

SUBMITTING SPECIMENS FOR IDENTIFICATION: COLLECTION, PREPARATION, AND SHIPMENT

INSECTS

Will Hudson, Extension Entomologist

An important function of University of Georgia's Extension entomologists is identifying insect and mite specimens submitted by Cooperative Extension agents. In order to obtain a correct identification, the county agent must collect and submit properly preserved specimens.

All county Extension offices are provided small vials containing a preservative, insect identification forms, and mailing tubes. Most specimens encountered are small enough to be placed in a vial containing preservative (alcohol). When possible, it is helpful to collect and submit multiple specimens of each pest for identification.

Insects may be unidentifiable after being crushed or becoming decayed. Large insects such as butterflies, wasps and beetles should first be placed in an insect killing jar and then transferred to a small, crushproof container for mailing.

Never mix moths and butterflies with other insects or put other insects into a killing jar that has previously contained butterflies or moths. Their dust-like scales quickly cover other insects, which greatly complicates proper identification.

Mites, thrips, and scale insects should be sent as you would diseased plants because they are easily damaged when handled and their characteristic appearance on the plant is often crucial to identification. If possible, small caterpillars, grubs, and maggots should be sent live in a sealed paper bag with some of the host material.

Sometimes they cannot be identified until they are reared to the adult stage. If live insects cannot be sent live, place the specimen in a vial with preservative before shipping the sample. All other soft bodied insects, ticks, mites, and spiders should be placed in a vial with preservative before shipping the sample.

To obtain rapid, accurate identification of insect specimens, be sure to include the following information:

1. Locality (nearest town and county, street address if available) where specimen was collected.
2. Name of collector of specimen.
3. Date collected.

4. Host plant(s) or whatever the insects were feeding on, if applicable.
5. Stage of growth: seedling, blooming, fruiting, one week before harvest, young animal (less than three months old), mature animal.
6. Degree of infestation.
7. What, if any, chemicals have been applied.

Complete either the Homeowner Insect and Weed Diagnostic Laboratory or Insect ID form as appropriate for the sample, extension.uga.edu/programs-services/structural-pest-management/insect-weed-id.html

SHIPPING INSECT SPECIMENS

Address package to the appropriate clinic and/or specialists. All home and garden samples submitted from homeowners should be submitted to the UGA Homeowner Insect and Weed Diagnostic Laboratory, 210 Cowart Building, College of Agricultural and Environmental Sciences, Georgia Experiment Station, 1109 Experiment Street, Griffin, GA 30223-1797. All insects submitted dealing with row crops, forage, forestry, apiculture, commercial ornamental and turf, commercial household and structural, man, pets, livestock, and poultry should be submitted to one of the following addresses:

Extension Entomology
Entomology Department
418 Building C
136 Cedar St
Athens, GA 30602

*(medical, fruit, ornamentals, turf, apiculture,
forest, pets, livestock, and poultry pest samples)*

Extension Entomology
Entomology Department
2360 Rainwater Rd.
Tifton, GA 31793

(row crop pest samples)

SUBMITTING SAMPLES TO THE UGA PLANT DISEASE CLINICS

Laxmi Pandey, Plant Disease Diagnostician

The UGA Plant Disease Clinics provide diagnostic support for county Extension personnel and the residents of Georgia. Our services include analysis for plant disease or disorders as well as suggesting appropriate management strategies. Our clients include Extension educators, growers, retailers, arborists, golf courses, researchers, and homeowners. The Plant Disease Clinics work closely with the UGA Cooperative Extension county offices.

Contact your county office for assistance with your plant disease problem at extension.uga.edu/about/county. If the county Extension office personnel cannot provide an answer to the disease problem, they will often submit the sample to the appropriate plant disease clinic. All samples sent to the clinics must be submitted through the county Extension offices.

INSTRUCTIONS FOR SUBMITTING SAMPLES:

The UGA Plant Disease Clinics use the PClinic online system to track both physical and digital disease submissions. PClinic is used by the clinics to track when samples are sent and when they arrive. Specialists use this system to return diagnoses and recommendations to county offices.

Fill out completely a PLANT DISEASE SUBMISSION FORM, either the commercial or homeowner form, for each specimen. The information on these forms is a valuable tool in the diagnostic process. Forms and more information can be found on the clinic website at plantpath.caes.uga.edu/extension/clinic.html. The county Extension office should have copies of these forms. Make sure the sample is appropriately packaged and include the form with the sample in the box. Do not place the form in the plastic bag with the sample. Place in a separate envelope in the box.

TAKING GOOD IMAGES FOR THE PCLINIC SYSTEM:

Images can be submitted as a digital submission through the PClinic system or in a separate email with or without physical samples. Diseases and disorders are often influenced by conditions in the surrounding site. For dieback issues on woody plants, for example, taking images is often vital since entire plants cannot be submitted.

Image submissions should include both close-ups of the problem and the entire plant, including surrounding conditions. Images alone may not provide enough information for confirmation of a disease and a follow-up physical sample may be needed, but images can be an important part of the diagnostic process.

PREPARATION OF SAMPLES FOR SUBMISSION:

The ability to correctly diagnose plant diseases or disorders is only as good as the quality of the sample and the information provided on the disease submission sheet. Diagnosis of a sample that was improperly collected, packed, and/or shipped and arrives in poor shape is usually very difficult and often impossible. Place diseased specimens in a plastic bag. **DO NOT ADD ANY MOISTURE.** Place a DRY paper towel in the plastic bag to absorb any excess moisture. Fleshy fruit and vegetables should be wrapped separately in paper towels. If whole plants are shipped, seal root balls in a plastic bag to keep the roots moist and prevent contamination of the foliage. Mushrooms should be wrapped in newspaper and shipped overnight in a box; avoid using plastic bags. **KEEP ALL SPECIMENS COOL. DO NOT ALLOW SPECIMENS TO DRY OUT.**

PLANT SYMPTOMS AND SPECIMEN SELECTION:

Wilting, yellowing, or general decline of foliage often indicates a problem with the roots or the lower stems. If practical, send the entire plant (leaves, stems, roots). Collect plants or plant parts that have early disease symptoms. Dig up carefully. **DO NOT PULL UP**—many roots will be lost. If whole plants cannot be submitted, images of the plants can be useful for diagnosing die-back issues.

Twig and Branch Blights and Cankers. Select specimens that show recent infection. Include healthy tissues connected to diseased tissues. The problem cannot be diagnosed from entirely dead samples.

Foliage Diseases (spots, blights). Select leaves that have early or recent infections. Leaves still attached in groups are better than a few individual leaves. Marginal leaf burn symptoms can indicate a lack of water uptake, environmental stress or chemical injury, or in some cases bacterial scorch disease.

Turf. Remove a 6–12" square section of turf from the edge of the problem area so that the sample shows a range of disease symptoms. Include the intact roots with the underlying soil. Place in a plastic bag and seal. Dried-out turf is very difficult to diagnose.

Fruit and Fleshy Plant Organs. Diseases of these structures require special attention. Never select a specimen that is exhibiting advanced stages of decay or disease. Select fresh specimens that exhibit early symptoms.

SHIPPING SAMPLES:

The county Extension office will ship the samples to the clinic. A \$25 fee will be charged for disease diagnosis of any Georgia samples not approved by the county Extension office of sample origin. If possible, ship specimens Monday, Tuesday, or Wednesday. Samples shipped on Thursdays and Fridays may not arrive at the Plant Disease Clinic until the following week resulting in possible specimen degradation and difficulty with diagnosis. Specimens may be sent by regular mail (may be slow), delivery service such as FedEx or UPS, or by state courier. Samples that break down quickly should be shipped by express mail. Weekend deliveries are not accepted.

Place the specimen in a refrigerator over the weekend if necessary. Place prepared specimen in an appropriately sized box.

THERE IS A \$10 PROCESSING CHARGE FOR ALL PHYSICAL HOMEOWNER SAMPLES. PLEASE SEND A CHECK PAYABLE TO 'PLANT DISEASE CLINIC' ALONG WITH THE SAMPLE.

PLANT DISEASE CLINICS AT THE UNIVERSITY OF GEORGIA

SAMPLE TYPE	DIAGNOSTICIAN	CONTACT ADDRESS
Commercial ornamentals (nursery, greenhouse, landscapes, cut flowers), forestry, Christmas trees, legume and grass forages, wood rots, certain fruits (apples, peaches, strawberries, grapes), ornamental landscapes, turf, small grains, all homeowner, all controlled-environment agriculture (CEA), community gardens	Ansuya Jogi 706.542.8987 or 706.542.9157 Ansuya@uga.edu	Athens Plant Disease Clinic UGA—Plant Pathology Dept. 2105 Miller Plant Sciences Bldg. 120 Carlton St. Athens, GA 30602-7274
Commercial vegetables (including transplants), commercial row crops (cotton, soybean, peanut, corn), tobacco, pecan, Southern Georgia fruits (blueberry, blackberry, pomegranate, citrus, kiwi, olives, mayhaw)	Laxmi Pandey 229.386.7495 Fax 229.386.7415 laxmi.pandey@uga.edu	UGA—Plant Pathology Dept. Tifton Plant Disease Clinic Room 116, 4604 Research Way Tifton, GA 31793
All samples for nematode analysis (check with nematode lab for instructions and fees)	Ganpati Jagdale 706.542.9144 Fax 706.542.5957 gajagdal@uga.edu	UGA—Plant Pathology Dept. Extension Nematode Laboratory 2350 College Station Road Athens, GA 30602-4356

NEMATODES

Bob Kemeraït, Extension Plant Pathologist

I. WHY SAMPLE

Nematodes can parasitize virtually all crops and ornamental plants and can cause significant economic damage by reducing both yield and quality. Properly taken samples from small field units can reduce production costs by allowing the grower to eliminate nematode control practices where they are not needed and implement control practices where they are needed. Improper sampling or handling of samples can lead to poor recommendations and economic losses that could have been avoided.

II. WHEN TO SAMPLE

The timing of collection of nematode samples is important because nematode populations fluctuate throughout the year. Nematodes may be undetectable during the winter and early spring but increase to very high levels before harvest; following harvest, population levels may decline precipitously. Sampling when population densities are high decreases the risk of failing to detect a damaging species. The best time to collect samples is when living roots are present and nematode populations are high. For most crops, this is generally near harvest.

The optimum time to take samples for nematode assay from various Georgia crops are given below:

From roughly December through March, most Georgia soils are too cold to support active root growth of warm-season crops and nematode populations exist primarily as eggs. Unfortunately, typical laboratory assays do not detect nematode eggs, so samples collected in the winter frequently fail to detect nematodes when there are actually many nematode eggs present. Failure to detect a species does not necessarily mean that it is not present because the species may be present at low levels that the random sample missed or it may be present only as eggs, which the assay cannot detect. Because of these limitations, samples should not be collected during the winter. Soil moisture should be about right for good seed germination when nematode samples are taken.

III. HOW TO SAMPLE

It is very important that the soil sample be truly representative of the area sampled. The only way to ensure this is to collect the sample from many spots around the field rather than from only 1 or 2 spots. Even if a small problem area is being

CROP	WHEN TO SAMPLE	COMMON NEMATODES
Cotton	September, October, November or until frost/cold weather	Root-Knot, Columbia Lance, Reniform, Sting
Field Corn	At harvest and prior to frost/cold weather	Root-Knot, Stubby-Root, Sting
Fruit Orchards (except peaches)	September, October	Root-Knot
Peaches	September, October (for root-knot) February, March, April (for ring)	Root-Knot, Ring
Peanuts	September, October, November or until frost/cold weather	Root-Knot, Sting
Soybeans	September (Group IV) October (Groups V, VI) November (Group VII) or until frost/cold weather	Root-Knot, Columbia Lance, Reniform, Soybean Cyst
Tobacco	July	Root-Knot
Turfgrass Warm season Cold season	June, July, August September, October, April	Root-Knot, Lance, Sting, Ring
Vegetables	August, September	Root-Knot

sampled, soil should still be collected from multiple spots within the area being sampled. Ideally, one soil sample should be taken for every 4–5 acres, but practically, 1 sample may have to represent a much larger area of a field. The sample may represent a section that has homogeneous soil type and conditions and is farmed uniformly. The shape of a field may influence the number of acres that a sample represents. If a very large area is sampled, high-population areas will be diluted by low-population areas so that areas with nematode problems will be more difficult to identify.

Take 20–30 soil cores from random locations throughout the field. One sample should not represent more than 20 acres. If a problem area is being sampled, collect soil from the margin of the affected area. Collect soil to a depth of 8 inches (20 cm) in the root zone of living plants. Sampling depth may be different with certain crops, such as turf. Thoroughly mix the collected soil and put about 1 pint of soil into a plastic bag. **Do not take samples from extremely dry soil. DO NOT ALLOW SAMPLES TO GET HOT OR DRY!** Storing samples in an insulated cooler protects them well. Allowing samples to sit in direct sunlight or in a hot vehicle for even a short time can kill the nematodes in the sample. Nematodes must be alive for the extraction procedure to work. Killing the nematodes in the sample may result in failure to detect nematodes. Send samples early in the week so that they do not spend the weekend in transit.

IV. SHIPPING SOIL SAMPLES FOR NEMATODE ASSAY:

All samples for nematode assay must be submitted through your local county Extension office. Your county Extension office will send the samples to the Extension Nematology Laboratory, 2350 College Station Road, The University of Georgia, Athens, GA 30602. The results of the assay will be returned to you through your county Extension office. Samples for problem diagnostics submitted through the county Extension office of sample origin will be analyzed at no charge. Samples for purposes other than problem diagnostics submitted through the county Extension office of sample origin will be charged \$15 per sample. All other samples, including samples submitted from out of state NOT submitted through the county Extension office of sample origin, will be charged \$25 per sample.

V. SUMMARY OF HOW TO COLLECT AND SUBMIT A SOIL SAMPLE FOR A NEMATODE ASSAY

1. Collect a soil sample for nematode assay.
 - a. Take 20–30 soil cores from random locations throughout a field. If a problem area is being sampled, collect soil from the margin of the affected area.
 - b. Collect soil to a depth of 8" (20 cm) in the root zone of living plants. Sampling depth may be different with certain crops, such as turf.
 - c. Thoroughly mix the collected soil and put about 1 pint of soil into a plastic bag. Seal tightly.
 - d. Keep samples cool. Do not allow samples to dry out.
2. Fill out a "NEMATODE ASSAY FORM" for each sample. Supply all information requested. You **MUST** list present, past, and future crops to assist in identifying nematode problems and making management recommendations. Also list variety grown. Variety information is critical for soybeans and tobacco.
3. Carefully label plastic bags on the outside with a permanent marker.
4. Your county Extension office will send the sample to the Extension Nematology Laboratory in Athens. The results of the assay and recommendations will be returned to you through your county Extension office. Keep a record of which nematodes are found in which fields.



WEEDS

Taylor Singleton—Extension Sustainability Specialist

Correct identification may be required to ensure the proper choice of control methods. Weed specimens may be identified for you by this procedure:

1. Collect a representative specimen, preferably with flowers and fruit, but definitely with leaves, stem, and roots.
2. Place specimen between sheets of newspaper and mail in a padded envelope. DO NOT send specimens wrapped in wet paper towels and sealed in plastic bags. (Aquatic plants may be shipped in moist paper towels in a zip lock bag.)
3. Send a letter with at least this information:
 - a. Associated desirable plants, type of turfgrass, or crop.
 - b. Degree of infestation and size of the weed.
 - c. If control suggestions are required.

SHIPPING WEED SPECIMENS FOR IDENTIFICATION

Send the specimen to the weed scientist who has responsibilities for weed control on the site or crop where the weed was found:

Extension Weed Science
Crop and Soil Sciences
1109 Experiment Street
UGA-Griffin Campus Griffin, GA 30223-1797

Dr. Stanley Culpepper
Horticulture Bldg.
P.O. Box 748 Tifton, GA 31793

Responsibilities: Cotton, Vegetables, Small Grains, Pecans

Dr. Eric Prostko
Horticulture Bldg.
P.O. Box 748 Tifton, GA 31793

Responsibilities: Corn, Sorghum, Peanuts, Soybeans, Canola

Dr. Gary Burtle
Plant Science Bldg.
P.O. Box 748 Tifton, GA 31793

Responsibilities: Aquatic Weeds, Fish

Mr. Wayne Mitchem
Mountain Horticultural Crops Research & Extension Center
455 Research Drive
Fanning Bridge Road Mills River, NC 28759

Responsibilities: Apples, Peaches, Grapes, Muscadines, Pecans

Dr. Mark Czarnota
Horticulture
1109 Experiment Street
UGA-Griffin Campus Griffin, GA 30223-1797

Responsibilities: Blueberries, Christmas Trees, Ornamentals

Lisa Ames
UGA Homeowner Insect and Weed Diagnostic Laboratory 210 Cowart Bldg.
UGA-Griffin Campus 1109 Experiment Street
Griffin, GA 30223-1797

Responsibilities: Home Gardens, Home Lawns

FISH KILL DIAGNOSTICS

James Shelton and Wesley Gerrin, Fisheries

GUIDELINES FOR FISH DIAGNOSTIC SERVICES

In the case of fish kills suspected to be the result of diseases, parasites, insecticides, and other chemicals, fish specimens may have to be examined to confirm the problem. It is very important that the fish arrive at the laboratory in a usable condition.

A. Diseases and Parasites in Fish Tissue

The Veterinary Diagnostic Laboratories located at the College of Veterinary Medicine, Athens and Tifton, as well as the Extension fisheries specialist, offer services in the area of fish problems. Assistance is available to veterinarians, county Extension agents, fish farmers, or other interested individuals. Specimens of fish should be submitted in the following manner:

1. Live fish showing signs of disease are always preferred for examination. Small (fingerlings or less than 10 inches long) live fish should be placed in a 2–5-gallon plastic bag half-full of water and topped off with air or, preferably, oxygen. Seal the top of the bag with two strong rubber bands. This is the most desirable sample to deliver to a lab. An aerated container may also be used to hold water and fish during transport.
2. Dead fish should be placed in plastic bags without water and sealed. These bags should be placed in an insulated shipping container with an ice pack for shipment. For fish diseases, Do Not Freeze!! Fish must be freshly dead for a diseased sample to be useable. When pesticide kills are suspected, fish may be frozen prior to shipment (see section B below).
3. Preserved fish or fish organs should be placed in 10% formalin (10 parts formalin + 90 parts water) in a plastic container. In some cases, 70% ethyl alcohol may be used as a preservative. Use this method only after calling a laboratory for instruction.
4. Call the appropriate laboratory before the shipment is dispatched to ensure personnel will be available to take care of the specimens when they arrive. Fees are charged for Veterinary Diagnostic Laboratory services.

Direct courier is the only way to ensure that specimens will arrive at the laboratory in a usable condition. Commercial transportation, bus, UPS, mail, etc., are usually unsatisfactory as methods of sending live or fresh fish specimens to the laboratories. The results from the laboratory are only as good as the specimen submitted.

Regardless of the method chosen for submission of fish samples, it is important that a detailed written history be submitted including: name and address, water temperature, amount of water in tank or pond, number of fish and the species, feeding schedule and type of feed, any antibiotic or chemical therapy, changes in color or swimming ability of fish, duration of illness, and number of fish lost. In all aquaculture cases, report dissolved oxygen, nitrite, total ammonia, pH, alkalinity and chloride if possible. A sample of pond water (at least 125 milliliters) should be sent along with the fish. Submit 2 but no more than 5 fish from the affected population in the sample for fish disease analysis. Select fish that are showing abnormal behavior or signs of a disease and choose small fish (fingerlings less than 10 inches long, or less than ½ pound unless no small fish are available) when possible.

Samples should be transported to the laboratory by the fastest means possible. A visit to the farm by specialists may be necessary for better understanding of a fish kill, but the best information may be obtained on the day the fish kill began.

The Athens Veterinary Diagnostic Laboratory is located at the College of Veterinary Medicine, Room 501 DW Brooks Drive, Athens, Georgia 30602; GPS Coordinates: Latitude 33.940590; Longitude -83.374870. Laboratory hours are 8 am–5 pm, Monday–Friday. The telephone number is 706-542-5568, call to request UPS shipping labels. For immediate service, an appointment is needed.

The Tifton Veterinary Diagnostic and Investigation Laboratory is located at the intersection of I-75 and Brighton Road, Tifton, GA. The contact telephone number is 229-386-3340. Call to request UPS shipping label. Use the Distance Diagnostic Digital Imaging System when possible to submit images of fish showing disease signs.

B. Insecticides and Other Chemicals in Fish Tissue

The Athens Agricultural and Environmental Services Laboratory provides analysis of fish tissues for insecticides and other chemicals.

1. Live fish should be collected, wrapped in aluminum foil, and frozen before shipping. Obtain information about the identity of the suspected chemical.
2. Frozen fish (foil wrapped) should be packed in plastic bags without water and sealed. Place bags in an insulated shipping container along with sufficient ice packs for shipment.

■ SUBMITTING SPECIMENS FOR IDENTIFICATION: FISH KILL DIAGNOSTICS

3. Call the Athens Vet Diagnostic Center at 706-542-5568 for necropsy and toxicology in pollution cases that involve potential legal cases.
4. Direct courier is the best way to ensure specimens will arrive at the laboratory in a usable condition. Commercial transportation, such as a bus or UPS is satisfactory; that is, as long as the transit time is short enough to ensure the fish will arrive still frozen.
5. Call the Athens Vet Diagnostic Lab at 706-542-9023 for specific sample size information.

GUIDELINES FOR SUBMISSION OF WATER QUALITY SAMPLES

A. Water Chemistry Analysis

Containers:

1. Plastic 500 ml bottle for all analyses except pesticides and heavy metals.
2. Glass 1000 ml amber bottle with aluminum foil lined lid for pesticides and heavy metals analyses. Two samples should be submitted: one each for pesticides and heavy metals. These bottles are available from the Agricultural and Environmental Services Laboratory, Athens.

Method of Sampling (as soon as possible after a fish kill):

1. Samples should be collected at multiple locations in the pond and pooled for the sample submission. Sample pond water from 6" below the water surface and about 1 foot above the pond bottom in at least 3 locations around the pond. Pour the samples into a clean plastic bucket, then fill the 1000 ml amber glass containers for analysis (See the AESL Fee Schedule for sample handling tips). Refrigerate but DO NOT FREEZE glass bottles.
2. Water should not be sampled near any inflows that might dilute the sample, but should represent the area of fish death.
3. Care should be taken not to contaminate samples with mud, plant, or insect material. Contact the Extension fisheries specialist before submitting a water sample for analysis to discuss the identity of the suspected chemical.
4. If pollution of a public waterway is involved, contact the Georgia Department of Natural Resources, pollution hotline, 1-800-241-4113.
5. Ship samples, check payment, and submission form by UPS overnight to:

Soil, Plant, and Water Laboratory
University of Georgia
2400 College Station Road
Athens, GA 30602.

B. Algal Analysis

The Agricultural and Environmental Services Laboratories (AESL) has existing tests for fishponds (W1 and W18) that help characterize conditions that may be conducive for algal growth. A new test protocol has been developed that includes these tests as well as algal genus and species identification (Test 1). If this test confirms that toxic algae are present at greater than 2000 cells/mL, additional testing on chemical characterization of the toxin as well as quantification of the toxin level is highly recommended (Test 2). Sample volume requirements for the tests are the following:

Test 1. Water quality and algal identification—two 125 ml, plastic, or Nalgene containers wrapped with aluminum foil.

Test 2. Toxin identification and concentration—one 125 ml, plastic, or Nalgene container wrapped with aluminum foil.

Water Sample Collection for Test 1 (two 125 ml):

- Collect water samples from several different areas around the pond as far from the bank as possible during the early afternoon (if possible).
- Hold the container(s) under water and let it fill completely.
- Mix all of the collected water together in one large, clean container (ex. bucket/pail) that has been pre-rinsed with water in the pond.
- Pour water from the composite sample into 2 plastic or Nalgene bottles provided for this purpose. Cap tightly. Each bottle holds 125 ml. One bottle is sufficient for water quality test, and the other bottle for algae test.
- Wrap each bottle with aluminum foil to keep light from promoting algal growth during transit.
- Ship samples, check payment, and submission form by UPS overnight to:

Soil, Plant, and Water Laboratory
University of Georgia
2400 College Station Road
Athens, GA 30602

Water Sample Collection for Cyanobacteria (for toxin screening, 125 ml), Test 2:

- Collect surface water sample(s) from the downwind side of the pond during the early afternoon. This is typically where a scum will develop if a cyanobacteria bloom is present.
- Hold the plastic or Nalgene container at the surface and let it fill completely.
- Wrap the bottle with aluminum foil to keep light from promoting algal growth during transit.
- Ship samples, check payment, and submission form by UPS overnight to:
Soil, Plant, and Water Laboratory
University of Georgia
2400 College Station Road
Athens, GA 30602

Combined Sample Submission for Cyanobacteria (three bottles):

- Request sampling Kit from 706-542-9023 UGA AESL, Athens, GA.
- One 125 mL opaque Nalgene container for Water Quality Test
- One 60 mL opaque Nalgene bottle (without Lugol) for Algal Identification
- One 60 mL Nalgene bottle with Lugol and wrapped in aluminum foil for Toxin Identification
- Ship samples, check payment, and submission form by UPS overnight to:
Soil, Plant, and Water Laboratory
University of Georgia
2400 College Station Road
Athens, GA 30602

VERTEBRATES

Michel Kohl, Wildlife Specialist

Hand carry or mail specimen to Mike Kohl, Wildlife Specialist, Warnell School of Forestry and Natural Resources, The University of Georgia, Athens, Georgia. Telephone Number (706) 389-0404; email michel.kohl@uga.edu.

LIVE SPECIMENS

Live organisms may be held for several days pending identification and later released. The key is to provide air, moisture, water, and, sometimes, food. Keep from direct sun, excessive heat, and freezing temperatures. All wildlife can carry potentially harmful diseases and care should be taken when handling live animals. Most, including snakes, are protected by law. A permit from the Georgia Department of Natural Resources is required before collecting nearly all specimens.

Snakes and Lizards

Place in a bag of tight-weave cloth or container with a tight-fitting, perforated lid. Include a handful of damp leaves or moss. Keep at room temperature and out of the sun. Specimens can survive without food for a week or more. Place snakes in a container with water for a few hours every few days. Spray water in container with lizards; they will lap water drops.

Frogs, Toads, and Salamanders

Place in a cloth bag with plenty of damp leaves or moss. Sprinkle bag with water as necessary to keep moist.

Aquatic Salamanders and Tadpoles

Care for as live fish.

DEAD SPECIMENS

Rodents and Other Small Vertebrates

Small mammals taken from traps should be frozen. Other dead vertebrates, such as reptiles and amphibians, should be preserved in Ethanol. Seventy to eighty percent (70–80%) alcohol will also do as a preservative. Inject body cavity or pierce in several places. Place in plastic bottle with a tight-fitting lid. Pack jar in mailing tube or well-made cardboard box. Contact package service or postal service prior to shipping specimens.

Dry animal parts, such as skulls or pieces of skin, can be placed in mailing tubes. Pack with crumpled paper. Accurate identification is easier with whole specimens in good condition. Skulls (cleaned and free of insects or tissue) are best for identification of mammals.

DIGITAL PHOTOS

Digital photography often provides enough information for an identification. You can photograph many kinds of small animals—alive and dead. You can easily photograph harmless snakes, frogs, turtles, lizards, etc. Use a setting that will show pattern. Use adequate light and a neutral background. Include some form of scale (e.g., tape measure). Take several pictures from various angles. For snakes and lizards, photograph head, face, belly, and back, showing all lines or patterns. Mail or email the photo to the wildlife specialist.

PESTICIDES, FUMIGANTS, TOXICANTS

Use of poisons may be restricted to licensed pesticide applicators only. Always consult the label of a current product for expiration data and legal restrictions on use and application. Always conform to pesticide labels but use caution if working with older formulations or products—the EPA registration may have expired. Current information on pests and pesticide products can be found by searching EPA websites, state registration websites, other online sources or contacting your county Extension agent. Additional information on pesticides use can be found at kellysolutions.com/ga/searchbypest.asp.