



Etowah HCP Development Grant **Report on Year One Activities**

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The Etowah Regional HCP Development Project is a multi-year program to develop a cross-jurisdictional Habitat Conservation Plan covering 11 species, funded in large part by grants from the U.S. Fish and Wildlife Service. There are three major components to its development:

- (1) Adoption and implementation of a governance structure whereby all the county and municipal governments in the Etowah watershed feel that they have a meaningful voice in the development of the plan.
- (2) The second is a determination, through applied research, of how development actually degrades habitat for imperiled species and the most successful means of reducing these impacts through control of land development patterns and methods.
- (3) An outreach campaign that educates the public about the value of the imperiled species in the watershed and how they can participate in the reduction of adverse impacts on the species and obtains input from the public regarding which specific protection measures are most appropriate given the circumstances of their community.

We have made significant progress on all three of these components and have completed all of the objectives laid out in our initial application for funding.

For first-year HCP planning team (or “we”) includes Bud Freeman, Mary Freeman, Laurie Fowler, Liz Kramer, Elizabeth Pate, Libby Ormes, Seth Wenger, Beth Gavrilles, Erin Dreelin and Garnett Stokes of the University of Georgia; Bill Ensign of Kennesaw State University; Mike Harris of the Georgia Department of Natural Resources, Robin Goodloe and Sandy Tucker of the U.S. Fish and Wildlife Service, Candace Stoughton of the Nature Conservancy, Ron Papaleoni and Ginger Rayburn of the Lake Allatoona Preservation Authority, Susan Kidd of the Georgia Conservancy and Doris Cook of the Upper Etowah River Alliance.

1. Governance of the HCP.

The implementation of the Etowah Regional HCP will result in enactment of ordinances and other policies to minimize impacts of development across many jurisdictions in the watershed. We expect twenty-six local governments to hold incidental take permits and to issue certificates of inclusion to developers and others who may impact aquatic habitat within their jurisdictions. Developing a strategy for including all of these local governments in the creation of the HCP is a tremendous challenge but essential to the success of the project.

- a. We began by speaking to each of the county commissions and the city councils of the larger municipalities in the watershed. For background, officials were sent a two-page summary of the project in advance, and we used visual materials to show the biodiversity of the watershed and the distribution of the imperiled species. We explained the concept of an HCP, why we believed this tool would

benefit the Etowah, and asked if they would agree to participate in the development of the HCP. In some cases, the governing body asked us to return and talk with key staff members (for example, water and sewer and planning staff) before presenting a second time to the elected officials. In every case, the governing bodies endorsed the development of the HCP (see Resolution of the Forsyth County Commission, attached, as an example).

- b. We made presentations about the HCP to other organizations that are major stakeholders in the watershed to solicit their participation in the HCP planning team, which will serve as staff to the HCP process. These included the Lake Allatoona Preservation Authority, an entity formed by the Georgia General Assembly to protect the health of Lake Allatoona (the reservoir which bisects the Etowah), and the steering committee of the Upper Etowah River Alliance, a diverse group of stakeholders appointed by the governing bodies of the five upper Etowah counties to encourage responsible stewardship of the Upper Etowah River. Both of these organizations renewed their commitment to support and assist the HCP and have subsequently participated on our planning team. We also spoke to the North Georgia Regional Issues Committee and a coalition of water and sewer authority representatives from the basin to solicit their input on the scope and structure of the plan.
- c. In the meantime we studied other regional HCPs to determine how major decisions were made and conflicts addressed, how committees were structured, how the general public had been involved, whether the process or plan had been challenged in court and with what result, and which strategies appeared to be most successful.
 - i. We interviewed USFWS staff and others (for example, Micheal Bean of the Environmental Defense Fund) to determine which HCPs were most similar to ours, and therefore most helpful in terms of models.
 - ii. Our study of the HCPs involved researching websites, reading the HCPs and associated materials, interviewing key players by phone and e-mail, and, in two cases (Sonoran Desert and Bat International), interviewing the HCP teams in person.
- d. Based on this research and our conversations with the elected officials, we developed a proposed governance and committee structure.
- e. In September, with the help of a professional facilitator, we convened representatives from the local governments within the watershed (invitations were sent to all local elected officials) and asked for their input on the proposed structure. At that meeting, and at a follow-up meeting in October, we developed the Etowah Regional HCP Governance and Committee Structure (attached). Elected officials asked that we invite a representative of a local government who had successfully completed an HCP and obtained an incidental take permit to speak at the next meeting.

- f. As a result of those meetings, the elected officials determined that the development of the plan would be overseen by a steering committee composed of one representative designated by each local government, as well as representatives of the Georgia DNR, UGA, the Lake Allatoona Preservation Authority and the Upper Etowah River Alliance. The steering committee met for the first time on January 10th at the Sawnee Center in Cumming Georgia. At this meeting, Steve Kintner of Volusia County, Florida talked about his experience developing a multi-species sea turtle HCP and a scrub jay HCP (in progress). As a local government official himself, Kintner was able to address many of the questions and concerns of the steering committee. U.S. Fish and Wildlife Service staff explained the status of their consultations and biological opinions in the basin and the advantages of developing an HCP. University of Georgia researchers the known needs of, and threats to, the imperiled aquatic species of the Etowah, as well as their ongoing research (see below). The steering committee decided that its next meeting would be a full day retreat (to be held on February 20th) to begin developing a scope of work and timeline for the completion of the HCP and assigning committee and staff tasks and responsibilities. The group also posed a list of questions about the HCP process to be answered by UGA staff and student researchers at the retreat (list of questions attached) which are already under study.

2. Scientific Research

- a. In order to develop effective policies to protect imperiled aquatic species, we must have a sound understanding of the threats to these organisms. Based on previous research in the Etowah River basin and elsewhere, we have identified flow alteration and sedimentation as major stressors to the target species of the HCP. To better understand these impacts, we undertook two lines of research in year one: (1) a correlative study of relations between land use/cover, flow alteration, habitat quality and fish assemblages in 30 sites along a gradient of hydrologic alteration, and (2) a temporal study of changes in fish assemblages and land use/cover change over time.

The hydrologic gradient study involves 30 small streams in the Etowah River basin that range in degree of hydrologic alteration. The goal is to study the extent to which stream hydrologic alteration (e.g. baseflow yield, stormflow yield, peak stormflow discharge) can be used to predict fish assemblages, and to understand the mechanism by which hydrologic alteration leads to the extirpation of sensitive species.

Correlation and multiple linear regression analysis will be used to determine relations between landscape, hydrologic, and physical habitat stressors and fish assemblage metrics. Data collected during this study will be incorporated into a decision-support model for landscape development that will be used to predict future fish distributions under different scenarios of watershed management. The management scenarios will then be related to alternative techniques for land development and used to determine scientific recommendations for imperiled species conservation.

The temporal study is designed to identify changes in fish assemblages within streams that can be related to land use/cover changes within the sub-catchment over the same time period. The study involves 34 sites that were sampled in the early 1990s and then resampled approximately 10 years later. This study allows us to make predictions about how types and levels of land use/cover change relate to specific changes in fish assemblages.

b. Hydrologic Alteration Gradient Study

1. *Site Selection*

Thirty small streams (9-21 km²) were selected within the Piedmont physiographic region of the Etowah River basin based on degree of hydrologic alteration (Fig 1; Table 1). Percent impervious cover and baseflow yield were used as indicators of hydrologic alteration for the purpose of site selection. All sites were located >1 km upstream of the juncture with a large river (e.g. mainstem of Etowah River) or reservoir. Streams that were impounded across all upstream tributaries or had a major chemical alteration (e.g. quarry) were excluded. These criteria reduced the initial set of 87 sites to 54 sites, which were then classified according to hydrologic alteration.

Sites were stratified by three classes of percent impervious cover in the watershed, < 10%, 10-20% and >20% (Fig 2). We calculated impervious cover from aerial photography and land cover maps for the region. Baseflow yield (defined as discharge/watershed area) was measured at 54 sites, 18-19 June 2002. Results of the stream discharge survey revealed a geographic pattern of higher yields in the northeast portion and lower yields at sites in the southwest portion of the Etowah basin (dividing the basin diagonally approximately at the upper end of Allatoona reservoir). Therefore, to ensure that study sites represented a range of underlying flow conditions existing in the basin, we chose sites as follows. Within each class of percent impervious cover, sites were classified as either above or below the median baseflow yield. In the <10% impervious class, we randomly selected 5 each of sites located in the northeast (most of which were above the median) and southwest (mostly below the median) portions of the basin. In the 10-20% and >20% impervious cover classes, sites in the northeast and southwest portions of the basin were more evenly distributed above and below the median yield, and so we randomly selected 5 each of sites with yields above and below the median value for the class. The final set of 30 sites thus represented three levels of impervious surface coverage, and a gradient of relative baseflow yield within each level (Table 1).

2. *Project Status*

Fish sampling at all 30 sites took place during summer 2002. Fish samples are currently being processed to calculate fish assemblage metrics. AquaRods© were installed at each site in fall 2002 to continuously measure water stage height. Initial monitoring of rods has demonstrated higher peak stormflows in the high impervious sites compared to the low impervious sites.

For example, Hickory Log Creek (8.0% urban) had lower peak stormflows than Rubes Creek (34.3% urban; Figs 1 & 3). We will continue to monitor water stage height for one year. In spring 2003 we will measure physical habitat variables related to sedimentation (e.g. bed texture, % fines, stream slope). We are also analyzing spatial land cover data for the $n=30$ sites. Ultimately, landscape, hydrologic, physical habitat, and chemical variables will be used to predict fish assemblages across sites and determine which stressors are most related to loss of imperiled species.

c. Temporal Change Study

1. *Site Selection*

Thirty-four sites were selected in the Piedmont physiographic region of the Etowah River basin for analysis of temporal changes in fish assemblages (Fig 1; Table 2). Each site was previously quantitatively sampled for fishes in the early 1990s (1990-1993) and repeat sampling took place approximately 10 years later (1999-2002).

2. *Project Status*

Field sampling of fish assemblages was completed in summer 2002. We are currently processing fish samples and analyzing spatial land use/cover data in a Geographic Information System. Changes in species composition will be compared to changes in land use/cover over the same time period.

3. Outreach

- a. Our research indicates that an open and comprehensive public education and involvement process is essential to the success of the HCP. To that end, we developed the framework for a stakeholder outreach committee with two major goals: (1) to represent diverse stakeholders throughout the watershed (ranging from water and sewer authorities, developers, landowners, etc.) who might be affected by the HCP to provide direct input to the Steering Committee in the development of the plan, and (2) to develop a larger public outreach component that educates and invites input from the public at large. At the February 20th retreat of the Steering Committee, the membership and specific charge of the Stakeholder Outreach committee will be finalized and we expect that group to convene in March.
- b. In the meantime, UGA staff developed several outreach tools including a website (www.etowahhcp.org), a handout describing the Etowah HCP, several photographic displays showing the imperiled species and their range, and a Frequently Asked Questions (and Answers) sheet, also posted on the website) that we are adding to as new questions arise. In addition, we are completing our first HCP poster, "Currents through Time" which explains the history of human reliance on the Etowah and the historical and cultural as well as ecological significance of the river. We decided to integrate the cultural and historical aspects of resource protection as a result of the success of a similar strategy used in the Sonoran Desert HCP.

- c. We commissioned a telephone survey of households throughout the Etowah basin to help us focus our outreach efforts. The intent of the survey was to determine citizens' knowledge and philosophy about watershed issues, and the best avenue for communicating with citizens. The survey results are attached; they show us, for example, that public service announcements and other programs on the radio might be particularly effective in this community, while web materials might have a more limited audience. We were surprised that a majority of residents already believe the protection of biodiversity should be a high priority. The survey also showed that while a majority of citizens believe that local regulation of land is necessary to protect species, more than half believe that such regulation is a violation of property rights. Addressing this tension will need to be a priority in the outreach campaign.
- d. We researched effective environmental protection campaigns in other communities around the country, talking to advertising and marketing professionals and public relations staff of the major national environmental groups. We will present this research to the Stakeholder Involvement Committee as they begin crafting a plan for involving the public in the preparation of the HCP.
- e. We have drafted a job announcement for an outreach coordinator and have identified donated office space in the watershed for this staff person. We expect to post the position in February, 2003 and fill the job as soon as we receive FWS funding pursuant to our Year 2 HCP grant. This person will work closely with the Stakeholder Involvement Committee, will develop educational and outreach materials, and will make presentations to stakeholder groups throughout the Basin.