North Carolina Wildlife Resources Commission

Workshop Proceedings

Climate Change and the NC Wildlife Action Plan

September 1-2, 2010

Prepared by
The UNC Charlotte Urban Institute
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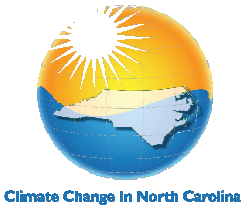

Workshop Proceedings

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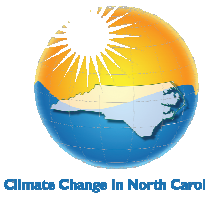


Workshop Proceedings

1. Introduction.

Workshop Overview. Approximately 140 individuals attended the September 1-2, 2010 Climate Change and Wildlife Action Plan Workshop hosted by the North Carolina Wildlife Federation for the North Carolina Wildlife Resources Commission (NCWRC) and held at the Raleigh Convention Center. The workshop was designed as the first step in developing a process for integrating climate change information into the NC Wildlife Action Plan (WAP). Additionally, this workshop builds on previous efforts by the North Carolina Interagency Leadership Team (ILT) and the NC Department of Environment and Natural Resources (NCDENR) in relation to climate change including their *Ask the Climate Question* workshop in March 2010. The ILT is a collaboration among eleven U.S. and North Carolina agencies, including the NCWRC, that work together to balance successfully mobility, natural and cultural resource protection, community values, and economic vitality.

In preparation of this workshop, the NC Wildlife Federation and NCWRC worked in collaboration to conduct a stakeholder survey in December 2009 to assess interests and knowledge level of climate change and to update a Stakeholders contact list for the workshop. A NC Wildlife Action Plan Workshop Steering Committee comprised of public and private agency members provided input during planning and development of this workshop. Committee members included Linda Pearsall (NCDENR); Ken Bridle (Nongame Wildlife Advisory Committee); Sam Pearsall (Environmental Defense Fund); Todd Wooten (Nicholas Institute for Environmental Policy); Pete Benjamin (U.S. Fish and Wildlife Service); Lisa Creasman (Conservation Trust of North Carolina); Shannon Deaton (NCWRC); and Perry Sumner (NCWRC). Production of the workshop was a cooperative effort between the Defenders of Wildlife, National Wildlife Federation, North Carolina Wildlife Federation, the North Carolina Wildlife Action Plan Workshop Steering Committee, and the NCWRC. Additional support was provided by Progress Energy and the Renaissance Computing Institute (RENCI).

On the second day of the NCWRC workshop, following presentations on the Natural Heritage Program's vulnerability assessments and the new on-line Conservation Registry, workshop participants were divided into eight groups for structured discussion of various aspects of how to integrate climate change information into the NC Wildlife Action Plan. Before participants were sent to breakout session rooms, they were asked to rate their organization's progress in integrating climate change into its work, by show of hands and on prepared "Feedback" sheets provided with their registration packets. They were also given an opportunity to report on their organizations' top two efforts related to climate change.

Breakout sessions. The breakout sessions were designed by the UNC Charlotte Urban Institute in consultation with NCWRC staff and the Workshop Steering Committee. As lead facilitator for the breakout sessions, the Institute's Associate Director for Public Policy Research, Vicki Bott, reviewed the purpose and agenda for the sessions and provided ground rules prior to participants' leaving the plenary room for their assigned breakout rooms. She also facilitated brief reports from each group on their return to the plenary room.

Volunteer moderators and scribes were recruited by NCWRC staff to facilitate the structured discussion, keep track of time, and record group consensus on key discussion items. The moderators were given a discussion guide showing a sequential series of discussion "exercises", with the specific discussion question to be posed to the group for each exercise along with an indication of its intended purpose and

an estimated time allotment. Volunteer scribes equipped with laptops and a common template for recording group consensus points and keeping track of time were assigned to each group.

This report. Summary findings are presented from the breakout sessions and Feedback sheets on:

- Rating Your Agency's Progress
- Your Agency's Top 2 Efforts
- Top 3 Climate Change Impacts on Wildlife Species or Habitats
- Proposed Process and Organizational Structure for integrating climate change into WAP
- Proposed Content and Format for climate change information in the WAP
- Access to the WAP

The groups' unedited consensus points on items 3-5 are compiled in the Appendix.

2. Rating Your Agency's Progress

Workshop participants were asked while still in the plenary room, before the breakout sessions, to rate their organization's progress in integrating climate change into its work, using a scale of 1 to 5 as shown in Table 1 below and found on their individual Feedback sheets in their registration packets.

A show of hands was asked for in the plenary session room for each rating, and participants were also asked to record their rating on their individual Feedback sheets to be turned in at the end of the workshop. The visual estimate of the show-of-hands in the plenary session was that there were a lot of "2s" and "3s" present, and a healthy complement of "4s".

A total of 39 Feedback sheets were received at the end of the workshop, so results from those sheets should be interpreted with caution, as they may not be representative of the full attendance at the workshop.

However, the Feedback sheet results do bear out the visual estimate of results by show of hands in the plenary session room, with "2" and "3" the most frequently given ratings. Almost equal numbers of respondents gave ratings of "4" and "5", and no respondents gave their organization a "1". One respondent skipped this question.

Table 1. Rating Your Agency's Progress

1 Our first step is sending me here today	2 We are assessing how we will address these issues	3 We are planning or conducting our first specific efforts related to climate change	4 We have completed one or more specific efforts related to climate change	5 We have an established program of efforts that integrates climate change into our work	No response
0	12	11	8	7	1

The workshop appears to have drawn participants from organizations representing a broad range of experience integrating climate change into their work, with most organizations in the beginning stages of doing so.

3. Your Agency's Top 2 Climate Change Related Efforts

As a second exercise while still in the plenary session room, participants were asked to list their agency's top two climate change related efforts in the space provided on their Feedback sheets. This was intended to fulfill three purposes: a) provide concrete information to NCWRC about specific efforts related to climate change underway across the state, b) lead into the introduction of the on-line Conservation Registry, and c) provide a basis for collegial exchange and networking among the breakout groups at the start of those sessions and over the working lunch.

The Feedback sheets received showed a wide range of responses to this topic, but several themes could be identified. Most responses were related to one or more of the following main themes:

- Climate Change: most responses indicated the agencies are involved in modeling, data collection, data compilation, and threat assessment
- Project Implementation: these involved field research for data collection and monitoring of species and habitats
- Habitat: responses show conservation, management, analysis, and adaptation are primary concerns
- Education: responding to public needs and gaining knowledge on effects of climate change
- Agency Management: several responded they were involved in establishing new offices for climate science research
- Hydrology: responses were related to watershed planning and hydrologic cycle monitoring and analysis
- Species: efforts are for data collection and several responses also related to the Habitat theme (data collection, adaptation)
- Wildlife Action Plan revisions

4. Integrating Climate Change into the NC WAP

The next three sections of the report summarize the consensus points reached by table groups in the workshop's breakout sessions. The three sections are:

a. **Top 3 Climate Change Impacts on Wildlife Species or Habitats**

b. **Proposed Process and Organizational Structure**

c. **Proposed Content and Format & Access to the WAP**

a. Top 3 Climate Change Impacts on Wildlife Species or Habitats

Each table group was asked to identify the top three climate change impacts. Groups began by brainstorming a list of possible candidates, and then determined whether any of the brainstormed ideas could be collapsed into a single item. Each person then chose from that list their top three, with the three items receiving the most votes recorded as the groups' consensus pick for the top three climate change impacts.

The results from all the groups were combined and categorized by the nature or type of impact identified, in order to gain a sense of the range of responses across the groups and of common elements. Table 2 below presents the categorized results. The top three impacts are:

- Sea Level Rise
- Habitat Changes (including species range and habitat biodiversity)
- Changes in Weather Patterns (temperature and precipitation)

Virtually every group mentioned "sea level rise", either directly or indirectly. A majority of groups mentioned habitat changes or habitat loss, including species range changes and consequent loss of biodiversity. Changes in weather patterns, including air temperature and precipitation, were also mentioned by a majority of groups. Related to this, three groups specifically identified hydrologic regime changes. Finally, changes in human patterns of use of natural resources were identified by two groups, and socio-economic changes were identified by one group.

Notably, no groups singled out any particular habitat type or species as worthy of "top three" climate change impact designation.

Table 2. Top Climate Change Impacts

Topic#	***Impact***	***Group***
1	*Sea level rise/coastal wetlands/marshes*	*Group 1*
1	*Sea level rise*	*Group 2*
1	*Coastal impacts/sea level rise/human movement inland/maritime forest impacts*	*Group 3*

Table 2. Top Climate Change Impacts

Topic#	*Impact*	*Group*
1	*Sea level rise*	*Group 4*
1	*Inundation impacts and salt water intrusion impacts*	*Group 6*
1	*Sea level rise*	*Group 7*
1	*Sea Level Rise*	*Group 8*
2	*Extreme weather/changes in weather patterns (changes in hydroperiod, etc)/drought*	*Group 3*
2	*Increased temperature*	*Group 3*
2	*Temperature/precipitation changes*	*Group 4*
2	*Extreme/catastrophic events (weather, fire)*	*Group 5*
2	*Changes in Weather*	*Group 8*
3	*Aquatic community changes*	*Group 1*
3	*High elevation communities/coldwater fish (coldwater fish is one example of a high elevation community)*	*Group 1*
3	*Community - Species richness and abundance, migration pattern changes, phenology*	*Group 2*
3	*Loss of complexity (biodiversity)*	*Group 5*
3	*Loss of habitat*	*Group 5*
3	*Rapid rates of habitat shifts /changes at all elevation levels*	*Group 6*
3	*Change in species ranges (loss of marginal habitat; change in wildlife diversity; community conversion)*	*Group 7*
4	*Water – quality, quality, precipitation, runoff, temperature*	*Group 2*
4	*Alteration of freshwater hydrologic regime*	*Group 6*
4	*Changes in natural hydrograph*	*Group 7*
5	*Socio-economic*	*Group 4*
5	*Changes in patterns of human use of landscape & water demand*	*Group 7*
5	*Human Migration/response*	*Group 8*

It should be acknowledged that these categories are an imperfect way of organizing the very different types of response from the eight groups. Some groups identified very general impacts ("sea level rise", "changes in weather",) while others identified more specific impacts ("high elevation communities", "freshwater hydrologic regime"). They thus do not pinpoint "the top three" climate change impacts as much as they provide very useful guidance in developing subsequent workshops at which the relative importance of various climate change impacts can be more fully explored.

Specifically, it will be important to establish common definitions and to distinguish between physical changes in climate itself (changes in air, soil and water temperatures and in precipitation patterns), the secondary effects of those changes (such as sea level rise or vegetative hardiness zone shifts) and the impacts to habitats and species that result from those climate changes and secondary effects. So for example, increased temperatures may create one set of impacts, while changes in frequency and intensity of storms create another set of impacts. Often these impacts will combine to affect habitat area, species range, and biodiversity.

As the NWRC and stakeholders continue to work to address climate change impacts in the Wildlife Action Plan, and to assess their relative importance, it will also be necessary to differentiate between general categories of impacts and more specific impacts on particular regions of the state, habitat types, and species.

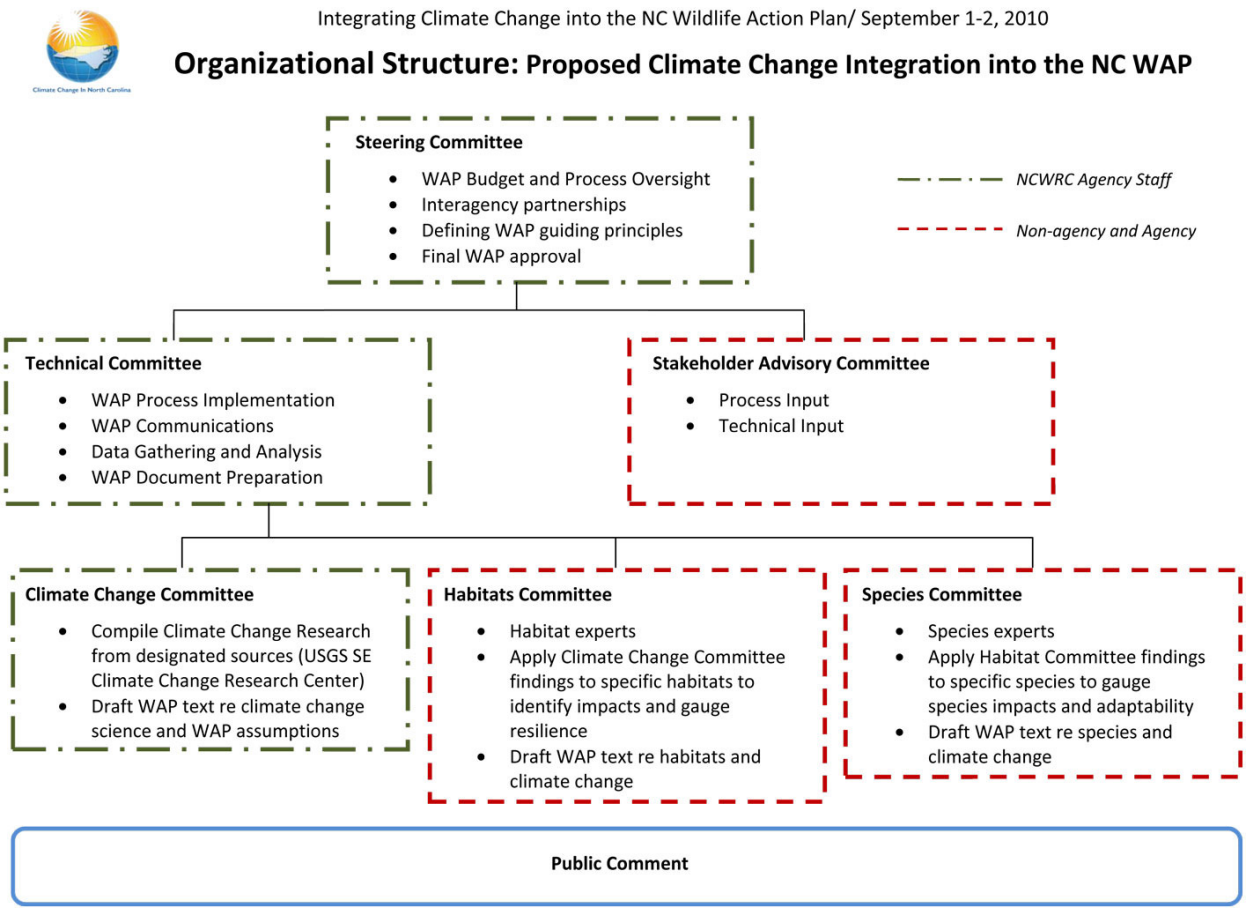
b. Proposed Organizational Structure and Process

Table groups next were asked to spend about 50 minutes discussing the proposed organizational structure and process for updating the WAP to incorporate climate change, identifying aspects on which there was group consensus to keep, change, or add new elements. For these discussions, they referred to diagrams of the proposed organizational structure and process that had been introduced and reviewed in the plenary session. They were also asked to indicate any organizational structure or process issues that are particular to integrating climate change (as opposed to a general update of the WAP) and to think about how advances in technology and the advent of new media might impact organizational structure or process. The results of those discussions are summarized here, and the un-edited reports from the table scribes may be found in the Appendix.

Organizational Structure.

The proposed organizational structure builds upon that used in the 2005 creation of the WAP. A Steering Committee made up of NCWRC staff members oversees the entire process, supported by a Technical Committee, also consisting of NCWRC staff members. NCWRC staff and other experts comprise the Habitats and Species committees, which report findings and recommendations to the Technical Committee. Public comment is received by the various committees, underlying the organizational structure. To incorporate climate change, two additional committees are proposed: a Climate Change Committee (of NCWRC staff), and a Stakeholder Advisory Committee (NCWRC staff and

representatives from other organizations.) The diagram below shows each committee's role, membership, and relationships among the committees.



The general response from table discussions seems to be that the proposed organizational structure, with some important modifications, should work well as the NCWRC seeks to incorporate climate change into the WAP. (One group wrote "Trust NCWRC judgment," about structure.) More specifically, positive feedback about the proposed structure included:

- Keep the Steering Committee as is, with only NCWRC staff (2 groups)
- Keep "Interagency Partnerships" as a Steering Committee role (1 group)
- Keep "Defining WAP Guiding Principles" as a Steering Committee role (1 group)

And, one group indicated concern that there be enough NCWRC staff to carry out all the functions shown on the diagram. (Note that the two groups in favor of an all-NCWRC staff Steering Committee are out-numbered by the five groups suggesting stakeholder be included in the Steering Committee.)

Suggestions for improving the organizational structure were many and varied. An overriding theme was a desire to integrate stakeholders into all aspects of the

organizational structure, so that they are represented on the Steering, Technical, and Climate Change committees. A related concern showed up in suggestions for reducing the hierarchical nature of the structure ("show communications lines" between all committees and the public's input, and move Climate Change Committee "up" in the hierarchy.) The discussions also revealed some interest in combining some Committees (Technical and Steering committees, or Habitat and Species committees, for example) and/or clarifying roles that may overlap. Another common theme was the importance of broadening the stakeholder group to include organizations whose work falls outside the usual definition of "wildlife", but who will share in concern about how climate change is being dealt with, including those who dissent.

Finally, some groups recommended the addition of new committees, a committee for Education & Outreach, one for Interstate Coordination, and one for Socio-economics: at least three groups championed increased emphasis in the organizational structure on outreach communications, suggesting the addition of an Education & Outreach Committee; two groups addressed the need for multi-state work on climate change planning; and one group suggested creating a Socio-economic Committee of non-wildlife groups such as the agriculture and tourism industry and policy makers.

Groups identified several structural issues relevant to undertaking the update effort in 2010-2011 (versus in 2005), most particularly concerns regarding the urgency of taking action and completing the update quickly.

Groups also highlighted issues that are specific to integrating climate change, reiterating points made earlier about diversity of stakeholders, inclusion of climate change expertise, development of species prioritization criteria that include climate change impacts, and interagency coordination.

The list below summarizes the groups' suggested changes and categorizes them by the part of the organizational structure to which they apply. When a suggestion was made by more than one group, the number of groups is indicated.

Steering Committee

- Take over Communications responsibility from Technical Committee / ad, clarify role of intra-agency communication
- Combine Steering and Technical committees

Stakeholders

- Define how stakeholder committee differs from technical committee / Include non-WRC staff in Steering committee and all committees membership/consider integrating stakeholders throughout the organizational structure instead of on a separate committee / show communication lines between stakeholder committee and climate, habitat, species committees / clarify where stakeholder contributions are fed back in – 5 groups
- Include stakeholders in WAP document prep (as end-users)
- Get stakeholder buy-in early on to determine science and stakeholder values
- Membership should include LCC, soil & water districts, users of WAP (sportsman groups, COGs, public, conservation organizations, estuarine and marine

fisheries) and climate change dissenting voices (utilities, developers, others), or engage dissenters other ways – 5 groups

Climate Change Committee

- Include non-WRC members – 3 groups
- Move CC Committee to mid-level (with Tech & Stakeholders)
- Use diverse sources of data (beyond USGS)
- Coordinate with other state agencies to use the same climate models/scenarios

Habitat/Species Committees

- Include game and non-game experts / consider plants, too – 2 groups
- Combine into one committee with sub-committees for specific habitats, species
- Show multiple sub-committees
- Habitat Committee to be responsible for integrating climate change with other stressors and species prioritization factors – 2 groups
- Habitat and species managers need to provide questions to guide research on climate change

Public

- Evaluate who, how, when, what to include as public input
- Connect the public comment box to the other boxes / Show where public comment fits in – 2 groups

Education/Outreach Committee

- Add a committee for education/outreach / Assign a greater role to education/outreach throughout the process – 3 groups

Interstate Committee – 2 groups

- Incorporate inter-state planning
- Model other states' organization structure
- Standardize language/categories/data platforms with other states

Socioeconomic Committee

- To bring in diverse voices and non-wildlife organizations (policy leaders, ag and tourism industry, etc.)

General:

- Show communication between stakeholder and technical committees
- Show communication between 3rd level committees and stakeholder committee

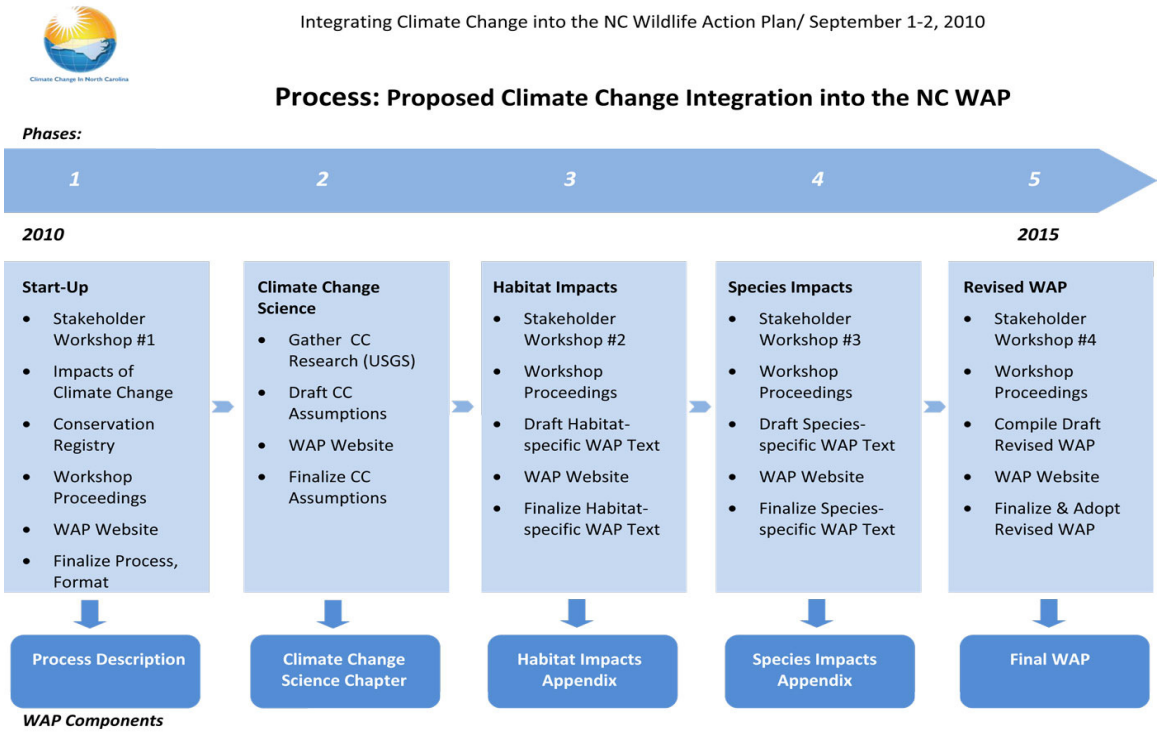
Other

- Consider landscape approach (ecoregions, watershed, etc, & extend beyond NC)
- Add a vulnerability assessment
- Increased collaboration, incorporate conservation plan for state, with DENR, other agencies – 2 groups
- Identify priority and species impacted, follow with monitoring & inventory
- Address threats other than climate change

Process.

As with organizational structure, the proposed process builds upon that used in the 2005 creation of the WAP. Under this process, the Steering Committee, with staff support from the Technical Committee, launches the process in "Phase 1". Subsequent phases provide for development of content by experts in the Habitat and Species committees, with stakeholder and public input as each chapter of the WAP is drafted. In the final phase, the completed draft receives additional review from stakeholders and the public before it is finalized and published.

To incorporate climate change, an additional phase is proposed, called "Climate Change Science". This phase would immediately follow the first phase and then be followed by the habitat and species expert content development. The purpose of the Climate Change Science phase is to determine what assumptions about the nature and degree of projected climate change should be used in assessing habitat and species impacts. The diagram below describes each phase's purpose, anticipated efforts and events, and their relationship to each other.



As anticipated, the responses to the proposed process include more suggestions for changes than did the organizational structure proposal. While some suggestions added detail or clarification to the proposed process diagram, others recommended substantive changes to the process itself. One group endorsed the proposed process with no changes or additions, except for a call for flexibility in amending the process as it goes forward as needed. The most substantive suggestions are presented below.

A theme emerged in calls from 5 groups for a less linear, more iterative process, with climate change, habitat, and species information being developed in parallel rather than sequentially. Two groups suggested that a 5-year timeline is too long and that the process could be completed more quickly, with one group suggesting a 2012 target date, and another group recommending development of "no regret actions" to be taken quickly and separated from other issues needing longer-term evaluation..

Three groups commented on Phase 1 ("Start-Up") , making these suggestions:

- Define how to establish committees
- Engage public earlier on, but not as integrated part of the process
- Survey current WAP users

Related to Phase 1, three groups want to ensure the process includes identification, recruitment, and ongoing involvement of stakeholders. One group suggested the use of the "spiderweb" approach, in which stakeholders help identify and recruit additional stakeholders. Another group emphasized communication with dissenting stakeholder voices.

Three groups had comments relating to the proposed "Climate Change Science" phase (Phase 2), all concerned with ensuring the WAP addresses climate change impacts and not just climate change science.

For the proposed "Habitat" and "Species" phases (Phases 3 and 4), in addition to the above-noted suggestions for parallel and iterative processes, two groups emphasized the importance of keeping the proposed process' a) inclusion of NHP Threat Assessment and b) use of informal meetings with expert biologists, respectively.

A new phase was suggested by one group to show implementation steps and management actions, including development of a prioritization process for ongoing research and actions.

Other comments and suggestions included:

- Maps: Two groups would like spatial analysis and development of maps to be an explicit part of the process;
- Schedule: Consider field work constraints in setting schedule for the process & set meeting dates well in advance.
- Technology: use web- and wiki-based communication and data-sharing vehicles; Also, provide video conferencing as an option for those who can't be physically present at meetings.

c. Proposed Content and Format, & Access

The table groups spent their final 50 minutes of the breakout sessions discussing the proposed content and format of the updated WA. For these discussions, they referred to diagrams of the current and proposed content and format of the WAP that had been introduced and reviewed in the plenary session. They were also asked to consider suggestions for improving the accessibility of the WAP and its contents. The results of those discussions are summarized here, and the un-edited reports from the table scribes may be found in the Appendix.

Proposed Content.

After reviewing the diagrams, the moderators asked the table groups, "What kind of information related to climate change needs to be in the WAP? " The table groups were prolific in their response to this question, and comments were received across a wide range of "Content" topics. The topics of Strategies, Impacts, Prioritization, and use of maps in the WAP received the most comments and were of concern to the majority of groups. Not surprisingly, given the interrelation of the breakout sessions' discussions on Organizational Structure, Process, Content and Format, some comments were noted that pertain to Format or Process. Table 3, below, shows the full range of comment topics.

Under "Strategies", suggestions ranged from incorporation of "best practices," detailed strategies and compensatory mechanisms, to policy changes. Discussion around "Impacts" included requests for vulnerability analysis, highlighting of most threatened habitats, distinctions between impacts to specialist versus generalist species, and implications of impacts for management priorities. Comments under the "Prioritization" category call for incorporating climate change in determination of priority areas, habitats, species, and management actions, rapid assessment of priorities based on climate change threats, and clear and concise documentation of priorities for easy reference by WAP users. Maps were requested to depict current and anticipated habitat extents, and are clearly something WAP users want more of, even to the extent of requesting actual shapefiles and map "project" files for maps shown in the WAP.

Table 3. "Content" Comments by Topic

Topic	***# Comments***	***# Groups***
Strategies	*9*	*7*
Impacts	*7*	*4*
Format	*6*	*5*
Other	*5*	*5*
Prioritization	*5*	*5*
Maps	*5*	*4*

Table 3. "Content" Comments by Topic

Topic	*# Comments*	*# Groups*
Species	*5*	*3*
Intro	*4*	*3*
Scenarios	*4*	*2*
Anticipated changes	*3*	*3*
Existing Conditions	*3*	*3*
Audiences	*3*	*2*
Future Habitats	*3*	*2*
Socio-economics	*3*	*2*
WAP Implementation	*3*	*2*
Anticipated responses	*3*	*1*
Ecosystems	*2*	*2*
Multi-state	*2*	*2*
Outreach	*2*	*2*
Decision-making	*2*	*1*
Current actions	*1*	*1*
Information gaps	*1*	*1*
Monitoring	*1*	*1*
Overall	*1*	*1*
Population response	*1*	*1*
Population Trends	*1*	*1*
Process	*1*	*1*

Proposed Format.

The moderators next asked the table groups to discuss likes and dislikes about the proposed format for integrating climate change into the WAP, again referring to the diagram showing proposed content and format. In general, the table groups did not recommend substantial changes to the format's flow of chapters (with the exception of one group suggesting that Chapter 4 should be moved to follow Chapter 6).

Regarding the key question of whether to integrate climate change throughout the WAP or provide a chapter specifically dealing with climate change, the consensus seems to be "both", meaning that there needs to be a chapter explaining what climate change is,

summarizing predicted weather and other changes, and outlining the general implications for ecosystems, habitats, and species, but that more specific climate change information relating to wildlife needs to be integrated throughout. In effect, this is a call for a "Climate Change Science" chapter to lay the ground-work for integrated treatment of impacts on wildlife, recommended strategies, and prioritization of actions.

There were also several suggestions for inclusion of information relating to climate change in the Appendices. Among those were an index that includes climate change topics, a ranked list of threats (including climate change threats), a glossary of climate change terms, and a synopsis of climate change information found in the WAP cross-referenced to other sections of the WAP where the information is found.

Other comments included:

- Incorporate climate change into the prioritization process in Chapter 2
- Integrate climate change threats in Chapter 3 (2 groups)
- Cover climate change impacts for each ecosystem/habitat group in Chapter 5
- Integrate climate impacts for aquatic habitats by river basin in Chapter 5 (2 groups)
- Include climate change mitigation efforts, and efforts to manage for climate change in Chapter 6
- Map priority areas (or link to NHP land trusts) in Chapter 6
- Add measures of success related to climate change (new chapter)
- Create an appendix explaining the committee structure and how the WAP was prepared

Access.

Finally, the moderators asked the table groups whether there are ways of accessing the WAP that would be more useful than the printed or downloadable pdf document formats currently available.

The most frequent responses included offering a searchable database (7 groups), providing GIS tools (4 groups), and a WAP website with an on-line, interactive form of the WAP (3 groups). Two groups recommended making individual chapters or sections available as downloadable pdfs in addition to a pdf of the entire WAP document.

A few access issues overlap with content or outreach suggestions:

- Highlights of changes to the WAP
- An Executive Summary "pull out" (stand alone document)
- A "Report Card" on the WAP for the general public
- Workshops on using the WAP / webinars / Outreach events around the state with expert presenters (2 groups)

- Use social media, such as Facebook
- Use broadcast media (e.g., public access TV or radio)

5. Conclusion

The workshop reached an audience representing organizations engaged in wildlife and land conservation that by and large, are just beginning to incorporate climate change into their work. Efforts related to climate change reported on behalf of these organizations tended to fall into several categories, including Habitat, Species, Hydrology, Project Implementation, Education, Agency Management, and Wildlife Action Plan revisions.

The breakout sessions' initial discussion topic identified the top three climate change impacts on wildlife as:

- Sea Level Rise
- Habitat Changes (including species range and habitat biodiversity)
- Changes in Weather Patterns (temperature and precipitation)

The breakout sessions focusing on Organizational Structure, Process, Content, Format, and Access produced a wealth of feedback, with several consensus themes:

- The Organizational Structure should include a Climate Change Committee, should be less hierarchical, include more stakeholder involvement throughout, and reflect more communication and interaction among the committees.
- The Process should be shortened to less than five years and should allow Climate, Habitat and Species "tracks" to run in parallel rather than sequentially, and in an iterative fashion.
- The Content should include a chapter specific to Climate Change, explaining what climate change is and summarizing the predicted changes to climate and general implications for wildlife; at the same time, specific climate change information should be integrated throughout the WAP
- The existing Format should be maintained, with the addition of a Climate Change chapter and possible evaluation of the order of Chapters 4 and 6.
- Access should be expanded by taking advantage of the Internet and providing a searchable database and GIS tools.

APPENDIX

Volunteer scribes equipped with laptops and a common template for recording group consensus points were assigned to each group. The groups' unedited consensus points as recorded by the scribes are compiled below for each of three major discussion items:

- Top 3 Climate Change Impacts on Wildlife Species or Habitats
- Proposed Process and Organizational Structure for integrating climate change into WAP
- Proposed Content and Format for climate change information in the WAP & Access to the WAP

Top 3 Climate Change Impacts on Wildlife Species/Habitats

Group 1

Sea level rise/coastal wetlands/marshes
High elevation communities/coldwater fish (coldwater fish is one example of a high elevation community)
Aquatic community changes

Group 2

Sea level rise
Water – quality, quality, precipitation, runoff, temperature
Community - Species richness and abundance, migration pattern changes, phenology

Group 3

Coastal impacts/sea level rise/human movement inland/maritime forest impacts
Extreme weather/changes in weather patterns (changes in hydroperiod, etc)/drought
Increased temperature

Group 4

Temperature/precipitation changes
Socio-economic
Sea level rise

Group 5

Loss of habitat
Loss of complexity (biodiversity)
Extreme/catastrophic events (weather, fire)

Group 6

Alteration of freshwater hydrologic regime
Inundation impacts and salt water intrusion impacts
Rapid rates of habitat shifts /changes at all elevation levels

Group 7

Changes in natural hydrograph
Sea level rise
Change in species ranges (loss of marginal habitat; change in wildlife diversity; community conversion)
Changes in patterns of human use of landscape & water demand

Group 8

Sea Level Rise
Changes in Weather
Human Migration/response

Designing the Process

Group 1

Designing the Process -- Summary	
*<u>Org. Structure</u> elements to **keep***	*1.* *2.*
*<u>Org. Structure</u> elements to **remove/replace***	*1.* integrate expert stakeholders (whether or not they are WRC staff) in climate change committees 2. move climate change committee to mid-level. *2.* 3rd level committees connect to stakeholder committee as well
*New <u>Org. Structure</u> elements to **add***	*1.* larger stakeholder group that includes dissenting voices – or find a way to engage stakeholders who may disagree *2.* Need communication between stakeholder committee and technical committee 3. Where does public comment fit in? 4. Get stakeholders buy-in early on to determine both science and stakeholders' values. 5. What about threats to address other than climate change??

Group 1

Designing the Process -- Summary	
<u>Process</u> elements to ***keep***	*1.* All public to comment on chapters as they develop – similar to 2005 – put chapters online for comments as the chapters develop. *2.* identify and recruit stakeholders early on (spiderweb—ask known stakeholders to suggest stakeholders)
<u>Process</u> elements to ***remove/replace***	*1.* integrate climate change with habitat/species impacts *2.* wording: "*finalize* CC assumptions" becomes "*document* CC assumptions"
New <u>Process</u> elements to ***add***	*1.* Climate change information may require more iterative process (less sequential process) – documenting climate change impacts will be happening through all steps *2.* build implementation steps and management actions in process, need prioritization process for research and management actions 3. Identify all people who can influence the process either way and determine at which point to involve them. We need way to communicate with people who may have problems with accepting climate change or the process
Changes specific to ***Climate Change***	*1.* need experts from outside NCWRC *2.* Use diverse sources of data (beyond USGS)
Changes specific to ***2010-11***	*1.*include species that were not included in original plan so that all wildlife is represented *2.*

Group 2

Designing the Process -- Summary	
<u>Org. Structure</u> elements to ***keep***	*1.* *2.*
<u>Org. Structure</u> elements to ***remove/replace***	*1. Climate change committee needs climate change experts outside WRC* *2. Stakeholder advisory committee interact with climate, habitat, species committees*
New <u>Org. Structure</u>	*1. Add a block for communication and education with public*

Group 2

Designing the Process -- Summary	
*elements to **add***	*throughout, not just public comment period at end* *2. Habitat committee integrate climate change with other stressors*
*<u>Process</u> elements to **keep***	*1.* *2.*
*<u>Process</u> elements to **remove/replace***	*1. define how to establish committees (who are they, when are they added)* *2. make habitat and species text concurrent, not sequential*
*New <u>Process</u> elements to **add***	*1. how to incorporate stakeholder involvement* *2. in step 3 – workshop address findings from step 2.*
*Changes specific to **Climate Change***	*1. process to revise Climate change research, assumptions, predictions, info during the development of the WAP* *2.involve those who would be involved in implementing plan (conservation organizations, estuarine and marine fisheries) as well as those may be opposed (utilities, developers)*
*Changes specific to **2010-11***	*1. begin acting on no regrets actions now, rather than waiting* *2.*

Group 3

Designing the Process -- Summary	
*<u>Org. Structure</u> elements to **keep***	*1. Make sure there are enough WRC employees available to carry out all functions.* *2.*
*<u>Org. Structure</u> elements to **remove/replace***	*1.Combine steering committee and technical committee?* *2. Consider stakeholder involvement throughout rather than having them in a separate box (define stakeholder).* *3. Incorporate more opportunities and greater role of educational outreach committee; need to include this throughout.*
*New <u>Org. Structure</u> elements to **add***	*1. Add/clarify role of intra-agency communication* *2.Clarify points where stakeholder contributions are fed back into the system* *3. Add a vulnerability assessment.*

Group 3

Designing the Process -- Summary	
*<u>Process</u> elements to **keep***	*1. Make sure enough WRC staff time is allocated. Hire a climatologist?* *2.Make sure NHP Threat Assessment is included and built upon.*
*<u>Process</u> elements to **remove/replace***	*1.If each separate box on the green. Process page represents a year, then we don't need a full year for gathering. Also, are these sequential steps, or can we do some of these items simultaneously.* *2.*
*New <u>Process</u> elements to **add***	*1.Clarify timeline – the process sheet makes it look like each box will take a full year.* *2.*
*Changes specific to **Climate Change***	*1.* *2.*
*Changes specific to **2010-11***	*1.* *2.*

Group 4

Designing the Process -- Summary	
*<u>Org. Structure</u> elements to **keep***	*1. Interagency partnerships* *2. Guiding principles*
*<u>Org. Structure</u> elements to **remove/replace***	*1. Relocate WAP Communications from Technical Committee responsibility; add to Steering Committee.* *2. Combine the Habitat and Species Committees into one committee; create necessary sub-committees for habitat and species matters.* *3. Need to connect the "public comment" box to the rest of the boxes linked to Steering Committee hierarchy. Don't keep it as a floating box.*
*New <u>Org. Structure</u> elements to **add***	*1. Establish a socio-economic committee at beginning of WAP development process. Bring in individuals who don't buy into climate change phenomenon; bring in policy leaders, agricultural and tourism industry reps, etc.* *2. The WAP document preparation should include the document's users (hence, don't limit WAP prep to WRC staff).*

Group 4

Designing the Process -- Summary	
<u>Process</u> elements to ***keep***	*1.* *2.*
<u>Process</u> elements to ***remove/replace***	*1.* *2.*
New <u>Process</u> elements to ***add***	*1. Engage public earlier on, but not as integrated part of the process. Goal is to find areas of agreement and speak their language for groups (e.g., hunters, anglers, private landowners).* *2. Integrate WAP of NC with the WAP of other states during the WAP development process.* *3. WAP development leaders should identify meeting dates and provide all planning participants with sufficient notice of when future meetings are.* *4. Take advantage of the web (e.g., Wikispace, PBworks, sharepoint) for sharing/collecting information during WAP development. Use other methods, too.* *5. Use video conferencing when organizing meetings, to supplement face-to-face meeting options (or occur in place of if people can't meet in person).* *6. Incorporate spatial analysis into WAP development. Prioritize areas needing conservation action*
Changes specific to ***Climate Change***	*1. The Climate Change Committee should integrate its climate models/scenarios with those of other State agencies/departments. Everyone should be using the same scenarios/models when addressing and planning for climate change.* *2.*
Changes specific to ***2010-11***	*1. Designated groups assisting with development of WAP need more role clarification, more task definition. Steering committee needs to give this direction to avoid meetings.* *2. Enhance interagency collaboration* *3. Incorporate county/city planners, water resource planners/managers, and transportation/electrical engineers in WAP development.* *4. Publicize website to encourage public input/comment.*

Group 5

Designing the Process -- Summary	
*Org. Structure elements to **keep***	*1. Trust WRC judgment* *2.*
*Org. Structure elements to **remove/replace***	*1. Increased collaboration – unified product; larger conservation plan for state, incorporates DENR w WAP* *(how to increase collaboration still debated- multiagency steering committee?)*
*New Org. Structure elements to **add***	*1. LCC involvement with Stakeholder advisory group* *2. Add soil and water districts to stakeholders*
*Process elements to **keep***	*1. Media outlets (wiki based that incorporates edits)* *2. Informal meetings on species and habitat w expert biologists that have guided tasks*
*Process elements to **remove/replace***	*1. Aim for 2012, rapid assessment by adding climate change addendum following VA model (see Chris McGrath)** *2. Emphasize both on habitat and species simultaneously* *3. Regional/state impacts based on model outputs (Process #2) not climate change science **
*New Process elements to **add***	*1. Specific actions might provide more guidance* *2. Add maps* *3. Incorporating climate change into current on-going projects* *4. Survey current users*
*Changes specific to **Climate Change***	*1. soil level and water districts* *2. other species (all wildlife at least, plants/insects)*
*Changes specific to **2010-11***	*1. Deciding on interim actions* *2.*
Note:	

Group 6

Designing the Process -- Summary	
*Org. Structure elements to **keep***	*1.Steering committee remain just WRC staff* *2.*
Org. Structure elements	*1. Include non-WRC staff in committee memberships*

Group 6

Designing the Process -- Summary	
*to **remove/replace***	*2.*
*New <u>Org. Structure</u> elements to **add***	*1. Consider landscape scale approach (by ecoregion, watershed , etc. not just NC)* *2.* *3. Identify priority and species being impacted and follow through with monitoring and inventory*
*<u>Process</u> elements to **keep***	*1.* *2.*
*<u>Process</u> elements to **remove/replace***	*1.Process should not be a linear process. Can be an iterative or parallel process* *2.Process doesn't need to take 5 years*
*New <u>Process</u> elements to **add***	*1 Develop" no regret actions" and a decision tree processes for making longer-term to evaluate longer term issuese* *2.*
*Changes specific to **Climate Change***	*1. Species and habitat managers need to provide questions to guide research on climate change* *2.Need to prioritize species considering climate change*
*Changes specific to **2010-11***	*1.Climate change issues can be considered now, not wait until plan is revised* *2.Identify actions that are being done now to help off set effects of climate change*

Group 7

Designing the Process – Summary	
Organization	1. Incorporate regional (multi-state) planning 2. Better define stakeholder committee; how different from technical comm? 3. Under habitat and species committees, include game and nongame experts 4. Specify that under habitat and species committees there are multiple sub-committees 5. Ask neighboring states what their organizational structure is 6. Standardize language/categories/data platforms with other

Group 7

Designing the Process – Summary	
	states 7. Expand climate change committee to include others besides WRC 8. Evaluate who, how, when, what to include as public input 9. Add over-arching comm. on outreach/communication 10. Make sure users of WAP are included in stakeholders; does this include public?; include COGs?, sportsman groups, etc.
Process	1. Make sure habitat impacts include ecosystem 2. Schedule should consider field work 3. Add monitoring under habitat and species committees 4. Move process 3 and 4 up – have 2 continuous 5. Update what's being done now for climate change (B. Stein comment to incorporate things already being done under current WAP)

Group 8

Designing the Process -- Summary	
*<u>Org. Structure</u> elements to **keep***	*1.Steering Committee* *2.*
*<u>Org. Structure</u> elements to **remove/replace***	*1.* *2.*
*New <u>Org. Structure</u> elements to **add***	*1.Interstate Dialog/Committee* *2.Non WRC staff on steering committee*
*<u>Process</u> elements to **keep***	*1.all* *2.*
*<u>Process</u> elements to **remove/replace***	*1. Start with existing elements and add or replace as needed* *2.*
*New <u>Process</u> elements to **add***	*1.Stakeholder input should be integrated at certain appropriate levels* *2.*

Group 8

Designing the Process -- Summary	
Changes specific to ***Climate Change***	*1.Focus on Ecosystems rather than habitats or species* *2.Species specific elements must be included*
Changes specific to ***2010-11***	*1.May not be necessary to take 5 years to complete revision* *2.*

Integrating Content and Format

Group 1

Integrating Content and Format -- Summary	
Proposed <u>Content</u> elements to ***keep***	*1* *2..*
Proposed <u>Content</u> elements to ***remove/replace***	*1.* *2.*
New <u>Content</u> elements to ***add***	1.Discussion of needing to manage for the future, that we are managing for change *2.* include more species, add/emphasize species, e.g. brook trout, even though we may have funding for currently excluded species, they should be included in the Wildlife Action Plan 3. restoration is not the target in changing climate 4. define climate change 5. Develop projected model for each habitat 6. Discussion of what future conditions may look like. This could be a discussion of habitat types. List the uncertainties, quantify degree of uncertainty 7. confidence intervals for scenarios 8. vulnerability of less mobile species 9. situations where climate change impacts WAP management priorities 10. incorporate climate change impact in timescales for management decisions (short and long range) 11. research questions that derive from change scenarios

Group 1

Integrating Content and Format -- Summary	
	12. Implementation strategies 13. Discussion of climate change impacts to specialist and generalist species 14. Discussion of how climate change affects WAP implementation 15. Discussion of how climate change affects decision making 16. Discussion of different time-scales. What can the WAP do on both short- and long-term scales 17. Include "then and now" maps. Create a map for where habitat is going to be 18. Include economic analysis of climate change. That is, show the economic benefits of fishing and hunting. The money we spend on climate change adaptation will be an investment in those resources 19. Show the cost in dollars of ecosystem services loss – the cost in dollars to humans. Similar to the cost of Hurricane Katrina impacts.
*Proposed Format elements to **keep***	*1.* All chapters and categories should be underlined and italicized as climate change will impact all categories. *2.*
*Proposed Format elements to **remove/replace***	*1.* integrate climate change in each chapter, no separate chapter *2.* In addition to incorporating climate change in the chapters, the group suggested developing an appendix or synopsis of climate change information with references showing where to find more detailed information throughout the WAP. The appendix or synopsis provides an easily accessible summary. 3. Alternatively, include climate change summary in the state of the state in chapter 3 of WAP. Could make this a prominent section of Chapter 3
*New Format elements to **add***	*1.* Mapping suggestions below *2.* Database suggestions below
Access suggestions	*1.*Create searchable database *2.*Develop map-based search for localities and planners – to make it locally-relevant

Group 1

Integrating Content and Format -- Summary	
	3. Develop way to combine conservation registry and WAP database to document accomplishments of both short- and long-term goals 4. Another facet of "access" – may be more of a communication need – develop methods to create interest in Climate Change, i.e., make this accessible (important) to NC citizens

Group 2

Integrating Content and Format -- Summary	
*Proposed <u>Content</u> elements to **keep***	*1.* *2.*
*Proposed <u>Content</u> elements to **remove/replace***	*1. ch. 3 - threats and conservation opportunities* *2. swap sequence of current ch. 4 and ch. 5*
*New <u>Content</u> elements to **add***	*1. add a climate change science chapter or appendix – climate-related effects* *2. Maps that show ranges are changing, sea level rise* *3. vulnerability analysis (sensitivity, exposure)* *4. References - Defenders book, NHP ecosystem assessments,* *5. integration of strategies across levels (LCC through communities)* *6. triage – prioritization = rapid assessment strategy to determine*
*Proposed <u>Format</u> elements to **keep***	*1.* *2.*
*Proposed <u>Format</u> elements to **remove/replace***	*1. integrate climate change into each chapter where appropriate, but especially ch. 3 (threats)* *2.*
*New <u>Format</u> elements to **add***	*1.* *2.*
Access suggestions	*1. separate WAP website with hyperlinks integrating topics*

Group 2

Integrating Content and Format -- Summary	
	2. webinars with participatory sharing tools *3. expert presenters at locations around state as outreach* *4. public access TV/radio to provide outreach to get stakeholder input* *5. searchable database by species and keyword*
Recommended Actions	*1. acknowledge that there is a problem*

Group 3

Integrating Content and Format -- Summary	
*Proposed <u>Content</u> elements to **keep***	*1. Chapter 6 – highlight most critical/threatened habitats (include Climate Change here too) and specific areas.* *2.*
*Proposed <u>Content</u> elements to **remove/replace***	*1. Chapter 4 – lots of people have problems with its organization and its placement. Move to after Chapter 6. Add more bullets to Ch. 4 – Game spp., nongame spp., public land, private land, environmental review, etc.* *2. Chapter 8: make sure you define the roles of each division within WRC. Include Habitat Conservation, Environmental Review, enforcement, activities so it is clear that everyone in WRC has a role in implementation. Be careful not to highlight the differences among divisions, rather make sure they all have a role in implementation and work together. Define who will do each implementation action (within WRC and partners). But, don't make it seem like the roles of who will do what are too exlusive.*
*New <u>Content</u> elements to **add***	*1. Add Priority Areas for conservation actions.* *2. Integrate Climate Change threats and information throughout, rather than as a separate chapter. Especially include Climate Change in Ch. 3 (threats) and Ch. 5 (concerns and impacts).* *3 Integrate game and sport fish species, to make the WAP more useful for the public & hunting groups.* *4. Integrate the role of Game Lands in meeting the conservation priorities.* *5. Increase emphasis on natural communities and habitats, rather*

Group 3

Integrating Content and Format -- Summary	
	than individual species. *6. Make sure to include landscape-scale conservation as well as smaller patches of important habitat.* *7. Explicitly acknowledge the role of adjacent states and how the WAP (including threats and priorities) can span state boundaries and find opportunities to work together.* *8. Discuss specific actions or accomplishments undertaken as a result of the 2005 WAP and the results that came from those actions. What did the previous plan achieve? Maybe like a report card –"what have we done so far?" Maybe include this as an Appendix or part of the introduction?*
*Proposed <u>Format</u> elements to **keep***	*1. We like the flow from assessment of threats, then assessment of each habitat group, then priority actions, then monitoring, then implementation.* *2. People like the current format that allows people in a specific region (such as the mountains) to work with sections related only to their region of interest.*
*Proposed <u>Format</u> elements to **remove/replace***	*1. Consider putting Priority Objectives before Strategies.* *2.*
*New <u>Format</u> elements to **add***	*1 .Add climate change and other impacts to Chapter 5 in the discussion for each ecosystem/habitat group.* *2.*
Access suggestions	*1. Publish in multiple formats – single volume .pdf as well as the ability to download single chapters or only sections related to each habitat group.* *2. Make it searchable by geographic areas and habitat group.* *3 Include a section of "highlights of changes in the new action plan".* *4. People like the current format & find it accessible.*

Group 4

Integrating Content and Format -- Summary	
*Proposed Content elements to **keep***	*1.* *2.*
*Proposed Content elements to **remove/replace***	*1.* *2.*
*New Content elements to **add***	*1. Use maps and map priorities more. It's too expensive to tie time and effort to projects, grants, proposals because WA doesn't have priorities. A focus on priorities needs to be clear, accurate, concise and clear. Priorities may focus on where you have opportunities to achieve a conservation goal, even though that geographic area may not be exposed to the most significant impacts. Provide strata tiers to make WAP a go to document for prioritizing budgets, staff time, funding needs, etc.* *2. Incorporate existing data sets, such as NC naturally, Wildlife Habitat Biodiversity.* *3. Make goals, objectives and actions as specific as possible. Do so with WAP partner agreement as often or as much as possible so we can do the best we can to enhance and improve habitats and species. Use data, information and projections from non-WRC groups (e.g., forestry).* *4. Use case studies to show best practices to "go deep" with data, analysis, research, and uncertainty.* *5. Climate change should apply to Chapter 2's species prioritization process, Chapter 3's challenges, Chapter 4's education, outreach and recreation (e.g., increase exposure to ticks is linked to climate change, implications of people losing land).* *6. Collect/report demographic information about individuals not believing in climate change.* *7. Chapter 3's "challenges" section should explore socio-economic consequences of climate change (e.g., insurance costs for home, sea level rise forcing coastal residents to move more in land).* *8. Chapter 5's ecoregion discussions should also include subregions to aid conservation area prioritization.* *9. Acknowledge population trends with private lands discussion in Chapter 4.*

Group 4

Integrating Content and Format -- Summary	
*Proposed <u>Format</u> elements to **keep***	*1.* *2.*
*Proposed <u>Format</u> elements to **remove/replace***	*1.* *2.*
*New <u>Format</u> elements to **add***	*1. Use more illustrations and photos when publicizing the WAP content.* *2. Discussion about climate change needs to be integrated throughout the WAP; don't make it a stand alone discussion that is appended to the document.* *3. Create an appendix that explains how the committees prepared the WAP document.*
Access suggestions	*1. Organize workshops explaining how people can use the WAP.* *2. Provide drafts with some level of "privacy" for better debate/discussion.*

Group 5

Integrating Content and Format -- Summary	
*Proposed <u>Content</u> elements to **keep***	*1. Chapter structure* *2.*
*Proposed <u>Content</u> elements to **remove/replace***	*1. Synthesize map contents depicting priority locations – (i.e., land trust users)* *2. Using updated GAP data in revision* *3. Integrate throughout all chapters (e.g., Ch 2 – species prioritization process, terrestrial habitats)* *4. Why is marine in there when we have no jurisdiction?*
*New <u>Content</u> elements to **add***	*1. Focus on content based on who the audiences are and what is needed for applications/ priority actions* *2. Emphasize relevancy to management needs and prioritize funding needs (what is climate change going to cost us?) in the Introduction* *3. Incorporate all revisions of current content while adding*

Group 5

Integrating Content and Format -- Summary	
	climate change integration for efficiency
*Proposed Format elements to **keep***	*1. incorporate climate change throughout (and not as a separate chapter* *2.*
*Proposed Format elements to **remove/replace***	*1.* *2.*
*New Format elements to **add***	*1. Consider user-friendliness through surveying current users, ask what sections are more regularly used and the effectiveness of the plan* *2.*
Access suggestions	*1. Facebook* *2. Companion shapefiles* *3. Creating a tool that allows users to extract information specific to questions of interest (like ClimateWizard)* *4. Use best technology to make contents searchable, multiple terms in query (like ENDNOTE)*
Notes:	*Questions about state resources available to complete revision and integration- document as a "needs assessment" for funding*

Group 6

Integrating Content and Format -- Summary	
*Proposed Content elements to **keep***	*1.Put climate change content in chapter 3 (threats) and how to relate CC to existing stressors* *2. Add climate change to information and outreach section*
*Proposed Content elements to **remove/replace***	*1.* *2.*
*New Content elements to **add***	*1.Maps (population growth, priority species, habitats, planning, zoning and overlay with CC predictions* *2.New partners need to be considered considering climate change* *3. Work with partners to develop common protocols and core set*

Group 6

Integrating Content and Format -- Summary	
	of indicators given climate change *4. Decide priority species and management actions given climate change*
*Proposed <u>Format</u> elements to **keep***	*1.Have elements of climate change throughout the document but have a chapter that summarizes the primary predictions and effects of climate change on wildlife and habitats* *2.Add climate change to chapter 3 (threats) or as a separate chapter along with other threats* *3. Integrate efforts to off set or manage for climate change in chap 6.* *4. Between chaps 7&8 there should be a chapter on measures of success that consider climate change* *5. Climate change needs to be integrated into species prioritization process of chap 2* *6.*
*Proposed <u>Format</u> elements to **remove/replace***	*1.* *2.*
*New <u>Format</u> elements to **add***	*1.* *2.*
Access suggestions	*1.Create a GIS tool that priorities given climate change* *2.Pullout/executive summary* *3. Ability to query a species or habitat see threats, actions* *4. Ability to view DENR database* *5. Have a clearinghouse of NC that integrates and filters information* *6. Report card that public can view*

Group 7

Integrating Content and Format – Summary	
Content	1. Baseline data; what are existing conditions 2. Anticipated changes 3. What's being done already to address climate change 4. Threats to species 5. Compensatory mechanisms (solutions) 6. Monitoring guidelines 7. Identify information gaps/needs 8. Choose a scenario; describe likely population responses 9. Acknowledge uncertainty 10. Use multiple scenarios 11. Urban vs rural responses to climate change 12. Focus on effects in terms of mechanisms/ecosystem services, not on individual species 13. Detailed strategies, not generic solutions 14. Education, include climate change mitigation 15. Conservation impacts of mitigation actions (e.g., wind turbines) 16. Include game species 17. Show projections – both "good" (e.g, range expansions) and bad 18. Don't stop at state line; put in context of adjoining states
Format	1. Add index in back that includes climate change; could be searchable 2. Have climate change chapter that talks about the science; but in context of other threats 3. But in rest of WAP, climate change is incorporated, not a stand alone chapter 4. For aquatics – go across river basins (by habitat units) to address broader threat of climate change 5. Include rank list of threats like Natural Heritage or include habitat-threat matrix; 6. Glossary of climate change terms

Group 7

Integrating Content and Format – Summary	
Access suggestions	1. Interactive document 2. Interactive tools (e.g., highlight geographic areas) 3. Downloadable shape files 4. Links to other sources 5. Species searches 6. Consider users/customers – easy for funders to use 7. Time span maps – past, present, projected future 8. Web version of pdf that is more readable (w/links)

Group 8

Integrating Content and Format -- Summary	
*Proposed <u>Content</u> elements to **keep***	*1.all* *2.*
*Proposed <u>Content</u> elements to **remove/replace***	*1.No climate change chapter* *2. Intro should list assumptions and changes that occur in the revision.* *3. Get rid of GAP maps*
*New <u>Content</u> elements to **add***	*1. Identify needed policy changes(all levels)-Ch.4* *2.Climate Change Science Appendix (links or list of resources)* *3. Have maps available as GIS project* *4. Unintended impacts from human responses to climate change (alternative energy, development patterns, impact from shoreline hardedning)*
*Proposed <u>Format</u> elements to **keep***	*1.Lists and Tables* *2.Habitat and River Basin sections*
*Proposed <u>Format</u> elements to **remove/replace***	*1.* *2.*
*New <u>Format</u> elements to **add***	*1.Maps of priority areas (or link to NHP land trusts)* *2.Consolidate all habitat/connectivity maps into useful single map*

Group 8

Integrating Content and Format -- Summary	
Access suggestions	*1. HTML/nested format to allow the ability to click through each level to get to content* *2.Searchable database (by species/habitat)* *3. Downloadable sections (ability to cut and paste from document)*