

Crossroads

A Quarterly Newsletter of The H. John Heinz III Center for Science, Economics and the Environment

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THE
HEINZ
CENTER

The Heinz Center is a nonpartisan, nonprofit institution dedicated to improving the scientific and economic foundation for environmental policy through multisectoral collaboration. The Center fosters collaboration among industry, environmental organizations, academia, and all levels of government in each of its program areas and projects.

“I’m a Stranger Here Myself” Invasive Non-native Species

The Bird and the Bard

In the spring of 1890, Eugene Shieffelin, a Shakespeare enthusiast with a mission—to introduce into the United States every bird mentioned by the Bard—released 60 European starlings into Central Park. The next year, not satisfied with the effect, he released another 40 birds. This time, he succeeded beyond all expectation (luckily, he was not so successful with the hundreds of other Shakespearean birds). Today, one hundred and ten years later, there are some 200 million starlings in North America, in every U.S. state and in every Canadian province, in cities, suburbs, rural areas, and farms. Along with two other non-native species, pigeons and English sparrows, starlings are by far the most common birds in America’s cities. In many places, they have displaced native species, including woodpeckers, purple martins, orioles, and the Eastern Bluebird, and they pose risks to health, crops, and esthetics.



Other Unwelcome Guests

Starlings are only one of the tens of thousands of non-native species of plants and animals that have found their way, with deliberate or inadvertent human help, to North America since the first European settlements. Indeed, most of our crops and domesticated animals and many of our garden plants have their origin elsewhere—they were introduced deliberately, and for the most part they have stayed within the bounds we have set for them. The problem arises when a non-

native species becomes *invasive*—that is, when it leaps those bounds. Because non-native species have no natural enemies in their new home, the potential for disaster is great.

Non-native species are also called nonindigenous, exotic, alien, or introduced; those that spread aggressively are called invasive. They may act as predators or parasites of native species, cause diseases, compete for food or habitat, and alter essential habitat. They may also threaten human health and economic well-being.

In the United States alone, invasive non-native species cost federal, state, and local government, business, farmers, and the



public more than \$135 billion each year. Fire ants, zebra mussels, kudzu, Scotch broom, Japanese beetles, Norway rats, nutria, brown tree snakes, crabgrass, Dutch elm disease, West Nile virus—all these and more annoy, disturb, damage, and even destroy our native species, endanger our health, and undermine our economy. To be sure, some **(continued on page 4)**

The trustees and staff of
The Heinz Center welcome
you to the first issue of
Crossroads

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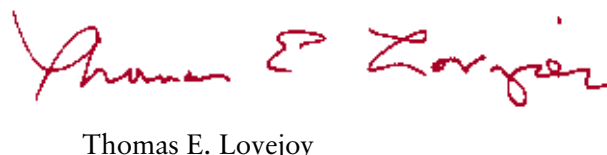
From the President

When the invitation came to join The Heinz Center about a year ago, it struck a personal as well as a professional chord. John Heinz had been a close friend and colleague in a partnership first forged by an intense and historic trip to the Amazon in 1989. I had shared his interest in pragmatic solutions to environmental problems, which is at the root of the Heinz Center's philosophy. On my first day at the Center, I hung a framed copy of "John Heinz: Environmentalist," which Tim Wirth and I had written for the *Washington Post* the week of his tragic death (you can read the article on the Heinz Center's Web site, http://www.heinzctr.org/About/heinz_editorial.htm).



As I arrived, the Center was in the process of publishing its monumental study of the *State of the Nation's Ecosystems*. The report appeared to great acclaim and extremely wide acceptance, and the next phase of this landmark effort is well under way. I soon came to realize that had the Center produced exactly the same report but without the Heinz Center process of engaging government, business, academia, and environmental groups (the "four sectors"), it would not have received the same level of acceptance. The Center is an institutional crossroads, where those with different perspectives can produce meaningful consensus and workable solutions to environmental challenges. I believe deeply in what we at the Center call "the four-sector approach," an approach whose origins lie with John Heinz himself.

Beyond being a generator of ideas and innovations, we also believe it is important to reach out beyond our professional circles and engage others. In November we launched the Friends of the Heinz Center (see page 6 for details), and with this first issue of the Center's new quarterly newsletter, we invite all of you to share in our commitment to bringing the strengths of all four sectors to bear on the pressing environmental and policy challenges that face our nation, and the world, today.



Thomas E. Lovejoy

Hill Briefing on New Coastal Zone Management Report

The Heinz Center held a congressional staff briefing on May 5 on its new report, *The Coastal Zone Management Act: Developing a Framework for Identifying Performance Indicators*. Staff members of legislators from coastal states, as well as committee staffers from the Senate Committee on Commerce, Science, and Transportation, attended. They heard Tom Lovejoy introduce Robert Tudor, Deputy Executive Director, Delaware River Basin Commission (the study's co-chair); Timothy R. E. Keeney, Deputy Assistant Secretary

for Oceans and Atmosphere, National Oceanic and Atmospheric Administration (NOAA); and Eldon Hout, Director, Office of Ocean and Coastal Management, National Ocean Service, NOAA.

The report is the result of a 2-year study, carried out in cooperation with NOAA. The goal of the study was to identify shared national and state coastal resource goals (focus areas), based on the objectives of the Coastal Zone Management Act, and to develop a framework for results-based management utilizing performance indicators.

Fifteen experts from industry, academia, government, and environmental organizations identified national and state coastal focus areas—coastal ecosystems and populations, coastal water quality, public access, coastal hazards, coastal community development, and coastal-dependent uses. For each of these focus areas, the report offers three or four “dimensions” that identify the types of indicators that should be measured. Together, these focus areas and dimensions constitute the framework for performance indicators that the panel set out to create.

Long a common practice in the private sector, performance-based management can also produce benefits for the public and increase government efficiency. Applying this practice to coastal zone management will make it possible to assess program performance, provide accountability, and measure the progress of government-funded programs.

Mr. Keeney reported that the framework is already being used by coastal managers around the nation.

Single copies of The Coastal Zone Management Act: Developing a Framework for Identifying Performance Indicators are available free of charge from The Heinz Center; the report is also available in full on the Heinz Center's Web site www.heinzctr.org.

Policy Meeting at AAAS Considers Heinz Center State of Environment Report

On May 8, Tom Lovejoy and Robin O'Malley, director of the State of the Nation's Ecosystems project, briefed Washington's science policy community on the accomplishments and aspirations of the ongoing project. More than 70 representatives of government agencies, nongovernmental organizations, business, and research institutions attended a seminar sponsored by the American Association for the Advancement of Science and the Washington Science Policy Alliance.

The State of the Nation's Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States, was published late in 2002. New editions are scheduled to come out every five years, as new information emerges and as new issues arise. The long-term goal is to create national environmental indicators that would receive as much attention and acceptance as economic indicators do today.

The audience heard Lovejoy and O'Malley explain the need for a set of nonpartisan, scientifically sound,

and generally agreed-upon indicators of the state of the environment—like the economic indicators that are so familiar. “These economic indicators are numbers that people believe tell us how the economy is doing, and politicians respond to these numbers,” said O'Malley. He went on to describe the Heinz Center's commitment to its trademark “four-sector approach”—the involvement of industry, environmental organizations, academics, and government in all its activities—and the importance of that approach to the credibility and strength of its work.

The second phase of this long-term project is now under way—a new working group on non-native invasive species has begun work (see page 5 for details), and regional application of the national-level findings of the first phase is also planned.



“I’m a Stranger Here Myself”

Invasive Non-native Species

(continued from page 1)

non-native invasive species seem less harmful at first glance—honeybees, for example, were brought to our shores by the first English settlers—but almost all non-native species that establish themselves here have displaced some native species.

North America lies at the crossroads of the world—we import and export goods and materials all over the world, and the planes, ships, and trucks that carry them to and from our shores and borders also bring insects, animals, plants, and diseases. The risks associated with importing plants and other agricultural and horticultural products are fairly obvious (the Mediterranean fruit fly and Dutch elm disease, for example), but it was the little-known international trade in used tires that brought the Asian tiger mosquito to Texas in 1986. In less than 20 years, this fierce mosquito—a vector for

dengue fever and eastern equine encephalitis—has extended its range to more than 23 states. And the Asian long-horned beetle, which hitched a ride on wooden packing materials from China, has the potential to cause more damage than Dutch elm disease, chestnut blight, and gypsy moths combined, by killing hardwood trees such as

maple birch, poplar, willow, elm, ash, and black locust. According to USDA, the beetle could cause losses as high as \$40 billion, affecting industries such as lumber, maple syrup, nursery, commercial fruit, and tourism.

The Road to Hell

Many of the species that are causing trouble now were introduced deliberately, often as a solution to problems that now seem smaller than the ones their introduction has created. Both kudzu and multiflora rose were widely distributed by the Soil Conservation Service beginning in the 1930s for erosion control. Today, kudzu, a native of Asia (which was originally introduced as an ornamental at the Centennial Exposition in 1876 and later promoted as a forage crop), smothers native forest trees and shrubs and destroys habitat for native birds and animals throughout the Southeastern states. And multiflora rose, which has also been widely planted in highway medians

as a crash barrier, is rampant in pastures and other unplowed fields in the East and Midwest, sometimes making grazing impossible.

One of the most destructive and best known of these misguided imports is the gypsy moth. An optimistic entrepreneur brought gypsy moths to Boston in 1869 in the hope of establishing a silk industry in this country; several moths escaped, and now their descendants defoliate an average of nearly 3 million acres of forest each year.

How many little piggies? Nice Kitty?

Other deliberately introduced non-native invasive species include feral hogs and, perhaps surprisingly, feral cats. First brought to North America by Hernando DeSoto in 1539, feral swine now number more than 2 million in 23 states, where they destroy the habitat of native forest and wetland birds and small animals and carry several diseases that can be transmitted to both people and livestock. In Hawaii, the fragile ecosystem is damaged by a burgeoning population of feral swine—the native birds fall victim to avian malaria (itself an introduced disease), which is carried by a mosquito that breeds in the pools formed when the pigs root in wet forests.

Feral cats—which number in the tens of millions—kill hundreds of millions of birds (unfortunately not all of them starlings) and other wildlife every year in the United States. Feral cats also harbor diseases that can affect people and domestic animals, including plague. According to the Defense Department (colonies of feral cats are common on military bases), feral cats “pose a potential public health risk ... and they pose a threat to wildlife, including endangered species and migratory





birds.” In Hawaii, feral cats—along with another non-native invasive species, the Asian mongoose—prey on the imperiled hawksbill turtle and the rare nene, Hawaii’s state bird.

Accidental Tourists

Other invaders arrive unexpectedly, as stowaways on planes, ships, trucks, and cars. And because it is easier

and faster to transport people and goods now, it is also easier for non-native species to reach our lands and waters. The zebra mussel is just one example among all too many.

First seen in Lake St. Clair near Detroit in 1988, probably having hitchhiked from Europe in a transatlantic freighter’s ballast water, the zebra mussel, a native of Russia, is now found in all the Great Lakes and all the major river systems of eastern North America. In fact, by 1989, only a year after their discovery, there were so many of them in Lake Erie that they blocked Monroe, Michigan’s water-intake pipeline, cutting off the city’s water supply for three days. Zebra mussels are invading inland lakes throughout the northeastern and central states, and they have been sighted in Virginia and as far west as California. They are in the headwaters of the Susquehanna River, headed for the Chesapeake Bay and its fertile fishing grounds. They are still spreading. They have damaged power plants and dams, closed water treatment plants, fouled boat engines and piers, spoiled beaches, displaced some native species, and altered the habitat for others. The U.S. Fish and Wildlife Service estimates that zebra mussels will cost U.S. and Canadian water users in the Great Lakes region alone some \$5 billion over the next ten years.

Non-native Invasive Species and the State of the Nation’s Ecosystems

In September 2002, The Heinz Center released its landmark study *The State of the Nation’s Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States*. The result of five years of work by experts from industry, government, academia, and government, the report lays the foundation for periodic, high-quality, nonpartisan reporting on the condition and use of our nation’s ecosystems. The indicators that these experts selected provide a strategic view of key aspects of

ecosystem condition, establishing a basis for periodic reporting to decision makers and the public.

One thing the study revealed was that invasive non-native species affect all of our ecosystems—coasts and oceans, farmlands, forests, fresh waters, grasslands and shrublands, and urban and suburban areas. The study also revealed that, with few exceptions, data for tracking the spread of these species is sorely lacking.

The 2002 report marked the end of the first phase of this long-term project. The Center has now launched the second phase by convening a Non-native Species Task Group to review the non-native species indicators in the 2002 report and to recommend refinements or modifications. This task group—made up of experts in marine, freshwater, forest, urban, farmland, and grassland ecosystems—hopes to identify common approaches to

reporting on the spread of non-native species across these very different systems. The group’s first meeting highlighted a key distinction—between reporting on the actual spread of invasive species themselves, and reporting on the effects of the invaders. Reporting on effects such as fouling of intake pipes by zebra mussels and the coverage of sandy coastal

bottoms by masses of algae is important, but the group agreed that measures that describe the relentless expansion of these species are more practical in the near term and are thus a higher priority in collecting new data.



Knowledge Is Power

Clearly, if we do not know what to measure and how to measure it, we will not be able to track our success or failure as we confront the effects of non-native invasive species on our ecosystems, our health, and our economy. The Heinz Center, with its State of the Nation’s Ecosystems project, is working to provide the tools we need to do the job. The next invader is on its way—we must be ready for it.

For more information about the State of the Nation’s Ecosystems project, see <http://www.heinzctr.org/ecosystems>. The State of the Nation’s Ecosystems report may be purchased from Cambridge University Press (<http://us.cambridge.org/>). It is also available in full on the Heinz Center Web site at <http://www.heinzctr.org/ecosystems/report.htm>.

Dam Removal—an International Issue

Since the publication of *Dam Removal: Science and Decision Making* in May 2002, The Heinz Center has received requests for the report and inquiries about collaboration from Canada, Scotland, and New Zealand, among other countries. On reflection, international interest in dam removal is not surprising—the problems of orphan small and medium-sized dams may be even more widespread elsewhere than they are in the United States. In France, for example, as early as the end of the 17th century more than 100,000 watermills blocked the flow of streams; this pattern is mirrored in much of the rest of Western Europe and the British Isles.

Late last year, we learned that dam removal is a hot topic in Asia as well. Iwanami Shoten, one of Japan's most respected publishers, asked The Heinz Center for permission to translate *Dam Removal* into Japanese and publish it in Japan. Negotiations have now concluded, the contract has been signed, and the project is under way. This is a first for The Heinz Center, and we look forward to working with publishers elsewhere in the world to bring the Center's work to those who can use it, wherever they are.

Single copies of the English-language edition of Dam Removal are available free of charge from The Heinz Center, and the report is also available in full on the Heinz Center's Web site www.heinzctr.org.

Heinz Center Welcomes New Friends

The *Friends of the Heinz Center* is a special group of supporters interested in advancing sound environmental policies. In addition to providing much-needed support, the Friends serve as ambassadors for sound environmental policies in their own communities.

Heinz Center Friends include people of diverse backgrounds and occupations who help support the Center's work. Bringing together business, environmental groups, government, and scholars to address the serious environmental challenges we all face is a hallmark of The Heinz Center.

Our special Friends of the Heinz Center help spread the word about our work to provide balanced and thoughtful research to improve the scientific and economic foundation for environmental policy. The Friends demonstrate interest and active participation through members-only briefings and seminars by visiting scholars. If you would like to join this dedicated group of supporters, please respond in the envelope provided in this newsletter or contact Anne Hummer, Development Director, at the Heinz Center, (202) 737-6307 or hummer@heinzctr.org.

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Heinz Center and Urban Debate Leagues

The Heinz Center is providing copies of its books and reports on coastal and ocean policy to the 277 urban high schools and middle schools that



participate in the national urban debate movement. The connection between the Center and the National Association of Urban Debate Leagues (NAUDL) grew out of two serendipitous events: first, Judy Goss, a Center staff member, is a volunteer mentor with the Washington, D.C., league; second, next year's topic for debate focuses on the environmental implications of U.S. ocean policy. The relevance of our work to the Leagues' needs seemed clear, and we looked for a way to help.

The national urban debate movement, whose seed funding came from the Open Society Institute, involves 15 Urban Debate Leagues in school districts across the nation. In 2003, 4,000 students from 227 high schools and 50 middle schools took part; overall, the program has involved more than 12,000 students, largely disadvantaged minority students. According to the NAUDL, students involved in debate often receive higher grades than nondebaters in high school and are more likely to continue on to postsecondary education.

Les Lynn, NAUDL's executive director, says, "The NAUDL appreciates The Heinz Center's support of the Urban Debate Network. These materials will be a spur to research, and thus advance our educational mission." The Center may be helping to recruit the next generation of environmental scientists and policymakers.

See www.urbandebate.org for more information about the urban debate movement.

People

Trustee **Shirley Malcom** received the National Academy of Sciences' highest award, the Public Welfare Medal, at the Academy's Annual Meeting in April.

Sharon Phenneger joined The Heinz Center as Treasurer and Chief Financial Officer in March. Ms. Phenneger was Chief Financial Officer for Holton-Arms School, Director of Finance for American Farmland Trust, and Director of Finance for Oceans Conservancy.

Anne Hummer became the Center's new Development Director in June. She has served as development director for WAMU Radio, the Reproduction Research Institute, and the Center for Science in the Public Interest, and at World Wildlife Fund she was membership director and editor of FOCUS, a quarterly membership publication.

Heinz Center Program News

Environmental Reporting

- Funders have committed more than 90% of the money needed to complete the **2007 State of the Nation's Ecosystems** report. Six federal agencies, working under the auspices of the Council on Environmental Quality, have agreed to provide approximately one-half of the funding, and the project has received substantial commitments from the Foundation for Environmental Research and the Teresa and H. John Heinz III Foundation, as well as a grant from the ExxonMobil Foundation. Contributing federal agencies include the Departments of Agriculture and the Interior, the Environmental Protection Agency, NASA, the National Oceanic and Atmospheric Administration, and the National Science Foundation.
- **Robin O'Malley**, Program Director, participated in a day-long session designed to help guide a new effort initiated by the White House Council on Environmental Quality on the broad subject of "environmental, natural resource, and closely related human health and social and economic indicators."
- The **Environmental Protection Agency** recently released its "Report on the Environment," covering a wide range of environmental, ecological, and human health information. The report drew very heavily on *The State of the Nation's Ecosystems* for identifying indicators of ecosystem condition.
- The Non-native Species Task Group, which will review and refine the indicators dealing with nonnative species, met twice this spring. **Ann Bartuska**, who heads The Nature Conservancy's Invasive Species Initiative and is President of the Ecological Society of America, chairs the group.
- **Norm Christensen**, noted ecologist and founding Dean of the Nicholas School of the Environment and Earth Sciences at Duke, has agreed to chair a working group on indicators of landscape pattern and fragmentation. The group's first meeting will take place in the fall.
- The Center is conducting a **survey** to help set priorities for filling data gaps identified in the 2002 *State of the Nation's Ecosystems* report. More than 160 experts from businesses, academic institutions, nongovernmental organizations and government agencies have responded, and data analysis is currently under way.
- Discussions are under way to determine the best locations and partners for two **new regional indicator projects**, targeted for startup by year's end. These projects will apply the basic reporting design from *The State of the Nation's Ecosystems* to reporting on regional conditions. Ten potential candidates have been identified; a decision will be made about which ones to pursue after the project's Design Committee meeting in July.

Global Change

- In cooperation with the International Council of Scientific Union's Scientific Committee on Problems in the Environment (SCOPE), The Heinz Center recently held a workshop on **Forest Conservation and Management in an Information Age**. Experts from the forest industry, environmental groups, the information technology industry, and government agencies explored the use of new information technologies in changing the way that forest policy has evolved.
- The Heinz Center cosponsored—with the cooperation and financial support of the Millennium Ecosystem Assessment and NASA—an international experts' workshop on the **status and documentation of changes in land cover and land use**.
- As part of his responsibilities as a member of the NRC's Committee for Review of the U.S. Climate Change Science Program Strategic Plan, **Tony Janetos** gave a number of print and radio interviews; he also participated in a panel that testified before Senator John McCain's Senate Energy and Commerce Committee.
- In March, **Tony Janetos** gave an invited presentation on potential climate impacts and adaptation to the Electric Power Research Institute's Environment Council. The Council is composed of the electric utilities that support EPRI's environmental research portfolio.

Sustainable Oceans, Coasts, and Waterways

- The **Sharing Innovations in Coastal Zone Management** project began with a June conference attended by some forty experts. A final report to NOAA will recommend various methods to help government agencies and other stakeholders learn about innovative experiments going on in other coastal states. **James Good**, Professor, College of Oceanic and Atmospheric Sciences at Oregon State University, is chairing the study.
- Following up on the release of the Center's report *Dam Removal: Science and Decision Making*, thirty researchers whose work focuses on the impacts of dam removals took part in a Heinz Center workshop in October 2002. **William L. Graf**, Professor of Geography at the University of South Carolina, chaired both efforts. The proceedings of the workshop—*Dam Removal Research: Status and Prospects*—will be published this summer.
- With the help of a grant from ChevronTexaco, the planning phase of a project on the Role of Women in **Natural Resource Protection in Developing Countries** is now under way.

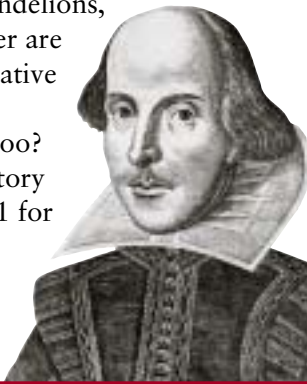
Did you know ...

That Shakespeare is responsible for the introduction of starlings—a poster child for invasive non-native species—into



this country just over a century ago? They displaced native birds, like woodpeckers, purple martins and bluebirds, and they

thrive in America's cities, where their calling cards are all too familiar. And did you know that honeybees, earthworms, brown trout, dandelions, and clover are all non-native invasive species, too? See the story on page 1 for more.



About the Heinz Center

Established in December 1995 to carry on the work of Senator John Heinz (1938–1991), The Heinz Center is a nonpartisan, nonprofit institution dedicated to improving the scientific and economic foundation for environmental policy through multisectoral collaboration. The Center fosters collaboration among industry, environmental organizations, academia, and all levels of government in each of its program areas and projects. It uses scientific and economic analyses to develop viable options to solving problems, and its findings and recommendations are widely disseminated to public and private sector decision makers, the scientific community, and the public. The active involvement of high-level decision makers in government and industry, as well as of leading academic researchers and environmental activists, enables the Center to make a unique contribution to environmental policymaking.

The Center's work currently focuses on three strategic areas: Environmental Reporting; Global Change; and Sustainable Oceans, Coasts, and Waterways.

Crossroads is a quarterly publication of The H. John Heinz III Center for Science, Economics and the Environment. The Heinz Center is a tax-exempt 501(c)3 nonprofit organization. *Crossroads* is also available online at www.heinzctr.org/crossroads.

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