SPECIAL SECTION

Restoration Ecology

INTRODUCTION
555  The Rise of Restoration Ecology

NEWS
556  Nursing China’s Ailing Forests Back to Health
559  Bringing Coral Reefs Back From the Living Dead
562  Unleashing an Army to Repair Alien-Ravaged Ecosystems
564  Addicted to Rubber

PERSPECTIVES
567  Ecological Restoration in the Light of Ecological History
S. T. Jackson and R. J. Hobbs

569  Species Invasions and the Limits to Restoration: Learning from the New Zealand Experience
D. A. Norton

571  Pollination and Restoration
K. W. Dixon

573  Soil Microbial Communities and Restoration Ecology: Facilitators or Followers?
J. Harris

575  Restoration of Ecosystem Services for Environmental Markets
M. A. Palmer and S. Filoso

>> See also Editorial p. 517; News stories pp. 525 and 526; Research Article p. 578; Science Express Reports by J. M. Rey Benayas et al. and D. M. Schulte et al.; Science Express Perspective by M. W. Chase et al.

EDITORIAL
517  Gene Banks for a Warming Planet
M. S. Swaminathan
>> Restoration Ecology section p. 555

527  Universities Begin to Rethink First-Year Biology Courses
From the Science Policy Blog

NEWS FOCUS
528  Reshuffling Graduate Training
>> Science Podcast

531  Saving a Venomous Ghost

532  A Quest for Cosmic Karma

534  Help Wanted: 2000 Leading Lights to Inject a Spirit of Innovation

LETTERS
536  Mayas Live On
J. M. Peña-Castro
Venezuelan Science: A Professor’s Defense
J. Requena
Venezuelan Science: Government on Course
G. R. Barreto
Venezuelan Science: Making Great Strides
J. Chacón-Escamillo

524  From Science’s Online Daily News Site

525  Oysters Booming on New Reefs, But Can They Survive Disease?
>> Science Express Report by D. M. Schulte et al.; Restoration Ecology section p. 555

526  Plant Bar Code Soon to Become Reality
>> Science Express Perspective by M. W. Chase et al.; Restoration Ecology section p. 555

528  More Bad Connections May Limit LHC Energy or Delay Restart

533  Fix Funding Agency’s ‘Original Sin,’ ERC Review Panel Demands

529  From Science’s Online Daily News Site

CORRECTIONS AND CLARIFICATIONS

TECHNICAL COMMENT ABSTRACTS

BOOKS ET AL.

539  He Knew He Was Right/James Lovelock
J. Gribbin and M. Gribbin, reviewed by L. R. Kump
The Vanishing Face of Gaia
J. Lovelock, reviewed by L. R. Kump

540  Wiki Government
B. S. Noveck, reviewed by B. Shneiderman

EDUCATION FORUM
541  Computing Has Changed Biology—Biology Education Must Catch Up
P. Pevzner and R. Shamir

542  Mathematical Biology Education: Beyond Calculus
R. Robeva and R. Laubenbacher

CONTENTS continued >>

COVER
Like solving a puzzle whose pieces themselves change shape, ecologists around the world are developing techniques to restore degraded and exploited ecosystems. See the special section beginning on page 555.

Photo illustration: Nayomi Kevityagala (image: Grand Tour/Corbis)
PERSPECTIVES

544  Brain Wiring by Presorting Axons
K. Miyamichi and L. Luo
>> Research Article p. 585

545  Ironing Out the Oxidation of Earth’s Mantle
M. M. Hirschmann
>> Report p. 605

546  Probing the Cold Universe
M. Rowan-Robinson

547  Nudging Through a Nucleosome
J. J. Otterstrom and A. M. van Oijen
>> Report p. 626

549  Dispensable But Not Irrelevant
T. Jia and E. G. Pamer
>> Report p. 612

550  Is Your Computer Secure?
F. R. Chang

BREVIA

577  The Map of Altinum, Ancestor of Venice
A. Ninfo et al.
Aerial mapping during an extreme drought has revealed the detailed plan of a major Roman city in the Venice lagoon.

RESEARCH ARTICLES

578  Rebuilding Global Fisheries
B. Worm et al.
Catch restrictions, gear modification, and closed areas are helping to rebuild overexploited marine ecosystems.
>> Restoration Ecology section p. 555

585  Pre-Target Axon Sorting Establishes the Neural Map Topography
T. Imai et al.
The mouse olfactory topographic neural map is self-organized by interactions between axons, not directed by the target.
>> Perspective p. 544

REPORTS

590  Grain Boundary Defect Elimination in a Zeolite Membrane by Rapid Thermal Processing
J. Choi et al.
A reduction in the formation of defects in silicalite-1 zeolite membranes improves their isomer separation capabilities.

594  Ultrasmooth Patterned Metals for Plasmonics and Metamaterials
P. Nagpal et al.
Films with enhanced surface-plasmon propagation may find use in sensing and communications devices.

597  Probing Spin-Charge Separation in a Tomonaga-Luttinger Liquid
Y. Jompol et al.
Electronic spin and charge respond differently during tunneling between low-dimensional electron systems.

601  The Formation of Population III Binaries from Cosmological Initial Conditions
M. J. Turk et al.
Simulations show that binary systems are likely to exist among the first generation of stars.

605  Water and the Oxidation State of Subduction Zone Magmas
K. A. Kelley and E. Cottrell
Oxidation of Earth’s mantle at subduction zones is caused by fluids released from the melting of subducting plates.
>> Perspective p. 545

607  The cAMP Sensor Epac2 Is a Direct Target of Antidiabetic Sulfonylurea Drugs
C.-L. Zhang et al.
A drug used to enhance insulin secretion in diabetes has a previously unrecognized protein target.

611  Flexible Learning of Multiple Speech Structures in Bilingual Infants
Á. M. Kovács and J. Mehler
Exposure to two languages facilitates the development of a more flexible associative learning capacity.

612  Identification of Splenic Reservoir Monocytes and Their Deployment to Inflammatory Sites
F. K. Swirski et al.
A rapid deployment force of immune cells is identified in the spleen that is important for resolving inflammation.
>> Perspective p. 549

617  Innate and Adaptive Immunity Cooperate Flexibly to Maintain Host-Microbiota Mutualism
E. Slack et al.
Mouse immune systems interact to ensure tolerance to nonpathogenic bacteria in the gut.

621  Chronic Stress Causes Frontostriatal Reorganization and Affects Decision-Making
E. Dias-Ferreiro et al.
Chronic stress alters brain neural circuits and affects the ability of animals to perform actions based on their consequences.

626  Nucleosomal Fluctuations Govern the Transcription Dynamics of RNA Polymerase II
C. Hodges et al.
RNA polymerase acts as a molecular ratchet to force its way through nucleosome-infested DNA.
>> Perspective p. 547
Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.

Catching a Giant Wave

New insights into tsunami behavior may help researchers better track them with radar.

New insights into tsunami behavior may help researchers better track them with radar.
325 (5940) 
(July 31, 2009)
Science 325 (5940), 514-629.

Editor's Summary

This copy is for your personal, non-commercial use only.

**Article Tools**
Visit the online version of this article to access the personalization and article tools:
http://science.sciencemag.org/content/325/5940

**Permissions**
Obtain information about reproducing this article:
http://www.sciencemag.org/about/permissions.dtl