DRAFT-CONFIDENTIAL, FOIA EXEMPT, PREDECISIONAL

EPA

Region I

Boston, Massachusetts

DRAFT

Oversight of GE Field Studies
for
Housatonic River Primary Study Area

DCN: GE-082902-ABEG

August 2002

Environmental Remediation Contract
General Electric (GE)/Housatonic River Project
Pittsfield, Massachusetts

Contract No. DACW33-00-D-0006/004

WOODLOT ALTERNATIVES, INC.
ENVIRONMENTAL CONSULTANTS

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Prepared by

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Prepared under

EPA Contract No. DACW33-00-D-0006/004

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Region 1

Boston, Massachusetts

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1.0 INTRODUCTION

Polychlorinated biphenyls (PCBs) have been found in the water, substrates, and floodplain sediments of the Housatonic River in the vicinity of Pittsfield, Massachusetts. The source of PCBs was a former electrical transformer facility in Pittsfield operated by General Electric (GE) from 1932 to 1977. That facility ceased operation in 1977, but the release of PCBs into the river system, from historic spills and underground storage tank ruptures, continued.

The United States Environmental Protection Agency (USEPA) has been investigating the extent of PCB contamination in the Housatonic River system since the early 1990's in support of human health and environmental risk assessment. Limited clean-up activities have occurred in residential areas throughout Pittsfield where elevated levels of PCB's have been discovered.

A Consent Decree between GE and USEPA in 1999 outlined an agreement by which both parties would continue to investigate the extent of PCB contamination in the City of Pittsfield, the Housatonic River and its floodplain habitats, and biota using the river system and evaluate corrective measures. The decree also included a data exchange agreement. The USEPA has continued to conduct activities to characterize the contamination within the river system. GE has also initiated it's own studies investigating the potential effects of PCB contamination on different biota in the River and its floodplain habitats. Both parties have also agreed to provide and allow professional oversight of field investigations initiated since the execution of the Consent Decree.

GE presented information on its planned studies at a meeting with USEPA on May 3, 2001. At that meeting, GE displayed a Powerpoint® presentation titled "GE's Site-Specific Field Studies of Ecological Receptors in the Housatonic River Watershed" that identified six studies to be initiated in 2001. The goals and general field methods of each of the six studies was included in that presentation. Hard copies of the presentation were provided, but no detailed work plans identifying measurement and assessment endpoints, detailed study designs, detailed field methodologies, or statistical analysis were ever provided by GE, despite repeated requests.

Therefore, the original May 2001 presentation represents the only source of GE's work scope information available to the USEPA during its oversight and assessment of those investigations. A copy of that presentation is provided in Appendix A.

Woodlot Alternatives, Inc. (Woodlot) was contracted by Weston Solutions, Inc. (formerly Roy F. Weston, Inc.) to perform oversight of field studies being conducted by GE along the Housatonic River. A copy of the work plan for the oversight of GE's field studies is provided in Appendix B. This report describes the oversight work conducted during 2001 and 2002, it is not intended to critique or be a peer review of the work; rather, it presents the observations of how the work was conducted. A separate report with comments on the scientific validity and robustness of the studies may be developed at a later time.

The objectives of the oversight work were to better document the goals of each study through discussions with researchers in the field, to identify the means (measures) by which GE intends to fulfill those goals, and to document the specific field and laboratory methods used.

2.0 STUDY OVERVIEW

Six field investigations where overseen by Woodlot during 2001 and 2002. These focused on largemouth bass, wood frogs, belted kingfishers, American robins, short-tailed shrews, and mink. The following sections present an overview of the study methods, the number and dates of oversight visits, and observations during the oversight visits. The first paragraph of each section gives a brief overview of the goal and methods of each study, based on GE's May 3, 2001 presentation "GE's Site-Specific Field Studies of the Ecological Receptors in the Housatonic River Watershed." Information presented in this report represents information available to Woodlot during oversight visits. This information includes the original GE presentation; discussions with field personnel regarding methods, sampling regimes, and equipment used; and direct field observations. Data sheets were filled out after each oversight visit and are included in Appendix C.

3.0 OVERSIGHT RESULTS AND OBSERVATIONS

3.1 LARGEMOUTH BASS

The goal of the largemouth bass study was to evaluate largemouth bass reproduction and population structure in the Housatonic River. The study proposed to do this by: (1) monitoring bass nesting activities and reproduction in the main stem of the River, (2) monitoring young-of-year (YOY) production and growth, and (3) calculating condition factors, such as length–frequency analysis and length–weight statistics for bass. Additional data on the overall fish community (e.g., number and type of species) was to be collected and species richness, trophic levels, and other fish community metrics evaluated. See Appendix A for the original May 2001 work scope overview provided to USEPA by GE.

The study was performed by R2 Resource Consultants, Inc. (R2), of Redmond, Washington. The principle investigator present during oversight visits was Emily Greenburg. Several additional personnel provided field assistance.

Three oversight visits were conducted from May to June 2001 during bass breeding season, and one visit was made during the October electrofishing survey. Table 1 shows the dates of the visits and the components of the study that were conducted during each visit. Following is a description of the study based on observations made during field visits and information provided by personnel on site.

3.1.1 Nest Monitoring

The study area, consisting of the confluence downstream to Woods Pond, was divided into fifteen index areas by R2, which they believed represented suitable nesting habitat for largemouth bass. Index areas were all located in backwater areas because researchers assumed that the main river channel current was too strong and Woods Pond had algal mats too dense to be optimal habitat (E. Greenburg, pers. comm., 5/24/01). Each index area was visited approximately twice a week (E. Greenburg, pers. comm., 5/24/01), and a small boat was rowed over shallow areas to look for potential largemouth bass nests. The amount of time taken to survey each index site was recorded; however, survey effort (amount of time) differed between

sites. When nests were found, they were observed until adults returned to nest and a positive species ID could be made. This was done because both pumpkinseed sunfish and bluegill nest in similar areas as largemouth bass, at the same time, and make similar nests. For each active nest found, the diameter and depth were measured and the location was recorded. If present, eggs were observed using an aqua scope and their condition was noted. Eggs were not counted or estimated.

Nests were to be revisited every two days until dispersal. During each visit, presence and condition of eggs and other bass life stages were noted. If a nest failed, its likely cause (e.g., fungal infection, abandonment) was assessed by E. Greenburg based on experience, best professional judgement, and previously recorded observations at that particular nest. After eggs hatched, the number and size of fry was recorded during each visit. Numbers of fry were estimated visually. Exact counts were not made. Instead, categorical estimates of less than 100, greater than 100, or greater than 1,000 were made. Fry size was measured by capturing some of the young using a small net, and then measuring them with a small scale placed in a container of water. Several fry were measured each time, if possible.

After dispersal from the nest sites, schools of fry in areas where nesting had occurred were still observed; however, individual broods could no longer be distinguished. Schools of fry were identified to species based on pigmentation, gut coil, robustness, and presence of identifiable adult. If no adult was present, species could not be positively identified. No voucher specimens were taken to aid in identification. The number of young in each school was estimated and individuals were captured in nets to measure length and weight. Minnow traps were also deployed in backwater areas to capture young for length–weight measurements (at the time of Woodlot's visits no fish had been captured in minnow traps).

3.1.2 Habitat characterization

Water chemistry data (pH, DO, conductivity, temperature) were measured during each visit using hand-held equipment and deployed instruments. Ten Hobo data loggers were deployed between the confluence and Woods Pond to record water temperature. Nine Greenspan probes were deployed on the edge of the river channel and in backwaters to measure DO, pH, and water

temperature. These data loggers were deployed for one-week periods. Floats were not used for the first two deployments, which resulted in the data logger lying on the bottom. Researchers thought this was causing problems with the data and attached floats for the third round to correct the problem. Woodlot observed the third deployment. Data logger locations were recorded by using a hand-held laser range finder to record the distance from the shore.

3.1.3 Population estimates

An electrofishing survey was conducted in October 2001 to record YOY population characteristics. Electrofishing was planned at seven sites from Yokum Brook to the backwater just north of Woods Pond; however, backwater sites could not be fished due to low water levels. Because of this, the areas where bass nested and where young were raised could not be sampled. Researchers performed electrofishing in the main channel of the river, nearest the entrance to each backwater, but these sites were not in the same area or same habitat.

During electrofishing, each bass captured was weighed with a hand-held scale and measured to the nearest 5 mm. Some bass were tagged and had scales removed for age analysis. A representative set of additional fish species captured were weighed and measured. Catch per unit effort from the electrofishing survey, along with 2000 and 2001 data, were to be used for population estimates. Nesting success and population information from the Housatonic was to be compared with values reported in literature.

3.2 WOOD FROG

According to GE's May 2001 PowerPoint presentation (Appendix A), the goal of the wood frog productivity study was to "evaluate effects of larvae density, predation levels and PCB levels on success of metamorphosis". Woodlot understood from conversations with Kevin Mooney of GE, that the predation effects goal was eliminated from the study when field investigations were initiated.

The study was designed by William J. Resetarits, Jr., Associate Professor, Department of Biological Sciences at Old Dominion University, Norfolk, Virginia. Field work was performed by two employees of ARCADIS, Tom McCllenahan and Dan DeOrazio.

Egg masses were retrieved from floodplain pools (USEPA designated vernal pools 8 VP 4, 8 VP 5, 23B VP 1, 23B VP 2, 40 VP 1, and 40 VP 3) with varying PCB concentrations and allowed to hatch in containers off site. Larvae were transported from the lab to various enclosures in floodplain ponds with varying PCB concentrations using different experimental parameters (i.e., different initial densities). Data to be recorded upon completion of metamorphosis included number of metamorphs, time to metamorphosis, weight at metamorphosis, and possibly number of untransformed larvae.

Four oversight visits were conducted between May 16 and June 28, 2001 (Table 1). Additional visits were not made when eggs were collected or when metamorphs were harvested from the enclosures because GE failed to notify the EPA or their consultants when fieldwork was to be conducted. Tasks observed included monitoring of tadpoles in enclosures in the field and data collection on metamorph wood frogs.

At least 21 wood frog egg masses were collected from 5 source pools with varying soil PCB concentrations (USEPA designated vernal pools 8 VP 4, 8 VP 5, 23B VP 2, 40 VP 1 and 40 VP 3). Eggs were hatched in the lab and approximately one-week-old tadpoles from three of those five pools were transferred to enclosures in two pools (labeled as vernal pools 23B-VP-1 and 2 in USEPA studies). Nine enclosures were placed in each of the two uncontaminated pools. Larvae were placed in these enclosures at three levels of density; 200, 400, or 800 per enclosure. The study was replicated in the second pool. The enclosures were to be checked every three days to ensure that they were not vandalized, and to monitor development of larvae. Woodlot was unable to verify that the enclosures were monitored every three days as planned.

Enclosures consisted of white mesh netting in an approximately 1 m x 3 m rectangle with the corners secured to metal stakes. Enclosures had mesh netting on four sides and the bottom, with the top left open. Some enclosures contained rocks to hold down the netting in areas that were being pushed up by growing or previously cut vegetation. No food source was added to the enclosures and tadpoles within the enclosures appeared to be approximately $^1/_3$ to $^1/_4$ the size of free-swimming tadpoles outside the enclosures. Enclosures contained invertebrates, including mosquito larvae, mayfly larvae, and predacious diving beetle larvae.

Three of the field visits (May 30, June 20 & 28, 2001) consisted of checking on the condition of larvae within the enclosures. Tadpoles observed in the enclosures on May 30, 2001 were approximately $^1/_3$ the size of tadpoles observed outside of the enclosures. Most tadpoles observed on June 20, 2001, were about 2.5 cm in length and were nearing the size at which they could metamorphose. Some tadpoles had legs, while others were half the size and without legs. ARCADIS researchers were unaware that the tadpoles had legs, and believed that none were near the point of metamorphosis (T. McCllenahan, pers. comm., 6/20/01). On June 28, water levels in both of the experimental pools were low (15 to 18 cm in depth), and parts of some of the bottom enclosures were out of the water. Many of the tadpoles in the enclosures had legs, and some had metamorphs (20 seen in Pond 6.5, 23B VP 1, and 7 seen in Pond 6.6, 23B VP 2). Some metamorphs were seen climbing up the mesh on the inside and outside of the enclosures. Others appeared to be searching for a place to climb out of the water. An oily sheen was observed on the water surface in the enclosures that were in Pond 6.6, 23b VP 2. ARCADIS researchers were unaware that there were wood frog metamorphs in the enclosures (T. McCllenahan, pers. comm., 6/28/01).

Despite requests from Woodlot, ARCADIS and GE personnel failed to notify USEPA or their consultants when they removed all of the metamorphs from the enclosures. On July 5, 2001, Woodlot was notified that only the final stages of the bass reproduction study were active (see email from K. Mooney to J. Lortie dated July 5, 2001, Appendix D). However, on July 9, 2001, GE notified Woodlot that dry conditions in the vernal pools resulted in the collection and processing of all metamorphs and remaining tadpoles on July 3. GE further explained that all collected individuals had been transported to a GE warehouse where metamorphs and tadpoles were weighed and measured. Tadpoles were being held in the warehouse until they completed metamorphosis and could be weighed and measured, a process that took about one week to complete (T. McCllenahan, pers. comm., 7/24/01). Some mortality was noted during processing (T. McCllenahan, pers. comm., 7/24/01). GE informed Woodlot on July 9 that they expected to complete the processing of these animals the following day. Individuals that were alive after processing were then brought back to the pools and released. GE also informed Woodlot that the measurement endpoints of the study changed due to the expedited removal of animals from the

enclosure. Measurement endpoints included number of and individual weight of metamorphs and number of and individual weight of tadpoles.

3.3 BELTED KINGFISHER

According GE's May 2001 PowerPoint presentation (Appendix A), the goals of the belted kingfisher productivity study were to estimate kingfisher population size in the study area and evaluate reproductive output of kingfishers, if a sufficient number of nesting sites could be identified. GE proposed to conduct the study in three phases: pre-surveys were going to be performed to identify nesting sites; nest monitoring was to be performed during the nesting season to count numbers of eggs and hatchlings per nest; and incidental observations of adults and fledged young were to be recorded. Initially, the surveys were only going to be done in 2001; however, the effort was continued into 2002 to collect additional data. In 2001, the survey was designed by Lisa Baron under the direction of Miranda Henning from ARCADIS. In 2002, the survey was designed and performed by ARCADIS.

3.3.1 2001 Nest Surveys

Oversight field surveys in 2001 were conducted May 25, May 31, and June 29, 2001 (Table 1), when investigators were monitoring nest site use and probing nest burrows with a peeper probe. In May, GE researchers floated the study area by canoe and searched for potential nest sites, i.e., small oval-shaped cavities located on eroded banks. When nests were located, they were mapped using a hand-held GPS, a wooden stake was placed near the nest with the nest number on it, and an azimuth bearing to a nearby tree was taken. The air temperature and soil temperature were also recorded. Nest sites were monitored for signs of use and presence of adults.

Nests were probed during the egg laying period to determine if nests were active and the record the number of eggs in each nest. Three nests probed on May 25, 2001, did not contain eggs. Three of four nests probed on May 31, 2001, contained no eggs and the fourth, which previously had an incubating female in it, was underwater due to a flood event that occurred. Up to three other possibly active nests had also been found, but only one was documented to contain eggs. Post-fledgling nest visits occurred on June 29, 2001. One burrow contained fragments of eggs

appearing to make up 4 – 5 eggs, and some fish bones and scales. No definitive evidence of young fledging, however, was observed.

3.3.2 2002 Nest Surveys

The belted kingfisher nest study was repeated in 2002 because an inadequate number of nests were found in 2001 and flooding interrupted the nesting cycle. Eight oversight field visits were conducted from May 9 to July 29, 2002 (Table 1). The study approach used in 2002 was similar to that used in 2001. The entire river was canoed and all exposed banks were mapped and checked for burrows by GE's consultants during the month of May. Potential nest sites were identified by the size, shape, and location of cavity openings, and areas of adult kingfisher activity were recorded. Potential nest sites were probed for the first time from May 22 to 24, 2002, using a Peeper Video Probe® from Sandpiper Technologies, Inc. Each burrow visited was measured for depth, width, height of opening, and distance from water using a six-foot measuring tape. The location of burrow in relation to the top of bank and bottom of bank was recorded. A photograph was taken and the entrance was mapped using a hand-held Garmin GPS unit. Nests were visited and probed every other week throughout the breeding season to determine status of nest, number of eggs present, date of hatching, number of young hatched, and number of young fledged. A video of each probing event was recorded.

Ten active nests were found in, and near, the primary study area. One of these nests was destroyed during the incubation period by excavation activity at the quarry it was located in. The tenth nest appeared shortly after this nest was destroyed and was located in the same quarry, not far from the destroyed nest. It was believed that is was a re-nest by the pair from the destroyed nest. Therefore, it was assumed that nine breeding pairs occurred in the study area.

Woodlot personnel found an additional nest on June 18, 2002. The burrow was well formed and appeared to be deep enough to contain a nest cavity. Claw marks and scratches at the burrow entrance suggest that it was in use. An adult kingfisher flew over the area several times and perched in a nearby tree while personnel were in the vicinity of the burrow. ARCADIS personnel canoed past the burrow at least three times during June and July oversight visits and did not notice the burrow even though it was located in an obvious exposed sandy bank and

visible from the river. When asked if any burrows were found in that section of the river, they replied that no there were not any burrows present. When asked if there were any unused burrows or partially constructed burrows in the vicinity, they again replied that there were not. Woodlot field notes, however, show that this area was visited and three potential nest cavities were probed. Breeding adults were not present (visit could have occurred before egg laying). It is not known if the site was visited again later in the breeding season to determine if the nest was in use. However, previously mentioned comments from the field investigators suggest that it was not.

During each probing event, the status of the nest was recorded along with any sightings of adult kingfishers in the vicinity. If an adult was present in the burrow it was not possible to determine the number of eggs or young also in the burrow. For this reason, the exact number of eggs laid in each burrow was not always known. Even when an adult was not present the exact number of eggs or young cold not always be determined due to the placement of egg or young. For example, newly hatched young tended to stay huddled close together and did not move even when nudged with the probe. Therefore, an accurate count could not always be made. For the same reason, unhatched eggs were not always seen. In one nest, an unhatched egg was noticed several weeks after young had hatched, but was not seen during the previous visits. Another nest believed to have produced three nestlings (during the first observation of young) was later observed to have four.

Nests were visited for the final time when nestlings were approximately 26 days old and near to fledging. The number of young in each nest was counted and it was assumed that young in nest would fledge. When young had already fledged they were often still in the area and attempts were made to locate them. In some instances, young were not in the area and no final determination of fledging success could be made. At some nests, evidence of predation after fledging (piles of feathers, carcasses outside the nest) was found. Video was taken of fledglings and observations recorded.

3.3.3 Habitat Suitability Index

Habitat surveys were conducted to estimate the value of study area habitat to kingfishers. The United States Fish and Wildlife Service (USFWS) Habitat Suitability Index (HSI) Model was followed to evaluate habitat. Two habitat types were surveyed: the river and the bank. River surveys divided the river into 1 km sections from the confluence to Woods Pond. Each 1 km section was surveyed separately. The river was canoed and the habitat features required for the HSI were recorded, including number of perches along the river, percent of the river that was blocked (inaccessible to kingfishers), and the presence and extent of ripples. Perches were defined as any branch, or group of branches, overhanging the river. Each individual branch was not counted; rather, numerous branches from the same limb or tree were counted as one perch. The center of each 1 km section was recorded using a GSP unit, and a Secchi depth reading was taken at the center of the river. No river flow or river depth measurements were taken.

Bank habitat suitability surveys were conducted at the nine banks containing active kingfisher nests and at nine randomly selected inactive banks. All exposed, sandy banks in the study area were numbered and then nine numbers were randomly chosen to determine which inactive banks would be sampled. Five of the nine inactive banks, and four of the nine active nests, were located in the quarry. The remainders were located on or near the river. At each bank, the location was mapped using a GPS unit, bank height was estimated, the number of burrows present was recorded, the location of each burrow in relation to the top of the bank (e.g., distance from top of bank) was recorded, and a soil sample was taken. The bank height and location of the nests were visually estimated by researchers, but were not measured. Banks often contained more than one distinct soil layer. When this was the case, the soil sample was taken from the same soil layer in which the burrow was located for active banks. For inactive banks, the soil sample was taken from the layer that visually seemed most representative of the entire bank. No attempt was made to quantify the number and extent of soil layers, and only one soil sample was taken regardless of the number of soil layers present. The soil samples were used to determine whether or not the bank contained <27% clay and >50% sand.

At the end of the study, materials remaining in the nest burrows were extracted. These samples were split in half. Half of all these materials were shipped to Woodlot.

3.4 AMERICAN ROBIN

According to GE's May 2001 PowerPoint presentation (Appendix A), the goals of the American robin productivity study were to evaluate reproductive success of robins in the Housatonic River floodplain and reference sites and quantify PCB concentrations in eggs and nestlings. Nests were to be identified in the 10-year floodplain and in reference sites, and observed frequently enough throughout the breeding period to document the number of eggs and hatching success. Eggs and nestlings were to be collected randomly from nests and then analyzed for PCBs.

The study was designed and overseen by ARCADIS, but was performed by several subcontractors, including Joseph Sullivan, Kelly McKay, Lonny Morse, and Minga O'Brien. Robin reproduction was studied in the Housatonic River floodplain and in two reference areas: Hinsdale Flats and Peru State Wildlife Management Areas.

Three oversight visits were conducted during May 2001 (Table 1) when nest searches, nest monitoring visits, and nestling collection were observed. Two oversight visits coincided with nest search and monitoring activities. Searches for nests were conducted by walking through suitable nesting habitat, looking for birds, and listening for territorial or alarm calls. Once located, nests were visited every 3 – 4 days. During each visit, the number of eggs in the nest was recorded, and the distance from the nest the adult flushed, the number of adult vocalizations, and number of approaches within a one-minute period were recorded.

One egg and one approximately one-week-old chick were collected from nests that contained four or more eggs and were submitted to NE Analytical Laboratory for PCB analysis. One oversight visit coincided with nestling collection activities. During each collection event, a nestling was removed from a nest by researchers with gloved hands, placed in a foil-lined container with holes, and brought to a warehouse facility for processing. The nestling and container were weighed on a calibrated scale, and the nestling was euthanized by severing the head with a scissors. The nestling was placed in a labeled chemical-free glass jar. The foil-lined

container weight was recorded. The scissors were rinsed with acetone and a cap was placed on the scissors. The sample jar was labeled and placed in a freezer.

3.5 SHORT-TAILED SHREWS

According GE's May 2001 PowerPoint presentation (Appendix A), the goals of the short-tailed shrew population study were to evaluate shrew population density at key points in the breeding season and estimate productivity of the local shrew population based on changes in population size and structure over this period. Shrews were to be live-trapped in one-hectare grids in areas of the floodplain with varying PCB concentrations at key points prior to and during the breeding season. Trapped individuals were to be counted and marked by toe clipping. The location, weight, sex, reproductive condition, age, and general condition of each shrew captured were to be recorded.

The short-tailed shrew study was designed by Rudy Boonstra, Division of Life Sciences, University of Toronto at Scarborough, Ontario, Canada. Lanna Desantis and Ken Fukumoto implemented the study; however, Mr. Fukumoto did not complete the field surveys.

Two oversight visits were conducted, one on May 31 and one on September 11, 2001, to observe trapping methods (Table 1). At the sites visited, Woodlot observed that two grids were established, each with 50 traps. Captured individuals were measured, weighed, sexed, aged, and reproductive condition noted. Animals were then marked and released. Several animals were caught during each of the oversight visits. Methods used to sex and age individuals were consistent between the two visits. During the September visit some confusion over the sex of one individual occurred. A previously marked animal was caught and determined to be female. Field personnel found that the original data for that individual, however, identified it as being male and indicated that the data would be updated to reflect the new, correct sex for that individual. Some of the summer field work for this study was interrupted due to flooding in the trap sites.

3.6 MINK

According to GE's May 2001 PowerPoint presentation (Appendix A), the goal of this study was to evaluate mink presence, distribution, abundance, and feeding habits in the Housatonic River watershed, concentrating on areas within the main river drainage and along associated backwaters and tributaries. Live traps were going to be set for mink, and if any were captured, radio transmitters would be attached and tagged animals would be monitored for their movements using systematic point and sequential location telemetry. Scent post stations were also to be established along the river and tributaries and visited periodically to look for signs of mink. Cameras were to be installed at stations where mink tracks are observed.

The study was designed by M. Chamberlain, Louisiana State University, and implemented by staff from ARCADIS (Tom McClenahan, Dan DeOrazio, and Ian Ippolito). Paul Bernstan, a local trapper, was expected to help ARCADIS staff positively identify mink tracks.

Eight oversight visits were conducted from June to December 2001 (Table 1). During oversight visits, staff from ARCADIS visited scent-post stations that had previously been installed, and scent-post survey methods and track identification techniques were observed. Seventy-five scent posts were established along the Housatonic River, from the New Lenox Road Canoe Launch to Woods Pond. Twenty-five additional scent stations were established on tributaries to the Housatonic, including Mill Brook, Roaring Brook, Fenton Brook, and a small unnamed stream off of October Mountain Road. Scent stations consisted of a circular bed of sand (very fine, sand box-type sand), scented with a cottonball soaked in mink urine, or with amino acid tablets, placed at the center of the sand bed. The scent type was alternated between stations. Four motion detector cameras were set up at scent stations where previous sign of mink had been found. Camera locations were alternated between visits. Scent stations were visited for three consecutive days, once a month, with half the stations being visited for three days, and then the remaining stations visited for the next three days. During each visit, tracks and other sign found at each location were recorded to species, when possible. After all tracks had been reviewed, the sand used was smoothed out with a brush. New lure was applied if the cottonball or amino acid tablet were missing.

During site visits, Woodlot observed that field investigators did not wear rubber boots or gloves when handling scents or when resurfacing the sand beds. Woodlot did not observe ARCADIS using scales to measure the size of individual tracks or the length of gait. On June 20, 2001, ARCADIS staff reported that they had seen "lots of river otter tracks all over the place." This statement was later recanted as a misidentification. The ACADIS staff on June 20, 2001 indicated that they had not performed any mammal tracking work before this job. On June 28, 2001, ARCADIS staff reported that they had seen three sets of mink tracks, two sets on an unnamed tributary to Roaring Brook, and one set in the floodplain.

Field investigators reported that no mink were ever trapped; therefore, that portion of the study was discontinued. The scent post stations appeared to produce animal tracks and the tracks of a number of species were observed during each oversight field visit. No mink tracks were observed during any of the eight oversight visits.

Due to the fineness of the sand and moisture associated with the floodplain soils, the scent post station sand beds were observed freezing solid during the colder winter months. Under these frozen conditions, animals could not create tracks in sand beds. Consequently, burrows were excavated near the shoreline of the river during the colder winter months. Burrows were approximately 10 cm wide and high, approximately 30 cm deep, and placed only about an inch above the water. Scents were placed at the back of the burrows and the burrow floors were examined for tracks.

Finally, snow tracking was conducted during periods when suitable snow conditions allowed. GE and their consultants did not contact USEPA oversight staff in time to allow snow tracking oversight to occur.

Table 1. Summary of oversight monitoring days, tasks observed, and personnel on site.			
Study/Date	**Tasks conducted during visit**	**Observer**	**Investigators On-site**
Largemouth Bass			
24-May-01	Nest search and data collection of physical properties of nests	Bob Roy	Emily Greenburg, Ian Ippolito
30-May-01	Nest searches, nest monitoring, data logger deployment	John Lortie	Emily Greenburg, Ian Ippolito
19-Jun-01	Nest monitoring, fish index site characterization and data logger deployment	John Lortie	Emily Greenburg, Ian Ippolito
9, 10-Oct-01	Observed electrofishing survey	John Lortie	Emily Greenburg, Dudley Reiser, Walter Klock
Wood Frog			
16-May-01	Checked enclosures	Bob Roy	Kevin Mooney
30-May-01	Observed tadpoles in enclosures	John Lortie	None
20-Jun-01	Observed tadpoles in enclosures	John Lortie	None
28-Jun-01	Observed tadpoles and metamorphs in enclosures	John Lortie	None
Belted Kingfisher			
09-May-02	Observed nest searches	John Lortie	Kelly McKay, Tom McClenahan
23-May-02	Observed nest surveys using peeper probe	Bob Roy	Kelly McKay, Tom McClenahan
25-May-01	Observed nest searches and use of nest probe	Bob Roy	Joe Sullivan, Minga O'Brian
31-May-01	Observed nest searches	John Lortie	Minga O'Brian, Kelly McKay, Lonny Morse, Joe Sullivan
29-Jun-01	Observed nest searches	John Lortie	Joe Sullivan, Lisa Baron, Kelly McKay
11-Jun-02	Observed nest surveys using peeper probe	Kurt Karwacky	Kelly McKay, Tom McClenahan
24, 25-Jun-02	Observed nest survey and riverine portion of habitat suitability index survey	Chris Werner	Kelly McKay, Tom McClenahan
09-Jul-02	Observed nest survey and bank portion of habitat suitability index survey	Chris Werner	Kelly McKay, Tom McClenahan
17-Jul-02	Observed nest/fledgling survey	Chris Werner	Tom McClenahan
29-Jul-02	Observed nest/fledgling survey	Chris Werner	Tom McClenahan, Dan DeOrazio

Table 1. Continued			
American Robin			
16-May-01	Observed nest check and egg counts	Bob Roy	Minga O'Brian, Kelly McKay
24-May-01	Observed nestling collection and processing of tissue samples	Bob Roy	Kelly McKay, Maggie Branton
31-May-01	Observed nest surveys	John Lortie	Minga O'Brian, Kelly McKay, Lonny Morse, Joe Sullivan
Short-tailed Shrew			
31-May-01	Observed trapping methods	John Lortie	Lanna Desantis, Ken Fukumoto
11-Sep-01	Observed trapping methods	Bob Roy	Lanna Desantis, Ian Ippolito
Mink			
20-Jun-01	Reviewed survey sites, scent post layout	John Lortie	Tom McClenahan, Ian Ippolito
28-Jun-01	Observed scent post survey	John Lortie	Tom McClenahan, Ian Ippolito
23-Jul-01	Observed scent post survey	John Lortie	Tom McClenahan, Ian Ippolito
21, 22-Aug-01	Observed scent post survey	Bob Roy	Tom McClenahan, Ian Ippolito
14, 15-Nov-01	Observed scent post survey	Chris Werner	Tom McClenahan, Ian Ippolito
17-Dec-01	Observed scent post survey	Bob Roy	Tom McClenahan, Ian Ippolito

Appendix A

GE's Site-Specific Field Studies of Ecological Receptors in the Housatonic River Watershed (May 2001 PowerPoint Presentation)

Fax to:
John Lovitie

GE's Site-Specific Field Studies of Ecological Receptors in the Housatonic River Watershed

May 3, 2001

FISH

Assessment of Largemouth Bass Reproductive Success and Population Structure

Goal:

- Evaluate largemouth bass (LMB) reproduction and population structure in the Housatonic River

Study:

- Reproduction: Monitor LMB nesting activities and reproduction in mainstem of the River.
- Young of Year: Monitor YOY production and growth.
- Population structure and condition: Calculate condition factors, length - frequency analysis, and length-weight statistics for LMB.

Ancillary Study on Fish Community Structure and Condition

- Obtain additional data on overall fish community (e.g., number and type of species) and evaluate species richness, trophic levels, and other fish community metrics.

Timeframe: April – October 2001

MINK

Radio Telemetry and Scent Station Study

Goal:

- Evaluate mink presence, distribution, abundance, and feeding habits in the Housatonic River watershed, concentrating on areas within the main river drainage and along associated backwaters and tributaries

Study:

- Radio telemetry: Live traps will be set for mink. If captured, mink will receive radio transmitters as implants and will be monitored for their movements using systematic point and sequential location telemetry.
- Scent post study: Stations will be established along the river and tributaries and visited periodically to look for signs of mink. Cameras will be installed at stations where mink tracks are observed.

Timeframe: April – December 2001

SONGBIRDS

Robin Productivity Study

Goal:

- Evaluate reproductive success of robins in the Housatonic River floodplain and reference sites and quantify PCB concentrations in eggs/nestlings

Study:

- Nest identification and monitoring: Nests will be identified in the 10-yr floodplain and in reference sites, and will be observed during the breeding season. Number of eggs and hatching success will be recorded.
- Collection of eggs and nestlings: Eggs/nestlings (no more than 1 of each per nest) will be collected from nests *via* random selection and analyzed for PCBs.

Timeframe: April – June 2001

PISCIVOROUS BIRDS

Kingfisher Productivity Study

Goal:

- If sufficient nesting sites can be identified, estimate kingfisher population size in study area and evaluate reproductive output of kingfishers.

Study:

- Pre-survey: A reconnaissance will be made of eroded cutbanks of the Housatonic River to identify nesting sites.
- Nest monitoring: If sufficient nests are identified, they will be observed during the breeding season. Number of eggs and hatching success will be recorded for each nest.
- Incidental observations: Presence of adult and juvenile kingfishers noted outside of their burrows will be documented.

Timeframe: April – July 2001

SMALL MAMMALS

Short-Tailed Shrew Population Study

Goals:

- Evaluate shrew population density at key points in breeding season.
- Estimate productivity of local shrew population based on changes in population size and structure over this period.

Study:

- Live trapping: Shrews (and incidental species) will be trapped in one-hectare grids in areas of the floodplain with varying PCB concentrations at key points prior to and during the breeding season.
- Population data collection: Trapped individuals will be counted and marked. Location, weight, sex, reproductive condition, age, and general condition will be recorded.

Timeframe: May – August 2001

AMPHIBIANS

Wood Frog Productivity Study

Goal:

- Evaluate effects of larvae density, predation levels, and PCB levels on success of metamorphosis.

Study:

- Egg mass collection: Eggs will be retrieved from floodplain ponds with varying PCB concentrations and allowed to hatch in containers off-site.
- Pond enclosure study: Larvae will be transferred from lab to various enclosures in floodplain ponds with varying PCB concentrations using different experimental parameters (i.e., different initial densities, some enclosures allowing and some excluding predators). Number of metamorphs, time to metamorphosis, weight at metamorphosis, and possibly untransformed larvae will be recorded.

Timeframe: April – September 2001

Appendix B

Work Plan for Oversight of GE Field Studies

1.0 Introduction

Woodlot Alternatives, Inc. (Woodlot) has been asked by the U.S. Environmental Protection Agency (USEPA) to oversee field studies being conducted by General Electric (GE) along the Housatonic River. This work plan describes the goals and planned schedule for the oversight of those studies from July 1 to December 31, 2001.

To date, GE has not provided detailed work plans for their investigations. The only documentation provided for the studies has been a presentation entitled "GE's Site-Specific Field Studies of the Ecological Receptors in the Housatonic River Watershed" dated May 3, 2001. This presentation identified six specific studies that GE will undertake in 2001, with brief descriptions of the goals and field methods of each. Additional, more detailed information on the goals and specific methods will be acquired through the oversight process.

The objectives of the oversight work, therefore, are to better document the goals of each study, identify the means (measures) by which GE intends to fulfill those goals, and document the specific field and laboratory methods used. As GE plans to conduct field investigations until December 2001, oversight work will occur through the remainder of the year.

2.0 Study Overview

As noted above, six field investigations are currently planned and underway. ARCADIS is the primary consultant for GE for these studies and is coordinating the activities of several other consultants. The six studies focus on the following species: largemouth bass, wood frogs, belted kingfishers, American robins, short-tailed shrews, and mink. Following is a brief overview of the goals and methods of each study, based on GE's May 3, 2001, presentation. Some additional information on study goals, methods, or target dates has been acquired during some initial oversight visits and is included.

2.1 Largemouth Bass

The goal of the largemouth bass study is to evaluate bass reproduction and population structure in the Housatonic River. The study proposes to do this by: (1) monitoring bass nesting activities and reproduction in the mainstem of the River, (2) monitoring young-of-year production and growth, and (3) calculating condition factors, such as length—frequency analysis and length—weight statistics for bass. The study also hopes to obtain additional data on overall fish community (e.g., number and type of species) and evaluate species richness, trophic levels, and other fish community metrics.

Field investigations include nest searches and repeated visits to located nests to monitor hatching and rearing success. Electro-shocking is planned for Fall 2001. The timeframe for this study is April–October 2001.

2.2 Wood Frogs

The goal of the wood frog productivity study is to evaluate effects of larvae density, predation levels, and PCB levels in breeding pools on success of metamorphosis. We understand that the predation effects goal has since been eliminated from the study. Egg masses will be retrieved from floodplain ponds with varying PCB concentrations and allowed to hatch in containers off-site. Larvae will be transferred from the lab to various enclosures in floodplain ponds with varying PCB concentrations using different experimental parameters (i.e., different initial densities). Number of metamorphs, time to metamorphosis, weight at metamorphosis, and possibly number of untransformed larvae will be recorded.

The enclosures are checked every three days to ensure that they are not vandalized and to monitor development of larvae. Detailed data collection will occur when larvae begin to metamorphose. The timeframe for this study is April–September 2001.

2.3 Belted Kingfishers

The goal of the belted kingfisher productivity study is to estimate kingfisher population size in the study area and evaluate reproductive output of kingfishers, if sufficient numbers of nesting sites can be identified. Nest sites will be found during a reconnaissance survey of eroded cutbanks in the study area. Nests will be observed during the breeding season and the number of eggs and hatching success will be recorded for each nest. The presence of adult and juvenile kingfishers noted outside of their burrows will be documented.

To reduce disturbance to nesting birds, only two nest monitoring events are planned – one during the nesting season to count eggs and one after fledglings have left the nest. The timeframe for this study is April–July 2001.

2.4 American Robins

The goal of the American robin productivity study is to evaluate reproductive success of robins in the Housatonic River floodplain and reference sites, and quantify PCB concentrations in eggs and nestlings. Nests will be identified in the 10-year floodplain and in reference sites, and will be observed during the breeding period. The number of eggs and hatching success will be recorded. Eggs and nestlings will be collected from nests via random selection and analyzed for PCBs.

Nest monitoring visits will be conducted frequently at all nests located throughout the breeding season. This is the only study that GE is conducting in 2001 that includes the collection of tissue samples. The timeframe for this study is April–June 2001.

2.5 Short-tailed Shrews

The goals of the short-tailed shrew population study are to evaluate shrew population density at key points in the breeding season and estimate productivity of local shrew population based on changes in population size and structure over this period. Shrews will be live-trapped in one-

hectare grids in areas of the floodplain with varying PCB concentrations at key points prior to and during the breeding season. Trapped individuals will be counted and marked. Location, weight, sex, reproductive condition, age, and general condition will be recorded.

As indicated, trapping at each site will occur periodically through the breeding period. The estimated timeframe for this study is May–August 2001.

2.6 Mink

The goal of this study is to evaluate mink presence, distribution, abundance, and feeding habits in the Housatonic River watershed, concentrating on areas within the main river drainage and along associated backwaters and tributaries. Live traps will be set for mink. If captured, mink will receive radio transmitters as implants and will be monitored for their movements using systematic point and sequential location telemetry. Scent post stations will also be established along the river and tributaries and visited periodically to look for signs of mink. Cameras will be installed at stations where mink tracks are observed.

3.0 Recommended Field Visits and Schedule

We recommend weekly or nearly weekly oversight visits during the first half of the field season (May through July). This corresponds with the largest number of studies being concurrently undertaken in the field. After July, field visits can be less frequent, as fewer studies will be ongoing. Each study has its own specific field tasks that should be observed and are in Table 1.

Table 1. Oversight visit recommendations and goals.

Study and Task	Number of Visits (days)	Timing	Oversight goal and notes
Largemouth Bass			
Nest searches and monitoring	2	May–June	monitor search and observation methods
Monitoring of YOY bass	2	June–July	monitor observation methods
Fish collection for metrics	4	October	monitor collection, identification, and measurement
Wood Frogs			
Collection of egg masses	N/A	N/A	work was performed before oversight began
Monitoring of larvae in enclosures	4	May–June	document enclosures and larval development
Metamorph collection	6	July–Sept.	observe collection timing, methods, and metamorphs
Belted Kingfishers			
Reconnaissance survey	N/A	N/A	work was performed before oversight began
Nest burrow probe during nesting	1	May	observe equipment, technique, and study approach
Nest burrow probe after nesting	3	July	observe post-nesting data collection
American Robins			
Nest searches	1	May–June	observe search technique
Nest monitoring	2	May–June	observe monitoring technique and data collection
Egg collection	1	May–June	observe collection technique and sample handling
Nestling collection	2	May–June	observe collection technique and sample handling
Short-tailed shrew			
Live trapping	4	June–July	observe trapping methods, handling of animals, and data collection
Mink			
Trapping and radio tagging	N/A	N/A	study abandoned
Scent post surveys	8	June–Dec.	observe station set-up, lure placement, and data collection

A total of 40 observation visits are indicated in Table 1.

Appendix C

Oversight Data Sheets

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: BASS REPRODUCTION STUDY

Date/Arrival Time: 5/24/01 PM **Observer:** BOB ROY

Personnel On-Site: EMILY GREENBERG (?) - LEAD
IAN - TECH

Weather: OVERCAST, OCC. SHOWERS, LT TO MOD WIND

Study Design Notes (planned methodologies, specialized equipment, etc.)

STUDY AREA IS CONFLUENCE TO WOODS POND. FOCUS FOR SEARCHES IS IN BACKWATERS (FEW NESTS & TOUGHER CURRENTS NEAR CONFLUENCE; TOO MUCH ALGAE MATS IN WOODS POND).

SEARCH FOR NESTS. WHEN POTENTIAL NESTS ARE FOUND, THEY WAIT FOR ADULT TO RETURN TO VERIFY SPP. BASS NESTS ARE MEASURED (DIAMETER & DEPTH) & EGGS ARE VIEWED USING AN AQUA SCOPE. IF PRESENT, SAC-FRY & ADULTS ARE MONITORED FOR A LITTLE WHILE. NOTES ON EGG HEALTH RECORDED. WATER CHEMISTRY (TEMP, pH, DO, COND) RECORDED.

NESTS REVISITED EVERY 2 DAYS.

Study Status (Tasks completed, tasks currently undertaking, etc.):

SURVEYS & MONITORING UNDERWAY.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

NO SPECIMENS COLLECTED

Modifications (work plan task, time, location, personnel, etc.):

NONE MENTIONED

Action Items to address:

No.	Task	Follow-up Comments/Date
1		NEED TO BETTER DEFINE GOALS OF STUDY - KEVIN MAY BE ABLE TO DO THIS.

Photographs taken (roll#/photo #):

NONE

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: BASS REPRODUCTION STUDY

Date/Arrival Time: 5/30/01 - 6:00 am **Observer:** JOHN LORNE

Personnel On-Site: Emily Greenburg, Ian Ippolito (Intern-Tech)

Weather: Windy - partly cloudy; hail, rain, sun

Study Design Notes (planned methodologies, specialized equipment, etc.)

Objectives for the day were to collect data logger data from Hobo data loggers and to search for/monitor nests along index sites. Data loggers and YSI data include pH, DO, conductivity and water temperature. 12 data loggers b/w canal & w. Pond.

Nest monitoring includes: identifying nest sites; determining that eggs were laid; that eggs hatched; that fry grew/matured. Nest failure will be characterized as fungus; or abandoned.

Indiv. nests were to be GPS'd, but Emily is not certain if this will happen. Nests are identified by Index sites (which are all in the backwaters and not in the river)

Population estimates or characterization will be done by using catch per unit effort (CPU) from electrofishing surveys. Data from 00 and 01 will be used for pop. est.

~~Study Status~~ (Tasks completed, tasks currently undertaking, etc.):

No PCB data is expected to be collected. Emily stated "I'm not a PCB expert, they (GE) can hire others to do toxicology work."

The study is not trying to see the effects of PCBs on bass, but rather, is trying to verify that bass successfully nest and rear young in the PSA. This will not be done quantitatively but qualitatively.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

At each index area, the small boat is rowed along a shallow area and searches for nesting bass are conducted. Polarized sunglasses and an underwater scope were used to observe nesting. The time taken to survey each index site is recorded, but surveys effort (time) is not the same per site. Young fish are identified to species based on pigmentation, coiled gut, and robustness. Emily also said they use the presence of adult fish to verify ID. When adults are not present, ID cannot be 100%. Vouchers can't be collected b/c they do not have a permit. Future visits should verify species ID. There are approximately 20 index sites

~~**Modifications (work plan task, time, location, personnel, etc.):**~~

Emily has little understanding of the extent of contamination, she stated "its the same throughout the study area" which is why they are not trying to tie individual nest surveys with contamination levels.

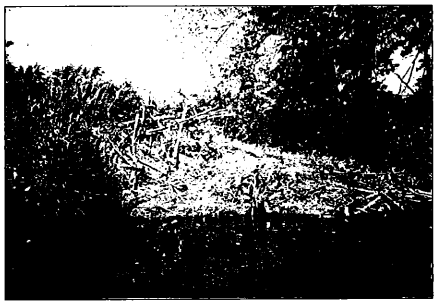
Action Items to address:

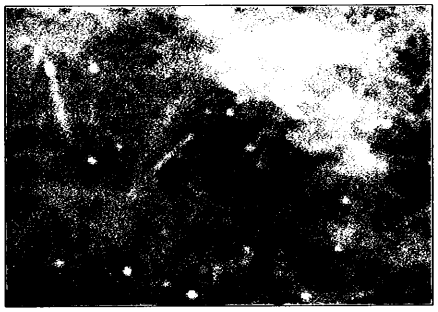
No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll #1, photo 9 - Emily & Dan during survey

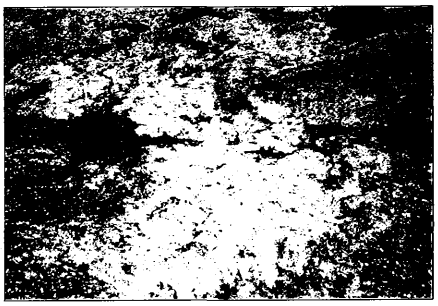
05.30.01 Largemouth Bass

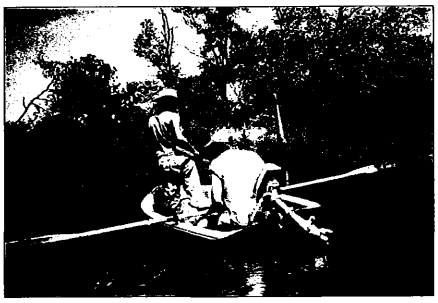





05.30.01 Largemouth Bass





6/19

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Bass Reproduction Survey

Date/Arrival Time: 6/19/01 - 8:00 AM **Observer:** J. LORTIE

Personnel On-Site: Jan Ippolito, Emily Greenburg

Weather: Sunny, partly cloudy

Study Design Notes (planned methodologies, specialized equipment, etc.)

Collected YSI data in "sunk hole" backwater upstream & E of Woods Pond

Deployed data loggers on edge of river channel and in backwaters - There are 9 Greenspan Probes that collect DO, Temp & pH. These are deployed a week at a time, and have been set out twice before — i.e., this deployment is the third time. They had some problems with the first two deployments - They think the problems were due to the fact that the data loggers were lying on the bottom. This time they put small floats with the data loggers so they were collecting/sampling water from the "water column"!

There are also 10 temp. probes out. A hand-held Laser range finder was used to estimate the distance from shore that the data logger was placed. They also mentioned that they will not be mapping submerged aquatic veg; but thought that would be a good idea b/c then they could compare fish productivity w/ habitat.

Study Status (Tasks completed, tasks currently undertaking, etc.):

E. Greenburg indicated they will complete field work in mid-July and that she expects to get the data to GE in late July or in August. This data, however, will be the raw data.

(over)

6/19

Description of Specific or Specialized Tasks (handling of specimens, etc.)

- deployed Greenspan data loggers
- checked minnow traps, deployed in backwaters to catch YOY fish, however, no fish were caught
- individual fish from broods were captured in a net and measured for length in a small tray w/ a scale.
- took YSI data at an index site

Modifications (work plan task, time, location, personnel, etc.):

- had to modify how data loggers were deployed so that water "column" not water "bottom" data was collected

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll #1 photos 14-24

6/19

Additional Notes, Sketches, etc.:

- fish fry vary in size up to 30 mm on date of visit
- E. Greenburg thought that larger/older broods would be dispersing soon
- Er Greenburg reiterated that they were not looking for any bass nests in the river, just in backwaters
- bass fry in backwater by Sportsman Club about 15mm in length
- so far they have found about 100 nests, not all of them have been successful - some were lost to flooding, some for unknown reasons.
- Emily expects to compare nesting success with success reported in the literature, although she didn't say how.
- Emily stated that once fry leave the nest, it's tough to tell broods apart, although they still follow broods in areas where there were nests and measure size of groups (i.e. estimate #s of individ. in group) and size of individuals
- yellow perch fry were captured and were about 25mm in length.

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: L. M. Bass

Date/Arrival Time: 10/10/01; 7:00 am **Observer:** J. Lorbe

Personnel On-Site: E. Greenberg; D. Reisen; Walter Klecik (Beak Consultants)

Weather: Partly sunny; ~60°F

Study Design Notes (planned methodologies, specialized equipment, etc.)

- No work plan provided. We were on a ~18' John Boat rigged out for electrofishing by W. Klecik, a fisheries tech. from Beak Consultants.
- When weighing fish, they used a balance without a tray with water. When balance heated up, this stressed fish.
- They did not make much of an effort to distinguish between cyprinid species, although W. Klecik knew his identification features well.
- Not all fish were weighed, only a "representative" set
- There was no aeration in live well = extra stress.
- A lot of rock bass were "toasted" because they had the electroshocker turned up to capture smaller bass. (OVER)

Study Status (Tasks completed, tasks currently undertaking, etc.):

They weren't able to sample the LMB index sites because water levels were too low, therefore sampling occurred in the main-channel of the river, as close to the backwaters as possible.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

(cont.) most fish were weighed with a hand-held scale accurate to 10g; most were measured for length with a scale accurate to 5 mm.

First site fished was a small channel where Yukum Blt enters the river. 2nd site was just downstream of Yukum about 100m. 3rd site was in the new "cut through" channel. 4th site was the first large backwater – we couldn't get in, so we fished the main channel – which was different habitat. 5th site was at the top of the harp, just downstream from 1st large backwater – i.e., next to October mtn. 6th site was the big backwater where we trapped waterfowl

Modifications (work plan task, time, location, personnel, etc.):

They could not fish in the index sites b/c water levels were too low.

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Wood Frog

Date/Arrival Time: 5/16/01 PM **Observer:** Bob Ray

Personnel On-Site: Kevin Mooney - GE

Weather: FAIR, SUNNY

Study Design Notes (planned methodologies, specialized equipment, etc.)

9 ENCLOSURES IN 2 POOLS. EGGS TAKE FROM 3 SOURCE POOLS W/ VARYING CONCENTRATIONS (SOIL PCB). EGGS HATCHED IN LAB & +/- ONE-WEEK OLD LARVAE WERE PLACED @ 3 DIFFERENT DENSITIES W/IN THE ENCLOSURES (3 SOURCE POOLS X 3 DENSITIES = 9 ENCLOSURES). STUDY IS BEING REPLICATED, THEREFORE ENCLOSURES WERE PLACED IN 2 POOLS.

ENCLOSURES CHECKED EVERY 3 DAYS TO ENSURE THAT THINGS ARE OK. (NOT VANDALIZED).

ASSUME THAT A FINAL COUNT WILL BE MADE AT OR JUST PRIOR TO METAMORPHOSIS. SAMPLE COLLECTION?

Study Status (Tasks completed, tasks currently undertaking, etc.):

LARVAE IN ENCLOSURES.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

NONE DESCRIBED OR OBSERVED SO FAR.

Modifications (work plan task, time, location, personnel, etc.):

KEVIN MENTIONED THAT STUDY HAS BEEN SCALED BACK. ORGINALLY THE EFFECTS OF DENSITY & PREDATOR PRESSENCE/ABSENCE WERE FOCUS, NOW JUST DENSITY EFFECTS.

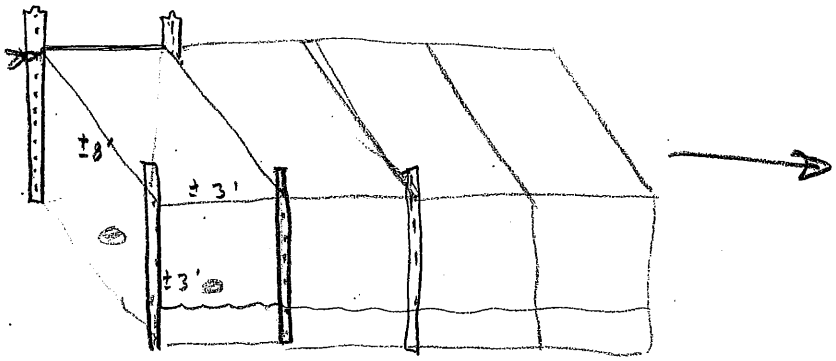
Action Items to address:

No.	Task	Follow-up Comments/Date
1	OBSERVE FINAL COUNT VISIT & SAMPLE COLLECTION	?

Photographs taken (roll#/photo #):

Additional Notes, Sketches, etc.:

ENCLOSURES: POOLS: 23B-VP-1 & 2 (IN GRAVEL PIT)



- WHITE MESH NETTING. MESH NOT MEASURED BUT APPEARED TO BE SMALL ENOUGH TO RETAIN A ± 1 WEEK OLD WOOD FROG TADPOLE

IN ONE POOL, ROCKS (±6" DIAM.) WERE PLACED ON BOTTOM TO HOLD BOTTOM NETTING DOWN (CUT PHRAGMITES STEMS WERE PUSHING IT UP.

- PREDACIOUS DIVING BEETLE LARVAE (PREDATORS) WERE PRESENT IN ENCLOSURES, ALONG W/ MOSQ. & MAYFLY LARVAE.

- TADPOLES IN ENCLOSURES WERE VISIBLY SMALLER THAN THOSE FREE SWIMMING IN POOLS.

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Wood Frog

Date/Arrival Time: 5/30/01 **Observer:** John Lortie

Personnel On-Site: None

Weather: Partly cloudy, 50°F

Study Design Notes (planned methodologies, specialized equipment, etc.)

See previous data and study plan

Study Status (Tasks completed, tasks currently undertaking, etc.):

enclosures still operating

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

tadpoles in enclosures may be deprived of sufficient food - they are ~1/3 to 1/4 the size of wood frog tadpoles outside of enclosures. There was little to no food in enclosures - this may be a serious problem affecting the outcome/survivorship of the experiment.

Modifications (work plan task, time, location, personnel, etc.):

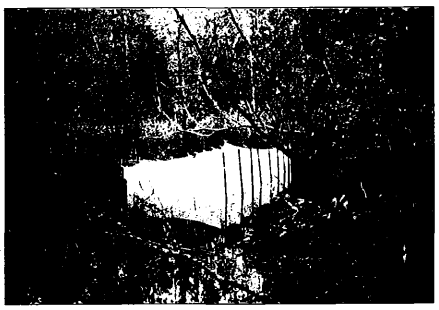
Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll #1, photos 1-4 (1&2 of W pool; 3&4 Epeel)

05.30.01 Wood Frogs



GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Wood frog reproduction

Date/Arrival Time: 6/20/01; 6:30 am **Observer:** T. Lerhe

Personnel On-Site: None

Weather: Sunny

Study Design Notes (planned methodologies, specialized equipment, etc.)

See previous data sheets

Study Status (Tasks completed, tasks currently undertaking, etc.):

Enclosures still operating. Wood frog tadpoles in 5-1 to 5-9 growing and are close to the age when they could metamorphose, if fact some may have already. Based on our experience, its likely that metamorphs could climb the mesh and leave the enclosure without being noticed. Many tadpoles are now about 2.5 cm long; some have rear legs, and some are 1/2 that size w/ legs and some are 1/2 that size without legs. Not sure if food limitations account for differences in sizes of individuals per enclosure. Wood frogs in 6-1 to 6-9 about the same size and development as those in 5-1 to 5-9.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

Modifications (work plan task, time, location, personnel, etc.):

I spoke with ARCADIS staff later in the day and they were unaware that frogs in enclosures had hind legs. They believed that metamorphosis was weeks away.

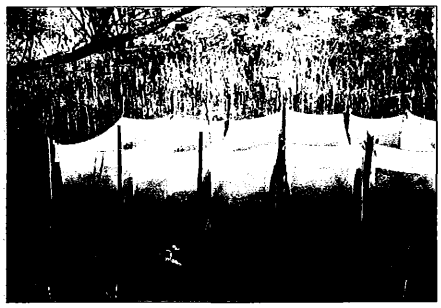
Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll 2 1-2 5-1 to 5-9
3-4 6-1 to 6-9

06.20.01 Wood Frog Reproduction



GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Wood Frogs

Date/Arrival Time: 6/26/01; 6:30 am **Observer:** J. Lorthe

Personnel On-Site: None

Weather: Sunny

Study Design Notes (planned methodologies, specialized equipment, etc.)

See previous sheets

Study Status (Tasks completed, tasks currently undertaking, etc.):

Water levels were very low in both pools; 6" in pool w enclosures 5-1 to 5-5; and 7" in pool w/ 6-1 to 6-9. Enclosures 5-1 to 5-9 all have tadpoles, most with legs. Metamorphs were observed in 5-1 (6); 5-2 (1); 5-4 (3); 5-5 (5); 5-6 (1); 5-7 (1) 5-8 (2); and 5-9 (1). If metamorphs can't find a place to climb out, they will die and decompose without being counted. Most metamorphs observed were climbing up the mesh. Tadpoles seen outside of enclosures are at the same stage as tadpoles in enclosure; i.e. they (over) have legs and are morphing.

~~Description of Specific or Specialized Tasks~~ (handling of specimens, etc.)

Study Status (cont)

Enclosure 6-1 has an oily sheen on surface; no metamorphs or tadpoles seen. 6-2 has tadpoles, no metamorphs; 6-3 has 1 metamorph; 6-4 has 3 metamorphs; 6-5 has no metamorphs, lots of algae and also an oily sheen; 6-6 has no metamorphs, but has tadpoles with legs; 6-7 has no metamorphs. 6-8 has at least 1 metamorph and 6-9 has at least 2 metamorphs.

ARCADIS staff indicated they were unaware that tadpoles were morphing.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

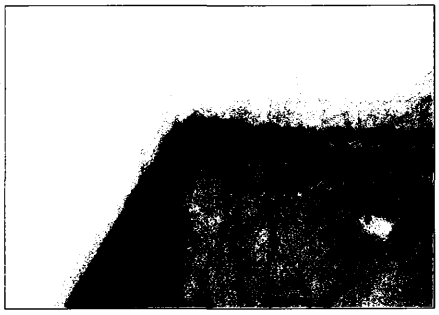
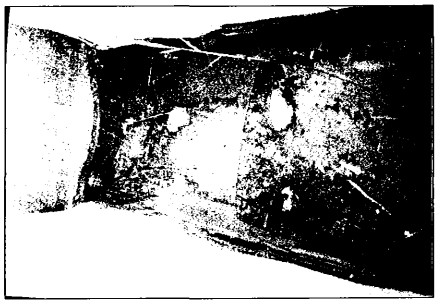
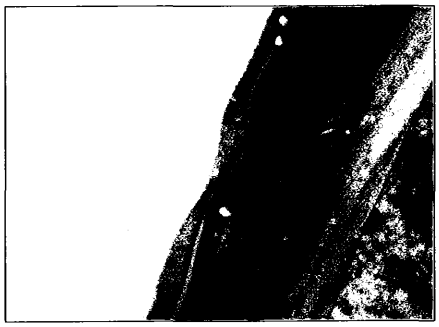
No.	Task	Follow-up Comments/Date

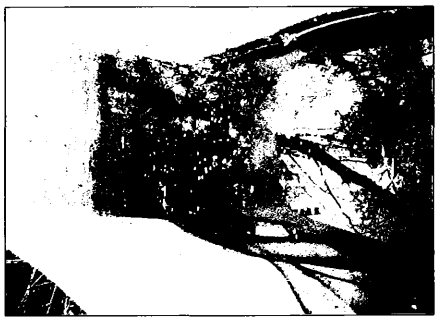
Photographs taken (roll#/photo #):

Roll 2 13 - Encl. to N; 14 - enclosure 5-4; 15 encl. 5-2 metamorph on mesh (center of frame); 16 - Encl. 5-1, metamorph in ctr of frame on mesh; 17-20 encl. 5-1, 5-5, 5-6 w/ metamorphs; 21-22 - habitat shots 23 - Encl. 6-3 and metamorphs and; 24 Encl. 6-9 w/ metamorph.

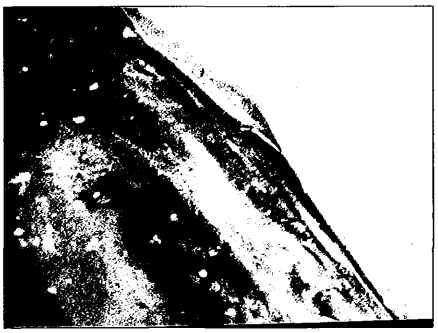
06.28.01 Wood Frogs






06.28.01 Wood Frogs



GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: KINGFISHER STUDY

Date/Arrival Time: 5/25/01 **Observer:** BOB ROY

Personnel On-Site: JOE SULLIVAN - ARDEA CONSULTING - LEAD FIELD SCI.
MINGA O'BRIAN - TECH, PLUS ONE OTHER - LINDA (?) - N.J. MARINE RES. - HELPED DESIGN

Weather: OVERCAST, MOD WIND

Study Design Notes (planned methodologies, specialized equipment, etc.)

1. SEARCH FOR POTENTIAL NEST SITES BY FLOATING STUDY AREA
2. PROBE POTENTIAL NESTS DURING EGG PERIOD
3. MONITOR SITES
4. PROBE NESTS POST FLEDGING TO DETERMINE PRODUCTIVITY

Study Status (Tasks completed, tasks currently undertaking, etc.):

- SEARCHES FOR POTENTIAL NEST SITES COMPLETED
- NEST SITE MONITORING (FOR ADULT PRESENCE) UNDERWAY
- FIRST PROBING BEGINNING 5/25/01

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

PROBE IS A 10' SEMI-RIGID CHORD W/ A I.R. CAMERA @ END. PUSHED INTO HOLE TO COUNT EGGS. PRIMARY VISUAL OUTPUT IS TO A SET OF GLASSES WORN BY OPERATOR BUT A VIDEO RECORDER & SCREEN CAN BE (AND WAS) ATTACHED.

-SITE OBSERVED HAD 3 POTENTIAL NESTS. SOME CONFUSION OVER WHAT THE BURROW NUMBERS WERE - FIELD NOTES (THIS SITE) DIDN'T INCLUDE MAPS OR SKETCHES.

Modifications (work plan task, time, location, personnel, etc.):

NONE MENTIONED

Action Items to address:

No.	Task	Follow-up Comments/Date (DATE)
1	MAY WANT TO INCLUDE ANOTHER FIELD VISIT.	POST FLEDGING? I ONLY OBSERVED ONE POTENTIAL NEST SITE EXAMINATION. BURROW CONTAINED NO EGGS.
2	OBTAIN WORK PROTOCOL FROM JOE SULLIVAN	JOE MENTIONED THAT HE HAD A COPY FOR US

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Kingfisher

Date/Arrival Time: 5/31/01; 11:00 am **Observer:** J. Larthé

Personnel On-Site: Joe Sullivan; Kevin Mooney

Weather: Partly cloudy

Study Design Notes (planned methodologies, specialized equipment, etc.)

No work plan available; K. Mooney said they couldn't provide us with work plans because they were "still changing and not done yet."

Study Status (Tasks completed, tasks currently undertaking, etc.):

Two, possibly 3, Kingfisher nests have been found so far with birds in the cavities. One of the cavities has eggs for sure.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

None

Modifications (work plan task, time, location, personnel, etc.):

None

Action Items to address:

No.	Task	Follow-up Comments/Date
1	Future oversight	call GE to schedule

Photographs taken (roll#/photo #):

N/A

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: B. Kingfisher

Date/Arrival Time: 6/29/01, 8:00am **Observer:** T. Lerche

Personnel On-Site: Joe Sullivan; Lisa Baian; Kelly McKay

Weather: Sunny; ~70°F

Study Design Notes (planned methodologies, specialized equipment, etc.)

No study plan available.

Study Status (Tasks completed, tasks currently undertaking, etc.):

We first checked nest site IC3; the bank where the nest was built had slumped and 8-10' of bank had fallen away. The burrow appears as though a mammal, possibly long-tailed weasel, has been using the site. It took the researchers a few minutes to locate the right burrow. We used the peeper probe to peer inside and observed that there were 5 eggs, which were hatched. Joe Sullivan retrieved 3 egg bottoms and 5 tops from a distance of 25'12 inches (the bank had sloughed off, so the burrow was not very deep). There were also some fish scales and bones in the nest

(over)

(OVER)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

(cnt.) The young had hatched, but it could not be determined that they fledged. There were no feathers, regurgitant or other material indicating that young had lived in the nest till fledging.

Note: L. Baran, when she first spotted the eggs, thought they were swallow eggs not K. kingfisher.

None of GEs staff had collecting bags, nitrile gloves or a camera.

Modifications (work plan task, time, location, personnel, etc.):

They were unable to determine nest success.

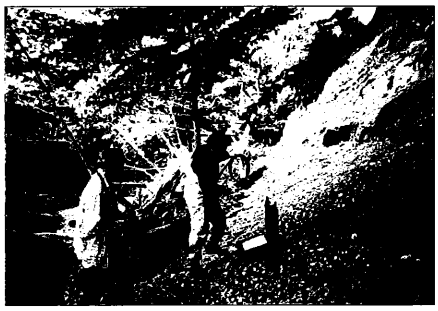
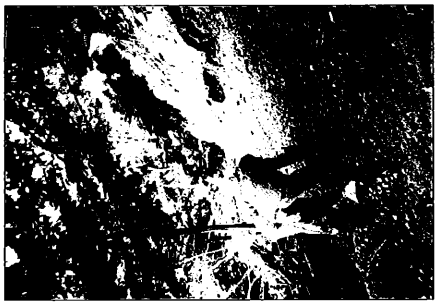
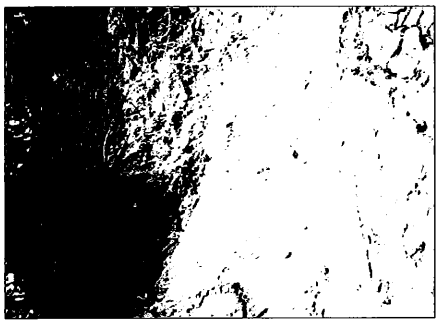
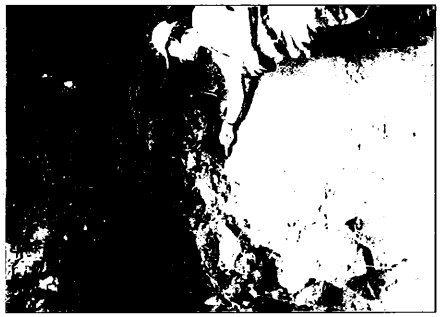
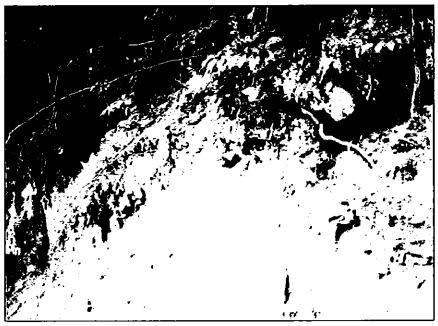
Action Items to address:

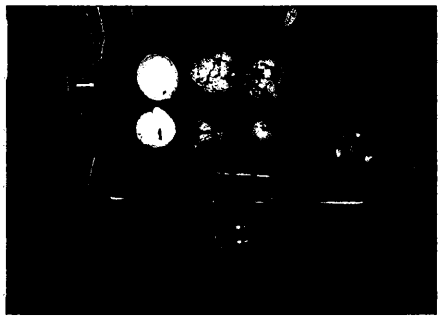
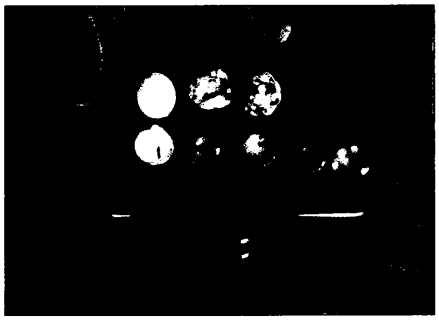
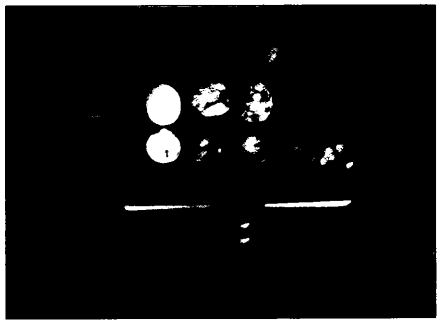
No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll 3; 20-24 of Burrow 103 and nearby bank slumping.

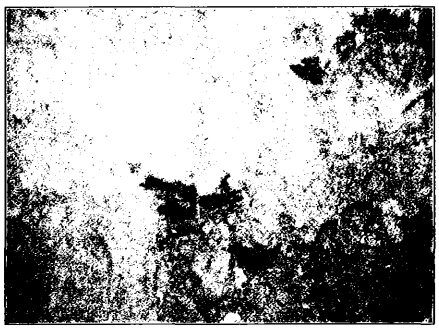
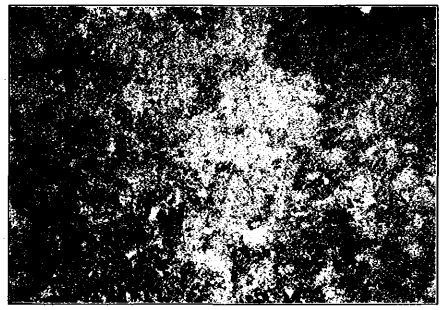
06.29.01 Belted Kingfisher

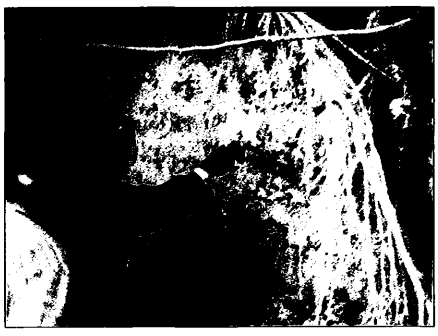




06.29.01 Belted Kingfisher





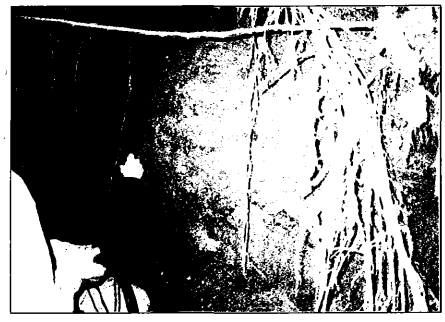
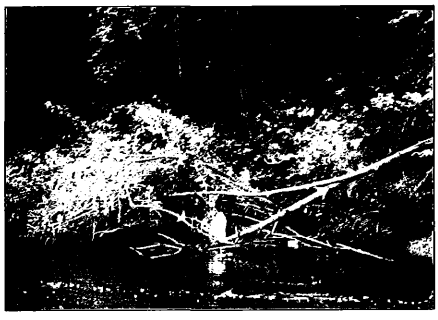



06.29.01 Belted Kingfisher








GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: B. Kingfisher

Date/Arrival Time: 5/5/02; 7:00 am **Observer:** J. Lortie

Personnel On-Site: Kelly McKay Tom McClenahan

Weather: Partly sunny – mid 60s

Study Design Notes (planned methodologies, specialized equipment, etc.)

No work plan received. They canoed from N. Lenox Rd south and scanned all banks for potential burrows. They found a burrow next to October Mtn. Rd, which was well formed. They looked for fresh tracks to determine if burrow was active; also looked for adults and lack of spider webs in burrow entrance.

Study Status (Tasks completed, tasks currently undertaking, etc.):

They reported that there were 3 other potential nest sites upstream of N. Lenox Rd.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

They will be using the peeper probe in two weeks to check on nest status

Modifications (work plan task, time, location, personnel, etc.):

None noted

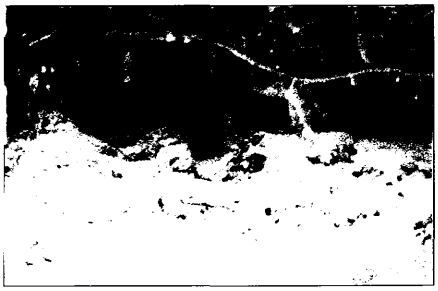
Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Photos 1-5 of Burrows.

05.09.02 Belted Kingfisher



GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: KINGFISHER STUDY

Date/Arrival Time: 5/25/02 **Observer:** BOB ROY

Personnel On-Site: KELLY MCKAY & TOM MCGRENAHAN

Weather: SUNNY, CALM, WARM

Study Design Notes (planned methodologies, specialized equipment, etc.)

FIND NESTS & MONITOR SEVERAL TIMES WITH PEEPER PROBE.

Study Status (Tasks completed, tasks currently undertaking, etc.):

CURRENTLY CHECKING NESTS FOR INITIAL USE & EGG COUNTS.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

1) FIRST NESTS (SEVERAL BURROWS IN ONE PLACE)
~~FIRST~~ NEST PROBED HAD AN ADULT IN IT.
2) SECOND
~~SEE~~
3) 3RD NEST SITE HAD 2 ADULTS NEARBY BUT NO EGGS.
4) 4TH NEST SITE ± 200 M DOWNSTREAM OF # 3 HAD ONE EGG.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: BELTED KINGFISHER

Date/Arrival Time: 11JAN02 0830 **Observer:** KURT KARWACKY

Personnel On-Site: TOM McCLELLAN, KELLEY

Weather: CLEAR, SUN & HAZE

Study Design Notes (planned methodologies, specialized equipment, etc.)

CHECKED STATUS & LOCATIONS OF KNOW BEKI NESTS ALONG HUDSON RIVER.

Study Status (Tasks completed, tasks currently undertaking, etc.):

I VISITED THE 3RD ROUND OF BEKI SURVEYS.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

(1) VISITED NEST @ TWEEDBROOK FARM - ADULT IN BURROW WHICH WAS LOCATED IN SAND MOUND ON WEST END OF PROPERTY.

(2) VISITED NEST ALONG OCTOBER MOUNTAIN ROAD. NEST ~ 3' ABOVE ~~GROUT~~ GRADE OF ROAD @ BEND JUST NORTH OF SPRING. DID NOT PROBE.

(3) KELLEY DESCRIBED 2 MORE NESTS LOCATED IN QUARRY BELOW WOODS POND. ALSO A POSSIBLE THIRD NEST MAY BE PRESENT. WE DID NOT VISIT NESTS B/C OF LIMITED ACCESS TO QUARRY.

(4) THOM DESCRIBED 3 OTHER NESTS ALONG NORTHERN PORTION OF RIVER, ALL OF WHICH JOHN OR BOB HAD SEEN. WE DID NOT CHECK THOSE NESTS.

Modifications (work plan task, time, location, personnel, etc.):

UNKNOWN

Action Items to address: NONE

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

NONE

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: KINGFISHER SURVEY

Date/Arrival Time: 6-24-02 : 6-25-02 **Observer:** CHRIS WERNER

Personnel On-Site: TOM MCCLELLAN & KELLY MCKAY

Weather: CLEAR, MID-80s, SLIGHT BREEZE

Study Design Notes (planned methodologies, specialized equipment, etc.)

Kingfisher nest surveys: Surveys are timed to occur at approximately two-week intervals throughout the breeding season. Nests were found by searching the study area, visiting potential nesting areas, and observing adults. When cavities were found a peeper probe was used to determine if the cavity contained an active nest.

During each survey, nests were visited on day one. Nests were probed to determine the stage of nest (i.e. female incubating eggs, nestlings present). The number of eggs or young was recorded when possible (the number could not be accurately counted when adult was present) and the age of young was estimated. A second visit was conducted at the end of the weeklong survey event. Similar information was collected and video of the nest cavity was recorded.

Habitat Suitability Index: Habitat suitability index surveys were conducted to determine value of study area habitat to kingfishers. The river was divided in to one km sections, with each section being surveyed. For each 1 km section, the percent of the river that was blocked (inaccessible to kingfishers) was estimated, the number of perches was recorded, and presence and extent of riffles was noted. The middle of each 1 km section was determined using a GPS unit and a Secchi disk reading was taken at the center of the river. Information regarding bank slope, composition, cover, etc. will be recorded to determine suitability for nest site. Exact details are not known, as this portion of the habitat suitability survey was not done while I was present.

Study Status (Tasks completed, tasks currently undertaking, etc.):

- CONDUCTING NEST VISITS - DAY 1 VISITS
- HABITAT SUITABILITY SURVEY

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

SEE ATTACHED SHEET FOR STATUS OF NESTS VISITED DURRING SURVEY.

Modifications (work plan task, time, location, personnel, etc.):

- THE INTENT IS TO SURVEY ALL NESTS OCCURING IN THE PSA. HOWEVER WOODLOT LOCATED A NEST, THAT APPEARED TO BE ACTIVE (DISRUBTION OF SOIL AROUND BURROW, ADULT PRESENT CALLING FROM NEST AREA), WHICH IS NOT ONE OF THE 9 NESTS CURRENTLY BEING SURVEYED.
- TOM & KELLY EXPRESSED CONCERN ABOUT SURVEYING FLEDGLING PERIOD. TIMING OF SURVEYS, ALOWS LONG PERIOD OF TIME WHEN NESTS ARE NOT BEING SURVEYED AND IF FLEDGLING OCCURS DURRING THIS TIME OBSERVERS WILL NOT KNOW IF YOUNG ABSENT FROM NEST DUE TO SUCCESSFUL FLEDGLING OR DUE TO PREDATION OR KNOW THE # OF YOUNG FLEDGE

Action Items to address:

No.	Task	Follow-up Comments/Date
1	MAY WANT TO CONDUCT ANOTHER FIELD VISIT	VISIT DURRING FLEDGLING PERIOD TO SEE HOW OBSERVERS QUANTIFY FLEDGLING SUCCESS

Photographs taken (roll#/photo #):

Status of Kingfisher Nests on 24 June 2002

Nine active nests have been located in the study area. The northernmost nest is located at approximately 750 meters downstream of the confluence, immediately downstream of the powerline crossing. Nest is in sandy bank on west side of river, below a large hemlock. Adult was present upon arrival and was carrying a large fish (fallfish?). Nest contained 6 young, 14 days old (hatching date was known as young hatched during last visit). Young were completely feathered with primary feathers unsheathed and neck bands clearly visible. No addled eggs were present in nest.

Second nest was located at approximately meter 6800. It was located west bank of river below a large white birch snag in an exposed sand bank. Female was incubating eggs. The number of eggs is unknown.

Third nest was at meter 7200, along the edge of an old agricultural field above the EPRI towers. Nest in located in sandy bank below overhanging grass and vegetation. Five young were in nest. They appeared to be 2-3 days old (small, sparse down, huddled together and inactive).

A fourth nest is located in a pile of excavated dirt on ~~Gilford~~ TWEEN BROOK Farm property. It is located near river meter 7400 approximately 100 meters from river in open grassy field. The nest contained 3 young, possibly 4. Exact number was difficult to distinguish as young were huddled together and did not move enough to allow a clear view. Nestlings were approximately one week old (some feather development but primary feathers were not yet unsheathed. Adult was incubating eggs on last visit so young must be less than 12 days old.

The fifth nest along the river was located along October Mt. Road, in the area of river meter 14900. Just north of the spring, in a sandy exposed bank with overhanging hemlock roots. The nest had an adult incubating eggs. The adult was on eggs during the last visit as well, so eggs were estimated to be approximately three weeks old.

The remaining four nests were located in the sand and gravel quarry below Woods Pond. The northernmost nest in the quarry had the adult incubating eggs. Two eggs were visible, however total number of eggs was undetermined. Adult was incubating eggs during last visit.

The second quarry nest was around the corner, approximately 100 meters southeast of first nest. The female was in the nest cavity. She appeared to be injured (dried blood on face). It was unable to be determined if eggs were taken by predator or is still on eggs.

The third quarry nest is near west central section of quarry. Nest contains three young approximately two weeks old. Last visit nest contained 3 or 4 young and one egg. It is unknown if the eggs hatched or was an addled egg. No egg was currently in nest but could have been broken by chicks or removed by adult.

Fourth query nest was located in southern portion of quarry. Nest contained 3 young appeared approximately two weeks old. Adult was present during last visit and she appeared to be brooding young, but number of young was unknown.

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: KINGFISHER STUDY

Date/Arrival Time: 9 JULY 2002 **Observer:** CHRIS WERNER

Personnel On-Site: TOM McCLELLAN & KELLY McKAY

Weather: SUNNY, HOT, HUMID 80's

Study Design Notes (planned methodologies, specialized equipment, etc.)

HABITAT SUITABILITY INDEX:

BANK PORTION OF HABITAT WAS SURVEYED. 9 ACTIVE NEST SITES & 9 RANDOMLY CHOSEN UNOCCUPIED SITES. ALL BANKS IN PSA SUITABLE FOR KINGFISHER NESTS WERE #ed & 9 NUMBERS RANDOMLY CHOSEN FROM LIST.

AT EACH BANK THE LOCATION WAS GPSED, BANK HEIGHT WAS ESTIMATED, PRESENCE & # OF BURROWS WAS NOTED AND THEIR LOCATION IN THE BANK WAS RECORDED. A SOIL SAMPLE WAS TAKEN & IT WAS DETERMINED WHEATHER OR NOT THE SOIL CONTAINED < 27% CLAY & > 50% SAND.

Study Status (Tasks completed, tasks currently undertaking, etc.):

HABITAT SUITABILITY FINISHED DURRING THIS VISIT.

3 NEST HAVE FLEDGED
2 NESTS HAVE BEEN DEPREDATED
4 NESTS CURRENTLY ACTIVE

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

HABITAT SUITABILITY SURVEY WAS CONDUCTED. MEASUREMENTS WERE ESTIMATED BY EYE AND NOT VERY PRECISE.

NO PROTOCOL FOR TAKING SOIL SAMPLES. BANK OFTEN CONTINED MULTIPLE SOIL LAYERS BUT ONLY 1 WAS SAMPLED - WHEN BURROWS WERE PRESENT SOIL SAMPLES TAKEN FROM SAME LAYER THAT THE BURROW WAS IN. HOWEVER AT UNOCCUPIED SITES, THE SOIL LAYER SAMPLED WAS CHOSEN BY THE SAMPLER ? COULD BE BIAS.

MOST OF THE BANK SURVIES WERE CONDUCTED AT THE QUARRY AND NO ATTEMPT WAS MADE TO SURVEY BANKS IN VARIOUS HABITAT TYPES OR LOCATIONS ON THE RIVER.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: KINGFISHER STUDY

Date/Arrival Time: 17 JULY 02 **Observer:** CHRIS WERNER

Personnel On-Site: TOM McCLELLAN & DAN

Weather: SUNNY, MID-80's

Study Design Notes (planned methodologies, specialized equipment, etc.)

SEE PREVIOUS FORMS

Study Status (Tasks completed, tasks currently undertaking, etc.):

5 NESTS HAVE FLEDGED

3 NESTS HAVE BEEN DEPARTDATED

1 NEST ACTIVE

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

VISIT TO NEST FOR LAST / FLEDGLING VISIT. NEST VISIT MADE ON DAY 26 (YOUNG FLEDGE ON DAY 28). IF YOUNG IN NEST THEY WERE CONSIDERED TO BE SUCCESSFULL. IF YOUNG HAD LEFT NEST AN ATTEMPT WAS MADE TO LOCATE YOUNG IN THE AREA.

WE VISITED 3RD RIVER NEST. ON APROACHING NEST AREA FEATHERS WERE NOTICED ON AN OVERHANGING TREE LIMB ≈ 50 METERS UP STREAM OF NEST. OBSERVERS STOPPED TO LOOK AT FEATHERS... THEY WERE UNCERTAIN OF SPECIES... ASSUMED BLACK & WHITE FEATHER BELONGED TO HAIRY WOODPECKER. I COLLECTED FEATHERS... BUT OBSERVERS DID NOT. DOWNSTREAM, DIRECTLY ACROSS FROM NEST A KINGFISHER CARCASS WAS FOUND ON RIVER BANK. OBSERVERS LOOKED @ CARCASS & TOOK PHOTO-VIDS BUT MADE NO ATTEPT TO IDENTIFY CAUSE OF DEATH OR EXAMIN CARCASS. AFTER OBSERVERS RETURNED TO THIER BOAT. I EXAMINED CARCASS. THE SKULL WAS CRUSHED, SKIN ON HEAD TORN & BLOODY, BREAST TISSUE WAS PATIALLY CONSUMED (≈ 1/4 OF ON BREAST) AND REMAINED OF CARCASS WAS UNTOUCHED. ONLY 1 TRACK WAS OBSERVED IN AREA. IT WAS A BIRD TRACK (HERON?) APROX. LONG. I COMPARED COLLECTED FEATHER TO CARCASS & DETERMINED THAT FEATHERS UPSTREAM WERE FROM KINGFISHER.

Modifications (work plan task, time, location, personnel, etc.):

3 YOUNG IN AREA. 1 NEAR LOGS ON SANDBAR IN RIVER, 1 PERCHED ON LIMB ≈ 50 FT DOWNSTREAM OF NEST, & 1 ON LOG ≈ 100 FT DOWNSTREAM OF NEST.

Action Items to address: NO YOUNG IN NEST

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: KINGFISHER STUDY

Date/Arrival Time: 29 JULY 02 **Observer:** CHRIS WERNER

Personnel On-Site: TOM MCCLELLAN

Weather: SUNNY, HOT - 90's

Study Design Notes (planned methodologies, specialized equipment, etc.)

SAME AS PREVIOUS

Study Status (Tasks completed, tasks currently undertaking, etc.):

LAST ACTIVE NEST CHECKED

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

QUARRY NEST OBSERVED. 2ND NEST IN QUARRY (2 ING FROM N TO S). NEST CONTAINED 2 YOUNG. NEST ALSO HAD 2 YOUNG (3 DAYS PREVIOUS WHEN CHECKED BY TOM). ON LAST RECORDED VISIT NEST HAD 5 YOUNG. NO SIGN OF MISSING YOUNG OR SIGNS OF PREDATION.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Robin Study

Date/Arrival Time: 5/16/01 AM **Observer:** Bob Roy

Personnel On-Site: Kevin Mooney - GE; Minga O'Brian, & Kelly ——— (Lead Sci.)

Weather: Fair, Sunny

Study Design Notes (planned methodologies, specialized equipment, etc.)

Looking @ Robin reproduction in Housatonic River floodplain (target) & reference area(s). Hinsdale Flats is a ref. area, also possibly Pelu S.W.M.A. Search for nests by traveling through nesting habitats & looking for territorial/alarm responses. Then focus search in area of alarmed adults. Count eggs, visit every 3-4 days, count # vocalizations & # of approaches w/in a certain time period while checking nest (though not done each time). Also record flushing distance. Only collect one egg & one ± 1-week old chick in nest w/ 4 eggs.

Study Status (Tasks completed, tasks currently undertaking, etc.):

Found nests in target area. Nests in ref. areas more difficult to find. Will be collecting chicks next week.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

NEST SEARCHES I.D.'D ON FRONT PAGE.

SAMPLE COLLECTION NOT DESCRIBED YET.

Modifications (work plan task, time, location, personnel, etc.):

NONE MENTIONED

Action Items to address:

No.	Task	Follow-up Comments/Date
1	OVERSIGHT OF CHICK COLLECTION	WEEK OF 5/21

Photographs taken (roll#/photo #):

NO

Additional Notes, Sketches, etc.:

3 NESTS VISITED ON 5/16/01

1) WHERE BRUNSWICK RD. TRAIL MEETS T-LINE. IN LONICERA MORROWI. 3 EGGS

2) NORTH SHORE OF WILLOW CREEK, WEST OF TRACKS. NEST ± 35' UP IN WHITE PINE. NO EGGS. POSSIBLY ABANDONED.

3) YOKUM BROOK, SOUTH SHORE OF BROOK, JUST EAST OF RAILROAD TRACKS. NEST PREDATED. ONE EGG FOUND ON TRACKS. PROBABLY A CROW OR JAY.

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: ROBIN STUDY

Date/Arrival Time: 5/24/01 AM **Observer:** BOB ROY

Personnel On-Site: KEVIN MOONEY - GE; MAGGIE - ARCADIS; KELLY - LEAD SCI.

Weather: LT SHOWERS, CLOUDS, LT-MOD WIND

Study Design Notes (planned methodologies, specialized equipment, etc.)

SEE 5/16/01 NOTES

Study Status (Tasks completed, tasks currently undertaking, etc.):

- NESTS FOUND, SEARCHES CONTINUING IN REF. AREAS
- EGG & NESTLING COLLECTIONS ONGOING.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

NESTLING COLLECTION:

① NESTLING COLLECTED W/ GLOVED HAND & PLACED IN A FOIL-LINED CONTAINER W/ AIR HOLES.

NESTLING PROCESSING:

① SCALE CALIBRATED
② WEIGHT OF NESTLING & CONTAINER WEIGHED
③ A PIECE OF FOIL (FROM BOX - NO DECON.) PLACED ON TRAY, A CHEM. CLEAN JAR PLACED ON FOIL
④ NESTLING EUTHANIZED (HEAD SEVERED W/ SCISSORS) & PLACED IN JAR
⑤ CONTAINER WEIGHT RECORDED
⑥ SCISSORS RINSED WITH ACETONE
⑦ CAP PLACED ON SCISSORS
⑧ JAR LABELED
⑨ TRAY CLEANED

Modifications (work plan task, time, location, personnel, etc.):

NONE MENTIONED

Action Items to address: ?

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

NONE

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Robins

Date/Arrival Time: 5/31/00 7:00 AM **Observer:** J. Lurtie

Personnel On-Site: Joe Sullivan, Kelly McKay, Lenny Morse, Minga O'Brien Kevin Mooney

Weather: Partly cloudy

Study Design Notes (planned methodologies, specialized equipment, etc.)

No work plan available; K. Mooney said they were "still changing and not done yet!"
Northeast Analytical is the lab that will be testing the eggs and nestlings. None of the staff on site knew which constituents were being tested for, or what detection limits would be used.

There is no plan to collect any soil/sediment data to correlate [PCB] in egg/nestling with that in nesting area. In addition, no insects will be collected.

Miranda Henning, ARCADIS, is the PI on this study

Study Status (Tasks completed, tasks currently undertaking, etc.):

60 nests found so far in target area; 37 in reference areas

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

Visited 4 nest locations - 2 in fields @ Sportsman Club, 1 by the sewage treatment plant and one in forested wetland by RR tracks south of Sportmans Club. There were no eggs in the first three nests. The fourth nest was in the water, the ♀ had been incubating eggs previously. At the 4th nest they collected nest location data with GPS; collected soil and air temperature, and put (hand-held Garmin) in a wooden stake w/ nest number and recorded azimuth bearing to tree.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

none

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Short-tailed Shrews

Date/Arrival Time: 5/31/01, ~1:30 pm **Observer:** T. Lorthe

Personnel On-Site: Kevin Mooney; Lana Desantis; Ken Fukumoto

Weather: Partly Sunny Cloudy

Study Design Notes (planned methodologies, specialized equipment, etc.)

K. Mooney said that there was not a work plan because they were "still changing and were not done yet."

The study design used 2 grids, each with 50 traps. Grids were established on 10 x 10 m grids with traps every other station. Longworth live traps were used. Each captured shrew was sexed, weighed and had the reproductive status noted. Traps are opened at 6:00 am and shut down by 6:00 pm. Young of the year aging is based on pelage color, length and overall size.

Study Status (Tasks completed, tasks currently undertaking, etc.):

To date there have been few captures.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

None noted

Modifications (work plan task, time, location, personnel, etc.):

N/A

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: S.T. Shrew

Date/Arrival Time: 7/23/01 **Observer:** J. Lentz

Personnel On-Site: N/A

Weather: N/A

Study Design Notes (planned methodologies, specialized equipment, etc.)

Study Status (Tasks completed, tasks currently undertaking, etc.):

Note: K. Fukumoto quit today. He will be replaced by K. Mckay. This was according to T. McClenahan (ARCADIS)

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: SMALL MAMMAL (SHORT TAILED SHREW) SURVEY

Date/Arrival Time: 9/11/01 **Observer:** BOB ROY

Personnel On-Site: LANNA DESANTIS, IAN IPPOLITO

Weather: SUNNY, CALM, WARM

Study Design Notes (planned methodologies, specialized equipment, etc.)

50 TRAPS PLACED ON A 100-SITE (10X10) GRID. TRAPS @ EVERY OTHER SITE. TRAPS CHECKED EVERY 3 HOURS DURING DAY.

Study Status (Tasks completed, tasks currently undertaking, etc.):

OBSERVED TRAPPING & ANIMAL DATA COLLECTION.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

INDIVS. CAPTURED WERE MARKED, AGED, SEXED, WEIGHED & CHECKED FOR WOUNDS ~~THEN RELEASED~~ & EVIDENCE OF PREGNANCY/LACTATION. THEN RELEASED.

ONE ANIMAL CAUGHT WAS ALREADY MARKED. ON 9/11 IT WAS ID'D AS A ♀ BUT DURING PREVIOUS CAPTURE IT WAS ID'D AS ♂.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Mink - Scent Post Surveys

Date/Arrival Time: 6/20/01; 8:00am **Observer:** J. Lothe.

Personnel On-Site: Kevin Mooney; Tom McLenahan; Dan DeOrazio

Weather: Sunny - 80°F

Study Design Notes (planned methodologies, specialized equipment, etc.)

No study plan available. There are 75 scent post stations on the main stem spaced 100-125m apart, based on the linear length of river. There are 25 more stations on 4 tributaries; 8 on Mill Brook, 12 on Roaring Brook; 4 on Fenton; and 1 on an unnamed brook. They plan on baiting stations tomorrow; then checking once each day for 3 days. They plan on repeating this once a month for possibly a year. Mink urine (on cotton balls) purchased from Minnesota Trapline will be used on ½ the stations and Amino Acid tablets, purchased from Pocatello Supply (WJ) will be used on the other half. They said photos of tracks will be taken and that they were also going to use the (over)

Study Status (Tasks completed, tasks currently undertaking, etc.):

They reported they had seen "lots of other tracks all over." I believed their ID was incorrect. They also reported they had seen some mink tracks on the tributary site.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

Peterson "Mammal Field Guide" to aid in identifications. A local trapper, Paul Bornstein, will confirm photos, and will also help train these guys in track ID. They also reported that they were going to use 6 remote cameras; 4 on the main stem and 2 on the tributaries, to try to get photos of mink.

Modifications (work plan task, time, location, personnel, etc.):

Kevin Mooney said "the work plan is not finalized yet, so it's not available".

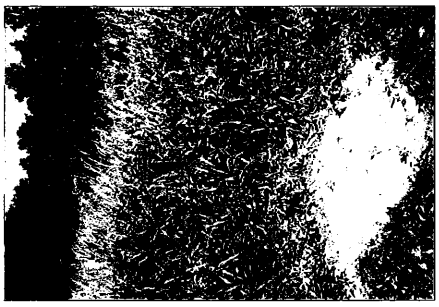
Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll 2 photos 5-10 mink scent stations, PSA
11-12 " " , Roaring Brook

06.20.01 Mink Scent Post Surveys



GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Mink – Scent Post Surveys

Date/Arrival Time: 6/26/01, 8:00am **Observer:** J. Lorthe

Personnel On-Site: Tim McClenahan, Don DeOrazio

Weather: Sunny, warm 75-60°F

Study Design Notes (planned methodologies, specialized equipment, etc.)

Instead of checking 100 stations per day; they decreased scent stations to 50 per day – 35 on the mainstem and 15 in tribs. Therefore all 100 stations were done but in two rounds.

Study Status (Tasks completed, tasks currently undertaking, etc.):

3 mink tracks (sets of) have been seen so far; 1 in floodplain and 1 in unamed tributary by Roaring Brook.

The scent stations we visited were moist from condensation and also hard, this made tracks hard to leave.

No mink tracks observed by us.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

Modifications (work plan task, time, location, personnel, etc.):

see over

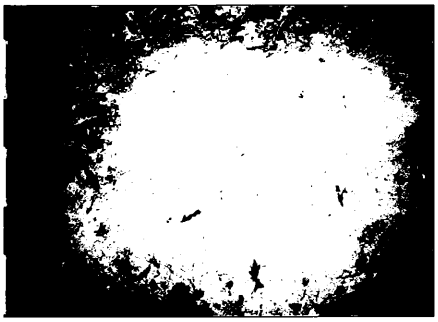
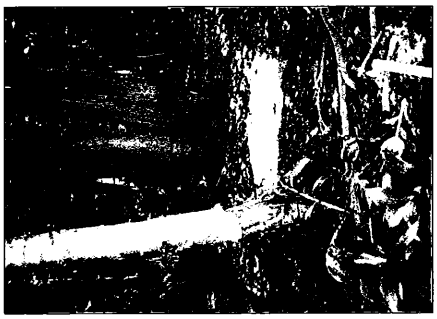
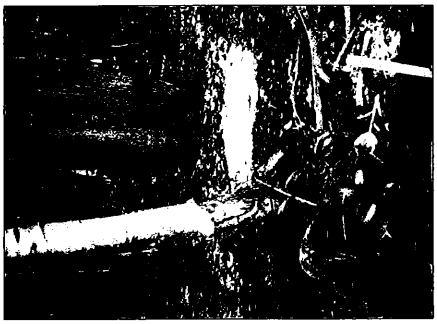
Action Items to address:

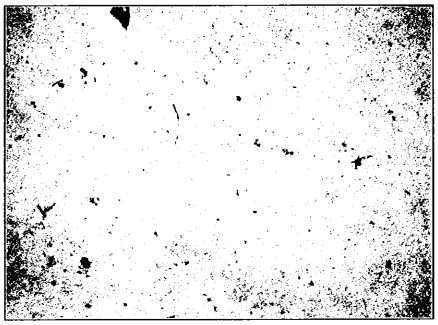
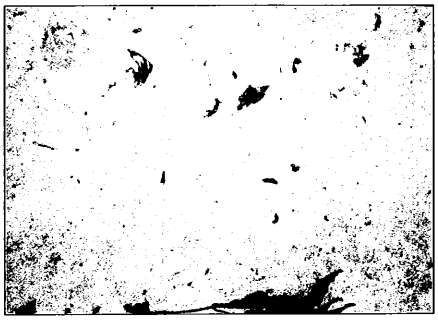
No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Roll 3, photos 1-14 of diff. stations; 15-18 are of a dead juvenile common merganser

06.28.01 Mink Scent Post Survey

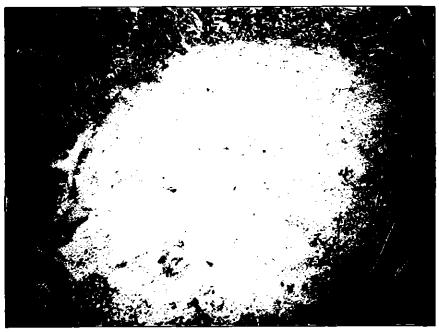





06.28.01 Mink Scent Post Survey





GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: Mink – Scent Post Surveys

Date/Arrival Time: 7/23/01, 9:00 am **Observer:** T. Lorkp

Personnel On-Site: Tom McClenahan, Jan Ippolito

Weather: Sunny; ~60's °F; dry

Study Design Notes (planned methodologies, specialized equipment, etc.)

No study plan received to date; according to K. Mooney (GE), work plans are still not completed.

Study Status (Tasks completed, tasks currently undertaking, etc.):

Checked scent stations downstream of New Lenox Rd.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

No mammal traps were measured with rules; did not observe any photos being taken.

Modifications (work plan task, time, location, personnel, etc.):

None noted.

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: MINK SCENT POST STUDY

Date/Arrival Time: 8/21 - 8/22/01 **Observer:** BOB ROY

Personnel On-Site: TOM McCLENAHAN
IAN IPPOLITO

Weather: _____

Study Design Notes (planned methodologies, specialized equipment, etc.)

SCENT POST SURVEYS W/ SAND BEDS & SCENTS (MINK URINE ON COTTON OR AMINO ACID TABLET).

Study Status (Tasks completed, tasks currently undertaking, etc.):

MAIN STEM & TRIBUTARY SITES ARE BEING RUN.

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

1) CHECK SITES FOR TRACKS
2) REPLACE SCENTS (AS NEEDED)
3) SMOOTH OUT SAND WITH BRUSH.

-DID NOT WEAR RUBBER BOOTS OR RUBBER GLOVES WHEN HANDLING SCENTS, TOUCHING SAND, OR SMOOTHING OUT SAND.

Modifications (work plan task, time, location, personnel, etc.):

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: SCENT POST

Date/Arrival Time: 14 NOV - 15 NOV 2001 **Observer:** CHRIS WOERNER

Personnel On-Site: THOM McCLENAHAN & IAN IPPOLITO

Weather: TUES. NIGHT LOW'S IN 20° WEDS. NEAR 50° HIGH. AFTERNOON SHOWERS LOW MID-30°S WEDS. WARM 60°

Study Design Notes (planned methodologies, specialized equipment, etc.)

75 SCENT POST ON HOUSATONIC RIVER FROM NEW LENOX RD CANOE LAUNCH TO WOODS POND, 25 SCENT POST ON TRIBUTARIES. SCENT POST VISITED FOR 3 CONSECUTIVE DAYS ONCE A MONTH. HALF OF SCENT POSTS VISITED FOR 3 DAYS & THEN REMAINING HALF VISTED FOR NEXT THREE DAYS. SCENT POSTS MARKED WITH MINK URINE OR AMINO ACID TABLETS WITH LURE TYPES ALTERNATING BETWEEN STATIONS.

4 MOTION DETECTION CAMERAS WERE SET UP AT ~~RANDOM~~ STATION. CAMERA WERE PLACED AT LOCATIONS THAT HAD VISITATIONS DURRING PAST SCENT POST SURVEYS.

Study Status (Tasks completed, tasks currently undertaking, etc.):

OBSERVED SURVEY OF SCENT STATION #1-35 ON HOUSATONIC AND TRIBUTARY STATION #1-10 (ROARING BROOK); #13-17 (FENTON BROOK)

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

AT EACH STATION TRACKS WERE RECORDED TO SPECIES AND SAND RAKED CLEAN.

TRACKS WERE NOT MEASURED. FOR EXAMPLE SQUIRREL TRACKS WERE NOT MEASURED TO DETERMINE WETHER THEY WERE FROM RED, GREY, OR FLYING SQUIRRELS.

SOME TRACKS WERE NOT CLEAR BUT ID MADE WITHOUT NOTING DEGREE OF UNCERTAINTY

THOM EXPESSED DIFFICULTY IN DISTINGUISHING CANINE TRACKS SUCH AS DOMESTIC DOG FROM COYOTE & FOX FROM COYOTE. WAS NOT AWARE OF SOME BASIC CHARATERISTICS USED TO DISTINGUISH CANINE TRACKS.

~~**Modifications (work plan task, time, location, personnel, etc.):**~~

FREEZING TEMPS MAY BE EFFECTING STATIONS - HARDENING WET SAND AND PREVENTING TRACKS FROM BEING SEEN. STATIONS IN SHELTERED AREAS, (ESP. ROARING BROOK) ARE MOST EFFECTED. MOST STATIONS HAD SOME FREEZING AROUND EDGES & BOTTOM LAYERS OF SAND, BUT OVERALL STATION STILL ABLE TO PICK UP TRACKS. THIS MAY WORSEN AS TEMP. DROPS.

AFTERNOON SHOWERS DISTURBED SAND AT STATIONS. SOME STATIONS HIGHLY DISTURBED, OTHER NOT HAD LITTLE OR NOT DISTURBANCE. OBSERVERS DID NOT NOTE THE DISTURBANCE CAUSED BY RAIN.

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

2 PHOTOS OF STATION - ONE w/ URINE ONE w/ TABLET

GE FIELD STUDY – OVERSIGHT MONITORING FORM

Project: SCENT POST STATIONS / MINK

Date/Arrival Time: 12/17/01 **Observer:** BOB ROY

Personnel On-Site: ~~CLEAR, COLD~~ TOM MCCLENAHAN & IAN IPPOLITO

Weather: CLEAR, COLD

Study Design Notes (planned methodologies, specialized equipment, etc.)

- OBSERVE SCENT POST STATIONS
- CHECK CAMERAS

Study Status (Tasks completed, tasks currently undertaking, etc.):

MAINSTEM SITES BEING RUN

(over)

Description of Specific or Specialized Tasks (handling of specimens, etc.)

- SAND BEDS WERE FROZEN. EVEN OUR WEIGHT DID NOT CREATED TRACKS IN SAND

- COLLECTED ONE CAMERA FOR REDEPLOYMENT. THEY MENTIONED THAT ONE CAMERA SITE WAS NOT WORKING.

Modifications (work plan task, time, location, personnel, etc.):

THEY CONSTRUCTED BURROWS AT THE WATER'S EDGE TO ADDRESS FREEZING CONCERNS. BURROWS WERE ~4-5" HIGH/WIDE, ± 12" DEEP, & ±1" ABOVE H_2O. BOTTOM STAYED AS SOFT MUD. SCENT WAS PLACED (NO GLOVES) AT BACK OF BURROW.

Action Items to address:

No.	Task	Follow-up Comments/Date

Photographs taken (roll#/photo #):

Appendix D

Email from K. Mooney to J. Lortie dated July 5, 2001

John Lortie

From: Mooney, Kevin (CORP) [Kevin.Mooney@corporate.ge.com]
Sent: Thursday, July 05, 2001 4:58 PM
To: 'John Lortie'
Cc: Margaret Branton (E-mail)
Subject: Oversight

John,

Not much going on next week.

We only have the fish study active and that is in the final stages of

wrapping up

I will be out on Friday but we can talk more on Monday about other up coming activities.

Kevin

g General Electric Company

Kevin G. Mooney
Remediation Project Manager
Corporate Environmental Programs
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Pittsfield, MA 01201
% Tel: 413-494-4391 [DC: 8*236-4391]

- Fax: 413-494-5024
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