



Sporting Conservation Council
A Federal Advisory Committee

9828 North 31st Avenue
Phoenix, Arizona 85051-2517



June 6, 2008

Dear Policy Workshop Participant:

You have been invited by CEQ Chairman Jim Connaughton to participate in a Policy Workshop on Monday, June 16, 2008, from 9 am – 5 pm and on Tuesday, June 17, 2008, from 9 am – 12 noon, at the Capitol Hill Liaison Hotel Ballroom (415 New Jersey Avenue, NW), to discuss implementation of Presidential Executive Order 13443: *Facilitation of Hunting Heritage and Wildlife Conservation*. (EO) The EO calls for the Federal Government to consult with the Sporting Conservation Council, a USDO/USDA federally chartered advisory committee, state and tribal partners, and the public to “facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.”

Enclosed is a set of draft White Papers developed from an April, 2008 Technical Workshop in Denver during which subgroups, chaired by Sporting Conservation Council members and composed of scientists and experts, met and deliberated on the topics represented in the White Papers. This material will assist you in the Policy Workshop discussions on the development of the comprehensive ten year Recreational Hunting and Wildlife Conservation Plan called for in the EO.

Sincerely,

Phyllis "Twinkle" Seitts
Federal Designated Officer

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NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION

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EXECUTIVE SUMMARY

AUTHOR: Shane Mahoney

The wildlife abundance of America today is often taken for granted. Citizens of the United States have come to expect wildlife diversity as part of their cultural experience and remain largely uninformed of the heroic efforts that led to this priceless wild legacy and the complex infrastructure that ensures its continued presence in our lives. In the absence of such understanding an impression has taken hold that wildlife exists free of human endeavour, or that only in the absence of human influence can wildlife thrive. Much is threatened by this lack of understanding, not only wildlife diversity and abundance but also our cherished tradition of open access to it. This threat goes beyond the borders of the United States and is clearly a continental problem involving the citizens of Canada as well.

The discovery of the New World by European man was one of the great dramas of human history and its opening acts were sanguineous and severe. The new conqueror-citizens saw wildlife as theirs by right of might, and natural limits amounted to imaginations, nothing more. With incredible speed a surge of exploitation laid waste the wildlife capital of North America. While this debauchery outstripped the survival capacity of numerous species, its perverse scale was to some extent ultimately responsible for the emergence of a more enlightened view. In particular the grotesque but well publicized slaughter of the bison helped ferment a notional view that there were limits to America's wild abundance and launched a collective sense of stewardship towards wild animals and the lands they depended upon.

Initially slow to take root, this movement was led in both the United States and Canada by a rising class of hunters committed to the sustainable use of wildlife for personal rather than market purposes, democratic access to nature, and a European standard of fair chase in hunting that could only be viewed in hindsight as the first North American conservation ethic. This recognition of resource crisis would help amalgamate a revised sense of nationhood, in both countries. The revisionist view saw the citizen-conqueror replaced by the citizen-steward, a champion for rational exploitation, and preservation even, when necessary.

Thus was launched one of the great North American inventions; namely, a citizen activism for nature based principally upon a sustainable use mantra and freighted primarily by a vested interest motivation. While unrestrained commercial slaughter was the juggernaut endangering North America's wildlife, regulated hunting became the founding influence and remains the spinal cord of the world's longest standing movement for wildlife protection, use and enhancement. This social and political movement eventually coalesced into a systematic arrangement of conventions, policies and laws that we recognize today as the *North American Model of Wildlife Conservation*.

Since its emergence this *Model* has been remarkably successful not only in restoring and safeguarding wildlife populations, but also in developing the highly complex infrastructure that is essential for wildlife conservation and sustainable use. To suggest that without this ongoing effort wildlife can be protected, is nothing more than a mythical proposition. Wildlife does not exist by accident. Nevertheless, many social, economic and political factors have the potential to undermine the foundations upon which wildlife conservation in North America is based. To protect our shared wildlife legacy and ensure the democratic access that lies at the heart of its public support we must remain informed of both what we have and what we stand to lose. To do so, we must, as citizens, understand the *North American Model*. Its principles, threats and challenges are our collective responsibility.

SEVEN CORE PRINCIPLES OF THE NORTH AMERICAN MODEL: The model's two basic tenets – that harvest of our fish and wildlife are reserved for the non-commercial use of individual hunters and anglers, and are to be managed in such a way that their populations will be sustained at optimal levels forever—are elaborated by seven concise stipulations first articulated in the mid-to-late 1800s. Refined and modified over time, these pillars of the North American Wildlife Conservation Model may best be remembered as the Seven Sisters for Conservation as follows:

Public Trust Doctrine: Since Roman times ownership of wildlife has been the subject of legal debate. A 1842 U. S. Supreme Court opinion established the legal precedent that it was the government's responsibility to hold wild nature in trust for all citizens. The next three "sisters" reflect this fundamental doctrine.

Democratic Rule of Law: Wildlife is allocated for use by its citizens through laws. This safeguards against the rise of special elites who would appropriate wildlife to themselves (as was the situation in Europe). All citizens can participate, if necessary through the courts, in developing systems of wildlife conservation and use.

Opportunity for All: In Canada and the United States, every man and woman has an equal opportunity under the law to participate in hunting and fishing. No one group, hunters or non-hunters, have had the opportunity to exclude others from access to game.

Commercial Use: Hunters and anglers led the effort to eliminating markets and commercial traffic in dead animal parts which was a huge business in the latter half of the 1800's and early 1900's.

Legitimate Use: Although laws could govern access to wildlife and ensure that all citizens had a say in its protection, there has to be guidelines as to appropriate use. This is defined as killing for food and fur, self-defense and property protection, categories that are broadly interpreted.

Science and Wildlife Policy: Interest in science and natural history was deeply ingrained in North American society, a fact reflected in the emphasis placed on recording wildlife habits and diversity by almost every major expedition charged with mapping the continent. Hunters and anglers are by habit and inclination, naturalists. Science is identified as a crucial requirement of wildlife management. Aldo Leopold in his 1930 American Game Policy credited Teddy Roosevelt with this, explicitly stating that science should be the underpinning of wildlife policies.

International Wildlife Migratory Resources: The boundaries of states and nations are of little relevance to wildlife and fish, and policies and laws for wildlife conservation have to address this reality. The Migratory Bird Protection Act of 1918 is an excellent example of successful international cooperation.

GOALS:

Public Trust Doctrine

- ***The public must understand and value the Doctrine:*** The public must understand that wildlife, regardless of whose property they are on, belongs to them, with the government acting as trustee. The government as trustee must be able to be held accountable for the trust. The Doctrine must be in broad enough terms to allow inclusion of resources considered of value to the public, regardless of values held in the past.

- ***Strengthen the legal foundations:*** Constitutions, laws, and administrative rules that govern the use of fish and wildlife should be explicit in defining these resources as property of the State, conserved and utilized to benefit present and future generations.

Democratic Rule of Law

- ***Develop a better decision-making process:*** Develop a decision-making process that is cooperative, open and constructive, and that maintains the principles and enhances the discharge of the public trust. This process will lead to decisions that are sustainable and uphold traditional uses and wildlife access enshrined through the public trust.

Opportunity for All

- ***Ensure Equal Opportunity to Becoming a Hunter:*** Making sure that all citizens have the opportunity to become hunters, and retaining and enhancing the popular support of hunting among the non-hunting public are fundamental to North American wildlife conservation.
- ***Ensure Fair and Equal Access to Hunting Opportunity:*** We must ensure all hunters have equal lawful opportunity to participate in this tradition and we must ensure and work to promote hunter access to wildlife resources on public and private lands, without respect to income or group-affiliation.
- ***Recognize the Societal Value of Fair-Chase Hunting:*** While the conservation impact of fair-chase hunting extends benefits to all members of society, it is also true that for hunting participants the experience leads to a strong commitment for not only sustainable wildlife use, but also wildlife conservation, in general. This commitment to wildlife conservation arises from the unique spiritual connection to the land and the rhythms of nature that emerge most intensely in the act of hunting.

Commercial use

- ***Ensure Wildlife Remains Wild:*** Wildlife must remain a resource managed by State wildlife agencies, and federal agencies where appropriate, in congruence with the Public Trust Doctrine.
- ***Ensure Wildlife in Captivity is not mixed with Domestic Livestock and not Classified as an Agricultural Commodity:*** While ensuring that wildlife, either free-ranging or captive, remains in the domain of State wildlife management agencies, it is also imperative that wildlife species and domestic livestock are not mixed in captivity. This is not only to ensure the health of wildlife populations but also to safeguard public health.
- ***Ensure Management Agencies and the Public Understand the Dangers the Commercial Use of Dead Wildlife Presents to Conservation Efforts:*** It is imperative that agencies charged with the responsibility of managing wildlife understand and

communicate the historical arguments for and continued relevance of the principles against commercialization enshrined in the North American Model.

Legitimate Use

- ***Rearticulate What Constitutes Legitimate Use of Wildlife:*** The broad understanding of the legitimate uses of wildlife should be re-enforced through broad public dialogue led by the hunting and trapping community.
- ***Promote the Conservation Value of all Wildlife:*** In addition to developing clear definitions of legitimate use, this dialogue must recognize the conservation value of all wildlife species and also recognize that non-consumptive uses of wildlife are also legitimate.

Science and Wildlife Policy

- ***Strengthen Science-based Decision-making:*** Wildlife policy development should be informed by appropriate scientific investigation. To be effective relevant science must be utilized and integrated in the decision-making process. Furthermore, science must be represented accurately and not modified to suit preconceived positions.
- ***Maintain Adequately Funded Wildlife Science Programs:*** Effective science is a continuous process, the need for which is not necessarily determined by the abundance of a species. Long-term commitments to science are essential to enable adaptive management approaches and require stable, enduring funding commitments.
- ***Ensure Stakeholder Involvement in the Decision-making Process:*** Broader societal input must be incorporated in the science base of the decision-making process. This should be approached with no less rigor than the ecological aspects. Public input and participation should be structured and strategic to best inform policy development.
- ***Ensure Human Dimensions Studies are Available and Integrated in the Science Base:*** Scientific understanding of the social context should be considered significant to effective decision-making, just like empirical ecological research. Furthermore, social concerns should help inform and establish science priorities.

International Migratory Wildlife Resources

- ***Ensure Continuing Support for Coordinated International Management Approaches:*** Migratory species management is currently served by a highly complex array of policies, programs, specialist working groups and funding mechanisms all of which are deployed to ensure conservation and sustainable use of these species. Ensuring that these coordinated efforts remain in place and are appropriately supported by the relevant political jurisdictions will require constant effort and attention.

- ***Apply Lessons from International Collaboration to Safeguard Wildlife Conservation in North America:*** While migratory species were effectively addressed in the early years of the North American Model's formulation, a diverse group of other species has ranges that encompass habitats in more than one country. For such trans-boundary species, and indeed for other special wildlife conservation challenges, the lessons learned in the cooperative arrangements deployed for migratory species should prove highly relevant and worthy of extension.

OVERARCHING SOLUTIONS:

- 1) Develop ways and means to effectively create and distribute appropriate informative materials on the North American Model / Public Trust Doctrine for dissemination to a wide target audience, including the general public, academic programs and State and federal agencies.
- 2) Encourage the creation of landowner incentive programs to maintain and increase habitat, and to ensure public access for hunting opportunity.
- 3) Develop mechanisms that have two simultaneous objectives: a) to more effectively communicate the rationale, results and recommendations of science to the general public; and b) to ensure that stakeholder perspectives are used in conjunction with science.
- 4) Improve communication to and participation by the public in decision-making processes that impact wildlife management.
- 5) Pass legislation giving the State fish and wildlife agency (commission) the exclusive authority to regulate the time, manner and place of the take of wildlife.
- 6) In addition to communication the practical applications of hunting as a management tool, we must develop ways and means to effectively create and implement outreach efforts that convey to the public the deeper philosophical, emotional and spiritual aspects of hunting and the influence these forces have on developing a conservation ethic and commitment.
- 7) Distribute model legislation to guide implementation of laws and regulations that ensure wildlife species, whether free-ranging or in captivity, remain the jurisdiction and responsibility of State, and where appropriate federal, fish and wildlife management agencies.
- 8) Implement a review of impediments to hunt internationally, such as prohibitive firearm or importation laws that would serve to undermine the incentive for cooperating countries to contribute to shared wildlife management programs and recommend solutions to minimize or eliminate the impediments.
- 9) Develop initiatives for the management of trans-boundary, or other wildlife populations of special concern, that reflect the effective characteristics of existing programs for the conservation of migratory species.

PUBLIC TRUST DOCTRINE

TITLE: The Public Trust Doctrine as a Core Element of the North American Model of Wildlife Conservation

AUTHOR: Gordon Batcheller

PROBLEM SUMMARY: The keystone pillar of the North American Model of Wildlife Conservation is that wildlife is managed as public trust resources. However the public is generally unaware of the historical foundations and ongoing relevance of the public trust doctrine. Furthermore, the legal framework around the public trust doctrine is neither comprehensive enough nor definitive enough with the respect to wildlife uses and the habitats upon which they depend that we seek to protect. In the absence of this clarity, the challenges of privatization of wildlife and the movements against consumptive use cannot be effectively addressed.

GOALS:

The public must understand and value the Doctrine. The public must understand that wildlife, regardless of whose property they are on, belongs to them, with the government acting as trustee. The government as trustee must be able to be held accountable for the trust. The Doctrine must be in broad enough terms to allow inclusion of resources considered of value to the public, regardless of values held in the past.

Strengthen the legal foundation. Constitutions, laws, and administrative rules that govern the use of fish and wildlife should be explicit in defining these resources as property of the State, conserved and utilized to benefit present and future generations.

CHALLENGES:

Privatization of Wildlife

There is an increasing trend by private interests to control wildlife for personal profit. Typically, access is controlled through land ownership (featuring “high fences” in many cases) and restriction of users through leasing of rights or pay-per-use. Ultimately, competition fosters efforts to control the number and quality of wild animals inhabiting the land. Consequences of such demands include the elimination of predators, less biological diversity, loss of “democracy of sport”, and the erosion of the wildlife profession. The use of science in wildlife management and policy is predicated upon the public valuing the services of wildlife biologists to ensure the public trust is maintained. In private hands, science, when applied, is focused on profit. Some trust resources may become expendable to maximize others.

Game Ranching. Closely related to privatization of wildlife, game ranching systematically destroys the legislative framework that has been effective in conserving wildlife - elimination of markets, allocation by law, the democracy of hunting. It is most dangerous in the disease implications it presents to wildlife and humans. Additionally, it has potential to destroy the

genetic integrity of wildlife through assured escapes and the genetic manipulation of captive wildlife.

Unsustainable Land-Use Practices. The United States human population is projected to increase to nearly 400 million by the year 2050 from its 2000 census figure of about 281 million. Our current trends in human impacts on the land pose the greatest long-term threats to wildlife. Unless a major change in social values and corresponding political ideology occurs, our conservation triumphs on behalf of our trust resources will dwindle away.

Animal Rights. North American wildlife conservation programs have largely adhered to three fundamental principles regarding use of wildlife: (1) The use does not threaten or endanger the species, (2) the techniques used to kill animals are fair and acceptable to society, and (3) the use serves a legitimate purpose. These principles are grounded in the concept of wildlife as public trust resources that must be perpetuated for the benefit of present and future generations. However, this runs afoul of the animal rights doctrine that use be restricted only to non-sentient beings. Policies that would eliminate human uses of wildlife would destroy wildlife's value as public trust resources.

CONSEQUENCES OF INACTION: Assertion of trusteeship over wildlife as public resources occurred in North America during a time when the stakeholder base was narrower than it is today. Primary stakeholders were consumptive users and agricultural interests. Contemporary society has a base of stakeholders with more diverse interests, ranging from people whose interests are tangential and appreciative of the existence of wildlife, to those who want to avoid interactions with wildlife altogether. Moreover, the "digitization" of American youth and the concomitant loss of outdoor experience and values will mean that future generations will value wildlife and natural resources even less so than today. Other initiatives are addressing this problem, but to ensure that future wildlife conservation policy makers have the tools they need to conserve wildlife, the Public Trust Doctrine must be strengthened. Absent this, the North American Model of Wildlife Conservation is not sustainable, and we will fail future generations.

OPPORTUNITIES (policy/solutions)

- 1) Encourage the creation of landowner incentive programs to maintain and increase habitat and to ensure public access for hunting opportunity.
- 2) Pass legislation giving the State fish and wildlife agency (commission) the exclusive authority to regulate the time, manner and place of the take of wildlife.
- 3) Implement a review of impediments to hunt internationally, such as prohibitive firearm or importation laws that would serve to undermine the incentive for cooperating countries to contribute to shared wildlife management programs and recommend solutions to minimize or eliminate the impediments.

DEMOCRATIC RULE OF LAW

TITLE: Democratic Rule of Law: Access to and use of wildlife is best managed through laws and regulations that reflect inclusive citizen engagement as implied by the public trust.

AUTHOR: M. Carol Bambery

PROBLEM SUMMARY: The imposition of values that exclude traditional uses of wildlife resources through access to the courts and ballot measures not only exclude a specific use, but undercut the principles and discharge of the Public Trust, and therefore put at risk the public's trust in government stewardship of wildlife resources.

GOAL:

Develop a better decision-making process. Develop a decision-making process that is cooperative, open and constructive, and that maintains the principles and enhances the discharge of the public trust. This process will lead to decisions that are sustainable and uphold traditional uses and wildlife access enshrined through the public trust.

CHALLENGES:

Public perceptions about the mindset of government wildlife managers. Public perceptions about the mind set of government wildlife managers contribute to irreconcilable differences, often leading to judicial intervention. There are groups and segments of the population that do not trust government agencies to make any decision. Sometimes this distrust is based on perceptions that all government wildlife managers cater to the hunter. Some people believe that government wildlife managers are losing (or have lost) their connection to the hunter, and that regulations are created simply to make it more difficult, if not impossible, to hunt.

CONSEQUENCES OF INACTION: Decisions based on sound science should promote maintenance of healthy wildlife populations and habitats. Conversely, decisions based on politics, emotion, and special interests may not serve the resource and often results in loss of recreational opportunity. One example is the consequences of not hunting whitetail deer where overpopulations cause starvation, stress to the animals, and damage to personal and public property. A more complex example is dove hunting, where science may support recreational hunting, and social or emotional forces are opposed, and hunting is not needed to maintain sustainable populations.

OPPORTUNITIES (policy/solutions):

- 1) Develop mechanisms that have two simultaneous objectives: a) to more effectively communicate the rationale, results and recommendations of science to the general public; and b) to ensure that stakeholder perspectives are used in conjunction with science.
- 2) Improve communication to and participation by the public in decision-making processes that impact wildlife management.

OPPORTUNITY FOR ALL

TITLE: The Democracy of Hunting: Opportunity for All

AUTHOR: John McDonald

PROBLEM SUMMARY: Because hunting in North America has not been reserved or perceived as a privilege of the wealthy or well-connected, it has enjoyed widespread popular support. However, pressures have arisen on several fronts that serve to undermine the democracy of hunting by restricting movements of wildlife across the landscape, selling rights to wildlife to the highest bidder and other related obstacles to equal access, including restrictive firearms laws or regulations.

GOALS:

Ensure Equal Opportunity to Becoming a Hunter. Making sure that all citizens have the opportunity to become hunters, and retaining and enhancing the popular support of hunting among the non-hunting public are fundamental to North American wildlife conservation.

Ensure Fair and Equal Access to Hunting Opportunity. We must ensure all hunters have equal lawful opportunity to participate in this tradition and we must ensure and work to promote hunter access to wildlife resources on public and private lands, without respect to income or group-affiliation.

Recognize the Societal Value of Fair-Chase Hunting. While the conservation impact of fair-chase hunting extends benefits to all members of society, it is also true that for hunting participants the experience leads to a strong commitment for not only sustainable wildlife use, but also wildlife conservation, in general. This commitment to wildlife conservation arises from the unique spiritual connection to the land and the rhythms of nature that emerge most intensely in the act of hunting.

CHALLENGES:

Some of our current practices limit hunting opportunity. Privatization of wildlife through legal or illegal means, including fencing, feeding, and water provision that impede or discourage the free and natural movement of wildlife on the landscape limit hunting opportunity. The leasing of hunting rights to individuals or organized groups result in limited access to private lands for local, resident hunters. Some hunters are unable to access public lands because access points are controlled by private landowners. Anti-hunting and restrictive firearm laws contribute to limiting hunting opportunity as does set-aside or reserved permits for outfitters or landowners.

CONSEQUENCES OF INACTION: Actions that serve to create an inequitable, tiered, or class-conscious structure to hunting opportunity will serve to undermine the stability of the wildlife commons. Real or perceived inequities in opportunities to access game populations lead to resentment among those hunters who feel excluded and serves to skew the historic alignment of

interests among hunters. Such inequities will also reduce the acceptance non-hunters have of hunting. Practices such as fee-hunting within fenced enclosures or on preserves, exclusive leasing of private lands (as opposed to charging of an access fee open to all willing payers), guaranteed hunts for exotic species, and trophy-focused marketing serve to lessen the historic perception of hunting as a “real” activity requiring skill and patience and create the perception that hunting is an artificial “experience” that can be bought like an amusement park ride. If hunting opportunities are based on the ability to pay not for licenses but exclusive membership fees in private clubs, people who cannot or will not pay will cease to be hunters, may become poachers, and very likely, cease to be advocates for wildlife management.

OPPORTUNITIES (policy/solutions)

- 1) Develop ways and means to effectively create and distribute appropriate informative materials on the North American Model / Public Trust Doctrine for dissemination to a wide target audience, including the general public, academic programs and State and federal agencies
- 2) Encourage the creation of landowner incentive programs to maintain and increase habitat, and to ensure public access for hunting opportunity.
- 3) In addition to communication the practical applications of hunting as a management tool, we must develop ways and means to effectively create and implement outreach efforts that convey to the public the deeper philosophical, emotional and spiritual aspects of hunting and the influence these forces have on developing a conservation ethic and commitment.
- 4) Distribute model legislation to guide implementation of laws and regulations that ensure wildlife species, whether free-ranging or in captivity, remain the jurisdiction and responsibility of State, and where appropriate federal, fish and wildlife management agencies.

COMMERCIAL USE

TITLE: Prohibitions on Commercial Uses Deleterious to Wildlife Conservation.

AUTHOR: Val Geist

PROBLEM SUMMARY: Historically, wide-scale commercial slaughter and marketing of wildlife led to severe depletions, and in some cases extinction, of a range of wildlife species. Commerce in dead wildlife destroys proven conservation principles, increases policing costs to the public, fosters genetic pollution and the spread of diseases to wildlife populations and livestock, and threatening public health. It also leads to loss of wildlife habitats and public lands, as well as loss of Public Trust rights and freedoms.

GOALS:

Ensure Wildlife Remains Wild: Wildlife must remain a resource managed by State wildlife agencies, and federal agencies where appropriate, in congruence with the Public Trust Doctrine.

Ensure Wildlife in Captivity is not mixed with Domestic Livestock and not Classified as an Agricultural Commodity. While ensuring that wildlife, either free-ranging or captive, remains in the domain of State wildlife management agencies, it is also imperative that wildlife species and domestic livestock are not mixed in captivity. This is not only to ensure the health of wildlife populations but also to safeguard public health.

Ensure Management Agencies and the Public Understand the Dangers the Commercial Use of Dead Wildlife Presents to Conservation Efforts. It is imperative that agencies charged with the responsibility of managing wildlife understand and communicate the historical arguments for and continued relevance of the principles against commercialization enshrined in the North American Model.

CHALLENGES:

Mixed governmental agency jurisdiction oversight of captive wildlife. There are policies in place by agricultural agencies supporting the domestication of wildlife and consumption of wildlife products which need to be exposed to evaluation, discussion and political action.

A market in hunt farms promotes commerce and possible spread of disease. There is currently a market in breeding and exporting trophy animals to “hunt farms” which serve as an impediment to a broad public acceptance of hunting, especially when coupled with an inadequate body of science pertaining to wildlife disease and parasites.

Other threats to wildlife conservation: Large markets in exotic wildlife and deeply held ethnic beliefs in the healing properties of dead wildlife stimulating illegal wildlife markets.

CONSEQUENCES OF INACTION: Failure to maintain a prohibition on commerce in dead wildlife can lead to a rapid depletion of wildlife via illegal markets. Trying to police markets in dead wildlife is not only very costly, but leads to calls for severe policing practices, the abolition or severe control of firearms, and restrictions on civic liberties. Failure to deal with markets in wildlife can lead to the spread of diseases to livestock and humans and back again into unaffected wildlife populations.

OPPORTUNITIES (policy/solutions)

- 1) Develop ways and means to effectively create and distribute appropriate informative materials on the North American Model / Public Trust Doctrine for dissemination to a wide target audience, including the general public, academic programs and State and federal agencies
- 2) Pass legislation giving the State fish and wildlife agency (commission) the exclusive authority to regulate the time, manner and place of the take of wildlife.
- 3) Distribute model legislation to guide implementation of laws and regulations that ensure wildlife species, whether free-ranging or in captivity, remain the jurisdiction and responsibility of State, and where appropriate federal, fish and wildlife management agencies.

LEGITIMATE USE

TITLE: Ensure Wildlife is Used for a Legitimate Purpose

AUTHOR: Ron Regan

PROBLEM SUMMARY: While the traditional understanding of legitimate wildlife use has included fur, food, self-defense, and the protection of property, there are contemporary perspectives that would imply otherwise. While historically, frivolous killing of wildlife threatened the sustainability of many species, regulated hunting and trapping today pose no threat to species sustainability and are legitimate uses of wildlife. How to maintain public acceptance of regulated hunting as a legitimate use of wildlife is a crucial question. This not only relates to the future of hunting, but also to the continued participation of hunters in the conservation of wildlife.

GOALS:

Articulate What Constitutes Legitimate Use of Wildlife. The broad understanding of the legitimate uses of wildlife should be re-enforced through broad public dialogue led by the hunting and trapping community.

Promote the Conservation Value of all Wildlife. In addition to developing clear definitions of legitimate use, this dialogue must recognize the conservation value of all wildlife species and also recognize that non-consumptive uses of wildlife are also legitimate.

CHALLENGES:

Hunters and non-hunter need to see themselves and each other as stewards of wildlife.

Public support for hunting is most likely to prevail when the public sees the hunter in the best possible light – as a steward and conservationist in the fullest sense of the terms. To the extent that hunters deviate from that heritage, one could expect the concomitant appreciation of hunting by the general public to diminish.

CONSEQUENCES OF INACTION: The hunter may be branded as one that does not care about the natural world and about all wildlife, especially before a non-hunting public.

OPPORTUNITIES (policy/solutions)

- 1) Develop ways and means to effectively create and distribute appropriate informative materials on the North American Model / Public Trust Doctrine for dissemination to a wide target audience, including the general public, academic programs and State and federal agencies.
- 2) Improve communication to and participation by the public in decision-making processes that impact wildlife management.

3) Pass legislation giving the State fish and wildlife agency (commission) the exclusive authority to regulate the time, manner and place of the take of wildlife.

4) In addition to communication the practical applications of hunting as a management tool, we must develop ways and means to effectively create and implement outreach efforts that convey to the public the deeper philosophical, emotional and spiritual aspects of hunting and the influence these forces have on developing a conservation ethic and commitment.

5) Distribute model legislation to guide implementation of laws and regulations that ensure wildlife species, whether free-ranging or in captivity, remain the jurisdiction and responsibility of State, and where appropriate federal, fish and wildlife management agencies.

SCIENCE AND WILDLIFE POLICY

TITLE: Science is the primary basis for wildlife policy

AUTHOR: John Organ

PROBLEM SUMMARY: Investment in and integration of both ecological and social science by management agencies is inadequate for making many wildlife policy decisions at the landscape level. In addition, the politicization of wildlife management decisions can result in policies that alienate hunter and other stakeholders, and cause non-hunters to question the claim of “science informed management.” Also, ballot measures have resulted in mandates that, in many cases, are contrary to the prevailing science.

GOALS:

Strengthen Science-based Decision-making. Wildlife policy development should be informed by appropriate scientific investigation. To be effective relevant science must be utilized and integrated in the decision-making process. Furthermore, science must be represented accurately and not modified to suit preconceived positions.

Maintain Adequately Funded Wildlife Science Program.: Effective science is a continuous process, the need for which is not necessarily determined by the abundance of a species. Long-term commitments to science are essential to enable adaptive management approaches and require stable, enduring funding commitments.

Ensure Stakeholder Involvement in the Decision-making Process. Broader societal input must be incorporated in the science base of the decision-making process. This should be approached with no less rigor than the ecological aspects. Public input and participation should be structured and strategic to best inform policy development.

Ensure Human Dimensions Studies are Available and Integrated in the Science Base. Scientific understanding of the social context should be considered significant to effective decision-making,

just like empirical ecological research. Furthermore, social concerns should help inform and establish science priorities.

CHALLENGES:

Challenges within the governmental agencies that manage wildlife populations.

Inadequate funding and prioritization of science within wildlife management agencies; lack of social science expertise within wildlife management agencies, and inadequate integration of biological and social science are all challenges for wildlife managers. Public mistrust and lack of understanding of science hinders its use as the basis for policy development. Politicization of Boards, Commissions, and superagency leadership (e.g., wildlife management agency subsumed within a larger resource management agency with political appointee as head), resulting in policies that do not reflect the greater good or public trust mandates. Lack of rigor and discipline in the process of policy/management decision making, which leads to oversimplification of decision frames, neglect of science available, overlooking needs for critical information, and inadequate anticipation of collateral and subsequent effects of policy decisions and management actions.

CONSEQUENCES OF INACTION: Wildlife management programs and directives are not sustainable. Public support for the wildlife conservation and management is lost. Overall biodiversity, including game species, declines. Wildlife management policy is increasingly dictated through direct democracy (i.e., ballot initiatives), without adequate dialogue and investigation, resulting in oversimplification and polarization of issues, and ultimately an overall devaluing of the resource and a conversion to a pest-management model. Traditional management approaches and traditional uses of wildlife, while biologically sound and socially acceptable, may decline through lack of political support.

Excessive use of resources by agencies mitigating unanticipated consequences of decisions and actions that were not thoroughly analyzed, which undermines agency credibility in future actions. The leadership role of fish and wildlife agencies in conservation is diminished.

OPPORTUNITIES (policy/solutions):

- 1) Develop mechanisms that have two simultaneous objectives: a) to more effectively communicate the rationale, results and recommendations of science to the general public; and b) to ensure that stakeholder perspectives are used in conjunction with science.
- 2) Improve communication to and participation by the public in decision-making processes that impact wildlife management.
- 3) Pass legislation giving the State fish and wildlife agency (commission) the exclusive authority to regulate the time, manner and place of the take of wildlife.

INTERNATIONAL MIGRATORY WILDLIFE RESOURCES

TITLE: Recognize and Manage International Migratory Wildlife as a Shared Resource

AUTHOR: Rollie Sparrowe

PROBLEM SUMMARY: Migratory species require coordinated management by different political jurisdictions. Globalization, changing politics, economic forces, cultural change from immigration, landscape modification and climate change all serve to make the normally complex issue of managing and conserving migratory species even more challenging. The robust and highly effective approaches to migratory species management enshrined early in the North American Model must be assiduously attended to in this changing context, but also utilized as effective models for application to other wildlife conservation challenges.

GOALS:

Ensure Continuing Support for Coordinated International Management Approaches:

Migratory species management is currently served by a highly complex array of policies, programs, specialist working groups and funding mechanisms all of which are deployed to ensure conservation and sustainable use of these species. Ensuring that these coordinated efforts remain in place and are appropriately supported by the relevant political jurisdictions will require constant effort and attention.

Work to Remove Impediments to the Continuing Efforts to Conserve, Manage and Hunt Conserve Species in North America. Even where species are migratory or trans-boundary in distribution, hunting has been at the basis of conservation and management programs, a number of which have international treaty designations.

Apply Lessons from International Collaboration to Safeguard Wildlife Conservation in North America. While migratory species were effectively addressed in the early years of the North American Model's formulation, a diverse group of other species has ranges that encompass habitats in more than one country. For such trans-boundary species, and indeed for other special wildlife conservation challenges, the lessons learned in the cooperative arrangements deployed for migratory species should prove highly relevant and worthy of extension.

CHALLENGES:

Differences in people and cultures create diverse opinions on how to manage wildlife.

Different cultural values and more diverse publics do not agree on goals for managing many species of wildlife. The proliferation of interest groups, from animal rights to energy development, does not share the main principles of the North American Model or support science-driven management through professionally-staffed agencies.

The North American Model of Wildlife Conservation has not been fully utilized.

The North American Model of user-supported wildlife conservation is not the basis for all needed conservation in North America. Wildlife issues, potential solutions, maintaining habitats, servicing diverse publics, and maintaining a balance between protection and human use of wildlife are not regularly engaged between North American countries as in the past. The solid funding mechanism of the North American Model has not been expanded to address all wildlife through contributions by all citizens.

CONSEQUENCES OF INACTION: Separate goals for shared resources combined with cultural change and values that do not support responsible human uses of wildlife can only lead to conflict. Loss of habitat to unfettered economic development will erode the wildlife restoration achievements of the past century. Failure to address issues of the globalization of human activities will leave North American wildlife vulnerable to exotic disease and invasive plants. Continued lack of regular engagement between countries on shared wildlife issues, ranging from protection to managed use, will foster distance, rather than collaborative effort. Failure to embrace conservation of all wildlife as a mutual goal and find ways for all citizens to contribute to conservation will leave countries and hunters and anglers fragmented as society evolves in complex ways.

Failing to learn from the successes of close cooperation under the North American Waterfowl Management Plan will continue insular efforts to solve wildlife problems, rather than working through collaborative strength and partnerships. Dwelling on past achievements without adaptive methods and approaches to a changing North American climate and landscape will not sustain desired traditional activities like hunting and fishing.

OPPORTUNITIES (policy/solutions):

- 1) Implement a review of impediments to hunt internationally, such as prohibitive firearm or importation laws that would serve to undermine the incentive for cooperating countries to contribute to shared wildlife management programs and recommend solutions to minimize or eliminate the impediments.
- 2) Develop initiatives for the management of trans-boundary, or other wildlife populations of special concern, that reflect the effective characteristics of existing programs for the conservation of migratory species.

CONCLUSIONS

AUTHOR: Shane Mahoney

To the broad majority of the American public the unique and improbable history of our conservation achievement remains unknown. Even most hunters remain ignorant of their own conservation legacy. Yet for more than one hundred years a recognizable protocol has been guiding the stewardship and sustainable use of North America's wildlife and at the same time safeguarding democratic access and traditional activities that are cherished signatures of our way of life. Having emerged from a milieu of overkill and waste, the *North American Conservation Model* has been responsible for a remarkable resurgence in wildlife as well as a staggering and diffuse economy that has enabled wildlife to "pay its way" across a vast and diverse continent.

Despite these achievements all is not well. Social and economic forces of great magnitude are combining with the normal challenges inherent to conservation, resulting in an organic, evolving and highly complex new political frontier that is severely testing the principles we once thought inviolable. Changing social realities not only relate to vastly increasing numbers

of people, but also include extensive recalibration of ethnic and cultural proportions that bring new and differing attitudes towards wildlife and its use. Urbanization is a relentless force full of profound implications for what we once thought was the obvious relevance of wildlife in people's lives. Globalization is changing the very fabric of life in North America, and energy, security and finance are riding hard towards an escalating and inevitable collision with some of our most cherished conservation positions and programs.

As the foregoing review of the *Model's* principles and challenges has indicated we are at a juncture in our history where the future of wildlife and how we interact with it are highly uncertain. An enormous array of factors need improved definition, and a host of policy and legal institutions require intensive review and adjustment. To further complicate these realities the financial foundations of wildlife conservation are themselves in the throes of decline while escalating landscape alterations and changing land ownership patterns are casting a deep shadow over what we once thought ingenious and lasting solutions. Commercialization and wildlife domestication, and the ills and diseases they engender, have emerged as increasingly complex and vibrant challenges, as is the demand for improved science and better decision-making frameworks.

In short, there has never been a more appropriate time for us to take stock, regroup, and recommit ourselves to wildlife and those founding traditions and values that rescued and restored it some four generations ago. This review of the *North American Wildlife Conservation Model* is more than timely; it is critical to our future. Even great things, no matter how hard won, can be easily lost. Neglect is the rust of progress. It is not surprising that educating the public about their conservation history has surfaced as one of the most critical requirements from this review. Without knowledge we cannot care, and without concern we will not act. The *Model* will not falter because of the problems it faces. As in the fading days of the bison it will rise or fall with the tide of citizen commitment.

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North American Wildlife Policy Conference

TITLE: **Federal, State, and Tribal Coordination**

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PROBLEM STATEMENT:

In light of our current knowledge of ecosystems sustainability in the face of human population growth, development, climate change and other stressors, federal, state, and tribal wildlife managers of North America believe wildlife resources of this continent can only be sustained with more effective collaboration. Wildlife conservation efforts aimed at managing populations, habitat, and people must be coordinated in order to achieve landscape-scale goals. Although it is most apparent in addressing migratory species, interstate fishery resources, and other federal trust species; the importance of coordination is also evident in the management of resident species and/or populations that cross state or state/tribal boundaries or reside on federal public land. Federal, state, and tribal land management plans and actions should be developed in concert because of the proximity of these lands to one another and because actions taken on one governmental entity's land may have an impact on wildlife and habitat occurring on the same range and/or habitat type. Although we recognize that some level of collaboration and coordination exists today and numerous federal laws authorize or require coordination (see Appendix 1), it is apparent that improvement is necessary to meet the fish and wildlife conservation challenges of tomorrow.

GOALS:

Federal and state wildlife agencies and tribal governments should coordinate and collaborate in planning, decision-making, and implementation activities to achieve maximum wildlife conservation success for the nation.

Detailed Goals:

1. Ensure that federal agencies, state agencies, and tribal governments integrate the seven principles of the North American Model of Wildlife Conservation (Geist 2006) into resource management decision-making.
2. Ensure that federal agencies, state agencies, and tribal governments regularly and routinely communicate and collaborate in resource management decision-making, planning, and implementation in order to achieve seamless implementation and integration of wildlife objectives regardless of land status.
3. Ensure that federal agencies, state agencies, and tribal governments collaborate in wildlife conservation efforts aimed at managing populations, habitat, and people, to achieve landscape scale goals. For example, establish wildlife population objectives, maintain, enhance, and reestablish migratory corridors for wildlife, and enhance human access for wildlife related recreation.

CHALLENGES:

Although some collaboration currently exists, there are challenges that must be addressed to maximize collaboration and achieve the stated goals. Some federal and state agencies and tribal governments are unaware of existing opportunities to collaborate. Even though various cooperative agreements and memoranda of understanding exist, at the field level, they often collect dust on bookshelves and in filing cabinets. Irregular and somewhat voluntary meetings occur among federal and state agencies and/or tribal governments regarding land management planning activities and wildlife population objectives. Often state agencies and tribal governments lack the capacity and knowledge of the process to fully engage in federal planning activities. Even though state agencies may become involved in federal agency planning processes in a “cooperating agency” status, not all elect this approach. Due to the sovereign status of tribes, tribal governments desire, and federal policy mandates, a “government to government” approach.

The challenges continue and occur at the federal, state, and tribal level. No one form of government is fully at fault. Federal land management agencies may not incorporate state or tribal wildlife and habitat objectives into their land management plans. State agencies and tribal governments may not have well documented population objectives for federal agencies to incorporate into their plans. Federal agencies often consider the comments of state wildlife agencies and tribal governments as just another public comment as opposed to professional judgment and recommendations from a cooperating/partnering agency with its own set of statutory authorities. States and tribes may lack the dedicated resources to contribute to the federal planning process. Even if they do become engaged, states may present conflicting input to the decision-making process due to conflicts within the state government itself. Wildlife resources agencies may provide different comments than their own Governor’s office, the state’s

Department of Agriculture, or other state agencies with resource management authority. Federal agencies are forced to try to reconcile these conflicting recommendations.

Detailed Challenges:

1. Federal land management planning decisions continue to hamper the ability of states to effectively implement wildlife management projects and to promote the North American Model of Wildlife Conservation.
2. Irregular (and somewhat voluntary) meetings occur between federal, state, and tribal wildlife managers regarding land management planning activities and setting wildlife population objectives.
3. Some state agencies do not become involved in the federal planning process in a cooperating agency status
4. Federal and state agencies and tribal governments may not have defined or reached an agreement on each other's expectations of involvement in a collaborative process.
5. Statewide wildlife management plans are not always incorporated into federal land management plans.
6. Federal land management activities that could contribute to state plans (State Wildlife, Action Plans, habitat plans, and wildlife plans) are not always identified or implemented.
7. In some cases, state agency and tribal input is received as "just another" public comment as opposed to professional judgment and recommendations from a cooperating/partnering agency with statutory authorities, and government to government consultations.
8. State agencies, representing different authorities (e.g., natural resources, agriculture, water offices, and Governors' offices), sometimes provide federal agencies with conflicting issues and comments.
9. Some state agencies and tribal governments lack wildlife population objectives (spatially referenced) to guide federal agency planning and decisions.
10. Due to lack of capacity, funding, knowledge, or the right tools, some federal, state, and tribal managers do not engage in collaborative and cooperative resource decision making and implementation opportunities.
11. Previous decisions and prior land use allocations may preclude new collaborative opportunities without the development and use of new tools and techniques.
12. Conflicting laws, policy, and regulations may preclude collaborative discussions.
13. There is a lack of knowledge and understanding of the principles and philosophy of the NA Model for Wildlife Conservation, by federal, state, and tribal employees.
14. A lack of common spatial language, incompatible data, and uncoordinated planning undermines successful regional landscape planning and conservation.
15. Working at a regional landscape scale is complicated by multiple jurisdictional authorities, funding, priorities, protection of "turf", and interdepartmental coordination.
16. Professional wildlife law enforcement is not widely recognized as an integral component of the N.A. Model.
17. An increasing lack of personal connection by agency employees and the public with the natural world hinders agency ability to successfully manage wildlife resources.

CONSEQUENCES OF INACTION:

The lack of collaborative involvement of federal and state agencies and tribal governments to address the aforementioned challenges and achieve the stated goals will lead to wasted time and

money, miscommunication, distrust, counterproductive, redundant and/or conflicting efforts; and therefore, ineffective conservation efforts at each level of government. Finite financial resources, staff, and time will not be used as effectively as possible to deliver wildlife conservation to the citizens of the nation. Given the nation's substantive and financial challenges facing wildlife conservation, the North American Model of Wildlife Conservation will be impaired and may become imperiled. However, we have the opportunity to address these challenges in the coming years. We believe that collaborative processes exist and can be enhanced to improve the coordination among federal, state, and tribal resource agencies, thereby helping to sustain the model of wildlife conservation that is the envy of the world.

OPPORTUNITIES:

Goal #1: Ensure that federal agencies, state agencies, and tribal governments integrate the seven principles of the North American Model of Wildlife Conservation into resource management decision-making.

- Federal and state agencies' and tribal governments' training for current and new employees should include a comprehensive instruction of the role that hunters and hunting has played in the development of the North American Model of Conservation.
- University wildlife professors should be encouraged to include the North American Model of Conservation within their natural resource curricula.
- Professional societies (The Wildlife Society, American Fisheries Society, Ecological Society of America, etc.) should include the North American Model of Conservation in their educational service to their members.
- In order to promote and support the North American Model of Conservation, agency directives should consider inclusion and references to the seven principles of the Model.
- Expand National Conservation Training Center courses to include active wildlife management and hunting principles.
- Continue and expand the National Conservation Leadership Institute and the Conservation Leaders for Tomorrow training programs.

Goal #2: Ensure that federal agencies, state agencies, and tribal governments regularly and routinely communicate and collaborate in resource management decision-making, planning, and implementation in order to achieve seamless implementation and integration of wildlife objectives regardless of land status.

- Require semi-annual meetings of pertinent federal and state wildlife agency and tribal government personnel to discuss upcoming planning, rules, land management activities, decisions, and opportunities to collaborate. Utilize existing structures where they exist, and supplement as necessary and include administrators, biologists, law enforcement, community outreach and educators in meetings
- Identify and enhance existing resources or develop a new multi-agency regional clearinghouse to track planning and implementation efforts ongoing by federal and state wildlife agencies and tribal governments.
- Develop a web-based, personnel contact directory for federal and state wildlife agencies and tribal government staff working on wildlife resource issues.

- Develop budget incentives for collaboration and make Cooperative Conservation recognition a real award for individuals and teams at federal, state, and tribal levels.
- Develop federal, state, and tribal collaborative strategy to demonstrate benefits to wildlife resources by fully funding the State and Federal Land and Water Conservation Fund.
- Allocate funding commensurate with the costs and personnel demands related to managing wildlife resources and mitigating impacts of resource commodity extraction.

Goal #3: Ensure that federal agencies, state agencies, and tribal governments collaborate in wildlife conservation efforts aimed at managing populations, habitat, and people, to achieve landscape scale goals. For example, establish wildlife population objectives, maintain, enhance, and reestablish migratory corridors for wildlife, and enhance human access for wildlife related recreation.

- Recognizing that scientific management is a key principal of the North American Model, Congress should provide funding to address the research and management needs related to landscape scale wildlife objectives. This should include fully funding the Cooperative Research Units, and providing funding to federal land management agencies and state fish and wildlife agencies to implement landscape scale management plans.
- Federal agencies should establish specific wildlife population and habitat goals and objectives in collaboration with tribal and state governments to enhance wildlife and habitats, with emphasis on important game species and species at risk.
- Awareness of federal, state, and tribal interdependencies makes landscape scale cooperative conservation essential; therefore, support and enhance consistent data collection and transfer to facilitate more effective landscape scale planning and management.

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APPENDIX 1: Important federal wildlife resource laws that authorize or require federal, state, and tribal coordination.

- Bald and Golden Eagle Protection Act
- Clean Water Act
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Dingell-Johnson Federal Aid in Sportfish Restoration Act
- Endangered Species Act
- Federal Land Policy and Management Act
- Federal Lands Recreational Enhancement Act
- Fish and Wildlife Conservation Act
- Fish and Wildlife Coordination Act
- Lacey Act
- Migratory Bird Treaty Act
- National Environmental Policy Act
- National Forest Management Act
- National Historic Preservation Act
- National Wildlife Refuge System Improvement Act
- North American Wetlands Conservation Act
- Pittman-Robertson Federal Aid in Wildlife Restoration Act
- Rivers and Harbors Act
- Sikes Act
- Wild and Scenic Rivers Act
- Wild Bird Conservation Act
- Wilderness Act

APPENDIX 2: Seven principles of the North American Model of Wildlife Conservation (Geist 2006):

1. **The Public Trust** - In North America, natural resources on public lands are managed by government agencies to ensure that we always have wildlife and wild places to enjoy.
2. **Prohibition on Commerce of Dead Wildlife** - Conservation laws and their strong enforcement in the United States and Canada saved wildlife from slaughter.
3. **Democratic Rule of Law** - You can help make laws to regulate hunting and fishing and conserve wildlife.
4. **Hunting Opportunity for All** - Every citizen has an opportunity, under the law, to hunt and fish in the United States and Canada.
5. **Non-frivolous Use** - In North America, we can legally kill certain wild animals under strict guidelines for food and fur, self-defense and property protection.
6. **International Resources** - Wildlife and fish migrate freely across boundaries between states, provinces and countries.
7. **Scientific Management** - The right information helps us make good decisions and become better stewards of wildlife.

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TITLE - WILDLIFE HABITAT CONSERVATION

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“To some the loss of range is neither a clear nor dramatic concept. Loss of range is homelessness. It can extirpate a species more effectively than a plague. It is no coincidence that great hunters have often been great conservationists, for it is things like these that hunters learn.” - Frances Hamerstrom

PROBLEM STATEMENT

Land and resource management projects conducted by federal agencies on federal lands can significantly affect the ability of states to attain or sustain fish and wildlife population goals – this is particularly the case in the western United States where federal lands account for a significant proportion of the land base of most states.

Habitat conservation on private lands is a key to sustaining populations of game and non-game wildlife – this is particularly the case in the eastern United States where most lands are in private ownership.

States have long been recognized as having primary responsibility for the conservation of resident fish and wildlife. Existing federal statutes (Fish and Wildlife Coordination Act, Sikes Act, National Environmental Policy Act, Federal Lands Policy and Management Act, National Wildlife Refuge System Improvement Act, etc.) require coordination between federal agencies and state fish and wildlife agencies during project planning processes and throughout project implementation. **However, wildlife habitat management activities on federal lands are often hindered by conflicting statutory and regulatory priorities that may be inconsistent with state agency wildlife population objectives. In addition, the potential impacts of proposed land management projects on federal lands commonly require that multiple federal agencies review and approve the proposed actions. In these instances, conflicting priorities within and between federal agencies combine with imperfect knowledge to complicate an assessment of the risks to wildlife of inaction versus the risks of action, which can delay or even preclude important habitat management projects.**

Landscape fragmentation through the conversion of wild lands to suburban and urban development is a leading cause of wildlife habitat loss and degraded habitat function across the United States. Between 1992 and 1997, 5 million acres of forest were converted to developed areas¹. Estimates suggest that by 2030, a significant increase in housing development could occur on an additional 44 million acres of forest in the continental United States; approximately 50% of this development is projected to occur within 10 miles of a national forest or grassland². Development in what is termed the “wildland-urban interface” will dramatically increase costs of wildfire suppression for state and federal agencies and, thereby, reduce the availability of funds for wildlife conservation. Development in this interface can also decrease active forest management on adjacent public lands, thus further degrading wildlife habitat.

Over the past decade, numerous large tracts of formerly industrial forestland have been purchased by Timber Investment Management Organizations and Real Estate Investment Trusts. These investment vehicles often have land management and economic objectives that are inconsistent with maintaining contiguous habitats for wildlife or with maintaining access for wildlife habitat management or for public hunting and other forms of recreation. These changes in ownership are driven primarily by market conditions and tax policies that create financial disincentives for maintaining working lands.

Wildlife habitat quality on millions of acres of public and private land is degraded or seriously threatened by insect infestation, disease outbreak or encroachment by invasive plants. Dead and dying trees cover vast areas of the West as a result of insect infestations and/or disease outbreaks, which place these lands at serious risk from wildfires of uncharacteristically severe intensity. The vegetative composition of many rangelands has been significantly altered by the spread of spotted knapweed and cheatgrass, seriously degrading these important wildlife habitats. Wetland and riparian habitats throughout the country are at risk from exotics, such as purple loosestrife and tamarisk, which can drastically alter their structure and function.

Numerous individual state and federal monitoring initiatives provide snapshots of landscape status and change. However, comprehensive assessments of ongoing changes to our nation’s wildlife habitats and the impacts of these changes on game wildlife populations are not available. Some existing habitat evaluation processes were developed using data collected and assumptions

derived from landscape conditions that vary significantly from today; conclusions based on these processes may no longer be valid. Adaptive management of our nation's wildlife resources on public and private lands requires the capability to adequately monitor habitat changes at spatial and temporal scales of relevance to target wildlife populations and the potential implications of these changes to these populations.

Forest Habitat Conservation

State Wildlife Action Plans, regional bird conservation plans and game bird conservation plans have documented the loss of biodiversity in the eastern United States due to declines in shrublands and young forest habitats. Reduced levels of vegetation management on US Forest Service lands throughout the east have resulted in reduced availability of young forest habitats and disturbance-dependent forest types such as aspen-birch and, to a lesser degree, oak (US Forest Service Forest Inventory and Analysis data). These habitats and forest types are important to many species of game and nongame wildlife. In February, 2007, the American Bird Conservancy identified young deciduous forest habitats in the eastern United States as one of the nation's 20 most imperiled bird habitats.

The oak forests of the eastern United States are critically important to many species of forest wildlife. Oak forest acreage in the eastern US has declined from 112 million acres in 1985, to 85 million acres in 2005, a reduction of 27 million acres (24%) (US Forest Service Forest Inventory and Analysis data). Aspen forests are common only in the Great Lakes states of Michigan, Minnesota and Wisconsin and in Maine, and are declining across all ownerships primarily as a result of declines in the utilization of even-age forest management treatments. Aspen forests provide important habitats for ruffed grouse and American woodcock throughout the Great Lakes region and the Northeast³. Both of these game species are experiencing population declines throughout much of the eastern United States^{4,5}.

Approximately 70% of the timberland in the eastern United States is in non-industrial private ownership. Birch⁶ reported that privately owned forest tracts < 100 acres in size increased from 30.4 million acres (26.7% of private forest land) in 1978 to 56.6 million acres (43.6% of private forest land) in 1994. As the size of non-industrial private forest tracts decreases, so does the likelihood of forest habitat management^{7,8}. Professional assistance can help private landowners avoid unintended, poor management, yet only 4% of private forest landowners have an established management plan prepared by a natural resource professional⁹.

Inadequate markets for small-diameter or low grade forest products can complicate landowner efforts to maintain shade-intolerant forest types and young forest habitats. The emergence of technologies to create cellulosic ethanol from forest products as a key component of the nation's energy supply represents a significant opportunity to merge biodiversity conservation and energy independence.

White-tailed deer populations exceed state agency goals in many regions of the eastern United States. Opportunities to increase hunter harvest of deer and meet population objectives can be affected by restrictions on vehicular access - either seasonal or permanent - to federal lands.

Likewise, the preclusion or strict limitation of hunter access to large tracts of private land can complicate efforts to maintain local white-tailed deer populations at desired levels.

In the West, reduced vegetation management and plant community succession have together diminished the abundance and productivity of early-successional habitats that regulate the reproductive potential of many wildlife species. The productivity of most big game populations is dependent upon habitat and forage conditions on their summer ranges, which occur primarily on federal lands. Most of these ranges are successional in that the adequacy of the forage base is dependent to a large extent on periodic disturbance, either natural or anthropogenic. Disturbance agents that can be used to manipulate wildlife habitats include fire, forest management and regulated grazing by livestock.

Historically, frequent, large-scale disturbance from fire maintained early-successional habitats in the West, but neither the periodicity nor the magnitude of historical disturbance regimes has been replicated by recent habitat management on federal lands^{10,11}. On many landscapes, forage is no longer adequate on federal lands to maintain big game populations at historic levels. To restore and maintain big game populations and their productivity, disturbance (management) must be sufficiently recurrent and widespread to replenish nutritionally adequate forage that, in the absence of periodic disturbance, would otherwise be lost as the vegetation on the landscape matures through succession. Loss of summer range productivity on federal lands can be implicated in several problems of growing concern to states including loss of hunter opportunity, participation and license revenue, reduced economic contributions from hunters to rural economies, loss of habitats of special conservation concern and increased damage on adjacent private lands due to shifting wildlife distributions^{12,13}.

Enhanced cooperation between federal and state agencies could facilitate better public understanding of the role of active management in wildlife conservation and improve public support for the management of disturbance-dependent habitats and associated wildlife. Where state objectives for game populations are not consistent with current landscape conditions or recent disturbance regimes, state agencies ultimately will need to reconcile these objectives with anticipated lower expectations for game wildlife carrying capacity on federal lands. Where big game populations are now contributing to deteriorating range conditions, these populations should be reduced to levels that will allow important early-successional habitats to successfully regenerate.

Federal habitat assessments and management planning processes should be conducted at spatial and temporal scales that are consistent with those at which game wildlife populations are managed by the states. This would not preclude smaller-scale assessments for other purposes. In addition, these assessments commonly fail to adequately articulate the relationships between declines in early successional habitats and declines in game wildlife populations. There is a need to develop land management planning tools and processes that can better inform the public of the long-term implications to wildlife of potential land management decisions.

Wetland and Riparian Habitat Conservation

Wetlands in the United States are among the habitats most affected by the lack of clear, consistent statutory and regulatory guidance and protections. Although rates of wetland loss have slowed since the 1950s, the U.S. continues to annually lose over 80,000 acres of wetland habitats. Between the mid-1950s and 2004, the U.S. lost almost 17 million acres of wetlands (not including farm ponds and similar water bodies). Some areas (e.g., California's Central Valley) have suffered losses exceeding 95% of the original wetlands, with other areas not far behind. Approximately 66% of the original wetlands in the nation's "duck factory," the Prairie Pothole Region, have been drained or filled. These wetland impacts have significantly reduced the capacity of the U.S. to produce and maintain populations of waterfowl and other wetland associated wildlife, some of which provide significant hunting opportunity and associated economic benefits.

After years of progress in slowing wetland loss rates, current interpretations of U.S. Supreme Court decisions in 2001 and 2006 by the Environmental Protection Agency and the Army Corps of Engineers have had the effect of removing wetland protections that had been in place for over 30 years as a result of the Clean Water Act. These interpretations have removed protection from 20 to 60 million acres of the remaining 100 million acres of wetlands in the nation.

Functional riparian areas provide unique and important habitats and travel corridors for many species of wildlife on many landscapes. Across the West, riparian habitats provide for the timely capture, storage and release of water; and provide important conditions to sustain healthy fish and wildlife populations. Although riparian habitats comprise only a minor component, estimated at less than 1% of forest, shrub, and grasslands ecosystems in the western United States, approximately 80% of native wildlife species utilize riparian habitats at some time during the year. Many riparian areas have been altered by water development and use, domestic livestock grazing, mining, fire suppression and the colonization and spread of invasive plant species.

Grassland Habitat Conservation

The Great Plains of North America once comprised 585 million acres of diverse prairie ecosystems making it one of the largest and most productive grasslands in the world. Over the past 200 years, 5 factors have eliminated or significantly degraded most of these grasslands: direct conversion to agriculture, alterations from historic grazing regimes, fire suppression, structural habitat fragmentation, and invasive species. Today, prairies of the Great Plains are considered among North America's most endangered ecosystems^{14,15}; yet, relative to their size, status and ecological value, these ecosystems are the least protected¹⁶.

The current rate of destruction and fragmentation on remaining grassland habitats has accelerated dramatically as a result of high commodity prices, genetically-engineered crops, efficient herbicides, large and powerful farm equipment, interest in bio-fuels, oil and gas exploration and

interest in wind power. Plant and animal species that were once abundant are suffering significant declines throughout the Great Plains. Grassland-dependent birds are experiencing steeper population declines than any other group. Prairie grouse are declining precipitously and many are listed as federally endangered, threatened, candidate species, petitioned for listing, or in vastly-depressed population numbers.

Conservation of grassland habitats is largely a private-land issue. As a result, habitat conservation for grasslands will require the development of incentive programs that encourage private landowners to maintain or restore native prairie ecosystems and their natural disturbance regimes (*i.e.* fire and grazing). To be effective, these incentives must rival or exceed the economic opportunities that competing land uses provide. Federal financial support through Farm Bill programs and others should be linked and coordinated with state and regional grassland conservation efforts. Protection of grassland habitats should be a significant consideration in energy development.

Grassland ecosystems are diverse and this diversity is a key component of functional landscapes needed to support the full complex of grassland-associated species. Prairie grouse respond to habitat conditions at landscape scales, have broad public support for both the hunting and viewing recreation they provide, and can serve as flagship species for prairie conservation. Conservation goals for these species have identified a need to maintain or restore 20% of the Great Plains to functional grassland diversity.

Sagebrush - Shrubland Habitat Conservation

Shrubland habitats dominated by sagebrush once occupied over 150 million acres of western North America, but have declined in area by > 50% since European settlement^{17,18}. Sagebrush habitat loss and degradation is a result of urban and suburban development, conversion to agriculture, energy development and associated infrastructure and exotic plants¹⁹. Wisdom et al.²⁰ identified 26 threats to sagebrush habitats that operate at varying spatial scales and thus can affect large landscapes.

Millions of acres of sagebrush habitats are threatened by the continued and widespread invasion of cheatgrass and other exotic plants, as well as by expansive encroachment of pinyon pine and juniper woodlands. The rate of loss appears to be accelerating and management intervention thus far has been ineffective in abating this loss²¹.

Populations of many sagebrush-associated wildlife species are declining in response to these habitat changes²², and approximately 20 percent of the ecosystem's native flora and fauna are considered imperiled²³. Estimated risks of regional extirpation for sagebrush-associated vertebrates, given current management regimes on public lands, are similar to risks for species in other ecosystems that are already listed as federally threatened or endangered²⁴. Populations of many of species of big game and upland game birds are declining in sagebrush habitats. Populations of the greater sage-grouse have declined steadily over the latter half of the 20th century as human activities have substantially reduced the quantity and quality of sagebrush habitats¹⁸.

Habitat Conservation on Agricultural Lands

Approximately 50% of the United States, or 900 million acres, is managed as cropland, pastureland or rangeland. These working lands commonly include forest, rangeland, wetland and riparian habitats that are the foundation for regional populations of game and nongame wildlife. In the mid 1980s, funding for fish and wildlife conservation first became available through the federal Farm Bill. The 2002 Farm Bill included over \$17 billion in funding to support programs designed to enhance fish and wildlife habitats and address other pressing conservation needs. In addition, over \$800 million is provided annually for technical assistance to private landowners to implement conservation programs including fish and wildlife habitat.

Federal Farm Bill programs such as the Conservation Reserve Program, Wetlands Reserve Program, Grassland Reserve Program, Wildlife Habitat Incentives Program and the Environmental Quality Incentives Program provide financial incentives for landowners to establish and maintain important wildlife habitats by withdrawing lands from crop and forage production. Payment rates through these programs must be competitive with anticipated economic return from agricultural production or landowners will be unlikely to set aside significant acreages for wildlife habitat enhancement. Recent interest in biofuels has significantly changed these economic considerations. Grain-based and cellulosic ethanol offer opportunities to increase our nation's energy independence and benefit rural economies. However, the development of these new sources of energy on a finite land base must be balanced with the demonstrated wildlife habitat benefits derived from existing conservation programs. Any significant reduction in the acreage enrolled in existing conservation programs would negatively affect game and nongame wildlife populations and hunting opportunity.

Funding Availability

Costs to the US Forest Service and the Bureau of Land Management to control wildfires in United States have risen dramatically over the past decade and these increases are likely to continue into the foreseeable future. As US Forest Service wildfire costs increase at a more rapid rate than the overall agency budget, the proportion of funds available for wildlife habitat enhancement and other important programs continues to decrease. The proportion of the Forest Service discretionary budget spent on wildfire suppression has risen from 13% in 1991, to 48% in 2007. In addition, funds historically available for wildlife habitat management and other activities through the Knutsen-Vandenberg Fund have decreased dramatically as a result of significant declines in timber sale revenues.

Agency Culture

Fish and wildlife management agencies at both the federal and state levels will experience significant workforce turnover within the next decade. Approximately 40% of the federal workforce is beyond the age of 50²⁵. Within state agencies, 46% of employees in leadership

roles and 27% of all employees are expected to retire by 2010²⁶. Wildlife professionals who have been in the profession for > 10 years exhibit a slightly more positive orientation toward consumptive wildlife use than those professionals with ≤ 10 years of professional experience²⁵. In addition, wildlife professionals employed by federal agencies are significantly less likely to participate in consumptive wildlife recreational activities than wildlife professionals employed by state agencies²⁸.

GOAL:

Ensure regular and effective collaboration between state fish and wildlife management agencies and federal land management agencies to restore and maintain wildlife habitats sufficient to maintain game wildlife populations at levels consistent with public expectations.

CHALLENGES:

1. Uncoordinated and sometimes conflicting federal land laws, regulations and policies can complicate efforts of federal agencies to implement land management projects.
2. State and federal agencies commonly have different wildlife habitat and population objectives, even on landscapes with intermixed holdings. These objectives may be poorly understood both within and among agencies, thereby complicating effective coordination.
3. Formal processes to facilitate effective communication and coordination between state and federal agencies are inconsistently utilized.
4. Reductions in the use of active habitat management, in conjunction with the interruption of natural disturbance regimes, has led to declines in the availability of early-successional habitat types at spatial and temporal scales that are consistent with wildlife population dynamics and management objectives.
5. Land and resource management planning processes can be too lengthy and technical to be readily understood by sportsmen and women and other interested publics, thereby decreasing public participation in and support for these processes.
6. Inadequate state and federal agency budgets and increasing financial demands, such as wildfire suppression, decreases the availability of funds for research, educational outreach, habitat and population monitoring and on-the-ground habitat management activities on public and private lands.
7. Existing habitat evaluation processes and associated game population modeling programs may no longer be relevant due to changes in landscape conditions and in our understanding of how these changes affect game wildlife populations. Evaluation

and modeling programs for big game habitats in the West have become outdated as a result of new information regarding the nutritional dynamics of forest landscapes (see Appendix).

8. Native pest outbreaks resulting from unhealthy forest and range conditions and encroachment by invasive plant species across many vegetation types threatens the abundance and function of important wildlife habitats.
9. Current agency interpretation of the Supreme Court's Clean Water Act decisions has not been sufficiently protective of wetland habitats.
10. Rising prices for rural lands suitable for residential or commercial development can reduce the incentive for private landowners to maintain these lands in an undeveloped state and available to wildlife.
11. Tax policies associated with the inheritance of private lands can promote ownership fragmentation and the resulting loss of wildlife habitats.
12. Rising prices for agricultural commodities can reduce the incentive for farmers and ranchers to enroll lands in federal Farm Bill conservation programs.
13. Private landowners do not consistently take advantage of opportunities to incorporate professional technical assistance into land management decisions for their properties.
14. Demographic and attitudinal changes of employees of federal and state land and resource management agencies may lead to reduced consideration of consumptive wildlife activities on public and private lands in the future.

CONSEQUENCES:

1. **The ability of federal and state fish and wildlife agencies to maintain wildlife habitats and populations at levels consistent with public expectations and to conserve imperiled species, on both public and private lands, is eroding.**

OPPORTUNITIES:

1. Convene a panel of well-qualified natural resource management and legal professionals to conduct a rigorous assessment of the compatibility, or lack thereof, between existing federal environmental laws and regulations. The objective of this panel would be to identify conflicting direction and craft potential statutory and regulatory language to clarify these conflicts.
2. Enhance federal inter- and intra-agency communication during project

planning and implementation on federal lands to resolve conflicting statutory and regulatory requirements and to expedite habitat management initiatives. Fully incorporate comparative ecological risk assessments into federal land management decisions, particularly those related to Endangered Species Act Section 7 consultations.

3. Establish protocols to promote regular and routine coordination between federal and state agencies so that state wildlife habitat and population objectives can be used to aid in the development and implementation of land management activities on federal lands.
4. Utilize projects designed to reduce wildfire fuel loads, provide woody biomass for nontraditional products, including biofuels, or to control invasive species to coordinate the spatial and temporal distribution of early-successional wildlife habitats consistent with the needs of game wildlife populations.
5. To enhance public participation and trust in project planning processes, utilize a consistent framework that will assess and clearly communicate the impacts of project proposals on game wildlife populations and hunting opportunity.
6. Ensure that federal and state fish and wildlife management agencies have adequate personnel and funding to meet the needs for research, educational outreach, habitat and population monitoring and on-the-ground habitat management activities on public and private lands.
7. Review existing habitat evaluation and population modeling processes in light of changing landscape conditions to verify or enhance their usefulness in game population management (See Appendix for specific example of how nutritional science could be used to benchmark big game population status and guide federal habitat assessments and plans.) Establish new inter-disciplinary monitoring, evaluation and modeling programs to address deficiencies in current data collection.
8. Establish a collaborative framework to monitor the extent and severity of habitat loss and degradation resulting from outbreaks of native pests and diseases or invasive species encroachment. Develop a prioritization process to identify and address the most pressing threats.
9. Develop and implement a clear regulatory framework that reinstates strong federal protection for wetland habitats by rescinding existing guidance (post Rapanos case decision) and restoring guidance that better protects isolated wetlands in a manner consistent with recent Supreme Court decisions.
10. Create financial incentives for private landowners that increase the economic value of lands maintained in an undeveloped state. These incentives could include but are not limited to the development of markets for nontraditional products, such as biomass

for biofuel production, direct financial compensation and tax relief. State and federal agencies should be encouraged to acquire ecologically significant private lands that are at risk of fragmentation or development.

11. Develop tax policies to minimize the likelihood of ownership fragmentation and habitat loss resulting from the inheritance of private lands.
12. Utilize existing federal authority to regularly review and modify payment rates associated with Farm Bill conservation programs to ensure that these rates remain competitive with market conditions. Establish disincentives for private landowners to convert important existing wildlife habitats to agricultural crop production.
13. Create and implement marketing strategies to better communicate the availability of existing programs designed to provide educational outreach and technical assistance for private landowners.
14. Establish training programs to ensure that all employees of federal land management agencies understand the historic and current roles of hunting in wildlife conservation and, where appropriate, to introduce employees to hunting and shooting sports.

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APPENDIX

New Science and Changing Habitats Should Motivate Paradigm Shifts in Habitat Assessment and Planning Processes: A Case Study of Big Game in Forest Landscapes.

Overview:

In the 20th century, the West's habitats were initially dominated by early-succession vegetations that had been created and maintained by frequent and large-scale fires. Against this backdrop, traditional management for big game emphasized habitat protection and control of mortality from predators and humans. It was assumed that forage resources did not generally limit big game populations, and that by merely maintaining vegetative diversity within the seasonal ranges of big game populations, that other species with more narrow habitat requirements would be maintained as well. However, fire suppression following World War II and recent emphasis on preservation of late-succession forests have greatly reduced regeneration and abundance of early-succession habitats. The reduction of these habitats has had negative consequences for big game populations, particularly in those areas where forests dominate the landscape. State and federal agencies are now challenged to reconcile (historical) objectives for big game populations with objectives for managed landscape disturbance, and with conservation of late-succession habitats for other species. Preserving America's hunting heritage in the West will require a more holistic

approach to landscape assessment and planning, in which new science will be crucial to integrating the disturbance regimes of natural and managed agents to meet specific, strategic goals for big game populations.

Changing Disturbance Regimes and Altered Habitats:

For millennia, large-scale fire episodes were a frequent occurrence in the West, shaping the region's habitat mosaics and defining the production potential of its big game populations. Large-scale fire episodes occurred in the Interior Columbia River Basin, for example, at roughly 12-year intervals¹, and were also common in ecosystems west of the Cascade Mountains². Across the greater region, cycles of episodic fire were sustained and reinforced by interactions between the region's cyclic climate, seasonal convective storms, and for at least the last 10,000 years by aboriginal burning^{2,3}. Between 1870 and 1940, for example, an area equivalent to 53% of the entire Nez Perce National forest was burned during only four of these regional fire episodes (1889, 1910, 1919, 1934)⁴. Similarly large-scale episodic events ensured that vast areas of the region's landscapes were dominated by early-succession, post-fire vegetations prior to World War II.

In stark contrast, the scale of timber harvest has seldom approached the scale of historic fire on most public lands. On the Nez Perce National forest, for example, the percentage of land area modified through timber harvest has never exceeded 0.5% annually. Under such circumstances of low managed disturbance, post-WWII fire suppression effectively suppressed the former role of episodic disturbance in shaping habitats. Early-succession vegetations have not been maintained or regenerated at historical rates, and their prevalence in forest landscapes has declined over time⁵. Recent federal policies aimed at reducing timber harvests have reinforced this decline, albeit to varying extent from one locale to another.

In the West's forest landscapes, abundant forage of superior nutritive value typically is found in the early-succession habitats³⁴, but these habitats usually persist for only 10-40 years after disturbance by fire or logging. As succession advances beyond these early stages, forage quantity often declines by an order of magnitude or more, and plant composition shifts toward plant species that are not nutritious and/or not palatable. Thus, as disturbance and the resulting amount of early-succession vegetations decline, the nutritional status, reproduction and survival, and sizes of dependent big game herds can be expected to decline as well^{8, 9, 24, 25, 26}.

Declining Populations of Big Game:

Following protection of game populations from over-hunting early in the 20th century, populations of big game grew dramatically in those landscapes that were dominated by early-succession vegetations. As these early successions have declined, however, game populations have declined despite strict regulation of hunting harvests. First indications of forage limitations were published for elk in the early 1950s⁶. Palpable declines in the reproductive vigor of specific deer and elk populations followed in the 1960s and 1970s, and have since become more evident in the 1980s and 1990s⁷. State archives reveal that in eastern Oregon and adjacent Idaho, for example, calf ratios for elk populations have declined to below 30 calves:100 cows in fully 1/3 of populations – a level of productivity that can only support marginal sport harvest. Idaho's famous Lochsa elk population has undergone at least three reductions since the 1940s. In Western Washington, elk populations have declined by as much as 50% in some areas since the late 1980s. The famous Interstate mule deer herd, along the California/Oregon border, has declined by 90%^{8,9}. Such declines of major big game populations present several problems. States must accept losses in hunter opportunity, reduced revenue streams, and losses of economic contributions from hunters to rural economies. As nutritionally-stressed game populations intensify their grazing on remaining early-succession habitats, state and federal agencies both must deal with habitat degradation from over-grazing and increased damage to crops on adjacent private lands.

Implications of New Science

In the West, habitat management for big game traditionally emphasized protection of winter ranges whereas forage limitations on other seasonal ranges were assumed to not be important. But recent research has established that the production potential of most big game populations is regulated by forage resources on summer and fall ranges – where birthing, growth, replenishing of fat reserves, and breeding occur^{14, 15, 16, 17, 18, 30}. In fact, habitat's greatest contribution to productivity of big game herds likely is a function of the nutritional adequacy of summer and fall ranges. In the Pacific Northwest, these seasonal ranges occur predominantly in forest zones that are managed by federal agencies. Thus, sustaining a viable heritage of big game hunting depends on enabling these agencies to maintain adequate forage bases, by maintaining adequate

amounts of early-succession vegetations through appropriate management of landscape disturbance. This will require that state and federal agencies more-explicitly reconcile their objectives for game production with their objectives for vegetation management and with their objectives for nongame wildlife. It will also require a more strategic (i.e., long-term) focus for landscape planning.

To succeed in this endeavor, federal agencies must be able to develop habitat assessment procedures and strategic management plans that recognize linkages among landscape disturbance regimes, nutritional adequacy of habitats, and the nutritional status and productivity of wildlife populations. Furthermore, regional climate change is likely to modify the disturbance ecology of the West's landscapes¹⁹, and thus federal strategic plans must be able to foresee the implications that climate change will have for managing other disturbance agents (fire, silviculture, grazing) and for developing and meeting appropriate goals for big game populations.

Challenges:

- 1) Current monitoring of game populations and their habitat by agencies is not sufficient to establish linkage between early successions and the production dynamics of wildlife populations. While research has clarified the mechanisms through which landscape forage dynamics limit wildlife populations, managers rarely know the nutritional status of their own wildlife populations or understand the nutritional dynamics of game ranges that they manage. This lack of professional understanding impedes effective agency response to changing habitat conditions.
- 2) Traditional habitat assessment models, such as habitat effectiveness (HE) and habitat suitability indices (HSI) dominate in federal habitat assessments^{20, 21, 22}. However, these models have not been updated to reflect best available science regarding the successional or nutritional dynamics of western game ranges. Current forms of HE and HSI models are categorically incapable of assessing game ranges in terms that reconcile nutritional adequacy of forage on seasonal ranges with the nutritional requirements of particular wildlife populations.
- 3) Managing landscapes on behalf of wildlife populations necessitates long-range strategic planning because interactions between wildlife populations, landscape disturbance cycles, and the succession of vegetations are normally played out over periods of several decades. Strategic landscape models nevertheless remain unreasonably simplistic. Dynamic landscape fire succession models (LFSMs)²³, for example, are emerging as dominant platforms for multi-disciplinary planning. However, these models remain insensitive to some disturbance agents, such as multi-species grazing regimes which, in interaction with other agents (forestry, fire, climate), are known to influence forest succession, landscape fuel dynamics and ultimately fire regimes. Thus, there is a substantial gap between what forest and game range ecologists know and what federal landscape planners are able to illustrate to stakeholders. Such technological gaps compromise the rigor and clarity of strategic planning, impede public understanding of complex habitat dynamics, and decrease the likelihood of broad support for appropriate vegetation management programs.

- 4) Habitat assessments and strategic landscape planning often are not executed by federal agencies at spatial or temporal scales that are demonstrably relevant to landscape disturbance cycles or to wildlife population dynamics. Consequently, many assessments and plans have had difficulty evaluating the strategic relevance of managed disturbance (in the short term) to sustaining wildlife populations over the long term. Assessments and planning exercises that are conducted at ecologically unrealistic scales (i.e., too-small of spatial scale, or too-short of time span) retard understanding of “relative risks” that involve trade-offs between long-term management benefits and short-term management risks.

Opportunities:

- 1) Recent research provides a sound nutritional basis for predicting the reproductive potential of big game populations^{15, 27, 28, 29, 30, 31, 32}. Federal agencies could usefully cooperate with state agencies and interested NGOs, to benchmark and periodically assess nutritional status and the reproductive performance of populations on federal lands. When specific benchmarks are not met, then area-specific problem analyses could be incorporated into federal planning processes to reconcile state population objectives with federal land objectives, and to identify management solutions.
- 2) Recent research provides federal agencies with a sound basis for revising habitat assessment procedures for big game (e.g., HE, HSI)^{15, 29, 31, 33}. Models now can be synthesized regionally to enable assessment of the nutritional adequacy of habitats in relation to benchmarks for nutritional status and productivity of populations.
- 3) The emerging class of Landscape Fire Succession Models (LFSMs) offers great promise for synthesizing multi-disciplinary land management, to respond to habitat issues and to the implications of climate change. Several federal research laboratories are already engaged in LFSM development, but these units contain little expertise relevant to game range ecology and thus have difficulty addressing multi-agent strategic issues, such as how big game and livestock populations could interact with forestry, climate, and fire to influence forest habitat mosaics over time. Federal emphasis on integrating ungulate research (e.g., deer, elk, cattle) with climate research and LFSM development is similarly low. Federal agencies could greatly enhance the relevance of their LFSM programs by adding relevant game range expertise to their staffs, and by funding “cross-cutting” programs through interdisciplinary collaboration with public- and/or private-sector research units that do focus on aspects of game range ecology.
- 4) The relevance of federal assessment and planning processes to managing habitats for game species, and for nongame species as well, can be enhanced by greater emphasis on habitat dynamics at temporal and spatial scales that are relevant to landscape disturbance cycles and to wildlife population dynamics. The realism and utility of federal assessments and

plans can be enhanced by increasing their emphasis on large spatial scales (e.g., state game management units) rather than small scales (e.g., sub-watersheds), and by increasing the weight given to long-term habitat responses (e.g., several decades) that exceed the time horizons of typical state or federal strategic plans (e.g., 5- to 10-year horizons). By enlarging assessment scales, particularly for strategic plans, the long-term implications of short-term decisions will be more clearly understood by professionals and by the public.

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DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT
North American Wildlife Policy Conference

TITLE: Oil and Gas Development and Wildlife Conservation

DATE: May 7, 2008

STATUS: Final

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PROBLEM STATEMENT:

The August 16, 2007 Executive Order 13443 (EO) "Facilitation of Hunting Heritage and Wildlife Conservation", directs federal agencies, especially the Departments of Interior and Agriculture "to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat". Success in this effort means expanding and enhancing the North American Model of Wildlife Conservation (1) that depends on vibrant and resilient game species, populations and habitats.

Energy development is a major wildlife concern in significant parts of several western states (especially Wyoming, Colorado, New Mexico, Utah, Montana and North Dakota) which contain the largest onshore natural gas reserves in the nation. These areas also contain some of the best game/wildlife (and hunting) habitats in the West and their future as prime habitat, in the face of actual or potential energy development is uncertain. The Bureau of Land Management (BLM) administers the energy minerals on these mostly federal lands following a minerals policy directed by six acts of Congress (the Mineral Leasing Act of 1920 as Amended, the Domestic Minerals Program Extension Act of 1953, the Mining and Minerals Policy Act of 1970, the

Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980, and the Energy Policy Act of 2005). As energy security concerns and energy prices continually increase so does the national priority [as stated in the Energy Policy Act of 2005 (P.L. 109-58) (EPACT 2005)] to expand the domestic production of oil and natural gas and encourage new energy minerals exploration.

With energy activities in the West increasing, concerns about maintaining game/wildlife species, populations and habitats at the wildlife-energy interface are also increasing. Given the magnitude of present and anticipated energy development in the West, it is doubtful that game/wildlife species and associated habitat values can be maintained without increased interagency collaboration, reducing on-site habitat impacts and developing landscape-scale efforts to enhance habitats off-site similar to the 2007 U.S. Department of Interior Healthy Lands Initiative (HLI). If improved collaboration and landscape-scale habitat efforts including analysis and decision-making are not implemented it is unlikely that meaningful balance between energy development and wildlife and hunting can be maintained or achieved, the North American Model of Wildlife Conservation supported, and the intent of the EO fulfilled.

GOALS:

1. Manage the public lands in a manner that will protect the quality of...environmental...values; that will provide food and habitat for fish and wildlife... [Federal Land Policy and Management Act of 1976 (FLPMA)].
2. Federal land management agencies (FLMA) should maintain, restore and enhance healthy lands for wildlife and their habitat while seeking enhanced energy security through domestic oil and natural gas production (HLI).
3. FLMA should actively manage species to prevent listing under the Endangered Species Act and to assure recovery for those species already listed (HLI).
4. FLMA management plans and decision documents for energy development projects should provide for habitats that support game/wildlife populations at current state wildlife agency planning levels. (i.e., 1988 Pinedale Anticline Planning Area ROD).
5. FLMA should use and apply landscape-scale assessments and state wildlife action plans to identify game/wildlife species needs and conservation priorities to conserve game/wildlife species, populations and habitats while assuring access to energy resources (HLI).
6. The BLM should consider temporary deferral of fluid minerals leasing to preserve options for game/wildlife species, populations and habitat conservation in specific areas (HLI) undergoing active land use planning with legitimate BLM-recognized resource concerns. (BLM Instruction Memorandum No. 2004-110).
7. FLMA should emphasize landscape-scale assessments through cooperative conservation partnerships with other federal, state, private and tribal partners to benefit the land they manage with special emphasis on state wildlife action plan programs (HLI).
8. FLMA should seek and obtain sufficient funding to support effective partnerships to implement landscape-scale initiatives to protect wildlife and restore habitat in energy interface areas and other areas where the conservation of wildlife and habitat may be inconsistent with energy development on public lands (HLI).

9. FLMA and state wildlife agencies should maintain sufficient habitat on site, or off site if needed, to support all resident and migratory game species at populations providing reasonable hunting and fishing success throughout the energy development process; disturbed sites should be reclaimed to habitat standards supporting predevelopment hunting opportunities. (EO).

CHALLENGES:

1. Reforms were made in the Energy Policy Act (EPACT) of 2005 to encourage new exploration and expand domestic production of oil and natural gas. These have increased the challenges to the FLMA in maintaining healthy lands for wildlife and habitat. The Association of Fish and Wildlife Agencies' (AFWA) Energy and Wildlife Policy Committee (EWPC) submitted (10/11/07) comments to Congress offering suggestions for EPACT 2005 reforms to enable the BLM to better assess and mitigate negative impacts to wildlife from oil and gas exploration and development. Suggestions included:
 - Continue operation of seven BLM Oil and Gas Pilot Offices through at least 2015.
 - Increase the review time for Applications for Permits to Drill from 30 to 45 days to provide the BLM more time to adequately evaluate drilling applications and consider appropriate permit stipulations to protect wildlife species and their habitats.
 - Ensure adequate site-specific analysis prior to issuing categorical exclusions for oil and gas development.
 - Require annual federal agency consultation with state agencies to review new data, NEPA documents, etc., prior to new leasing offerings and decisions to avoid or mitigate impacts to wildlife, wildlife corridors and crucial habitats.
 - Support reclamation and bonding requirements.
 - Create a dedicated recurring source of funding for the HLI.
2. The Western Governor's Association (WGA) February 2007 resolution 07-01 *Protecting Wildlife Migration Corridors and Crucial Wildlife Habitat in the West* and the subsequent Oil and Gas Working Group (OGWG) December 2007 final report, identify conflicts between energy development and wildlife and solution options. The federal leasing process as implemented was cited as a major barrier to wildlife conservation. Major findings of the report include:
 - Development of both new and existing oil and gas leases can create conflicts with other resource values and stakeholder preferences. The special needs of crucial habitat and wildlife corridors are key concerns.
 - Monitoring helps achieve management objectives. Inadequate monitoring can have serious consequences for both wildlife and development.
 - Informed decisions about crucial habitat and wildlife corridors require new geospatial products including GIS-based landscape assessments and maps that identify areas of potential conflict between wildlife and oil and gas development.
3. Federal funding for partnerships for landscape-scale habitat initiatives has not been sustained (e.g. HLI was funded at a relatively small percentage of the President's request in the 2008 Appropriations Act).
4. The Sporting Conservation Council (SCC) in a December 2007 letter to the Secretary of the Interior documented concerns about balancing energy development and wildlife on

the Pinedale Anticline in Wyoming. Concerns included BLM's response to state wildlife population goals, and opportunities for temporary deferral of leasing in HLI areas to protect game/wildlife conservation options during active land use planning activities.

5. The Theodore Roosevelt Conservation Partnership has published *Energy FACTS for Fish and Wildlife*, which outlines actions it believes are needed to better balance management of public lands for energy and fish and wildlife. Recommendations include:
 - A long-term funding solution is needed to provide federal and state wildlife agencies means to manage habitats and populations affected by energy development.
 - Energy development and wildlife and fish needs should be balanced on federal land.
 - A Conservation Strategy should be developed for each major energy project.
 - The leasing process should be changed to include wildlife and fish assessments before leasing.
 - The federal government should improve coordination with all stakeholders.
 - Science must be used to inform decisions.

CONSEQUENCES OF INACTION:

Failure to fulfill the above goals and respond to these identified challenges will increase the uncertainty about the effects of energy development on game/wildlife and potentially increase the risks to game/wildlife populations and habitats. This increased risk and uncertainty could jeopardize the sustainability of game/wildlife populations, habitats and hunting. Such risk and uncertainty could also jeopardize the North American Model of Wildlife Conservation and the ability to implement and fulfill the intent of the EO.

OPPORTUNITIES:

1. In collaboration with state and tribal governments, FLMA should establish specific game/wildlife population and habitat goals and objectives for energy development projects for inclusion in land management plans and related decision documents.
2. FLMA initiation/completion of pre-development landscape level wildlife/ecological assessments in energy development project areas should be a priority of the HLI program in each of the major HLI project areas.
3. FLMA should immediately establish a landscape assessment taskforce to develop assessment standards and protocols for on-site and off-site considerations drawing on recent examples of success including the Encana, BP, The Nature Conservancy, and the Jonah Interagency Office Partnership that produced the "Off-Site Mitigation Plan for the Jonah Field" based on the *Marxan* Habitat Model. A critical part of the standards and protocols would be consideration of the unique cooperative conservation partnerships appropriate to different types and scopes of assessments.
4. The BLM should immediately re-emphasize the discretionary authority of the State Directors to temporarily defer leasing of specific tracts of land with active land use planning activities involving legitimate BLM-recognized concerns (i.e., preserving

game/wildlife conservation options pending completion of landscape assessments and related management plans and decisions).

5. FLMA should establish a cooperative conservation partnership with the WGA to jointly explore the feasibility of implementing recommendations in the WGA Wildlife Corridors Initiative (11/07) developed by the WGA Oil and gas Working Group.
6. FLMA should invite the AFWA and its Energy and Wildlife Policy Committee to jointly discuss its views of the needs and opportunities for refining EPACT 2005.
7. The Department of Interior is to be commended for seeking \$21.9 million for HLI in its FY 2009 budget. The Department should continue to seek full funding for this important initiative and other landscape-scale initiatives in new project areas.

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North American Wildlife Policy Conference

TITLE: Climate Change and Wildlife Effects

DATE: May 7, 2008

STATUS: Final

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PROBLEM STATEMENT:

Summary:

Executive Order 13443, signed by the President in August 2007, directs federal agencies to "facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitats." This presents three challenges:

- *To improve the management of game species and their habitats.*
- *To take actions that will help sustain America's hunting heritage.*
- *Do these in the context of concern about global warming and its effects on game species, populations and habitats.*

This document suggests ways to move forward constructively to deal with the three interrelated concerns.

The Nation's climate change science program (CCSP) provides valuable information on projected effects of climate change on wildlife habitats. However it does not systematically

and rigorously examine the present and future effects of climate change on specific game species, populations and habitats and at management and policy relevant scales, in response to mandates. Currently, U.S. resource management agencies have limited capability to document the likely effects of climate change on the North American Model of Wildlife Conservation and effectively respond to Executive Order 13443 (EO). The current CCSP is inadequate in scope. Changes in priorities of the CCSP are needed to enable federal natural resource and wildlife managers to have the tools to respond effectively to the EO and to adapt to climate change.

The August 16, 2007 Executive Order 13443 (EO) “Facilitation of Hunting Heritage and Wildlife Conservation” directs federal agencies, especially the Departments of Interior and Agriculture “to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat”. Success in this outcome means expanding and enhancing the North American Model of Wildlife Conservation (1) that depends on vibrant and resilient game species, populations and habitats all greatly affected by climate which on a global scale appears to be warming.

The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report *Climate Change 2007: Synthesis Report* notes: “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level”. Further the report notes, “eleven of the past twelve years (1995-2006) rank among the twelve warmest years in the instrumental record of global surface temperature (since 1850)”. On June 11, 2001 President George W. Bush noted “...we know the surface temperature of the earth is warming... There is a natural greenhouse effect that contributes to warming... And the National Academy of Sciences indicates that the increase is due in large part to human activity”. The President committed his Administration to “cutting our Nation’s greenhouse gas intensity... by 18 percent by 2012. He also committed the U.S. to continued leadership on the issue and through early 2007 had dedicated nearly \$29 billion to advance climate-related science, technology, international assistance, and incentive programs.

The Nation’s climate change science program (CCSP) follows a July 2003 Strategic Plan prepared in response to the *U.S. Global Change Research Act of 1990* (PL 101-606;11/16/90). (A revised research plan for the CCSP was presented in the Federal Register 12/28/07 for a 60 day public comment period; no final revision appears on the CCSP web site: www.climate-science.gov). Chapter 8 sets the research agenda for climate change/ecosystem interactions. *Our Changing Planet: The U.S. Climate Change Science Program for FY 2008* highlights recent research advances and future directions for climate change research in response to the Strategic Plan. Both documents present ambitious intents and useful outcomes for mostly coarse-scale, broad ecosystem-based questions relating generally to climate change and biogeochemical cycles and community ecology. There is little focus on the present and future effects of climate warming on game species, populations and individuals and their habitats. In addition to the EO, accountability for game species, populations and habitat has many mandates including the Public Trust Doctrine, State Wildlife Action Plans (SWAP), the Endangered

Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the North American Waterfowl Management Plan (NAWMP), The National Forest Management Act (NFMA), the Refuge Improvement Act (RIA), the National Marine Mammals Protection Act (NMMPA) and the Alaska National Interest Lands Conservation Act (ANILCA).

The current focus of the CCSP has increased our understanding of current physical changes in our climate and has allowed the development of a suite of models to project changes in physical parameters at very coarse scales. Unfortunately that science has not been coupled with projected ecological changes in landscapes at scales that allow scientists and managers to examine systematically and rigorously the present and future effects of climate change on game species, populations and habitats in response to the above mandates. More fundamentally, there is limited ability to document the effects of climate change on the North American Model of Wildlife Conservation and respond to the EO. In this regard the current CCSP is limited in scope for both physical and biological responses to changing climate. Accordingly, the CCSP appears necessary but insufficient. Initial attempts to document the effects of climate change on public lands wildlife and wildlife habitats provide a foundation for the more detailed and policy relevant suggestions we make here (2).

Carbon emissions are rising rapidly all around the globe – with uncertain present and future effect on North American game species, populations and habitat. U.S. emissions are rising, and now account for approximately one-quarter of the global total. But emissions from developing countries (e.g. China, India, Brazil, Mexico), are rising much faster. As human populations urbanize and modernize globally, their per capita emissions, now a fraction of U.S. per capita emissions, are quickly catching up. Growing global emissions are expected to accelerate the effects of climate change on North American game species, populations and habitats. The need to understand and respond to those effects grows with time. A much sharper and very specific U.S. research and monitoring focus on the present and future effects of climate change on select game species, populations and habitats and their adaptation to climate change is therefore greatly needed to preserve the North American Wildlife Management Model and meet the intent of the EO. In the following sections we identify the key climate-related goals that respond to the EO, the challenges that must be resolved and the opportunities for resolution.

GOALS:

Federal land management agencies supported by the CCSP, in cooperation with tribal, state, private and international conservation partnerships should seek to:

1. Preserve and enhance the conservation of sustainable populations of game species, populations and habitats and the heritage of hunting in the face of climate change with its likely effects on the abundance, distribution and resilience of game species, populations, habitats and associated patterns of use.
2. Identify game species most likely at risk due to current and anticipated climate change within the context of the North American Model of Wildlife Conservation.
3. Incorporate information on climate trends and projections into planning and decision making for game species management.
4. Develop and apply mitigation and adaptation strategies to sustain at-risk game species, populations, and habitats.

5. Explore and develop funding strategies sufficient to meet the intent of the EO where game species, populations and habitat may be affected by climate change.

The scope of the CCSP should be expanded to provide scientific support for determining the effects of climate change on game species, populations and habitats and for developing monitoring and adaptation strategies. Expanded support should be in the form of:

1. Research and modeling to develop:
 - a. Climate information (trends and projections) at scales useful to game/wildlife managers.
 - b. Assessments of present and future effects of climate change on at-risk game species, populations, and habitats.
 - c. Monitoring protocols and data sets that track the trends and enable adaptive management of at-risk game species, populations, and habitats.
 - d. Models that integrate all of these inputs for use in wildlife management at scales relevant to policy and management.
 - e. Verifiable methods of forecasting population and habitat changes for at-risk game species.
2. Information bases that are established, developed and maintained to be readily usable by policymakers and that show the effects of climate change on at-risk game species, populations, and habitats.

CHALLENGES:

1. CCSP priorities and goals for adaptation to climate change focus primarily on broad, coarse-scale questions about general ecosystem function and effects. While some results relate to individual species populations and habitat (viewed from the systems perspective) most past and planned work relates to general systems ecology and climate change effects at the broad ecosystem level rather than at the game species population and habitat levels. Questions concerning game species, populations, and habitats are insufficiently addressed.
2. Climate change research partners receiving primary emphasis in the CCSP include the Ecosystems Interagency Working Group (EIWG) made up of federal agencies and various international agencies (i.e. International Geosphere-Biosphere Programme). State, private, university, and tribal partners are seldom if ever mentioned indicating that conservation partnerships with these entities, capable of global change research at the game species population and habitat levels are lacking or not emphasized.
3. Some emphasis on improving ecosystems observations and climate forecasting models was noted in the 2008 *Program*. However priorities:
 - for improving forecasting models for specific game/wildlife species and habitat responses to climate change, or
 - for developing information bases for tracking effects of climate change on specific game/wildlife species, and
 - for recording and sharing mitigation and adaptation strategies

were not mentioned.

4. For most wildlife species, insufficient basic data have been gathered about population abundance and vital rates over time, age structure over time, and related data. Even less data has been gathered on these variables' responses to threats. Baseline data and monitoring programs are required to overcome this limitation.
5. Population models typically fail to take into account key environmental factors adequately. Many wildlife population models still only include population size as a variable, ignoring any other specific environmental variable. Improved models are required that take specific environmental variables into account along with risk and uncertainty, both as environmental phenomena and as measurement errors.
6. Historically, forecasting of wildlife habitat, species and population dynamics has been based on the concept that the future will echo the past, both in terms of climate and its variability and in terms of the relationships among species and of species with their habitats, as statistically described. Now, given the rapidity and uncertainties of future climate trends and variability, our sense of forecasting 'certainty' is no longer applicable and entirely new forecasting tools must be constructed. Stationarity is no longer a valid concept. We will never again have the sense of 'certainty' that we used to incorrectly presume, but will rather have to develop new management tools and philosophies to manage under continuous, rapid change with considerable uncertainty.
7. Key ecological systems, including ocean habitats for anadromous fish and marine mammals, and dry forested habitat vulnerable to uncharacteristic wildfire, are undergoing rapid change with increasing uncertainty about the sustainability of these habitats for many game species, especially in light of recent climate change effects.
8. Other key ecological systems are under stress due to habitat loss, fragmentation, invasive species, and other factors. These stressors pose difficulties for game species populations and habitats to adapt to the rapid and widespread changes potentially brought about by climate change.
9. Traditional management approaches are not well suited to address the uncertainties associated with future climate change conditions. These uncertainties have been a barrier toward implementation of adaptive management strategies and as a result such strategies have not been widely or successfully implemented.
10. Subsistence users in Alaska anticipate significant climate change effects on subsistence activities including:
 - Wildlife: changes in the distribution and density of wildlife will have a direct effect on subsistence harvests.
 - Forestry: disturbance of existing habitat and wildlife as the boreal forest intrudes further north will affect subsistence users. (3)
11. Climate change and its impact on game species, populations, and habitats represent new research and management challenges which cannot be addressed with currently available funding sources.

CONSEQUENCES OF INACTION:

Failure to fulfill the goals and resolve the challenges presented above will increase the current high degree of uncertainty about the effects of climate change on game species, populations and habitats and potentially increase the risks to them. This increased risk and uncertainty could jeopardize their sustainability. Such risk and uncertainty could also greatly jeopardize the North American Model of Wildlife Conservation and the ability to implement and fulfill the intent of the EO.

OPPORTUNITIES:

1. CCSP should be expanded to include studies of the effects of climate change on at risk game species, populations and habitats.
 - Provide guidance on a periodic assessment process (e.g. characterization of species at risk; regional and local scales for forecasting climate change effects; engaging federal, state, tribal, private and university partners/managers in the assessment process.)
2. The Federal Government's climate change efforts should be expanded to include state, university, and tribal partnerships in determining effects of climate change on at risk game species, populations and habitat and in fulfilling the intent of the EO.
 - Effects information should be made available for inclusion into the various agency management planning and decision-making processes.
 - Mechanisms should be created for federal, state and tribal wildlife managers to share climate change data (data base coordination), research findings and forecasting and other modeling projections.
3. CCSP and other ecological and biological research efforts should emphasize development of future modeling and forecasting programs which link physical climate changes to biological responses of at-risk game species, populations and habitats at scales needed by managers. (See footnote below).
4. Federal biological research and management entities should emphasize development of monitoring programs necessary and sufficient for incorporating climate change effects on at risk game species, populations and habitat. Programs should:
 - Improve systematic observation and recording of species, population levels and habitat data.
 - Utilize/strengthen ongoing inventories.
 - Create new capacities for monitoring.
5. CCSP agencies and the natural resource management community should use expanded research partnerships to foster collaborative relationships (as in #2 above in this section) among natural resource agencies to design, construct, and implement adaptation strategies for at risk game species, populations and habitats, using adaptive management principles. Strategies could include for example, those that allow for flexibility and rapid response in setting hunting seasons and bag limits for subsistence resources.

- Other strategies could include networks of large, widely distributed tracts of wildlife habitat, migration corridors and habitat linkages which increase species resiliency (ability to adapt to climate change) and reduce the effects of stressors.
6. Individually or together, the five opportunities in this section will require new funding. In response, U.S. carbon policy in whatever form should be designed to generate significant new revenues. For example, pending legislation (S. 2191; Lieberman/Warner) offers a concept for funding wildlife programs related to climate change (Sec.4702-Adaptation Fund-) by making funds available to the states through the Wildlife Conservation and Restoration Account established under the Pittman-Robertson Wildlife Restoration Act. A carbon tax would be an alternative.

Footnote to #3, This Section:

Given the broad sources and diversity of uncertainties, scenario analysis offers a viable alternative to statistical forecasting. Multiple scenarios can be selected to attempt to sample the potential range of future uncertainties, but with no or conditional assignment of more or less likelihood to any given scenario. Traditional statistical forecasting assumes a certain ‘stationarity’ or repeatability of past statistical variability. However, non-stationary approaches to statistical analysis that include trends and possible threshold effects could be used within the context of scenario analysis for forecasting potential future impacts. Within that range of uncertainties, *Risk Analysis* can be used to identify the relative potential for negative impacts on valued natural resources, species, populations and habitats. Management alternatives could then be examined on the basis of ‘relative acceptability’ of any given risk. For example, narrowly endemic species with low dispersal capabilities and little adaptive flexibility would likely be at greater risk of extinction under rapid climate change than would more ‘generalist’ species with greater adaptive flexibility. It may be possible to identify functional groups or individual species that would most likely be ‘increasers’ under climate change; while, other groups might be ‘decreasers’ under climate change. Thus, the potential ‘success’ of restoration or conservation measures in a given locale might be differentially gauged for likely ‘increasers’ versus ‘decreasers’.

- Attached are two examples of wildlife risk analysis using scenario analysis of potential future habitat based on simulations from a mechanistic model of vegetation distribution, growth or dieback and drought and fire disturbances. The first is a published analysis of potential loss of sagebrush habitat in consideration of risk for the sage-grouse (Neilson et al. 2005). (4) The second is a recently completed study of potential snow and habitat change over North American in consideration of the potential risks of local extirpation of the Canadian Lynx (Report to the USDA Forest Service, Gonzalez et al. 2007). (5)

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Funding The North American Model of Wildlife Conservation in the U.S.

Background:

In the history of American conservation, the period 1850-1900 is referred to as the “Era of Exploitation.” Many species of wildlife were over-harvested for subsistence and for sale to commercial markets for food, fur, and feathers. Their habitats were seriously degraded through unregulated logging, over-grazing, destructive mining practices, pollution of waterways, conversion of native habitat to agriculture and many other disturbances. Around the turn of the 20th Century an American conservation ethic was galvanized through the leadership and efforts of progressive thinkers like Roosevelt, Grinnell, Pinchot, Muir, Merriam, Marsh, Audubon, Hallock, and Hornaday who started the Sportsman-Conservationist movement. They would lead the United States through the “Era of Protection” (1900-1929) and into the “Era of Game Management” (1930-1965) where harvest of wildlife became highly regulated, and correction of abusive land management practices and restoration of degraded habitats began in earnest (Shaw 1985, Trefethen 1975, Regier 2001).

Through the U.S. Constitution, the states possess broad trustee and police powers over fish and wildlife within their borders, including fish and wildlife on Federal lands within a state. Generally, states have delegated this responsibility to the state fish and wildlife agencies. During the early 20th century, the state’s management focus was on halting the decline of fish and game and restoring depleted populations through use of harvest regulations, law enforcement, and artificial propagation and stocking. Funding would always be a major issue and chronic problem for Conservation. Early on, sportsmen demanded a user pays system where fish and wildlife conservation was funded with dedicated revenue from the sale of hunting and fishing licenses. In 1937, sportsmen’s collective actions resulted in the passage of the Federal Aid in Wildlife Restoration Act (commonly known as the Pittman-Robertson Wildlife Restoration Act). This historic legislation established a “user pay – user benefit” program that is driven by a “self-imposed” tax on hunting firearm and ammunition (1970 & 1972 amendments extended this tax to pistols, revolvers and most archery equipment). These taxes are levied to the manufacturers of the equipment and collected nationally through the Internal Revenue Service, the Tariff and Taxation Bureau, or Customs depending on the type and origin of the equipment. The collections are deposited into the Wildlife Restoration Account, and allocated by the U.S. Fish and Wildlife Service to every state fish and wildlife agency (including U.S. territories) to support the management of the state’s wildlife resources. The allocations are based on a formula that takes into account the number of licensed hunters and the geographic area of each state. The allocations are contingent on state governments agreeing not to divert hunting license revenue away from wildlife management activities.

In 1950, sportsmen expanded this user pay – user benefit funding mechanism to fisheries with the passage of the Federal Aid in Sport Fish Restoration Act (commonly known as the Dingell-Johnson Fishery Restoration Act). This legislation established an excise tax on most equipment used by anglers with the collections deposited into a Sport Fish Restoration Account. The funds deposited into this account are allocated by the U.S. Fish and Wildlife Service to the states and territories based on the number of fishing licenses sold and the water area within the state. This legislation also assures that all funds collected through the sale of fishing licenses are spent on fishery management activities. Later amendments captured federal fuel taxes attributable to motorboat use to the Sport Fish Restoration Account.

With this dedicated funding stream, states were able to retain adequate staffs of well-trained employees, and in addition to law enforcement and fish stocking, state-level programs for public access and habitat management developed all across the country. Thus began America's system of funding the North American Model of Wildlife Conservation that links the hunter and angler, and the industry they support with educated and trained natural resource management professionals. While there have been supplemental federal funding and increased grass root support, this user pay – user benefit funding engine for implementing the North American Model of fish and wildlife conservation in the United States remained primarily unchanged for the last 75 years.

The Problem:

For most of the last century, the responsibility for the funding of conservation of our nation's fish and wildlife resources has rested squarely on the backs of those who hunt, trap, fish, enjoy recreational shooting and participate in recreational boating. This funding engine, fueled through hunting and fishing license fees and equipment purchases is the mainstay of our nation's fish and wildlife conservation efforts. While these contributions have come from the small group of hunters and anglers, the much larger population of outdoor enthusiasts are enjoying the benefits of this conservation without contributing to the costs.

The costs of fish and wildlife conservation are increasing with inflation and with legal and public demands for new and expanded services. Professional managers and the organizations and individuals that help support them have to address a large number of new pressures on the landscape that are rapidly changing the outlook for North America's fish and wildlife. Those changes include new energy demands, the global impacts of climate change, increasing consumption of natural resources and changing demographics. At the same time, the people our country has relied on to fund fish and wildlife conservation for over the last century (hunters and anglers) are declining as a percentage of the population. These expanding demands and decreasing hunter and angler numbers may lead to a shortfall in license revenues to adequately address needs. Furthermore, the state/federal/sportsman/industry partnership that has driven the Wildlife and Sport Fish Restoration Programs for over half a century is aging and showing signs that it may not meet future needs.

Goals:

- **Expand hunter and angler participation numbers and the license and excise tax revenues available to state and tribal agencies to allow fish and wildlife conservation to grow with the public's demands on these resources.**
- **Identify and develop new sources of dedicated, long-term funding for state and tribal fish and wildlife agencies that will ensure adequate financial resources for diverse fish, wildlife, and habitat conservation needs.**
- **Broaden the public's political and economic support for fish and wildlife conservation in the 21st Century.**
- **Expand public awareness of the North American Model of Wildlife Conservation and the funding engine that drives it in the United States.**

Challenges:

Sport Fish and Wildlife Restoration Acts

Over the last 75 years, these two important pieces of legislation represent the primary funding engine of the North American Model of Wildlife Conservation – totaling nearly \$11 billion dollars from excise taxes on sporting arms and ammunition, archery equipment, pistols and revolvers, fishing tackle, and gasoline excise taxes on outboard motor fuel. Additionally, these acts have protected the funds generated from the sale of hunting and fishing licenses for fish and wildlife management. Unfortunately, these acts are somewhat in need of updating and the state's fish and wildlife management demands have outpaced the funds they are generating.

Industry support for these funding sources needs to be carefully evaluated, and alternatives which will assure strong support for increased, reliable long-term funding to support state fish and wildlife agencies needs to be developed.

Traditional State Funding

Hunter and angler numbers are declining as a percentage of the overall population. Consequently, funding from license sales has failed to keep pace with resource management demands. Funding for fish and wildlife conservation needs to grow significantly to meet all of the states' statutory mandates. Opportunities to expand the responsibility for funding fish and wildlife conservation beyond hunters and anglers needs to be explored.

Public Awareness

Since 1937, the Wildlife and Sport Fish Restoration Acts have generated over \$11 billion that has been used exclusively to protect and improve fish and wildlife habitats, manage their populations and provide public places for hunting, fishing, wildlife observation, wildlife photography and the general enjoyment of the outdoors. Additionally, the states generate just over \$1 billion annually from the sale of hunting and fishing licenses. Together this is by far the largest and most reliable long-term contribution to fish and wildlife conservation, and has been the mainstay of our nation's conservation efforts. However, it has been made by a small percentage of the much larger population that enjoys the benefits of this conservation.

The vast majority of the public either is not aware at all of the contributions made by the hunting and fishing community, or they do not recognize that contribution as significant in the overall conservation of our nation's fish and wildlife resources. Most Americans believe that the primary funding for fish and wildlife resources come from either state or federal general tax revenues. Even hunters, anglers, and recreational shooters and boaters are not well versed in the importance of the contribution made to fish and wildlife conservation when licenses or the equipment are purchased for use in their recreational pursuits. Similarly, the numerous manufactures of equipment and gear that are taxed to support the programs have not been appropriately recognized for their significant contribution to conservation in America.

This lack of public awareness often creates unnecessary rifts among the various publics who benefit from the conservation actions supported with this funding. Non-consumptive wildlife users (bird watchers, outdoor enthusiasts, etc.) are often critical of the hunting community, unaware that dollars generated from hunting are responsible for preserving and making available their favorite bird watching or hiking locations. The establishment of target shooting facilities on state property is often rejected as "incompatible" by the public without realizing that recreational shooters made a significant contribution to the purchase of the property in question. Additionally, this lack of awareness by the public of this important contribution is also a significant impediment as states and federal agencies seek solutions to funding shortfalls.

To address this challenge, the hunting, angling and recreational shooting and boating community (including the state fish and wildlife agencies and the U.S. Fish and Wildlife Service) need to embark on a comprehensive outreach effort designed to first educate ourselves on the importance of our contribution, then to educate the general public on that importance.

Federal Agency Appropriations

A number of federal agencies receive federally appropriated dollars for the purpose of fish, wildlife and recreational management activities on their lands or that benefits their lands and /or advances their mission. The three most important federal land management agencies that interact and cooperate with state and tribal fish and wildlife agencies in the advancement of their respective fish and wildlife management objectives are the Bureau of Land Management (BLM), Forest Service (FS) and Fish and Wildlife Service (FWS).

BLM – When adjusted for inflation, the 1994 appropriation for the combined subactivities for wildlife management, threatened and endangered species and riparian management totaled \$67.2 million. In 2007, the comparable total was \$71.4 million. Therefore, while the recreational and resource demands on BLM lands have increased significantly, their appropriations have increased by less than \$4 million for these wildlife management subactivities in 14 years.

FS – When adjusted for inflation, the 1994, FS fish and wildlife management budget \$99.6 million. The comparable 2008 enacted appropriations was \$132.4 million – comparable to \$76.8 million in 1994 levels. Compounding this funding deficiency, the FS total budget was required to absorb fire suppression costs that increased from 13% in

1991 to 45% in 2008. Finally, in the President's budget, the 2009 FS request for fish and wildlife management activities is \$117.6 million.

FWS – When adjusted for inflation, the 1995, FWS appropriation was \$251 million for 4 subactivities directly related to fish and wildlife management (Migratory Bird Monitoring, the North American Waterfowl Management Plan, and Refuge Operation and Maintenance). In 2008, the FWS received a total of \$471.5 million.

While the FWS has seen significant increases for their activities, funding for the wildlife management activities of the two largest federal land management agencies has either remained nearly static (BLM) or declined (FS).

These federal agencies will face further budget constraints and demands on their fish and wildlife management objectives from invasive species, urban sprawl, and fire and water management among other issues. As these demands increase, their ability to interact with state fish and wildlife agencies to advance cooperative fish and wildlife management objectives will become strained even further as their resources become more limited, not only due to budget constraints that affect fish and wildlife management objectives, but due to increased regulatory and permitting demands as well as litigation costs. In light of this, an increased focus on well integrated resource management planning and implementation can and should benefit wildlife habitat improvement.

There is a need for increased federal appropriations for these important federal land management agencies.

Non-traditional Funding Sources

As the obligations have increased and the challenges facing fish and wildlife conservation have evolved, the limitations of the “user pay – user benefit” model become increasingly apparent. In response to these limitations, wildlife conservationists have advanced a range of initiatives at the state level (State Wildlife Funding Campaigns 2004). and federally to enhance wildlife conservation funding and help broaden the financial base for wildlife management. These alternate sources of funding have included the following:

- Voluntary Income Tax Check-offs
- Vanity License Plates
- State Lottery Funds
- Private Donations
- Dedicated Portion of State Sales Tax
- State Sales Tax from Outdoor Equipment
- Real Estate Transfer Fees
- Supporting Foundations for State and Federal Conservation Programs
- Wildlife Conservation Restoration Program
- Landowner Incentive Program
- State Wildlife Grants Program

While some of these non-traditional sources of funding have generated significant, sustainable funding for wildlife conservation, many have not. And, the majority of state wildlife agencies have no funding beyond license revenue, sport fish and wildlife restoration money, and state wildlife grants for fish and wildlife conservation. To meet the public's demands and to conserve fish and wildlife resources in the future it will be essential for every state to have a significant, sustainable source of non-traditional funding.

Consequences of No Action:

The costs for programs to conserve fish and wildlife resources already exceed available funding. The consequences of no action will be a continuation and worsening of trends that are already becoming apparent. Active conservation – the maintenance and enhancement of fish and wildlife resources – requires discretionary spending for habitat protection and restoration, maintenance and development of public access, applied research, actions to protect species-at-risk before they become threatened or endangered, availability of adequate baseline data and monitoring as a basis for well-informed scientific-based decisions, as well as many routine functions such as setting regulations and law enforcement. As funds become scarce, maintenance backlogs develop, law enforcement efforts are reduced, core functions suffer, and personal contact with constituents declines. The result is less than satisfactory performance of the agency's fish and wildlife management responsibilities which fall short of meeting public demands.

Likewise, access to and across private lands will continue to decrease leading to lower recruitment of new hunters, anglers, and wildlife enthusiasts. This may eventually result in lower participation rates, declines in traditional funding from license sales, loss of hunting, shooting and angling industry support, and less political support for conservation of fish, wildlife and habitat. Programs to acquire key habitats, enter into conservation agreements with private landowners and corporations, and to physically maintain and restore habitat may be seriously curtailed. Fish and wildlife populations and the ecological systems they depend on may enter a long-term trend of decline.

A higher percentage of funds will be directed towards maintenance of agency infrastructure such as personnel and facilities, and for legally directed expenditures such as listing threatened and endangered species, completing environmental documents, and issuing permits. Environmental analysis will often be conducted with inadequate information. Baseline information collected and subsequent monitoring will focus primarily on the project areas proposed by others rather than adequate, comprehensive surveys of all resources. The ability to identify and restore fish and wildlife and habitats at risk will decline, and more species will become listed as threatened and endangered. The regulatory burden from more threatened and endangered species may increase, while the hope for recovering any of these species virtually disappears.

Declines in fish and wildlife populations and their habitat and declines in hunting, fishing, and other forms of wildlife-associated recreation may lead to serious economic impacts nation-wide. In 2006 more than 87.5 million Americans over 16 years of age participated in hunting, fishing, and wildlife-associated recreation, spending over \$122 billion (USFWS 2007).

Substantial social impacts including the loss of our hunting, fishing, and outdoor heritage, and a growing disconnect between people and the natural world may also occur (Louv 2005).

Opportunities:

The traditional sources of fish and wildlife conservation funding – receipts from hunting and fishing licenses, federal taxes on hunting and fishing equipment and motorboat fuel, and annual appropriations – have supported the American Model of Wildlife Conservation in our nation for the past century. With the public’s demand for expanded and diversified conservation programs coupled with a decline in hunters and anglers as a percentage of the U.S. population, traditional funding sources will be inadequate to support future fish and wildlife conservation programs.

The following actions are recommended in order to address these challenges and accomplish the goals:

- **Expand hunter and angler participation numbers and the license and excise tax revenues available to state and tribal agencies to allow fish and wildlife conservation to grow with the public’s demands on these resources.**
 - Broaden the classes of products subject to excise taxes.
 - Capturing additional portions of the highway gas tax for the wildlife restoration account (snowmobiles, ATVs, etc.)
 - Solicit corporate sponsorships to provide licenses for youths.
 - Institute duties on all imported hunting and fishing products to support wildlife fund.
 - Appoint a committee of sportsmen, industry, state and federal agencies, and congressional staff to evaluate the current economic health and revenue collection processes of the Sport Fish and Wildlife Restoration Programs and provide recommendations for improvement to Congress and the Administration.
 - Develop more expertise within USFWS on excise tax compliance and enforcement.

- **Identify and develop new sources of dedicated, long-term funding for state and tribal fish and wildlife agencies that will ensure adequate financial resources for diverse fish, wildlife, and habitat conservation needs.**
 - Generate new sources of revenue within state fish and wildlife agencies (bottle taxes, product sales, impact fees, transaction fees, etc.)
 - Develop federal incentives for states to develop additional sources of revenues that support habitat and conservation funds.
 - Provide funding to state fish and wildlife agencies for loss of revenue due to decrease in hunting (similar to funding to support Rural Schools).
 - Explore opportunities with states in the use of lottery and gaming revenues to support fish and wildlife resource management.

- Dedicate a portion of any climate change mitigation funds to support wildlife restoration account (see Climate Change section of Habitat Conservation Paper).
 - Tax relief/credit for privately funded projects that contribute towards goals of State Wildlife Action Plans.
 - Create a mechanism to encourage and receive voluntary contributions to the sport fish and wildlife restoration account.
 - Dedicate a percentage of income derived from off-shore/on-shore oil and gas development to benefit wildlife management for state fish and wildlife agencies
 - Develop a new federal program similar to NAWCA to enhance upland wildlife habitat.
- **Broaden the public's political and economic support for fish and wildlife conservation in the 21st Century (see North American Model paper).**
 - Teach the North American model in history classes within all American schools (See paper on North American Model).
 - Develop a shooting sports and hunting foundation for outreach efforts, similar to the Recreational Boating and Fishing Foundation (RBFF).
 - Require a federal public lands access permit for all users of BLM, FS and FWS lands with revenue dedicated to habitat conservation. A state hunting/fishing license or federal Migratory Bird Stamp could be purchased in lieu of this permit.
 - Dedicate portions of the America the Beautiful Pass (or other existing permits) to habitat conservation.
- **Expand public awareness of the North American Conservation Model and the funding engine that drives it in the United States (see North American Model paper).**
 - Work with retail and manufacturing hunting and angling industries to develop an outreach program to emphasize the consumers' economic contribution to the North American Conservation Model.
 - Work with industry to brand the Wildlife Restoration Program through marketing initiatives.
 - Identify industry champions to help expand the revenue for the Wildlife Restoration Program.
 - Develop a marketing program that uses traditional and non-traditional media to promote the efforts of the sportsman.
 - Develop a funding mechanism to support the Sporting Conservation Council, similar to the Sport Fish and Boating Partnership Council support from the Sport Fish Restoration Program.
 - Include information about the funding sources for the North American Model of Wildlife Conservation within an RBFF like outreach program.

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NORTH AMERICAN WILDLIFE POLICY CONFERENCE

Issue Briefing Statement

TITLE

Perpetuating Hunter Traditions: Access to Public and Private Lands

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PROBLEM SUMMARY

Hunting and recreational shooting with firearms and archery equipment are important elements of America's outdoor heritage. Opportunities to engage in these activities are dependent upon public access to federal, state and private lands. Constraints on access have been identified as one of the leading impediments to sustaining and growing participation in these activities. Where adequate public access is not provided to public lands, recreational opportunities are forgone. Where access once was allowed and is now closed, participation diminishes due to lack of alternatives and reduction of recreational opportunities. The most notable problems are as follows:

1. Lack of consistent and easy access to information about what lands are open to hunting and recreational shooting, including identification of boundaries between open and closed areas, and public and private lands.
2. Inadequate public access to millions of acres of federal lands. Federal lands are extremely important in providing hunting opportunities (4.9 million people hunted on federal lands in 2006). These opportunities can be significantly increased with improved access to millions of acres managed by the Forest Service (FS), Fish and Wildlife Service (FWS), Bureau of Land Management (BLM), Bureau of Reclamation (BoR), and National Park Service (NPS).
3. Federal land management agencies (as listed above), along with the Departments of Defense (DOD) and Energy (DOE), may not have been tapped for their full potential to provide opportunities for sportsmen, including lands being transferred out of DOD.

4. Lack of a unified approach to addressing the special access needs of senior and disabled hunters and shooters.

5. Inadequate agency planning for the designation, maintenance, and management of shooting areas or ranges resulting in the closure of public lands to shooting. Closures have been based on safety and environmental concerns, liability risks, resource impacts, user conflicts, suburban sprawl, anti-gun sentiments, sound levels, zoning ordinances, land prices, and other management concerns. Many closures could be avoided by cooperative efforts based on a proactive, supportive attitude. Similar issues face state and county-owned lands.

6. Decline in access to private lands due to development and a paradigm shift in new landowners allowing access and concerns over liability. While leasing hunting clubs and private game ranches may be part of the hunting tradition in some areas, and may be beneficial for hunting and improved land stewardship, this trend has generally resulted in less hunting access and opportunities for a wide array of hunters.

7. Fragmentation of rural lands into smaller parcels which creates smaller hunting areas, reduces the number of people able to participate, increases the proximity of rural areas to developed areas, and increases user conflicts.

8. Existing policies or laws that limit or restrict access to federal lands for hunting and trapping (i.e. The National Wildlife Refuge System Administration Act of 1966 stipulates that only 40% of refuges designated as an inviolate sanctuary for migratory birds may be opened to migratory bird hunting).

9. Missed opportunities to make state and federally-funded conservation easements attractive to private landowners.

GOALS

1. Work with state and federal agencies and the shooting sports community to improve the quality and availability of information on access to public and private lands to hunters and shooters. Actions include:

a. Develop an inter-agency integrated mapping template using a *Google Earth* polygon or similar format to access mapping databases that will display hunting and shooting opportunities, including opportunities for the disabled, and identify land boundaries.

b. Improve agency websites to provide useful information to hunters and recreational shooters including maps, camping sites, access points, shooting areas/ranges, wildlife species available for hunting, and rules and regulations.

c. Prioritize funding for signage of designated travel routes, public land boundaries, and printing of travel maps to improve information for hunters and recreational shooters.

d. Evaluate funding needs under the Transportation Act for roads, trails, signage, and roads and trails maintenance that would improve access for hunters and shooters.

2. Work with state and federal agencies to expand and improve access on public and private lands. Actions include:

a. Define what access means to the hunting and shooting community. How much access is enough? What is the right balance between motorized and non-motorized access? How should access be addressed in terms of distances to be traveled and needs of seniors and the disabled?

- b. Ensure that access to hunting and recreational shooting opportunities is addressed in land, resource, and travel management plans. Require that these plans adequately analyze and address the effects of management alternatives on hunting and recreational shooting access.
- c. Address game retrieval issues in travel management plans. Evaluate the effects on motorized and non-motorized hunting due to restrictions on off-highway vehicle (OHV) use for game retrieval.
- d. Develop partnerships with the DOD, DOE, and BoR to determine what lands could be accessed by hunters and recreational shooters.
- e. Develop partnerships with the Department of Transportation to provide access to public lands by establishing trails and roads across private land (where there are willing landowners).
- f. Forge cooperative efforts among the federal agencies and state and local governments (e.g. Front Country Initiative, Colorado) to identify and manage sites that meet the needs of recreational shooters and hunters.
- g. Support states' efforts to establish and expand access programs (as an alternative to land leasing) like "Open Fields" that offer incentives for private landowners to provide access to hunters. Landowner appreciation and/or cooperative signage initiatives could be developed.
- h. Forge cooperative efforts among agencies to encourage willing landowners enrolling in federal/state-funded habitat conservation/cost-share programs to allow access to youth-mentor hunters.

3. Identify currently "land-locked" federal lands or lands with inadequate access and prioritize those lands according to the amount of sportsmen-related recreational opportunities that are likely to be gained with access. Actions include:

- a. Work with the Administration and Congress to elevate funding under the Land and Water Conservation Act and other authorities (e.g. Challenge Cost Share, Transportation Bill) for access acquisition.
- b. Identify other possible opportunities to gain or improve access such as willing seller land exchanges and easement acquisition or donation across private land, as well as participation by third party private, corporate or non-profit organizations to partner in access opportunity development.
- c. Develop criteria consistent with landscape planning to govern the sale and purchase of land-locked federal land (Sell a Square - Buy a Square).
- d. Establish a separate account that would hold the sale proceeds to be used to purchase new public land according to a landscape plan.

4. Work with the states, the federal agencies, and the shooting sports community to develop a comprehensive analysis of recreational shooting needs. Actions include:

- a. Conduct local use surveys and identify range development tactics and designs to meet recreational shooter and hunter needs.
- b. Determine how the concerns over liability, related to recreational activities and hazardous materials, is impacting recreational shooting on federal lands.

CHALLENGES

1. Establishing an integrated mapping website, improving signage, and providing other important information to hunters and recreational shooters takes money and staff. The current process for acquiring funds for signage is cumbersome and is unlikely to achieve the desired goals.
2. Opening access to blocked federal lands takes money and willing private landowners.
3. Hunter participation on federal lands could be affected by restricting OHV use to designated routes for game retrieval.
4. Providing access to recreational shooting can be dependent upon funding, staff, and private or state/local government management partnerships.
5. Federal policies can affect recreational shooting access and opportunities. The FS and BLM do not designate areas for shooting because of liability and hazardous materials concerns. The BLM cannot pursue land leases for shooting ranges under the Recreation and Public Purposes Act due to concerns related to hazardous materials and resource clean-up liability. The BoR requires sportsmen's clubs to post significant bonds for future clean up of ranges.
6. Opening public access to and through private land is constrained by the cost of the incentives, the economic return in leasing private lands, and concerns over liability.
7. Funding for state hunter-access programs is not sufficient to meet current and future demand for places to hunt, although there does not appear to be a shortage of private landowners who are willing to enroll or lease their lands for such programs.
8. Proposals for new and expanded hunting on federal lands are weighed down by perceived administrative costs.

CONSEQUENCES OF INACTION

1. Lack of awareness of what lands are open for hunting and recreational shooting will continue to exact a toll on hunter participation similar to the limitations on physical access.
2. Urbanization of the west and lack of funding and proactive management of recreational shooting will continue to result in federal lands being closed to recreational shooting.
3. Reduction in access for hunting will result in lost revenue to state wildlife agencies through excise taxes, license fees, habitat stamps, and game tags, as well as diminishing the state agencies use of hunting to manage for desired population levels. These reductions also lead to losses to local and state economies.
4. Continued closure of private lands to public hunting increases the burden on public lands to provide hunting opportunities which can lead to overcrowding, creating safety issues, and impacting the quality of the hunting experience.
5. Not having access to places to shoot can have a significant impact on recruiting and retaining hunters and teaching safe, ethical and responsible shooting.
6. Closure of federal lands and state lands to recreational shooting increases the burden on each other to provide for these opportunities, with shooters and hunters becoming the losers in the process.
7. Professional wildlife management programs and initiatives that rely on hunter participation will be unable to achieve wildlife population objectives.

OPPORTUNITIES

1. Create a Hunting and Shooting Sports Foundation similar to the Recreational Boating and Fishing Foundation.
2. Expand and develop partnerships with the Department of the Interior, Department of Agriculture, DOD, DOE, FWS, BLM, BoR, NPS, and FS to determine what lands could be accessed by hunters and recreational shooters.
3. Examine the potential for shooting ranges and hunting opportunities as part of the military Base Realignment and Closure (BRAC) process.
4. Expand federal funding or tax incentives to provide access to private land (i.e. the “hunter walk-in“ programs and the “open fields” program in the Farm Bill).
5. Partner with the technology industry to design and implement user-friendly access databases and websites.
6. Federal policy should be developed to creatively acquire access and maintain and improve existing roads and trails. For example, in the Transportation Bill, create an “open roads” program to provide funding to improve access to isolated parcels of federal lands. In addition, enhancement and maintenance funds should be provided to federal agencies and states for roads and trails.
7. Federal agencies should incorporate evaluation of the effects on hunting and recreational shooting as part of their NEPA analyses for land-use plans and subsequent management actions.
8. Fund or implement the results of the data call for proposals that would improve federal land access, an initiative under the umbrella of the Federal Lands Hunting, Fishing, and Shooting Sports Roundtable Memorandum of Understanding.
9. Federal agencies need to evaluate and assess the public safety risks and risk liability associated with shooting and hunting, commensurate and consistent with other public land recreational activities.
10. Federal agencies need to base their decisions relative to the environmental liability of recreational shooting on EPA’s policy, management guidance, and regulatory positions on spent lead ammunition.
11. Develop an effective government-wide process to facilitate the use of non-federal funds for acquiring access.

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TITLE: PRESERVING THE TRADITION OF HUNTING: EDUCATION, RECRUITMENT, AND RETENTION

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PROBLEM SUMMARY:

Participation in hunting has been declining in the United States for more than two decades. Between 1990 and 2005, participation in hunting declined by 4.4%, continuing a trend of decline between 1980 and 1991 (decline from 10.3% of Americans ≥ 16 years of age hunting to 7.4%, respectively; U.S. Fish and Wildlife Service 1982, 1993, 2006). This is part of a larger trend away from nature-based recreation of almost all types (Pergams and Zaradic 2008) and a nationally recognized growing disconnect between children and nature (Louv 2006). On average working American men increased the time in leisure activities by 6-9 hours per week between 1965 and 2003 (Aguiar and Hurst 2007); however, competition for time among the great array of leisure opportunities results in even greater pressure against allocating time for hunting and shooting sports. Indeed, primary reasons for not hunting (inactive for ≤ 3 years) include “not enough time,” (44%) “family and work obligations,” (46%) and “health/disability” (14%) (U.S. Fish and Wildlife Service 2007).

Contributing to the change in the social landscape is an aging U.S. population (those 55 years of age and older increased 13% from 2000-2005 to 67.1 million people; U.S. Census Bureau 2008c). Further, the U.S. population is projected to increase from 282 million in 2000 to 420 million by 2050 (U.S. Census Bureau 2004). The changing family structure reflects further modifications to the U.S. social structure. In 2006, for example, 67% of children ages 0–17 lived with two married parents, down from 77% in 1980 (Federal Interagency Forum on Child and Family Statistics 2007).

Hunters, trappers and anglers provide critical sources of revenue for the management of fish and wildlife resources. This revenue largely comes from license sales and excise taxes on the sale of equipment used in the sports. In addition to their financial contributions to resource management, sportsmen and sportswomen have traditionally formed the backbone of organizations that provided political support for policies that form the basis of the North American Model of Wildlife Conservation. Failure to reduce the decline in the trend will reduce the funding available to federal and state agencies, as well as NGO’s, with a subsequent decline in wildlife habitat and outdoor experience opportunities.

Hunters, trappers and anglers have traditionally entered these activities via socialization by family and close friends (O’Leary et al. 1987, Langenau and Mellon 1980). The social structures in support of hunting and recreational shooting traditions have eroded, however, as the U.S. populace has shifted from a rural to an urban culture. In 2005, 83% of the U.S. population lived in metro areas (one or more counties of 50,000 or more people), 10% in micro areas (at least one urban cluster of 10,000-49,000), and the remainder outside of core-based statistical areas (U.S. Census

Bureau 2008a). The Midwest had the smallest proportion of the population living in metro areas (75%); however, even there, the nature of residence has changed. In Missouri, for example, “open-country” living increased at a rate greater than residence in cities and towns during the 1990s (8.1% vs. 12.3%, respectively) and increased in all but 17 of the state’s 93 rural counties – 71% of Missouri population growth occurred outside of towns’ borders (Brookings Institution 2002). Increases in “exurban” residents resulted in a redistribution of jobs, land development (e.g., conversion of 680 square miles of rural lands to residential use), and infrastructure needed to support the increasing rural population. Repercussions of this change include loss of farmland, reduced hunting and fishing spots, crowded traffic-ways, eroded scenery, fragmented landscapes, and reduced water quality.

As society becomes more urbanized and as urbanites have reduced ties to rural settings, the opportunities to be socialized into these activities have declined (summarized in Wentz and Seng 2000)). The mobile nature of our society is exemplified by the rate of annual changes of address. For example, 39.9 million people (1 year of age or older) of the 287.1 million U.S. population in 2005 lived at a different address in 2004, with 29% of adults 20-29 years of age moving between 2004-2005 (U.S. Census Bureau 2008b). As families scatter across the landscape for economic opportunity or retirement, the ability to retain hunters and recruit others into hunting traditions is lessened.

While rural upbringing contributes to a propensity to hunt among males, other factors, such as gender and availability of a parent or mentor who hunt play a role in hunter recruitment (Stedman and Heberlein 2001). Participation in these activities by women and minorities has historically been very low. The most recent survey results show that about 9% of hunters are women; only 1% of women hunt (U.S. Fish and Wildlife Service 2006).

Education programs are vital to the preservation of hunting traditions. A variety of programs mainly aimed at youth and women have demonstrated that North Americans are still interested in learning traditional hunting and fishing skills. These programs offer women and youth opportunities to learn skills outside the traditional family setting. They have been successful in increasing participation in traditional hunting, have increased sale of licenses and equipment, and have increased the interest of participants in natural resource management (Lueck and Thomas 1997). Recent information suggests, however, that greater structure in youth activities will be required to engage the next generation of hunters. Despite the obvious need to increase attention to youth and women in hunting, middle-aged adults also comprise a significant reservoir of new hunters and shooters, with at least 1/3 of first time hunters and anglers being more than 20 years of age (U.S. Fish and Wildlife Service 2007).

The programs that have provided effective educational opportunity are expensive, labor and equipment intensive, and competitive with one another for limited funding. In order to be successful, programs need to be supported long-term and be aimed at audiences that either have infrastructure (meaning family, friends and access to land and equipment) in their lives, or provide that infrastructure beyond the initial skills learning phase (NSSF Best Practices citation). While much of this Problem Statement has focused on future participants, knowledge and acceptance by the general public of hunting and wildlife management is critical to maintaining hunting traditions. Education is a key influence on attitude and behavior of citizens.

The foundation for support in the wildlife profession also has eroded. Participation by Wildlife Society members declined significantly during the decade after 1994 in “consumptive” activities such as small game hunting and bait and lure fishing as well as “non-consumptive” activities, such as birdwatching and feeding wild animals or birds (Brown, et al 2006). An aging leadership within agencies also threatens retention of the foundation within the natural resource profession to ensure the future of the North American model of Wildlife Conservation. McMullin and Stout (2005) reported that 27.2 % of conservation professionals plan retire, by 2010; among leadership positions this was nearly half (46.1 percent) and is projected to exceed three-fourths by 2015 (76.7%). While this presents opportunities in natural resources careers, skills needed to address contemporary conservation challenges have changed (San Julian and Yeager 2002) and questions arise about the tendency of new hires to embrace a traditional culture linked to the North American Model of Wildlife Conservation (Muth et al. 2002). With the advancing age structure in state and federal resource agencies, a primary concern has been the loss of core competencies, leadership skills, and institutional memory (McMullin and Stout 2005, Colker 2005).

The academic training needed to develop conservation leadership also is facing a crisis. In a survey of U.S. and Canadian universities, Kaminski (2002) found that nearly two-thirds (65%) of faculty with waterfowl expertise were greater than 45 years of age, and only half (53%) would be replaced in-kind by university administration if waterfowl positions were vacated. Reasons for not replacing waterfowl expertise included a shift from wildlife emphasis to conservation biology, single species orientation to more general expertise, and lack of funding. A renewed commitment to education and educators will be essential to the future of wildlife management.

GOALS:

1. Increase participation in hunting and recreational shooting in the United States.
2. Identify, aggressively deliver, and fund sustainable, effective programs that educate, recruit, and retain participants.
3. Establish the institutional framework required to facilitate effective education, recruitment, and retention efforts.
4. Create the conduit for hunting and recreational shooting recruitment and retention by focusing programs and initiatives on skills (social and technical) development and competence in a social environment of hunting and recreational shooting.
5. Emphasize development and organization of mentors to pass on hunting skills and ethics to youth and other non-participants, as essential elements in the social structure of hunting traditions. The near term goal is to develop and retain a pool of skilled and respected mentors, while in the long term, emphasize recruitment of youth into hunting traditions.
6. Ensure that the rich traditions of hunting and the North American Model of Wildlife Conservation in support of conservation are viewed as a vital part of conservation agency culture and university programs in natural resources. Conservation leaders and educators must understand, support, and expect this in the future. As catalysts to active involvement, agencies and NGOs must work in harmony to invite participation.
7. Ensure that the rich traditions of hunting and the North American Model of Wildlife Conservation are viewed by the public, including non-hunters, as a vital part of our heritage.
8. Ensure that access to hunting and recreational shooting areas and information about hunting and shooting are available and do not serve as barriers to participation. To the degree possible, remove barriers presented by “not enough time,” “family and work obligations,”

and “health/disability” through hunting and shooting initiatives that increase the access to hunting and shooting information.

9. Base initiatives to recruit and retain hunters and recreational shooters on reliable information about wants and desires of potential hunters and shooters, and annually evaluate programs to adapt to changing social landscapes. Research and evaluation concurrent with implementation of new initiatives to preserve hunting and shooting traditions will be essential.
10. Reestablish shooting as a mainstream recreational opportunity for youth.
11. Develop the capacity for recruitment and retention of hunting and recreational shooting among local groups and NGOs.

CHALLENGES:

1. Funding and institutional frameworks are not adequate to support education, recruitment and retention efforts needed to counteract the downward trends in participation.
2. There are insufficient numbers of trained professional and volunteer educators to ensure understanding and appreciation of the North American Model of Wildlife Conservation.
3. Passive and “quick fix” solutions to the education process and challenges of recruitment and retention have characterized approaches to date. Effective programs will likely be expensive, labor intensive, and require a long-term commitment of funding and energy to be successful. Traditional approaches to preserving hunting traditions will not be effective in contemporary society. Additionally, hunting opportunity and social structures are not the same throughout the U.S., and solutions to the challenge of preserving hunting traditions will be heterogeneous as well.
4. Hunting and recreational shooting as a mainstream activity of youth will not be achieved if hunting and shooting is not an important and predominant part of family and peer networks.
5. Complex and at times insignificant regulations (developed without stakeholder input), and requirements for licenses and hunting education mandates may increasingly become barriers if the social structure and management culture do support entry into hunting and shooting.
6. There is a reluctance to integrate hunting into the culture of conservation agencies. Further, agency support for recruitment and retention is likely to erode as the demographics of conservation leadership changes.
7. The availability and distance to places to hunt and shoot, regimentation on public lands, and competition for uses all limit access to hunting and shooting opportunity.
8. Agencies have not made a high priority of using the wealth of data available to monitor and evaluate hunter recruitment and retention efforts or to develop new solutions for declining hunter recruitment and retention. Lack of capturing detailed, consistent and timely reporting of shooting and hunting related incidents to convince the public of the safety youth hunting and shooting (need goal).
9. Lack of coordinated effort among agencies, NGOs and industries to address hunter and recreational shooter recruitment and retention

CONSEQUENCES OF INACTION:

1. Failure to stop the decline in the numbers of hunters and shooters will result in the failure of the North American Conservation Model.
2. Funding for conservation programs and initiatives through license sales, Pittman-Robertson funds, and other revenue sources will be reduced.

3. Failure to preserve hunting and shooting traditions through recruitment and retention will result in fewer wildlife conservation efforts.
4. Hunting traditions and the associated “connection to the land” will be eroded along with citizens’ awareness and understanding of the need for a conservation ethic.
5. Without hunting traditions, an important tool for wildlife management also will be gradually lost during a time when it has become increasingly important (e.g., management of over-abundant species and conflict).
6. Without recruiting and retaining hunters who are willing to participate in urban wildlife management, there is a possibility of an erosion of public appreciation for wildlife and management may be relegated to integrated pest management.
7. Without recruitment and retention strategies, resource agencies may lose the political support for conservation.

OPPORTUNITIES:

1. Provide sufficient and assured funding (e.g., comparable to RBFF) and establish the institutional framework and priorities for education, recruitment, and retention.
2. Deliver educational programs through local partners using best practices. National dissemination of educational programs for natural resource students as well as state and federal conservation agency personnel to ensure an understanding and appreciation of the North American Wildlife Model and its relevance.
3. Seek visible Executive endorsement for Americans’ involvement in natural resource based recreational activities (similar to President Kennedy’s physical fitness program) and engage influential people as spokespersons in support of the North American Model of Wildlife Conservation.
4. Incorporate into environmental literacy through the Department of Education or other agencies, the role and relevancy of the North American Model of Wildlife Conservation.
5. Issue directive to federal land management agencies, including DOD, to facilitate an increased number of structured hunting and shooting events on federal lands and integrate the North American Model of Wildlife Conservation into educational exhibits and programs at Federal land management agency visitor contact points.
6. Commit to annual evaluation of progress toward increasing recruitment and retention.

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