

## CHAPTER 8.

# IMPLEMENTATION MONITORING, ADAPTIVE MANAGEMENT, & REVIEW AND REVISION PROCEDURES

### Introduction

Our Plan has identified priority species and their habitats, described threats to those species and habitats, prioritized appropriate conservation actions to mitigate those threats, and addressed status and trends monitoring. The resultant product is a roadmap for implementing species conservation and habitat management. To be successful, however, we must develop effective ways to monitor not only particular species and species groups (detailed in Chapter 7), but also the conservation actions being implemented, their effects on habitat, and eventually the results that those actions have on priority species. The product of this monitoring effort will provide a measure of project and program success that can be used to determine if our goals and objectives are being met. Monitoring feedback is a critical piece of the adaptive management process that will keep both projects and the program on task and goal-oriented.

Plan implementation will be a dynamic process through time, involving management of the monitoring process, performance assessment, adaptation as new information dictates, and refocusing to new tasks and projects as appropriate. The goals of the Plan must remain visible as personnel and organizational shifts occur both within the Commission and across the broader conservation community. Maintaining communication and input from the broader conservation community will be critical to the success of the Plan and its implementation.

Eventually, the Plan will require a more formal review and revision to make sure it remains relevant to its core purpose. We propose a process for incorporating monitoring, maintenance activities, adaptive management, and review and revision within a five-year cycle (Figure 8.1).

Our monitoring, adaptive management, and review and revision protocols have primary importance to the Commission, as the agency ultimately responsible for review and revision. Yet in order for this process to be an efficient and meaningful way to measure advancement towards the goals we have outlined for our Plan, it is important that it be clear and easy to understand for all partners involved in Plan implementation.

*Note:* After October 2005, each state and territory in the country will have 55 other Plan examples to review and draw inspiration from. The next few cycles of implementation, review and revision will be the most critical in terms of working out kinks, testing methods that are as of yet just theoretical, and improving aspects of the Plan that aren't working well. For this reason, the five-year interval of Plan revision may be shortened for the first few rounds of revision.

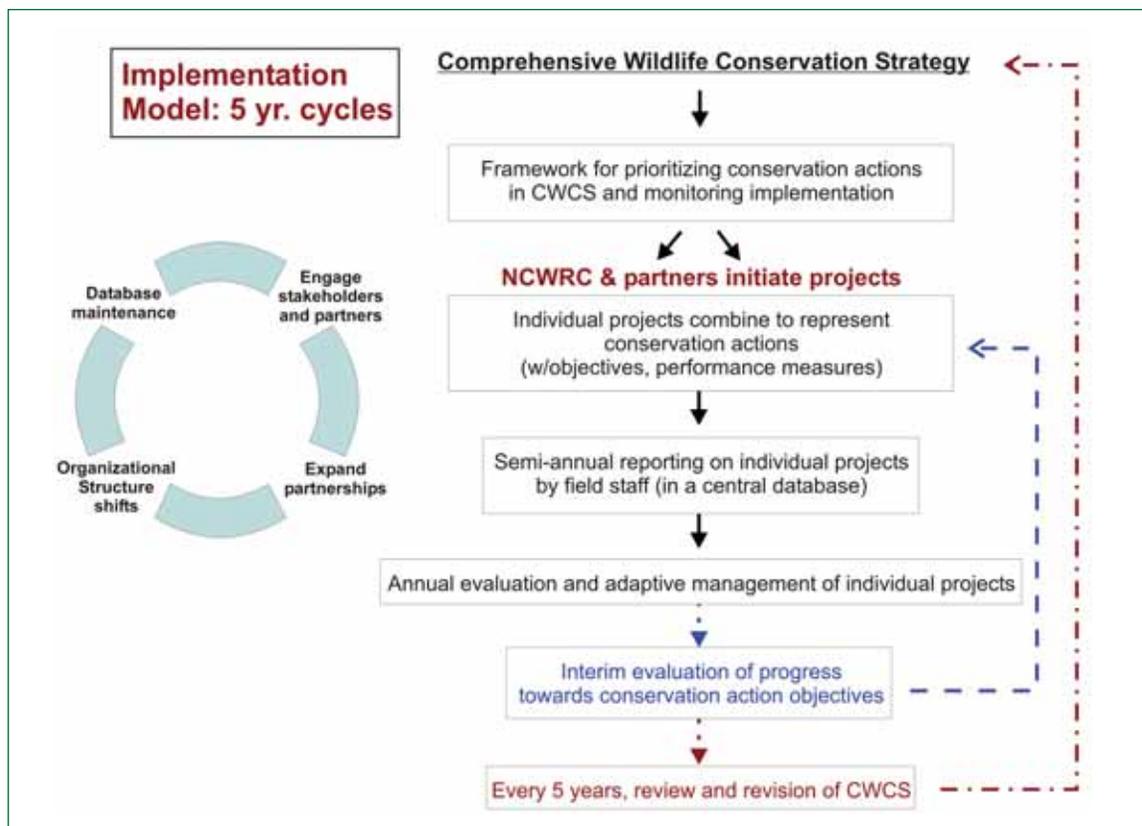


Figure 8.1. North Carolina's Wildlife Action Plan implementation model.

## Monitoring of Conservation Actions and Adaptive Management

In order to effectively review and revise a document of this depth and breadth, we must first establish protocol and procedures for evaluating how well the conservation actions we have proposed are working to further the goals and objectives of the Plan. As an agency, the Commission is used to setting project level objectives and indicators of success; scaling those indicators up to address conservation action objectives will be a matter of organizing and classifying projects into the framework identified in Chapter 6 (Tables 6.2 – 6.6). In that chapter, we linked priority conservation actions to objectives and indicators that will facilitate monitoring and performance measurement of those conservation actions. Following, we describe how the outcomes of the conservation actions will be monitored and how adaptive management will be employed.

An effective, comprehensive approach to measuring success will need to take advantage of existing relevant monitoring and reporting (e.g., Federal Assistance documentation) and the expertise of other agencies and organizations (e.g., US Geological Survey). It will also require the development of new monitoring protocols to address measurement needs unmet by existing efforts. Coordination should be attempted on as broad a scale as feasible to make the monitoring process as useful as possible across multiple scales for multiple purposes. Design considerations might include extrapolating monitoring results at a smaller scale to a larger scale, using indicator species or communities, defining effectiveness as threat abatement when feasible, measuring habitat changes instead of animal responses, and other strategies to address success but manage difficulty and cost. (See Chapter 7 for a discussion on status and trends monitoring).

IAFWA guidance emphasizes the importance of a good cost accounting system to keep track of investments (time and money) at the individual project level, as well as the importance of commitment to evaluation and adaptation by project managers (2003). Another aspect of successful monitoring involves the recognition that, in order to be effective, evaluation must occur at different

levels – and that at each level there are unique time scales, relationships and evaluation questions. Successful implementation of the Plan will eventually require monitoring strategies across several scales, from a single project, to conservation actions applied over many projects, to broad programmatic evaluations. The Forest Service makes distinctions between the types of monitoring and evaluation they conduct (USFS 2002). Applied to the Plan, they include:

- *Implementation monitoring* – Determines if the activities and recommendations proposed in the Plan are being implemented through individual projects according to initial direction, requirements, and standards.
- *Effectiveness monitoring* – Determines if activities and recommendations are achieving, or moving towards, the desired goals or objectives.
- *Validation monitoring* – Determines if the initial activities and recommendations are valid, or are there better ways to meet the goals and objectives of the Plan.

We are committed to developing a centralized database to serve as the reporting mechanism for Plan implementation and the basis of our monitoring structure. This database will be maintained by the Commission to provide a meaningful tool for future review and revision procedures. Using this database, we will be able to query for information on, for example, how many acres of prescribed burning, linear feet of stream shoreline restoration, or new life history studies were conducted over a particular time period. At the project level, the step-down framework proposed in Chapter 6 will be a useful guide to reporting on specific targets across various planning activities (e.g., a shorebird project might employ a survey and a research component, thus performance measures and targets, identified in the database, would be set to reach stated objectives for each of those activities).

*Note:* While it is generally straightforward to gather and store implementation monitoring data, effectiveness data will be more difficult and costly to collect. Consider the example of fencing cattle out of a stream with the objective of reducing siltation in riffles and the goal of increasing population size of rare mussels. It is relatively easy to quantify the linear feet of stream protected by fencing (implementation monitoring). It is more difficult and costly to determine if fencing the stream has rehabilitated the riffle habitat (effectiveness monitoring), which requires measuring changes in silt coverage in the riffle over time. It is much more difficult and costly to determine if there better ways of increasing rare mussels in the riffle (validation monitoring). It is our long term goal to develop effectiveness and validation monitoring that is strategic and cost effective, through metrics we are able to track over time.

Making use of the Forest Service distinctions, we propose that evaluation must occur at the following levels, using diverse types of evaluation questions and employing different levels of leadership (Table 8.1) (*all of which must be considered in the proposed centralized database*).

**Table 8.1.** Evaluating the effectiveness of conservation actions in North Carolina's Plan.

Work Level	Time Scale	Type of Monitoring <sup>1</sup>	Types of Evaluation Questions	Conducted By	Methodology
Individual project	Semi-annual reporting Annual evaluation	I, E	<ul style="list-style-type: none"> <li>• Did the project occur?</li> <li>• Did it stay within budget? Did it use funds correctly?</li> <li>• Are budgeting proportions accurate?</li> <li>• Who did the work? What was the quality of the work?</li> <li>• Were the hours required reasonable and expected?</li> <li>• Did it have the desired outputs?</li> <li>• How many targets or objectives were met?</li> <li>• Are the performance indicators useful metrics of progress/success?</li> <li>• Was there collaboration among agencies/private entities/NGOs? To what extent? How many?</li> <li>• Were volunteers encouraged/solicited to participate and at what level/to what extent?</li> <li>• Are there any unintended consequences of implementing the project? Unexpected side-effects?</li> <li>• What (if any) was public opinion of the project?</li> </ul>	Program supervisors, and staff	Cost accounting system tracking time and money by project; central project tracking database used to track project accomplishments.
Adaptive management of project	Annual	I, E	<ul style="list-style-type: none"> <li>• Based on evaluation, how should future projects be changed or retained?</li> </ul>	Program supervisors and staff	
Wildlife Action Plan conservation actions (on par with program-level strategies)	Interim (every few years)	E, V	<ul style="list-style-type: none"> <li>• What is the status of the desired outcomes associated with each activity, as measured by performance indicators? Are the performance indicators valid measures?</li> <li>• Are the individual projects meeting the conservation actions called for in the Plan? If not, why not?</li> </ul>	Program supervisors, Steering Committee	Central project tracking database used to track project accomplishments.
Adaptive management of conservation actions	Interim (every few years)	E, V	<ul style="list-style-type: none"> <li>• Based on evaluation, how should future program-level activities and projects be changed or retained?</li> </ul>	Program supervisors, Steering Committee	
Wildlife Action Plan Goals	Every five years	E, V	<ul style="list-style-type: none"> <li>• Are the conservation actions meeting the state's goals of the North Carolina Wildlife Action Plan?</li> </ul>	Program supervisors, Steering Committee	Central project tracking database used to track project accomplishments.

## Maintenance

Maintenance of the Plan will require the continuation of all the activities that went into the initial development of the document (e.g., communication and coordination with partners, database updates, organizational structure shifts), as well as the management of new activities (e.g., project evaluation/monitoring/adaptive management procedures, a funding allocation mechanism). Maintenance activities will be primarily coordinated by Commission staff, but will require regular communication with external stakeholders. If maintained properly, future revision of the Plan should be a straightforward and streamlined process.

### Project Evaluation, Monitoring, and Adaptive Management

As reported above (see Figure 8.1 and Table 8.1) semi-annual reporting on projects, and annual evaluation of project accomplishments by program supervisors will be the tools to assess adaptive management needs on a project-by-project basis. Interim assessments of the individual projects'

<sup>1</sup>I = Implementation, E = Effectiveness, V = Validation

performance at meeting program-level strategies that are on par with the conservation actions called for in the Plan will be conducted by program supervisors and Commission administration. Program supervisors will work with staff and external partners to review the results of individual projects and make adaptive management changes as need be. Annual project updates will be sent to partners to keep them abreast of project progression and highlights.

### Organizational Structure Shifts

Organizational structure shifts are inevitable considering imminent retirements, contract term expirations and staff changes. Through all of these changes, it is critical that connection and dedication to the Plan be maintained, even strengthened. Strong leadership from the Commission administration is vital.

- An agency-wide position will be created to assume the duties of the current Plan Coordinator and to oversee the implementation of the Plan and future revision procedures. A position at this level will promote institutional memory and reduce fragmentation within the project. This position should be filled by someone highly skilled in project coordination, planning, and communications, with strong multi-tasking skills.
- Current committee structures and roles will be reviewed and needed revisions made to maximize their efficiency and effectiveness (see Chapter 2 for committee descriptions).
- The role of the Nongame Wildlife Advisory Committee as a support mechanism for Plan implementation will be formalized and strengthened. This body represents a key link to external partners and to the Scientific Councils who are responsible for recommending additions or deletions to protected species lists in North Carolina; they are a key body to explore and offer solutions to the Commission on challenging issues like match generation and funding streams.

### Communication and Coordination

Communication and coordination are vital aspects of Plan implementation. Again, an agency-wide position will be the most efficient way to manage Plan-related communications in the future. The following communications must be maintained throughout Plan implementation:

- Email updates to formal committees, partners, and stakeholders on implementation progression, project successes and adaptive management changes (might query stakeholders to determine the most effective way(s) to provide implementation updates).
- Web site updates and improvements.
- Small-scale meetings and communications to initiate implementation projects among partners.
- Annual “State of the Plan” meetings with partners and stakeholders to report on accomplishments, invite project coordination, and maintain enthusiasm for the Plan.
- Individual phone and email communications.
- Maintenance and management of formal committee structures.

Cooperative partnerships formed to meet shared needs and priorities will become increasingly important throughout Plan implementation, especially under current match requirements. The Commission will continue to actively search for partners to assist in addressing unmet priorities.

### Database development and updates

A database manager will be responsible for developing, managing and maintaining Plan-related databases (e.g., priority species database). As previously mentioned, a centralized project management database will be developed in order to facilitate tracking and reporting on project accomplishments by Commission staff and partners. In this reporting system, individual project targets will be linked to conservation actions, objectives, performance measures, and broader Plan goals to show accountability for meeting with success. *(A prototype model has been developed, but the model will require substantial feedback and testing by technical staff who will be reporting in the database).*

### State Wildlife Grants Fund Allocation

As the state fish and wildlife management agency, the Commission is charged to coordinate the development, implementation, and future revision of our state Plan, along with the allocation of funding. Having the staff and expertise to carry out projects, coordinate goals and objectives, and measure success is a critical component of realizing our Plan, so at current funding levels, the Commission is using much of the State Wildlife Grants funds to grow and support staff operations and projects. Until funding increases substantially, this will not change. Yet with a challenging match requirement for project implementation (currently 50:50 federal to state match), partnerships are absolutely essential to realizing implementation of our Plan.

The Commission has a long history of being involved in successful partnerships across the state:

- Since 1993 we have coordinated the state Partners in Flight program.
- Our Colonial Waterbird Cooperative Agreement has 11 different agency signatories and has been a model for other states since 1989.
- We rely on the assistance of hundreds of volunteers across the state to complete numerous conservation projects, including sea turtle nesting and stranding monitoring, peregrine falcon monitoring, bog turtle surveys and habitat management, and songbird monitoring.
- We hold Memorandums of Understanding related to conservation practices with corporations (e.g., International Paper), other agencies (e.g., the US Fish & Wildlife Service), and private entities (e.g., The Nature Conservancy).
- We support collaborative research with colleges and universities (past research projects have include work on northern flying squirrel, bog turtle, woodrats, and freshwater mussels).
- We participate in interstate efforts such as the Robust Redhorse Conservation Committee and the Pigeon River Restoration Project.

We strongly encourage our partners and stakeholders to stay engaged in the Plan implementation process. As funding increases, the services and support that we can provide to partners and external stakeholders will also increase (e.g., assistance with surveys and inventories, technical guidance, research and management), as will our ability to provide additional external funding to meet targeted needs identified in the Plan that cannot be met in-house. In time (if funding allows) we hope to work towards open competitive grants. We see our standing Nongame Wildlife Advisory Committee as a critical link to external partnerships and we intend to continue to use the assistance of that committee to facilitate long-term project planning with partners.

### Review and Revision

As outlined in the Implementation model graphic (Fig. 8.1), revision of the actual Plan document will occur at five-year intervals, coinciding with the existing Federal Aid reporting cycle. Interim reporting, project evaluations, and reviews will largely determine the nature and direction of the five-year revision. However, the state will be especially vigilant of necessary changes and revisions in the short-term (the next revision may need to happen quicker than subsequent revisions because the Plan is 'untried' as of yet).

Future revision of the Plan is critical to its continued use as a planning document. We have ensured that review will occur by defining a timeframe over which revision will take place. Any number of issues may be cause to revise the document:

- New information gained through surveys, research, and monitoring will warrant future reevaluation of our species priorities.
- Reprioritization of activities following accomplished tasks will be also necessary.
- Flaws in how the Plan serves to guide implementation activities must be identified and eliminated.

- New or improved approaches to internal supporting processes (e.g., species prioritization, threat assessment) that are worth the investment of revision should be executed before an unwieldy process becomes tradition.
- Expansion of the Plan to primarily include species groups (e.g., game species, insects) that were secondarily addressed in the first iteration will make it a more truly comprehensive document.

There will be a need for fairly frequent review by the existing committees in the short term to answer the big question: ‘How is the Plan working as a planning resource and guidance document?’

Evaluating the successful implementation of the Plan will take several forms (also see ideas above in the “Monitoring of Conservation Actions and Adaptive Management” section):

1. We must answer the question: “Are the stated goals of the Plan being fulfilled?” The project tracking database (mentioned previously) will be a direct way to track progress towards our stated goals.
2. Surveys of Commission biologists, partners, and stakeholders will help us gauge how well the Plan is functioning as a planning resource. Important queries will include:
  - How helpful was the Plan to your annual project planning?
  - Were the projects that you ended up pursuing emphasized/prioritized in the Plan?
  - Did you involve partners in your projects?
  - How easy/difficult was it for you to identify match opportunities for those projects?
  - Did potential partners contact you as a result of the Plan?
  - What are the strengths, weaknesses of the Plan?
3. Annual accomplishment measures<sup>3</sup> that correlate to implementation progress might include quantification of:
  - Acres of key habitat protected or improved through various means (e.g., acquisition, conservation easements, restoration)
  - Biological assessments of priority species
  - Research or surveys to fill data gaps
  - Monitoring program advances
  - Information management advances (e.g., database improvements, upgrades, etc)
  - Funding of conservation projects
  - Outreach to partners and the public
  - Partnership coordination (e.g., Memorandums of Understanding, match agreements, etc).

“Success” criteria might thus include the following:

  - A net increase in the acreage of key habitats protected through acquisition, easements, or restoration.
  - A net increase in scientific knowledge of priority species and key habitats.
  - Successful funding of the highest priority conservation project(s).
  - Successful completion of the highest priority conservation project(s).
  - An increase in partner and public involvement in achieving protection of fish and wildlife resources in North Carolina.

<sup>3</sup>These measures should be components of the proposed central reporting database.

- The removal of threats to priority species and key habitats through avoidance, minimization and mitigation measures.
- The long-term reduction in the number of species on the priority species list, as threats are adequately addressed.

In addition to these measurable criteria, the success of the Plan (and the implementation of conservation actions) will be monitored in qualitative methods. An improvement in the coordination of similar monitoring projects conducted by disparate entities would be one such qualitative measure (enhancing the efficiency of each project). Another qualitative measure of success may be the increased involvement of the Commission in other statewide or regional conservation initiatives (e.g., Coastal Habitat Protection Plan implementation, One NC Naturally Initiative). By utilizing both quantitative and qualitative success criteria, the Commission will be responsive to the diverse nature, scope and scale of the proposed priority conservation actions.

A more broad-based review will be necessary on a longer-term basis, involving all of the stakeholder groups we have engaged thus far, and any that we may engage in the future. The Nongame Wildlife Advisory Committee is one such group who will be providing critical feedback and review of the Plan. They currently serve as an informal External Partners Committee, though representation by partners who are not currently represented on the Nongame Wildlife Advisory Committee (e.g., The Nature Conservancy) will also be critical to maintain.

Supporting materials to guide a review may include analysis of other state Plan efforts with recommendations given to strengthen particular aspects of North Carolina's Plan (e.g., separate reviews regarding threats analyses, species prioritization processes) and review of the Guiding Principles document to identify how many principles were attained during the first iteration and determine how North Carolina can work to attain more of them in the future.

When a revision is to occur, the Steering and Technical Committees will assemble teams that put the revisions together. It will be critical to identify criteria to guide the five-year review, then review the major elements of the Plan with those criteria, identify areas needing revision and the nature of the revision(s). Revisions will be peer reviewed and then major revisions will come to the Steering Committee, who will approve putting the revisions into the Plan. External views are especially important during a big revision, to give the Commission a "reality-check" and an outside view; this will involve partners (represented by the Nongame Wildlife Advisory Committee and others).

Reevaluation of our set of priority species should also occur on the five-year review cycle, as it takes considerable time to assess changes related to implementation of conservation activities and to amass new information useful in making management decisions. During revision of the species prioritization process, taxa committees should be reinstated, chaired by Technical Committee members to maximize the efficiency of each committee; representation by all current Scientific Council members should be ensured.

## Conclusion

Many lessons have been learned from our efforts to develop this first iteration of the Plan. Over the next cycle of Plan implementation (and with each subsequent revision) we shall review and evaluate the Plan, and the processes that support it, for function and utility. The true value of the Plan will be conditional upon our experiences prioritizing our actions, building partnerships, and implementing the conservation recommendations proposed in this document and the ease with which we move forward with long-term planning. Monitoring, maintenance, review and revision are the tools that will allow us to continually improve and expand our vision for fish and wildlife conservation in North Carolina.

## References

- IAFWA Teaming With Wildlife Committee. 2003. Resources for development of state Comprehensive Wildlife Conservation Plans.
- U.S. Forest Service (USFS). 2002. Revised land and resource management plan for the Croatan National Forest. U.S. Department of Agriculture, Forest Service, National Forests in North Carolina, Asheville, NC.