



Woodland Campus

Indiana
University -
Bloomington
**A Historic
Walking
Tour**

The

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Introduction

The late Paul Weatherwax, an IU alumnus, faculty member, and eminent botanist, wrote in 1974:

Within the memory of alumni and former students, Indiana University has grown to be one of the great educational, cultural, and scientific centers of the world. A unique facet of its many-sided character is its campus with much of its original association of plant and animal life. There are few places in the world where great laboratories, classrooms, libraries, auditoriums, and other such centers of intellectual and artistic creativity are located in an environment which retains its primeval character—few places where one may so quickly and so completely cast off the tensions and anxieties of this complex modern world in quiet meditation. The tradition of a green campus and natural areas continues with the support of the IU Administration. We are fortunate to have easy access to the luxuriant forests of southern Indiana that have been specifically dedicated for teaching and research.

This brochure was inspired by Weatherwax and his publication, *The Woodland Campus*, which highlighted the natural beauty of the forests of Indiana University–Bloomington. Weatherwax, a student and faculty member at IU from 1914 to 1959, wrote and published the first version of *The Woodland Campus* in 1966, with subsequent revised publications following.

With generous support from the Indiana Department of Natural Resources Community and Urban Forestry Program, this brochure was written and published in hopes that a new generation of students, faculty, staff, and visitors to Indiana University–Bloomington will be inspired by the woodland campus.

History of the Woodland Campus

I want to say at the outset that I don't think I have ever been at a more beautiful university commencement than this. I shall always keep in mind this scene here in the open by the University buildings, a university which, in what we are apt to think of as a new nation, is approaching its centenary, here under these great trees, these maples and beeches, that have survived over from the primeval forest . . . it is a sight I shall never forget; it will always be with me. . . .

~ *Former U.S. President Theodore Roosevelt,
1918 IU commencement speech*

Roosevelt was right to note the natural beauty of Indiana University's campus, much as the university's own Board of Trustees had in 1884 when making a site report to the governor of Indiana as the university prepared to move from its original location in southern Bloomington. "A site unsurpassed in the state for its natural beauty and fitness for the purpose," they wrote of those 20 acres that were then at the eastern edge of the city.

Known as "Dunn's Woods," this original portrait of southern Indiana woodland remains intact to this day as the university has continued to expand from its original quadrangle of buildings around those woods to encompass nearly 2,000 acres. And as Dunn's Woods was the heart of the original campus, the university's commitment to preserving a woodland character with abundant green space has been at the heart of its ongoing expansion.

Early credit for the university's predisposition toward protecting the natural beauty of the campus goes to David Mottier, head of the Botany Department at IU from 1898 to 1937. Charged in 1913 with initially developing an overarching "plan for the walks and drives" on campus, Mottier has been recognized as one of the first to advocate preservation of the woodland campus aesthetic.

By 1929 the world-renowned Olmsted Brothers of Brookline, New York, had been hired to design a plan for the campus, and in their 1939 report to campus administrators, the designers of New York City's Central Park strongly advocated for retention of Dunn's Woods as a park.

Philosophically underscored by IU's iconic president Herman B Wells through both his words

and his actions over a career that spanned eight decades, IU's woodland campus—cited repeatedly as one of the five most beautiful in the nation—remained central to the university's commitment to learning, research, and service.

Establishment of Campus with Dunn's Woods

Since its purchase by Indiana University, Dunn's Woods has never been cleared or harvested and has consistently been managed naturally, with only minimal human intervention. Still protected by 19th century university bylaws, trees can only be cut when they fall naturally from old age or storm damage and then block a path.

Moses Fell Dunn sold the 20-acre parcel to IU in 1883 for \$6,000 and the former farm remained a central community gathering site, serving as a location for celebratory barbecues, for community speechmaking, and, today, as an informal research and teaching area. All the while its peaceful ambience has continued to provide a place of tranquility and introspection for the university community and its guests.

Considered the hub of the university's original Old Crescent—that group of historic buildings in the southwest corner of campus that includes Owen, Wylie, Maxwell, Lindley, Franklin, and Kirkwood halls—Dunn's Woods is the original undeveloped remnant of that 20-acre parcel and today remains

An aerial photograph of the central campus of Indiana University during autumn. The image shows a dense forest of trees with vibrant orange, yellow, and red foliage. Several large, historic stone buildings with gabled roofs and dormer windows are visible, interspersed among the trees. A winding road or path cuts through the campus. The text is overlaid on the upper left portion of the image.

*Arial view of central campus, featuring
Dunn's Woods at left.*

an exemplary natural showcase of southern Indiana's natural flora, where mature tree species of Black Walnut, Sycamore, Yellowwood, Northern Red Oak, Burr Oak, Ohio Buckeye, Basswood, Shagbark Hickory, Ash, American Beech, Sugar Maple, and Red Maple can all be found.

IU President Herman B Wells

Prior to his death in 2000, Herman B Wells had initially refused to support an effort to have a life-sized bronze sculpture of himself erected on campus to commemorate his more than 25 years as president and nearly 40 years as chancellor.

But Wells changed his mind, then-IU Foundation President Curt Simic later recalled, only after it was suggested that if Wells' likeness were placed at Dunn's Woods it would help protect the campus trees for future generations. Needless to say, the bronze was completed and the life-sized likeness now sits on a park bench next to the picturesque woodland (noted on the tour).

During his tenure, the breadth of IU's Bloomington campus bounded from just 137 acres in 1937 to more than 1,700 acres by 1962, and during that growth Wells explicitly advocated for the retention of woodlands and green space.

"To cut a tree unnecessarily has long been an act of treason against our heritage and the loyalty, love, and effort of our predecessors who have preserved it



for us,” he once said. Despite rapid development and demands for more buildings as enrollment burgeoned, Wells remained committed to the environment throughout his leadership at IU.

Cox A

Completed in 1984 on the site of IU’s original Memorial Stadium and named the Jesse H. and Beulah Chanley Cox Arboretum in 1997, this ideal site for relaxation and study offers an additional touring opportunity to view examples of outstanding and unique flora on the IU campus. Nestled between the Herman B Wells Library, the Kelley School of Business, and the School of Health, Physical Education and Recreation, the 11-acre arboretum and its primary point of reference, Hemlock Hill—the highest point in the arboretum—were first envisioned by Wells’ favored landscape architect, Holland native Frits Loonsten.

Set in a gentle rolling valley that settles toward a kidney-shaped pond, the arboretum provides guests with examples of both native and non-native flora identified by placards throughout the grounds. “I really think we don’t introduce our children enough to nature,” Loonsten told local reporters when asked about the arboretum prior to his death in 1989.



Cox Arboretum

Herman B Wells statue



Current Projects and the State of the Woodland Campus

With such a rich history of tree care and preservation, Indiana University–Bloomington continues to manage the woodland campus today with the spirit of tradition instilled by leaders of the past, but with new, innovative tools and techniques that have built upon its reputation of natural, wooded beauty. Through collaboration among faculty, students, and staff, recent efforts have bolstered the university’s management of the woodland campus, including a tree management inventory program, as well as designation as a “Tree Campus USA.”

Campus Tree Inventory

Managing the woodland campus requires an inventory of it. Prior to 2007, IU–Bloomington maintained only an inventory of trees that had been donated to campus; a complete inventory of the woodland campus did not exist. Through collaboration between the Task Force on Sustainability and the Landscape Architect’s Office, an ongoing *Campus Tree Inventory Internship* was undertaken in 2007 with the hope of establishing a constant system for monitoring the woodland campus conditions.

Inventory protocol calls for information collected on individually planted trees including a tree’s species, diameter at breast height (or DBH, which is a proxy for tree age), height, and condition. In addition, the location of each individual tree has been recorded using Global Positioning System (GPS) instrumentation that allows for accurate mapping. A database is used to manage inventory data, from which one can summarize the tree demographics of the woodland campus. Even more exciting has been the use of U.S. Forest Service software that has allowed tree inventory interns to calculate trees’ ecosystem service values. The following section details the currently inventoried tree demographics and economic value added by trees’ ecosystem services on campus.

Campus Tree Demographics and Ecosystem Services

Ecosystem services are the all-too-often unrecognized benefits that trees provide, including air quality improvement, carbon storage and sequestration, energy savings from shading buildings,



stormwater interception, and aesthetic quality, to name a few. Most of these services can be given an annual dollar value based generally upon the costs of equally beneficial human infrastructure that would be required to replace the trees' services. In general, the larger the tree, the larger its canopy, the more ecosystem services it provides.

The most populous species in the currently inventoried portion of campus include Sugar Maple, Red Maple, Black Cherry, Northern Red Oak, Silver Maple, and Flowering Dogwood. The trees in the current inventory were found to be in good condition and distributed well across different age classes, promising a sustainable tree population for generations to come. Canopy cover, or the area covered by tree canopy projected onto the ground's surface, was estimated to be 47 percent within the IU campus boundary (including the heavily wooded Research and Teaching Preserve), 7 percent higher than the recommended 40 percent canopy cover for cities east of the Mississippi River. The calculated net annual dollar value of the benefits provided by the currently inventoried trees is estimated at over \$400,000! If this information is extrapolated to estimate the value of all trees on campus, it is safe to say that IU and the City of Bloomington garner at least \$1,000,000 in ecosystem services each year from the woodland campus.

Tree Campus USA Designation

Given its amazing tree population and the services that these trees provide, it is no wonder that in 2008, IU was designated as a "Tree Campus USA" by the Arbor Day Foundation—among its 29 inaugural designees. The Tree Campus USA program was modeled after the Arbor Day Foundation's Tree City USA program, of which Bloomington, Indiana, is a designee and the oldest "Tree City" in the state. Tree Campuses are recognized for effective management of campus trees, urban forestry collaboration with the community beyond campus, and engagement of students in urban forestry. Specifically, a Tree Campus USA is required to have (1) a campus tree advisory committee, (2) a campus tree care plan, (3) a campus tree program with dedicated annual expenditures, (4) an Arbor Day observance, and (5) service learning opportunities related to urban forest management for its students. IU has met these requirements and plans to maintain its status as a Tree Campus USA indefinitely.

Urban Forest Management Research

IU's woodland campus provides not only green space for relaxing, socializing, and studying, but also it provides a living lab for urban forest management research because, after all, the woodland campus resides in the urban core of Bloomington. Although the field of urban forest management is relatively new, IU has made great strides within it. IU's School of Public and Environmental Affairs (SPEA) offers an Urban Forest Management course each spring. In addition, IU researchers have worked with Bloomington's city forester to complete a 100 percent inventory of all street trees within the city, including those within the woodland campus. Several researchers on campus have worked with remotely sensed data and GIS software to delineate the tree canopy cover on campus and in the City of Bloomington. In addition, a graduate student recently utilized GIS technology to analyze the potential impact on city and university urban forests of the Emerald Ash Borer, an exotic pest that is killing Ash tree species.

Just outside of the core campus, but still within the Bloomington city boundaries, IU maintains Griffy Woods, the most rural component of the woodland campus and a component of the IU Research and Teaching Preserve established in 2001. The preserve, a contemporary manifestation of the tradition of a green campus within natural surroundings, is dedicated to providing natural field settings for



SPEA's Urban Forest Management class.

research. This 185-acre site is composed of a diversity of successional stages, from old fields to mature oak and beech-maple forests, and is less than one mile from IU's Assembly Hall. The preserve is administered by a director and an executive committee of faculty members from Biology, SPEA, Geography, Geology, and the School of Health, Physical Education and Recreation. Given its proximity to campus, a tour of the woodland campus would not be complete without a walk through Griffy Woods; a trail map is available at www.indiana.edu/~preserve/docs/GriffyTrailMap.pdf.

Future of the Woodland Campus

I hope that our alumni will always insist on retention of our precious islands of green and serenity—our most important physical asset, transcending even classrooms, libraries, and laboratories in their ability to inspire students to dream long dreams of future usefulness and achievement—dreams that are an important and essential part of undergraduate college experience.

~ Herman Wells, in 1962, his final year as president, in an address to alumni on the state of the university

Where will Indiana University–Bloomington's woodland campus be in 25, 50, or 100 years? To answer this question, one must consider the driving forces that influence the woodland. Scholars often describe urban forests such as IU's campus as *social-ecological systems*, that is, they are coupled human-environment systems, influenced by people and the rules we establish, as well as the biophysical world.

From the biophysical perspective, the current campus tree inventory is assuring. Canopy cover is high, supporting an adequate supply of ecosystem services. Trees of all ages compose the woodland campus ensuring that as older trees die, there will be a steady supply of younger, maturing trees to replace them. The fact that trees in the current inventory are overwhelmingly in good condition is reassuring of a sustainable tree population, as well.

From the perspective of our human influence, there is promise of a sustainable future for the woodland campus. In 2009, the IU Board of Trustees approved a new master plan for the Bloomington campus that includes continued allegiance to the natural green

spaces and woodlands amidst new development. Planning processes included extensive input by faculty, staff, students, and other stakeholders. Consequently, the plan guides the addition of classroom and research space, while preserving the beauty and character of the campus and finding opportunities for improvement—including increasing tree canopy cover and restoration of the Jordan River, which will likely call for increased tree plantings to help stabilize the river’s banks. In addition, the plan calls for preserving the current football tailgating fields as a new arboretum of sorts. The fields already boast an assortment of mature, native trees including Maples, Black Walnuts, Hackberries, Ashes, Black Cherries, and Elms. This area, which you are also invited to tour, is located between 17th and 13th Streets and Woodlawn and Indiana Avenues, south of the football stadium.

As new plans are laid and begin to physically take shape on campus, we will surely watch as the university is catalyzed into a more influential position as a leader among its peer institutions. As such is the case, it is even more important that IU never lose sight of its past, its tradition of natural, wooded beauty. For we know that these trees offer much more than aesthetic enjoyment; their roots tie us to our history, their presence today brings shade, clean air, and a true sense of place, and their future ensures our continued commitment to the education and growth of future generations.



Tour tree #19
Flowering Dogwood

The Woodland Campus Tour

The tour begins at the northeast entrance to Indiana Memorial Union's (IMU) Biddle Hotel. Just outside and to the west of the hotel's turnstyle doors, you will find tree **#1**, an **American Sweetgum** (*Liquidambar styraciflua*). The Sweetgum is identifiable by its spiky, "gumball" fruit and its deep, glossy green star-shaped leaves, which turn yellow-purple-red in the fall, and stay on the tree quite late. The sweet smell of its crumpled leaves has been compared to the smell of "fruit loops."

The tour continues to the southeast, following the sidewalk between the IMU parking lot and the Jordan River. To your south you will notice tree **#2**, an **Ohio Buckeye** (*Aesculus glabra*) that sits just inside the wall of the Jordan River. This species is remarkable for its five, palmately compound, long and broad leaflets that spread out from each stem like fingers from a hand, and of course, the buckeye nut.

Follow the sidewalk around the south edge of the IMU parking lot and take the second set of stairs, crossing the street headed toward the red clock and Woodburn Hall. Directly behind Woodburn Hall, you will find an open woodland known as "Bryan Woods," where there are two specimen of tree **#3**, **Black Walnut** (*Juglans nigra*). Located in the "V" of the two sidewalks, the walnuts are recognizable by their long, palm-like leaves and their fruit, ripening during the autumn with a brownish-green, semi-fleshy husk and a brown corrugated nut.

From here, head south toward the small bridge that crosses the Jordan River. Just southeast of the



#1



#2



#3



#4



small wooden bridge and on the bank of the Jordan, you will find tree **#4**, a large **Chinkapin Oak** (*Quercus muhlenbergii*), whose acorns provide mast for the squirrels and other animals that make campus their home.

Do not cross the bridge, but follow the sidewalk (that parallels the river) east behind Woodburn Hall and the Lilly Library through Bryan Woods to another small wooden bridge crossing south over the Jordan River onto a gravel trail. Just over the bridge, you will notice a lamp post on your right, across from, which is tree **#5**, a **Green Ash** (*Fraxinus pennsylvanica*). Ash species, common trees in Bloomington, are threatened by the Emerald Ash Borer (*Agrilus planipennis*), an exotic pest whose larvae kill the trees.

Continuing south along the gravel trail, you will come to an area notable for its evergreen trees which sit just behind the Bryan House, the former home of IU presidents. To the right of the trail, you will find tree **#6**, a **Blue Spruce** (*Picea pungens*), tree **#7**, an **Eastern Hemlock** (*Tsuga canadensis*), and tree **#8**, a **Norway Spruce** (*Picea abies*). To the left of the trail, you will find tree **#9**, an **Eastern White Pine** (*Pinus strobus*). These evergreens (see image below) provide important winter habitat for birds and woodland mammals, and together, allow for comparison of species.

Past the evergreens, follow the sidewalk south along the Musical Arts building and take a right at the first sidewalk intersection, heading west. Along this path, to the north is a lawn in which you will notice an extremely large **Scarlet Oak** (*Quercus coccinea*), tree **#10**. At >46 inches in diameter, this specimen is one of the largest on the tour, and is recognizable by its lower branches, which point toward the ground.



This sidewalk intersects with the drive to the Bryan House. At the drive's entrance, cross the road, heading southwest up the stairs to another lawn behind the circle drive of Goodbody Hall. Here you will find tree #11, a **Black Cherry** (*Prunus serotina*), with two main trunks, located on the northwest edge of the lawn. This species is identifiable by its broken, dark gray to black bark, which has the appearance of very thick, burned potato chips.

From here, walk south past the circle drive and make a right, heading west across the wooden bridge between Ballantine and Jordan halls. At the northwest edge of the circular courtyard behind Jordan Hall you will come to a set of stairs leading directly west alongside a wooded area to the north. At the edge of this woodland, to the right of the first stair landing is tree #12, a **White Oak** (*Quercus alba*). White Oak bark is whitish or ashy gray, irregularly platy or blocky on large stems such as this.

At the top of the stairs, a brick path splits and the center path leads northwest toward the Chemistry building, where just inside the building's arched entrance way, you will find a small courtyard housing tree #13, an **American Beech** (*Fagus grandifolia*). American Beech is a climax species—typical of mature forests due to its shade-tolerance.

Leaving the courtyard, head southwest to a staircase that leads up into a newly constructed courtyard located between Simon Hall, Rawles Hall, Lindley Hall, and the Chemistry building. This courtyard is actually Indiana University's first green roof top, which serves to decrease the amount of impervious surface on campus. Yes, below the grass and trees are offices and classrooms!

The tour proceeds west across the roof top. At Lindley Hall, follow the sidewalk north to reach tree #14, a **Yellowwood** (*Cladrastis kentukea*), between Lindley and Kirkwood halls. The Yellowwood, here beside another American Beech, is a low-branching



#5



#10



#12



#13

tree with rounded crown, and it is a species extremely rare and difficult to find in the wild. In fact, it is on the endangered species list for many states, including Indiana.

Now facing west, follow the brick path directly west past the sculpture into Dunn's Woods. From this entrance to the woods, tree **#15, Eastern Hemlock** (*Tsuga canadensis*) is visible. You will recall this species from the evergreens behind the Bryan House. This specimen is much larger, at 22.5 inches in diameter, than the former. Prized for its beauty, Hemlocks are threatened like Ash species, by an exotic pest, the Hemlock Woolly Adelgid (*Adelges tsugae*).

Continue west on the brick path, and at the first intersection of a perpendicular trail, you will find, to your southwest, tree **#16, American Basswood** (*Tillia americana*) (on the cover). This specimen is tall and straight, and its leaves are shaped like narrow hearts. It is commonly planted as a street tree in cities.

The trail splits just past the Basswood, where you should take the route to the right, which will lead out of the woods at the Kirkwood Observatory. Head straight past the observatory toward Bryan Hall. At the lamp post, you can observe tree

#17, an American Sycamore (*Plantanus occidentalis*), which sits directly west of the lamp post and the small parking lot south of Bryan Hall. Sycamores are commonly found along streams and rivers and are notable for their white-washed look as the gray-green bark sloughs off in large, irregular masses.

Follow the sidewalk between Bryan Hall and Dunn's Woods north to a small bricked courtyard with benches. Facing east, you will find tree **#18, a Shagbark Hickory** (*Carya ovata*) and several specimens of tree **#19, Flowering Dogwood** (*Cornus florida*). Of course, the Dogwoods are relatively small trees prized for their beautiful spring flowers. The Hickory is a relatively large tree notable for its exfoliating bark slabs and its flavorful nuts.



#14



#16



#17



#18

Walk a little farther north along the sidewalk and turn east, walking away from the Sample Gates and parallel to Dunn's Woods on your right and Franklin Hall and the Student Building on your left. On your left, between Franklin Hall and the Student Building you will find tree **#20**, a large **Sugar Maple** (*Acer saccharum*), perhaps one of the most recognizable species for its leaf shape and its sap, used for making syrup.

Continue north on the brick path, following alongside Dunn's Woods toward the courtyard where the famous statue of a seated Herman Wells is located. Just north of Well's statue, you will find tree **#21**, a **Tulip Tree** (*Liriodendron tulipifera*), the state tree of Indiana. This species is notable for its magnolia flowers.

Just further north, between Maxwell Hall and the Tulip Tree, you will find two specimens of tree **#22**, **Ginkgo** (*Ginkgo biloba*). This pair of trees both measure about 50 inches in diameter, as some of the largest trees on the tour. Ginkgos are virtually free of disease and pests and are often used in urban plantings.

The next two trees on the tour are among the largest, as well. Follow the sidewalk north past the Ginkgos, cutting northwest between Maxwell Hall and to the west of the IMU.

Walk down the hill, away from the IMU and cross over the Jordan River where you will find a cluster of specimens (on both sides of the sidewalk) of tree **#23**, **Bald Cypress** (*Taxodium distichum*), all at about 50 inches in diameter. These trees sit at the edge of the Jordan River and are notable for their "knees," roots that grow upright and are thought to help the tree obtain oxygen in flooded conditions.

The trail on the north side of the Jordan River can be followed east to tree **#24**, a massive **Burr Oak** (*Quercus macrocarpa*), found in front of the steps leading into the Union. This Oak measures in at nearly 56 inches in diameter as the largest and final tree on the walking tour.



#19



#20



#21



#24

TREES INCLUDED ON HISTORIC WALKING TOUR

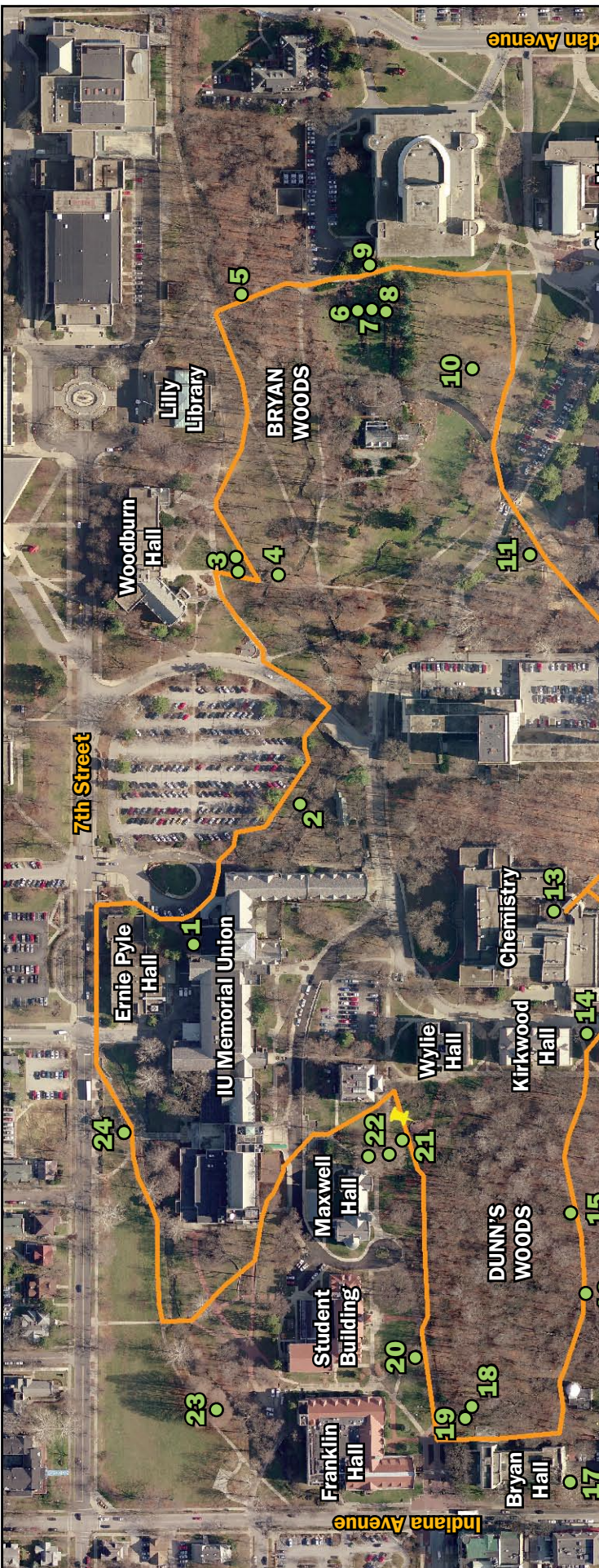
ID No.	Common Name	Scientific Name	Diameter at Breast Height (DBH) (inches)
1	American Sweetgum	<i>Liquidambar styraciflua</i>	27
2	Ohio Buckeye	<i>Aesculus glabra</i>	17
3	Black Walnut	<i>Juglans nigra</i>	24
3	Black Walnut	<i>Juglans nigra</i>	30
4	Chinkapin Oak	<i>Quercus muhlenbergii</i>	40
5	Green Ash	<i>Fraxinus pennsylvanica</i>	28
6	Blue Spruce	<i>Picea pungens</i>	14
7	Eastern Hemlock	<i>Tsuga canadensis</i>	6
8	Norway Spruce	<i>Picea abies</i>	24
9	Eastern White Pine	<i>Pinus strobus</i>	14
10	Scarlet Oak	<i>Quercus coccinea</i>	47
11	Black Cherry	<i>Prunus serotina</i>	33*
12	Eastern White Oak	<i>Quercus alba</i>	26
13	American Beech	<i>Fagus grandifolia</i>	34
14	Yellowwood	<i>Cladrastis kentukea</i>	38*
15	Eastern Hemlock	<i>Tsuga canadensis</i>	23
16	American Basswood	<i>Tillia americana</i>	16
17	American Sycamore	<i>Platanus occidentalis</i>	45
18	Shagbark Hickory	<i>Carya ovata</i>	18
19	Flowering Dogwood	<i>Cornus florida</i>	6‡
20	Sugar Maple	<i>Acer saccharum</i>	30
21	Yellow Poplar	<i>Liriodendron tulipifera</i>	31
22	Gingko	<i>Gingko biloba</i>	48
22	Gingko	<i>Gingko biloba</i>	50
23	Bald Cypress	<i>Taxodium distichum</i>	50‡
24	Burr Oak	<i>Quercus macrocarpa</i>	55

* multiple stems, average DBH

‡ multiple specimens, average DBH



#24



7th Street

Indiana Avenue

Dan Avenue

Ernie Pyle Hall

IU Memorial Union

Maxwell Hall

Student Building

Franklin Hall

Woodburn Hall

Lilly Library

BRYAN WOODS

Wylie Hall

Kirkwood Hall

Chemistry

Bryan Hall

DUNN'S WOODS

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2

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3

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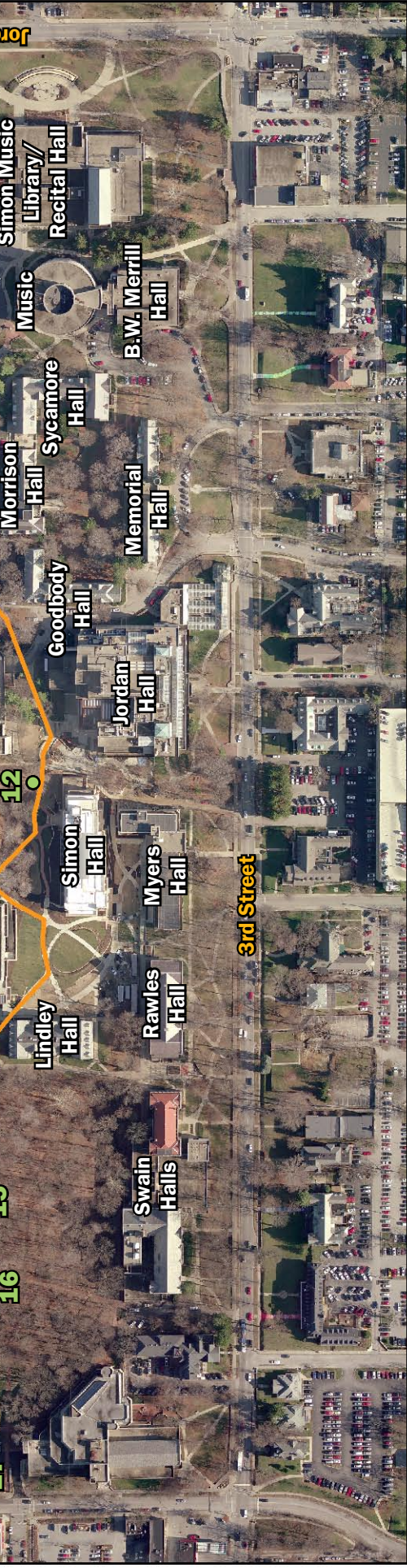
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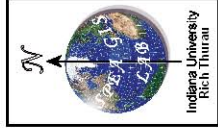
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● Trees of Interest

— IU Tree Trail (trail length: 1.45 miles)

★ Herman Wells Statue



* IU Pictometry Natural Color Orthos, winter 2006
(<http://www.indiana.edu/~gjsdata>)



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INDIANA UNIVERSITY

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