

Cornell University
Arnot Teaching and Research Forest



Summer Undergraduate
Research and Extension Intern Program

Student Handbook

2002 – V. Lane and P. Smallidge

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Summer Intern Program

Introduction & History

Since its founding in 1927, the Arnot Teaching and Research Forest has provided a place for Cornell students and faculty to carry out elements of the three-part function of CALS: Teaching, Extension, and Research, in service to the citizens of New York. The current Arnot Forest results from a long history of changing land-use patterns, and presents an opportunity to study the long-term consequences of these changes. As private property, the Arnot mimics the predominant land base of the Northeast and thus pursues its mission to document and disseminate the ecological and economic functions of a managed hardwood forest that support societal benefits and conservation values.

In 1910 the Chemung Canal Trust Company, a private bank owned by the Arnot family, foreclosed on the mortgage, taking ownership from the Rodbourns. In 1914 the land was sold to the Matthias H. Arnot Estate. Cornell ownership of the property began in 1927 when the heirs of the estate gave 1,641 acres to the University. Later, 2,090 acres were acquired during the Federal Resettlement Administration in 1956. With the purchase of in-holdings and adjoining parcels over the years, the acreage now totals 4,075.

To some the Arnot is a remote acreage of rural land on which to ski, hike, hunt, or study nature. To others it is a unique ecosystem to be studied, analyzed, manipulated and at least partially understood. To still others it is the place they go to learn how to make maple syrup or manage timber resources. The forest is an outdoor laboratory where students can learn the principles of forestry, ecology, and wildlife management and where both students and faculty have opportunities to conduct original research.

The Arnot helps support the teaching, extension, and research mission of the Department of Natural Resources and Cornell University. These opportunities are provided in the context of a multiple-use, managed forest, producing timber

and maple products and providing recreational opportunities for the public.

Forest management, forest ecology, conservation ecology, introduction to natural resources, agroforestry, and resource economics are some of the courses that conduct field exercises at the Arnot. The Arnot also hosts annual educational training workshops for Cornell Cooperative Extension. Current research projects include studies of breeding bird populations, amphibian conservation, forest gap analysis, forest farming, deer population impacts, and forest stand dynamics.

Internship Program

Begun in the summer of 2000, the Arnot Forest Intern Program is focused on providing research and extension experience to augment the field skills of Cornell University students. Interns learn to integrate research inquiry with opportunities for educational outreach activities through interaction with extension programs.

The concept of the intern program is based upon the positive experiences that Cornell students gained during the 1930's and 40's while conducting field research on the biology and management of the ruffed grouse at the nearby Connecticut Hill Wildlife Management Area. Those students, known affectionately as the "Hiller's", established a fund to support students who similarly desire a field-based experience working on the pressing conservation and natural resource issues of today.

Although there are no course pre-requisites for the program, interns are expected to have or quickly gain well-developed skills in field biology, plant/animal identification, basic statistics, orienteering, and writing. Interns will develop additional skills in field biology, data collection and analysis, statistics, technical and extension (educational) writing, and public presentation.

Under the supervision of a project leader, each intern will implement a field-based research project that contributes to an improved understanding of the ecology of a managed

hardwood forest. Interns are expected to commit to at least 12 weeks of summer field work, participate in a multi-day orientation program, on-site and regional professional development experiences, and prepare and present an oral presentation on November 21st during the Department of Natural Resources fall internship seminar series. Interns and project leaders are expected to develop a Cornell Cooperative Extension news article, or other Extension materials, related to the topic of their project.

Up to 6 undergraduate field research and extension internships are available during most

summers. The Arnot Forest Research and Extension Internship Program includes a \$2500 stipend for 12 weeks between May and August, free use of a shared Arnot cabin and the camp kitchen, active participation in a faculty-guided project, and social galas. Interns are eligible for 2 or 3 independent study credits during the subsequent fall semester for written and oral presentations of research data.

The Arnot Internship program is an enriching and fun way to learn more about what it's like to be a field researcher.

Program Objectives

The general objectives of the Arnot Intern Program are:

1. To provide experience with hypothesis forming and testing, field data collection, and data analysis.
2. To enhance intern understanding of forest ecology and management.
3. To provide a research and database for future projects.
4. To introduce the complexities of field research, and improve problem solving skills.

Interns are expected to prepare for a public seminar in November through participation in one of the following independent study courses the following fall semester:

Course	Credit(s)
NTRES 495	1 - 3
NTRES 496	1 - 3
(or the equivalent in the project leader's department)	

Project Descriptions

Intern projects are part of the Arnot research program and support efforts of faculty and staff in CALS and the CCE system. The projects are typically multi-year in nature, though interns engage for a single year, and may also represent a piece of a more complex set of research questions. Project leaders work directly with interns in orienting them to the project but typically do not work daily with the interns. Project leaders select projects that are of mutual benefit to the larger research question and to help in the scientific development of the interns.

Research at the Arnot, and thus for interns, typically focuses on questions that relate to how terrestrial and semi-terrestrial systems/organisms respond to management activities. Because New York and the Northeast are heavily forested and dominated by private forests that

experience management practices, the research and extension programs that originate from the Arnot provide an important function in helping landowners and natural resource managers make sound and sustainable decisions. Example of internship projects from previous year have included: Conservation of amphibians and reptiles; ecology and management of sugar maple; deer impacts on hardwood forest regeneration; forest hydrology and amphibian response; forest farming production of ginseng and gourmet mushrooms, and use of meat goats for controlling interfering vegetation.

For specific descriptions of current or previous research projects, visit the Arnot web site at www.dnr.cornell.edu/arnot

General Internship Information

Application Procedure

Freshmen, sophomores, and juniors are eligible to apply for an Arnot Forest internship. Curriculum vitas or resumes, a prioritized list of projects the potential intern would be interested in performing, names, email addresses, and phone numbers of three references, and a separate statement expressing interest in the Arnot Forest Internship Program should be submitted by the deadline (usually mid-February) to Diana Bryant at <dlt5@cornell.edu>. Interviews of potential candidates are conducted during early March and hiring announcements will be made by late March.

Contact Information

Interns need to complete personnel forms with emergency contact information provided by the Arnot Director during the orientation period.

Internship Schedule

Interns are expected to arrive at the Arnot on Monday between 9 and 11:00 am. There is a six day orientation, during which the interns will become oriented to Arnot facilities, participate in first aid and CPR certification, learn compass and land navigation skills, and learn field sampling skills through establishment/monitoring of a permanent inventory system. Interns and project leaders should expect to begin working on their individual projects on Monday following orientation. Workday hours are Monday through Friday, 8:00 am to 4:30 pm. Interns will need to prepare lunches in the morning because projects typically involve fieldwork throughout the day.

A calendar for the summer and fall is included at the end of this document prior to the maps.

Other Information

Interns will share access to vehicles equipped for fieldwork, and must provide a copy of their driver's license before driving an Arnot vehicle. These vehicles may be used on Arnot property only. Personal vehicles may be brought to the Arnot for evening or weekend trips, with parking at the maintenance shop. Use of personal vehicles is permitted throughout the Arnot, but travel is at the driver's risk. The current road system can be hard on personal vehicles.

Camp Operation

Facilities

The Arnot Field campus consists of thirteen cabins, a main lodge, and a separate building that contains bathrooms and showers. Interns will have keys to access the Arnot Shop, where tools, vehicles, the laundry machines, and field equipment is stored.

Meals

Meals are not supplied by the internship program, but a private intern kitchen is available. Weekend runs to the grocery store in nearby Spencer or in Ithaca will have to be arranged among the interns.

Registered Field Campus Users

The Arnot Field Campus hosts visiting groups in periods ranging from a few days to a week. Use by external groups is high during the summer with groups registered for weekdays and weekends. Visitors will have access to the showering and bathroom facilities, but will not be permitted to use the intern kitchen. The small meeting room and lodge are reserved for registered camp users.

The Arnot Forest is a public area, and interns may occasionally encounter non-Arnot personnel while in the field. Side roads that access many research sites are blocked from public access.

Communications

Internet access is available on Arnot property in the library and lounge where there are phone lines. Interns are permitted to use phones, but must bring a phone card or call collect when calling long distance.

Because the Arnot Forest is so large (>4000 acres), immediate communication from a phone to an intern is nearly impossible. Interns are provided with short-range handheld radios, and these radios must be carried at all times during working hours.

Interns are required to sign out in the morning before work and write down exactly where in the forest they plan on working for the day. If an emergency does occur, interns can then be more easily contacted. If interns fail to return to camp before dark without making the other interns or Arnot Director aware that they are going to be out late, then a search party will be sent.

Camp phone numbers and mail addresses are as follows:

Intern Lounge phone: (607) 589 - 6076
Shop phone: (607) 589 - 6076
Emergencies: (607) 589 - 7530 (director's home)

Mailing Address:

(Intern's Name)
Arnot Forest
611 County Route 13
Van Etten, NY 14889

Recreational Activities

There will be opportunity for recreation during the evenings and on weekends. Fishing, archery, biking, hiking, and jogging are all allowed on or near the field campus. A volleyball net is also available. Other popular recreational activities include Frisbee, football, and soccer.

Although the Arnot has several ponds, swimming is not allowed. A public pool is available at the nearby Newfield Central School. Also, Park Station is nearby a state park with swimming pond is located in the town of Erin, and swimming is permitted there. Parking is \$6. Interns may also travel to Buttermilk Falls State Park in Ithaca.

Personal Information

Living Accommodations

Interns should plan to live in cabins on the Arnot Field Campus during the week and are certainly welcome on weekends. Cabins are separate from the bathroom, shower, and kitchen facilities, and cabins will be assigned according to gender. A private clothes washer and dryer will also be provided to interns in the maintenance building. Interns should not leave toiletries in the sanitary building, rather transport as needed from their cabins.

Cabins have electricity, lighting, are heated, and may house up to four interns. Although they have large screened windows and doors, the cabins can get hot, and interns may wish to bring a personal fan to help keep cool on humid nights.

The camp complex has a limited amount of space for storing personal items. Storage space is generally limited to what interns can keep under their bunks and along the wall. If the top bunk is not being used, interns have the option of storing soft items such as clothing there. Larger and/or heavier items could post a safety risk if they fell off the bed.

Computers, or other electronic devices may be brought, as long as noise volumes remain at a minimum. A television and VCR is available in the lounge, and interns can bring movies to watch in the evening and on weekends. Cable or satellite dish coverage is not available. Few places on the Arnot can receive cell phone transmission.

Because of the shared living accommodations, interns are not permitted to have overnight guests. Immediate family members are welcome to visit and may stay for free in a cabin if the field campus is not in use. Any use of the field campus cabins should be coordinated well in advance through the field campus coordinator.

Laundry

Each intern will be responsible for his/her personal laundry. There is one free washer and dryer available for interns. Clothes can be hung to dry outside, as long as they aren't visually distracting or annoying to visitors or other interns.

Medical Services

Interns are expected to have their own health insurance during their stay at the Arnot forest. All interns should be immunized against tetanus.

First-aid material is available from camp faculty, and first-aid boxes are located in multiple strategic points across the campus facility.

Extreme care must be taken by interns in the field to prevent injury. Some portions of the Arnot are very steep, and it is very easy to fall. Because the Arnot is in a relatively remote location and is large in size, it could take upwards of an hour for an ambulance to arrive, or even longer if the intern can not summon help on the radio.

Because of this risk of injury in the field, interns will be taught first-aid by a certified instructor, and receive first-aid certification.

Religious Activities

Arrangements to attend religious ceremonies must be arranged by the interns themselves. Churches of various denominations and synagogues are located in all nearby villages.

Personal Equipment

Bedding

Mattresses and beds are provided, but interns must provide their own sheets, pillows, pillowcases, and blankets. Although the summer days can be hot and humid, it is not uncommon for the nights to be very cool. At least two thick blankets or suitable sleeping bags that can be unzipped are recommended. There is nothing worse than being cold while trying to sleep.

Clothing

Field clothing (long pants and sturdy shoes) is required while working. Since work proceeds regardless of weather for most projects, rain gear and a warm jacket are essential. Students should bring lightweight, tear-resistant rain jackets and pants. Ponchos and heavy rubberized rain gear are cumbersome, hot, and difficult to work in. Hard hats are available if they are desired.

Footwear

Interns should bring at least two pairs of shoes. One pair of comfortable sneakers is recommended for wearing around camp and during weekends. A pair of waterproof boots is highly recommended for fieldwork. Rubber knee boots may be useful for projects around water. Sandals may also be brought, but they are unsuitable for work in the field.

Miscellaneous Items

Compasses, short-range radios, hard hats, and all necessary tools are provided by projects for use by the interns. Here is a compiled list of items interns should and can bring (priorities listed first):

- Wristwatch
- Plenty of socks!!
- Pocket knife
- Flashlight(s) and batteries
- Towels
- Bathroom items
- Phone card(s)
- Bed sheets, blankets, pillows, etc.
- Laundry detergent
- Rain gear
- Alarm clock
- Plenty of pencils
- Sturdy hiking boots
- Waterproof boots
- Comfortable shoes & sandals
- Specialty kitchen utensils
- Food
- Painkillers, band-aids, medicine, etc.
- Binoculars
- Any necessary field guides/books/literature
- Durable pants and clothing
- A warm jacket
- Camera
- Computer/ Electronics
- Fan
- Swimming suit
- Fishing pole and tackle

Rules and Regulations

The successful implementation of Arnot Forest programs necessitates rules and regulations to govern personal conduct and camp operation. The mode of operation, close living conditions, and full schedule associated with the internship program requires that all personnel behave in a way that will not diminish the ability of any intern or Arnot Forest employee to achieve the fullest benefit from the program. All interns and Arnot personnel will be expected and required to adhere to the camp rules and regulations.

Major Rules

1. Possession and/or use of alcoholic beverages by interns are not permitted on Arnot Forest Property.
2. The possession and/or use of non-prescribed drugs, with the exception of over-the-counter medications, is prohibited on Arnot Forest Property.
3. Tampering with, dismantling, or destroying Arnot Forest equipment will not be tolerated.

General Rules

4. The rules and guidelines for all visitors to the Arnot generally apply to interns.
5. Interns are expected to view their work as a full time job, and are required to work from 8:00 a.m. to 4:30 p.m. Mondays through Fridays. If a day is missed, it must be made up later in the season. July 4th is a holiday.
6. Since the Arnot Forest is a high-use recreation area, visitors are frequent. Interns are expected to conduct themselves in a polite and proper fashion, both in the Arnot Forest and in the surrounding community. Reasonable dress is expected at all times.
7. There must be no unreasonable noise after 10:00 p.m. so that those wishing to sleep may do so.
8. Smoking is prohibited in all Arnot Forest buildings.
9. High standards of personal hygiene are expected at all times. The rights and sensitivities of others must prevail.
10. All suspicious activity that takes place in the Arnot Forest by non-Arnot personnel must be reported immediately to the director or manager.
11. Interns must sign out every morning and indicate where they will be working.
12. Interns must carry a personal radio on them at all times during work hours.

Calendar

Date (confirmed prior to program start each year)	Activity	Participants
Day of Arrival	Interns arrive at Arnot (cabins 9-11).	Pete and the interns
6 Days of Orientation	Interns begin (8:00 AM) - tour Arnot and review safety, equipment, tools, sign-out policy, vehicles, kitchen/cabin cleaning, etc. Meet in cabin 8.	Interns (project leaders optional)
	Intern orientation, first aid & CPR training, orienteering, field methods, scientific methods, and establishment of PFI plots	Interns, Pete, Gary, Steve, Don, and other leaders as interested.
Monday following Orientation	Interns begin on their projects	Interns and their leaders
After the first week of work	Arnot Social Gala	Interns, Project Leaders and Families, Distinguished Guests
End of June	Forestry Basics (w/ ACEP)	Pete, interns, registrants
Beginning of July	Interns on special projects	Trail clearing and GPS (pjs, sjm)
End of July	Arnot Social Gala	Interns, Project Leaders and Families, Distinguished Guests
Beginning of August	Interns on special projects	TBA
August 5	How to present scientific results, half day (in intern lounge)	Interns (project leaders invited)
Mid August	Interns project summary with PowerPoint, half day (in intern lounge)	Interns (project leaders invited)
Mid August, noon	Interns depart (final cleaning cabins & kitchen)	
Fall Semester	Independent Study Projects	Interns with leaders
December xx th (first day of reading period, after classes)	DNR Intern Seminar	All
Mid December	Interns submit research papers and extension articles to pjs23@cornell.edu	Interns

Maps

Road map and general location of Arnot Forest



From the North (Ithaca): Take NY Route 13 South (toward Elmira) from Ithaca. Approximately 4 miles from the intersection of Routes 13, 34, and 96, turn left at the intersection of Route 13 and Trumbulls Corners Road just before the Newfield Post Office. Turn right on Main Street at the "T". Take the first left past the People's Baptist Church, onto VanKirk Road. Proceed approximately 4 miles, bear to the left at the Irish Hill Road intersection. Travel 3 miles to the steep driveway on the right, just before the gate to the Arnot Forest (also on the right). Follow the driveway to the lodge.

From the Southwest (Elmira, Horseheads): Take NY Route 13 North (toward Ithaca) from Horseheads, turning right onto NY 224 at Alpine Junction. Proceed approximately 6 miles, turn left on County Route #13 and proceed 1.4 miles to the steep camp driveway on the left, just after the gate to the Arnot Forest (also on the left). Follow the driveway to the lodge.

Directions from Southeast (Binghamton, NY and I-81): Take NY Route 17 West. Exits 64 & 65 will access Owego via 17C or Owego directly from Exit 66 (note that Exit 66 is currently closed). From Owego, go north on Rt 96 towards Candor, making sure to bear left at the light and bridge just north of Owego where 96 diverges from Rt 38 towards Richford. In Candor, bear left on 96 (96B goes north to Ithaca) towards Spencer. In Spencer, take 34 South (go straight at the stop light) towards Van Etten. In Van Etten, the road changes to Rt. 224 north towards Cayuta and Alpine. About 4 miles west of Van Etten, just after crossing in Schuyler County, turn right (north) onto County Rt. 13 (this is not NY Rt. 13). Go north for 1.2 miles and when you reach the second bridge you've reached the Arnot Forest on your left. The gated road goes into the forest and the road up the steep hill is into the field campus.

Topographic map

[provided during orientation]

Aerial photograph

[copy in director's office]

East boundary trail

Arnot Forest's "East Boundary Trail"

Established Fall 2000 by Cornell Outdoor Education

Arnot Teaching and Research Forest
(607) 589 - 6095; www.dnr.cornell.edu/arnot

Trail Considerations and Conditions

- Access the trail from the Birch Road Extension immediately north of first bridge (culvert), or from within the field campus at the pond if you are a registered camp user. Birch Rd. Extension is 0.6 miles from south gate.
- Trail is approximately a two mile loop through mature hardwoods.
- Orange markers designate the trail, with double markers at trail intersections and abrupt corners.
- Terrain is predominately gentle, though the trail climbs steeply at north end.
- XC-skiers use extreme caution at north end where trail climbs up and over Camp Ridge. Novice skiers should not use this trail.
- Forest management and amphibian conservation demonstration areas being created during Spring of 2002.
- Users should consult with the USGS Alpine quadrangle for topographic conditions.

