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*IRIS*  
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**Outdoor Trends Publications<sup>1</sup>**

**A Research Brief in the IRIS Series<sup>2</sup>**

**March, 2013**

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<sup>1</sup> Athens Research Group, Southern Research Station, USDA Forest Service, Athens, GA (Ken Cordell, Project Leader).

<sup>2</sup> The Internet Research Information Series (IRIS) is an internet accessible science report series covering outdoor recreation statistics, the National Kids Survey, natural lands research, and other human-dimension and demographics research 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/nrrt/nsre/IrisReports.html>

## Outdoor Trends Research

There are enormous social and economic trends working through American society. Singularly, they can seem subtle, but taken together these trends are drivers with highly significant effects on uses and management of natural resources. An example of a significant, driving social trend is the rapid development and adoption of digital media. Other significant trends are the rapid growth of population and change in population demographic makeup. And, overlaying all social, economic, political, resource or any other trend is climate change. Climate and social changes have important implications for outdoor recreation, tourism, and management and protection of land and water resources, especially public lands. For sound and responsive future management of these resources, it is essential that we work tirelessly to improve our understanding of the effects on recreation, tourism and public lands of the broad-scale changes underway in the United States. Research conducted over the last 5 years by the Athens Research Group has sought to track some of these trends and to forecast future recreation, natural amenity, protected land, and potential human impact trends associated with natural lands.

This IRIS research report is devoted to providing a brief overview of the major accomplishments from this 5-year research endeavor. In subsequent IRIS reports, more detailed findings will be summarized. Following below are abstracts for each of the 5 principal publications resulting from the research. Authors, titles and links for on-line access are listed at the end.

### **Projecting U.S. county-level populations to 2060 under three future scenarios (2010)**

*Abstract*—County-level population projections from 2010 to 2060 are developed under three national population growth scenarios for reporting in the 2010 Renewable Resources Planning Act (RPA) Assessment. These population growth scenarios are tied to global futures scenarios defined by the Intergovernmental Panel on Climate Change (IPCC), a program within the United Nations Environment Programme. The first of these scenarios, the A1/Census scenario, is equivalent to the current official U.S. Bureau of Census national projection, which, at the writing of this paper, extended to 2050. The second scenario, A2, is a higher population growth future, and the B2 scenario is a lower



population growth future. The methodology for developing projections to 2060 is to disaggregate the above-mentioned national growth scenarios by using county shares of national population growth obtained from the Woods & Poole Economics Inc. projections of county populations from 2010 to 2030. A1/Census county projections from 2035 to 2060 are based on a recursive approach that extends past growth to project future growth, with adjustments to assure national additivity across counties and growth-dampening for the highest growth counties. The A2 and B2 county populations for 2010 to 2060 are derived from the A1/Census county projection shares.

### **Natural amenities and rural population migration (2011)**

*Abstract*—Research has suggested that significant relationships exist between rural population change and natural amenities. Thus, understanding and predicting domestic migration trends as a function of changes in natural amenities is important for effective regional growth and development policies and strategies. In this study, we first estimated an econometric model which showed the effects of natural amenities, such as climate and landscape variables, on rural population migration patterns in the United States between 1990 and 2007. The estimated model was then used to predict the effects of changes in these variables on rural county net migration and population growth to 2060 under alternative future climate and land use projections. Results suggest that people prefer rural areas with mild winters and cooler summers; thus we can expect a direct impact of climate change on population migration when areas associated with these conditions change. Results also suggest preference for varied landscapes that feature a mix of forest land and open space (e.g., pasture and range land). During the projection period from 2010 to 2060 in the United States, changes in natural amenities were predicted to have positive effects on rural population migration trends in most parts of the Inter-mountain and Pacific Northwest regions, and some parts of the Southeastern, South Central, and Northeastern U.S. regions (e.g., Southern Appalachian Mountains, Ozark Mountains, northern New England). Changes in natural amenities were predicted to have negative effects on rural population migration trends during the projection period in Midwestern regions (e.g., Great Plains and North Central regions).

### **Outdoor recreation trends and futures (2012)**

*Abstract*—This publication presents a national study of outdoor recreation trends as part of the Renewable Resources Planning Act Assessment by the Forest Service, U.S. Department of Agriculture. The objectives are to review past trends in outdoor recreation participation by Americans, to describe in detail current outdoor recreation participation patterns, and to

compare patterns across regional and demographic strata. Further objectives include describing recreation activity participation on public and private lands and providing projections of outdoor recreation participation out to the year 2060. One overriding national trend is quite evident: the mix of outdoor activities chosen by Americans and the relative popularity of activities overall have been evolving over the last several decades. One general category of activity that has been showing growth in the first decade of the 21st century is nature-based recreation. Between 2000 and 2009, the number of people who participated in nature-based outdoor recreation grew by 7.1 percent and the number of activity days grew about 40 percent. Among types of nature-based recreation, motorized activities showed growth up to about 2005, but then ended up toward the end of the 2000-2009 decade at about the same level as in 2000. The trend in hunting, fishing, and backcountry activities remained relatively flat during this period. Various forms of skiing, including snowboarding, declined during this decade. The clear growth area was within the overall group of activities oriented toward viewing and photographing nature. Generally, outdoor recreation activities are projected to grow in number of participants out to 2060. Population growth is projected to be the primary driver of growth in number of adult participants under each RPA Assessment scenario. The top five activities in terms of growth of number of participants are developed skiing, other skiing, challenge activities, equestrian activities, and motorized water activities. The lowest rates of participant growth are visiting primitive areas, motorized off-road activities, motorized snow activities, hunting, fishing, and floating water activities. At the same time, a number of activities are projected to decline in per-capita adult participation rates.



Photographing wildlife. Photo by Babs McDonald

## **Outdoor recreation participation in the United States - projections to 2060 (2012)**

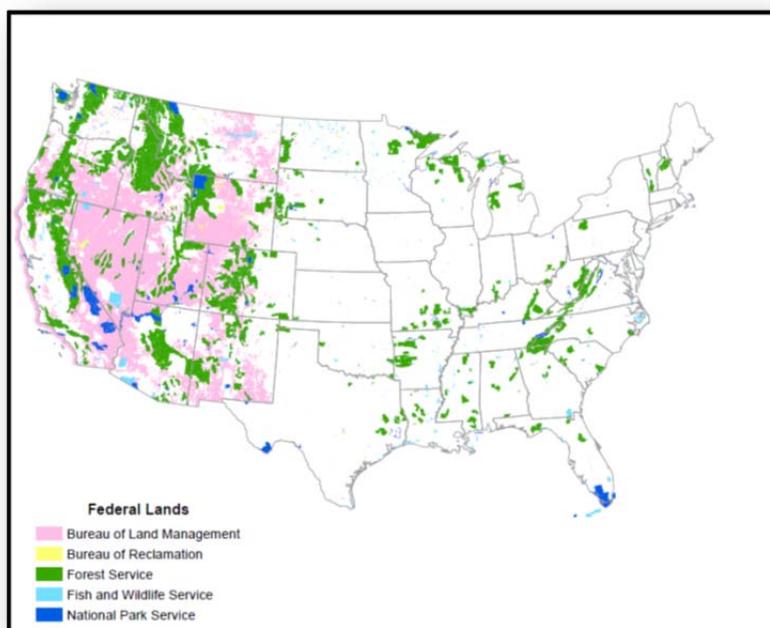
*Abstract*—National projections were developed through 2060 of participation for 17 outdoor recreation activities. The projections were made under futures that vary by population growth, socioeconomic conditions, land use changes, and climate. We used a two-step approach to project the number of participants and the days of participation. The estimation step yielded national level statistical models of adult participation rate and days of participation by activity. The simulation step combined the models with external projections of explanatory variables at

10-year intervals to 2060. Per capita estimates for participation and days were then combined with population projections to derive estimates of participants and days of participation by activity. Results were derived across three 2010 Resources Planning Act Assessment scenarios that each feature three associated climate futures. Findings indicated that outdoor recreation will remain a key part of the social and economic fabric of the United States. In the absence of climate change, the number of participants in the 17 recreation activities is projected to increase over the next 5 decades. In some cases, the participation rate will decline, but population growth will ensure that the number of participants increases. Some climate futures led to projected declines in participants, e.g., snowmobiling and undeveloped skiing showed declines in participant numbers up to 25 percent, despite population growth. Climate was also shown to have disparate effects on projections of annual days of participation, particularly for snowmobiling, undeveloped skiing, and hunting.

### Recreation and protected land resources in the United States (2013)

*Abstract*—This report provides an overview of the public and private land and water resources of the United States. Described is use of natural and developed land as recreation resources with an emphasis on nature-based recreation. Also described is land protection through conservation organizations and public funding programs, with an emphasis on protecting private land through funding for purchase or for conservation easements. Outdoor recreation resources include land, water, snow and ice, scenery, developed sites, facilities, and user services. Protected land resources range from farm lands to remote wilderness, but mostly are

the undeveloped lands in the United States with various forms of protection status.



The total U.S. land area is 2.43 billion acres, which contains 169 million acres of water, and consists of a diversity of land use and cover types. The United States loses about 2 million acres of forest, farm, and open space each year. In attempting to conserve such lands, land trusts and

governments have instituted programs to obtain easements or purchase the land outright. The Federal Government holds in trust about 640 million acres of land (30 percent of the country's total land area). This includes national parks, national forests, national wildlife refuges, and other Federal agency ownerships. These lands, along with State and local government lands are important recreation resources serving the public interest. Private lands and recreation businesses are also important recreation resources. Projections to 2060 of per capita area of public and private land and water show a steady downward trend across all regions of the United States.

### **The Publications**

Bowker, J.M.; Askew, Ashley E.; Cordell, H. Ken; Betz, Carter J.; Zarnoch, Stanley J.; Seymour, Lynne. 2012. Outdoor recreation participation in the United States - projections to 2060. USDA Forest Service General Technical Report. [http://www.srs.fs.fed.us/pubs/gtr/gtr\\_srs160.pdf](http://www.srs.fs.fed.us/pubs/gtr/gtr_srs160.pdf)

Cordell, H. Ken. 2012. Outdoor recreation trends and futures. USDA Forest Service General Technical Report. [http://www.srs.fs.usda.gov/pubs/gtr/gtr\\_srs150.pdf](http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs150.pdf)

Cordell, H. Ken; Betz, Carter J.; Zarnoch, Stanley J. 2013. Recreation and protected land resources in the United States. USDA Forest Service General Technical Report. [http://www.srs.fs.fed.us/pubs/gtr/gtr\\_srs169.pdf](http://www.srs.fs.fed.us/pubs/gtr/gtr_srs169.pdf)

Cordell, H. Ken; Heboyan, Vahé; Santos, Florence; Bergstrom, John C. 2011. Natural amenities and rural population migration with Projections to 2060. USDA Forest Service General Technical Report. [http://www.srs.fs.usda.gov/pubs/gtr/gtr\\_srs146.pdf](http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs146.pdf)

Zarnoch, Stanley J.; Cordell, H. Ken; Betz, Carter J.; Langner, Linda. 2010. Projecting county-level populations under three future scenarios. USDA Forest General Technical Report. [http://www.srs.fs.fed.us/pubs/gtr/gtr\\_srs128.pdf](http://www.srs.fs.fed.us/pubs/gtr/gtr_srs128.pdf)