

# Ensuring the RELEVANCE of Wilderness & Protected Areas in a Changing World

North American Intergovernmental Committee on Cooperation for Wilderness and Protection Conservation (NAWPA) — Working Group II

Working Group II members



## Executive Summary

*Working Group II reviewed more than 100 relevant studies between August and October 2011 conducted by NAWPA members and external parties. Group II is able to provide snapshots of visitors in specific cases, but unable to provide comparisons across protected areas and/or countries. The environment was found to be both a source of pride and concern for North American citizens, but direct links of public support to protected areas managed by NAWPA members is tenuous. Climate change research has advanced in recent years, yet Group II found minimal evidence in the literature regarding public relevance understanding of protected areas under climate change or public support for landscape connectivity. Group II remains challenged to address the diverse questions posed by Agency heads about relevance. Three options are provided for consideration, and Group II seeks direction on next steps.*

## Introduction

The federal governments of Canada, the United States, and Mexico are the proud stewards of a large base of wilderness and protected areas (hereinafter referred to as protected areas), which includes but is not limited to national parks, national forests, forest reserves, recreation areas, wilderness areas, biosphere reserves, flora and fauna protected areas, wildlife refuges, marine conservation areas, marine sanctuaries, and marine protected areas. These protected areas provide a range of social, economic, and ecological benefits to their respective country's citizens, and they are also an enduring legacy for generations to come.

Continued relevance of protected areas is dependent upon public support from the citizens of the countries entrusted with their protection and management. In recent years however, the relevance of protected areas has been questioned in the context of current and projected social and environmental changes in the 21<sup>st</sup> Century. It is well documented that North American society is changing. Populations are becoming more culturally diverse, urban areas are growing, leisure time and activity patterns are shifting, and concerns over the long-term impacts of nature-deficit disorder have emerged. In terms of environmental change, habitat and species shifts, glacier retreat, and altered forest fire seasons are a few of the early indicators of the pending risks of climate change for protected areas. How social and environmental dynamics at play today and in the future influence public support for and connection with protected areas in North America remains to be seen.

Under the umbrella of relevance, Working Group II members were asked to examine citizenry connection to protected areas managed by NAWPA members via visitation and public opinion on select issues. Specifically, using existing sources, Working Group II was asked to conduct a North American analysis to determine the following:

- ◆ Who is visiting/using protected areas managed by NAWPA members, and is there a difference between countries and land types?

- ◆ What is the importance of these protected areas to the citizenry of each country?
- ◆ What is the perceived relevance of these protected areas to the citizenry of each country in the context of climate change (specifically, landscape management as a response to climate change and biodiversity loss)?

Over 100 studies supplied by Working Group II members were reviewed (Table 1). What follows is a North American scale state of knowledge report as it relates to the questions above, and based on the results, options for Agency heads to consider as next steps. A bibliography of the reviewed studies is also provided.

## Visitors

### Visitation

Visitation statistics are available for most NAWPA members (Table 2), and are derived from a diverse suite of methods (e.g., national polls, traffic counters, point of sale, manual counts, and surveys) and could be reported for various temporal periods (e.g., monthly, calendar year, and fiscal year) where/when required. Definitions of a visitor and/or reported statistics (e.g., person visits, recreation visits, and paid visits<sup>1</sup>) vary, including who is included / excluded, what constitutes a measureable location<sup>2</sup>, and what can be measured, making overall patterns and magnitude of change across Canada, the United States, and Mexico more important than direct comparisons of absolute numbers.

<sup>1</sup> In Mexico, reported statistics include paid visitors and an estimation of visitors to protected areas where no fees are charged

<sup>2</sup> In Mexico, approximately 80% of the land in protected areas is social and private property (i.e. lands are owned by a community, a group of landowners called "Ejido" or a private owner). This fact requires CONANP to work closely with the land owners orienting their productive practices to properly manage the protected areas and conserve the ecosystems, while at the same time provide economic opportunities and incentives to the population who depend on the natural resources. Tourism, when conducted sustainably, can be an opportunity to involve local communities in the conservation of the areas. It is also an opportunity for visitors to come in contact with the social context of these sites. It must be noted that the figure 80% (noted above) is an approximation, which may vary given current field work and estimations being conducted in Mexico's protected areas

**Table 1: Studies supplied by Working Group II**

Study theme areas	Qty
<b>VISITORS</b>	
Visitation statistics and/or visitor profiles	9
Visitor satisfaction surveys	17*
<b>CITIZENRY SUPPORT</b>	
NAWPA-specific national surveys	9
Public surveys on the environment	17
<b>CLIMATE CHANGE</b>	
Climate change impact studies	11
Public surveys on global warming	10
<b>HUMAN DIMENSIONS</b>	
Case studies (e.g., support for new/revised limits, policies, users)	15
<b>OTHER</b>	
Conceptual (e.g., what is wilderness, benefits, being relevant)	30
Recreation participation studies	3
Economic value / contributions	2

\*Includes ~700 individual study results

**Table 2: Visitation<sup>1</sup>**

NAWPA related	Visits
National parks (PCA)	11M
National marine conservation areas (PCA)	1M
National parks (US NPS)	281M
Bureau of Land Management lands (BLM)	58M
National forests (US FS)	(179M) <sup>2</sup>
Wildlife refuges (US FWS)	45M
Protected Areas (CONANP) (Mexico)	6.1M
<b>Other protected areas (as reference)</b>	
State parks (USA)	730M
National marine sanctuaries (USA; NOAA)	0.3M

<sup>1</sup> Note: Visitation statistics are rounded. Visitor definition also varies from Agency to Agency. Figures cited may or may not include all places under the respective jurisdiction, and/or all visitors to that designation due to measurement challenges, group exclusions etc.

<sup>2</sup> To be confirmed

In order, and reference year: Parks Canada (PCA): 2010/11; U.S. National Park Service (US NPS): 2010/11; Bureau of Land Management (BLM): 2010; U.S. Forest Service (US FS): 2007; U.S. Fish & Wildlife Service (US FWS): 2010; National Commission of Natural Protected Areas (CONANP): 2010; State Parks: 2007; National Oceanic & Atmospheric Administration (NOAA): 2010 (7 of 13 sanctuaries; visitor centres only);

Examination of total annual visitation to protected areas managed by NAWPA members reveals a complex picture, with variable year-over-year patterns and variable temporal trends depending on the period examined. Visitation at some protected areas has remained steady, while others have experienced declines or increases in recent years. For example, as of 2010, visitation to national parks (and national marine conservation areas) in Canada was up

1% from 2000, down 4% from 2005 and up 5% from 2008; visitation was down 23% from a peak in 1999. As of 2007, annual visits to US national forests were down 13% over 2004, and down 1% over 2006, while US national wildlife refuges were up almost 17% since 2000 (compared to 2008). By comparison, in Mexico, visitation to protected areas increased 12% in 2008 (over 2007), but declined 5% for 2009 and 2010, respectively<sup>3</sup>.

Declining visitation and/or use of some protected area types in Canada and the United States is often cited as a proxy indicator of relevance, reflecting broader social changes occurring in North America. In Mexico, it is uncertain what caused the decline in visitation for 2009 and 2010. Confidence in long-term visitation trends across protected areas managed by NAWPA members remains challenged due in part to definition differences and/or temporal changes in measurement methods. While current data are our best source of visitation counts, there remains concern over the ability to articulate the actual magnitude of longitudinal change (positively/negatively) in visitation and correlations with contributing factors.

## Visitor Profiles

Most NAWPA members employ some form of standardized visitor feedback survey<sup>4</sup> to assess overall satisfaction with their respective programs and services, ascertain information on activity participation, travel expenditures, and elements that were enjoyed and/or need improvement, and to assist in departmental performance reporting. Overall, these studies illustrate that visitors to protected areas are generally satisfied /happy with their experience. These surveys also provide some insight into who is visiting, based on demographic and trip variables.

Working Group II is able to provide small profile snapshots of visitors in particular cases, but based on available research, is unable to undertake comparisons across protected areas / land types or countries due to inherent differences in the types of

information collected and approaches used. In the United States for example, most visitors to national parks are found to be Caucasian (78%), followed by those of Hispanic (9%) and African (7%) ethnicity (via national survey) – available Bureau of Land Management visitor surveys found similar ethnicity patterns. In Canada, the ethnicity question is not permitted on federal protected area visitor surveys, and ethnicity is not yet distinguished in Mexico's national visitation statistics. In Canada, other forms of indirect analysis are required to address this issue (e.g., segmentation analysis of postal codes linked to demographic and other market data), if it is deemed important for operations.

Demographic characteristics, such as age/age class and party composition are collected by some NAWPA members, as is information on visit frequency (e.g., first, repeat) and origin (e.g., domestic, international). The emerging pattern based on available data from NAWPA members is that visitors to some protected area types in Canada and the United States appear to be in the older age brackets (aged 40 or 50+) with some indication of lower proportions of children and/or family compositions.

Limited evidence was available to inform understanding of visitor/non-visitor profiles beyond standard demographic characteristics. The exception is Parks Canada, which has begun linking demographics, psychometrics (social values) and geography (e.g., rural, downtown) to profile visitors /non-visitors. Such analysis is affording the member richer insight into who is/is not coming, potential markets, and how to reach and communicate with different groups, in order to help nurture some groups and target potential new ones to increase visitation.

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## Public Support

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### Environmental Protection

The research illustrates that the environment has been a source of concern for citizens of Canada and the United States for decades. While tendencies towards positive attitudes about the quality of their country's respective environments prevail, citizens of these two

<sup>3</sup> Calculation based only on visitors that paid entry

<sup>4</sup> Examples: Visitor Survey Project (U.S. National Park Service), Visitor Information Program (Parks Canada), National Visitor Use Monitoring Program (U.S. Forest Service), Government Performance and Results Act surveys (Bureau of Land Management)

countries believe their governments could do more to address environmental issues. For example, in 2010 surveys, 66% of Canadians and 53% of Americans felt that their federal governments were paying too little attention to the environment, and 58% of Americans felt protecting the ocean should be a priority for the US government. The environment however often registers lower than the economy in critical issues facing the public, but when given the choice between the two, environmental protection has consistently outranked economic growth in the United States until the most recent economic recession. In 2011, 36% of Americans felt protecting the environment should be given priority over the economy, which is significantly lower than it was in 2005 (53%) and 1999 (67%). By comparison, in a 2002 study, Atlantic Canada (77%) and New England (76%) residents felt long-term benefits of ocean protection outweighed short term costs/impacts.

National, regional, and/or ad hoc public opinion surveys on the environment vary in their focus, questions asked, and their longitude. This creates a complex picture of public awareness and support, and tenuous direct links to protected areas managed by NAWPA members. While not an exhaustive list, known public environmental surveys to date tend to assess public attitudes, perceptions, preferences and/or understanding related to the following:

- ◆ Priority of the environment in relation to other issues (e.g., health care)<sup>5</sup>;
- ◆ Satisfaction with the quality of the environment generally or health of specific components (e.g., oceans, local green space);
- ◆ Threats to the environment (e.g., what and/or by whom, seriousness of different types);
- ◆ State of the environment (e.g., is it getting better / worse);
- ◆ Government action on protecting the environment (e.g., doing a good /poor job);
- ◆ Adequacy of government spending on the environment (e.g., spend more / less);

- ◆ Importance of protecting the environment (e.g., important, not important)
- ◆ Concerns over general and/or specific environmental issues (e.g., air pollution, oil spills, overfishing).

Other ad hoc national and/or regional public opinion surveys, often instigated by a policy, funding, political, or regulatory issue have focused on protected areas. Sponsored by the media and environmental non-governmental organizations for example, these surveys have explored the public support for the number of protected places to enjoy, the importance of protecting wilderness and at what cost, and support for increasing the percent of land protected for citizens. A 2001 national survey found that 91% of Americans felt it was important to protect wilderness, while an earlier and separate study concluded that 48% of Americans believed not enough wilderness was being protected by their governments. These ad hoc studies further reflect a genuine concern and support for the environment. While NAWPA members can draw strength from this environmental support, the direct applicability of any one ad hoc study to protected areas administered by specific NAWPA organizations is limited.

## NAWPA Protected Areas

Parks Canada (*National Survey of Canadians*) and the U.S. Forest Service (*National Survey on Recreation and the Environment*), in conjunction with the Bureau of Land Management, U.S. Fish and Wildlife Service and U.S. National Park Service, employ longitudinal national surveys. These surveys are designed to assess performance of their operations primarily, but are also used to monitor public support for their protection mandates, and/or support for protected areas under their respective jurisdictions. A series of national surveys conducted by the Mellan Group have links to Bureau of Land Management lands, and the National Commission of Natural Protected Areas (CONANP) recently participated in a national survey. The U.S. National Park Service also has its own national survey (*Comprehensive Survey of the American Public*). The most recent edition assessed support for specific management actions (e.g., control of invasive species, reintroduction of native species) and barriers to

<sup>5</sup> Example: 6% of Canadians identified the environment as a priority in 2010 compared to 21% in 2007. In a 2001 US study, 13% of Americans ranked the environment a priority after the economy (27%), crime (15%), and education (15%).

visitation, more so than public support and/or connection to the park system.

The approach and questions used varies between the *National Survey of Canadians*, the *National Survey on Recreation and the Environment*, and the CONANP national survey, and each survey attempts to gauge public perceptions of, attitudes toward, and the social value of protected areas in their own way. The results (Table 3) from select questions suggest that protection and protected areas under the jurisdiction of the respective NAWPA members are valued by the citizenry of Canada, the United States, and Mexico. In secondary analyses of each survey, some differences were found between visitors/non-visitors, age classes, country of origin, geography, and/or urbanity, depending on variables used.

With the inherent importance of protected areas to citizens of North America, few studies were found that illustrated the public's perception of these protected areas as symbols of cultural identity. The exception is a 2010 study that revealed that national parks were considered the fourth most defining symbol of Canada by Canadians, outranking hockey and the Royal Canadian Mounted Police (RCMP). The percentage of Canadians that consider this to be true has increased since 2003, but youth were less likely to identify strongly with the national park symbol compared to their more mature counterparts.

## Climate Change

Climate change poses risks and opportunities for federal stewards of protected areas. Some terrestrial and marine environments known and cherished by the citizens of Canada, the United States, and Mexico will undergo changes, including loss of iconic features, shifts in ecosystems, or the introduction and/or loss of particular flora/fauna. Alternatively, shifting climate regimes create opportunities for new and/or existing recreation seasons, and pose risks for other recreation activities.

**Table 3:** Value excerpts from NAWPA surveys

Percent of Canadians that strongly agree (or believe) (about national parks): <sup>a</sup>	%
Important that Parks Canada ensures they are available for present and future generations	82%
They are meant to be enjoyed by future generations as much as by people today	89%
They would be missed if they were gone	71%
It is important they exist even if people are unable to visit them	76%
They evoke a sense of pride as a Canadian	72%
Use tax dollars to maintain existing system	71%
Use tax dollars to expand the system	47%
Percent of Americans that feel it is extremely/very important to: <sup>b</sup>	%
Know that wilderness areas exist	76%
Know future generations will have wilderness areas	86%
Protect wildlife habitat	88%
Preserve unique wild plants and animals	83%
Protect rare /endangered plant and animal species	83%
Percent of Americans that:	%
Believe not enough land is designated as wilderness <sup>b</sup>	51%
Strongly favour designating more federal land as wilderness <sup>b</sup>	40%
Strongly favour preserving 60M acres of Bureau of Land Management administered land <sup>c</sup>	55%
Percent of Mexicans that: <sup>d</sup>	%
Are willing to contribute 'much/sufficient' economically to protect the environment	40%
Have a good impression of protected areas <sup>e</sup>	45%

a National Survey of Canadians (2009)

b National Survey on Recreation and the Environment (2008)

c The Mellman Group (2000) – cited in Campaign for America's Wilderness (2003)

d Bezaury-Creel, J. (2009)

e Includes people who lived, live or have visited protected areas

Climate change research applicable to protected areas to date has focused on modelling habitat and /or vegetation change under different climate change scenarios and projecting the risks and opportunities for flora/fauna, fire regimes, and park policies, among other issues. Climate modelling of recreation activities has also focused on projected risks and opportunities for tourism and recreation, including the implications for protected area managers at different levels of government.

With a strong base of climate-environment modelling, research has begun to emerge on the adaptability of protected area organizations to address the climate change issue. A few studies have

examined the extent to which managers of protected areas consider climate change a priority, and the extent to which they are prepared for climate change (e.g., is it integrated into policy, is there funding for adaptations, scientific expertise in house). A select few NAWPA members<sup>6</sup> have established climate change strategies for their protected areas. However, public understanding of the impact of climate change on protected areas themselves (risks and opportunities), and possible mitigating opportunities are poorly understood.

## Public Awareness & Connectivity

Public opinion research by public, private, and not-for-profit sector organizations, and the media, illustrate that citizens of Canada and the United States are generally concerned about global warming and climate change, but that they have difficulty relating the concept to their day-to-day lives. National, regional, and/or ad hoc public opinion studies on global warming /climate change tend to focus on whether citizens<sup>7</sup>:

- ◆ Worry about global warming (e.g., does it exist, is it a serious issue, should we be concerned);
- ◆ Believe the science (e.g., is it caused by nature or humans, will the projected temperature increase occur, is it real, has it begun);
- ◆ Rank it above other social and environmental concerns (e.g., acid rain);
- ◆ Believe their own actions can mitigate it; and/or
- ◆ Believe their governments should address the issue and/or perceptions of their respective government's current actions on the issue

Public opinion on mitigating actions to climate change has tended to focus on environmental ethics – green energy options, recycling, eat local, tougher regulations for industry. Working Group II found no

credible evidence in the scientific or grey literatures for Canada, the United States, or Mexico about:

- ◆ Public awareness and/or understanding of how climate change may influence the legacy of protected areas for future generations;
- ◆ Public perceptions of the importance of protected areas in the context of climate change;
- ◆ Public awareness and/or understanding of the management actions governments may need to take to protect the ecological integrity of protected areas;
- ◆ Public awareness and/or support for changing boundaries of protected areas in response to climatic impacts; and/or,
- ◆ Public awareness and/or support of the benefits of landscape connectivity in protected area management as a response to climate change induced environmental impacts.

Visitor perception of climate change induced environmental change is a relatively new area of research, and very few studies have explored reaction and/or behavioural adaptations to such changes. A recent study involved presenting visitors to Banff and Waterton Lakes National Parks with scenarios of how climate change could affect ecosystems in the southern Canadian Rocky Mountains over the next century. Participants were asked to reflect on each scenario and consider whether they would still visit the park if the changes occurred. The results suggest that visitation would decline when the most noticeable environmental changes emerge. The current challenge though is that the people that will experience the largest climate change induced environmental impacts [and be potential visitors] have yet to be born.

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## Conclusions

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This state of knowledge report reveals that NAWPA members conduct a wealth of research and undertake critical public monitoring programs to meet the management, policy, and performance objectives of their respective organizations. Across NAWPA

<sup>6</sup> Example: Climate Change Strategy for Protected Areas in Mexico (CONANP)

<sup>7</sup> These surveys tend to compare opinions over time in a given country, compare perceptions across countries (USA vs. Canada), and/or how opinions align with political affiliations (e.g., Republicans, Democrats).

members however, a clear picture of visitors (and non-visitors) outside of basic demographics requires work. More is known about long-term general support for the environment than specific protected area types and/or systems (e.g., marine areas, national forests), and challenges remain in linking climate change with the day-to-day lives of North Americans, including land management issues related to protected areas. The compilation of visitor statistics and relevance measurements are also particularly challenging in marine environments, due in part to the lack of clearly defined entry points.

Based on the current state of knowledge afforded by the available research, Working Group II remains challenged to address the diverse and complex questions posed by NAWPA Agency heads about relevance. Working Group II concludes this state-of-knowledge report with options for further consideration and some indication of their inherent value (Table 4).

**Table 4:** Next steps

Options		Value of information	Time & Cost
1	Longitudinal and comprehensive North American study	High	Very high
2	Iconic protected area study	Medium	High
3	Take action	TBD	TBD

#### **Option 1: Longitudinal and comprehensive North American study**

If NAWPA Agency heads are concerned with cross-cutting citizenry support for NAWPA-managed protected areas, Working Group II could undertake a longitudinal tri-lateral national public opinion survey to examine public attitudes and understanding of protected areas, their relevance with respect to climate change, and public support for adaptive management actions (e.g., boundary changes, landscape connectivity). Public messaging (and related evaluation) and other joint actions could follow, based on the knowledge gained.

#### **Option 2: Iconic protected area study**

If NAWPA Agency heads are concerned with public reaction to climate change-induced changes to

protected areas and the potential impact on visitation/use, Working Group II could undertake case studies of a few iconic terrestrial and marine protected areas in North America and examine the attitudes and behavioural adaptations of visitors and local residents to projected changes under climate change. This study would involve climate change scenarios and visitor surveys, and build on the Banff study identified earlier. Public messaging (and related evaluation) and other joint actions could follow, based on knowledge gained.

#### **Option 3: Take Action**

If NAWPA Agency heads are concerned with action, perhaps members need to move forward with efforts to increase public understanding and support for protected areas rather than conduct more research at this time to gain additional knowledge.

In this situation, Group II could share best practices, activities and/or evaluations they are doing to connect with their respective citizenry, and/or try to integrate opportunities to work together and/or find parallels in studies/programs where feasible, which may or may not include research. In addition, Working Group could develop joint activities (e.g., something for World Environment Day) to raise awareness of the relevance of protected areas trilaterally. In this option, it might be appropriate for Working Group II to be re-oriented towards practitioners in NAWPA organizations.

## Bibliography

- Abbe, J., and Manning, R. 2007. Wilderness day use: patterns, impacts, and management. *International Journal of Wilderness* 13(2): 21-25, and 28.
- Angus Reid. 2005. Canadians assess global warming measures. *Press Release – Angus Reid*. 8 March 2005. [www.angus-reid.com](http://www.angus-reid.com).
- Angus Reid. 2009. Americans perceive change in environment. *Press Release – Angus Reid Global Monitor*. 29 April 2009. 2pp. [www.angus-reid.com](http://www.angus-reid.com)
- Angus Reid. 2010. Canadians and Americans call for more action on the environment. *Press Release – Angus Reid Public Opinion*. 29 July 2010. 9pp. [www.angus-reid.com](http://www.angus-reid.com)
- Angus Reid. 2011. Britons question global warming more than Americans and Canadians. *Press Release – Angus Reid Public Opinion*. 12 September 2011. 6pp. [www.angus-reid.com](http://www.angus-reid.com).
- Bengston, D., Fan, D., and Kaye, R. 2010. The national public's values and interests related to the Arctic National Wildlife Refuge: a computer content analysis. *International Journal of Wilderness* 16(3): 13-20.
- Bergstrom, D., Bowker, J., and Kordell, K. 2005. An organizing framework for wilderness values. In K. Cordell, J. Bergstrom, and J. Bowker (eds.) *The Multiple Values of Wilderness*. State College, PA: Venture Publishing, 47-55.
- Bezaury-Creel, J. 2009. *El Valor de los Bienes y Servicios que las Áreas Naturales Protegidas Proveen a los Mexicanos*. México: The Nature Conservancy Programa México – Comisión Nacional de Áreas Naturales Protegidas. 32pp
- Borick, C., Lachapelle, E., and Rable, B. 2011. Climate Compared: public opinion on climate change in the United States and Canada. *Issues in Governance Studies* April (No. 39). Washington, DC: Brookings Institution, 1-13.
- Bowker, J., Murphy, D., Cordell, K., English, D., Bergstrom, J., Starbuck, C., Betz, C., and Green, G. 2006. Wilderness and primitive area recreation participation and consumption: an estimation of demographic and spatial factors. *Journal of Agricultural and Applied Economics* 38(2): 317-326.
- Bowker, J., Zhu, J., Askew, A., Starbuck, C., English, D., and Seymour, L. 2009. Wilderness recreation demand: a comparison of travel cost and on-site cost models. In C. Zinkhan and B. Stansell (eds.) *Southern Forest Economic Workers: 2009 Annual Meeting Proceedings*. Chapel Hill, NC: 8 to 10 March 2009, 154-163.
- Brown, G., and Alessa, L. 2005. A GIS-based inductive study of wilderness values. *International Journal of Wilderness* 11(1): 14-18.
- Brown, R., Rosenberger, R., Kline, J., Hall, T., and Needham, M. 2008. Visitor preferences for managing wilderness recreation after wildfire. *Journal of Forestry* 106(1): 9-16.
- Bureau of Land Management. 2007. *National Visitor Use Monitoring Program. Results for Dolores Public Lands Office*. Dolores, CO: Bureau of Land Management.
- Bureau of Land Management. 2007. *National Visitor Use Monitoring Program. Results for Moab Field Office*. Moab, UT: Bureau of Land Management.
- Campaign for America's Wilderness. 2003. *A Mandate to Protect America's Wilderness: A comprehensive review of public opinion research*. Washington, D.C.: Campaign for America's Wilderness. 44pp.
- Chavez, D. 2000. Wilderness visitors in the 21<sup>st</sup> century. Diversity, day use, perceptions, and preferences. *International Journal of Wilderness* 6(2): 10-11.
- Cole, D. 2000. Soul of the wilderness. Natural, wild, uncrowded, or free? *International Journal of Wilderness* 6(2): 5-8.
- Cole, D. 2001. *Day Users in Wilderness: How Different are They?* Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station Research Paper RMRS-RP-31. 29pp.
- Cole, D., and Hall, T. 2005. *Wilderness Visitors and Experiences in Oregon and Washington: Trailhead Surveys in Thirteen Forest Service Wildernesses*. Moscow, ID: University of Idaho, Wilderness & Protected Area Research Center. 237pp.
- Cole, D., Watson, A., Hall, T., and Spildie, D. 1997. *High-use Destinations in Wilderness: Social and Biophysical Impacts, Visitor Responses, and Management Options*. INT-RP-496. Ogden, UT: U.S. Department of Agriculture, Forest Service. 30pp.
- CONANP (Comisión Nacional de Áreas Naturales Protegidas). 2007. *Estrategia Nacional para un Desarrollo Sustentable del Turismo y la Recreación en las Áreas Protegidas de México*. Comisión Nacional de Áreas Naturales Protegidas, SEMARNAT, México. 81pp.
- CONANP (Comisión Nacional de Áreas Naturales Protegidas). 2007. *Programa de Turismo en Áreas Protegidas 2006-2012*. Comisión Nacional de Áreas Naturales Protegidas, SEMARNAT, México. 18pp.
- CONANP (Comisión Nacional de Áreas Naturales Protegidas). 2010. *Estrategia de Cambio Climático para Áreas Protegidas*. Comisión Nacional de Áreas Naturales Protegidas, SEMARNAT, México. 25pp.



- Cordell, K. 2008. The latest on trends in nature based outdoor recreation. *Forest History Today* (Spring): 4-10.
- Cordell, K., Carter, J., and Green, G. 2008. Nature-based outdoor recreation trends and wilderness. *International Journal of Wilderness* 14(2): 7-9, and 13.
- Cordell, K., Carter, J., Stephens, B., Mou, S., and Green, G. 2008. *How Do Americans View Wilderness – Part I: A Wilderness Research Report in the IRIS Series*. Athens, GA: U.S. Department of Agriculture, Forest Service.
- Cordell, K., and Stokes, J. The social value of wilderness. *International Journal of Wilderness* 6(2): 23-24.
- Cordell, K., Tarrant, M., and Green, G. 2003. Is the public viewpoint of wilderness shifting? *International Journal of Wilderness* 9(2): 27-32.
- CPAWS (Canadian Parks and Wilderness Society). 2001. *Backgrounder – State of the Ocean*. Omnibus poll commissioned by CPAWS British Columbia. 10 to 13 October 2001.
- Craig, R. 2003. Taking steps toward marine wilderness protection? Fishing and coral reef marine reserves in Florida and Hawaii. *McGeorge Law Review* 34(2): 155-266.
- Daigle, J. 2005. *Allagash Wilderness Waterway Visitor Survey 2003*. Miscellaneous Report 436. University of Maine, Maine Agricultural and Forest Experimentation Station. 53pp.
- DeMillion, M., and Lee, M. 2001. Ecological wilderness restoration: attitudes toward restoring the Mount Logan Wilderness. In R. Vance, C. Edminster, W. Covington, and J. Blake (eds.) *Ponderosa Pine Ecosystems Restoration and Conservation: Steps Toward Stewardship*. Flagstaff, AZ: 25 to 27 April 2000. Ogden, UT: U.S. Department of Agriculture Forest Service Proceedings RMRS-P-22.
- Durrant, J., and Shumway, J. 2004. Attitudes towards wilderness study areas: a survey of six southeastern Utah counties. *Environmental Management* 33(2): 271–283.
- Dustin, D., and McAvoy, L. 2000. Of what avail are forty freedoms: the significance of wilderness in the 21<sup>st</sup> century. *International Journal of Wilderness* 6(2): 25-26.
- Edge Research. 2002. *Public Attitudes about Ocean Protection. Results of a survey of residents of New England and Atlantic Canada*. Poll commissioned by Canadian Parks and Wilderness Society, World Wildlife Fund Canada, Environmental Defense, Ocean Conservancy, Conservation Law Foundation. 16 February 2002.
- EnviroNics. 2010. *Focus Canada 2010*. Toronto, ON: EnviroNics Institute. 52pp.
- Environment Canada. 2007. *Environment Canada Communications Survey*. Report prepared by Ipsos Reid. Gatineau, QC: Environment Canada.
- Flanagan, T., and Anderson, S. 2008. Mapping perceived wilderness to support protected areas management in the San Jaun National Forest, Colorado. *Forest Ecology and Management* 265(5): 1039-1048.
- Fly, M., Jones, R., and Cordell, K. 2009. Knowledge of and attitudes towards wilderness in the southern Appalachian ecoregion. In S. McCool, D. Cole, W. Borrie, J. O'Loughlin et al (eds.) *Wilderness Science in a Time of Change Conference – Volume 2: Wilderness within the Context of Larger Systems*. Proceedings RMRS-P-15-VOL-2. Ogden, UT: U.S. Department of Agriculture, Forest Service.
- Gossling, S., and Hall, C. 2006. *Tourism & Global Environmental Change*. New York, NY: Routledge. 320pp.
- Green, G., Bowker, J., Johnson, C., Cordell, K., and Wang, X. 2007. An examination of constraints to wilderness visitation. *International Journal of Wilderness* 13(2): 26-36.
- Haas, G., and Wells, M. 2000. A more pristine wilderness. *International Journal of Wilderness* 6(2): 21-22.
- Hall, T., and Cole, D. 2006. *Wilderness use in Oregon and Washington: an investigation of changes in motivations, perceptions, and behaviour*. Moscow, ID. University of Idaho, Wilderness & Protected Area Research Center. 96pp.
- Hallo, J., and Manning, R. 2010. On the edge, peering in: defining and managing the near-wilderness experience on the Denali Park Road. *Journal of Wilderness* 16(3): 28-34.
- Hammett, W., and Schuster, R. 2000. Wilderness use in the next 100 years. *International Journal of Wilderness* 6(2): 12-13.
- Ipsos Ried. 2011. Nine in 10 Canadians say that when connected to nature they feel happier. *Press Release – Ipsos Reid*. 7 January 2011. www.ipsos.ca
- Jager, E., and Sanche, A. 2010. Setting the stage for visitor experiences in Canada's national heritage places. *The George Wright Forum* 27(2): 180-190.
- Johnson, B., Hall, T., and Cole, D. 2005. *Naturalness, Primitiveness, Remoteness, and Wilderness: Wilderness Visitors' Understanding and Experience of Wilderness Qualities*. Moscow, ID: University of Idaho, Wilderness & Protected Area Research Center. 82pp.
- Johnson, C., Bowker, J., Bergstrom, J., and Cordell, K. 2004. Wilderness values in America: does immigrant status or ethnicity matter? *Society and Natural Resources* 17: 611-628.

- Jones, B., and Scott, D. 2006. Implications of climate change for visitation to Ontario's provincial parks. *Leisure* 30(1): 233-261.
- Jones, B., and Scott, D. 2006. Climate change, seasonality and visitation to Canada's national parks. *Journal of Park and Recreation Administration* 24(2): 42-62.
- Jones, J. 2011. In US, concerns about global warming stable at lower levels. *Press Release – Gallup*. 14 March 2011. [www.gallup.com](http://www.gallup.com).
- Kramer, B. 2011. Poll shows support for wilderness in Colville National Forest. Survey conducted for Pew Environmental Group. *Spokane Review*. 6 April [www.spokesman.com](http://www.spokesman.com).
- Kronsnick, J., and MacInnis, B. 2011. *National Survey of American Public Opinion on Global Warming*. Stanford, CA: Stanford University.
- Larkin, A. 2010. *Adirondack Stakeholder Wilderness Perceptions for use in Wilderness Preservation*. New York, NY: SUNY College of Environmental Science and Forestry. 7pp.
- Lawson, S., and Manning, R. 2003. Integrating multiple wilderness values into a decision-making model for Denali National Park and Preserve. *Journal for Nature Conservation* 11: 355-362.
- Lemieux, C. Scott, D., Davis, R., and Gray, P. 2008. *Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation*. Waterloo, ON: University of Waterloo. 55pp.
- Littlejohn, M., Yen, L., Russell, J., Hollenhorst, S., and Gramann, J. 2009. *National Park Service Visitor Services Project*. Moscow, ID: University of Idaho, Park Studies Unit. (158 surveys)
- Lorenzoni, I., and Pidgeon, N. 2006. Public views on climate change: European and USA perspectives. *Climatic Change* 77: 73-95.
- McCarty, J. 2001. Ecological consequences of recent climate change. *Conservation Biology* 15(2): 320-331.
- Mott, W., Boyle, P., Sher, K., and Hekkers, J. 2011. *America's Ocean. Annual Update 2011*. Providence, RI: The Ocean Project. 4pp.
- Nagle, J. 2005. The spiritual values of wilderness. *Environmental Law* 35: 955-1003
- National Geographic. 2010. *Greendex 2010: Consumer Choice and the Environment – A Worldwide Tracking Survey. Highlights Report*. Washington: D.C.: National Geographic. 12pp.
- Newport, F. 2010. Americans' global warming concerns continue to drop. *Press Release - Gallup*. 11 March 2010. [www.gallup.com](http://www.gallup.com).
- NSPLC (Nova Scotia Public Lands Coalition). 2004. New survey says majority of Nova Scotians want more land protected. Citizens favour wilderness conservation over development on Crown Land. *Press Release – NSPLC*. Poll conducted for Canadian Parks and Wilderness Society and Ecology Action Centre. 4 February 2004
- Parks Canada. 2009. *National Survey of Canadians*. Report prepared for Parks Canada by Environics Research Group. Gatineau, QC: Parks Canada. 88pp.
- Parks Canada. 2009. *The Value of Visiting National Parks. Secondary Analysis of Parks Canada's National Survey of Canadians*. Gatineau, QC: Parks Canada. 3pp.
- Parks Canada. 2009. *How Well are we Doing? – Top line results of Parks Canada's Stakeholder and Partner Engagement Survey*. Gatineau, QC: Parks Canada. 6pp.
- Parks Canada. 2009. *Minister's Round Table on Parks Canada: Background Document*. Gatineau, QC: Parks Canada. 47pp.
- Parks Canada. 2010. *Parks Canada Attendance Statistics*. Gatineau, QC: Parks Canada. 5pp.
- Parks Canada. 2010. *Visitor Information Program 2010: National Summary Report*. Gatineau, QC: Parks Canada.
- Parks Canada. 2010. *Visitor Information Program (2005 to 2010)*. Gatineau, QC: Parks Canada.
- Parks Canada. 2010. *Visitor Origin Monitoring Program – 2010 Results*. Gatineau, QC: Parks Canada. 2pp.
- Phoenix Strategic Perspectives. 2006. *Values, Beliefs, and Attitudes toward Environmental Issues and Actions – a secondary analysis*. Report prepared for Environment Canada. Ottawa, ON: Environment Canada. 52pp.
- Powell, R., and Vargas, W. 2010. The benefits of stakeholder involvement in the development of social science research. *Park Science* 27(1): 46-49.
- Responsive Management. 2011. Bringing back lapsed hunters in Virginia. *Responsive Management Report – Hunting Update 2011*. Harrisburg, VA: Responsive Management. 24pp.
- Richardson, R., and Loomis, J. 2004. Adaptive recreation planning and climate change: a contingent visitation approach. *Ecological Economics* 50: 83-99.
- Rodriguez, D., and Roberts, N. 2002. *The Association of Race/Ethnicity, Gender, and Social Class in Outdoor Recreation Experience*. Denver, CO: Colorado State University.

- Roggenbuck, J. 2000. Meanings of wilderness experiences in the 21<sup>st</sup> Century. *International Journal of Wilderness* 6(2): 14-18.
- Rosset, D. 2010. Mobilizing support for Canada's national treasures. *The George Wright Forum* 27(2): 191-201.
- Saad, L. 2006. Americans still not highly concerned about global warming. *Press Release – Gallup*. 7 April 2006. [www.gallup.com](http://www.gallup.com).
- Saunders, S., Easley, T., Logan, J., and Spencer, T. 2006. *Losing Ground: Western National Parks Endangered by Climate Disruption*. Los Angeles, CA: Natural Resources Defence Council. 39pp.
- Schroeder, S., and Schneider, I. 2010. Wildland fire and the wilderness visitor experience. *International Journal of Wilderness* 16(1): 19-25.
- Schuster, R., Cordell, K., and Green, G. 2007. Expansion of the wilderness values scale with three sub-scales: personal maintenance, expression and learning, and societal maintenance. In A. Watson, J. Sproull, and L. Dean (eds.) *Science and Stewardship to Protect and Sustain Wilderness Values*. Eighth World Wilderness Congress Symposium. Proceedings RMRS-P-49. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, 308-313.
- Schuster, R., Cordell, K., and Phillips, B. 2005. Understanding of cultural, existence and bequest values of wilderness. *International Journal of Wilderness* 11(3): 22-25.
- Schuster, R., Traant, M., and Watson, A. 2004. The social values of wilderness. In J. Murdy (ed.) *Proceedings of the 2003 Northeastern Recreation Research Symposium*. General Technical Report NE-317. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, 356-365.
- Schuster, R., Cordell, K., and Phillips, B. 2006. Measurement of direct-use wilderness values: a qualitative study. In J. Peden and R. Schuster (eds.) *Proceedings of the 2005 Northeastern Recreation Research Symposium*. General Technical Report NE-341. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, 188-195.
- Scott, D., Jones, B., and Konopek, J. Implications of climate and environmental change for nature-based tourism in Canada's Rocky Mountains: a case study of Waterton Lakes National Park. *Journal of Tourism Management* 28: 570-579.
- Scott, D., Malcolm, J., and Lemieux, C. 2002. Climate change and modeled biome representation in Canada's national park system: implications for system planning and park mandates. *Global Ecology and Biogeography* 11(6): 475-485.
- Scott, D., and Lemieux, C. 2005. Climate change and protected areas planning in Canada. *The Forestry Chronicle* 81(5): 696-703.
- Seekcamp, E., Hall, T., Harris, C., and Cole, D. 2006. *Attitudes and Changes in Attitudes about Visitor Management at the Great Lakes/ South Sister Area of Three Sisters Wilderness. A Study of Stakeholder Involvement Meetings in Oregon*. Moscow, ID: University of Idaho, Wildness & Protected Areas Research Center. 71pp.
- Shroyer, M., Watson, A., and Muir, A. 2003. Wilderness research in South Africa: defining priorities at the intersection of qualities, threats, values, and stakeholders. *International Journal of Wilderness* 9(1): 41-45.
- Siikamaki, J. 2009. *Use of Time for Outdoor Recreation in the United States, 1965-2007*. Discussion Paper. Washington, D.C.: Resources for the Future.
- Smith, J. 2008. Utah Off-Highway Vehicle Owners' Specialization and its Relationship to Environmental Attitudes and Motivations. *All Graduate Theses and Dissertations*. Paper 40.
- Solomon, E. 2009. *Canadian Perspectives on the Ocean and Climate Change*. The Vancouver Aquarium Marine Science Centre's findings based on The Ocean Project's 2009 study. Vancouver, BC: Vancouver Aquarium.
- Solomon, E. 2009. Canadian Perspectives on the Ocean and Climate Change. *Canadian Association of Zoos and Aquariums (CAZA) Annual Meeting*. Vancouver, BC: 2 October 2009.
- Taylor, P., Burke, D., and Bistra, A. 2011. *National Park Service Comprehensive Survey of the American Public, 2008-2009. National Technical Report*. Natural Resource Report NPS/NRPC/SSD/NRR – 2011/295. Fort Collins, CO: National Park Service. 102pp.
- Taylor, P., Burke, D., and Gramann, J. 2011. *National Park Service Comprehensive Survey of the American Public, 2008-2009. Racial and ethnic diversity of National Park System visitors and non-visitors*. Natural Resource Report NPS/NRPC/SSD/NRR – 2011/432. Fort Collins, CO: National Park Service. 22pp.
- Taylor, P., Burke, D., and Dorssom, M. 2011. *National Park Service Comprehensive Survey of the American Public, 2008-2009. Broad comparisons to the 2000 survey*. Natural Resource Report NPS/NRPC/SSD/NRR – 2011/431. Fort Collins, CO: National Park Service. 24pp.
- Torres, T. 2001. *The Influence of Cultural Identity on Resident Perceptions of Recreational Boating and the BLM: A Case Study from a Gateway Community*. Master Thesis. Oregon State University.
- United States National Assessment Team. 2001. *Climate Change Impacts on the United States: the Potential Consequences of Climate Variability and Change*. New York, NY: Cambridge University Press.
- University of Idaho. 2009. *National Park System 2009 Visitor Survey Card Data Report*. Report #NAPA09 for the

- National Park Service. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2010. *El Malpais National Conservation Area Visitor Survey*. Report #ELMA910 for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2010. *Big Morongo Canyon Preserve Visitor Survey*. Report #BIM0710 for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2010. *Grand Canyon-Parashant National Monument Visitor Survey*. Report #GRCA709 for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2010. *Gulkana National Wild River Visitor Survey*. Report #GULK908 for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2011. *Red Cliffs National Conservation Area Visitor Survey*. Report #RECL611 for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2011. *Aravaipa Canyon Wilderness Area Visitor Survey*. Report #ARCA611 for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- University of Idaho. 2011. *Canyons of the Ancients National Monument Visitor Survey*. Report #CAAN611 – for the Bureau of Land Management, U.S. Department of the Interior. Moscow, ID: University of Idaho, Park Studies Unit.
- U.S. Department of Agriculture. 2008. *National Visitor Use Monitoring Results. National Summary Report*. U.S. Department of Agriculture, Forest Service.
- U.S. Department of Agriculture. 2012. *National Visitor Use Monitoring Results FY 2010-FY 2012. National Summary Report*. Welcome to NVUM Results Version 2.0. U.S. Department of Agriculture, Forest Service.
- U.S. Department of the Interior. Various years, 1950-2007. *Public Land Statistics*. Washington, D.C.: Bureau of Land Management.
- U.S. Fish & Wildlife Service. (forthcoming). *National Wildlife Refuge System Visitor Survey — 2010/11 Summary*. U.S. Department of the Interior, U.S. Fish & Wildlife Service.
- U.S. Fish & Wildlife Service. (forthcoming). *National Wildlife Refuge System Visitor Survey – 2010/11 Summary*.
- U.S. Department of the Interior, U.S. Fish & Wildlife Service.
- U.S. Fish & Wildlife Service. 2006. *National Survey of Fishing, Hunting, and Wildlife Associated Recreation*. U.S. Department of the Interior, U.S. Fish & Wildlife Service.
- Vital Signs. 2010. Canadians' views on local, global environmental issues disconnected, survey shows. *Press Release – Vital Signs*. 18 October 2010. <http://www.vitalsignscanada.ca/nr-2010-public-opinion-survey-e.html#envissue>
- Wallace, G., Brooks, J., and Bates, M. 2004. *A Survey of the Day and Overnight Backcountry / Wilderness Visitors to Rocky Mountain National Park*. Fort Collins, CO: Colorado State University, Department of Natural Resources and Tourism.
- Walls, M., Darley, S., and Siikamaki, J. 2009. *The State of the Great Outdoors. America's Parks, Public Lands, and Recreation Resources*. Washington, D.C.: Resources for the Future.
- Walls, M. 2010. *Parks and Recreation in the United States. State Park Systems*. Washington, D.C.: Resources for the Future.
- Watson, A. 2004. Human relationships with wilderness: the fundamental definition of wilderness character. *International Journal of Wilderness* 10(3): 4-7.
- Watson, A., and Borrie, W. 2006. Monitoring the relationship between the public and public lands: application to wilderness stewardship in the United States. In C. Aguirre-Bravo, P. Pellicane, D. Burns, and S. Draggan (eds.) *Monitoring Science and Technology Symposium: Unifying Knowledge for Sustainability in the Western Hemisphere Proceedings* RMRS-P-42CD. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, 287-293.
- Webb, L. 2011. Utahans want country commission leadership to resolve public lands issues. Public land use poll. *Utah Policy Daily*. 5 May 2011.
- Welch, D. 2005. What should protected areas managers do in the face of climate change? *George Wright Forum* 22(1): 75-95.
- Williams, D., and Watson, A. 2007. Wilderness values: perspectives from non-economic social science. In A. Watson, J. Sproull, D., and Liese (eds.) *Science and Stewardship to Protect and Sustain Wilderness Values. Eighth World Wilderness Congress Symposium*. September 30 to October 6 2005. Anchorage AK. Proceedings RMRS-P-49, Fort Collins, CO: U.S. Department of Agriculture, Forest Service, 123-133.
- York, R., Rowland, P., and Salley, K. 1994. *A Survey of the Attitude of Residents along the Heilgate Recreation Area of the Rogue River toward User Groups and their Impact*.

Portland, OR: Southern Oregon State College, Department of Psychology.

Zaradic, P., Pergams, O., and Kareiva, P. 2009. The impact of nature experience on willingness to support conservation. *PLoS ONE* 4(10): e7367.