



## Legacy Program Update

### The Legacy Program moves forward 129 proposals:

The Legacy Program received 254 pre-proposals in response to the June RFP solicitation. A total of 92 natural resources, 27 cultural resources, and 10 integrated (natural and cultural) resources pre-proposals have been invited to submit full proposals.

**Full proposals are due to the Legacy Program on Thursday, September 24, 2009 by midnight local time.** All full proposals must be submitted by using the Legacy Tracker at <https://www.DoDLegacy.org>.

**National Public Lands Day:** DoD is again pleased to partner with the National Environment Education Foundation to celebrate the 16th annual National Public Lands Day (NPLD), September 26<sup>th</sup>. Last year, 38 DoD installations were among more than 1,300 sites that participated in celebrating NPLD. This national partnership enlists volunteers to work with land managers to restore and enhance public lands and to learn about resource conservation issues. Volunteers build trails, bridges and docks, and remove invasive plants to make room for fragile native species. They also restore habitat for wildlife, install signs, and make facilities universally accessible.

The Legacy Program is funding 51 projects (46 natural, five cultural) in 25 states and the Marshall Islands (Kwajalein Atoll); 31 projects support this year's DoD focus area on pollinators. For details including specific dates and locations of the DoD projects, please visit [www.publiclandsday.org](http://www.publiclandsday.org).

## Poster Contest Results!

We are pleased to announce the results of last month's 2009 SMR Conference Poster Contest. The almost 70 posters were of uniformly high quality and were the

[See Legacy, page 3](#)



## In The News

### Ever wonder how DoD policy is made?

By Kristin Gross  
Booz Allen Hamilton

It all starts with a need. An individual or a group of folks think "Hey, we really need to (re)issue guidance on [insert program area of your choice here]." So, the Military Department in charge of said program area determines if new/revised/updated guidance is actually warranted. Questions that need to be considered include: have there been any major changes in legislation? Are any new, emerging issues (e.g., global climate change) missing from the current policy? Have there been changes in Military Department responsibilities? Is a policy document simply outdated? This last one is especially important, since every policy document has a defined shelf life of 6 years for Directives, 5 years for Instructions, and 180 days for Directive-Type Memos.

If the answer to any of these questions is yes, chances

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## Reflections on the Sustaining Military Readiness Conference

We're still tallying the evaluation forms and just beginning to plan our way forward after last month's Sustaining Military Readiness Conference (SMR) 2009. But clearly, the verdict is in: by all accounts, the conference was a great success! It brought together DoD personnel and their stakeholders in natural and cultural resources management, readiness, sustainability, and compatible land use to exchange lessons learned from the public and private sectors, share results of sustainability programs and projects, and participate in a broad spectrum of informative training workshops.



I was able to attend plenary sessions and sessions within the Natural Resources track, view most posters and exhibits, and talk to more than 100 other conference attendees throughout the course of the week. A few broad themes seemed to emerge as the conference progressed, including that:

- ❖ communication and education remain crucially important;
- ❖ even though issues are broad-scale and large, impacts are local;
- ❖ being proactive is better than reactive; and
- ❖ although planning must be long-term and implementation must be strategic, action is needed immediately.

Partnerships are a powerful tool to achieve any goal. Current and successful natural resources partnerships include the tripartite agreement between DoD, the U.S. Fish and Wildlife Service, and the states; regional ecosystem management partnerships; National Public Lands Day; and Cooperative Ecosystem Services Units. But, success can never be too great. We need to continue to identify and implement improvements that will facilitate the ways we work together. A continued need exists for new and expanded partnerships, for better coordination and development of conservation agreements, for a greater focus on ecosystem-level cooperation, and for better communications within and outside these partnerships.

Reggie Van Lee, with Booz Allen Hamilton, spoke of megacommunities and the need to partner at a broad scale, engaging all stakeholders by finding common ground: the areas where serving each group's selfish interests achieves overarching goals and mutually beneficial outcomes. DoD, too, needs to organize collaboratively, broadly, and across artificial barriers while searching for input from all relevant and interested stakeholders. For example, the Natural Resources Program has recently begun working with the National Wildlife Federation, The Wildlife Society, and others in an effort to expand DoD's partnership networks. These and other partnerships can facilitate our progress towards the common goals of sustaining mission readiness and providing for long-term stewardship of our natural heritage.

Given the challenges that all land managers will face over the coming years and decades, it behooves us to work together whenever and wherever possible. Monitoring species and ecosystems, valuing ecosystem services, and assessing system resiliency and flexibility are just a few of the ways we can work collaboratively to manage for the risks we all face.



most informative and visually appealing set of displays we have ever had.

Dozens of attendees took the time to vote, with ten different presenters taking top honors in the four categories. We will send certificates and small tokens of our appreciation to all the winners as soon as we can – please be patient!

In addition, we sent a message to all natural resources-themed presenters on September 10th asking that they send us their posters and text for further dissemination. We plan to:

- ❖ use complete text or extracts in future issues of *Natural Selections*, or in other DoD and related publications (e.g., Navy's *Currents*, a DoD issue of the FWS's *Endangered Species Bulletin*),
- ❖ use photos in any of the aforementioned newsletters, or as part of more generic natural resources-themed posters and related materials that we may produce,
- ❖ post on DENIX and/or other DoD websites.

Without further ado, the winners are:

### **Favorite Legacy Funded Poster**

1<sup>st</sup> Place: Automated Biodiversity Monitoring in Real-time, Mitchell Aide, University of Puerto Rico

2<sup>nd</sup> Place: Protecting Whales While Maintaining Military Readiness, Ed Gerstein, Leviathan Legacy Inc.

3<sup>rd</sup> Place: A Predictive Model of Seventeenth-Century Archaeological Sites in the Chesapeake Region, Christopher McDaid, U.S. Army Installation Management Command Northeast Region

### **Favorite Non-Legacy Funded Poster**

1<sup>st</sup> Place: You Want to do What, Where?, Cheryl Schmidt, Nellis AFB Natural Resources Program

2<sup>nd</sup> Place: Eastern North Carolina Strategic Lands Inventory: Identifying the Most Suitable Lands for Natural Areas, Sarah Franson, DUSD(IE) Basing Directorate

3<sup>rd</sup> Place: Army Innovative Mitigation Strategies at Fort A.P. Hill, Virginia, John Mullin, Fort A.P. Hill

### **Most Visually Attractive Poster**

1<sup>st</sup> Place: Context is everything: The Sand Hills Rural Industry Context and Historic Resource Management, Renee Lewis and J. W. Joseph, Fort Gordon and New South Associates

2<sup>nd</sup> Place: Mapping the Spread of White-Nose Syndrome, Dave Waldien, Bat Conservation International

3<sup>rd</sup> Place: Do Frogs Still Get Their Kicks On Route 66?, Chris Petersen, Naval Facilities Engineering Command Atlantic

### **Most Informative Poster**

1<sup>st</sup> Place: Wildlife Trade and the U.S. Military Abroad: Raising Awareness and Reducing Demand, Heidi Kretser, Wildlife Conservation Society

2<sup>nd</sup> Place: Protecting Whales while Maintaining Military Readiness, Ed Gerstein, Leviathan Legacy Inc.

3<sup>rd</sup> Place: Automated Biodiversity Monitoring in Real-time, Mitchell Aide, University of Puerto Rico

Thanks again to everyone who participated!



are the internal coordination process is bound to begin....

First, the sponsoring individual chooses one of two courses of action: 1) Internally revise the existing policy document, submit the document to the DoD Directive Program for Formal Coordination and gather input/address comments from the designated reviewers (e.g., legal, Component) only during the Formal Coordination process; or 2) Internally revise the policy document and, through a series of meetings, brainstorming sessions and countless rounds of INFORMAL review, allow the other stakeholders to provide suggested revisions, propose language, and voice concerns BEFORE initiating the Formal Coordination process. Needless to say, the second option is highly encouraged.

By choosing to coordinate official policy documents informally before they are entered into the online Formal Coordination system, effected parties can hammer out differences and find commonly accepted language before differences can derail outcomes. This is because once Formal Coordination is begun, non-concurrence will stop the process. As a result, informal or pre-coordination ultimately makes the Formal Coordination process considerably easier, since all those affected saw the document in advance.

Once begun, the entire Formal Coordination process, from pre-coordination to final signatures, must be completed in 16-90 days, depending on the type of issuance. This is very little time when one considers that the informal process can take up to and even more than a year! For example, the DoD Natural Resources Conservation Program Instruction (4715.3), last issued in 1996, has been under informal review for almost a year and a half. The informal review process included 5 group meetings and 7 rounds of document review to incorporate/address approximately 900 comments submitted by the Military Service representatives. All in all, a process that has taken hundreds of cumulative hours, but will hopefully result in an Instruction that meets all Military Component needs and sails through the Formal Coordination process.

Once the originator decides a document is ready for Formal Coordination, he or she sends it to the Directives Program Office for review and editing. The editors ensure the document's language, formatting, and organization follows Office guidelines, and then returns it to the originator to incorporate the edits. Next, the revised document is entered into the online Formal Coordination process, along with the Forms (e.g., Coordination Record, Comment Matrix). Once entered, the clock starts, and all Components identified as being effected by the issuance are given the opportunity to submit comments and concur or non-concur. And, if the document survives all that, a policy Directive, Instruction, or Memo is issued!

For more information on DoD Issuances and the Formal Coordination Process, please visit [www.dtic.mil/whs/directives](http://www.dtic.mil/whs/directives).



## Focus on Spotlight Species

By Peter Boice, DoD and Lew Gorman, USFWS

The U.S. Fish and Wildlife Service (USFWS) recently proposed a list of approximately 186 "Spotlight Species" as part of the updated Strategic Plan for their Endangered Species Program. These 168 species represent about 10% of all listed and candidate species.

The USFWS' strategic focus on Spotlight Species is intended to demonstrate results towards their overall species conservation goals. Six criteria were considered in the selection of the Spotlight Species list:

- ❖ Partnership potential to help conserve the species.
- ❖ Ability/potential to reduce threats to a species' survival.
- ❖ A keystone species or representative of a priority landscape.
- ❖ Current level of public interest and program expenditures.
- ❖ A priority in a State Wildlife Action Plan.
- ❖ The USFWS' Endangered Species Program's ability to resolve conflicts to improve species status.

More than one-fourth of these Spotlight Species – 49 at last count – are found on at least one military installation and 22 are sufficiently widespread to be of management concern to more than one Military Service. These 22 species are: Florida scrub jay, piping plover, Mariana crow, whooping crane, wood stork, Stellar’s eider, Hawaiian dark-rumped petrel, spectacled eider, California least tern, least Bell's vireo, marbled murrelet, Hawaiian coot, Hawaiian gallinule, Hawaiian stilt, California gnatcatcher, black-footed ferret, West Indian manatee, gray wolf, Sacramento prickly poppy, pamakani, eastern Indigo snake, and desert tortoise.

What does this mean for DoD? It is possible that our installations will be asked to increase their monitoring and management of these Spotlight Species. Any proposed changes should be discussed in an installation’s annual Sikes Act metrics meeting with the USFWS and state representatives and, as appropriate, added to the installation’s INRMP.

What does all of this mean for the USFWS and the remaining 90% of listed species that are not Spotlighted? The USFWS is committed to continuing to work on both these species and on species at risk, emphasizing the use of partnerships whenever possible to protect and recover all species.

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### “Spotlight Species of Concern to DoD”



Florida scrub jay



piping plover



whooping crane



wood stork



Stellar’s eider



Sacramento prickly poppy



grey wolf



pamakani



Hawaiian stilt



black-footed ferret



Hawaiian dark-rumped petrel



California least tern

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# Training, Announcements & Events of Interest

Workshops, Interagency Training Announcements and Future Events of Interest to the Conservation Community



**SPONSORED! Applied Plant Conservation Training:** December 7-12, 2009 in Berkeley, CA. This six-day workshop will cover the following topics: legislative protection and regulatory obligations for plant recovery, population evaluation, demography, population viability analysis, plant conservation genetics, restoration and management (ex-situ and in-situ) inventory and monitoring techniques, tools and partnerships, and more. Participants will receive pragmatic tips, information resources, contact lists, and a unique opportunity to have questions answered by experts in the field. Space is limited to 35 attendees, so sign up early! For registration and more information contact Anna Strong, Center for Plant Conservation at: [Anna.Strong@mobot.org](mailto:Anna.Strong@mobot.org).

**SPONSORED! Strategic Management of Invasive Species in the Southwestern United States Workshop:** October 26-30, 2009 in Phoenix, AZ. This five-day invasive species workshop for installation personnel in the southwestern United States (AZ, CA, CO, NM, and NV) is sponsored by the Legacy Program. The workshop will provide participants with the knowledge and resources that will enable them to improve land stewardship by building partnerships and effectively addressing invasive species problems. Invasive terrestrial plants of the southwestern desert ecosystems will be emphasized, but non-native aquatic nuisance species and insects will also be covered. Science and management experts will address pressing ecological issues and explain key components of an invasive species management strategy. Participants will also learn about local, state, and federal invasive species initiatives and regional partnership opportunities. There is no charge for the workshop. To register please visit <http://www.weedcenter.org/dodworkshop/registration.html>.

**SPONSORED! Strategic Management of Invasive Species in the Southeastern United States Workshop:** December 7th-11th, 2009 in Chapel Hill, NC. This five-day invasive species course for installation personnel and their strategic partners in the southeastern United States (NC, SC, GA, FL, KY, TN, AL, and MS) is sponsored by the Legacy Program. The workshop will provide participants with the knowledge and resources that will enable them to improve land stewardship by building partnerships and effectively addressing invasive species problems. Invasive terrestrial plants of the southeast will be emphasized. Science and management experts will address pressing ecological issues and explain key components of an invasive species management strategy. Participants will also learn about local, state, and federal invasive species initiatives and regional partnership opportunities. Registration is available online at: <http://invasiveplantcontrol.com/registration.cfm>. Please contact Steven Manning at [steve@ipc-inc.org](mailto:steve@ipc-inc.org) to be placed on a list to receive notices about this workshop.

**SERDP/ESTCP Annual Technical Symposium & Workshop:** The Partners in Environmental Technology Technical Symposium & Workshop will take place December 1-3, 2009 in Washington, DC. This event is sponsored by the Strategic Environmental Research and Development Program (SERDP), DoD's environmental science and technology program, and the Environmental Security Technology Certification Program (ESTCP), DoD's environmental technology demonstration and validation program. This comprehensive technical symposium and workshop will feature 11 technical sessions and 5 short courses. Technical sessions will highlight research and innovative technologies that assist DoD in addressing increasingly complex environmental and mission sustainability challenges. Short courses on select technologies in the environmental restoration and munitions management areas will offer unique training opportunities on recent advancements in science and technology. For the most up-to-date information about the Symposium, visit [www.serdp-estcp.org/symposium](http://www.serdp-estcp.org/symposium). If you have any questions, please e-mail [partners@hgl.com](mailto:partners@hgl.com) or call the Symposium contact line at 703-736-4548.

**Natural Resources Compliance:** January 26-29, 2010, in Honolulu, HI and May 11-14, 2010 in Jacksonville, FL. This Natural Resources Compliance course offers instruction in specific natural resource laws, regulations, policies, Executive Orders, DoD Instructions, and other guidance, noting Service-specific requirements. The course addresses stewardship, preservation, and process; fish, game, and wildlife management laws; protection of wetlands, waterways, and other protected ecological areas; forest and land use management laws; Sikes Act and INRMP; and inter-service cooperation. The course includes a practical exercise, half day tour of a DoD or Coast Guard natural resource site and guest speakers. It is recommended that this course be taken by: Primary duty (Natural and Cultural Resource Managers and personnel, environmental lawyers or lawyers in that capacity), Civil Works Natural Resource Managers (U.S. Army Corps of Engineers), Natural Resources Law Enforcement personnel, and environmental staffs.; collateral duty personnel (non-natural resources specialists responsible for natural resources management and compliance with Federal laws and DoD policy); and personnel having a direct or indirect impact on natural resources during the performance of their duties. This course is approved by the Inter-

Service Environmental Education Review Board (ISEERB). There are no tuition costs for this course. It is a 4-day course, from 0730 - 1600 everyday. For more information or to register, please visit <https://www.netc.navy.mil/centers/csfe/cecos/>

**10th National Conference on Science, Policy, and the Environment: The New Green Economy:** January 20-22, 2010 in the Ronald Reagan Building and International Trade Center in the heart of Washington, DC. The National Council for Science and the Environment's National Conference engages leading thinkers and doers from a diversity of disciplines, sectors, and perspectives in a structured conversation about the meaning of the green economy and how investments in green education, research and jobs can help to solve both the economic and environmental crises. For more details and registration visit: <http://ncseonline.org/conference/GreenEconomy/>.

**2010 DoD Pest Management Workshop: Operational Pest Management, New Confrontations with Old Foes:** February 8-12, 2010, Naval Air Station, Jacksonville, Florida. This workshop will include several symposia, vendor displays, social events and an outstanding Plenary Session. Registration for the workshop is electronic: please visit <http://www.afpmb.org/workshopregistration> and complete the online form. A general information page, including workshop agenda and lodging information for the Tri-Service Workshop is now available on the Armed Forces Pest Management Board's web site: <http://www.afpmb.org/meetings/TriService2010/info.htm>.

**CALL FOR PRESENTATIONS! NatureServe Conservation Conference 2010: Biodiversity without Boundaries:** April 26-30, 2010 at the Omni Austin Southpark Hotel, in Austin, TX. This conference will explore the issues and solutions to these and related conservation needs on several fronts: the science behind the pressing problems, the information and expertise needed to direct decisions, the tools and methods for setting priorities and tracking progress, and the lessons learned from conservation success, collaboration, and leadership approaches. NatureServe invites the general public to submit proposals for presentations, workshops, symposia, and posters. Abstracts are due no later than October 6. For more information contact Pat Leighty at [pat\\_leighty@natureserve.org](mailto:pat_leighty@natureserve.org).

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### "Spotlight Species of Concern to DoD"



West Indian manatee



Indigo snake



desert tortoise



spectacled eider



least Bell's vireo



marbled murrelet



Hawaiian gallinule



Mariana crow



California gnatcatcher



Hawaiian coot

# Recent Natural Resources Documents Online

Reports, Fact Sheets, Photos, Videos



This section highlights recently uploaded reports and factsheets on the Legacy Tracker or on the DENIX website. For Legacy related products, please visit [https://www.dodlegacy.org/Legacy/intro/ProductsList\\_NU.aspx](https://www.dodlegacy.org/Legacy/intro/ProductsList_NU.aspx). All Legacy products and many more are available at <https://www.denix.osd.mil/portal/page/portal/denix/environment/NR>. In addition to these two websites, bird-related products are also posted on <http://www.DoDPIF.org>.

## **Ten Year Resurvey of Biodiversity of Marine Communities and Introduced Species in Pearl Harbor, Honolulu Harbor, and Ke'ehi Lagoon, O'ahu, Hawai'i:**

(Legacy 07-343) The marine and estuarine algae, invertebrate, and fish communities in Pearl Harbor, Honolulu Harbor, and Ke'ehi Lagoon Oahu, Hawai'i were surveyed between October 2007 and April 2008 for a comparison of the biotic communities, with results determined by previous surveys in Pearl Harbor in 1996 and Honolulu Harbor-Ke'ehi Lagoon in 1997. Both the 1996 Pearl Harbor study and the present study were conducted under the auspices of and funding provided by the DoD Legacy Resource Management Program, which provides financial assistance to DoD efforts to preserve our natural and cultural heritage. (<https://www.denix.osd.mil/portal/page/portal/denix/environment/NR/conservation/EcosysMgmt>)

**Integrating Off-Site Mitigation Banking and Trading into Land-Use Planning:** (Legacy 07-350) This Manual is designed to encourage DoD installations to integrate off-site mitigation banking and trading into land-use planning. Title 10 U.S.C. § 2684a authority is a land-use tool and initiator of important partnerships with eligible entities, such as state and local agencies, non-governmental organizations, and private corporations. These partnerships offer mechanisms for off-site mitigation banking and trading to permanently sustain military lands and resources for mission purposes and achieve.

<https://www.denix.osd.mil/portal/page/portal/denix/environment/NR/conservation/EcosysMgmt>

## **Channel Island and Southwest California Coastal Ecosystem Protection Program:**

(Legacy 02-172) The San Clemente loggerhead shrike (SCLS) is one of the rarest vertebrates in North America. Although the causes of the SCLS's decline are not fully understood, predation is certainly considered to be a major factor. Predator (feral cats) management efforts have been conducted on San Clemente Island since 1985, with a regularly established Predator Management Program initiated in 1992. The goal of the current predator management program is to continue to provide both direct and indirect measures of protection to SCLS and their nests, and to monitor the impact of predator management on native predator populations. For a copy of the report please visit:

<https://www.denix.osd.mil/portal/page/portal/denix/environment/NR/conservation/invasives>.

## **Predator-proof Fencing for Invasive Species Control in Hawaii: A Comprehensive Prioritization and Implementation Plan to protect native species:**

(Legacy 07-339) This project prioritized sites within Hawaii DoD land holdings that would be candidates for predator proof fencing. The prioritization was done by having each branch of the military nominate their top natural resource sites (13 total) and provide an accompanying site description. A set of ranking criteria that incorporated both biological and feasibility criteria were developed with military personnel and each site was ranked using these criteria. For a copy of the report please visit:

<https://www.denix.osd.mil/portal/page/portal/denix/environment/NR/conservation/invasives>.

## **Natural Resource Assessment of Wake Island After Feral Cat Eradication and Super Typhoon Ioke:**

(Legacy 07-371) Report on Natural Resource Assessment (mostly bird population impact) of Wake Island After Feral Cat Eradication and Super Typhoon Ioke. For a copy of the report and fact sheet please visit:

<https://www.denix.osd.mil/portal/page/portal/denix/environment/NR/conservation/invasives>.



## Photo of the Month

Capturing the beauty of our natural resources



September 2009 Photo of the Month Winner!

An invasive species, Amur bush honeysuckle (*Lonicera maackii*), was photographed last October growing into a slag-covered hillside in Pittsburgh, PA. The honeysuckle was controlled during a project funded by the Army Corps of Engineers.

Submitted by *Natural Selections* reader: Steve Manning, Nashville, TN



# Did You Know?

Little Did You Know Conservation Could Be So Much Fun!



## Ecosystem Services: What is it?

Ecosystem services (also called environmental services or nature's services) are benefits provided by ecosystems to humans, which contribute to making human life both possible and worth living. Ecosystem Services are the processes by which the environment produces resources that we often take for granted, including clean water, timber, habitat for fisheries, and pollination of native and agricultural plants. Whether we find ourselves in the city or a rural area, the ecosystems in which humans live provide the goods and services that are very familiar to us. Examples of ecosystem services include:

**Pollination:** Pollinators come in all shapes and sizes. Over 100,000 species—from bees, beetles, moths, and flies, to birds, mammals, and reptiles—serve as pollinators worldwide. Most flowering plants require help from pollinators to produce fruit and seed. Almost all commercially important crops, more than 150 in the United States, require pollination to produce their crops, including almonds, apples, alfalfa and squash. One-third of human food comes from plants pollinated by wild pollinators. The value of pollination services from wild pollinators in the U.S. alone is estimated at \$4-6 billion per year.

**Flood Damage Control:** About one-quarter of the rain that falls on the Earth runs off as flood water. Forests, wetlands, rivers, and coastal floodplains catch, store, absorb, and slowly release excess water. These ecosystems help prevent or reduce damage to human settlements and natural areas from flash flooding and lessen the height and duration of floods.

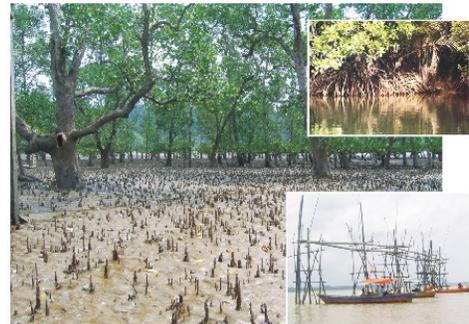
**Forest Carbon Storage:** Forests remove carbon dioxide—a principal greenhouse gas—from the atmosphere and store it as carbon. Carbon dioxide is released back into the atmosphere when forests are burned or cleared. Forest protection and restoration help slow global warming and provide important conservation co-benefits, such as preserving watersheds and biodiversity.

**Water Purification:** Streams, wetlands, lakes, estuaries, and forests all play important roles in purifying water. Excess nutrients, sediments, oil, bacteria, and viruses are processed and filtered out as water moves through these ecosystems. This natural purification process provides clean water for drinking, industrial uses, recreation, and wildlife habitat.

Natural ecosystems and the plants and animals within them provide humans with services that would be very difficult to duplicate. While it is often impossible to place an accurate monetary amount on ecosystem services, we can calculate some of the financial values. Many of these services are performed seemingly for “free,” yet are worth many trillions of dollars. For example: much of the Mississippi River Valley's natural flood protection services were destroyed when adjacent wetlands were drained and channels altered. As a result, the 1993 floods resulted in property damages estimated at \$12 billion partially from the inability of the Valley to lessen the impacts of the high volumes of water.

Did you know that about 78% of the top medicines used in the U.S. come from nature? Of the top 150 prescription drugs used in the U.S., 118 originate from natural sources: 74% from plants, 18% from fungi, 5% from bacteria, and 3% from one vertebrate (snake) species. Nine of the top 10 drugs originate from natural plant products.

Portions of this month's Did You Know? are excerpts from: <http://www.actionbioscience.org/environment/esa.html>



Mangroves provide essential ecosystem services to subsistence fishers, such as protection against storms and sea intrusion, firewood, construction materials and nursery habitat for fisheries. Photos by Sandra Díaz.

# Contact Us

Who we are and where to find us!



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## Disclaimer

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