



FY 2017 USGS Budget Request

Protecting and preserving America's resources with Ecosystems Science

The FY 2017 President's Budget Request for the USGS Ecosystems Mission Area is \$173,938,000, a net change of +\$13,706,000 from the 2016 Enacted level.

USGS science happens on the landscape, expanding our capacity to protect fish and wildlife and improves our quality of life.

| Dollars in Thousands | 2015 | 2016 | 2017 | | | Change from 2016 Enacted |
|---|-------------------|-------------------|--------------|------------------|-------------------|--------------------------|
| | Base | Enacted | Fixed Costs | Program Changes | Request | |
| Ecosystems | \$157,041 | \$160,232 | \$701 | \$13,005 | \$173,938 | \$13,706 |
| Status and Trends Program | \$20,473 | \$20,473 | \$89 | \$1,705 | \$22,267 | \$1,794 |
| <i>Pollinators</i> | <i>[\$350]</i> | <i>[\$350]</i> | | <i>[\$1,705]</i> | <i>[\$2,055]</i> | <i>[\$1,705]</i> |
| Fisheries Program | \$20,886 | \$20,886 | \$97 | \$3,100 | \$24,083 | \$3,197 |
| <i>Great Lakes Fisheries Assessments</i> | <i>[\$3,960]</i> | <i>[\$3,960]</i> | | <i>[\$250]</i> | <i>[\$4,210]</i> | <i>[\$250]</i> |
| <i>Unconventional Oil and Gas Research</i> | <i>[\$1,108]</i> | <i>[\$1,108]</i> | | <i>[\$350]</i> | <i>[\$1,458]</i> | <i>[\$350]</i> |
| <i>WaterSMART: Ecological Flows</i> | <i>[\$500]</i> | <i>[\$500]</i> | | <i>[\$2,500]</i> | <i>[\$3,000]</i> | <i>[\$2,500]</i> |
| Wildlife Program | \$45,257 | \$45,757 | \$218 | \$150 | \$46,125 | \$368 |
| <i>All-of-the-Above Energy: Renewable Energy - Wind & Solar</i> | <i>[\$1,495]</i> | <i>[\$1,495]</i> | | <i>[\$150]</i> | <i>[\$1,645]</i> | <i>[\$150]</i> |
| Environments Program | \$36,224 | \$38,415 | \$137 | \$4,800 | \$43,352 | \$4,937 |
| <i>Critical Landscapes: Arctic</i> | <i>[\$1,030]</i> | <i>[\$1,030]</i> | | <i>[\$1,000]</i> | <i>[\$2,030]</i> | <i>[\$1,000]</i> |
| <i>Critical Landscapes: Sage Steppe Landscape</i> | <i>[\$1,181]</i> | <i>[\$1,181]</i> | | <i>[\$3,000]</i> | <i>[\$4,181]</i> | <i>[\$3,000]</i> |
| <i>WaterSMART: Drought</i> | <i>[\$0]</i> | <i>[\$0]</i> | | <i>[\$300]</i> | <i>[\$300]</i> | <i>[\$300]</i> |
| <i>Rangeland Fire Response and Prevention</i> | <i>[\$542]</i> | <i>[\$542]</i> | | <i>[\$500]</i> | <i>[\$1,042]</i> | <i>[\$500]</i> |
| Invasive Species Program | \$16,830 | \$17,330 | \$47 | \$2,500 | \$19,877 | \$2,547 |
| <i>New and Emerging Invasives of National Concern</i> | <i>[\$5,212]</i> | <i>[\$5,712]</i> | | <i>[\$2,500]</i> | <i>[\$8,212]</i> | <i>[\$2,500]</i> |
| Cooperative Research Units | \$17,371 | \$17,371 | \$113 | \$750 | \$18,234 | \$863 |
| <i>Enhanced Support and Scientists for Tomorrow</i> | <i>[\$17,371]</i> | <i>[\$17,371]</i> | | <i>[\$750]</i> | <i>[\$18,121]</i> | <i>[\$750]</i> |

Federal, State, local, and tribal resource managers and policymakers are faced with countless decisions each year on issues as diverse as species listing and delisting, fish and game regulations, land conservation and restoration, water allocations, and permitting for economic activities such as energy development, transmission lines, mining, timbering, agriculture, and residential and commercial development. Uncertainty in the outcome and ramifications of those decisions on the Nation's natural resources is complicated by environmental changes associated with natural disasters, changing weather patterns, increasing occurrence of extreme weather events, invasive species, emerging wildlife diseases, and human demands for water, land, food, energy, transportation, mineral, and living resources. The urgency for objective science to support sound decision making is increasing dramatically as competition for resources intensifies and the world is being transformed at an unprecedented pace and in uncertain directions. Ecosystem science—the study of how living organisms react to changes in their environment, is essential to help inform land and resource managers who are facing decisions of increasing complexity and urgency to conserve biological diversity, restore and rehabilitate damaged ecosystems, adapt to climate change, resolve conflicts of resource allocation, and assess the changing condition of living resources and their habitats. Without the best available science to help inform the decision process, our Nation's environmental capital - the goods and services provided by resilient ecosystems that are vital to the health and well-being of human societies - are placed at risk. The USGS Ecosystems Mission Area provides unbiased science, tools, and decision support to our Nation's natural resource managers, with particular focus on the science needs of the

Department of Interior bureaus to fulfill Federal trust responsibilities for conservation of species, lands, and priority ecosystems, fulfill treaty obligations with Tribes, provide water for irrigation and human consumption, and manage energy and mineral resource extraction on public lands and the Outer Continental Shelf.

Highlights of the 2017 President's Budget for Ecosystems include:

Pollinators +\$1,705,000 for a total of \$2,055,000 (USGS Total: \$2,405,000) Insects, birds, and mammals, that are pollinators, are critical to agriculture and the economy. The USGS and other scientists are documenting alarming declines in pollinators. Pollinators, most often honey bees, are responsible for one in every three bites of food you take, and increase our Nation's crop values each year by more than \$15 billion dollars. USGS is providing science to better understand the status of pollinator species through field studies, habitat models, and population analyses. The 2017 increase would provide science to support restoration and enhancement of pollinators and pollinator habitat across the Nation, supporting land managers in ensuring that populations of native species are maintained.

WaterSMART: + \$2,800,000 for a total of \$3,300,000 (USGS Total: \$37,064,000): Meeting the water resource needs of the Nation is an increasing challenge because of rapidly changing drivers of water availability, such as climate change, population increases, and water use and land use changes. The 2017 budget request for Ecosystems includes increases that will investigate how drought interacts with other environmental stressors such as invasive vegetation and wildfires to affect landscape composition, structure, and function and effects on reproduction and survival of select plant and animal species and develop decision support tools that are an essential step in enhancing capacity for water regulators across the United States.

Arctic: +\$1,000,000 for a total of \$2,030,000 (USGS Total: \$38,991,000): The Arctic is being altered by climate change faster than any other region on Earth. Rapid coastal erosion threatens villages and critical infrastructure, greenhouse gas emissions from thawing permafrost are increasing, and invasive species are a growing threat. The USGS is focused on landscape scale climate, ecosystem, and resource issues to provide a scientific foundation for understanding the physical processes that shape the Arctic. The 2017 increase would allow for Ecosystems to partner with other Interior bureaus and Federal agencies to analyze potential changes to distributions and condition of fish and wildlife populations and their habitats as a result of climate changes and human activities.

Sage Steppe Landscape +\$3,000,000 for a total of \$4,181,000 (USGS Total: \$6,511,000): The Sage-Steppe Landscape extends across 11 Western States and two Canadian Provinces, and includes over 60 percent public lands, half of which is managed by the Interior. This area is dominated by sagebrush, which is priority habitat for over 350 wildlife species, most notably the greater sage-grouse. Alterations in the Sage-steppe landscape including changing fire regimes, spread of invasive grasses, climate change, and development have led to new challenges to these species and the landowners and public that lives and recreates in this area. The 2017 increase would expand research to address changing fire regimes, drought, and shifting climate; control the spread of invasive cheatgrass; design conservation and management strategies for greater sage-grouse; and effectively restore and adaptively manage the Sage-steppe landscape.

Rangeland Fire Response and Prevention +\$500,000 for a total of \$1,042,000: Fire restoration efforts rely on research-based information to reduce the post-fire effects on water quality and supply, critical wildlife habitat, invasive species, and ecosystem services such as livestock grazing, timber production, and recreational value. Demands for strategic preparation and rapid science delivery during and immediately after wildfires are increasing, and frequently surpass the current capacity of the USGS. The 2017 increase would expand the capabilities of USGS to more fully address the priority science needs to reducing the growing threat of rangeland fire and improve effectiveness of actions to stabilize, rehabilitate, and restore ecosystems after fire.

New and Emerging Invasive Species of National Concern +\$2,500,000 for a total of \$8,212,000: Invasion by non-native species remains a top threat to global biodiversity and costs the United States economy an estimated \$120 billion each year. Across government, resource managers are galvanizing to seek the science needed to make risk-based decisions and target scarce resources to better reduce impacts of invasive species. The 2017 increase would develop, evaluate, and improve tools for early detection and control of existing and emerging invasive species.