Mission Area 6: Building a Landscape-level Understanding of Our Resources

Goal #2: Provide Science to Understand, Model, and Predict Ecosystem, Climate, and Land Use Changes at Targeted and Landscape levels

Strategy #1: Identify and predict ecosystem and land use change

Program Performance Overview: The USGS Ecosystems strategic objective supports regional and nationwide monitoring of key indicators of the environmental variability of terrestrial, freshwater, and marine habitats, along with the abundance and distribution of biota, invasive species, wildlife disease, and other ecological features. Performance has risen steadily from FY 2011 through 2015 in conjunction with incremental funding increases from FY 2013 through 2015, with the USGS providing scientific knowledge and tools to land managers and policy makers for decision making. The Land Remote Sensing Program worked with the National Aeronautics and Space Administration (NASA) to determine the path forward for future Landsat missions.

Within the Ecosystem Mission Area, performance is expected to be maintained in 2016 and 2017. Within Land Use Change there would be increases in number of terabytes managed, and number of remote sensing products distributed in 2016 and 2017.

Public Benefit: USGS data holdings and observation networks are vital to understanding the status and trends and health of our Nation's ecosystems and natural resources. Many of these databases include decades-long records of observations, collected under strict standards of quality assurance and quality control. These programs fill a key role in adaptive management for the Nation's ecosystems. Data from Landsat and other land-observing systems operated by the USGS are vital for scientists to understand changes occurring on the Earth's land surface, and to model their impacts for land and resource managers. Socioeconomic data shows a significant return on Landsat investments, with productivity enhancements and cost savings in the public and private sectors. For example, a study demonstrates the potential for approximately $100 million annual savings by using Landsat-derived applications for better water management for irrigated agriculture in the Western United States. The National Land Cover Database (NLCD) supports thousands of science applications in the private, public, and academic sectors, and offers the only national database portraying land cover change spatially as a comprehensive "wall-to-wall" 30-meter cell database. It also provides a critical data layer in national assessments of biological carbon sequestration, water-quality monitoring, wildfire monitoring and modeling, and biodiversity conservation efforts.

Strategic Plan Performance Measures

Strategic Plan Performance Measures	Bureau	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2015 Actual	2016 Target	2017 Target	2011-2017 Trend
Strategy: Identify and predict ecosystem changes at targeted and landscape-levels (biota, land cover, and Earth and ocean systems)										
Percent of targeted fish and aquatic populations and their habitats for which information is available regarding limiting factors such as migratory barriers, habitat, and effects of disturbance (e.g. fire flood, nutrient enhancement).	USGS	42.0%	42.9%	42.9%	43.7%	45.4%	44.5%	44.5%	45.4%	
		50	51	51	52	54	53	53	54	
		119	119	119	119	119	119	119	119	
Percent of targeted wildlife populations for which science information is provided for management decision making.	USGS	57.8%	61.2%	61.2%	61.2%	62.3%	62.3%	62.3%	62.3%	
		204	216	216	216	220	220	220	220	
		353	353	353	353	353	353	353	353	
Percent of targeted species for which monitoring and decision support information on their status and trends are available.	USGS	28.2%	28.5%	28.5%	28.5%	29.0%	29.0%	29.0%	29.0%	
		185	187	187	187	190	190	190	190	
		655	655	655	655	655	655	655	655	
Percent of critical science information products available for successful control and management of targeted groups of invasive species.	USGS	45%	45%	45%	45%	48%	48%	48%	48%	
		27	27	27	27	29	29	29	29	
		60	60	60	60	60	60	60	60	
Percent of targeted ecosystems with information products forecasting ecosystem change.	USGS	22%	33%	33%	44%	44%	44%	44%	44%	
		2	3	3	4	4	4	4	4	
		9	9	9	9	9	9	9	9	
Percent of US land surface area with contemporary land cover data available for major environmental monitoring and assessment programs. (Land Change Science Program)	USGS	100%	15%	78%	98%	100%	100%	15%	78%	
		463	70	354	445	454	454	70	354	
		463	454	454	454	454	454	454	454	

Supporting Performance Measures

Supporting Performance Measures	Bureau	2011 Actual	2012 Actual	2013 Actual	2014 Actual	2015 Target	2015 Actual	2016 Target	2017 Target
Strategy: Identify and predict ecosystem changes at targeted and landscape-levels (biota, land cover, and Earth and ocean systems)									
Number of students complete degree requirements for MS, PhD, and post-doctoral program under the direction and mentorship of Unit Scientists (Cooperative Research Units)	USGS	84	83	83	76	75	81	70	66
Number of systematic analyses and investigations completed (Ecosystems)	USGS	1,273	1,444	1,262	1,257	1,288	1,540	1,265	1,282
Number of formal workshops or training provided to customers (Ecosystems)	USGS	142	129	75	121	68	130	70	80
Number of terabytes managed cumulatively (Land Remote Sensing)	USGS	3,723	5,073	7,397	10,057	14,420	12,582	14,618	16,564
Number of remote sensing products distributed (LRS)	USGS	4,710,757	5,923,825	8,249,372	14,622,000	15,332,000	19,553,000	21,508,000	23,659,000
Number of systematic analyses and investigation completed (Land Use Change)	USGS	92	84	106	100	100	103	100	100