

In the fourth edition of these awards upholding science as a motor of progress

## Janzen wins the BBVA Foundation Frontiers of Knowledge Award in Ecology and Conservation Biology for his revelatory work on tropical ecosystem function

- Starting from his knowledge of the dynamics of plant-animal interactions, U.S. biologist Daniel Janzen has restored endangered tropical wildland in Costa Rica, Mexico, Nigeria and Australia
- Janzen created the figure of “parataxonomist”, training local residents to identify and classify the species around them and take part in large-scale biodiversity inventories based on genetic barcoding
- The BBVA Foundation Frontiers of Knowledge Awards recognize the role of science and cultural creation as levers of society’s progress and wellbeing. Their eight categories span the main scientific, technological, social and economic areas and challenges of our times

**Madrid, January 31, 2012.-** The BBVA Foundation Frontiers of Knowledge Award in the Ecology and Conservation Biology category goes in this fourth edition to the U.S. ecologist and naturalist Daniel Janzen, “for his pioneering work in tropical ecology and the conservation of tropical ecosystems.”

The work done by Janzen (Milwaukee, United States, 1939) has moved us on from a merely descriptive knowledge of tropical ecosystems to an understanding of their function. “Daniel Janzen is a supreme example of the complete ecological scientist,” in the words of the citation, “combining expertise in natural history with scientific rigor and innovative thinking.”

“He has applied his knowledge to the practical question of biodiversity conservation, and in the process shaped tropical ecology as we know it today,” the jury continues. Through a research enterprise that ranges from the study of how seeds and leaves evolve in tandem with the animals that feed off them

through to the role of herbivores in structuring complex communities, he has contributed vitally to our understanding of the ecological interactions between animals and plants.

Janzen's efforts have also been crucial for conservation. Professor of Conservation Biology at the University of Pennsylvania (Philadelphia, United States), he has spent much of the last 40 years in Costa Rica, where he was a driving force in the creation of the Area de Conservacion Guanacaste, one of the world's most successful tropical forest reserves. His campaign to get the people of Guanacaste directly involved in the management of the reserve launched the concept of "biodiversity-based development". As a result of these initiatives, the local population have acquired a detailed knowledge of their environment and transformed the forest into a source of wealth for the community.

Among his most inspirational ideas, in the jury's opinion, was the recruitment of local residents as "parataxonomists". Janzen, in effect, has trained the inhabitants of these areas to recognize a wide variety of species, and to participate in large-scale biodiversity inventories based on DNA barcoding techniques.

Janzen, the citation affirms, is "among the pioneers of the science of restoration ecology; (...) has guided the restoration and conservation of thousands of hectares of a formerly degraded landscape, (...) and continues to lead an innovative research program with an emphasis on the conservation of tropical biodiversity through its integration with local cultures."

"This award helps me and my wife [ecologist Winnie Hallwachs] to feel that some part of the greater community of scientists and non-damaging users of biodiversity do appreciate what we are trying to do, and have been trying to do since 1985," was his first reaction on hearing of the award. "We will use the prize money to finance multiple research projects in taxonomy, ecology, and biodiversity development that other members of the team have not been able to finance for themselves; projects that are integral parts of our efforts to conserve wildlands in the tropics."

The new laureate also had words to say about the current state of tropical ecosystems, which he describes as "very endangered" and "already badly destroyed, and getting more so." "The tropics contain the great bulk of the unread biological books on the planet, and also a huge portion of the carbon that we have pushed into the atmosphere to give us the catastrophic climate change into which we have thrust ourselves."

But the tropics, he insists, can also be part of the solution, through their role in "getting that carbon back out of the atmosphere."

## **Área de Conservación Guanacaste**

The Área de Conservación Guanacaste is a vast tract of protected forest in Costa Rica, that Janzen himself helped get turned into a reserve 25 years ago. The jury's citation indicates the scale of the achievement: "It started as 10,000 hectares of degraded land and was expanded to 130,000 hectares of a restored, functional forest ecosystem. Now a UNESCO World Heritage Site, the ACG is the working model for the entire Costa Rican national park system."

Internationally recognized as an outstanding example of "biodiversity-based conservation", ACG is also the world's largest forest restoration project. A model, in short, of how to conserve a large complex tropical ecosystem that has been "inspirational to tropical biology and conservation initiatives throughout the world."

### **From caterpillars and their parasites to the "barcode" of life**

In the early stages of his career, between the 1960s and 1980s, Janzen was a key figure in the design and execution of model field experiments in tropical ecology, focusing mainly on Costa Rica, but extending to Africa, Asia and Australia. "My research pursues a 'total' understanding of the trophic web of a large conserved tropical wildland," he explains. "This means finding and documenting at least 30,000 species of food plants, caterpillars and parasitoids in an area the size of Madrid and its suburbs, and doing it with Costa Rican residents."

Janzen's own particular specialty is the study of caterpillars and the parasites that live off them, with a body of work which is among the most exhaustive of its kind. "Learning which caterpillar eats which plant, and which parasitoid eats each caterpillar, and why, and how, and when, is learning how to read wild biodiversity."

And reading biodiversity, as he puts it, is what teaches you the importance of its conservation. "At present, humanity largely treats biodiversity the way an illiterate treats literature – as firewood, toilet paper and shipping cartons. I do caterpillars, plants and parasitoids because I am curious about them, and because they taught me to read."

Janzen is also one of the pioneers, and principal promoters, of the use of genetic techniques to classify species. In particular, he is among the forces behind the International Barcode of Life project, which aspires to DNA barcode 5% of the world's species over the next five years. As part of this effort, Janzen himself has embarked on the DNA barcoding of the Lepidoptera fauna of Guanacaste.

The name of the new laureate was announced this morning in the Marqués de Salamanca Palace, Madrid headquarters of the BBVA Foundation, at an event attended by the jury chairman, **Daniel Pauly** of the University of British Columbia (Canada); **Gary Meffe**, Consulting Editor of *Conservation Biology* and Adjunct Professor in the Department of Wildlife Ecology and Conservation at the University of Florida (United States), and the Director of the BBVA Foundation, **Rafael Pardo**.

## The BBVA Foundation Frontiers of Knowledge Awards

The BBVA Foundation established the Frontiers of Knowledge Awards in 2008 to recognize the authors of outstanding contributions and significant advances in a broad range of scientific and technological areas characteristic of our times. The quality of the nominations received, the stature of the international judges, appointed in consultation with the Spanish National Research Council (CSIC), and the excellence of the laureates in their first three editions have earned them a place among the world's foremost award families.

In the midst of a severe economic crisis which has pushed science, culture and the environment lower down the list of public priorities, the BBVA Foundation Frontiers of Knowledge Awards enter this fourth edition firm in their commitment to the individuals and teams working for a better future for people through the advancement of knowledge and its dissemination to society.

The eight categories of the BBVA Foundation Frontiers of Knowledge Awards, each carrying prize money of 400,000 euros, reflect both the knowledge map of the early 21st century and the great global challenges of the day. Hence their inclusion of two dedicated environmental categories in the form of "Climate Change" and "Ecology and Conservation Biology".

The BBVA Foundation primarily engages in the generation and diffusion of scientific knowledge and culture. This effort materializes in research projects, advanced training, lectures and publications, and a series of award families aimed at recognizing and drawing public attention to the work of scientists and creative practitioners.

Among the BBVA Foundation's areas of activity are basic sciences, biomedicine, ecology and conservation biology, the social sciences and literary and musical creation. Its initiatives mesh with the BBVA Group's strategy of fostering innovation and knowledge as development drivers and an effective means to expand our individual and collective choices.

### International jury

The jury in this category was chaired by **Daniel Pauly**, Professor of Fisheries at the University of British Columbia (Canada), with **Gary Meffe**, Consulting Editor of *Conservation Biology* and Adjunct Professor in the Department of Wildlife Ecology and Conservation of the University of Florida (United States) acting as secretary. Remaining members were **Wilhelm Boland**, Director in the Max Planck Institute for Chemical Ecology (Germany); **Joanna Burger**, Distinguished Professor of Biology at Rutgers University (United States); **Pedro Jordano**, Research Professor at Doñana Biological Station, CSIC (Spain); and **Andrew Sudgen**, Deputy Editor of *Science* and International Managing Editor for AAAS Science International's European headquarters in Cambridge (United Kingdom).

Last year's award in this category went to **Edward O. Wilson** for "coining and popularizing the term biodiversity," in the words of the citation. Wilson, the jury added, is "one of the most influential thinkers of our time, an exceptional biologist and a world-class natural historian."

In the second edition, the winner was **Peter Reich** of the University of Minnesota (United States) for work that “radically improves our understanding of and ability to predict terrestrial ecosystem compositional and functional responses to global environmental change, including climate change (...) and biodiversity loss.”

Finally, the award in the inaugural edition was shared by biologists **Thomas Lovejoy** and **William Laurance** of the Smithsonian Institution (United States), whose studies show that the degradation of the Amazon rainforest is advancing much faster than predicted.

## Biography

Janzen (Milwaukee, 1939), graduated in biology from the University of Minnesota then went on to obtain a PhD from the University of Berkeley, California in 1965. In 1963, while still a student, he attended a tropical biology course in Costa Rica offered by the Organization for Tropical Studies, a consortium of North American and Costa Rican universities. He returned there as a teacher in 1965 and has since kept up an active involvement in OTS activities. Before joining the University of Pennsylvania, he held professorial posts at the universities of Kansas (1965-1968), Chicago (1969-1972) and Michigan (1972-1976), as well as teaching courses in Venezuela and Puerto Rico. An advisor to former Costa Rican president Óscar Arias, he was instrumental in the set-up of the country's National Biodiversity Institute (INBio) and in the design of its network of national parks.

## UPCOMING AWARD ANNOUNCEMENTS

CATEGORY	DATE
<b>Contemporary Music</b>	Tuesday, February 14
<b>Economics, Finance and Management</b>	Tuesday, February 21
<b>Development Cooperation</b>	Tuesday, February 28

### LAUREATE'S FIRST DECLARATIONS AND IMAGES

A video recording of the new laureate's first impressions on receiving news of the award is available from the Atlas FTP with the following name and coordinates, along with photographic images and an audio MP3 recording of the announcement event, featuring more declarations:

Server: **213.0.38.61**  
 Username: **agenciaatlas1**  
 Password: **amapola**

The name of the video is:  
 "FBBVA PREMIO ECOLOGIA"

## Fundación **BBVA**

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