

SUBMITTING SPECIMENS FOR IDENTIFICATION: *COLLECTION, PREPARATION AND SHIPMENT*

INSECTS

Dan Horton, 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. <http://www.ent.uga.edu/extension/insectform.pdf>

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
463 Biological Sciences Building
The University of Georgia
Athens, GA 30602

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

Extension Entomology Rural Development Center
P.O. Box 1209
Tifton, GA 31793

(row crop pest samples)

GUIDELINES FOR SUBMITTING DIGITAL AND PHYSICAL PLANT DISEASE SAMPLES THROUGH THE DISTANCE DIAGNOSTICS THROUGH DIGITAL IMAGING (DDDI) SYSTEM

Elizabeth Little, Plant Pathology Extension Specialist

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 appropriate management recommendations. Our clients include Extension educators, growers, retailers, arborists, golf course managers, researchers, and homeowners. The Plant Disease Clinic works closely with the UGA Cooperative Extension county offices. The goal of our diagnostic services is to promote the most up-to-date integrated pest and disease management practices for clientele in the state of Georgia.

Contact your county office for assistance with your plant disease problem <http://extension.uga.edu/about/county>. If county Extension agents cannot provide an answer to the disease problem, they will often submit the sample to the appropriate plant disease clinic and specialist. All samples must be submitted through county Extension offices.

Instructions for Submitting Physical Samples:

The UGA Plant Disease Clinics use the Distance Diagnostics through Digital Imaging System (DDDI) to track both physical and digital disease submissions. All county Extension offices have access to the DDDI system to submit information on samples before shipping. DDDI is used by the clinics to track when samples are sent and when they arrive. Specialists use this system to return diagnoses to county offices. The DDDI system is a valuable tool for tracking disease outbreaks from year to year.

Fill out a PLANT DISEASE INFORMATION FORM for commercial samples or a HOMEOWNER IPM CLINIC form. The county Extension office should have copies of these forms and the information must be entered into the DDDI system by the county Extension office. The information on these forms is a valuable tool in the diagnostic process. Forms and more information can be found on the clinic website: <http://plantpath.caes.uga.edu/extension/clinic.html>.

If possible, ship specimens Monday, Tuesday or Wednesday. Samples shipped on Thursdays and Fridays usually take longer to reach the Plant Disease Clinic resulting in possible specimen degradation. Specimens may be sent by regular mail, 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. It is advised that you place the specimen in a refrigerator over the weekend if necessary. Place prepared specimen in an appropriate-sized box.

Taking Good Images for the DDDI System:

Images can be submitted with physical samples or as a digital submission through the DDDI system. Diseases and disorders are often influenced by conditions in the surrounding site. For dieback issues on woody plants, 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 a complete diagnosis and a follow-up physical sample may be needed, but images are an important part of the diagnostic process.

Preparation of Physical 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 is very difficult and, often, impossible.

Place diseased specimens in a plastic bag. Disease diagnosis is usually impossible using a completely dry sample. **DO NOT ADD ANY MOISTURE.** Place a DRY paper towel in the plastic bag. This will 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 to 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.**

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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**—because many roots will be lost. If the entire plant cannot be submitted, images of the entire plant and site may be useful in diagnosing the problem.

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 usually indicate chemical injury or some type of root disorder (physiological, organic or chemical) in which case, it may be necessary to include the roots.

Turf. Remove an 8-12” 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 PLANT DISEASE SPECIMENS

When submitting an entire plant for diagnosis, root systems must be bagged separately to prevent soil from coming in contact with above-ground plant parts. Otherwise, place diseased specimens in a plastic bag. **DO NOT ADD ANY MOISTURE**. Place a **DRY** paper towel in the plastic bag with the specimen. This will absorb any excess moisture. Fleshy fruit and vegetables should be wrapped separately. Paper towels are better wrappings, but brown paper and newspaper are good. **KEEP ALL SPECIMENS COOL. DO NOT ALLOW SPECIMENS TO BECOME DRIED OUT AND BRITTLE.**

HOW TO SUBMIT SAMPLES FOR HOMEOWNER PLANT DISEASE DIAGNOSIS

Elizabeth Little, Plant Pathology Extension Specialist

The Plant Pathology Homeowner physical sample submission is now handled through the UGA Distance Diagnostics through Digital Imaging system. To submit a physical sample for a homeowner, navigate to <http://www.dddi.org/uga/> and login using your username and password. Upon login, select “Plant Pathology” from the side menu. The content pane to the right of the side menu will display the available forms for Plant Pathology. Choose “Digital & Physical Plant Pathology Homeowner.”

The content pane will display the client information form, which is identical to the client information form used for digital sample submissions. Select your client from the “Select Existing Client” box, or enter the client’s information in the “Client Information” form. When you have selected the client, or entered the client information, click “Continue” to go to the sample submission form.

The content pane will display the sample submission form. Enter the appropriate information in the form. Within this screen, you can select whether you are submitting a PHYSICAL, DIGITAL or PHYSICAL & DIGITAL sample. Please mark the appropriate choice and proceed by filling out the rest of the required information. Take note that all elements designated with an “*” on the form are required to be completed. If one of the questions does not pertain to your situation, enter “NA” or “Not Applicable.”

When you have completed all the information on the form, click “Submit Form” at the bottom of the submission form. If you have left a required form element blank, you will receive an error message. Upon successful submission of the form, you will receive a

success message with your sample tracking number and a link to generate a PDF report of your sample information. You must print the PDF/HTML sample report and enclose it with the sample to be mailed to the lab. If you do not print and enclose the PDF with your sample, your sample may not be diagnosed. Mail your physical sample and printed PDF sample report to the lab.

Your diagnosis will be handled through the UGA DDDI system, as well. Upon diagnosis, you will receive an email with your diagnosis. You may view your diagnosis in the DDDI system at any time subsequent to diagnosis.

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

Ship specimens Mondays, Tuesdays, and Wednesdays. Samples shipped on Thursdays and Fridays usually require longer to reach the Plant Disease Clinic. This often results in complete decay or drying-out of the specimen; therefore, diagnosis is greatly hindered. Place prepared specimen in a mailing tube. If specimen is too large, put it in an appropriate sized box. Fill out as completely as possible a PLANT DISEASE INFORMATION FORM (blue) for commercial samples. Address with appropriate label and send to either the Athens or Tifton Extension Plant Disease Clinics, depending on the crop involved.

Ship the following COMMERCIAL Disease Specimens Corn, Cotton, Peanut, Pecans, Tobacco, Soybeans, Vegetables and Kenaf	 To Tifton Clinic	Tifton Clinic Address UGA Plant Pathology Department Tifton Plant Disease Clinic Room 116 4604 Research Way Tifton, GA 31793
Ship the following COMMERCIAL Disease Specimens Christmas Trees, Floral Crops, Ornamental Trees and Shrubs, Fruits, Legume Forages, Forestry Trees, Small Grains, Turf, Urban Ornamental Landscape, Mushrooms and Wood Rot	 To Athens Clinic	Athens Clinic Address Plant Disease Clinic Dept. of Plant Pathology 2106 Miller Plant Sciences Bldg. University of Georgia Athens, GA 30602
Ship all HOMEOWNER Disease Specimens REGARDLESS OF CROP (no charge for community garden samples)		

SUBMITTING SPECIMENS FOR IDENTIFICATION: COLLECTION, PREPARATION AND SHIPMENT

NEMATODES

Bob Kemerait, 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:

CROP	WHEN TO SAMPLE	COMMON NEMATODES
Cotton	September, October, November	Root-Knot, Columbia Lance, Reniform
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	Root-Knot
Soybeans	September (group IV) October (groups V, VI) November (group VII)	Root-Knot, Columbia Lance, Reniform, Soybean Cyst
Tobacco	July	Root-Knot
Turfgrass warm season cool season	June, July, August September, October, April	Root-Knot, Lance, Sting, Ring
Vegetables	August, September	Root-Knot

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 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 \$12 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.

SUBMITTING SPECIMENS FOR IDENTIFICATION: COLLECTION, PREPARATION AND SHIPMENT

WEEDS

Patrick E. McCullough, Extension Agronomist-Weed Science

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.

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:

Dr. Patrick McCullough
Crop and Soil Sciences
1109 Experiment Street
UGA-Griffin Campus
Griffin, GA 30223-1797

Responsibilities
Forages, Noncropland
Turfgrasses (commercial)

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

Responsibilities
Cotton, Vegetables
Small Grains, Pecans

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

Responsibilities
Blueberries
Christmas Trees
Ornamentals

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

Responsibilities
Corn, Sorghum
Peanuts, Soybeans
Canola

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

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

Responsibilities
Aquatic Weeds,
Fish

SUBMITTING SPECIMENS FOR IDENTIFICATION: COLLECTION, PREPARATION AND SHIPMENT

FISH

Gary J. Burtle, Animal and Dairy Scientist

GUIDELINES FOR SUBMISSION FOR DIAGNOSTIC SERVICE

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:

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 live fish should be placed in a 5-gallon plastic bag half-full of water and topped off with air or, preferably, oxygen. Seal the top of the bag. 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 case, 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.

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 Co-Ordinates: 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. For immediate service an appointment is needed. Call 229-386-3364, gburtle@uga.edu, Dr. Gary Burtle, for assistance. Use the Distance Diagnostic Digital Imaging System when possible to submit images of fish showing disease signs.

B. Insecticides and Other Chemicals (analysis by Agricultural and Environmental Services Laboratory, Athens):

1. Live fish should be collected, wrapped in tin 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.
3. Call the Pesticide & Hazardous Waste Laboratory (AEL), 2300 College Station Road, Athens, Georgia 30602-4356, at 706-542-9023, to ensure personnel will be available to take care of the specimens when they arrive and to discuss fees for service.
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. A minimum of 30 grams (1 oz) of fish must be submitted for analysis.

SUBMITTING SPECIMENS FOR IDENTIFICATION: COLLECTION, PREPARATION AND SHIPMENT

FISH HABITAT: WATER SAMPLING PROCEDURES

Containers:

1. Plastic 500 mL bottle for all analyses except pesticides and heavy metals.
2. Glass 1000 mL amber bottle with tin 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 AEL 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.

WATER SAMPLES FOR ALGAL TOXIN 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.

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

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VERTEBRATES

Mike Mengak, Wildlife Specialist

(Hand carry or mail specimen to Mike Mengak, Wildlife Specialist, Warnell School of Forestry and Natural Resources, The University of Georgia, Athens, Georgia 30602 – Telephone Number (706) 583-8096, FAX Number (706) 542-8356, Email mmengak@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 and other dead vertebrates, such as reptiles and amphibians, can be preserved in 10% formalin solution (1 part formalin to 9 parts water). 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.** 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 local county agent.

Additional information on pesticide use can be found at www.kellysolutions.com/ga/searchbypest.asp.