

“Greatest Good for 21st Century America”



Pioneering Recreation Trends Research, RWU-4953

**Ken Cordell, Carter Betz, Shela Mou,
For the 2008**

Utah State U. Short Course

<http://warnell.forestry.uga.edu/nrrt/nsre/>



Research on outdoor recreation became a significant component of Forest Service research as research units were established in SE, NE, NC, INT, RM, and PNW in the late 1960s and 1970s.



RECREATION SYMPOSIUM PROCEEDINGS

Planned and Presented by:
U.S. Department of Agriculture,
Forest Service and
State University of New York
College of Forestry
in Conjunction with
The Pinchot Institute for
Environmental Forestry Research:
Consortium for Environmental
Forestry Studies



NORTHEASTERN FOREST EXPERIMENT STATION
FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
UPPER DARBY, PA. 1971
WARREN T. DOOLITTLE, DIRECTOR

INVENTORYING RECREATION USE

by GEORGE A. JAMES, *Project Leader in Recreation Research, Southeastern Forest Experiment Station, Forest Service, U. S. Department of Agriculture, Asheville, N. C.*

ABSTRACT. Part I is a general discussion about the estimation of recreation use, with descriptions of selected sampling techniques for areas and oriented Forestation of t
for areas and oriented Forestation of t
for areas and oriented Forestation of t
for areas and oriented Forestation of t

Jim James, for example, was an early pioneer in visitation monitoring research---Much of his work is the basis for NVUM

Our Research Mission



Provide up-to-date, science-based information on trends in public demands, perceptions, and benefits of nature-based outdoor recreation and describe how broad-scale demographic and other social shifts will affect these demands.....

Primary Methods of Research

- National and regional surveys of households and of on-site visitors, especially studies of recreation that occurs on **public lands**
- **Broad-scale** (region-wide and countrywide) assessments of societal and natural resources change
- Looking across a broad **array of data sources** and information, including the popular press and political discussions

Topics for Today—An Assortment

Much of our research focuses on public lands

- Much has been made about a recent paper by Pergams and Zaradic claiming that nature-based recreation is on the decline—a overview of that paper
- We will consider the conclusions of the Pergams and Zaradic paper to see if they hold up under close scrutiny. They concluded that nature-based recreation is on the decline in the U. S. and has been since the 1980s
- Results from the National Survey on Recreation and the Environment (NSRE)
- Part II will cover on-going mission research

Sharp Top Mountain, VA, USA

Web Site

<http://warnell.forestry.uga.edu/nrrt/nsre/>



Pergams and Zaradic, “Evidence for a fundamental shift away from Nature-based recreation, PNAS (authors are Biological Sciences U of I, and Leadership Program, Delaware Valley)

- “After 50 years of steady increase, **per capita** visits to National Parks have declined since 1987.”
- The authors tested 16 “similar” time-series participation variables—visitation to public lands, U.S. fish and game license sales, time spent camping, time spent backpacking/hiking
- They noted that the greatest visitation **per capita** was to state parks, National Parks and National Forests, in that order
- They found all three of these indicators in downturns they estimated to be **-1% to -3% per year**
- The authors note the longest time series suggests the decline began between 1981 and 1991, with total decline to date of -18% to -25%
- **They surmised an overall downtrend in nature recreation, and a fundamental shift away from nature-based recreation (read last Para.)**

<http://www.pnas.org/cgi/reprint/105/7/2295?>

The Pergams/Zaradic argument

- They postulate that NP visits is a good proxy for how much people are visiting nature in general
- “If we are also seeing declines in the majority of other nature-related activities, it becomes quite likely that we are seeing a fundamental shift away from people’s interest in nature.”
- “...as today’s adult role models spend less time in nature, this generation of children is also likely to follow suit.
- They argue (and I agree) that less nature experience will likely be associated with **less support for conservation**
- The authors report declines in NP, SP, NF and BLM visits **(PER CAPITA)**
- The research question was: **“Is there a general and fundamental shift away from people’s participation in nature-based recreation?”**

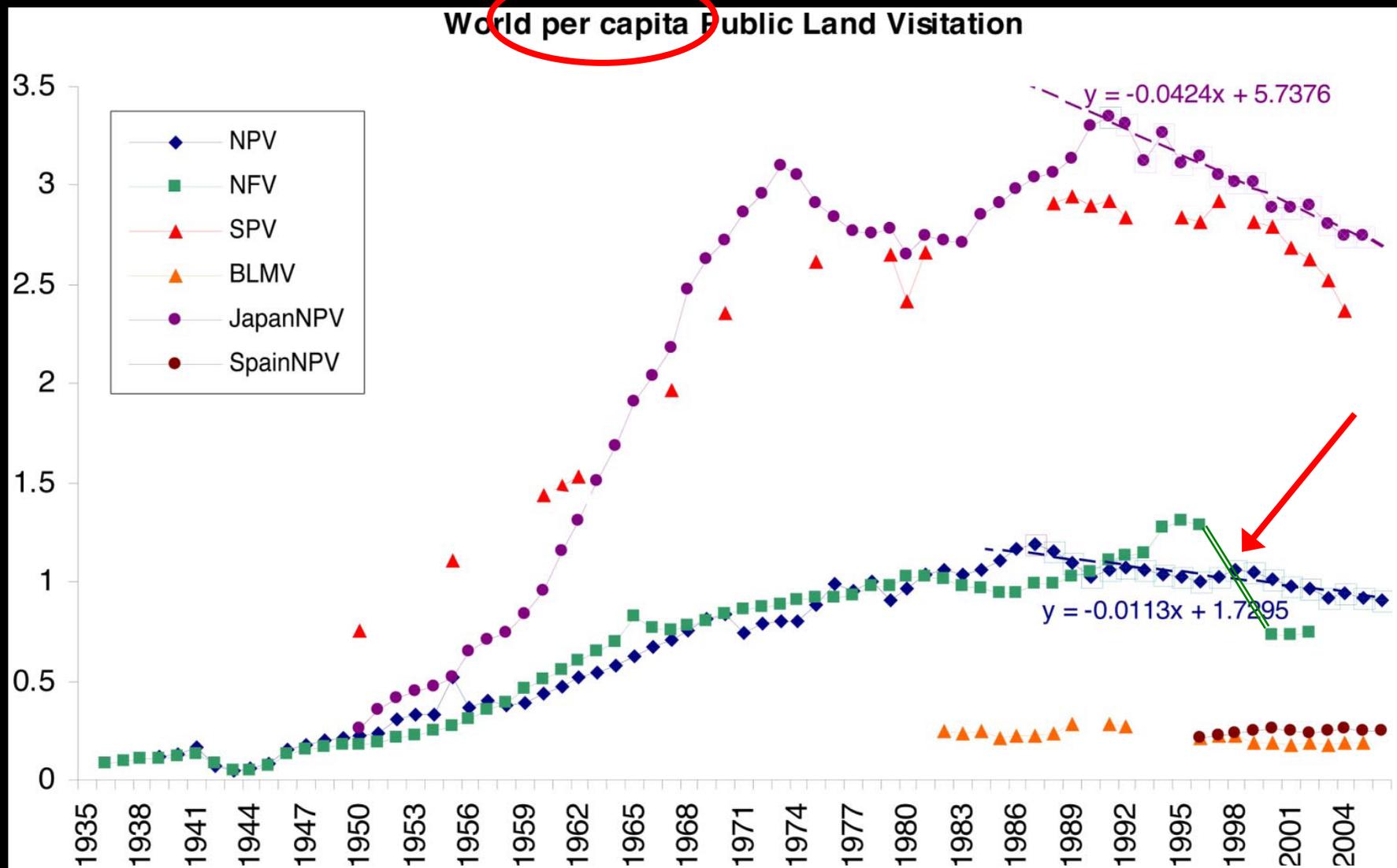
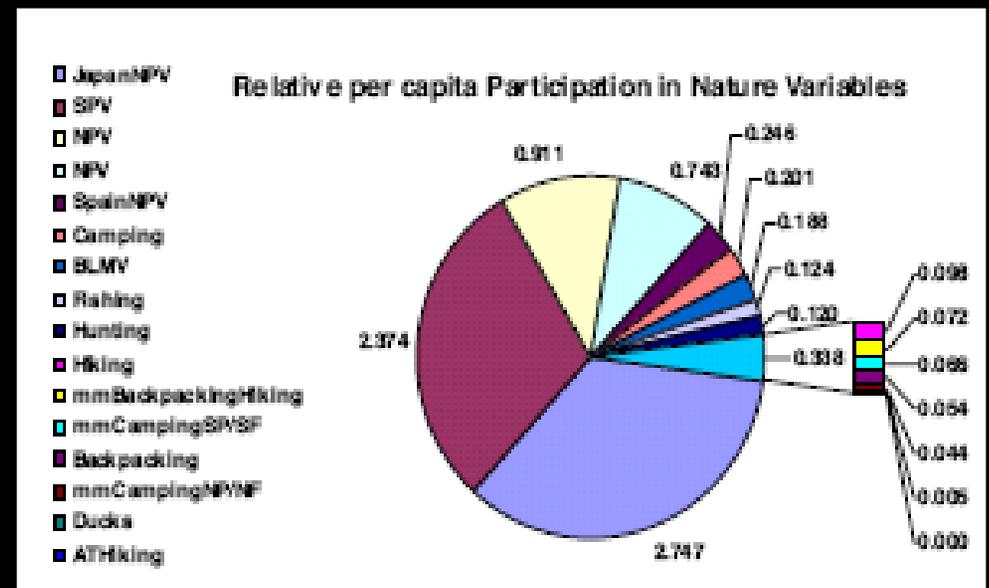


Fig. 1. Annual *per capita* visitation to the various U.S. and international public lands. Included were U.S. National Parks (1939–2006, *n*68), U.S. State Parks (1950–2003, *n*24), U.S. National Forests (1939–2002, *n*61), Bureau of Land Management (1982–2005, *n* 20), Japanese National Parks (1950–2005, *n* 56), and Spanish National Parks (1996–2006, *n* 11).

Their presentation of trends continues----

- The indicators they deemed most reliable they reported as **peaking between 1981 and 1991**
- On average (across indicators) **per capita visits** were seen as declining at a 1.2% rate per year, with total to date of between -18% to -25%
- “Rather than being an anomaly restricted to National Parks, our results suggest a fundamental and pervasive decline in nature recreation.”
- “...**a general longitudinal decline in visitation to natural areas**, rather than an isolated decline in U.S. National Park visits.”



Pergams/Zaradic Conclusions

- “**Discounting the probably inflated National Forest visitor data** in the mid-1990s, both U.S. National Park and National Forest visitors (data) showed steady increases for 50–55 years, before a considerable decline.”
- “Even given the **differences in counting methods and missing years of visitor data in the late 1990s**, it is remarkable that the last time the National Forests saw *per capita* visitors as low as 2002 was almost 40 years earlier.”
- “reported numbers for State Park visits are sporadic, the last 15 years of data suggest a **decline** similar to Japan’s National Parks (approximately 19% total and 1.3% annually).”
- “Camping data from two market survey sources independently corroborate the decline reported from park visitor counts (Table 3). The **Mediamark camping survey**....”
- “Camping is the largest recreation component of the *per capita* pie chart, a choice for approximately one in five Americans, more popular in *per capita* participation than hunting or fishing (Fig. 2). As such, a trend of **fewer and fewer Americans going camping** is especially notable.”
- “...data surveying the frequency of **camping in any venue (Camping in SI Fig. 5)** also suggest a decline since 1987.”

In Conclusion

- **“In conclusion, all major lines of evidence point to a general and fundamental shift away from people’s participation in nature-based recreation.”**
- **“The root cause may be videophilia, as our previous work suggests”**
- **“Regardless of the root cause, the evidence for a pervasive and fundamental shift away from nature-based recreation seems clear.”**

How well does the Pergams/Zaradic argument hold up? A couple of observations:

- First, and most importantly, the authors used a very limited set of indicators from which to conclude that **ALL** of nature-based recreation is on the decline.
- Second, solely choosing a **per-capita measure** pretty much assures observing a downward trend (cost of travel is up, choices of places to recreate are getting slimmer,). Total recreation visits typically will tell a different story.
- Third, a look at total **national and state park visitation** for the last few years shows very normal cycling, rising and falling. Did the authors look at recent visitation data for signs of rising from one of these normal cyclical lows?
- Fourth, **THE authoritative U. S. nationwide surveys** of nature-based recreation are the Fish and Wildlife Service and the Forest Service surveys, NSFHWAR and NSRE. These were not cited and apparently were unknown to the authors

State Park Visitation (total day + overnight)

Total, not per capita

- 1975 471 mm
- 1985 660 mm
- **1995 746 mm**
- 2000 767 mm
- 2001 735 mm
- 2003 735 mm
- 2005 715 mm
- 2006 711 mm
- **2007 740 mm**

Pre-2000 stats from *Outdoor Recreation in American Life*, Cordell et al, 1999

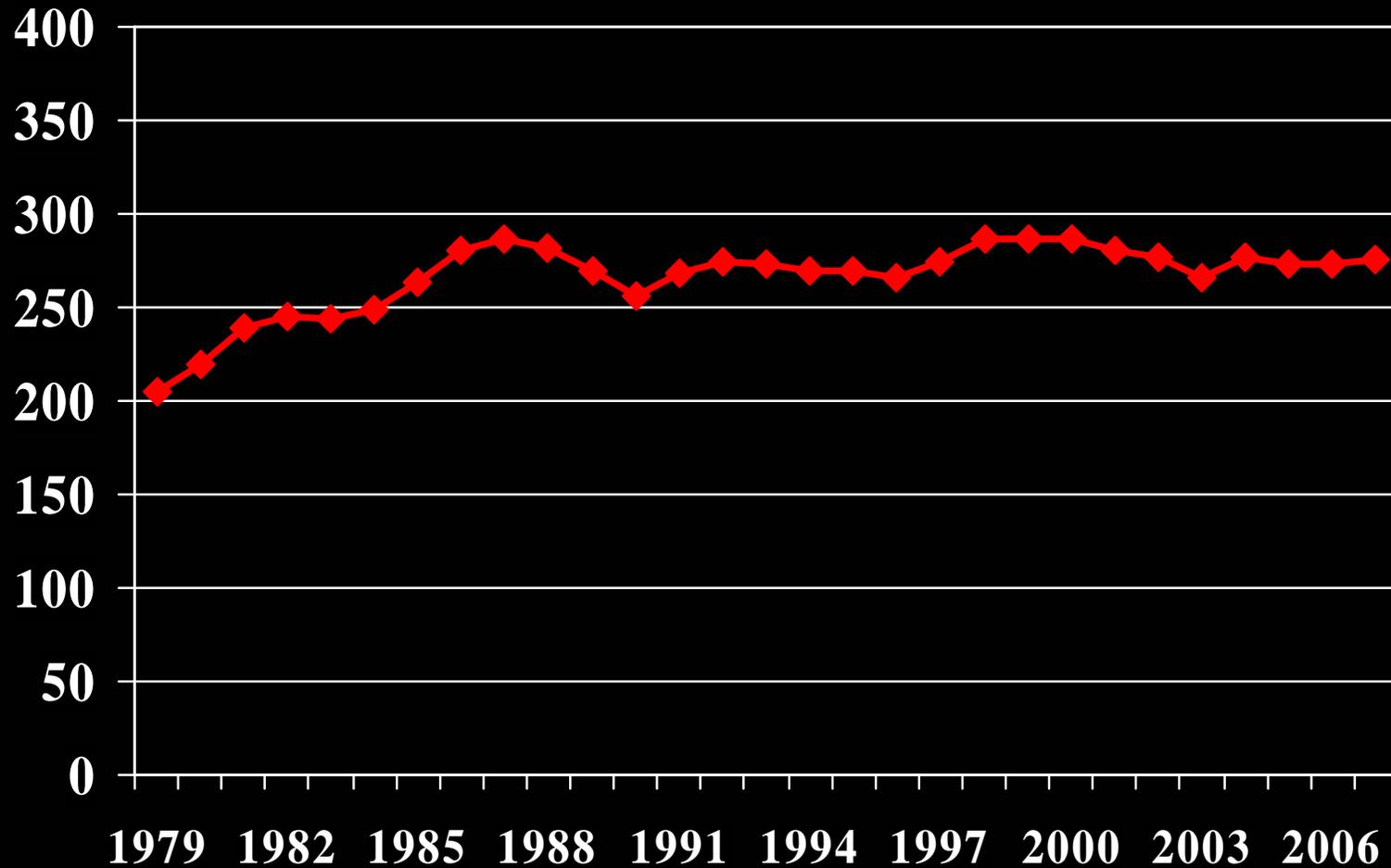
- Total visitation last year was back up, above its 2001 level
- State park visitation statistics are not generated consistently and are not typically based on statistical sampling, as is NVUM
- Source is National Association of State Park Directors
- From 2001-07 there was a **0.7% increase** in SP visits

Total National Park Visitation

- NP visitation has indeed been reported by the NPS as declining, **a little**..... NPS, nor any agency, reports per capita visitation
- 1987 (287mm---**record high**), 1988 (286mm), 1990 (260mm—**near record low**), 1992 (273mm), 1994 (269mm), 1996 (266 mm), 2000 (286mm—**back to 1988 level**), 2002 (277mm), 2004 (277mm), 2006 (273mm), 2007 (276)
- From January – November, 2007, NP visitation was **0.8% above the level for the same months of 2006**---over 2 million more visits
- From the high in 1987 of 287 mm to the most recent reporting year (2007 with 276 mm) there was an overall decline in visits of 11 million, a **3.8% decline**
- How big is -3.8%?

National Park System Attendance Rises In 2007: WASHINGTON – More than 275 million visits were recorded in America's national park system in 2007, **an increase of three million visits from the previous year.**

Total Annual Visitation to U.S. National Parks



Source: <http://www.nature.nps.gov/stats/park.cfm>

National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

Purpose: Demonstrate value of wildlife-related recreation to the American People by providing information on participation and expenditures.

- Fishing
- Hunting
- Wildlife Watching (observing, feeding, and photographing)

2006 Survey

- **11th conducted since 1955**
- **Fish and Wildlife Service carried out the Survey at the request of State Fish and Wildlife Agencies**
- **Bureau of Census collected data using computer-assisted telephone and in-person interviews**
- **Funded by the Multistate Conservation Grant Programs (*Wildlife and Sport Fish Restoration Improvement Act of 2000*)**

Are fishing and hunting license sales good indicators of overall nature-based recreation?

- Number of anglers in some categories has been declining and known to be declining over the past 10 years
- Number of hunters in some categories has also been declining and known to be declining over the past 10 years
- How about wildlife watchers, such as birders?
- Number of wildlife watchers has been increasing over the past 10 years and known to be increasing **(Up 13%)**

Anglers

1996 35.2mm

2001 34.1mm

2006 30.0mm

Hunters

1996 14.0mm

2001 13.0mm

2006 12.5mm

Wildlife Watchers

1996 62.9mm

2001 66.1mm

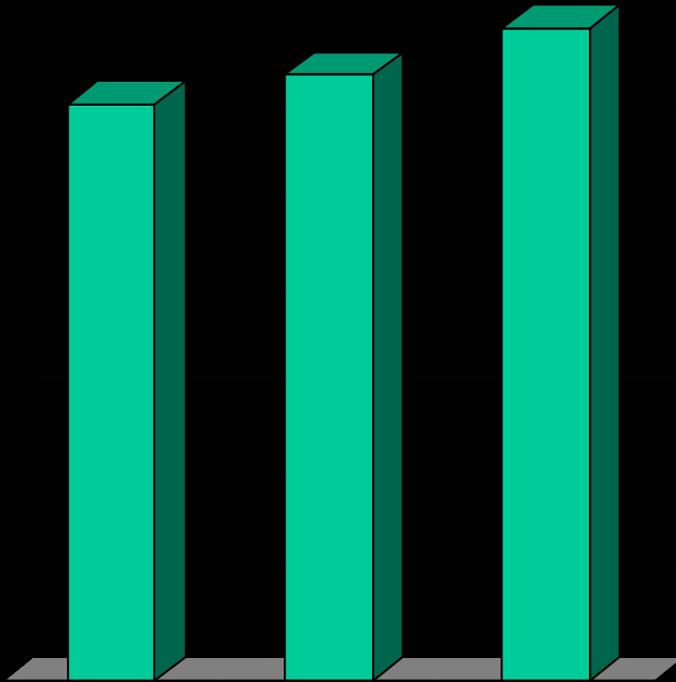
2006 71.1mm

Source: U. S. National Survey of Fishing, Hunting and Wildlife Associated Recreation

Wildlife Watchers

1996-2006

(16 years & older)

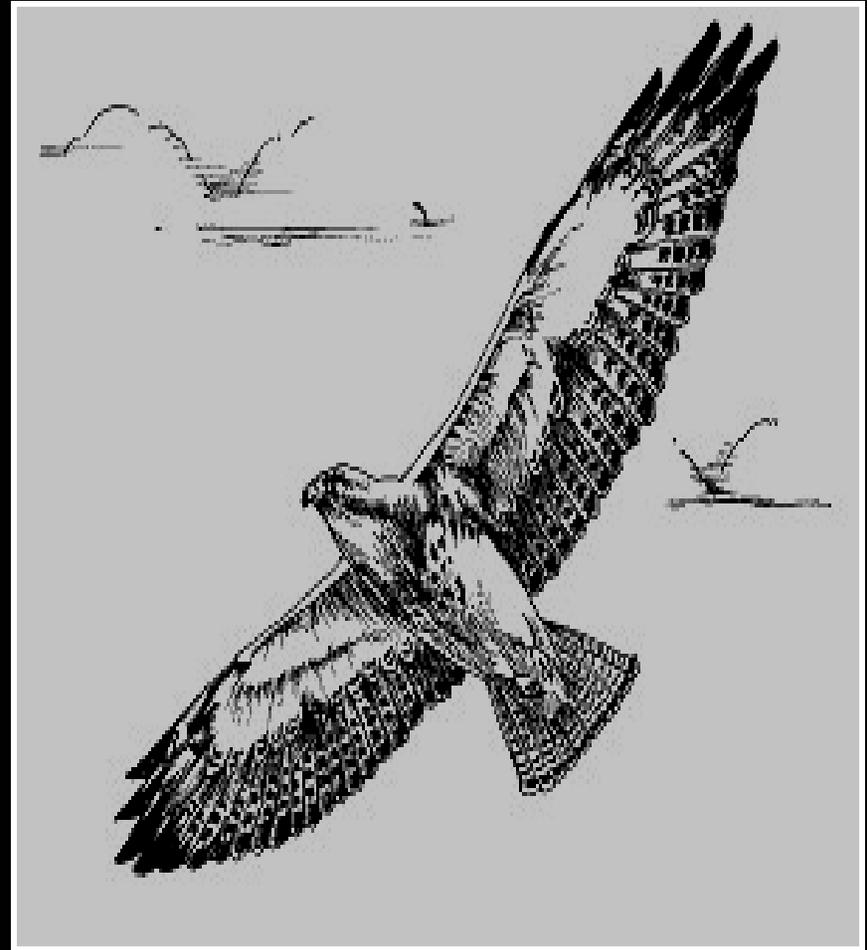


- Number **increased 13%** from 1991 to 2001.
- Wildlife Watchers, as a percent of the U.S. pop. remained steady at 31% from 1996 to 2006.
- Number of wildlife watchers increased 8% from 2001 to 2006.

Source: U. S. National Survey of Fishing, Hunting and Wildlife Associated Recreation

71 Million Wildlife Watchers

- **32%, 23 Million,** took trips away from home to wildlife watch.
- **95%, 68 Million,** wildlife watched around their homes.



Source: U. S. National Survey of Fishing, Hunting and Wildlife Associated Recreation

More evidence--this from the FWS Survey

- There have been increases in reported numbers of wildlife watching visitors **to public parks and areas:**

1996 11.0 million 2006 13.3 million

Trend is +21%

- There was a dip between 1996 and 2001 of 0.03 million, a dip of 0.3 percent
- How big is a 0.3 % dip in 5 years, when the overall trend is up 21% in 10 years (1996-2006)?

Source: National Survey of Fishing, Hunting, and Wildlife Associated Recreation

***NATIONAL SURVEY on
RECREATION and the
ENVIRONMENT***

SINCE 1960

*THE UNITED STATES' ON-GOING
NATIONAL RECREATION AND
ENVIRONMENTAL SURVEY*

NSRE - To Date

- **1999-2008, 100,000+ completed interviews**
- **22 survey versions**
- **115 modules overall**
 - **33 different modules**
- **Approx. 350,000 hours of interviewing**

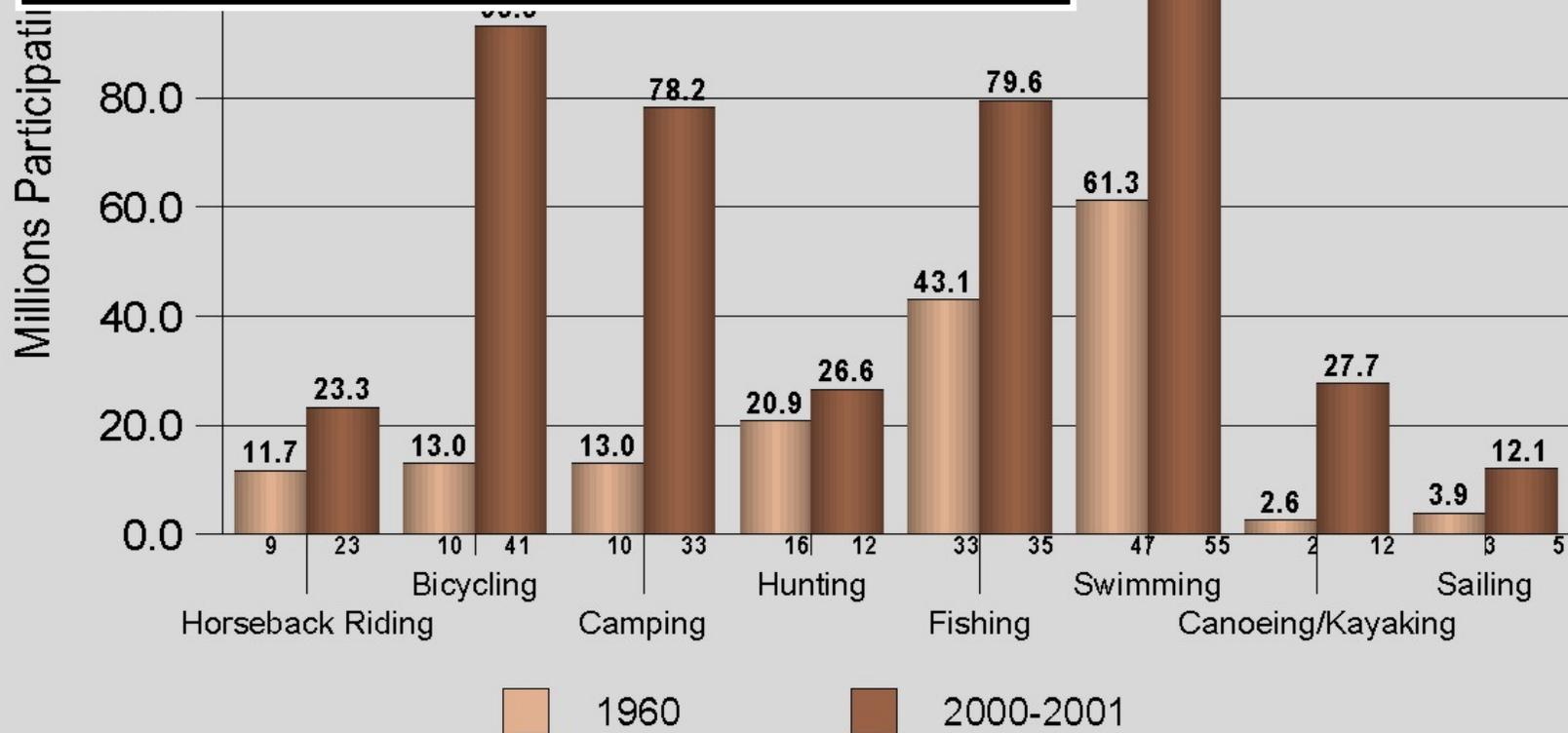
NSRE To Date

- 4 books
- 9 book chapters
- 61 articles
- 23 Technical reports
- 34 Statistical Updates / website reports
- 18 State outdoor recreation reports
- 251 presentations

And now, the rest of the story.....

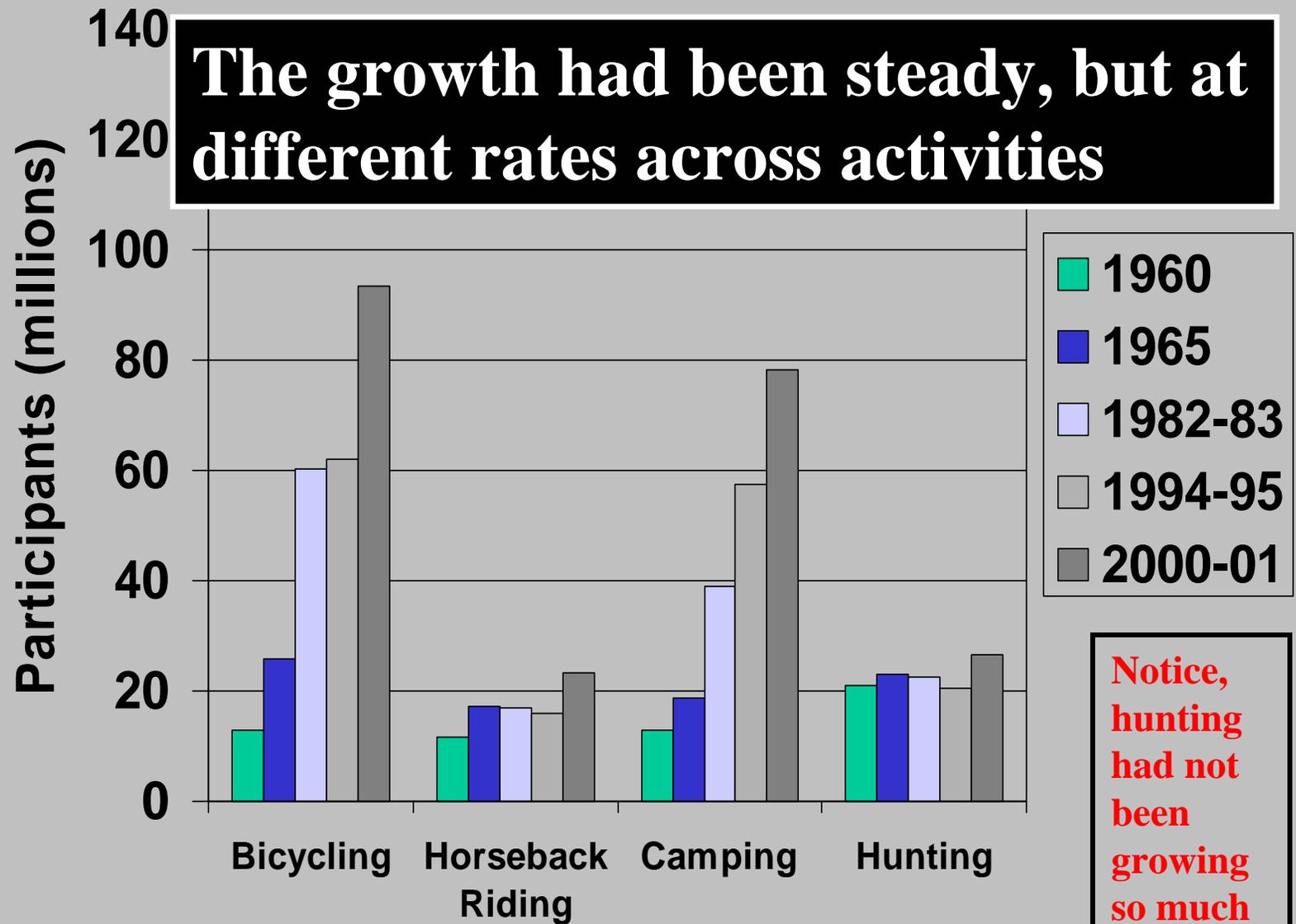
Popularity of selected activities in 1960 and 2000-2001

Demand for recreation had been growing over the years, how about now?



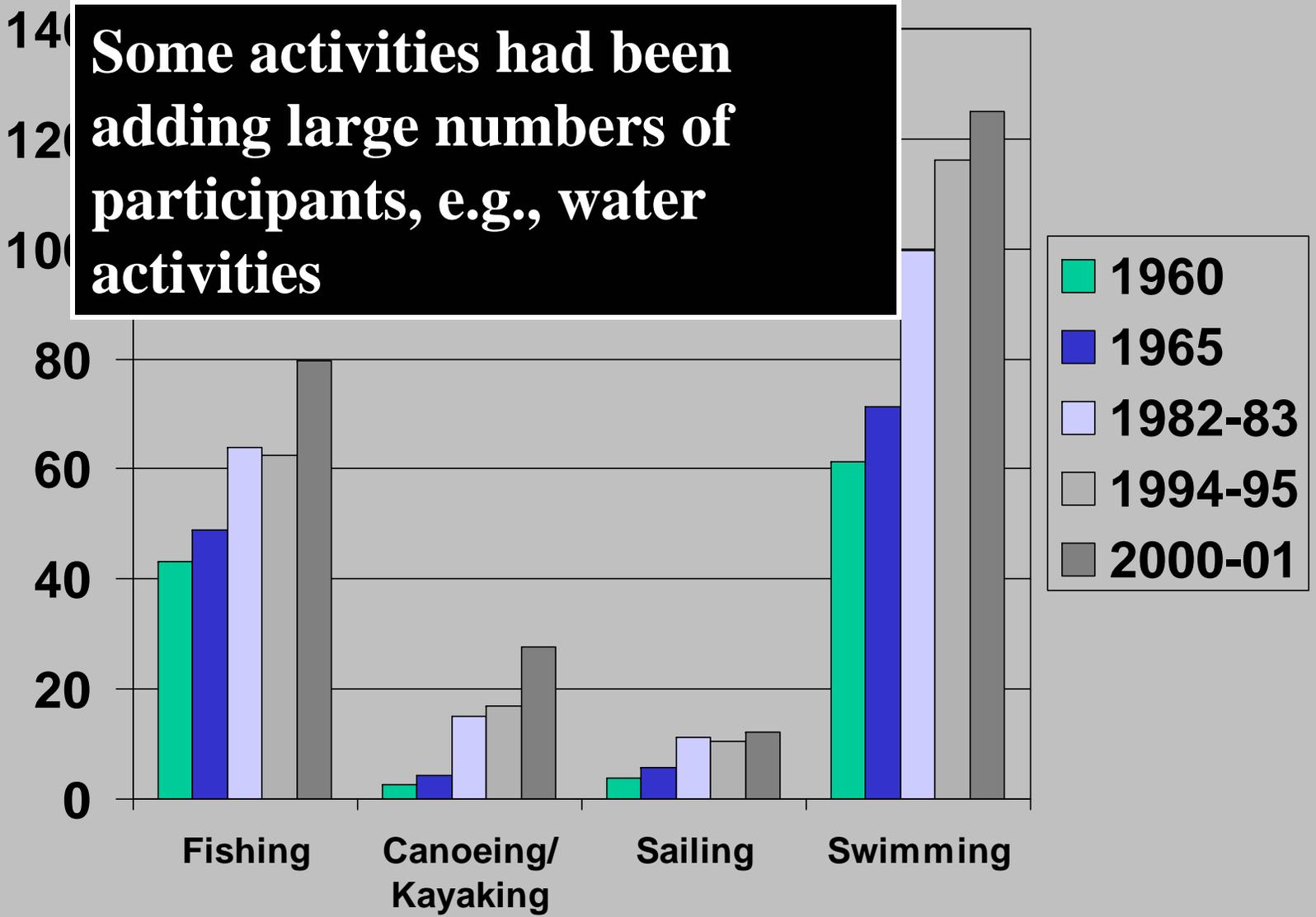
Source: NSRE

The growth had been steady, but at different rates across activities



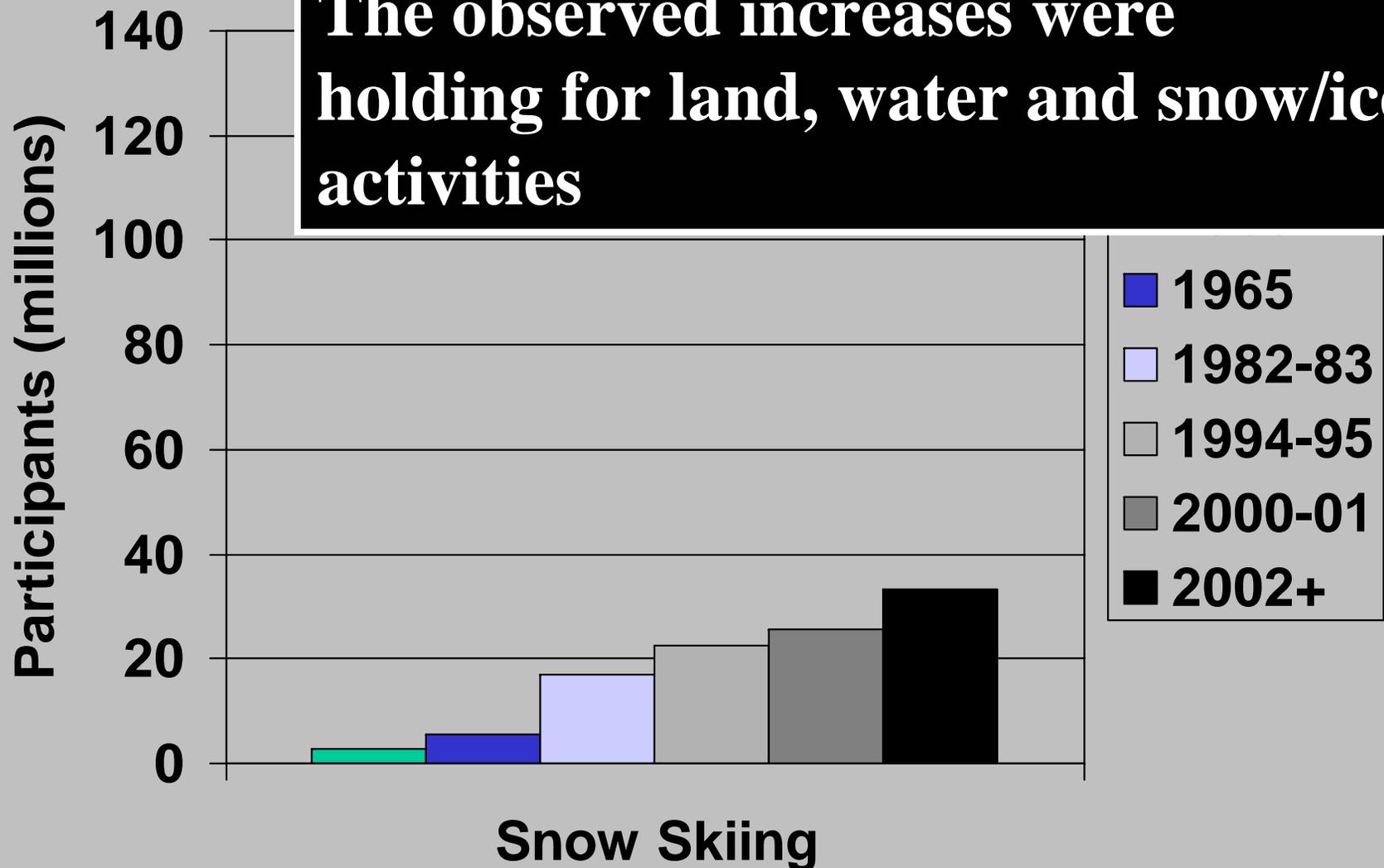
Source: NSRE

Some activities had been adding large numbers of participants, e.g., water activities



Source: NSRE

The observed increases were holding for land, water and snow/ice activities



Source: NSRE

NSRE is the Nation's Authoritative Source for Nature-Based Recreation Trends (as is NSFHWAR)

- **First implemented in 1960 and repeated in 1965, 1972, 1977, 1982, 1994, and now is on-going**
- **In the following slides up-to-date statistics from the NSRE are provided (including 2008)**
- **Activities in the next 5 slides were selected to parallel the indicators selected by Pergams and Zaradic**

Activities likely to have occurred on public land. Percent and days per participant are per capita measures

Visit nature centers, etc.

Time Period	Per-Capita Percent Participating ¹	Per-Capita Annual Days Per Participant ¹	Total Number of participants (1000s)	Total Number of Participant Days (millions)
1994-1995	. (61.4, 62.8)	.	.	.
1999-2001	56.7 (56.3, 57.1)	7.0 (6.4, 7.5)	121,326.1	847.2
2005-2008	55.2 (53.9, 56.4)	8.2 (7.4, 9.0)	127,406.5	1,044.0

Visit a wilderness or primitive area

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995
1999-2001	32.0 (31.6, 32.4)	14.3 (12.7, 16.0)	68,519.5	982.7
2005-2008	30.6 (29.4, 31.7)	15.7 (13.8, 17.6)	70,591.9	1,108.6

¹ 95% confidence interval in parentheses. Most activities did not ask annual activity days in 1999-2000.

Source: NSRE 1994-1995, NSRE 2000-2004, NSRE 2005-2007. Based on the following national age 16+ populations. 1994-1995: 201.3 million (1995 Woods & Poole, Inc.). 1999-2000: 214.0 million (2000 Census). 2001-2002: 220.1 million (2002 Census estimate). 2003-2005: 228.0 million (2005 Census estimate). 2006-2008: 230.9 million (2006 Census estimate).

If hunting license sales is a good indicator, it should reflect trends in hunting

Big game hunting

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	7.1 (6.8, 7.4)	14.2 (13.0, 15.3)	14,289.9	202.6
1999-2001	8.4 (8.1, 8.6)	14.7 (13.6, 15.9)	17,890.5	263.7
2005-2008	8.8 (8.2, 9.3)	15.9 (14.5, 17.2)	20,209.8	320.3

Small Game hunting

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	6.5 (6.2, 6.8)	13.6 (12.2, 15.0)	13,039.9	177.4
1999-2001	7.0 (6.8, 7.3)	15.9 (14.1, 17.6)	15,047.4	238.5
2005-2008	6.5 (6.0, 7.0)	15.8 (13.6, 17.9)	15,006.7	236.9

¹ 95% confidence interval in parentheses. Most activities did not ask annual activity days in 1999-2000.

Source: NSRE 1994-1995, NSRE 2000-2004, NSRE 2005-2007. Based on the following national age 16+ populations. 1994-1995: 201.3 million (1995 Woods & Poole, Inc.). 1999-2000: 214.0 million (2000 Census). 2001-2002: 220.1 million (2002 Census estimate). 2003-2005: 228.0 million (2005 Census estimate). 2006-2008: 230.9 million (2006 Census estimate).

If fishing license sales is a good indicator, it should reflect fishing participation

Warmwater fishing

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	20.4 (19.8, 20.9)	17.6 (16.3, 18.9)	40,970.3	721.6
1999-2001	22.6 (22.2, 23.0)	17.6 (16.4, 18.8)	48,353.6	852.0
2005-2008	22.5 (21.9, 23.1)	17.3 (16.4, 18.3)	51,924.6	900.1

Saltwater fishing

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	9.5 (9.1, 9.9)	13.1 (11.3, 14.9)	19,061.9	249.9
1999-2001	10.4 (10.2, 10.7)	12.6 (11.8, 13.5)	22,314.3	282.2
2005-2008	10.6 (10.2, 11.1)	10.3 (9.3, 11.2)	24,543.5	251.9

¹ 95% confidence interval in parentheses. Most activities did not ask annual activity days in 1999-2000.

Source: NSRE 1994-1995, NSRE 2000-2004, NSRE 2005-2007. Based on the following national age 16+ populations. 1994-1995: 201.3 million (1995 Woods & Poole, Inc.). 1999-2000: 214.0 million (2000 Census). 2001-2002: 220.1 million (2002 Census estimate). 2003-2005: 228.0 million (2005 Census estimate). 2006-2008: 230.9 million (2006 Census estimate).

Is the MediaMark camping survey a good indicator? Looks only at NFs and NPs.

Developed camping

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	20.7 (20.1, 21.3)	10.6 (9.9, 11.2)	41,658.6	440.6
1999-2001	26.4 (26.0, 26.8)	8.6 (8.1, 9.2)	56,476.6	486.8
2005-2008	25.1 (23.9, 26.3)	9.2 (8.2, 10.1)	58,021.3	532.3

Primitive camping

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	14.0 (13.5, 14.5)	9.3 (8.6, 9.9)	28,117.3	260.5
1999-2001	15.9 (15.6, 16.2)	8.1 (7.5, 8.8)	34,027.5	277.0
2005-2008	14.4 (13.5, 15.4)	9.3 (7.7, 10.9)	33,330.2	310.4

¹ 95% confidence interval in parentheses. Most activities did not ask annual activity days in 1999-2000.

Source: NSRE 1994-1995, NSRE 2000-2004, NSRE 2005-2007. Based on the following national age 16+ populations. 1994-1995: 201.3 million (1995 Woods & Poole, Inc.). 1999-2000: 214.0 million (2000 Census). 2001-2002: 220.1 million (2002 Census estimate). 2003-2005: 228.0 million (2005 Census estimate). 2006-2008: 230.9 million (2006 Census estimate).

Are fewer people hiking and backpacking?

Day hiking

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	23.8 (23.2, 24.4)	16.8 (15.6, 18.0)	47,978.6	805.4
1999-2001	32.4 (32.0, 32.8)	36.3 (33.5, 39.2)	69,388.9	2,521.8
2005-2008	32.1 (30.9, 33.2)	26.9 (24.5, 29.4)	74,032.5	1,993.4

Backpacking

Time Period	Percent Participating ¹	Annual Days Per Participant ¹	Total Number of participants (1,000s)	Total Number of Participant Days (millions)
1994-1995	7.6 (7.2, 7.9)	8.5 (7.5, 9.4)	15,216.7	128.8
1999-2001	10.4 (10.1, 10.7)	10.1 (8.8, 11.4)	22,261.2	224.5
2005-2008	9.6 (8.9, 10.2)	12.6 (10.7, 14.5)	22,077.0	277.7

¹ 95% confidence interval in parentheses. Most activities did not ask annual activity days in 1999-2000.

Source: NSRE 1994-1995, NSRE 2000-2004, NSRE 2005-2007. Based on the following national age 16+ populations. 1994-1995: 201.3 million (1995 Woods & Poole, Inc.). 1999-2000: 214.0 million (2000 Census). 2001-2002: 220.1 million (2002 Census estimate). 2003-2005: 228.0 million (2005 Census estimate). 2006-2008: 230.9 million (2006 Census estimate).

Nature based Outdoor Recreation Activity	1994-95		1999-2001		2005-2008	
	Millions of participants annually	Billions of participant days annually	Millions of participants annually	Billions of participant days annually	Millions of participants annually	Billions of participant days annually
Walking	134.3	14.5	176.3	17.9	193.4	20.4
Family gathering	124.3	1.1	158.0	1.2	164.8	1.3
Visiting nature centers	.	.	121.3	0.8	127.4	1.0
Viewing flowers & trees	.	.	94.1	5.8	118.4	10.2
Viewing wildlife	62.8	2.3	94.6	3.6	114.8	5.3
Swimming	78.4	1.2	88.6	1.3	92.1	1.3
Viewing birds	54.3	4.8	68.0	5.9	81.1	8.0
Gathering mushrooms & berries	.	.	61.2	0.9	71.0	0.9
Visiting watersides other than beach	.	.	54.7	0.9	55.5	1.1
Off-road driving	28.0	0.7	37.3	0.9	44.2	1.3
Horseback riding	14.3	0.3	20.6	0.4	21.7	.
Canoeing	14.2	0.08	20.5	0.1	21.0	0.1
Kayaking	2.7	0.02	7.7	0.06	12.5	0.08
Downhill skiing	16.9	0.1	18.3	0.1	15.6	0.1
Snowboarding	.	.	10.5	0.09	11.3	0.1

NSRE tracks over 42 nature-based activities

Pergams and Zaradic Conclusion

- “In conclusion, all major lines of evidence point to a general and fundamental shift away from people’s participation in nature-based recreation.”
- “The root cause may be videophilia, as our previous work suggests”
- “Regardless of the root cause, **the evidence for a pervasive and fundamental shift away from nature-based recreation seems clear.**”

How well does the Pergams/Zaradic argument hold up? A couple of observations:

- First, and most importantly, the authors used a very limited set of indicators from which to conclude that **ALL** of nature-based recreation is on the decline
- Second, the **choice of a per-capita measure** pretty much assured observing a downward trend (travel cost is up, supply is tighter, population base is larger) Total is a better indicator
- Third, except for hunting and fishing, surveys of nature-based recreation from the Fish and Wildlife Service and the Forest Service show **growth in nature-based recreation**. This is not consistent with the conclusions drawn by Pergams and Zaradic
- Fourth, **state park visitation** has been cycling up and down in a normal pattern over the last few years. Since 2000, it has risen from a cyclical low?
- Fifth, **national park visitation** has decreased less than 4% in the last 20 years, and rose by 3 million visits from 2006-07

End of Part I

Part II: 2010 RPA Assessment---5 Assessment Products from Athens GA research team

- **Current situation, recent trends and future social change---the human dimension—world, U. S. and regions**
- **Natural resource values in modern society**
- **Relationships between social trends and natural lands (Footprints = hotspots)**
- **Outdoor recreation, tourism and amenity migration trends and projections**
- **Wilderness and other protected lands**

Dimensions of Human Resources

- Numbers of people
- Spatial distribution
- Demographic makeup
- Cultural makeup (norms/values)
- Social organization

- Uses
- Appreciation
- Restoration
- Protection

Natural Resources

- Forests
- Range
- Water
- Wildlife
- Soil
- Earth Infrastructure
- Minerals

Dimensions:

- Quantity
- Distribution
- Condition
- Production

•Ecological Services

A very simplistic view of how humans and nature interact

Dimensions of Human Resources

- **Numbers of people**
- **Spatial distribution**
- **Demographic makeup**
- **Cultural makeup (norms/values)**
- **Social organization (general)**

Natural Resources

- **Forests**
- **Range**
- **Water**
- **Wildlife**
- **Soil**
- **Earth Infrastructure**
- **Minerals**

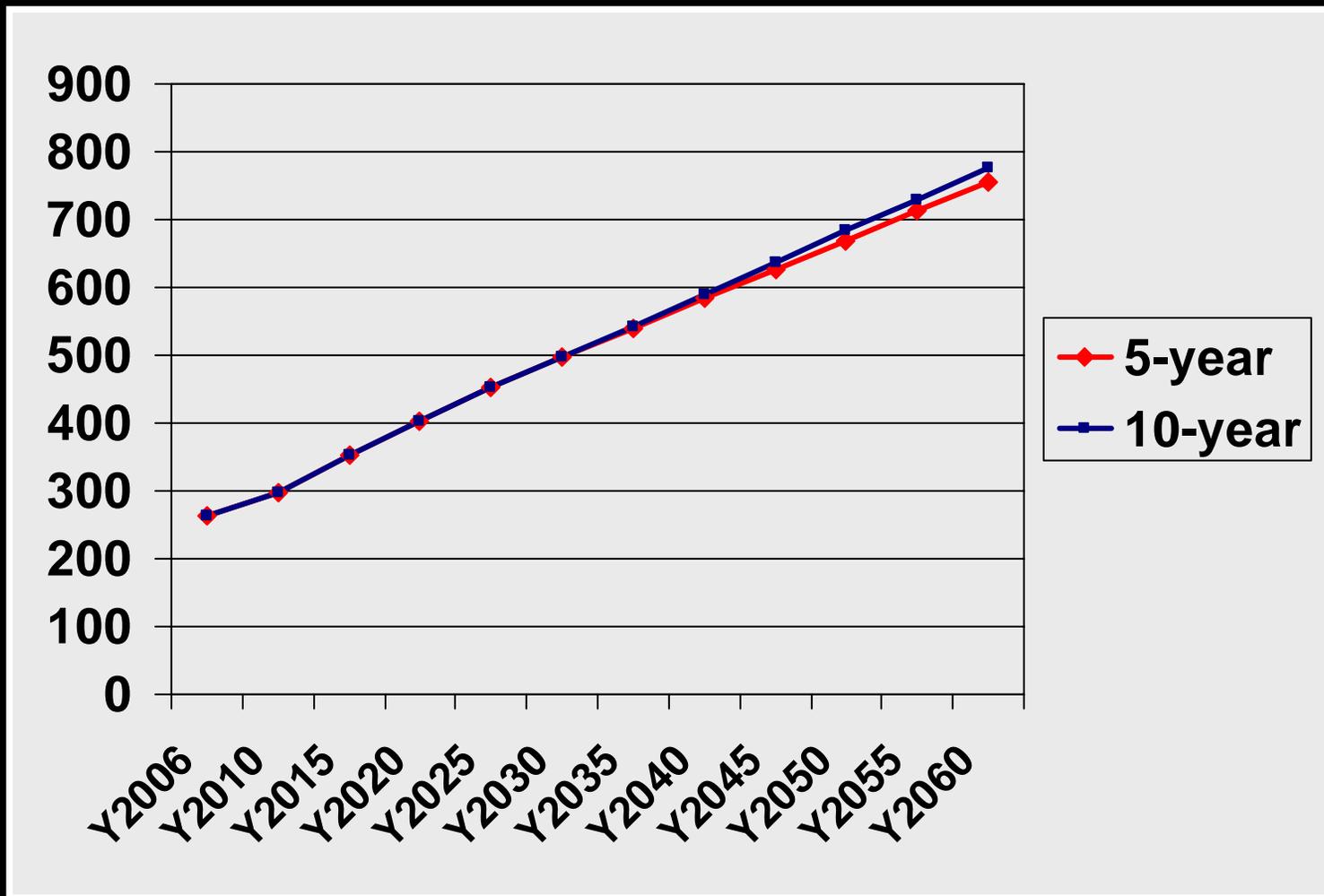
- **Uses**
- **Appreciation**
- **Restoration**
- **Protection**

- **Ecological Services**

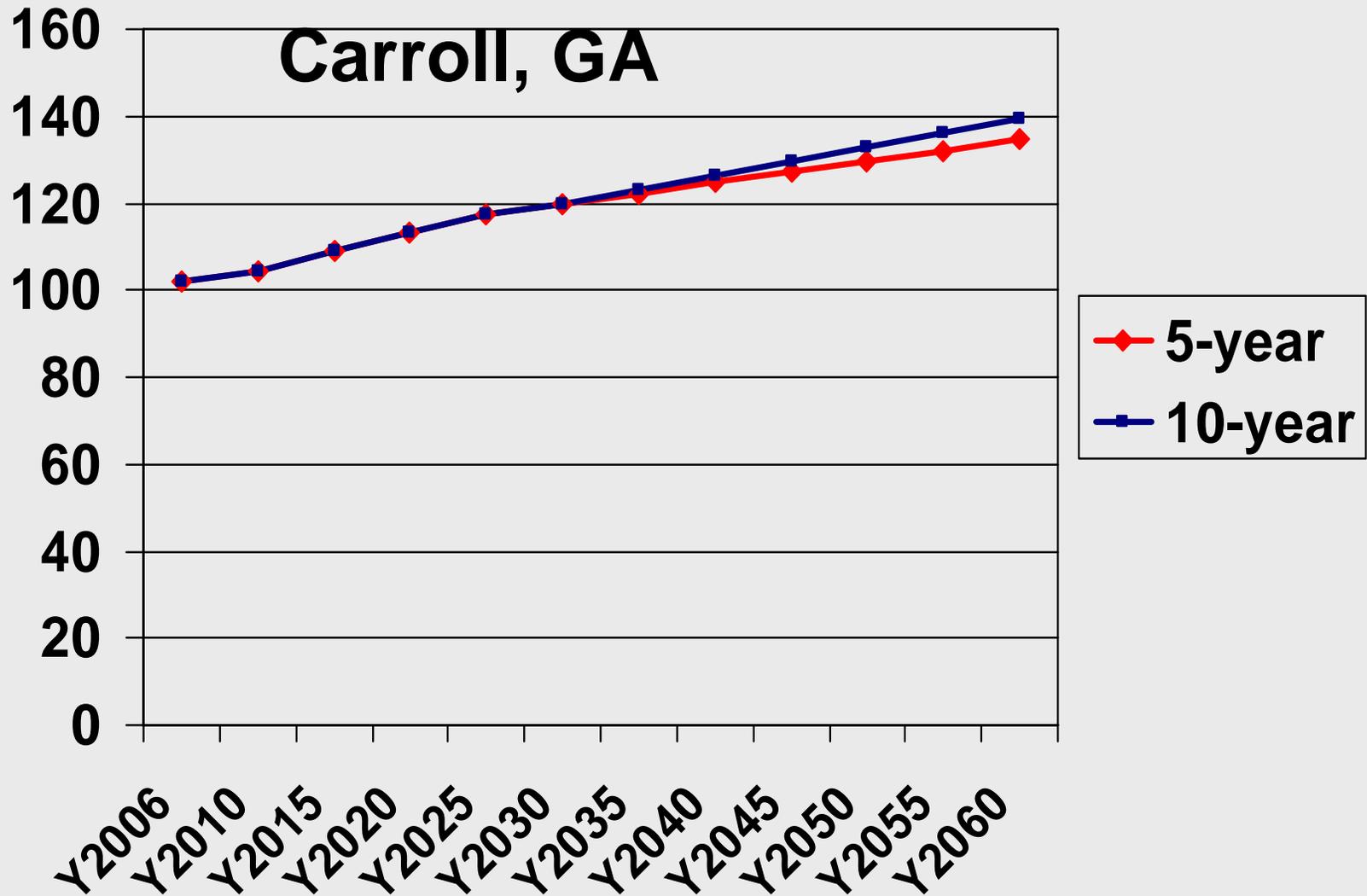
Of course, humans and nature interact

The first of our products will be to describe the human dimensions (current situation, recent trends and projections) (global and U. S. using as fine-scale data as possible to show distribution)

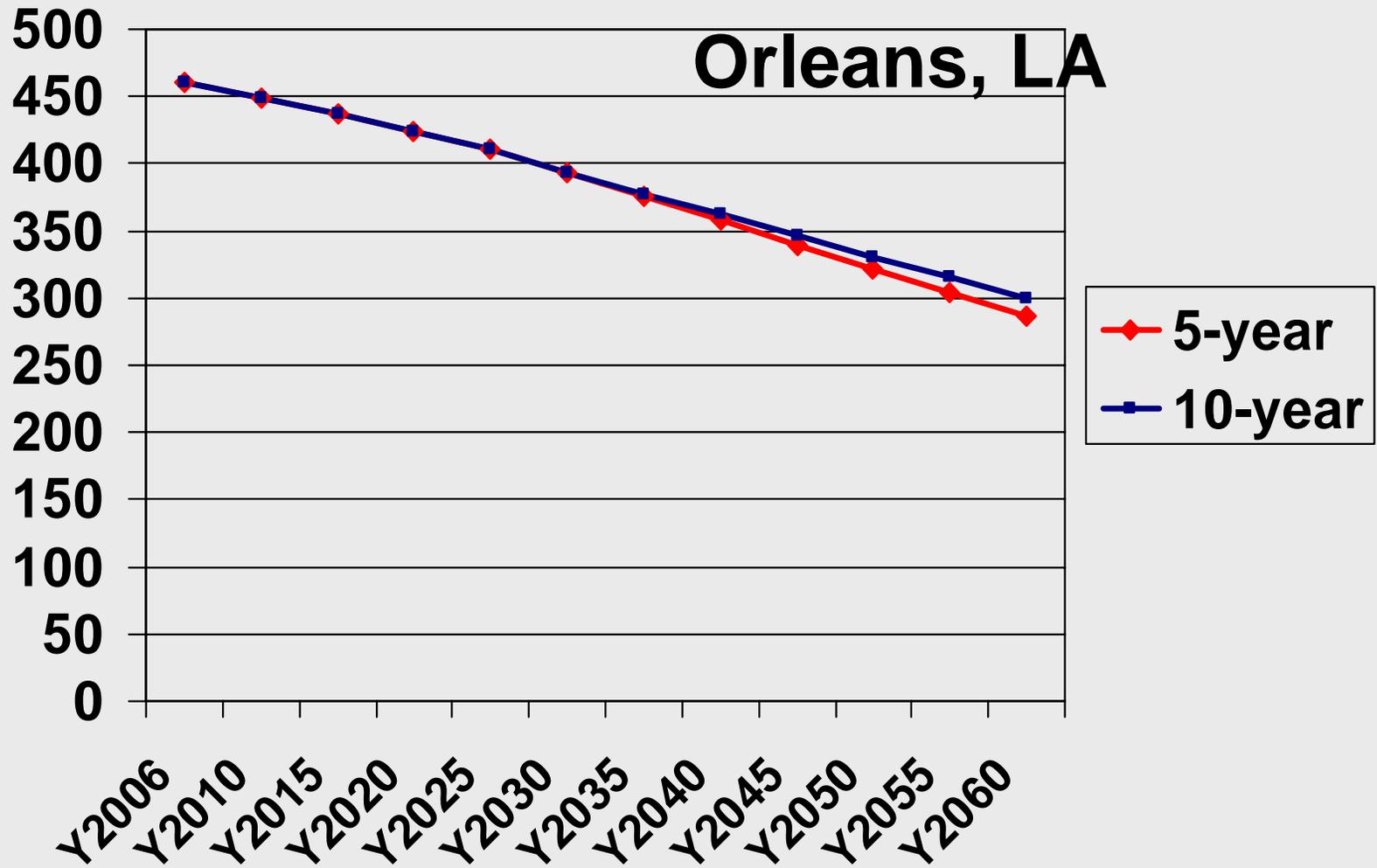
Projections of population change for all counties



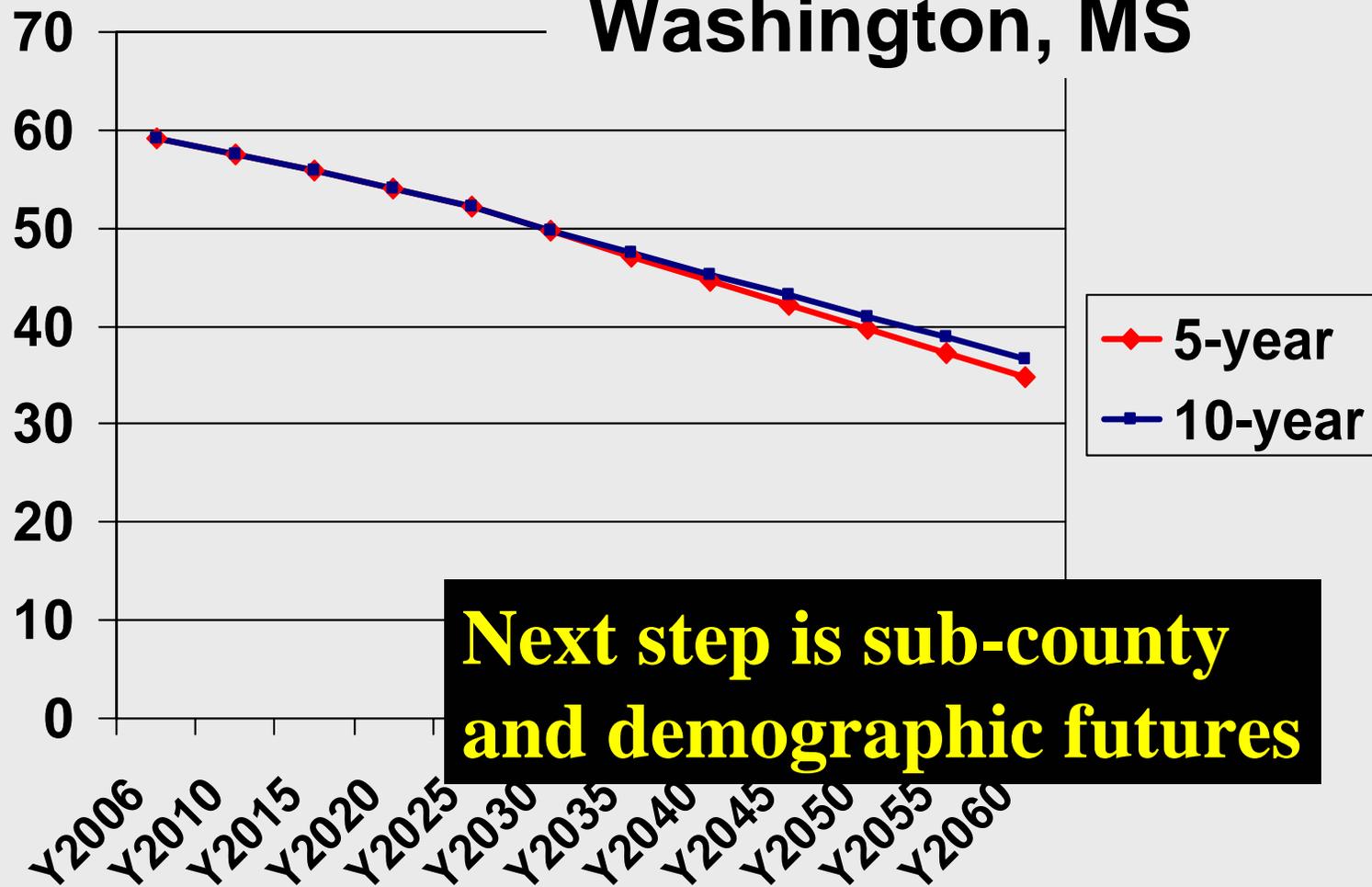
Carroll, GA



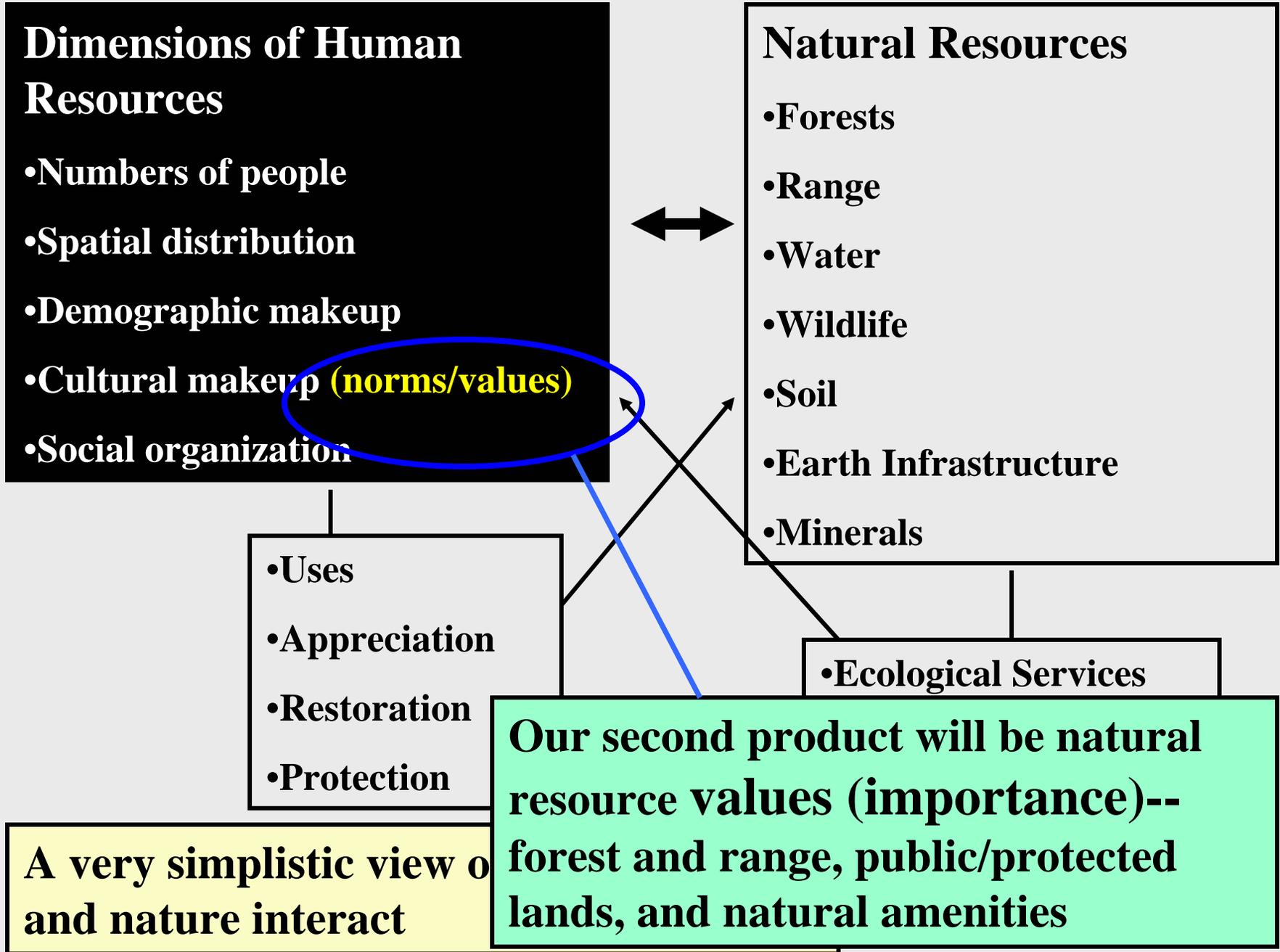
Orleans, LA



Washington, MS



**Next step is sub-county
and demographic futures**



WHAT DOES THE U.S. PUBLIC SEE AS IMPORTANT IN OUR PUBLIC LANDS??

- Provide permits to ranchers for grazing of livestock
- Maintain public lands for future generations to enjoy
- Provide access, facilities and services for outdoor recreation
- Provide quiet, natural places for personal renewal
- Use and manage public areas in ways that leave them natural in appearance
- Emphasize planting/management of trees for abundant timber supply
- Provide access to raw materials and products for local industries and communities
- Protect streams and other sources of clean water
- Protect rare, unique or endangered plant and animal species
- Provide roads, accommodations and services to help local tourism businesses
- Provide information and educational services about natural areas, their management and the natural life in them

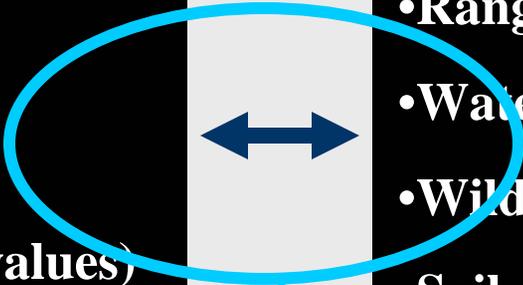
Another source will be the NSRE and the surveying we did for NFS---Applies to all public lands

Dimensions of Human Resources

- Numbers of people
- Spatial distribution
- Demographic makeup
- Cultural makeup (norms/values)
- Social organization

Natural Resources

- Forests
- Range
- Water
- Wildlife
- Soil
- Earth Infrastructure
- Minerals



•Uses
•Appreciation
•Restoration
•Protection

•Ecological Services

Of course, humans and nature in

The third of our products will be to describe interactions between humans and nature (Footprints = spatial hotspots) (current, recent trends and projections) (global and U.S.)

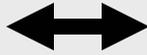
Footprints on the Land

- **Describes human society currently, recent trends, and futures in terms of number, spatial distribution, demographics, what is important to whom, and what change might mean**
- **Describes current resource conditions and futures (links to resource specialists)**
- **Examines spatial interaction between nature and humans (footprints = hotspots) (also links to specialists)**

Hopeful of getting a key indicator as an output for each resource (forest, range, water, wildlife habitat, fish habitat, coast, other?)

Footprints on the Land

- **Some areas of special emphasis:**
- **Wilderness and other protected lands**
- **Public lands in general (link to NFOTE)**
- **Coasts**
- **Mountains**
- **Alaska**
- **Great Lakes**
- **Southern Appalachians**



The fourth product will describe recreation use and appreciation of natural lands: activity participation, tourism, nature as an amenity (current, recent trends and projections) (global and U.S.)

Of course, humans and nature interact

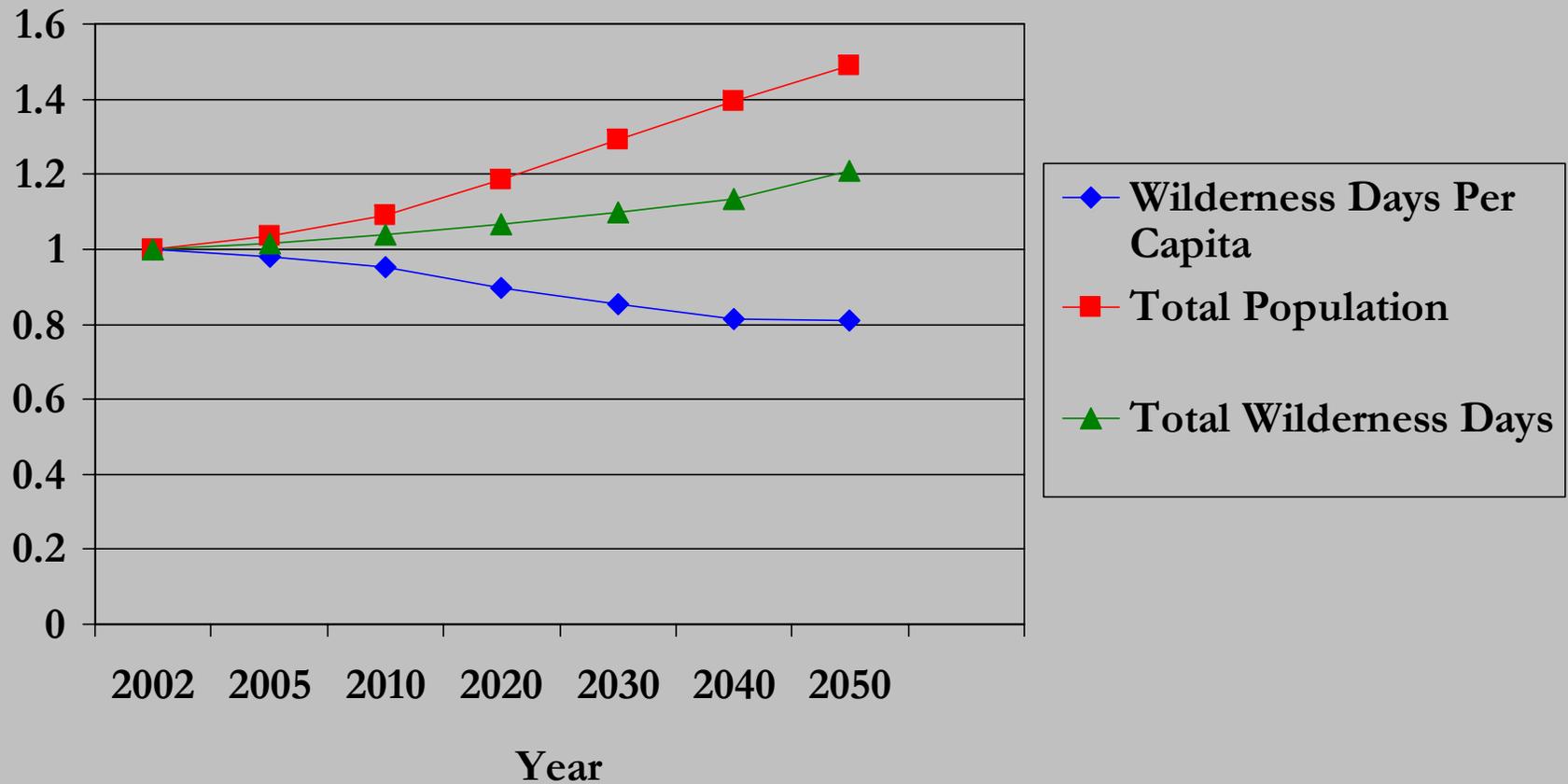
Stages of Natural Amenity Draw

- Day or overnight **visits in areas with natural settings** for recreation (short visits)
- **Vacations and extended stays** in areas with natural amenities (tourism)
- **Ownership of vacation/seasonal homes** in amenity areas (ownership or leasing)
- Migration to **establish permanent residence** in high amenity areas

Recreation visits (“demand”) to areas with natural attractions

- **Population-wide participation** at national to county levels (from NSRE with focus on nature-based activities, especially in forests, range, water, snow and urban)
- **Outdoor participation by youth** (6 – 19, and reasons for low participation) (NSRE)
- **Visitation to public lands**, federal and state (with an emphasis on National Forests and National Parks)
- **Recreation use of private** lands and water (NSRE)
- **Forecasts** of population-wide outdoor recreation (NSRE) and of visitation to National Forests (NVUM)
- **Recreation issues**, especially off-highway vehicles and access

Wilderness Days Index 2002 - 2050

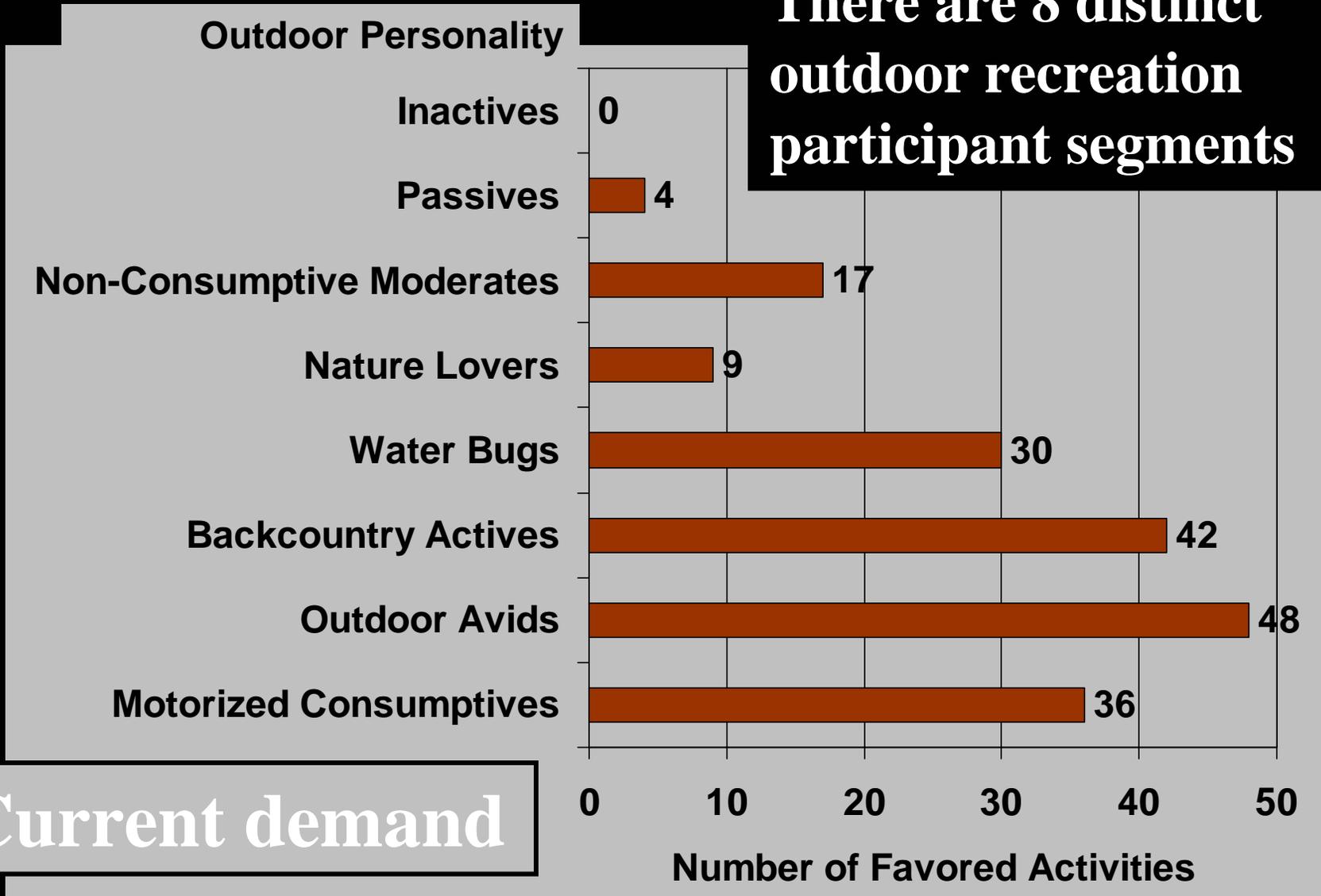


A focus on indicator activities across households

- **Birding**
- **Equestrian**
- **Hiking/Backpacking**
- **Canoeing/Kayaking/Rafting**
- **Fishing**
- **Snow Skiing/Snow Boarding**
- **Motorized Off-Road Use**
- **Motorized Water Use**

Number of favored activities for each of 8 outdoor personalities based on differences in choice of activities (NSRE 2000-2001)

There are 8 distinct outdoor recreation participant segments



Current demand

Percentages of U.S. population by range of days of participation per year in physically active, land-based outdoor activities

Segmentation based on level of participation

Activity	Percent of Population Who Do Not Participate	Least Active Third		Moderately Active Third		Enthusiasts Most Active Third	
		Percent of Population	Days per Year	Percent of Population	Days per Year	Percent of Population	Days per Year
Day hiking	66.7	11.5	1-4	11.5	5-15	10.4	16-365
Visiting a wilderness or primitive area	67.3	12.5	1-1	9.9	3-6	10.3	7-365
Mountain biking	78.6	7.2	1-5	7.4	6-24	6.8	25-365
Driving off-road	82.5	6.3	1-4	5.9	5-15	5.3	16-365
Big game hunting	91.6	3.0	1-5	2.7	6-14	2.6	15-150
Rock climbing	95.7	1.6	1-1	1.3	2-3	1.4	4-250

Current demand

Participation by enthusiasts accounts for most of the activity days (E.g., 6 of 34 activities)

Current demand

Activity	Percent of Population who are Enthusiasts	Percent of Total Participation Days by Enthusiasts
Visiting a wilderness or primitive area	10.3	88.9
Day hiking	10.4	88.5
Kayaking	1.2	84.2
Warmwater fishing	7.5	80.6
Downhill skiing	2.6	76.1
Snowboarding	1.5	74.0

Demographic characteristics of enthusiasts vary by activity, e.g., the physically active land activities shown in this table. Typically they are male, white, have higher incomes, and are urban

Activity	Minimum Days per Year to Qualify as an Enthusiast	Percent Male	Percent White, Non-Hispanic	Percent Ages 25 and Under	Percent Ages 45 and Older	Percent Earning \$50,000 or More	Percent Who Live in Metropolitan Areas
Mountain biking	25	62.0	74.7	24.9	20.6	49.0	79.4
Day hiking	16	46.4	50.5	19.4	32.0	41.7	80.3
Driving off-road	16	69.5	85.4	34.7	27.1	51.8	66.2
Big game hunting	15	88.6	92.6	26.7	33.5	38.9	51.0
Horseback riding	7	49.4	85.0	26.7	30.9	42.2	64.7
Visiting a wilderness or primitive area	7	63.4	87.9	28.7	31.6	47.5	73.9
Caving	3	42.8	74.8	36.8	26.7	43.6	75.0

The **Ultra Enthusiasts** are the most active 1/2 of the most active 1/3. Demographics vary by activity for ultra enthusiasts also.

Activity	Minimum Days per Year to Qualify as an Ultra Enthusiast	Percent Male	Percent White, Non-Hispanic	Percent Ages 25 and Under	Percent Ages 45 and Older	Percent Earning \$50,000 or More	Percent Who Live in Metropolitan Areas
Day hiking	52	42.7	41.7	14.8	35.8	35.6	85.0
Mountain biking	50	65.7	76.7	19.6	28.0	45.2	78.6
Driving off-road	30	64.1	85.7	42.3	20.1	56.5	68.9
Horseback riding	30	45.6	85.0	25.0	33.7	41.2	58.6
Big game hunting	24	91.8	96.8	23.3	23.3	48.9	43.4
Visiting a wilderness or primitive area	14	65.4	88.8	28.2	31.0	43.9	68.0
Caving	4	35.7	55.7	37.0	9.5	62.6	80.7

Current demand

Figure 4: Rural Recreation and Retirement Counties, by Natural Amenity Score
(A Review of Natural Resource Amenity Service Values and Impacts in the U.S.,
USDA Forest Service and University of Georgia, Athens, GA, March, 2008)

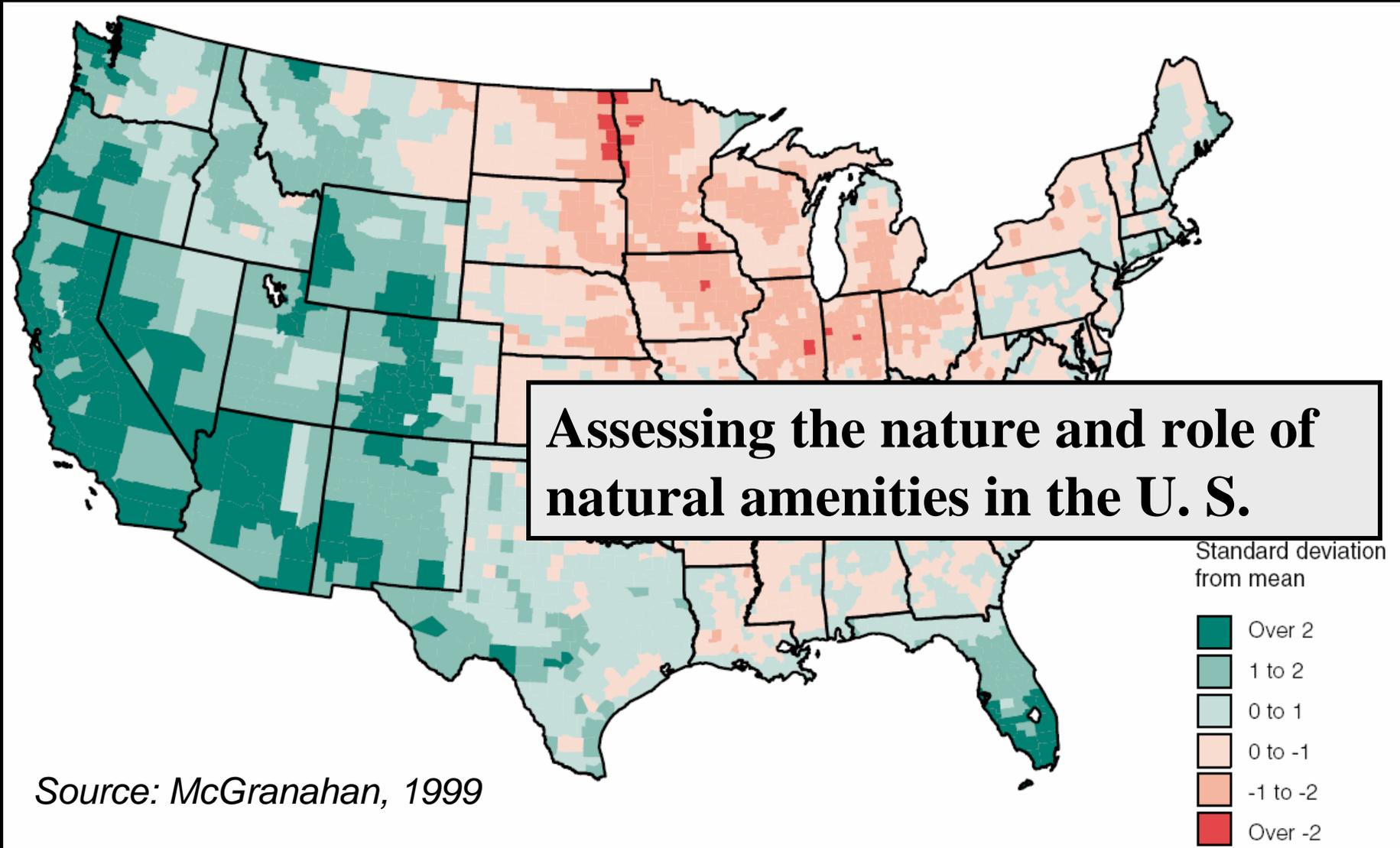


Figure 2: Average Changes in Nonmetropolitan Employment, 1969-96, and Population, 1970-1996, by Natural Amenity Score (A Review of Natural Resource Amenity Service Values and Impacts in the U.S., USDA Forest Service and University of Georgia, Athens, GA, March, 2008)

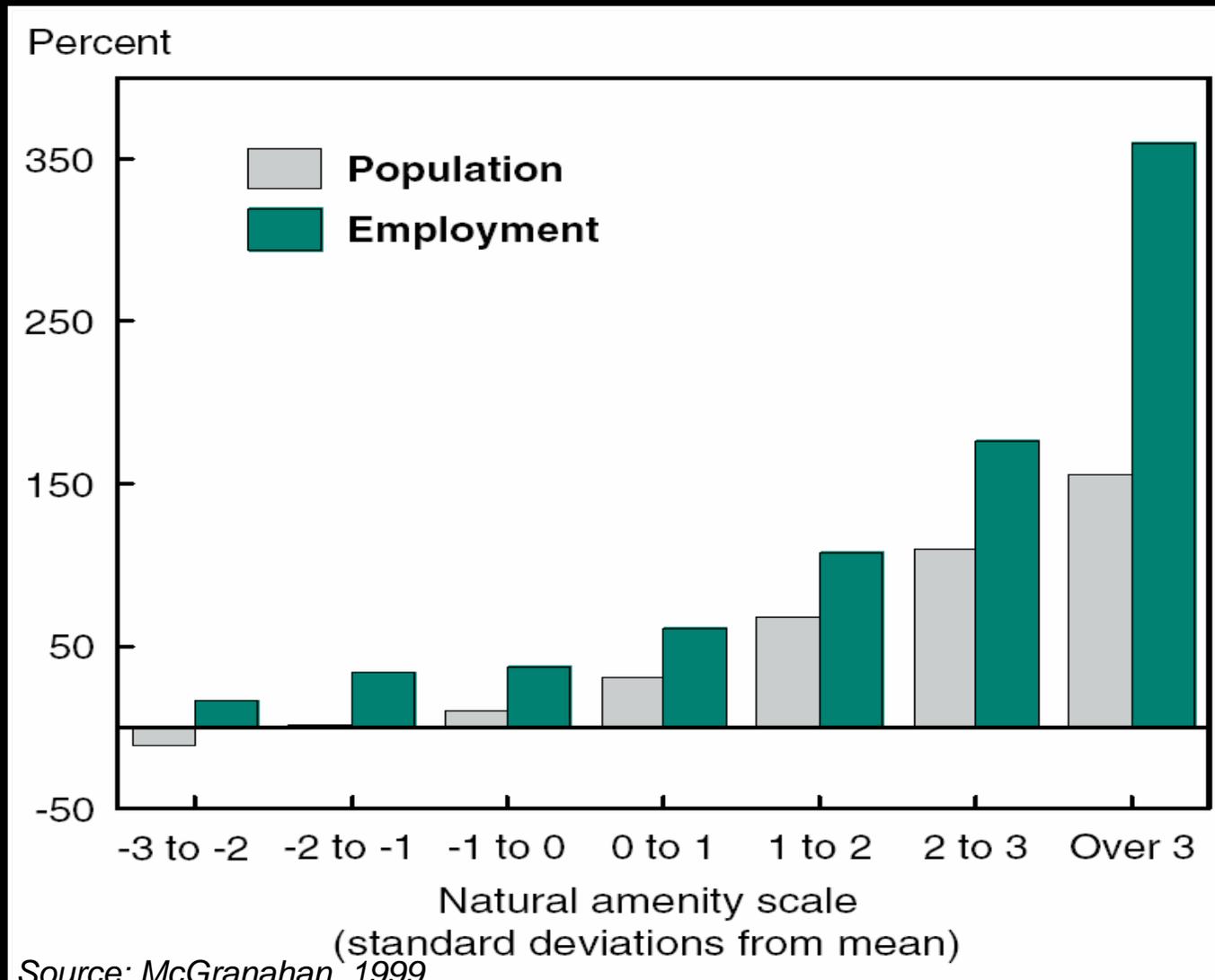
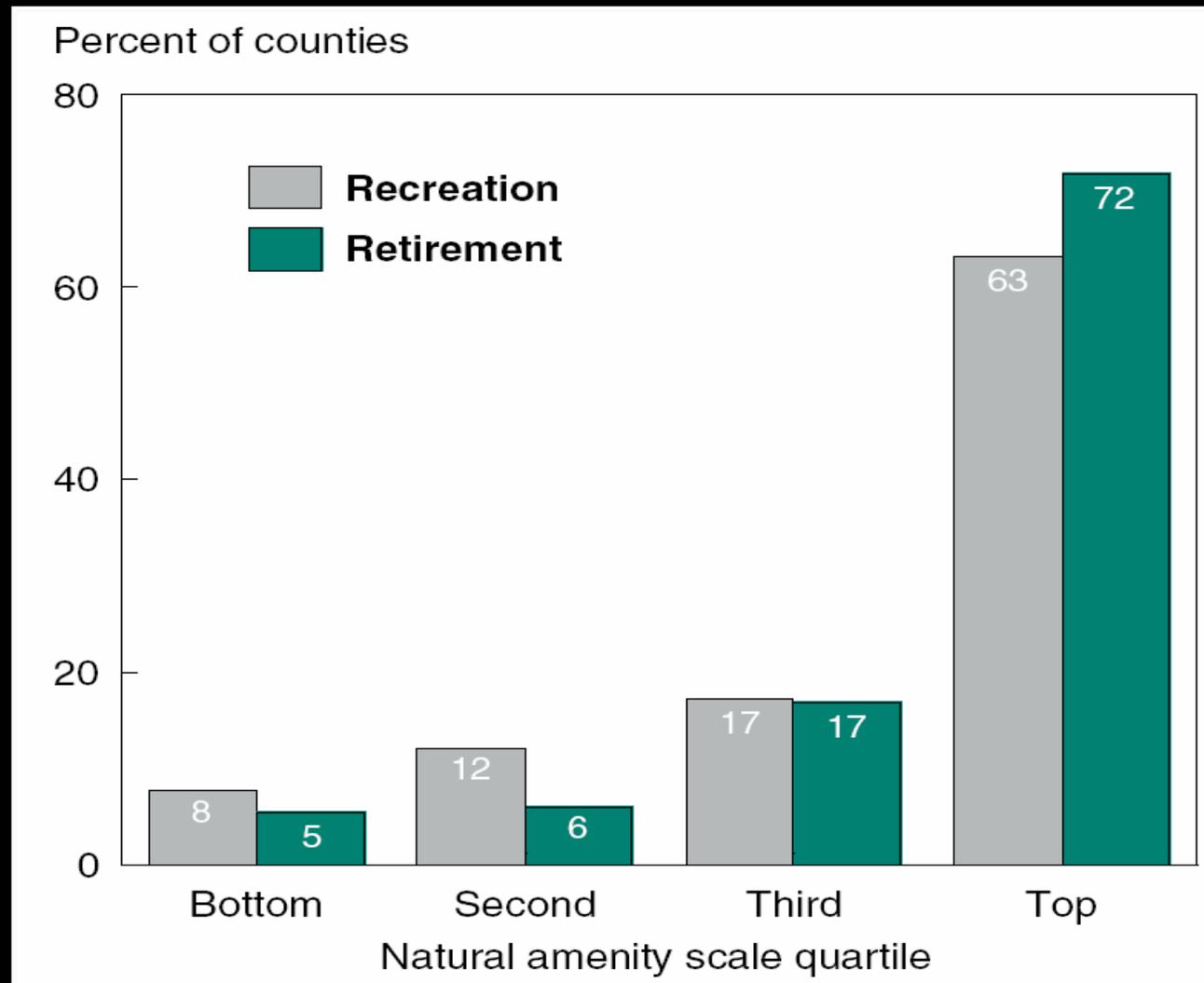
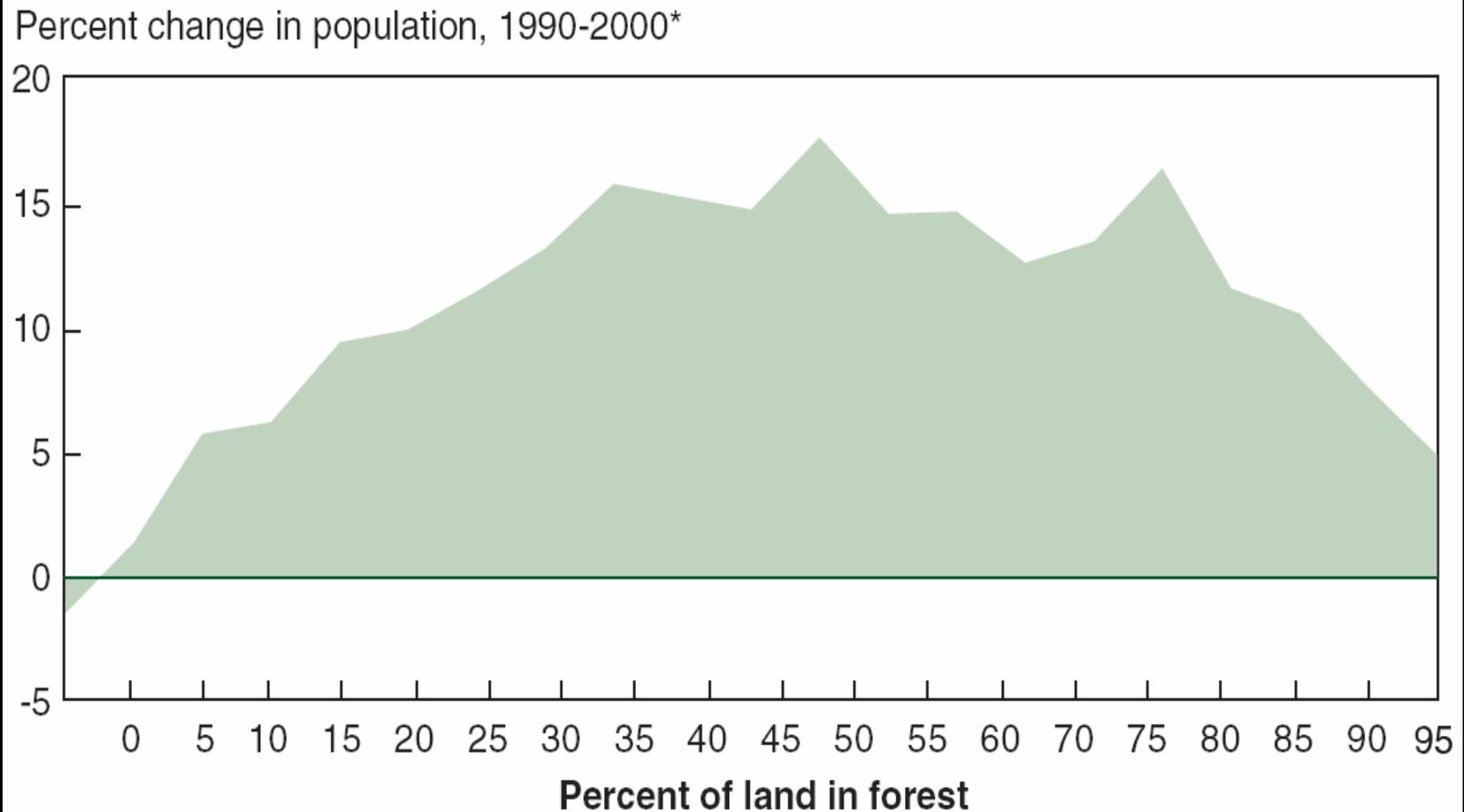


Figure 4: Rural Recreation and Retirement Counties, by Natural Amenity Score
(A Review of Natural Resource Amenity Service Values and Impacts in the U.S.,
USDA Forest Service and University of Georgia, Athens, GA, March, 2008)



The More Forest in a Rural County, the Greater the Population Growth, but Only Up to a Point (A Review of Natural Resource Amenity Service Values and Impacts in the U.S., USDA Forest Service and University of Georgia, Athens, GA, March, 2008)



*Averages calculated at intervals of 5 percentage points.

Source: McGranahan and Sullivan, 2005

The NSRE Report

The next NSRE report is underway as a series

2005

Outdoor Recreation for 21st

ica

Cordell
Principal Author



VENTURE

Outdoor Recreation for 21st Century America

A Report to the Nation:
The National Survey on Recreation
and the Environment



H. Ken Cordell
Principal Author



Internet Research Report Series

*How Do Americans View Wilderness--
Part I*
A WILDERNESS Research Report in the IRIS Series¹
January, 2008

H. Ken Cordell, Carter J. Betz, Becky Stephens, Shela Mou, and Gary
T. Green²

IRIS

¹ The Internet Research Information Series (IRIS) is an Internet accessible science report series covering outdoor recreation statistics (RECSTATS), wilderness research (WILDERNESS) and other human-dimension and demographics research (DEMOSTATS) related to natural resources. This research is a collaborative effort between the USDA Forest Service's Southern Research Station and its Forestry Sciences Laboratory in Athens, Georgia; the University of Georgia in Athens; and the University of Tennessee in Knoxville, Tennessee.

² The authors are H. Ken Cordell, Pioneering Scientist, Carter J. Betz, Outdoor Recreation Planner, and Shela Mou, Computer Assistant, USDA Forest Service; Becky Stephens, Research Associate, University of Tennessee at Knoxville; and Gary T. Green, Assistant Professor, University of Georgia. Iris photo courtesy of Jessica Mou.

Wilderness Values

- Two values stand out because over 90 percent said they are very or extremely important. These are **protection of air quality and of water quality**.
- Four additional values stand out also because over 80 percent indicated very to extremely important
- These include **protecting wildlife habitat, knowing that future generations will have Wilderness to visit (bequest value), protecting rare and endangered plant and animal species, and preserving unique wild plants and animals.**



IRIS - Internet Research Report Series

Off-Highway Vehicle Recreation in the United States and its Regions and States: An Update National Report from the National Survey on Recreation and the Environment (NSRE)

This is a RECSTATS Research Report in the IRIS Series¹

February, 2008¹

This report is provided to aid interested individuals and organizations gain access to statistics describing Off-Highway Vehicle (OHV) recreational use and users in the United States. The source of these statistics is the National Survey on Recreation and the Environment. Text has been kept to a minimum. The focus is on tabulated statistics in the numerous tables within.

¹ The Internet Research Information Series (**IRIS**) is an internet accessible science report series covering outdoor recreation statistics (**RECSTATS**), wilderness research (**WILDERNESS**) and other human-dimension and demographics research (**DEMOSTATS**) related to natural resources. This research is a collaborative effort between the USDA Forest Service's Southern Research Station and its Forestry Sciences Laboratory in Athens, Georgia; the University of Georgia in Athens; and the University of Tennessee in Knoxville, Tennessee.

IRIS

OHV Trends

- There **was** a consistent upward trend in number of OHV participants between 1999 and 2003
- The estimated number of OHV participants increased **37 percent**, from 37.6 to 51.6 million people, 1999 – 2003
- A slight **decrease was beginning to show** in late 2003, a trend which continued through 2007
- This **estimated decrease in total number participating** went from a high of 51.6 million in 2002-2003, to just over 44.4 million in 2005-2007



IRIS--Internet Research Information Series

***American Birders--Part I
Their Numbers and Outdoor Activity Profiles***

**A RECREATION Research Report in the IRIS Series¹
February, 2008**

**H. Ken Cordell, Ted L. Eubanks, Carter J. Betz, Gary T. Green, Becky
Stephens, and Shela Mou²**

2/08/08

IRIS

¹ The Internet Research Information Series (IRIS) is an Internet accessible science report series covering outdoor recreation statistics (RECSTATS), wilderness research (WILDERNESS) and other human-dimension and demographics research (DEMOSTATS) related to natural resources. This research is a collaborative effort between the USDA Forest Service's Southern Research Station and its Forestry Sciences Laboratory in Athens, Georgia; the University of Georgia in Athens; and the University of Tennessee in Knoxville, Tennessee. <http://warnell.forestry.uga.edu/html/nare/IrisReports.html>

² The authors are H. Ken Cordell, Pioneering Scientist, USDA Forest Service; Ted L. Eubanks, President, Fernata Inc.; Carter J. Betz, Outdoor Recreation Planner, USDA Forest Service; Gary T. Green, Assistant Professor, University of Georgia; Becky Stephens, Research Associate, University of Tennessee at Knoxville; and Shela Mou, Computer Assistant, USDA Forest Service. Iris photo is courtesy of Jessica Mou.

BIRDING Participation Trends in the United States

Years	Percent of Pop	Sample Size	Mean Annual Birding Days	Sample Size Birding Days	Number birding (1,000s)	Total Number of Annual Birding Days (millions)
1994-1995	27.0	17,216	87.7	3,626	54,416.0	4,774.9
1999-2000	33.2	28,327	81.9	8,602	70,993.6	5,811.0
2001-2003	31.6	41,822	92.9	11,423	69,619.9	6,466.8
2005-2006	34.6	9,985	101.1	3,894	78,793.3	7,967.5

POPULATION, RECREATION, AND OTHER TRENDS IN THE UNITED STATES

Bye



Many thanks to my colleagues Carter Betz, Shela Mou, John Bergstrom, Gary Green, Mike Bowker, Izzy Hill, Ali Ginn, Stan Zarnoch, Becky Stephens, Cassandra Johnson and others who we rely on very much to do the national research on recreation and Wilderness

kcordell@fs.fed.us

Web Site

<http://warnell.forestry.uga.edu/nrrt/nsre/>