicot species are herbaceous, they include the vast majority of woody plants on our planet.

There are 11 subclasses and over 100 families of flowering plants represented in this collection. The sequence in which the subclasses and families are arranged follows the classification system by the APG (Angiosperm Phylogeny Group) system according to the 2009 version.

CHARACTERS THAT DISTINGUISH EUDICOTS (DICOTS) FROM MONOCOTS

Character	Eudicotyledonous	Monocotyledonous
Cotyledons (seed leaves)	2	1
Leaves	Typically net-veined	Parallel-veined
Primary vascular bundles	In a ring	Scattered or in 2 or more rings
Floral parts	Sets of 4 and 5	Sets of 3
Habit	About 50% woody	About 10% woody

Plants are classified partly on characteristics of their flowers, fruit and development. Recent research in molecular biology offers insights into evolutionary relationships not always apparent in morphology (how the plant looks). Note that species within the same genus look similar as do flowers of different genera in the same family. One may notice common threads of organization and structure throughout the diversity shown here.

USEFUL PLANTS

Plants are absolutely essential to human existence. Early humans evolved with plants, using them for basic needs. Today we are no less dependent on plants than our early ancestors were. Economic botany is the study of plants used by people, especially as sources of food, clothing, drugs and products used in industry.

This section of the Garden comprises a collection of plants grouped by economically important cat-

egories. There are 11 major categories represented in beds 41 through 90. Plants in certain categories (such as dye, injurious and medicinal plants) are further subdivided into smaller units similar to chapter sections of traditional economic botany textbooks.

Individual plant labels provide information about each species including how it relates to the particular category. Some plants are repeated throughout different categories because they have multiple uses.

A WORD ABOUT COMMON NAMES

Common names are used locally and may offer anecdotal, historical or otherwise useful information. However, common names often vary over a plant's geographic range or with its use, causing potential confusion. Although Latin or scientific names may be challenging to learn or pronounce, they provide a standard understood around the world. And even more than common names, their meanings are descriptive of the plant.

INDEX OF PLANT GROUPINGS IN THE BEDS

Systematic Section Bed Numbers

MONOCOTYLEDONOUS PLANTS (Monocots)	1-6
DICOTYLEDONOUS PLANTS (Dicots)	7-40

Economic Section Bed Numbers (also on interpretive sign next to bed 40)

DYE PLANTS

I. Commercial	47
II. Old World Domestic	47
III. American Indian	43, 45

FIBER PLANTS

I. Soft fibers	44, 46
II. Hard fibers	44
III. Surface fibers	42
IV. Pseudo-fibers	42

FIXED OIL PLANTS 46, 48

FLAVORING PLANTS 49, 52, 54, 56

GRAIN PLANTS 77

HONEY PLANTS

I. Cultivated	48, 50
II. Native and naturalized	50, 51

INJURIOUS PLANTS

I. Hay-fever	53
II. Mechanically injurious	53
III. Milk-tainting	55
IV. Contact dermatitis	55, 57
V. Photodynamic	57
VI. Cyanogenic	59
VII. Cultivated	59
VIII. Field and forest	60, 61
IX. Poisonous seed producers	62

MEDICINAL PLANTS

I. Official	78, 79
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NOTES

W.J. Beal Botanical Garden
Volunteer Program Evaluation

All Beal employees and volunteers, and consequently the entire University can benefit from the observations, comments, and suggestions that you may offer here. Please take a moment to answer the following questions about your experience in Beal Botanical Garden. A copy will be provided upon request.

1) What type of volunteer activity are you involved with at Beal Garden?

a) Garden Ambassador b) Work Group/Garden Volunteer c) Tour Guide

d) other _____

How long have you been volunteering in Beal?

a) one season b) two seasons c) three seasons d) _____ seasons

2. Do you feel volunteering in Beal is a rewarding experience? yes no

Can you suggest anything that would make the experience more meaningful? _____

3. Did you find the orientation and supervision by staff sufficient? yes no

Any suggestions for improvement in these areas? _____

4. What is your overall impression of the W. J. Beal Botanical Garden?

Would you consider volunteering in the W. J. Beal Botanical Garden again?

5. Additional comments or suggestions (attach additional sheet if you need more space):

Name _____ Date _____

Please return completed form to Dr. Alan Prather, via Campus or regular mail to

W. J. Beal Botanical Garden
408 West Circle Drive, Rm. 207
Michigan State University
East Lansing, MI 48824

THANK YOU VERY MUCH FOR YOUR HELP!

VISITOR QUESTION CARD

W. J. Beal Botanical Garden, Michigan State University

If a visitor desires additional information regarding some aspect of the Garden or plant(s) growing here, please jot down their question(s) on this card and leave it in the Volunteer Access Box behind the shed. Please include the visitor's contact information to facilitate their receiving a reply.

Date: _____

Question: _____

Visitor's Name: _____

Address: _____

Phone number(s): _____

Fax or E-mail: _____

OFFICE USE: Date response completed _____	Time spent _____
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VISITOR QUESTION CARD

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