Big Game Hunting Recreation Demand

This EnviroAtlas national map portrays estimated day trip recreation demand for big game hunting within each 12-digit hydrologic unit (HUC) in the contiguous United States. These data are based on population distribution and hunter-reported willingness to travel for big game hunting. Big game includes deer, elk, bear, and wild turkey.

Why is recreational hunting important?

Big game hunting is an industry that supports conservation, local business, government, and general well-being.[1] Land managers must understand the demand for big game hunting to help better plan recreation areas in places where people are more likely to participate. The demand for and revenue from big game hunting contributes to the continued conservation of natural lands, which provide benefits such as air and water filtration, water and carbon storage, mitigation from natural hazards, and appealing settings that encourage people to spend time outdoors. Time spent outdoors recreating can improve health and help connect people with the environment and the ecosystem services that it provides.[2]

In 2011, hunters spent the equivalent of 212 million days hunting big game, which generated $33.7 billion for the U.S. economy and accounted for 50% of the total recorded hunting activities in that year.[1] Across the country, hunters support over 680,000 jobs related to the manufacturing and sale of outdoor products or services, and in some rural communities hunting has provided enough revenue to keep small businesses in operation.[3] According to the U.S. Fish and Wildlife Service (USFWS), between 2006 and 2011 big game hunting increased by 29 percent while total hunting trip expenditures increased by 39 percent.[1] In order to keep this industry growing, it is important for land managers to know where the demand for big game hunting is highest so that they can plan recreational areas in places where people are more likely to hunt.

The money generated from big game hunting not only supports local businesses and economies, but it also contributes to conservation efforts across the United States. From taxes on ammunition and firearms, revenue from state licenses and permit sales, and donations from hunters, a total of $1.6 billion is raised annually that goes directly to conservation efforts.[1, 3] Conservation of natural lands helps preserve ecosystem services such as water and air filtration, carbon sequestration, and biodiversity enhancement.

Photo: Bull Elk, Gary Zahm, USFWS

Outdoor recreation has significant impacts on human health and wellbeing. Recreational activities and time spent outdoors can improve cardiovascular and mental health by lowering blood pressure more than just from exercise alone.[4] Interacting with natural landscapes has also been shown to relieve stress and increase overall wellbeing.[5,6] By conserving natural land in areas where there is higher demand for recreation, it is possible to increase access to the outdoors and improve people's health and wellbeing.

How can I use this information?

The map, Recreation Demand for Big Game Hunting, illustrates the estimated demand for recreational hunting of deer, elk, bear, and wild turkey in the contiguous U.S. Other EnviroAtlas maps show the recreation demand for bird watching, freshwater fishing, and migratory bird hunting for each 12-digit HUC. Used together or independently, these maps can help identify the estimated demand for recreational activity to inform decisions about land conservation for hunting, fishing or bird watching.

This map can also be used in conjunction with other maps in EnviroAtlas, such as big game species richness maps, protected areas (PADUS) maps, or GAP ecological systems, to help identify areas with high recreational value for inclusion in conservation and recreation management decisions. When used in conjunction with EnviroAtlas potential habitat stressor maps and economic data for recreation, users could determine the effect of degraded natural lands on local economies.[7]

CONTINUED ON BACK ▶

How were the data for this map created?

This data layer is based on the EnviroAtlas dasymetric allocation of population data. The dasymetric data illustrates where people are most likely to reside within an area based on land cover. The USFWS Fishing, Hunting, and Wildlife-Associated Recreation Survey (FHWAR, 2011) was used to determine the big game hunting participation rates for different rural and urban demographic groups for each region in the U.S. Regional participation rates were applied to the dasymetric data for people over the age of 18 to determine the number of annual day trips people would take for big game hunting. The U.S. Department of Agriculture Forest Service National Visitor Use Monitoring program (NVUM, 2011) was used to generate people's willingness to travel for big game hunting. Day trip recreational demand for big game hunting in any given 480 meter pixel was calculated by distributing the number of days people were expected to participate in big game hunting by their willingness to travel for that activity. The demand for big game hunting in each pixel was then summarized by 12-digit HUC.

What are the limitations of these data?

EnviroAtlas uses the best data available, but there are still limitations associated with these data. The data are limited to individuals over the age of 18 taking day trips for big game hunting. This layer does not provide information about individuals taking overnight trips. Willingness to travel for big game hunting was calculated using visitor use data from National Forest and Grassland sites and therefore might not be representative of people who hunt on state or private land. Also, the data did not take into account infrastructure or geographical features (i.e. roads, cities, recreational destinations, restricted areas, etc.). Therefore, recreation demand may be higher or lower in certain areas depending on the proximity of recreation destinations and ease of access. Modeled data are intended to complement rather than replace monitoring data. This recreation demand model does not provide information on the actual amount of recreation in an area, but rather it predicts the expected demand for big game hunting in a given location.

How can I access these data?

EnviroAtlas data can be viewed in the interactive map, accessed through web services, or downloaded. Data for FHWAR or NVUM can be accessed through their respective websites.

Where can I get more information?

A selection of related resources and available data are listed below. For more information on the data creation process for EnviroAtlas, access the metadata for the data layer from the drop down menu on the interactive map layer list. To ask specific questions about this data layer, please contact the EnviroAtlas Team.

Acknowledgments

The data for Big Game Hunting Recreation Demand were generated by Samantha Sifleet and Michael Mangiante, EPA ORISE Fellows, and Lisa Wainger, University of Maryland Center for Environmental Science. The fact sheet was created by Michael Mangiante.

Selected Publications

1. U.S. Fish and Wildlife Service, and U.S. Census Bureau. 2014. 2011 National Survey of Fishing, Hunting, and Wildlife-associated Recreation, FHW/11-NAT(RV), Washington, D.C. Accessed September 2022.

2. U.S. Forest Service. 2010. Connecting people with America's great outdoors: A framework for sustainable recreation. Washington, D.C. Accessed September 2022.

3. National Shooting Sports Foundation and Association of Fish and Wildlife Agencies. 2013. Hunting in America: An economic force for conservation. Washington, D.C. Accessed September 2022.

4. Pretty J., J. Peacock, M. Sellens, and M. Griffin. 2005. The mental and physical health outcomes of green exercise. *International Journal of Environmental Health Research* 15:319–337.

5. Netz, Y., M.J. Wu, B.J. Becker, and G. Tenenbaum. 2005. Physical activity and psychological well-being in advanced age: A meta-analysis of intervention studies. *Psychology and Aging* 20:272–284.

6. Morita, E., S. Fukuda, J. Nagano, N. Hamajima, H. Yamamoto, Y. Iwai, T. Nakashima, H. Ohira, and T. Shirakawa. 2007. Psychological effects of forest environments on healthy adults: Shinrin-yoku (forest-air bathing, walking) as a possible method of stress reduction. *Public Health* 121:54–63.

7. Mazzotta, M.J., L.A. Wainger, S.D. Sifleet, J.T. Petty, and B. Rashleigh. 2015. Benefit transfer with limited data: An application to recreational fishing losses from surface mining. *Ecological Economics* 119:384–398.