CHANGES IN NATIONAL PARK VISITATION (2000-2008) AND INTEREST IN OUTDOOR ACTIVITIES (1993-2008)

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Abstract.—This paper addresses Pergams and Zaradic's (2006) assertions that recent national park visitation has declined sharply and that these declines are directly related to the increased use of electronic media and passive forms of entertainment. We analyzed two large, national datasets that have used consistently replicated methods of annual data collection over a lengthy period. Although we found evidence of some decline in national park visitation between 2000 and 2008, the declines were not dramatic. Analysis of data between 1993 and 2008 showed no evidence of declining interest in travel, outdoor recreation, and media-related activities among people who are interested in wildlife and the environment.

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BACKGROUND AND LITERATURE REVIEW

The overall purpose of the present research is to test the assertions made by Pergams and Zaradic (2006) regarding national park visitation, interest in environmental issues, and participation in selected outdoor recreational activities. Pergams and Zaradic (2006) claim that the U.S. population and culture are moving away from "biophilia" into an era of "videophilia," a growing interest in being entertained by passive media or video experiences instead of direct engagement with nature. They attribute a decline in national park visitation in recent years to this increase in videophilia. They claim that the decrease in the rate of visiting national parks is inversely correlated with increases in television viewing, video game playing, movie watching at home, theatre attendance, Internet use, oil prices, foreign travel, and extreme outdoor recreation, such as hiking the Appalachian Trail.

The Pergams and Zaradic (2006) research has some basic methodological problems. First, the authors selected data from a variety of unrelated datasets and sources. In addition, their analysis assumes or asserts *causation* where there is only *correlation* between national park visitation numbers and trends in different leisure and recreation activities. They suggest that their findings do not bode well for the future of biodiversity conservation, but their study period extended only until 2003 and included overall trend data only from 1988 to 2003. Many digital media activities did not become popular until the mid- to late-1990s and substantial long-term trend data are simply not available to analyze for long-term trends. In addition, Pergams and Zaradic lumped all households and participants into one large group and assumed that changes in leisure and recreation patterns were equally distributed across all demographic segments, household types, and regions of the country. Finally, they did not consider potentially useful data on youth participation in outdoor recreation from such sources as the Boy and Girl Scouts Programs, the National Camping Association, and the National Sporting Goods Association.

Since the release of the article, other recreation researchers have given considerable attention to the findings and many authors have criticized Pergams and Zaradic's (2006) methodology and conclusions. Jacobs and Manfredo (2008) noted that Pergams and Zaradic measured participation in a few types of recreation but extrapolate to all forms of outdoor recreation. In addition, Jacobs and Manfredo (2008) refute Pergams and Zaradic's claim that people's support for biodiversity is likely to be connected to their participation in outdoor recreation. They acknowledge that Pergams and Zaradic

raise important and compelling questions about the decline of selected forms of outdoor recreation but suggest that it would be premature to accept Pergams and Zaradic's far-reaching conclusions.

Cordell (2004) found that nature-based recreation activities tracked by the *National Survey on Recreation and the Environment* were still growing through the first part of the current decade. Citing this research, Cordell et al. (2008) note that almost 70 million people age 16 or older reported visiting a wilderness or other wildland area or went hiking in the last year and even larger numbers reported participating in nature-based activities such as bird watching or viewing natural scenery. However, Cordell et al. (2008) indicate that the trends in public lands visitation have been unclear and that declines in visitation to wilderness areas have been particularly unsettling. They note that visitation to state parks, national parks, and national wildlife refuges had remained relatively stable since the mid-1990s following long-term growth from the 1960s through the 1980s. The authors point out that many people who live near parks or protected areas may be entering those places without being counted or observed. They also conclude that the increase in nonconsumptive outdoor activities (e.g., observing wildlife or scenery) has more than offset the decline in consumptive activities (such as hunting and fishing) so that there is actually a net *increase* in outdoor activity levels.

In a comprehensive study of outdoor recreation in the United States from 1965 to 2007, Siikamäki (2009) found that per-capita time spent on outdoor recreation more than doubled over that period and that increased participation rates were the main driver. However, the author also noted that in the last decade or two, per-capita time spent on outdoor recreation has stayed constant or declined slightly.

Balmford et al. (2009) acknowledged the declining number of visits to natural areas in the U.S. and Japan. Their analysis of trends in visitor numbers at 280 protected areas in 20 countries, however, found increased visitation rates in 15 countries. They concluded that nature-related tourism and recreation are not declining everywhere and still have considerable potential to generate funds for conservation and shape attitudes toward the environment.

2.0 METHODS

We analyzed data from two large national datasets, Lifestyle Market Analyst (1993-2008) from Standard Rate and Data Service (SRDS) and Mediamark's Topline Research Reports (TRR) (2000-2008), to examine national park visitation rates and people's leisure and recreation choices. Where possible, we also addressed the larger issue of whether interest in outdoor recreation and national park visitation can be linked to people's increased interest in media-related activities.

The Mediamark and SRDS datasets contain individual and household data collected yearly in a consistently replicated manner. Mediamark's TRR samples more than 20,000 subjects per year on self-reported park visitation and other leisure and recreation activities. The Mediamark survey collects data on both activity interests and media use patterns from the same individuals. Likewise, Lifestyle Market Analyst (1993-2008) directly measures interest in the environment and an array of lifestyle pursuits, including outdoor recreation participation and media use patterns. In the SRDS data, these variables are measured within each household and are directly linked to each other so the data may be examined for "cross-market" or "within-market" interests or activity pursuits. The SRDS dataset also allows examination of interest in and use of new media (i.e., Internet use, cable television viewing, and viewing VCR/DVD tapes) and can link those variables to interest in the environment. For example, the SRDS data can help answer these questions: Are people who are interested in the environment also participating in outdoor recreation activities and spending time on a variety of new media interests? Have particular interests and activities increased or declined in recent years? Are individuals who use evolving media/video/digital devices also pursuing outdoor recreation and are they interested in the environment?

For this study, we used several variables to describe trends in the data. The descriptive statistics include an average annual adjusted percent-change rate for each dataset. Lifestyle Market Analyst data use a 3-year

Table 1.—Estimated visitation to national parks, 2000 to 2008, including breakdown by age categories and education level*

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	Chg Rate** '00-'08
Estimated Total Adult Population ('000)	201,715	202,753	204,964	209,657	213,454	215,800	218,289	220,847	222,210	1.2%
Estimated Number of National Park Visits	11,920	12,490	12,009	12,237	11,302	11,908	12,148	12,410	11,578	-0.2%
Total Adult National Park Visitation Rate (%)	5.9	6.2	5.9	5.8	5.3	5.5	5.6	5.6	5.2	-1.5%
Adults age 18-24	4.5	4.6	4.2	4.9	3.5	3.8	4.0	2.8	3.4	-1.6%
Adults age 25-34	5.4	5.9	5.7	6.7	6.0	4.6	5.1	6.0	5.1	0.4%
Adults age 35-44	7.4	7.4	7.9	7.4	6.3	7.2	6.8	7.2	6.7	-0.8%
Adults age 45-54	7.8	8.4	7.0	6.5	6.5	7.5	6.9	6.6	6.2	-2.4%
Adults age 55-64	5.9	7.0	5.7	5.9	5.6	5.5	5.6	5.9	5.6	-0.1%
Adults age 65+	3.4	2.8	3.4	2.6	2.8	3.4	4.2	4.1	3.5	2.0%
Adults age 18-34	5.1	5.4	5.1	6.0	5.0	4.3	4.6	4.7	4.4	-1.2%
Adults age 18-49	6.3	6.5	6.5	6.6	5.7	5.8	5.7	5.8	5.4	-1.8%
Adults age 25-54	6.9	7.3	6.9	6.9	6.3	6.5	6.3	6.6	6.0	-1.6%
Educ: did not graduate HS	3.1	2.6	2.4	2.6	1.7	1.7	2.5	1.8	1.8	-3.9%
Educ: graduated high school	4.5	4.5	4.8	4.6	3.9	4.2	4.3	4.3	3.6	-2.4%
Educ: attended college	6.9	7.1	6.4	6.1	6.4	6.4	5.9	6.0	6.1	-1.4%
Educ: graduated college plus	9.0	10.0	9.1	9.4	8.3	8.7	8.8	9.1	8.2	-0.9%
Educ: post-graduate	na	10.6	9.8	10.0	9.4	9.2	9.6	9.4	8.8	-2.5%

*Source: Mediamark's Topline Research Reports, 2000 to 2008; interpretation of data by authors.
**Chg. Rate = Average Annual Change Rate for period covered.

moving average—i.e., 1995 data would represent the average participation rate for 1993, 1994, and 1995. Participation rates of individuals (used for TRR data) and households (used for SRDS data) are treated as primary variables for examining the overall trends. SRDS data alone were used to conduct cross-market or within-market analysis of interest levels and household participation in various activities. Where possible, changes in participation were compared to national population growth and percentage change in number of households.

3.0 RESULTS

We present only some of the data in tables here; full data tables are available from the authors. As a reference point for the analysis of TRR data, the estimated U.S. population increased at an average annual adjusted rate of 1.2 percent per year from 2000 to 2008 (Table 1). Any rates not equaling or exceeding this rate indicate real declines in visitation or participation. As a reference point for the trends in the Lifestyle Market Analyst data, the number of households in the U.S. grew by 1.1 percent per year from 1993 to 2008.

3.1 National Park Visitation Trends, 2000 to 2008

Using the TRR data (Mediamark 2000-2008), we found that annual national park visitation rates between 2000 and 2008 declined by an average of about 1.5 percent per year while the actual number of visitors declined by about 0.2 percent per year (Table1). Approximately 5.9 percent of individuals had visited national parks in the past 12 months in 2000 and this percentage decreased to 5.2 percent by 2008. From 2000 to 2004, the participation rate steadily declined from 5.9 percent to 5.3 percent; it rebounded slightly to 5.6 percent in 2006-2007 and fell again to 5.2 percent in 2008. In 2000, an estimated 11.9 million individuals had visited a national park in the previous 12 months; by 2008, this number had declined to 11.6 million individuals.

3.2 National Park Visitation Trends by Adult Age Groups, 2000 to 2008

National park participation rates and number of visits were not evenly distributed across age groups (Table 1). Between 2000 and 2008, *participation rates* declined the most among adults age 45-54 (decline of 2.0 percent) and young adults age 18-24 (decline of 1.6 percent). Rate changes among other age groups were negligible and rates actually grew for adults 65 and older (increase of 2.0 percent) and age 25-34 (increase of 0.4 percent). When the age categories are broadened, the data show that adults over 55 had the largest estimated increase in *number of visits*. Between 2000 and 2008, the estimated number of 55- to 64-year-olds visiting national parks increased by 3.6 percent per year (from 1.4 million to 1.8 million) and the number of people over 65 visiting national parks increased by 3.1 percent per year.

3.3 National Park Visitation Trends by Education Status, 2000 to 2008

When we examined 2000-2008 participation rates across the education spectrum, we saw no definitive trends (Table 1). Participation rates declined across all education categories. The strongest declines occurred among adults who did not graduate from high school (a decline of 3.9 percent per year) and the weakest decline was among individuals with a college degree plus additional schooling (average annual decline of 0.9 percent). More revealing is that the rates of national park visitation were, on average, three to four times higher among the most educated groups than among the least educated group.

3.4 National Park Visitation Trends by Occupation, 2000 to 2008

National park visitation rates were also not evenly distributed across occupational groups of U.S. adults (Table 2). Participation rates declined the most among adults who held clerical/sales/technical positions (decline of 2.6 percent per year) and professional positions (decline of 2.1 percent per year). The participation rates of adults in precision/crafts/repair occupations actually increased slightly (0.2-percent increase per year) between 2000 and 2008.

3.5 National Park Visitation Trends by Regions, 2000 to 2008

National park visitation rates varied by region (Table 2). Regional participation rates were highest in the West in 2000 (6.6 percent) and 2008 (5.8 percent), but participation rates in the North Central region were the highest of all regions in several of the intervening years. Between 2000 and 2008, participation rates declined the most (4.1 percent per year) among adults who lived in the South and declined the least (0.6 percent per year) among adults who lived in the West. Participation rates actually grew in the Northeast by 1.5 percent per year between 2000 and 2008. Participation rates of adults living in the South was 6.3 percent in 2000 but dropped steadily to 4.4 percent by 2008 (except for a slight up-tick in 2006). Participation rates of adults who lived in the Northeast also fluctuated from year to year between 2000 and 2008.

3.6 National Park Visitation Trends by Household Income, 2003 to 2008

National park visitation rates were also not evenly distributed across household income categories over time (Table 2). Participation rates declined the most among adults from households with gross incomes of $50,000-$59,990 (a decline of 1.3 percent per year). Overall participation rates were highest (9.7 percent in 2003 and 9.9 percent in 2008) among households in the highest income category ($150,000 per year or more). However, the lowest income groups had the most robust increases in national park visitation rates. For those with annual household incomes under $20,000, participation rates increased by 27.6 percent per year (from 1.4 percent in 2000 to 3.7 percent in 2008)—almost tripling during the period. Participation increased 10.2 percent per year in households with incomes of $20,000 to $29,999, increased by 8.9 percent per year in households making $30,000 to $39,999, and increased by 14.7 percent per year in households earning $40,000 to $49,999. However, these rates were still less than half the rates of the wealthiest households in almost every year.

Table 2.—Estimated national park visitation rates, 2000 to 2008, by occupation, Census region, gross household income, and race*

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	Chg Rate** '00-'08
Total Adult National Park Visitation Rate (%)	5.9	6.2	5.9	5.8	5.3	5.5	5.6	5.6	5.2	-1.5%
Occupation: professional	10.3	11.3	10.2	10.6	8.6	9.7	9.6	8.4	8.3	-2.1%
Occupation: executive/ admin/mgr	8.5	9.4	9.2	8.3	7.7	7.8	8.2	8.6	8.1	-0.4%
Occupation: clerical/sales/ tech	6.3	6.9	6.5	5.8	5.7	6.0	6.2	5.7	5.0	-2.6%
Occupation: precision/ crafts/repair	5.5	5.0	4.1	5.1	5.3	6.0	4.1	5.1	4.8	0.2%
Occupation: other	4.8	4.7	5.1	4.7	4.7	4.1	4.4	4.6	4.0	-1.9%
Census Region: Northeast	5.1	5.7	5.7	6.1	5.9	5.9	6.1	6.0	5.7	1.5%
Census Region: South	6.3	6.2	5.4	5.3	4.3	4.3	4.6	4.4	4.4	-4.1%
Census Region: North Central	5.7	6.7	5.7	6.2	6.0	6.0	6.9	6.7	5.6	0.5%
Census Region: West	6.6	5.9	7.0	6.2	5.7	6.7	5.4	6.3	5.8	-0.6%
HHI $150K +	na	na	na	9.7	8.1	9.7	8.8	9.7	9.9	1.3%
HHI $75K - $149K	na	na	na	8.7	7.6	8.0	8.2	9.5	9.1	1.4%
HHI $60-$74.9K	na	na	na	7.6	7.4	6.5	6.9	9.1	8.7	3.8%
HHI $50-$59.9K	na	na	na	7.8	6.3	7.7	6.0	7.0	6.7	-1.3%
HHI $40-$49.9K	na	na	na	4.4	5.8	3.7	5.6	7.4	7.0	14.7%
HHI $30-$39.9K	na	na	na	4.2	3.4	4.0	3.8	6.5	5.2	8.9%
HHI $20-$29.9K	na	na	na	3.7	3.0	2.5	2.6	5.1	4.4	10.2%
HHI <$20K	na	na	na	1.4	1.4	2.3	1.8	3.3	3.7	27.6%
Race: White	6.3	6.6	8.1	6.4	5.9	6.1	6.3	6.5	6.1	0.3%
Race: Black	2.8	3.2	2.3	2.3	2.0	2.7	2.3	1.4	1.0	-9.3%
Race: Asian	na	6.7	4.5	5.0	6.8	6.9	5.9	6.0	4.2	-3.9%
Race: other	na	4.9	4.8	2.0	3.7	3.5	3.4	3.1	5.3	11.2%
Spanish-speaking Hshld	4.8	4.3	5.7	3.4	1.4	4.1	4.5	4.2	2.9	11.0%

*Source: Mediamark's Topline Research Reports, 2000 to 2008; interpretation of data by authors.
**Chg. Rate = Average Annual Change Rate for period covered.

3.7 National Park Visitation Trends by Racial Status, 2000 to 2008

National park visitation rates varied by racial group (Table 2). Participation rates declined the most (9.3 percent per year) among African American adults, from 2.8 percent in 2000 to 1.0 percent in 2008. Rates also declined among Asian American adults by 3.9 percent per year, from 6.7 percent in 2001 to 4.2 percent in 2008. Rates were fairly stable among white adults, growing at an average annual rate of 0.3 percent. National park visitation rates by Hispanic or Spanish-speaking households fluctuated the most of all racial groups; their participation rates were as high as 5.7 percent in 2002 and as low as 1.4 percent in 2004.

3.8 National Park Visitation Trends by TV-Viewing Quintile Groups, 2000 to 2008

National park visitation rates were also not evenly distributed across adults with different TV-viewing habits (Table 3). Mediamark divides survey respondents into quintile groups based on self-reported hours of daily TV

Table 3.—Estimated national park visitation rates, 2000 to 2008, by Internet user category and TV-viewing category*

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	Chg Rate** '00-'08
Total Adult National Park Visitation Rate (%)	5.9	6.2	5.9	5.8	5.3	5.5	5.6	5.6	5.2	-1.5%
TV (Total) Quintile I (Heavy)	3.9	4.1	5.7	3.9	3.4	3.4	3.4	3.8	3.0	-1.2%
TV (Total) Quintile II	5.6	5.8	7.4	5.1	4.2	4.8	5.6	4.5	4.6	-0.5%
TV (Total) Quintile III	6.2	6.3	5.9	6.0	6.0	6.4	6.3	6.4	6.0	-0.3%
TV (Total) Quintile IV	7.2	7.0	4.9	5.8	6.9	6.2	6.1	6.6	5.7	-1.6%
TV (Total) Quintile V (Light)	6.6	7.6	3.4	8.4	6.0	6.8	6.4	6.8	6.8	11.5%
										Chg Rate '04-'08
Internet Quintile I (Heavy)	na	na	na	na	8.2	8.1	7.3	7.8	7.3	-2.7%
Internet Quintile II	na	na	na	na	6.7	7.5	7.9	6.6	6.6	0.2%
Internet Quintile III	na	na	na	na	6.5	5.9	6.0	6.5	6.0	-1.7%
Internet Quintile IV	na	na	na	na	2.6	3.4	3.7	4.0	4.0	11.9%
Internet Quintile V (Light)	na	na	na	na	2.5	2.7	3.0	3.2	2.2	-1.4%

*Source: Mediamark's Topline Research Reports, 2000 to 2008; interpretation of data by authors.
**Chg. Rate = Average Annual Change Rate for period covered.

watching (from heaviest to lightest viewing); a quintile represents 20 percent of respondents. Those who watched the most television (Quintile I) were the least likely to visit national parks in every year between 2000 and 2008. Between 2000 and 2008, national park visitation rates declined among all but the lightest television-viewing group (Quintile V); the declines were nevertheless small (less than 2 percent per year). For those who watch the most television (Quintile I), national park visitation rates declined between 2000 and 2008 at a rate of 1.2 percent per year (from 3.9 percent in 2000 to 3.0 percent in 2008). Among those who watched the least television (Quintile V), participation rates increased from 6.6 percent in 2000 to 6.8 percent in 2008 (an average annual increase of 11.5 percent).

3.9 National Park Visitation Trends by Internet Use Quintile Groups, 2004 to 2008

National park visitation rates were unevenly distributed across U.S. adults with different Internet use habits (Table 3). Here, again, Mediamark provides participation rates of Internet use habits in heavy to light quintile groups, but the data have been collected only since 2004. For those with the heaviest Internet use (Quintile I), national park visitation rates declined at a rate of 2.7 percent per year from 2004 to 2008. In 2004, the heaviest Internet users had participation rates of 8.2 percent, declining to 7.3 percent in 2008. National park visitation rates among those who used the Internet the least (Quintile V) declined as well, from 2.5 percent in 2004 to 2.2 percent in 2008.

4.0 ADDITIONAL RESULTS

Similar patterns were noted in use of other media, including newspaper and magazine reading behavior and its relationship to national park visitation. (Data were not provided in table form due to space limitations.) Unfortunately, TRR does not report on video game playing, DVD purchases, or watching/listening to other media formats in a way that can be directly linked to national park visitation. However, SRDS provides data from 1993 through 2008 on U.S. households' interest in the environment and wildlife, and these data are directly linked to a wide variety of outdoor activities and media use habits.

For this section of the trend analysis, we selected the following groupings of activities: travel-related activities (domestic travel, vacation travel, foreign travel, and cruise ship travel); outdoor recreation activities (camping/hiking, fishing, hunting/shooting, snow skiing, and recreation vehicle use); and media/video-related activities (subscription to cable television, video game playing, and online Internet use). Trends in each of these activity categories are reported with the trend years of available data noted. Data for some activities were not available for the entire period of 1993 to 2008.

4.1 Interest in Environment and Wildlife, 1993 to 2008

National park visitation rates in households with an interest in the environment and wildlife declined only slightly (by about 0.5 percent per year) between 1993 and 2008. Among this group, the national park visitation rate was 16.9 percent in 1993, 18.6 percent in 2000, and 15.0 percent in 2008. Between 1993 and 2008, the actual number of people surveyed who expressed interest in the environment and wildlife grew slightly by 0.7 percent per year, from an estimated 15.93 million households in 1993 to 17.05 million households in 2008 (with an in-between peak of 19.6 million households in 2001).

4.2 Interest in Environment and Wildlife by Travel Related Activities, 1993 to 2008

Do people who are interested in the environment and wildlife travel? Are those rates increasing or declining? The percent of households that were interested in the environment and wildlife and that engaged in domestic travel increased at an average annual rate of 1.0 percent; the actual number of these households grew at a rate of 1.9 percent. In 1993, 49.3 percent of households interested in the environment and wildlife engaged in domestic travel and by 2008, 56.8 percent traveled domestically.

The percentage of households that were interested in the environment and wildlife and that engaged in vacation travel declined at an average annual rate of 0.05 percent (data available only from 1995 to 2005) and the actual number of these households grew at a rate of 0.6 percent per year. In 1995, 51.7 percent of households interested in the environment and wildlife engaged in vacation travel and by 2005, 48.8 percent engaged in vacation travel.

The percent of households that were interested in the environment and wildlife that engaged in foreign travel increased at an average annual rate of 1.9 percent and the actual number of these households grew at a rate of 2.7 percent per year. In 1993, 21.6 percent of households interested in the environment and wildlife engaged in foreign travel and by 2008, 28.5 percent traveled abroad.

Finally, cruise ship travel was examined with data from 1999 through 2008. The percent of households that were interested in the environment and wildlife that engaged in cruise ship travel increased at an average annual rate of 2.7 percent (data available only from 1999 to 2008) and the actual number of these households grew 4.4 percent per year. In 1999, 18.2 percent of households interested in the environment and wildlife engaged in cruise ship travel. In 2008, 22.4 percent went on a cruise ship and that percentage was as high as 24.4 percent in 2006. Among households interested in the environment and wildlife, the growth rate of only two of the four travel-related activities, cruise ship travel and foreign travel, exceeded the average annual household growth rate of 1.2 percent.

4.3 Interest in Environment and Wildlife by Outdoor Recreation Activities, 1993 to 2008

The percent of households that were interested in the environment and wildlife and that engaged in camping/hiking grew at an average annual rate of 1.6 percent. The actual number of these households grew 2.4 percent per year. In 1995, 40.2 percent of households interested in the environment and wildlife went hiking and/or camping and by 2008, 50.8 percent engaged in hiking/camping.

The percent of households that were interested in the environment and wildlife and engaged in fishing rose at an average annual rate of 3.1 percent and the actual number of these households grew 4.0 percent per year. In 1993, 33.3 percent of households interested in the environment and wildlife went fishing and by 2008, 51.1 percent engaged in fishing.

The percent of households that were interested in the environment and wildlife that engaged in hunting/shooting activities increased at an average of 2.1 percent annually and the actual number of these households grew 3.0 percent per year. In 1993, 28.4 percent of households interested in the environment and wildlife engaged in hunting/shooting activities and by 2008, 36.9 percent engaged in these activities.

The percent of households that were interested in the environment and wildlife that pursued snow skiing activities increased at an average annual rate of 1.3 percent and the actual number of these households grew at the rate of 2.1 percent per year. In 1995, 11.6 percent of households interested in the environment and wildlife went snow skiing and by 2008, 13.3 percent did so.

Finally, the percent of households that were interested in the environment and wildlife that engaged in use of recreational vehicles increased at an average annual rate of 3.3 percent and the actual number of these households grew 4.6 percent annually. In 1993, 12.9 percent of households interested in the environment and wildlife used recreational vehicles and by 2008, 20.1 percent engaged in these activities. In sum, among households interested in the environment and wildlife, all five outdoor recreation activity participation rates grew faster than the average per-year household growth rate.

4.4 Interest in Environment and Wildlife by Media and Video Use Activities, 1993 to 2008

We examined three activities: watching/subscribing to cable television, playing videogames (both activities had data available from 1993 through 2005), and subscribing to an online Internet service (data available from 2002 through 2008). All three of the media/video activities among households interested in the environment and wildlife grew at higher rates than the average per year household growth rate.

The percent of households that were interested in the environment and wildlife that engaged in watching/subscribing to cable television grew at an average annual rate of 2.8 percent per year and the actual number of these households grew 3.5 percent per year. In 1993, 44.5 percent of households interested in the environment and wildlife watched and/or subscribed to cable television and by 2005, 59 percent engaged in these activities. The peak was in 2001, when 67.3 percent of households reported watching/subscribing to cable television.

The percent of households that were interested in the environment and wildlife and played video games grew at an average annual rate of 1.8 percent and the actual number of these households grew at the rate of 2.8 percent per year. In 1993, 14.2 percent of households interested in the environment and wildlife played video games and by 2005, 15.8 percent played them. The peak was in 2002, when 25.9 percent reported playing video games.

The percent of households that were interested in the environment and wildlife and used an online Internet service grew at an average annual rate of 2.0 percent and the actual number of these households grew 1.8 percent per year. In 2002, 61.6 percent of households interested in the environment and wildlife used an online Internet Service and by 2008 this figure grew to 69 percent. The peak was in 2007, when 71.8 percent reported using an online Internet service.

Finally, overall interest in video game playing was examined for all households between 1993 and 2005, not just those who expressed interest in the natural world. The participation rate for playing video games increased only slightly (an average of 0.9 percent per year) over this period and did not keep pace with the overall growth of households. The peak year for video game playing was 2002 (18.2 percent of households, a total of 19.5 million households). Video game playing has waned since then and stood at 10.9 percent of all households, or 17.6 million households, in 2005. In 1993, the percentage of households that played video games and were also interested in the environment and wildlife was 21.1 percent and by 2005 it was 21.2 percent, barely any change.

Complete data were not available for online Internet subscriptions and television cable viewing for further analysis. Tables on trends in "cross-market" and "within-market" media use are available from the authors.

5.0 DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

Participation rates for visitation to national parks between 2000 and 2008 have declined, but the decline during this period has not been dramatic. The numbers also suggest that some of the decline has been in the volume of visits per household and part of the decline may be reflected in the findings of Siikamäki (2009), who noted that active participants spent less time per visit while participation rates had not changed substantially.

Decline in visitation has also not been evenly distributed across the demographic variables examined here. Notably, park visitation declined most dramatically among middle-aged adults (45 to 54 years old) and young adults (age 18 to 24). The growth that did occur was among people age 55 and over. The two occupational categories with the greatest declines in park visitation rates were professionals and clerical/sales/technical professions. The fastest-growing region of the country, the South, is also the region where park visitation rates declined the most. In fact, of all of the demographic variables, this group experienced the greatest decline. Surprisingly, while visits by those at the middle-income level of $50,000 to $59,999 declined the most among the income categories, households with incomes less than $50,000 actually had some of the highest increases in park visitation rates. Perhaps lower-income households are visiting the parks for the "good value" they provide for the expense of the trip.

While there is some support for Pergams and Zaradic's (2006) assertion that national park visitation is declining, some of the declines may also be attributed to the effects of the 9-11 terrorist attacks and the beginning of the downturn in the economy after Sept. 11, 2001. Among households that expressed an interest in the environment and wildlife, only vacation travel decreased between 1995 and 2005 and that overall decline was slight. All other activities, especially foreign travel and cruise ship travel, increased substantially among households that expressed an interest in wildlife and the environment. In addition, we found no evidence that those households interested in the environment and wildlife were also pulling away from outdoor recreation activities. In fact, participation rates for each of the five outdoor activities examined here grew much faster than overall household growth rates. We conclude that the causes of declining national park visitation are more complicated than Pergams and Zaradic suggest and are not easily linked to outdoor recreation participation and use of electronic media and passive entertainment. More research is needed, and more direct linkage within measured households and among participants is necessary.

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