



Climate Change and National Wildlife Refuge Conservation Planning

As the National Wildlife Refuge System moves to implement a new vision, one of the most important challenges it faces is how to protect its wildlife and habitats in a changing climate. The U.S. Fish and Wildlife Service (FWS) has recognized this challenge, both in its 2010 Climate Change Strategic Plan, and in its “Conserving the Future” vision document for the Refuge System. While FWS has been a leader in recognizing the threat of climate change, Defenders of Wildlife has consistently urged bolder and more comprehensive action to assess the vulnerability of biodiversity and to enhance the adaptive capacity of species and ecosystems in its care. One of the best ways to do this is through the comprehensive conservation planning process.

A Mandate for Addressing Change

The National Wildlife Refuge System Improvement Act of 1997 directed every refuge to develop a comprehensive conservation plan (CCP), a 15-year management plan to ensure the long-term conservation of fish, wildlife and habitats in accordance with the purpose of the refuge and the mission of the System. Secretarial orders issued in 2001 and 2009 made clear that climate change impacts should be considered in refuge planning. Defenders of Wildlife analyzed the most recent CCP (as of June 2011) from each of the FWS regions to evaluate the extent to which climate change is considered.

Evaluating CCPs for Addressing Climate Change

We evaluated CCPs in four categories: Background; Assessment; Actions; and Monitoring, Research and Adaptive Management. The Background section was worth two points, one for discussing climate change in the vision or purpose and need section, and one for referencing the applicable Secretarial orders. In the Assessment section, we scored for general climate change impacts (describing historic climate conditions, acknowledgement of climate impacts or extreme climate events, and references to downscaled climate projections); and impacts to refuge habitats and species (with one point for a general description, two points for one or more detailed assessments, and three points for detailed assessments for more than half of the refuge’s habitats and species groups). We also scored on planned actions, with up to three points based on detail and comprehensiveness, and additional points for plans to conduct monitoring, research, and adaptive management.



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Results and Recommendations

All eight refuges incorporated climate change into their planning, but the level of comprehensiveness varied considerably (see table on next page). On average, the refuges satisfied about 60% of the criteria we developed for incorporating climate change into CCPs. In general, the refuges with the most detailed considerations of climate change were those in areas where the impacts are particularly dramatic: in Alaska, and in coastal and island refuges. However, impacts will be felt – and in many cases are already being felt – throughout the country. Therefore, FWS must achieve consistent and thorough climate change planning for all refuges. This will facilitate the transition from strategy to action, and provide the regions and individual refuges with tools and guidance to assess vulnerability of their species and habitats, and to take bold steps to adapt to the changes ahead.

Climate Change Scoring for the Most Recent Comprehensive Conservation Plan in Each FWS Region

		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8
Background <i>(2 possible)</i>	Planning for Changing Conditions (1)	ü	ü	0	ü	0	0	ü	0
	Legal and Policy Considerations of Climate Change (1)	0	ü	ü	ü	0	0	0	ü
Assessment <i>(9 possible)</i>	Historic Climate Conditions (1)	ü	ü	ü	ü	ü	ü	ü	ü
	Current and Future Climate Conditions (2)	üü	ü	üü	üü	üü	ü	üü	üü
	Impacts on Refuge Habitats (3)	üüü	0	üü	üüü	üüü	üü	üüü	ü
	Impacts on Refuge Species (3)	üüü	0	ü	üü	üü	ü	üü	ü
Actions <i>(7 possible)</i>	Protecting Refuge Habitats (3)	üü	üü	üü	üüü	üü	üü	üü	ü
	Protecting Refuge Species (3)	üü	üü	ü	üüü	üü	ü	ü	ü
	Outreach and Education (1)	0	0	0	ü	0	0	0.5*	ü
Monitoring, Research, Adaptive Management <i>(4 possible)</i>	Monitoring (2)	ü	ü	ü	üü	ü	ü	üü	üü
	Research (1)	ü	0	0	ü	0	0	ü	ü
	Adaptive Management (1)	0	0	ü	0	0	0	0	0
Total Percent Score <i>(of 22 possible)</i>		73%	41%	55%	91%	59%	41%	70%	55%

**Didn't mention climate change directly, but referred to all management programs.*

Region 1	Protection Island and San Juan Islands	Washington	September 2010
Region 2	Aransas	Texas	September 2010
Region 3	Crane Meadows	Minnesota	August 2010
Region 4	J.N. Ding Darling	Florida	September 2010
Region 5	Canaan Valley	West Virginia	February 2011
Region 6	Red Rock Lakes	Montana	June 2009
Region 7	Kenai	Alaska	June 2010
Region 8	Ellicott Slough	California	September 2010

CCP GRADING CRITERIA

BACKGROUND (Total 2 points possible)

Planning for Changing Conditions (1 point):

- _____ The CCP does not mention climate change in the vision statement or in the section on “Purpose and Need for the Plan,” nor does it mention managing the refuge in a dynamic or changing environment. (0 points)
- _____ The CCP mentions climate change, either explicitly or indirectly (e.g., any mention made of managing the refuge in a dynamic or changing environment), in the vision statement or in the section on “Purpose and Need for the Plan.” (1 point)

Legal and Policy Considerations of Climate Change (1 point):

- _____ The CCP does not mention Secretarial Order 3289 or 3226. (0 points)
- _____ The CCP mentions Secretarial Order 3289 or 3226. (1 point)

ASSESSMENT (Total 9 points possible)

Historic Climate Conditions (1 point):

- _____ The CCP does not describe the refuge’s historic climate conditions and trends, based on data from local weather stations and other information. (0 points)
- _____ The CCP describes the refuge’s historic climate conditions and trends, based on data from local weather stations and other information. (1 point)

Current and Future Climate Conditions (2 points):

- _____ The CCP does not mention climate change, either explicitly or indirectly (e.g., any mention made of recent extreme events), as a current or future problem impacting the refuge. (0 points)
- _____ The CCP mentions recent extreme events and/or that climate change impacts are already being felt or are expected; it does not contain detailed references to downscaled climate projections for the region. (1 point)
- _____ The CCP contains detailed references to downscaled climate projections for the region. (2 points)

Impacts on Refuge Habitats (3 points):

- _____ The CCP does not mention any impacts of climate change on refuge habitats. (0 points)
- _____ The CCP includes a general description of the impacts of climate change on refuge habitats. (1 point)
- _____ The CCP includes detailed projections/assessments of climate change impacts for at least one, and up to half, of the refuge’s major habitat types, or scientifically justified assessments that such habitats are not expected to be vulnerable to climate change. (2 points)

_____ The CCP includes detailed projections/assessments of climate change impacts for more than half of the refuge's major habitat types, or scientifically justified assessments that such habitats are not expected to be vulnerable to climate change. (3 points)

Impacts on Refuge Species (3 points):

_____ The CCP does not mention any impacts of climate change on refuge species. (0 points)

_____ The CCP includes a general description of the impacts of climate change on refuge species. (1 point)

_____ The CCP includes detailed projections/assessments of climate change impacts for at least one, and up to half, of the refuge's major wildlife species or groups, or scientifically justified assessments that such species are not expected to be vulnerable to climate change. (2 points)

_____ The CCP includes detailed projections/assessments of climate change impacts for more than half of the refuge's major wildlife species or groups, or scientifically justified assessments that such species are not expected to be vulnerable to climate change. (3 points)

ACTIONS (Total 7 points possible)

Protecting Refuge Habitats (3 points):

_____ The CCP does not mention any actions to protect refuge habitats from climate change. (0 points)

_____ The CCP includes general language on taking action to protect habitats from climate change impacts; this may include incorporation of climate change effects (directly or indirectly) into the discussion of other threats (such as invasive species, disease, etc.). (1 point)

_____ The CCP includes specific management goals/objectives/strategies, based on climate change impact projections, to protect at least one, and up to half, of the refuge's major habitats identified as vulnerable to climate change. (2 points)

_____ The CCP includes specific management goals/objectives/strategies, based on climate change impact projections, for more than half of the refuge's major habitats identified as vulnerable to climate change. (3 points)

Protecting Refuge Species (3 points):

_____ The CCP does not mention any actions to protect refuge species or groups of species from climate change. (0 points)

_____ The CCP includes general language on taking action to protect species or groups of species from climate change impacts; this may include incorporation of climate change effects (directly or indirectly) into the discussion of other threats (such as invasive species, disease, etc.). (1 point)

_____ The CCP includes specific management goals/objectives/strategies, based on climate change impact projections, to protect at least one, and up to half, of the refuge's major wildlife species or groups identified as vulnerable to climate change. (2 points)

_____ The CCP includes specific management goals/objectives/strategies, based on climate change impact projections, for more than half of the refuge's major wildlife species or groups identified as vulnerable to climate change. (3 points)

Outreach and Education (1 point):

_____ The CCP does not mention any actions to incorporate climate change into refuge education and outreach efforts. (0 points)

_____ The CCP includes one or more actions to incorporate climate change into refuge education and outreach efforts. (1 point)

MONITORING/RESEARCH/ADAPTIVE MANAGEMENT (Total 4 points possible)

Monitoring (2 points):

_____ The CCP does not mention any actions to monitor climate variables. (0 points)

_____ The CCP includes actions to monitor climate variables or climate-relevant information (temperature, precipitation, and ecological variables associated with climate change) OR actions to monitor ecological systems that might be affected by changes in these variables (1 point)

_____ The CCP includes actions to monitor climate variables or climate-relevant information (temperature, precipitation, and ecological variables associated with climate change) AND actions to monitor ecological systems that might be affected by changes in these variables. (2 points)

Research (1 point):

_____ The CCP does not mention a research plan to answer targeted research questions related to climate change. (0 points)

_____ The CCP lays out a research plan or describes partnerships with external entities to answer targeted research questions related to climate change. (1 point)

Adaptive Management (1 point):

_____ The CCP does not mention adaptive management or includes only pro forma language. (0 points)

_____ The CCP includes a detailed plan to advance adaptive management that incorporates climate change information (must go beyond a pro forma paragraph). (1 point)