



**WAFWA  
CLIMATE CHANGE COMMITTEE**

**Annual Update for Committee Members  
2011**

*Updated July 5, 2011*

## Table of Contents

WAFWA Climate Change Contacts 2011 .....	3
Questions Covered in the 2011 Update .....	5
Alaska .....	7
Arizona.....	10
California .....	13
Colorado.....	17
Hawaii.....	21
Idaho .....	23
Kansas .....	30
Montana .....	32
Nebraska .....	35
Nevada .....	37
New Mexico.....	39
North Dakota.....	41
Oregon.....	43
South Dakota.....	45
Texas .....	47
Utah.....	49
Washington .....	52
Wyoming.....	55

## WAFWA Climate Change Contacts 2011

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## Questions Covered in the 2011 Update

In order to consolidate the number of requests submitted to state agencies the WAFWA climate committee deferred the 2011 survey to the Association of Fish & Wildlife Agencies (AFWA) climate change committee. The AFWA committee received a Multistate Grant in 2010 to host four regional climate change workshops for state fish & wildlife agencies (Northeast, Southeast, Midwest, and Western). In conjunction with these workshops, state participants were asked to fill out a questionnaire on past, current, and future actions and plans to reduce the impact of climate change within their state. Below are the questions that were asked of all state participants in all four workshops. This report contains an excerpt of the responses from the WAFWA member states and provinces.

### **AFWA Climate Change Committee Regional Workshops: State Climate Change Adaptation Questionnaire**

1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?
2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?
3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?
4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?
5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?
6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.
7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...
8. Does your climate change planning work involve partners? Who are they and how do they assist you?
9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?
10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?

11. Is there a cabinet level position for climate change in your state?
12. Is your state planning a comprehensive state adaptation plan?
13. If yes, is there a legislative mandate for a comprehensive state adaptation plan?  
Which sectors are involved?
14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?
15. Where does your agency/state get its scientific information for climate change planning efforts?
16. What are your science and research needs in regards to climate change adaptation planning?
17. What is the future direction of climate change planning in your agency/state in the coming year?
18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?

## Alaska

**Name:** Doug Vincent-Lang

**State Agency:** Alaska Department of Fish and Game

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**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes. We have a climate change lead and have published a Department strategic plan for climate change. We involved our chief scientists from our various Divisions in the construct of this plan. As we begin to implement it, we will involve a broad range of people from within the department as well as key external partners.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes, we began by examining anticipated impacts to key habitats identified within the SWAP as well as associated research needs. We also have climate change impacts to key species identified. As we move forward with our update we will consider additional changes we feel are necessary.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** Not yet, but we will as more information becomes available. Right now we are focusing on identifying and filling needed research.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** We have looked at the vulnerability of key habitats to climate change. We believe that we need to complete the habitat assessment before delving into species assessments. A sound habitat assessment is required to do species assessments.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** We have initiated several projects but none are complete.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** The department is involved in a cabinet level climate change strategic plan effort. The Department serves on a sub-cabinet tasked with developing a climate change strategy. This effort is underway. Included will be chapters on mitigation and adaptation that includes communication and outreach strategies. We are also involved in a joint state-federal climate change round table (the Alaska Climate Change Executive Round Table) formed to improve coordination on climate change activities.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** Yes, we are partnering with the DOI on LCCs and CSCs and NOAA in an effort to improve science. We are also involved in other key partnerships aimed at improving science

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** All state agencies have been asked to examine their core missions and the challenge that climate change presents towards meeting their missions.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** Right now there is not a dedicated position. We are contemplating how best to coordinate climate change activities as we develop the state strategy.

**11. Is there a cabinet level position for climate change in your state?** No, but there is a sub-cabinet that has been formed to develop a state climate change strategy.

**12. Is your state planning a comprehensive state adaptation plan?** We are developing a comprehensive state climate change strategy that includes a chapter on adaptation. As we move forward more tactical plans will be developed for focal areas.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** No, a state administrative order issued by the governor directs the effort.

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** We have the lead for fish and wildlife and their uses, but not for all sectors of adaptation. We understand the benefits of and need for multi-sector adaptation planning in that any one agency does not have all the tools or authorities necessary to address climate change.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** From a wide variety of sources, some of which are internal and others of which are external. We rely heavily on our partners for information. However, as the primary manager in Alaska, we take the lead on development of conservation strategies for fish and wildlife and their uses.

**16. What are your science and research needs in regards to climate change adaptation planning?** Improved downscaled models, baseline environmental research and monitoring, improved baseline mapping, improved research infrastructure, improved data integration and sharing, multiple level decision-making tools, and education/outreach.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** To implement the key initial actions identified in our agency climate change strategy



**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Funding and capacity

## Arizona

**Name:** Eric Gardner

**State Agency:** Arizona Game and Fish Department

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**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes, we are currently revising our SWAP in which we will be outlining our priority actions regarding climate change. The SWAP coordinator and Nongame Branch Chief; Nongame staff members; the Senior GIS analyst; Habitat branch staff, and a number of regional staff are involved.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes. We are using the guidance provided by AFWA on incorporation of Climate Change into SWAPs. We also held a week long workshop on Monitoring with the Heinz Center and the BLM. The revision effort will include examining the impact of climate change on other threats to wildlife, the effectiveness of our conservation actions in light of climate change, and set forth priority actions related to climate change including but not limited to: species and habitat vulnerability assessments, downscaling of global circulation models, and modeling the synergistic effects of climate change with other more traditional stressors.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** We have made a vulnerability assessment a priority action under Climate change in our revised SWAP. However, unless funds or other resources become available, we will need to rely on our partners to perform such assessments. There are a number of efforts already underway by other agencies, NGOs, and academia that we are actively engaged in.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Much of the traditional species and habitat work implemented by the Department can be described as managing for climate change adaptation. These include activities such as stream renovation, securing water rights, treatments to remove junipers encroaching into grasslands, development of species refugia, conducting transplants to increase genetic diversity and population numbers in isolated areas, securing habitat connectivity by working with transportation and development planners, and development of a Geospatial Tool to inform decisions.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...**The relatively new

headquarter building for Arizona Game and Fish has been awarded Platinum certification under the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. The building is designed with numerous energy and water saving features. The Dept. also recycles, employs alternate fuel sources for pumps etc., and is moving towards a more fuel efficient fleet utilizing E85 gas.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** See question number 5.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** The University of Arizona has been awarded a grant to host the DOI Southwest Climate Change Research Center

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?**

**11. Is there a cabinet level position for climate change in your state?** No, however we have what is known as the [Arizona Climate Change Initiative](#)

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**12. Is your state planning a comprehensive state adaptation plan?** No. However the state continues to be an active member of the Western Climate Initiative, The Arizona-Sonora Climate Initiative, and the Climate Registry per Executive Order 2010-06 (<http://www.azclimatechange.gov/download/eo-2010-06.pdf>).

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** See above.

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** Yes – for wildlife related issues.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** The IPCC; climate change literature review; communication with partners; and participation in webinars, seminars and conferences.

**16. What are your science and research needs in regards to climate change adaptation planning?** Vulnerability assessments for ecological systems and individual wildlife species, downscaling of global circulation models, exacerbating effects of climate change on other wildlife stressors.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Complete the SWAP revision, to include climate change as a threat/stressor and begin vulnerability assessments for key species or habitats.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Lack of resources and research needs.

## California

**Name:** Amber Pairis, Ph.D.

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**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes-The Climate Change Advisor is working with all branches and regions of the Department. In addition, the Advisor participates on various task force groups and working groups at the state level in collaboration with other state agencies and conservation partners.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** Yes-the Climate Change Advisor position is located in the Ecosystem Conservation Division out of the Director's office.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** The state's Wildlife Action Plan is scheduled to be revised by 2015. Primary objectives of the revision are to incorporate new information developed through updates to Species of Special Concern documents for birds, mammals, reptiles, amphibians, and fish; update the stressors and actions affecting fish and wildlife on an ecoregional scale; expand the analysis of threats poised by climate change and down-scale the State's Adaptation strategy to on-the-ground, implemental actions that will build resiliency for species adaptation. Teams have been formed that will guide the development of the two phase update. The first phase will focus on a statewide vulnerability assessment that brings together varied taxon-specific analysis into one assessment that can be used to inform the Action Plan's lists of Species of Greatest Conservation Need (SGCN). The first phase will also include public scoping and coordination with stakeholders, agencies, and tribes with the goal of making the Action Plan more relevant to all levels of natural resource managers in California. The second phase will involve a chapter-by-chapter review of the first Action Plan, incorporating new science on climate change, species status and distribution, and emerging threats and innovations. The update will draw from new tools such as the Areas of Conservation Emphasis (ACE) mapping model, and the California Essential Habitat Connectivity project both recently completed by the DFG.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** Yes but there is no standardized approach. Largely up to the responsible individual and their efforts to integrate climate change planning into documents

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** The Department is in the initial stages of conducting a climate change vulnerability assessment for rare plants and updating species of greatest conservation concern for climate change. A vulnerability assessment provides the scientific basis for developing or enhancing climate adaptation strategies and uses information about future climate scenarios with ecological information about climate

sensitivity and adaptive capacity to help manager anticipate how a species or system is likely to respond under the projected climate change conditions. The relative vulnerability of species or habitats can be used to set goals, determine management priorities and inform decisions about appropriate adaptation strategies.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** The CDFG has integrated climate change considerations into a number of restoration activities and research projects including the Elkhorn Slough Tidal Wetland Project. In addition, we have numerous management plans and recovery plans that are taking into consideration impacts associated with climate change and responding accordingly. Other projects related to climate change adaptation planning include California's Essential Habitat Connectivity Projects <http://www.dfg.ca.gov/habcon/connectivity/> and Areas of Conservation Emphasis Mapping and Modeling Effort.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...**

Mitigation

**DFG Going Green Activities:** DFG has had an ongoing effort to address its carbon footprint and create a more sustainable work environment. The Director convened a "Going Green Work Group" to provide guidance and recommendations for consideration by Department leadership. Activities listed below.

- **DFG Going Green: Next Steps towards Sustainability** DFG is preparing to release a second report from the Going Green work group to report on DFG's efforts to address its carbon footprint and create a more sustainable future for DFG activities and employees. This report is a collection of actions that DFG and its employees are pursuing as well as recommendations for consideration by executive leadership for future actions. The first report "DFG Going Green: Reducing Our Carbon Footprint" and an evaluation of carbon impact of all DFG operations can be found online. The second report will be posted fall of 2011 and will be available at <http://www.dfg.ca.gov/climatechange/activities.html>.
- **Director's Bulletin-Actions for a More Sustainable Workplace:** DFG is planning to release a Director's bulletin to follow up on the Going Green work group recommendations on actions that can be easily and immediately implemented with little disruption or alteration of daily operations and with no increase in operating expenses. During this period of significant and persistent statewide budget shortfalls, this bulletin provides guidelines that will help DFG continue to look for ways to reduce or optimize operating expenses, including fuel and energy costs while also resulting in potentially significant reductions in greenhouse gas emissions. By implementing these guidelines DFG will better embody its mission and continue to set an example of innovation and sustainability. These guidelines put DFG on a path to becoming a more sustainable organization and minimize its contribution to emissions that

contribute to climate change. When available the bulletin will be posted at <http://www.dfg.ca.gov/climatechange/bulletins.html>.

- **Paperless Office Pilot Project:** The Department's Going Green Work Group believes that there are significant benefits to be gained by converting many internal forms to an automated, electronic document format utilizing electronic signatures. This simplifies the process of filling out, submitting and routing forms, and saving time and money, while reducing the Department's overall carbon footprint. Documents would no longer have to be printed, manually routed for signatures, copied, mailed and eventually stored as hardcopy, while their security and integrity would be maintained and perhaps even improved. A full proposal is under internal review.

#### Communication/Outreach Working Group

##### **“Confronting the Challenge-Climate Change and the California Department of Fish and Game”**

This magazine is the result of a collaborative effort among DFG climate change stakeholders and can be used to communicate with and engage partners in climate change adaptation and mitigation efforts. This publication highlights the actions DFG is taking to address the challenges associated with climate change and illustrates the importance of biodiversity conservation in the implementation of climate change adaptation actions in other sectors. The magazine was printed in November 2010 thanks to the generosity of The Nature Conservancy California. It was also part of a special edition of the DFG's magazine Outdoor California (September/October 2010). “Confronting the Challenge” is available online at <http://www.dfg.ca.gov/climatechange/>.

#### **Research and Workshops Working Group**

##### **Bridging the Gap: Downscaling Climate Models to Inform Management Actions**

Workshop sponsored by DFG, the U.S. Geological Survey, and USFWS-California Landscape Conservation Cooperative. DFG's climate change work group of stakeholders presented a day long workshop on November 3, 2010 at Sacramento State University. The workshop provided participants with a shared technical understanding of potential downscaling applications to ecological resource management and provided an opportunity for discussion on data needs and the challenges of dealing with uncertainty, scale and resolution. The workshop was well attended with in person participation reaching capacity and web cast participants from all over the country. More information, PowerPoint presentations, and archived web cast can be found at <http://www.dfg.ca.gov/climatechange/downscaling-workshop/>.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** Yes-the Department has a climate change stakeholder group made up of representatives in federal, state, and local government agencies, NGO's, local land trusts, industry, and the academic community. Stakeholders meet annually as a group and participate regularly in working groups focused on specific subjects (i.e. research, workshops, outreach, etc.)

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** Under the Executive Order all CA state agencies have been charged with planning for climate change adaptation.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** Natural Resources, CA Dept. of Forestry and Fire Protection, Department of Water Resources, CA EPA.

**11. Is there a cabinet level position for climate change in your state?** Yes

**12. Is your state planning a comprehensive state adaptation plan?** Completed

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** Executive Order-all state agencies

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** No-the CA Natural Resources Agency

**15. Where does your agency/state get its scientific information for climate change planning efforts?** DFG uses climate change research funded and generated by other partners including but not limited to CEC's PIER program, NOAA's Climate Programs Office, or peer reviewed academic publications, and incorporates that research in its planning activities to the greatest extent possible.

**16. What are your science and research needs in regards to climate change adaptation planning?**

**17. What is the future direction of climate change planning in your agency/state in the coming year?** The Department does not have funding that is specifically directed towards climate change related research or projects, rather is integrating climate change considerations into existing programs and new and on-going projects to the best of its ability.

Specifically- To continue to grow the program and add more full time or even part time staff to the program. As of now we have 20+ employees who work on various climate change projects but these are always on top of their regular responsibilities. While this is helping to build capacity within our staff it is not sustainable in the long term.

Pursue a vulnerability assessment as part of the revision of the Wildlife Action Plan.

Continue collaborative efforts with stakeholders to achieve shared goals and build a collective vision for delivering climate change adaptation actions throughout the state.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Funding, staff time, and resources (templates and targeted and appropriate research/data) to help staff incorporate climate change into documents and daily activities.



## Colorado

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**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?**

We are in the initial stages of planning for climate change adaptation and anticipate these adaptation efforts to be based on a refinement of our understanding and identification of crucial habitats and wildlife corridors throughout the state. Key agency staff currently involved with preparing for climate change adaptation include: Tom Remington, Director; Jeff Ver Steeg, Assistant Director and Tom Schreiner, climate change lead. We have also created an internal climate review team to help develop recommendations for future agency-wide climate adaptation planning.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?**

Yes, we have a full-time position engaged in climate change issues, the statewide Water Availability Task Force and the Wildlife Impact Task Force activities as related to drought monitoring, mitigation, and response.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?**

No. However, we began several initiatives in 2010 which we hope will enable us to plan for how to respond to the threat of climate change and produce useful tools and information that we may incorporate into our Wildlife Action Plan. First, we began a 2-year project to update a GIS format, coarse-scale wildlife corridors database associated with Colorado landscapes. The project will include a climate modeling range shift analysis for 8 priority species: bighorn sheep, lynx, elk, greater prairie chicken, greater sage-grouse, moose, pronghorn and mule deer. Second, we began a pilot project in coordination with the Western Governors' Association and the New Mexico Game and Fish Department to identify crucial wildlife habitats and corridors on the New Mexico-Colorado state border.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?**

No. However, our Wildlife Commission updated its Strategic Plan in 2010 to include consideration of climate change.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon?**

**What technique are you using?** No. We have postponed conducting a detailed vulnerability assessment for priority habitats and species until we have further developed our capability to define, identify, and map crucial wildlife habitat and movement corridors in conjunction with the Western Governors' Association Decision Support System initiative. We anticipate a vulnerability assessment to begin in either 2012 or 2013.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.**

None, other than our existing wildlife conservation practices.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** We anticipate briefing our Wildlife Commission on the topic of climate change sometime in 2011. We are also considering hosting a conference or workshop on climate change and inviting the main governmental and nongovernmental entities currently involved in climate change research and initiatives in Colorado. Furthermore, our agency is working to meet the Governor's Greening Government Executive Orders in support of Colorado's Climate Action Plan.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** We have not significantly engaged other partners to assist us in our climate planning work, although we have had informal conversations.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** The following agencies are involved in the 2010 Colorado Climate

Preparedness Project: Colorado Division of Wildlife, Colorado Water Conservation Board, Colorado Department of Public Health & Environment, Colorado Department of Agriculture, and the Governors Energy Office. The purpose of the project is to prepare an outline for the next administration of who is doing what relative to climate change adaptation within Colorado state government and to provide recommendations for next steps.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** The Colorado Water Conservation Board has a drought planning and mitigation specialist who works on water availability and water adaptation issues. The Colorado Department of Public Health & Environment has a specialist who works on monitoring and mitigation of greenhouse gas emissions per the Governor's 2007 Colorado Climate Action Plan.

**11. Is there a cabinet level position for climate change in your state?** Until recently, Alice Madden had been serving as the Governor's Climate Change Coordinator. A primary function of this position was to facilitate implementation of the Governor's 2007 Colorado Climate Action Plan.

**12. Is your state planning a comprehensive state adaptation plan?** See item 9 above. We anticipate there will be a recommendation for development of a comprehensive state climate adaptation plan.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** None that we are aware of.

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** No. We may have more definitive information in 2011.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Literature review, webinars/trainings, federal agencies, state climatologist, universities, Colorado Water Conservation Board

**16. What are your science and research needs in regards to climate change adaptation planning?**

Assessment of the relative vulnerabilities of priority ecosystems (alpine tundra, subalpine forests, montane shrublands, montane forests, piñon-juniper woodlands, grasslands, sage-grass shrublands, riparian/wetlands), wildlife movement corridors, and priority species of Colorado to the anticipated effects of future climate change; assessment of possible changes in the distribution and abundance of priority species and habitats due to climate change; and identification of geographic and/or topographic refuge areas of low vulnerability to the effects of climate change.

Assessment and quantification of expected phenological changes and translation of how those changes may impact the annual, seasonal, and life cycle requirements of priority fish and game species and species of greatest conservation need; and translation of how those changes may impact crucial wildlife habitats (summer range, winter range, production areas, etc.) and wildlife movement corridors within priority ecosystems.

Assessment of what are the critical thresholds in hydrologic regime that will result in significant changes in dominant vegetation types of Colorado, such as the mountain shrublands and sage-grass ecosystems of the Western Slope, i.e., what are the climatic envelopes of these existing ecosystems and which ones are most likely to experience a conversion to a different vegetative land cover due to a changing climate.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** See response to items 3 and 7. Other activities may include:

Evaluation of methods, options, and potential partners for conducting a future vulnerability assessment for priority habitats and species; and coordination with the North Central Climate Science Center, the National Fish and Wildlife Climate Science Center, the 3 LCC's covering Colorado, and other regional climate change pilot projects as necessary to develop and refine our understanding of scaled-down predictions of climate change impacts to Colorado's wildlife habitats and species.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Funding and capacity. Political and public support for fish and wildlife adaptation planning.

Regionally Specific Information - We require more information about the predicted impacts of climate change on habitats and species (and how those relate to other threats) before we can begin to develop adaptation strategies. We also see the need for developing consensus on appropriate climate models, ecological response models, and habitat models appropriate for Colorado's diverse topography that will result in reliable, scaled-down predictions of climate change impacts on Colorado's habitats and species.

Increased Coordination and Clarifying of Roles – There remains a critical need for increased coordination and clarifying of roles and responsibilities for future wildlife conservation regarding federal and state Agencies and NGOs. State fish and wildlife agencies are expected to play an integral role in landscape conservation initiatives as coordinated through the Department of Interior's Landscape Conservation Cooperatives, yet the details of how conservation priorities and conservation targets for habitats and species will be determined by agencies with varying jurisdictions is yet to come. There is also an expectation that states will need to engage in multi-sector climate change natural resource adaptation plans. As a result, the need to clarify the role of state fish and wildlife agencies in these planning efforts, relative to the role of federal agencies engaged in fish and wildlife conservation will become more important than ever.

Resources – We will need additional financial and technical resources to fully develop climate change adaptation planning, to monitor the effects of future drought and other climate change impacts on our wildlife resources, to monitor the effectiveness of adaptation actions, and to employ adaptation strategies and actions that are greater in scope and/or different from our existing suite of management actions.

## Hawaii

**Name:** Scott Fretz

**State Agency:** Hawaii Department of Land and Natural Resources

**Contact Information:** [scott.fretz@hawaii.gov](mailto:scott.fretz@hawaii.gov)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes. Department of Land and Natural Resources director and designees include Paul Conry, Scott Fretz

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** No

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** Not yet. Expected to be conducted in collaboration with the PICCC, with specific techniques to be identified in the Science Assessment.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Not specific to climate change.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** PICCC

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** PICCC

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?**

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None

**11. Is there a cabinet level position for climate change in your state?** No

**12. Is your state planning a comprehensive state adaptation plan?**

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?**

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?**

**15. Where does your agency/state get its scientific information for climate change planning efforts? PICCC**

**16. What are your science and research needs in regards to climate change adaptation planning?** Assessment of impacts to a) plants, wildlife, rare, threatened, and endangered species, including influences on habitat availability and suitability, disease, and other limiting factors and threats; b) watershed function and forest composition and structure; c) fire regimes, fine fuels, and risk; d) invasive species;

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Participation in PICCC, begin planning for revision of the SWAP to incorporate climate change planning

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Funding for personnel and operations to commission and conduct research needed to assess impacts and plan and implement adaptation strategies and objectives.

## Idaho

**Name:** Sharon W. Kiefer

**State Agency:** Idaho Department of Fish and Game

**Contact Information:** [sharon.kiefer@idfg.idaho.gov](mailto:sharon.kiefer@idfg.idaho.gov)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** A primary planning function incorporating climate change adaptation is our revision of the Idaho Comprehensive Wildlife Conservation Strategy (CWCS). We are incorporating information about the potential impacts of climate change on species of greatest conservation need and the habitats on which they depend. Discussions will include climate change adaptation possibilities. This revision will be informed by the collaborative project “Assessing the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest”. In addition, as we work to reassess the conservation status of Idaho species to update our list of species of greatest conservation need, climate change will be considered when assessing threats. Another key project is the Western Governors’ Association Decision Support System (WGA DSS) pilot projects. Brief descriptions of the two projects that include Idaho are attached; climate change considerations will be a component of the DSS.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** Idaho Department of Fish and Game (IDFG) has one position working almost exclusively on climate change planning/research, including the project “Assessing the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest” (also called PNW Vulnerability Assessment). This project is collaboration among researchers from IDFG, the Nature Conservancy, University of Idaho, University of Washington, USGS, and Washington Department of Fish and Wildlife (WDFW).

Several other people are working on climate change-related activities part-time, particularly relative to updating the state Comprehensive Wildlife Conservation Strategy incorporating climate adaptation planning strategies. Personnel working on climate change issues include staff primarily in the Wildlife and Fisheries Bureaus. There is also policy representation in the Director’s Office. However, to date, IDFG has not developed a focused programmatic or centralized approach to address climate change issues but instead climate adaptation is being assessed more on a project basis, such as the CWCS revision, or through collaborative opportunity with other agencies and NGOs.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes, we are incorporating climate change into the Idaho CWCS following the AFWA 2009 guidance document. We are considering both direct and indirect impacts of climate change and incorporating climate change under all eight elements. We have teamed up with USGS, University of Idaho, University of Washington, Washington Dept. of Fish and Wildlife, and The Nature Conservancy to assess the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest (project previously noted, PNW Vulnerability Assessment). The results of this project will provide us with 1) downscaled regional

climate models (~1km), 2) simulated shifts in vegetation, 3) an extensive database of documented species vulnerabilities, 4) models of species range shifts for selected species, 5) summaries of the extent of uncertainty in the climate, vegetation, and species changes, and lastly 6) a collaboration of resource managers working to incorporate climate change information into management planning and implementation efforts. There is also additional research being done jointly by the University of Idaho, Idaho State University, and Boise State University under a National Science Foundation grant <http://www.idahoclimatechange.org/> that is connected to the assessment of climate change on water management and related aquatic resources in the state. This information is extremely relevant and important to the CWCS revision, updated State Wildlife Action Plans (SWAPs) and for other IDFG projects such as the Western Governors' Association pilot projects to create Decision Support Systems (DSS), tools for integrating wildlife and habitat information into trans boundary infrastructure planning.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** We are beginning to include climate change consideration into newer IDFG management plans, such as for Bonneville cutthroat trout, but have not yet developed specific management actions or requirements. Methods and information used to revise the CWCS will likely trickle down to other specific management plans and the intent of the DSS is to influence climate considerations relative to crucial habitat and wildlife corridors at the state and regional scale. Management use of downscaled regional climate models (noted above), dynamic vegetation models, and models to predict potential species distribution shifts related to predicted climate changes will progress as tools become more available.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** As previously noted, we are collaborating with several others on a broad vulnerability assessment for the Pacific Northwest. With regard to species, the PNW vulnerability assessment includes two distinct components; first, a database that highlights and details the sensitivity of species and habitat in the study region. The estimated sensitivity of individual species will be based on the ability of the species to disperse and whether dispersal barriers exist, dependency on disturbance regimes (e.g. fire or flood), physiology (e.g., temperature, salinity), dependency on climatically-sensitive habitat requirements (e.g., alpine areas, shallow wetlands), whether the species is a generalist or specialist, and whether the species existence is tied to other specific species. Currently, over 570 species are in the database and nearly 200 are complete. The second component of the assessment involves modeling the potential effects of climate change on species and habitats. This includes: 1) downscaling the climate change projections, 2) simulating potential changes in vegetation, and 3) modeling potential effects on the distribution of 12 focal wildlife species using a hierarchical approach.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Not yet.



**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** As part of the Western Governors Association Decision Support System pilot projects, we are working to incorporate information from the PNW vulnerability project as well as other efforts (e.g., Montana's Climate Change Working Group). Phase 1 of these projects will include a framework for how we are going to go about incorporating climate change information and phase 2 will focus on implementation. Communication and outreach about aspects of the DSS, including climate considerations is occurring at the WGA and pilot project level.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?**

Specific to the PNW Vulnerability Assessment (and by reference, the CWCS revision):

USGS (climate modeling, vegetation modeling)

University of Washington (species database and modeling)

University of Idaho (species database, management implications)

WDFW (management implications, implementation)

The Nature Conservancy (management implications, implementation)

We are working with Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, and Montana Fish Wildlife and Parks and contractors to integrate climate change considerations into the WGA DSS projects in Idaho. The USFWS through the Great Northern LCC is a funding partner for the Idaho DSS pilot projects, in part to incorporate climate considerations.

We expect considerable partnership with the new Northwest Regional Climate Center but do not have any specific example yet. There is potential for collaborative benefit from the Landscape Conservation Cooperatives (LCCs) and other Department of Interior climate planning initiatives but there are considerable hurdles to effective partnership (see October 25 AFWA letter to Secretary Salazar et al.) .

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** Unknown

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** Unknown

**11. Is there a cabinet level position for climate change in your state?** No.

**12. Is your state planning a comprehensive state adaptation plan?** Not that IDFG is aware of.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** There is no state legislative mandate for any comprehensive state adaptation plan in Idaho but there are policies and actions of the Western Governors' Association that serve as a policy expression of Idaho's Governor

relative to climate issues as follows: (derived from <http://www.westgov.org/> Western Governors have adopted resolutions that specifically speak to [Regional and National Policies Regarding Global Climate Change](#) and [Supporting the Integration of Climate Change Adaptation Science in the West](#). In the latter resolution, the Governors encouraged Congress and the Administration to create a [National Climate Service](#), which is now being pursued within the National Oceanic and Atmospheric Administration. In 2010, WGA issued a [climate adaptation report](#) that emphasizes the need for coordination between state and federal efforts to identify key science that is Western specific and begins to share and implement smart practices.

In their policy resolution 09-2 Western Governors called for the formation of a Climate Adaptation Work Group whose purpose is to 1) determine appropriate uses of climate adaptation modeling in informing natural resource and economic infrastructure planning and policies, and 2) to identify and fill existing gaps in climate adaptation efforts within WGA. This work group may also review current and future climate legislation to assess the impact to states and their efforts to adapt to a changing climate and report their findings to the WGA Staff Council. The Work Group is currently composed of representatives from WGA projects related to water, wildlife, forests and air. In 2010, WGA issued a [climate adaptation report](#) that emphasizes the need for coordination between state and federal efforts to identify key science that is Western specific and begins to share and implement smart practices.

The Governors are advocating for creation of a comprehensive national drought policy. Such a policy would support a proactive approach toward drought and water shortages at all levels of government and the private sector. Given that droughts are predicted to be more frequent and with greater intensity in the West under climate warming scenarios, a national drought policy would provide a sound basis for adaptation.

The Governors released the report [Water Needs and Strategies for a Sustainable Future](#) in June 2006 and a follow up [Next Steps](#) report in 2008. The reports conclude that there is already substantial stress on the water sector today even in the absence of climate change. There are many watersheds that are already over-appropriated, and new stresses are coming from population growth, land use changes and water needs for instream uses. Climate change may pose additional stresses and could result in thresholds being reached earlier than currently anticipated. The reports include recommendations for improved data collection; improved prediction, modeling and impact assessment; state planning; and on-going coordination and information sharing between scientists, policymakers, and water users.

The [WGA Forest Health Advisory Committee](#) has developed a subcommittee specifically working on Climate Change/Adaptation, focusing on forest lands. The subcommittee is identifying priorities and action items to address the concerns of the governors in the area of forest and rangeland health.

The Western Governors formed the [Western Governors' Wildlife Council](#) to work in partnership with federal agencies, industry and NGOs, to identify key wildlife corridors

and crucial wildlife habitats in the West and make recommendations on needed policy options and tools for preserving those landscapes. Included in this identification should be research to understand climate change impacts to crucial habitat and wildlife corridors, and necessary steps should be taken to support adaptation to climate change. The current focus is development of trans boundary Decision Support Systems, currently underway as several pilot projects in the west.

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** The State of Idaho has not undertaken state level climate adaptation planning. However, other natural resource agencies such as Idaho Department of Water Resources, Idaho Department of Lands, and Idaho Department of Agriculture may be undertaking some efforts and assessments to forecast potential change and response strategies but there has not been state synthesis or coordination across agency sectors. IDFG is the lead specifically for the CWCS revision or any other wildlife management endeavors.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Somewhat addressed by #17, also scientific information comes from various professional forums and journal articles. The challenge is that climate change planning science is not “owned” by any specific agency or forum, thus information is available from multiple venues but not necessarily with consensus.

**16. What are your science and research needs in regards to climate change adaptation planning?** The Great Northern Landscape Conservation Cooperative (GNLCC), with IDFG participation, identified Land Cover Data and Information, Climate Information, Data Sharing, Integration and Management, Habitat Connectivity, Vulnerability Assessments (emphasis on Water Resources), and Biological Monitoring and Evaluation as key science focal areas.

Aspects of vulnerability assessment and downsized climate models are in progress for the Pacific Northwest but even with completion of this project, there will still be several research needs in regards to climate change adaptation planning. For example, the downscaled (1km) climate models represent significant progress (as compared with the global models) yet are still too coarse to address many local and state management needs and range of uncertainty is still high. In addition, the lack of basic natural history information for many species and their habitats is a hindrance. It is often not clear how species will react to particular temperature and/or precipitation changes, if thresholds occur beyond which the populations may decline, and if the current relationships between species and their habitats will persist. Given these uncertainties, experience and knowledge on addressing and planning for the ‘unknown’, such as implementation of adaptive management and structured decision making, would be helpful. With regard to revision of the Idaho CWCS, we will continue to need information on the efficacy of management actions for species and habitats of greatest conservation need in the face of climate change.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** The IDFG has not established specific programmatic direction for climate change planning for the coming year other than benchmarks for specific projects such as CWCS revision. New or ongoing initiatives, as well as emerging tools from key projects will influence and facilitate increased consideration for climate change planning and understanding about effective approaches. The following initiatives, which IDFG is either participating in or getting information from, are expected to further influence our management considerations (although not all will necessarily solidify information or direction in the next year). These are primarily agency-related; there are numerous NGO initiatives that are not listed:

Great Northern Landscape Conservation Cooperative (LCC) and related grant to assist the WGA Decision Support System pilot projects in Idaho,  
Great Basin LCC,  
Highway Linkages/Wildlife Corridor efforts with Idaho Department of Transportation and Federal Highways Administration,  
WGA's Decision Support System pilot projects,  
Seeking Wildlife conservation Society grant pursuant to the Wildlife Action Opportunities Fund (to support WGA DSS),  
Partnering with USGS, WDFW, U of WA, U of Idaho, and TNC on the project "Assessing the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest",  
Participation in Safeguarding Wildlife from Climate Change web conference series,  
Participation in monthly conference calls among SWAP coordinators regarding wildlife and climate change and how best to update state action plans,  
Attendance at various climate related conferences (including those supported by AFWA and WAFWA),  
Assessment of potential resilience of National Parks in the coterminous US to climate change given projected future species ranges, elevational variability, and landscape context,  
Participation with the new Northwest Regional Climate Science Center (University of Idaho, Oregon State University, University of Washington).

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** -Need consistent and integrated state and federal policy and expectations for addressing climate change effects on species and their habitat/management. For example, any integration between WGA policy efforts and WAFWA? Also consider consistent approach for adaptations: Consider (as example) a three-way management framework that makes management sense that could apply to a wide range of sectors: resistance – manage for actions that “resist” climate change impacts; resilience – manage for actions that conserve and restore resilience of a particular system; facilitation – manage to shift to a better-adapted system that will still provide reasonable utility for stakeholders. Citation: Galatowitsch, S., L. Frelich, and L. Phillips-Mao. 2009. Regional climate change adaptation strategies for biodiversity conservation in a midcontinental region of North America. *Biological conservation* 142:2012-2022.

- Need consistent and “mature” information; the science is still developing and thus, difficult to act upon.
- Need to formulate and understand how IDFG and Idaho will adapt management priorities to a changing climate, i.e. need to understand priority and support of state/federal legislative decision-makers.
- Need dedicated IDFG funding and resources to address climate information and implementation needs that are broader than sport license buyers.
- Need improved IDFG capacity/technical expertise to deliver climate adaptation strategies as a conservation service. Ultimately climate adaptation considerations may require more programmatic focus than just an “add-on” to other duties.
- Need understanding of the risk tolerance of biological and public sectors and decision-makers.

## Kansas

**Name:** Steve Adams

**State Agency:** Kansas Department of Wildlife and Parks

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**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Discussion stage at this point in time.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? No. Where are they located within the agency?**

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it? No**

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it? No**

**5. Has your agency done a vulnerability assessment? No. Are they planning on doing one soon? What technique are you using?**

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? No. If the answer is yes please describe them.**

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** Yes, discussion stage with other state agencies, primarily those agencies with missions related to management or regulation of natural resources.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?**

**9. What other agencies in your state are planning for climate change adaptation? Unknown. If there are what are they doing?**

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Unknown. Where are they located within those agencies?**

**11. Is there a cabinet level position for climate change in your state? No.**

**12. Is your state planning a comprehensive state adaptation plan? No.**

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved? No**

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? No. If not, who is the lead?**

**15. Where does your agency/state get its scientific information for climate change planning efforts?** A variety of sources. Federal agencies, universities, etc.

**16. What are your science and research needs in regards to climate change adaptation planning?** We have not identified specific needs yet.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** In reality the state is just beginning to look at how changing climatic conditions may affect state programs and it is not yet clear what the near term direction will be.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Budget, staffing, reliable data.

## Montana

**Name:** Deb O'Neill

**State Agency:** Montana Fish, Wildlife & Parks

**Contact Information:** [doneill@mt.gov](mailto:doneill@mt.gov)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes. We are going to address it in our SWAP update. Our Strategic Planning and Data Services Bureau are most involved right now, but as we start developing our SWAP many biologists in the state will be involved.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** We just hired a person to complete the update. We have a state climate change work group that is helping us develop framework for including climate change into our SWAP update.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** No. We may be partnering with other states (WA, ID, WY, and OR) to conduct one.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** No.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...a.)**Region 1 developed the "FWP Northwest Montana Terrestrial Climate Change Species Monitoring and Conservation Plan". The plan lists nine important objectives regarding habitat conservation, coordination, species monitoring, etc. for species that are likely to be negatively impacted by climate change. Since completing the plan in January 2010 we have specifically addressed four of those objectives. These objectives are: 1) enhance FWP species monitoring and inventory of species impacted by climate change, 2) coordinate with other agencies, Tribes, NGOs, citizen scientists, and volunteers to increase the regional knowledge relative to climate change species by conducting surveys or coordinating field survey efforts, 3) establish appropriate regional databases to collect and store survey and inventory information that is readily accessible by the Montana Heritage Program and our conservation partners, and 4) identify and encourage new climate change research opportunities and partnerships.

b.) The US Canadian Trans-boundary Wildlife Working Group has identified fee or conservation easement acquisition as their #1 priority to maintain connectivity across these landscapes and allow species to adapt to future climate change.



c.) We are working on mitigation projects in the Flathead Valley that include the restoration of agricultural lands into functional wetland complexes. These projects also feed into a waterfowl bioenergetics study that will allow us to quantify the importance of existing agricultural lands to migrating waterfowl. For one approach, we will attempt to use highway water runoff to flood fields in the absence of snowmelt.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** See above answers for some partnership information. We partner with the USFS Wildlife Programs in Region 1. We coordinate surveys for Climate Change Focal Species to maximize our survey effort. Harlequin surveys are organized by USFS while small mammal surveys and ptarmigan survey are organized by FWP. We worked together to create the “Identification Guide: Terrestrial Species Sensitive to Climate Change-Northwest Montana”. USFS conducts training with their trail and back country crews and seasonal employees; each employee is given a guide. All of the information our partners collect is entered into the Heritage Program database so everyone benefits.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** None.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None.

**11. Is there a cabinet level position for climate change in your state?** Don’t think so.

**12. Is your state planning a comprehensive state adaptation plan?** No.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** NA

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** NA

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Universities, NGOs, other states

**16. What are your science and research needs in regards to climate change adaptation planning?** We do not have the capacity to first learn about and then model climate change. We are relying on experts to help us identify what is appropriate for us to include in our SWAP.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** We will continue to meet with our climate change work group to decide how to incorporate climate change into our SWAP update.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Lack of expertise, funding, and time.

There are concerns from some that addressing climate change does not ultimately matter in terms of fish and wildlife management.

Lack of scaled down models resulting in little ability to assess potential impacts and therefore, proactive actions.

We primarily are worried about funding to collect baseline data on many of our species. Funding for equipment and seasonal staff has been limiting. We are short staffed and find it virtually impossible to conduct coordinated climate change surveys over large areas while completing our other high priority tasks. Many of these surveys require extensive time commitments due to their remote location, making it difficult to complete multiple surveys during a field season.

## Nebraska

**Name:** Rick Schneider

**State Agency:** Nebraska Game and Parks Commission

**Contact Information:** [rick.schneider@nebraska.gov](mailto:rick.schneider@nebraska.gov)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes. We are currently updating our State Wildlife Action Plan to incorporate climate change assessments and adaptation strategies. Biologists from the Wildlife and Fisheries Divisions are on the SWAP Science Team which is overseeing the climate change portion of the SWAP update.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes. See attachment 1 at the end of the questions for our approach.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** Yes. We have assessed the vulnerability of the Tier 1 at-risk species (~90) identified in our SWAP. We used the NatureServe Climate Change Vulnerability Index in an expert's workshop setting, with workshops for birds, fishes, herps, insects, mammals, mollusks, and plants.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Not yet.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** No.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** Yes. Our SWAP Science Team includes members from the University of Nebraska, The Nature Conservancy, the Rainwater Basin Joint Venture, the Northern Prairies Land Trust, and the Nebraska Bird Partnership. They provide input of ideas for analyses and strategies, as well as review of products.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** None that we are aware of at this time.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None.

**11. Is there a cabinet level position for climate change in your state?** No.

**12. Is your state planning a comprehensive state adaptation plan?** No.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** N/A

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** N/A

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Scientific journals, government agencies (e.g. U.S. Global Change Research Program), conservation organizations (e.g. TNC Climate Wizard, National Wildlife Federation and AFWA climate change documents).

**16. What are your science and research needs in regards to climate change adaptation planning?** Better understanding of locations of potential movement corridors as species shift their ranges in response to climate change. Effective methods for making the working landscape (e.g. agricultural lands) more permeable to species movement. Understanding of how agricultural lands will be affected by climate change. Better regional climate models at both the national and sub-national scale. Understanding of which aspects of species' life histories will be most affected by climate change. Effective, tested techniques for helping wildlife adapt to climate change.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Impact assessment, triage analyses, modeling.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** The current administration in the state does not view climate change as an issue that needs to be addressed. As a result, there is no dedicated funding or political will for a dedicated climate change coordinator.

## Nevada

**Name:** Laura Richards

**State Agency:** Nevada Department of Wildlife

**Contact Information:** [lrichard@ndow.org](mailto:lrichard@ndow.org)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** NDOW and our conservation partners identified a need to develop a plan amendment to Nevada's Wildlife Action Plan to address potential impacts of climate change on Nevada's fish, wildlife, and habitats. NDOW is again partnering with The Nature Conservancy (TNC), the Nevada Natural Heritage Program (NNHP), and Lahontan Audubon Society (LAS), and also the Great Basin Bird Observatory (GBBO) to develop this climate change amendment to the plan. This partnership team was awarded a \$400,000 state Question 1 Bond Habitat Conservation Planning grant in order to help fund these efforts.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** N/A

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** See Question 1.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** N/A

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** The Nature Conservancy is developing ecological models that will predict the relative risk of Nevada's key wildlife habitats to the projected impacts of climate change. This information will be integrated into the development of effective adaptation strategies for managing and protecting key habitats for species and communities threatened by climate change in Nevada. NDOW is also utilizing Nature Serve's Climate Change Vulnerability Index to assess Nevada's 263 Species of Conservation Priority.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Not to date. Most projects are focused on restoration of habitats impacted by other stressors such as invasive species, wildfire rehabilitation, etc.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...**N/A

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** In addition to the partners identified in Question 1, NDOW is also working closely with federal land management agencies such as the BLM, USFWS, USDA Forest Service, etc.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** Nevada Natural Heritage Program.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** N/A

**11. Is there a cabinet level position for climate change in your state?** No

**12. Is your state planning a comprehensive state adaptation plan?** Not at this time.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** N/A

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** N/A

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Universities, conservation organizations, federal land management agencies.

**16. What are your science and research needs in regards to climate change adaptation planning?** Management recommendations for on-the –ground conservation actions.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Completion of climate change revision of Nevada’s Wildlife Action Plan.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Primarily funding, staff time.

## New Mexico

**Name:** Matthew Wunder

**State Agency:** New Mexico Department of Game and Fish

**Contact Information:** [Matthew.Wunder@state.nm.us](mailto:Matthew.Wunder@state.nm.us)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes it is on our radar but there have been no specific actions planned to respond to climate change. Primarily the Conservation Services Division.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** NO.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** NO.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** NO.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** NO, Dependent on resources. We are not that far along.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Not to date. Most projects are focused on restoration of habitats impacted by other stressors such as invasive species, wildfire rehabilitation, etc.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...**Participation in the LCC program. Planning for the revision of the Comprehensive Wildlife Conservation Strategy for NM.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?**

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** The Environment Department is responding to Executive Orders from the Governor related to climate change. Much of their work focuses on potential cap and trade program. The internet link to the ED Climate Change page is: <http://www.nmenv.state.nm.us/cc/>.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** I do not believe that there are any positions solely directed at climate change.

**11. Is there a cabinet level position for climate change in your state?** No. There is a New Mexico Climate Change Advisory Group established to make proposals to reduce greenhouse gas emissions in the state.

**12. Is your state planning a comprehensive state adaptation plan?** No.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?**

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** No. The environment Department comes as close as any to being the lead department in the state addressing climate change.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Multiple sources depending on agency and specific questions regarding climate change. The Environment Department maintains some information resources related to climate change at:  
[http://www.nmenv.state.nm.us/aqb/GHG/Science\\_Projections.html](http://www.nmenv.state.nm.us/aqb/GHG/Science_Projections.html).

**16. What are your science and research needs in regards to climate change adaptation planning?** We need to be able to have confidence in the climate projections specifically for New Mexico and how those will impact the environment/wildlife. When we have good information on the climate changes we can begin to see options for prioritization and planning.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** This is completely unclear at this time. There is a new governor being sworn in and probably a new director of Department of Game and Fish as well as most if not all other departments statewide.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Lack of resources is the primary obstacle. Secondarily New Mexico is an energy producing state that receives income from royalties so there is some tension between recognition of climate change as a problem and support for state government from energy development. Third there is some difficulty in collecting, understanding, and applying the available scientific information at the state level. Fourth, there is uncertainty about how to respond to climate change given the other shorter term conditions and situations develop and demand response.



## North Dakota

**Name:** Terry Steinwand

**State Agency:** North Dakota Game and Fish Department

**Contact Information:** [tsteinwa@nd.gov](mailto:tsteinwa@nd.gov)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Only superficially. We're doing as we've always done, i.e., adapt as we see the issues arriving but nothing specifically for climate change. All Division Chiefs are involved to some extent along with Administration (Director, Deputy Director)

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes. This is in its initial stages.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** No. No. N/A

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** We are looking at several models for non-game species and assessing where habitats might be affected. Then looking at overlap from current habitat and predicted habitat areas and putting priority on conserving those areas.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** Only as they relate to wind power. Nothing specific as of yet.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** To some extent. NGO's are the primary partners at this point and we're more of a technical advisor at this point.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** None that I'm aware of.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None

**11. Is there a cabinet level position for climate change in your state?** No

**12. Is your state planning a comprehensive state adaptation plan?** No

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** N/A

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** N/A

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Primarily AFWA and WAFWA

**16. What are your science and research needs in regards to climate change adaptation planning?** Primarily more definitive/specific information or models to provide direction to us for habitat conservation.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** No different than in past years. With only 157 FTE's on staff and other issues, it's difficult to put time into this.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Politics, lack of specific information.

## Oregon

**Name:** Holly Michael

**State Agency:** Oregon Dept. of Fish and Wildlife

**Contact Information:** [holly.b.michael@state.or.us](mailto:holly.b.michael@state.or.us)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?**

Director's Office: Conservation Policy Coordinator (.8 FTE)

Wildlife Division: Conservation program manager (.1 FTE)

Fish Division: Fisheries research (.1 FTE)

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No, although 80% of the Policy Coordinator position is dedicated to climate change

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes. Holding workshops for key habitats (estuaries, sage, and oaks). Contracted for writing SWAP revision. Compiling data. Working with partners on vulnerability assessments for species and ecosystems.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** Yes. Referencing climate change in species, habitat, wildlife area and hatchery plans and management updates.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** In process. Assessments are being done by at least 3 universities.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** No

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** Around a dozen efforts at state, western regional and national scales. A few examples: Western Governor's, USGS Climate Research Centers, Oregon Global Warming Commission, several others

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** Too many to list. Examples include: Defenders of Wildlife, several state agencies in Oregon, other western states, Ducks Unlimited, The Nature Conservancy, Joint Ventures, universities, The Wetlands Conservancy

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** Mostly through the State's Adaptation Framework.  
Work varies by agency.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None.

**11. Is there a cabinet level position for climate change in your state?** No

**12. Is your state planning a comprehensive state adaptation plan?** Oregon's Statewide Climate Adaptation Framework was completed in 2010

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** Yes. Sectors include 21 agencies, universities and others. A few examples are: Human Services, Transportation, Agriculture, Fish and Wildlife, Forestry, Energy, Water Resources, Business Oregon, and Oregon State University.

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** Co-lead with Department of Land Conservation and Development

**15. Where does your agency/state get its scientific information for climate change planning efforts?** NOAA, USGS, several universities, NGO's

**16. What are your science and research needs in regards to climate change adaptation planning?** Downscaled models for habitat and stream changes, predictive vegetation changes, connectivity for terrestrial habitats in response to vegetation and water availability changes

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Develop a climate policy for the agency; continue working with universities on vulnerability assessments, tracking science developments

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Money for building capacity, doing research and on-the-ground habitat work

## South Dakota

**Name:** Tom Kirschenmann

**State Agency:** South Dakota Department of Game, Fish and Parks

**Contact Information:** [tom.kirschenmann@state.sd.us](mailto:tom.kirschenmann@state.sd.us)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** SDGFP recently prepared a State Wildlife Grant proposal for revision of our state Wildlife Action Plan. We are currently lining up technical experts who will assist with the plan's revision as climate change adaptation will be incorporated into our revision process. The current date for completion of the revision is June 30, 2012.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** See answer to questions #1. To date, we have been communicating with other WAP coordinators in the Midwest through a special committee established under MAFWA. We will continue that coordination and explore data sources and input specific to South Dakota, such as the state climatologist and researchers at universities within the state.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** Not at this point, but we are likely to explore the use of the vulnerability assessment tools developed by The Nature Conservancy.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** No.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** No formal activities or projects, although involved with the Plains and Prairie Pothole LCC.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** It will involve partners. The specific partners and their roles will be determined once our WAP revision process begins.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** South Dakota Department of Agriculture has provided strategies to address climate change in their Statewide Forest Resource Strategy. South Dakota State University have been conducting research and modeling impacts of climate change on prairie wetland within the agricultural landscape.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None.

**11. Is there a cabinet level position for climate change in your state?** No.

**12. Is your state planning a comprehensive state adaptation plan?** Not at this point.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** N/A

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** N/A

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Most of the scientific information sources will be determined once our WAP revision process begins. Models predicting climate change impacts on prairie wetlands completed at South Dakota State University is another source of information that will be useful in our habitat priority efforts.

**16. What are your science and research needs in regards to climate change adaptation planning?** Defensible stepped-down models that are appropriate in a region that is subject to dramatic natural fluctuations in temperature and precipitation.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Climate change will be a main component of our WAP revision process which will help guide wildlife and habitat management. Beyond that, the direction for additional climate change planning will be determined by state and agency administration.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** The first step to address climate change will be to complete the revision of the state wildlife action plan. Upon the completion of the revision, our agency will need to determine the appropriate direction and actions and prioritize resources where needed most.

As in many areas, there is skepticism among some segments of society whether climate change is occurring and at what rate is it progressing. Is it faster than expected due to natural or human-caused factors?

## Texas

**Name:** Wendy Gordon

**State Agency:** Texas Parks and Wildlife Department

**Contact Information:** [wendy.gordon@tpwd.state.tx.us](mailto:wendy.gordon@tpwd.state.tx.us)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Texas is talking about planning for climate change adaptation but we have not yet undertaken any concrete projects. We are intending to write a chapter on climate change for the revision of our Wildlife Action Plan to be completed later this year. Wendy Gordon, Program Leader for the Dept.'s Nongame and Rare Species Program is the agency lead for climate change issues. Wendy Connally is the Wildlife Action Plan Coordinator.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No, see above.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes. Wendy Gordon will draft the chapter and it will cover general issues, species impacts, and possible adaptation strategies. It will not be based on any detailed vulnerability or other assessments.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** Nothing so far and no immediate plans.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue?** If the answer is yes please describe them. No.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** Wendy Gordon is the agency representative to work groups, committees, etc. relating to climate change activities. She has been actively involved in various networks and cultivating ties to the academic and non-profit communities to leverage those networks to provide guidance to TPW on this issue.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** See previous question. At this point, they have mostly served as sounding boards to help frame how we might move forward with planning. In some instances, they have been partners on grant proposals.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** None.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** None.

**11. Is there a cabinet level position for climate change in your state?** No.

**12. Is your state planning a comprehensive state adaptation plan?** No.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?**

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** NA

**15. Where does your agency/state get its scientific information for climate change planning efforts?** Through partnerships with university faculty working on climate change and through portals like Climate Wizard. Long-term routine monitoring of environmental conditions in the bays and estuaries (a 30+ year continuous record), as part of our fisheries-independent sampling efforts, has been an especially valuable resource for documenting changes.

**16. What are your science and research needs in regards to climate change adaptation planning?** It would be helpful to have historic analyses of climate trends, say the past 50 to 100 years, covering distinct ecoregions. Since the precipitation model projections over Texas are so variable, looking backwards may be more informative than looking forward.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** I doubt the direction will be substantially different; we're progressing in baby steps. Lack of funding/resources is a key obstacle.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** See previous answer.



## Utah

**Name:** Michael Canning

**State Agency:** Utah Division of Wildlife Resources

**Contact Information:** [mikecanning@utah.gov](mailto:mikecanning@utah.gov)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Yes, but on a very limited basis; climate change is not a major focus of our agency. Those involved are Jimi Gragg (WAP implementation project leader) and several program coordinators and from throughout the agency.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Yes, but on a limited basis. We are developing implementation goals and tasks for each species of conservation need, and some of those tasks involve determining impacts of climate change and restoring habitats to help mitigate potential impacts from climate change.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** No.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** We have not conducted a wholesale vulnerability assessment, and we have no current plans to do so. The activities mentioned in response #3 have begun with species-level vulnerability assessments for a number of our SGCNs. We are using the NatureServe Climate Change Vulnerability Index (CCVI) tool. We have not initiated habitat- or landscape-level vulnerability assessments, but are aggressively utilizing a number of resiliency-enhancing tactics at these higher levels.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Yes. We are restoring habitats throughout the state by setting back succession and managing invasive plant species. We are also attempting to maintain or restore landscape connectivity through this enhancement of successional heterogeneity, by working with our state DOT on an increasing number and quality of highway crossing projects, and by working with numerous partners to improve stream connectivity. We hope these restoration efforts make our lands and waters more resilient as we experience climate changes.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** Our primary focus has been habitat and landscape management.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** As noted in response #5, our climate change planning has been

limited in scope, but we are working with a number of partners in our species-level vulnerability assessments. These partners include the Utah Climate Center at Utah State University, the NOAA Western Regional Climate Service, Region 4 of the US Forest Service, the Utah State Office of the Bureau of Land Management, the Natural Resources Conservation Service, US Department of Defense, The Nature Conservancy's Utah Chapter, and the US Fish and Wildlife Service's Utah Ecological Services Office. Together with UDWR staff, these partners bring perspective and knowledge of the innumerable ongoing initiatives concerning climate change science and management response. They also bring a wealth of specific technical knowledge (of species biology and atmospheric modeling, and their derivatives) required to perform the species vulnerability assessments.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** We are not aware of any adaptation planning efforts in other state agencies in Utah. However, numerous federal agencies have been directed to begin this planning, and their offices in Utah are doing so. See response #8 for a partial list. Regarding what these agencies are doing, the simplest and most succinct way to put it is that they're beginning to assess the ways climate change may impact the goods and services (water, forage, fiber, energy, etc.) they deliver to their constituents. There's simply far too much going on to keep track of it all, and report it here.

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** We are not aware of any state agencies in Utah with positions solely dedicated to climate change. The first 2 entities named in response #8 each have multiple positions dedicated to climate science and change.

**11. Is there a cabinet level position for climate change in your state?** No.

**12. Is your state planning a comprehensive state adaptation plan?** No.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** Not applicable.

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** No. There is not a comprehensive state adaptation planning effort for Utah.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** As mentioned above, our climate change planning efforts have been minimal. However, we have utilized data collected by our agency, universities, the BLM, and the USFS to plan our habitat and landscape restoration efforts. At the species level, see response #8 for a list of partners who bring climatological and ecological expertise to our efforts.

**16. What are your science and research needs in regards to climate change adaptation planning?** We are under the impression there is no lack of ongoing research. We are in no position to comment on the quality or appropriateness of such research. What we could use is coordination, compilation, synthesis, and communication of the status and management implications of such research.

**17. What is the future direction of climate change planning in your agency/state in the coming year?** Climate change planning in Utah state government will be likely be limited in the coming year. In UDWR we will continue the species-, habitat-, and landscape-level activities noted in responses # 5 and 6. Federal, NGO, and academic entities will presumably continue developing their initiatives, including the USGS Climate Science Centers, NOAA Western Regional Climate Service, the USU Utah Climate Center, the USFWS Landscape Conservation Cooperatives, and The Nature Conservancy's Canyon lands Research Center.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** There is little political support for climate change planning in our state, so that is our major barrier. If there was political support for such planning, we would need additional funding and people, which would be a challenge for us in the current economic environment.

## Washington

**Name:** Lynn Helbrecht

**State Agency:** Washington Department of Fish and Wildlife

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**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Our agency has a climate change strategic plan, which includes a goal to “drive conservation at landscape scales in response to a changing climate”. A climate task force has been established, representing major functional areas of the agency, as well as a technical advisory team to assist with guiding implementation of the strategic plan.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** A climate change coordinator position was established in early 2010 and hired in April, 2010. The position reports to the environmental policy lead within the habitat program.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** WDFW has evaluated the scientific literature and prepared documents summarizing projected climate impacts for four major ecological systems: marine and coastal, freshwater and aquatic, forests, alpine and western prairies, and arid lands and shrub steppe. These science summaries are being used to develop a set of recommended adaptation strategies and actions for each of these systems.

Once these draft actions have been vetted within the agency, recommended adaptation actions and timelines will be integrated with the SWAP.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** Not yet.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** WDFW is a partner in a regional vulnerability assessment involving USGS, the Nature Conservancy, University of Washington, University of Idaho, University of Oregon and each of the state fish and wildlife agencies. The principle researchers are located at UW, U of I and TNC.

A two page fact sheet describing this effort is attached. The project will develop a species specific vulnerability database, a habitat vulnerability database and conduct modeling on specific habitats to assess and evaluate changes over time.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Adapting near shore restoration priorities and activities to projected climate change impacts.

**7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...** A state law passed in 2009 (ESSB 5560) requires state agencies to meet mitigation targets.

**8. Does your climate change planning work involve partners? Who are they and how do they assist you?** WDFW has been working with a stakeholder advisory group to develop adaptation recommendations for adaptation. Members include NGOs, state and federal agencies and local government and tribes. Subgroups for each ecological system have been established and have developed draft recommendations – a set of overarching themes and statewide adaptation actions will also be developed by the end of the calendar year.

**9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?**

**10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** The Department of Ecology has 1-1/2 positions in the director's office dedicated to climate change and several others who have related responsibilities. The Department of Natural Resources has ¾ of an FTE dedicated to work on climate change, and Departments of Commerce, Agriculture and Transportation each have a portion of an FTE dedicated to climate change. .

**11. Is there a cabinet level position for climate change in your state?** No.

**12. Is your state planning a comprehensive state adaptation plan?** See below.

**13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** Washington state legislature passed legislation in 2009 which requires development of an integrated statewide response strategy to address climate change (ESSB 5560) Six state agencies were designated to develop the statewide strategy; WDFW is one of the six, along with Department of Commerce, Department of Transportation, Department of Ecology, Department of Health, Department of Agriculture, and Department of Natural Resources. The Department of Ecology leads the development of the strategy, which is due in December, 2011.

As part of this process, WDFW is leading a stakeholder advisory group which is developing draft adaptation strategies for species, habitats and ecosystems.

<http://www.ecy.wa.gov/climatechange/adaptation.htm>

**14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** See above.

**15. Where does your agency/state get its scientific information for climate change planning efforts?** WDFW has relied on information from the Climate Impacts Group.  
<http://cses.washington.edu/cig/>

**16. What are your science and research needs in regards to climate change adaptation planning?** Vulnerability assessments; particularly for marine and aquatic species. Improved mapping and modeling re: sea level rise throughout Puget Sound and the outer coast. Data on food web interactions and how changes in freshwater aquatic environment from climate change may impact those, same for marine. Improved monitoring for ocean hypoxia and acidification. Improved monitoring for impacts to terrestrial systems. Mapping to identify cold water refugia for freshwater systems. Climate smart habitat connectivity corridors (adapting work on identifying habitat connectivity to incorporate projected climate impacts).

**17. What is the future direction of climate change planning in your agency/state in the coming year?** The agency will participate in developing the statewide integrated response strategy, focusing on the needs of species, habitats and ecosystems. The agency will conduct training and education programs internally. The agency will prepare an internal climate action plan, which will be integrated with the State Wildlife Action Plan.

**18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Challenges include: Developing public support and communication materials, particularly in light of planning for impacts projected to occur in 20-50 years. Need to share information more fully with other states and agencies, so we don't re-invent the wheel and can benefit from planning and implementation others have done. Filling in knowledge gaps. Agency Resources to implement.

## Wyoming

**Name:** Glenn Pauly

**State Agency:** Wyoming Game and Fish Department

**Contact Information:** [Glenn.Pauley@wgf.state.wy.us](mailto:Glenn.Pauley@wgf.state.wy.us)

**1. Is your state fish & wildlife agency planning for climate change adaptation? Who is involved within your agency?** Wyoming's revised State Wildlife Action Plan (SWAP) has a chapter devoted to climate change. Climate change is also addressed in individual habitat types, aquatic basins, and Species of Greatest Conservation Need species accounts within the SWAP

<http://gf.state.wy.us/SWAP2010/Plan/index.asp>. This information was assembled across Department Divisions and with external agency input. The Wyoming Game and Fish Department (WGFD) also held a Department-wide workshop in January 2010 on climate change to increase personnel knowledge of potential climate change impacts and begin integrating climate change issues into management planning. The WGFD Leadership Development I class has a project of making recommendations for integrating climate change considerations into the culture and operations of the Department.

**2. Do you have a position(s) in your agency that is solely dedicated to climate change? Where are they located within the agency?** No, however the SWAP Coordinator has been appointed the lead for climate change issues.

**3. Has your agency begun updating their State Wildlife Action Plan for climate change? If the answer is yes, how are they going about it?** Wyoming's revised State Wildlife Action Plan (SWAP) has a chapter devoted to climate change. Climate change is also addressed in individual habitat types, aquatic basins, and Species of Greatest Conservation Need species accounts. Wyoming's SWAP climate change chapter was assembled with the input for multiple state and federal agencies, conservation organizations and climate change researchers.

**4. Has your agency begun updating other management plans for climate change? If the answer is yes, how are they going about it?** The ground work in being laid to integrate climate change into the Department's Strategic Habitat Plan and annual work plans; however, little has been formally done to date.

**5. Has your agency done a vulnerability assessment? Are they planning on doing one soon? What technique are you using?** Both habitat and species vulnerability assessments have been identified as conservation actions in the revised SWAP; however, none have been conducted to date.

**6. Does your agency have any on the ground adaptation examples that they are pursuing and/or planning to pursue? If the answer is yes please describe them.** Projects to enhance fish passage have been conducted to allow greater movement of aquatic species. The Department has funded projects on the potential effects of climate change on aquatic systems with a focus on cutthroat trout as well as lodgepole pine dependent species.

- 7. Are there other activities your agency is involved in with respect to climate change? I.e. mitigation, communication and outreach, etc...**No
- 8. Does your climate change planning work involve partners? Who are they and how do they assist you?** Other agencies and nonprofits were involved in submitting information and reviewing the climate change chapter of Wyoming's revised SWAP. The WGFD is an active participant in the Great Northern and Plains and Prairie Pothole LCC's. We get a lot of data from the USGS and State Climate Office.
- 9. What other agencies in your state are planning for climate change adaptation? If there are what are they doing?** Wyoming's State Land Forestry Division completed of forest health assessment and resource strategy which included a climate change component. There is a multi-state agency Wyoming Climate Change and Drought Task force in which the Department participates.
- 10. What other agencies in your state have a position(s) solely dedicated to climate change? Where are they located within those agencies?** No
- 11. Is there a cabinet level position for climate change in your state?** No
- 12. Is your state planning a comprehensive state adaptation plan?** No
- 13. If yes, is there a legislative mandate for a comprehensive state adaptation plan? Which sectors are involved?** NA
- 14. Is your fish & wildlife agency the lead on comprehensive state adaptation planning for your state? If not, who is the lead?** NA
- 15. Where does your agency/state get its scientific information for climate change planning efforts?** State climatologist, USGS, Journal articles
- 16. What are your science and research needs in regards to climate change adaptation planning?** Vulnerability assessments for species and habitats coordinated across state boundaries to help develop a national response.
- 17. What is the future direction of climate change planning in your agency/state in the coming year?** Increasing personnel awareness, participating in LCC's
- 18. What are the challenges or barriers that are holding your agency/state back from climate change adaptation planning and implementation?** Public and political acceptance of climate change, multiple competing priorities, Department funding and human resources