

# Regional Planning for Wildlife in the Triangle

## Report of Results from Survey 3

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This document reports the results of the third part of a Delphi Survey to identify focal species for conservation planning in the Triangle. The questionnaires, subsequent reports, and other information about this effort are on the web at [www4.ncsu.edu/~grhess/research/regplan](http://www4.ncsu.edu/~grhess/research/regplan).

Forty-two surveys were mailed out; 19 were returned. Respondents were asked for their level of agreement with two statements. They were also asked to provide references to key people, data and GIS coverage's that may be of assistance and to indicate how they would like to participate for the remainder of the project.

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### Section I. Statement and Issue Summaries

**Statement 1.** The following approach will provide a map of habitat required to support all of the selected focal species.

Proposed steps to map a regional network of habitat based on the focal species selected:

1. For each focal species,
  - a) determine habitat requirements (literature and expert opinion);
  - b) link habitat requirements to available GIS-based data (new research);
  - c) estimate range of population densities (literature and expert opinion);
  - d) estimate viable population sizes (literature and expert opinion);
  - e) estimate area of habitat required for viable populations (pop. size / density);
  - f) develop GIS habitat maps based on above information (new research).

## 2. Overlay maps for all focal species to get overall network

<b>Level of Agreement</b>	<b>Number of Respondents</b>	<b>% of Respondents</b>
Disagree strongly	0	0%
Disagree	2	12%
Neutral	2	12%
Agree	11	65%
Agree strongly	2	12%

\*Two respondents did not answer

### Summary of Comments

- The approach is logical; similar to one we have developed for red-cockaded woodpeckers in the NC Sandhills.
- I am relatively certain that existing databases will not contain all the variables really needed for management or the ground work will undoubtedly be needed to supplement available GIS databases.
  - I generally agree. However, I expect that the availability of adequate GIS-based data may be a limitation.
- The habitat GIS data links are difficult to make sometimes even for species as well studied as the RCW. For species less studied it may be even more difficult to make the habitat-land cover links. That doesn't mean we should be shy about making the effort.
  - "Link habitat requirements to available GIS-based data" – Does this mean data on where various habitats with all or some requirements exist now?
- I cannot strongly agree because the literature and expert opinion for (a), (c) and (d) are going to be weak links. USFWS tried (a) in the late 70's in their Habitat Evaluation Procedures and got no consensus from either experts or the literature. While this may be the best approach, all things considered, I doubt the results are going to be very useful.
- What is not clear to me is the protection status of habitat within the mapped area?
- How habitats are managed will obviously be important in maintaining viable populations and the compatibility of management for the species using common areas should be considered.
- How to move animals across existing barriers (i.e. highways, urban areas) will need to be considered.
  - The steps under step 1 are valid for determining location of core areas for the focal species. Also needed are the links between the core areas that, by themselves, cannot support residential populations. The network requires both core areas and links.
  - What about things like spatial arrangement of habitat patches, connectivity, barriers, etc.? Is that all incorporated into (b)?

- How will you validate your focal species maps? Extensive field sampling or at least ground truthing of distribution abundance maps is necessary.
    - Much ground truthing of the GIS data bases through field surveys may be necessary to develop reliable maps.
  - How do you determine viable population sizes? Perhaps an alternative is to agree on a probability of survival for some period. For example, a 90% probability of surviving 100 years.
    - Defining a viable population is difficult and controversial in both theory and practice -for a single species doing so for all focal species may be a monumental task.
    - Viable is a buzzword that is difficult to assess. Viable for how many species? Viable over what geographical area?
    - This approach should provide the desired map if most assumptions made are valid. The lack of data on minimum population sizes and minimum habitat requirements for many species will necessitate “educated guesses”.
    - “Estimate range of population densities” – What does this mean? Existing population densities? Optimal population densities (must depend on habitat). Typical population densities (typical of what)? Something based on home range requirements?
    - I am not aware of any theoretical connection between population size and quality/area of habitat (to date), so I’m not sure how to estimate habitat required for viable populations.
  - If you just limited this to forest species I’d agree. By including Loggerhead Shrike and Bobwhite, you are also including farmland and cut-over areas that are unsuitable for forest species. Basically then, the map will include most all of the region other than developed areas, small fields, etc.
  - I think it is possible to protect viable populations of all the selected focal species and a good many other species that would fall under the umbrella of these yet still lose a number of vertebrates species from the area. If the goal is to protect all species, then special attention should be given those that will lose out with this umbrella approach.
  - Info on breadth of tolerance of focal species may be poor.
  - This is a lot of work.....funding? Seems like when we get done, not much of this area will be left undeveloped.
  - The "approach" is theoretically great - may need to create min/max maps.
  - Source/sink is a hot topic - lots of questions.
  - I doubt that some of the species on the list will prosper because significant populations and habitats for them are disappearing to fast but the assessment of existing habitats and populations may prove me wrong.
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**Statement 2.** The following additional steps are proposed to evaluate objectively the degree to which the focal species approach serve as an umbrella for other species.

1. Map known populations of focal species (literature and expert opinion plus new mapping);
2. gather any available data on other species (i.e., non-focal species) in GIS format (e.g., Natural Heritage Program, GAP) (assemble existing data);
3. overlay data on known species locations with our habitat map created using the focal species approach (GIS ); and
4. determine what proportion of known species are "covered" by the focal species (new research).

This approach will provide an objective evaluation of the focal species approach.

<b>Level of Agreement</b>	<b>Number of Respondents</b>	<b>% of Respondents</b>
Disagree strongly	0	0%
Disagree	2	11%
Neutral	3	17%
Agree	11	61%
Agree strongly	2	11%

\*One respondent did not answer.

### **Summary of Comments**

- These steps are also logical additions but their implementation will be problematic.
  - It "should" work but may vary depending on extent of type I/II errors.
- This appears to be an excellent approach. I hope that species not covered by the "umbrella" will stand out so that you will know what will and will NOT be protected.
- It is probably important to know the population status of focal species (i.e. stable, increasing or declining) and this may be difficult to determine in a rapidly changing landscape such as the Triangle region.
  - Landscapes are changing so rapidly that determining the "current" distribution of some species may be problematic.
  - Ultimately, at some scale, correlation's of fitness with habitat configurations will be needed for focal species and/or suites of species which characterize a landscape type.

- Ground truthing to verify that suitable habitat still exists may be needed for records that are only a few years old.
    - Maps for the focal species, using actual records, will be hard to produce - none of these species, except for shrikes is being monitored by anyone.
    - Charting or mapping habitats without benchmark data on existing populations is likely to fail.
    - Relying on literature and existing databases may be misleading. Historic records of occurrences cannot confirm that a species is present today. Contemporary field surveys may well be needed to confirm.
  - Even assuming you have good focal species maps, distribution/abundance data for non-focal species are not available with sufficient resolution to do this.
  - The concern with "known species" is that they are "found" where people look for them and people haven't looked everywhere. Therefore, where they are found provides information, whereas where they are not found doesn't reveal anything.
    - What are "known species?"
    - How will known populations of focal species be assessed? I am not sure how much is really known about these populations beyond presence/absence or maybe relative abundance.
    - Seems vague. What are "other species?" Cardinal, Grey squirrel, etc.?
  - Species by definition are unique. Therefore, there is a fundamental problem with any species being a substitute for some other species.
    - Even if you have a complete map for bobcats and their habitat, which may cover extensive area's of undeveloped lands, the core areas and connections needed for bobcats may be meaningless for species with different habitat and ranging requirements.
    - I'm not a fan of the "umbrella" species approach in general.
  - I am doubtful that the Natural Heritage Program data would be reliable on the scale of interest, and I am near-certain GAP would not be. I think you will run into an issue of having animal and habitat data that are "reliable" on two different scales: Large (county grain) for some animal distributions and small (sub-county grain) for habitat patches.
  - The intensity of which focal animals must be sampled (or the precision with which population characteristics must be estimated) in order to have accurate mapping on a sub-county grain may be difficult to achieve.
  - "Location" does not mean viable populations either in short or long term.
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## Getting Started

A major part of this process will involve linking detailed species habitat requirements to much less detailed GIS data. Please take a look at the list of focal species again and write down the names of any key people, references, data, and GIS coverage's that you feel will help us with this task.

<b>Reference</b>	<b>Contact/affiliation</b>
Beaver	Dave Woodward, NCSU Jon Heisterberg, US Dept of Agriculture Wildlife Control Perry White, NC wildlife Resource Commission
GIS information	Terry Ellis, Johnston County GIS office Steve Williams, NC Gap Kirsten Hazler, NC Gap CGIA, DOT data Center for Geographical Information and Analysis, Office of State Planning
Mammals	Mary K. Clark, NC Museum of Natural Sciences
Natural Heritage Databases	Linda Pearsall, NC Natural Heritage Program
Corp. of Engineers	
Eastern Box Turtle	Alvin Braswell, NC State Museum of Natural Sciences Jeff Beane, NC State Museum of Natural Sciences Steve Hall, NC Natural Heritage Program Harry LeGrand, NC Natural Heritage Program
Birds	Mark Johns, NC Wildlife Resources Commission Harry LeGrand, NC Natural Heritage Program John Connors John Gerwin, Natural History Museum
Bobcat	Roger Powell, NCSU Perry Summer, NC Wildlife Resources Commission
Northern Bobwhite	Peter Bromley, NCSU Terry Sharpe, NC Wildlife Resource Commission
Loggerhead Shrike	Wayne Irvoh (#11 spelling?)
NC State Museums Breeding Bird Atlas	
NCWRC – Gamelands	

## Staying Involved

<b>How would you like to be involved as this research moves forward?</b>	<b>Percentage of Respondents</b>
I would like to provide technical advice for one or more of the selected focal species.	7 respondents (39%)
I would like to serve on a panel that provides overall project direction by responding periodically to surveys similar to this one.	12 respondents (67%)
I will make myself available for periodic telephone consultations.	13 respondents (72%)
I would like to see periodic progress reports.	17 respondents (94%)

## Section II. Summary of Additional Comments

- I still feel some of these species will be difficult to work with in the proposed areas: 1) beaver (controversial species) 2) broad-winged hawk (not common enough in this area 3) shrike (may be a reach, they are so uncommon now) but this is what the surveys participants came up with so we'll see what happens. Overall, I think this is a very good idea and worth a try.
- On page one, it is stated that this plan focuses on four groups of animals, but the final list of focal species is over half birds and includes no amphibians.
- On page three, the bobcat is given "keystone" designation. I don't see how that applies to the bobcat by my understanding of keystone species. An umbrella species yes - but to me some of the other species listed (pileated woodpecker, box turtle) better fit the definition of a keystone species than does the bobcat (the beaver may be the only true keystone species included).
- The umbrella approach is a good start, and certainly better than no plan at all, but it will still result in the loss of some species. It tends to ignore some rare species and plants and aquatic species in general. Considering that no approach is perfect, it's not a bad effort, and I appreciate the work you all have put into it.
- What's really needed is to stop human population growth and development in the Triangle and protect every remaining scrape of wildlife habitat.
- I think this is good stuff but you are going to run into major challenges that might make your excellent ideas difficult to pull off in reality.
- The whole idea of mapping animal populations based on habitat is a real bugaboo. One has to understand the populations before habitat associations can be correlated with population characteristics.
- Scale will be a big issue too. It will be difficult to map populations reliably on the same scale you can portray habitat, the scale at which I believe your interests and questions are addressed.
- I would urge not to expect too much from the animal data.
- I am tired of dealing with this planning, abstract, philosophical material. It's time to see some maps, GIS coverage's, etc. I think we can better answer things when we visually see a rough shape, etc. of habitat blocks out there. Wake County is pretty much shot, Durham partly so, but other counties have much potential habitat for landscape protection.
- I'm not sure how all of this will "play out". Obviously we as conservationist/environmentalists would like to see more lands protected for wildlife in the region. We know that there are few rare species out there to guide us in this work. Thus, we'd like to know where to put the "most bang for our bucks". What habitats should be

protected, or what habitats should be protected first given extra money. I hope this work will lead to this and can help the local agencies in protecting wildlife in the region.

- I am interested in seeing how this progresses to the application phase. You have quite a challenge ahead but I do not think it is too late for such planning.
- I think biodiversity planning on research is a great idea and very important for the Triangle.
- Landuse cover data should be available as GIS coverage's but I don't know how you will get meaningful data on species distribution and abundance without collecting it yourself in a systematic way.
- I am hopeful the work you are doing will translate into meaningful protection and management of wildlife habitat in the Triangle Region. Thanks for allowing me to be a part of your efforts.
- Is there a strategy for acquiring resources to accomplish these formidable tasks and obtaining community support?
- Periodic monitoring of the landscape and the species/species suite will be necessary which will require more effort (resources). Such monitoring could however help establish the aforementioned habitat-species fitness correlation.

### **Section III. List of Respondents**

Forty-two surveys were distributed; we received responses from these 19 participants. Thanks to all of you!

1. Owen Anderson, NC Wildlife Resources Commission
2. Alvin Braswell, NC Wildlife Resources Commission
3. Susan Campbell, NC State Museum of Natural Sciences
4. Phil Doerr, NC State University
5. Stephen Hall, NC Natural Heritage Program
6. Mark Johns, NC Wildlife Resources Commission
7. Richard Lancia, NC State University
8. Harry LeGrand, NC Natural Heritage Program
9. Lynn Maguire, Duke University
10. Mike Mitchell, NC State University
11. Roger Powell, NC State University
12. Ted Simons, NC State University
13. Don Stephenson, Johnston County Community College
14. Peter White, UNC Chapel Hill
15. Randall Wilson, NC Wildlife Resource Commission
16. Jeff Beane, NC State Museum of Natural Sciences
17. Richard Yates, CP&L?
18. John Gerwin, NC State Museum of Natural Sciences
19. Peter Bromley, NCSU