



WHAT'S UP?

THE NEWSLETTER OF THE INTERNATIONAL CANOPY NETWORK

NALINI NADKARNI, EDITOR

DAVID FRANKLIN, EDITORIAL ASSISTANT

ICAN Announces New, Improved Website

ICAN is pleased to announce the release of our new, updated website. The site, designed by David Franklin, features an all-new look and interface.

Users can browse categories including Education, Outreach, Conservation, Research, Global Canopy Programme, Canopy Access, and Meetings. Some features include CVs for over 25 researchers, reports on the 1999 NSF/ESF workshop, and links to websites associated with canopy research and exploration. Information on ICAN is centrally accessible for quick reference. Also revised is the Canopy Citations database. Note that we are eager to augment the database with new references that concern canopy studies.

ers to augment those posted on the site. If you would like your CV posted, please e-mail it in Word format or as a .pdf file to the e-mail address below. It is not necessary to worry about formatting; we will format it accordingly before we post it. To see sample CVs, click on the "research" link, then click on the name of a researcher.



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The site is designed to be user-friendly. Users can quickly find information, and the new graphics are easy to read and pleasing to the eye. The site contains numerous cross-references, making navigation around the site and accessing data simple.

We are also soliciting CVs of canopy research-

We request feedback on the new site. Please send your comments and suggestions to the address below.

The URL is unchanged: <<http://www.evergreen.edu/ican>>.

For more information, contact: David Franklin, Outreach Coordinator, The International Canopy Network; 2103 Harrison Avenue NW, PMB 612, Olympia, WA 98502; Phone: (360) 866-6788; <canopy@evergreen.edu>.

Tropical Forest Canopies: Ecology and Management

edited by K.E. Linsenmair, A.J. Davis, B. Fiala
& M.R. Speight

Almost half of all life on earth may exist in the world's forest canopies. Renowned for their great diversity and role in forest functioning, canopies play a vital role in maintaining the planet's climate, yet they remain largely unexplored owing to difficulties of access. There are still great gaps in the understanding of this 'last biological frontier'. With extensive deforestation currently destroying large areas of tropical forest, the need to study and understand this unique habitat is more pressing than ever.

The European Science Foundation (ESF) Tropical Canopy Research (TCR) Programme was launched in January 1994 to span a period of five years, with the aim of making the above issues the primary focus of tropical canopy research in Europe. In 1998, leading canopy scientists from Europe and America met at St. Anne's College in Oxford, UK, for a conference that gave a state-of-the-art account of tropical canopy research in Europe and put this work in a global perspective. 'Tropical Forest Canopies: Ecology and Management' represents a culmination of the knowledge presented at this meeting, and gives an authoritative overview of the all the key aspects of canopy research. It represents a comprehensive and definitive account of tropical canopy research at the beginning of the 21st century.

There are six sections in the book. "Plants in the Canopy" examines the importance of epiphytes and hemiepiphytes in the crown layer of tropical forests, including ecophysiological aspects of intraspecific size variability. Pollination biology and flowering phenology are also discussed, as are general considerations into actual plant-related canopy research and its future development. "Animals in the Canopy" contains two major reviews of invertebrate and vertebrate diversity in tropical forest canopies, with other contributions examining arboreal invertebrates (spatial stratification, seasonal changes, and the consequences of disturbance gradients for the structure and diversity of communities) and vertebrates (how behaviour and morphology in canopy dwelling birds is adapted to the ecological demands of this stratum; vertical stratification and corresponding guild structures in fig-eating frugivores). The section on "Sampling and Access" contains an authoritative review of the development of the technical side of accessing forest canopies, and addresses the particular problems of carrying out research in the treetops. "Canopy Architecture" is devoted to the architecture of crowns and the overall structure of the canopy. Following this is a review of methods for describing, measuring, and analyzing the three-dimensional structure of rainforests, examination of the intra- and interspecific variability of crowns in a number of rainforest tree species, and whether

species-specific characteristics of tree crowns can successfully be used for the identification of these species on large-scale aerial photographs. The dynamical topography of the canopy surface viewed from different organisational and spatial levels of the forest ecosystem is also addressed. The fifth section, "Hydrology, microclimate and light", looks at issues of ecohydrology and micrometeorology in undisturbed and disturbed forests, and micrometeorological conditions and energy exchanges between the canopy layer and the atmosphere. A stimulating overview of light climates in primary and disturbed tropical forests and their effect on plants and the habitat choices of animals concludes this section. The

final section summarizes research in two important areas: education, and forest management.

This seminal book shows how canopy science is now in a position to answer many of the outstanding questions and environmental problems that are a fundamental part of, and in many ways special to, canopy biology. Among these are some of the most pressing environmental issues society is presently faced with, including global climate change, the consequence of biodiversity loss, carbon and water cycling on the regional and the global scale, and sus-



Logging operations in Borneo-one of the pressures facing the conservation of tropical forest canopies addressed in the book.

Photo by Andrew Davis.

tainable forest use. It represents a major summary of the current understanding of one of the last great biological frontiers, and maps a path forward into a greater understanding of tropical forest ecology and management, at a time when the very future of this ecosystem is threatened by humanity's actions.

2001, 380 pages; ISBN: 0-7923-7049-X

To be published in the book series *Forestry Sciences*
Reprinted from *Plant Ecology Special Issue*.

Volume 153, issues 1&2.

Contact: Dr Andrew J. Davis; Green College, University of Oxford,
Woodstock Road, Oxford OX2 6HG; Phone: 01865 271124; Fax: 01865
274899; <andrew.davis@green.oxford.ac.uk>

Global Canopy Programme Questionnaire



The Global Canopy Programme (GCP) secretariat was established in Oxford, UK, in October 2000. Since then, the GCP secretariat has been making contact with organizations worldwide who have expressed an interest in joining a coordinated program of research, education, and conservation, all of which are principle aims of the GCP. We extend an invitation to all members of the International Canopy Network to collaborate in the the program. The purpose of this questionnaire is to invite you to become more involved in the GCP, and indicate to what degree you'd like to be involved, if at all.

The mission of GCP is to integrate canopy studies across the world into a linked programme of research, conservation, and education, with the emphasis being on research. This came out of the ESF/NSF-funded International Canopy Science workshop in November 1999 in Oxford, which Andrew Mitchell (Director of GCP) and ICAN helped to organize with support from scientists all over the world.

The workshop proposed an initial US\$5-10 million international project to be launched at the 3rd International Conference in Cairns in June 2002. To date, US\$1 million has already been raised toward Phase I funding. \$300,000 from UK foundations is secured as start-up funding for the GCP secretariat, and another \$750,000 from NSF has been raised by ICAN for the Big Canopy Database. To view the final report of the workshop, visit <<<http://192.211.16.13/individuals/nadkarnn/Gcp/page11.html>>>. Further information on the aims and objectives of GCP can be found at <<<http://www.globalcanopy.org>>>.

The GCP secretariat has compiled this questionnaire for you to fill out and return, asking for your interests, hopes, and requirements from the GCP.

If you wish to contribute to or benefit from this programme, please complete the following questions. If you would prefer to fill out the questionnaire electronically, you may request an e-mail version from the address that follows.

Thank you for your cooperation and support!

Global Canopy Programme Participant Questionnaire

- 1) Are you interested in becoming a part of the Global Canopy Programme?
- 2) How would you expect to contribute to the Global Canopy Programme?
- 3) To what extent could your existing research be included under the umbrella of the Global Canopy Programme?
- 4) If there was funding available, would you be prepared to carry out research in cooperation with others to answer the questions brought up at the workshop (e.g. providing a global understanding of issues such as climate change, biodiversity loss, and ecosystem function)?
- 5) What specific piece of research would you like to carry out as part of the GCP that would benefit from comparative studies at 5-10 sites around the world? How would this contribute to the mission of the GCP?

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-
- 6) How could your research benefit local communities adjacent to the forests you study (from a socio-economic perspective)?
- 7) Are you linked internationally to any other canopy research programmes?
- 8) To help us raise funds, we are interested in estimating the scale and dollar interest in canopy research. Could you provide a general dollar (US\$ preferable to local currency) value to your research in terms of grants received?
- 9) How would you expect to benefit from the Global Canopy Programme? Please prioritize on a scale of 1 to 5, 1 being the lowest value, 5 the highest:
- Coordination of a framework for comparative research? ___
 - Exchange of data through the Big Canopy Database? ___
 - Meetings and conferences? ___
 - Funding? ___
 - A network of students/researchers to help carry out your research in numerous locations? ___
- 10) Could you or your institution provide any support for a capacity-building programme aimed at training individuals in canopy access methods and research techniques?
- 11) Are there any conferences/meetings that you will be attending in the next 18 months that may serve as an opportunity to have another workshop? If so, where and when?
- 12) Are there any times that you will be passing through the UK, so that we might meet? If so, when?
- 13) If you are willing, please list your website, so that we may link it into the GCP's.
- 14) Please provide your name, address and contact information.
- 15) Any other comments?

RETURN TO:

Katherine Secoy, GCP Co-ordinator; Halifax House, University of Oxford, 6/8 South Parks Road, Oxford OX1 3UB, UK; Phone: +44 (0) 1865 271036; Fax: +44 (0) 1865 271035; <k.Secoy@globalcanopy.org>; <<<http://www.globalcanopy.org>>>.

Andrew Mitchell, Director and ICAN Board member; <a.mitchell@globalcanopy.org>.

Introducing the “Tropical Tribune”, the only newspaper about tropical rainforests written for children by children

Established in 1992, the *Tropical Tribune*, a student-written newspaper for students and families, provides accurate and reliable information about rainforests, threats facing these ecosystems, and creative ways to link student projects and interests. It shows readers how students and adults have contributed to constructive conservation efforts, and strives to motivate people to take action in solving ecological problems and become a positive force for change in the world. Requests for the publication have been received from schools in all 50 states and 20 foreign countries. Students from as far away as Australia have submitted articles for publication. Distribution is now in the thousands.

Readers of the *Tropical Tribune* have become immensely more aware of the circumstances surrounding rainforests, and become more environmentally aware on a global level. Many have used the *Tropical Tribune* to do class projects, buy acres of rainforests, contact environmental organizations, and involve others in their school and community.

Save The Rainforest, Inc. (STR) believes that the *Tropical Tribune* can provide students with information about complex and important issues at a level they will be able to comprehend. Any student that sends a letter to STR asking for information automatically receives a copy. Many other prominent groups worldwide support the publication as well, including the Rainforest Action Network and the Rainforest Alliance, The National Geographic Society, Center for Ecosystem Survival, Dian Fossey Gorilla Fund, and Preservation of the Amazonian River Dolphin. Dr. Daniel Janzen, professor of biology at the University of Pennsylvania and technical advisor to National Institute of Biodiversity in Costa Rica, and Conservation International, asked the newspaper to help spread the word about projects and programs to students.

The *Tropical Tribune* has been recognized for its environmental education approach as well as its innovative curricular design. *Skipping Stones* magazine, The Wisconsin Association of Environmental Education, and the EPA have given the publication top awards. The National Middle School Association and Prentice Hall honored it in 1996 as the Grand Prize-winner for innovative interdisciplinary curriculum design.

Conservation authors including Judy Kimerling (Amazon Crude), Joe Kane (Savages), Mark Plotkin (Tales of a Shaman's Apprentice), Arnold Newman (Rainforests), Geoff O'Connor (Amazon Journal), Mike Tidwell (Amazon Stranger), Man Eating Bugs (Menzel) and Michael and Patricia Fogden have become involved with the paper. Television host Jack Hanna contributed a story about his exploits in Africa with mountain gorillas, and actor Ed Begley, Jr. recently shared his environmental philosophy.

The project's success has exceeded even the most optimistic expectations. The students' work has been recognized

by U.S. Congressmen, zoo directors, the State Superintendent of Schools, university professors, and environmental organizations. The *Tropical Tribune* has been cited in Rainforests



Forever! (RAN), Promising Practices (WAEF), Taking Action: An Educator's Guide To Involving Students in Environmental Action Projects, and the Project WET Curriculum and Activity Guide and Get Real Rainforest Adventure curriculum guides, both published by PBS. It is included in numerous books and magazines. The Center for Environmental Education has included the Tropical Tribune in their documentary film *Generation Earth* and its companion teacher's manual.

The *Tropical Tribune* strives to foster students' sense of social responsibility by teaching others about tropical rainforests, and represents an outlet for student action as they become aware of the social, environmental, and political issues associated with conservation. The students at J.C. McKenna Middle School have been studying tropical rainforests since 1998, and were one of the first groups of students in Wisconsin to purchase and protect rainforest land for future generations. Networking children with a student-created paper empowers them with the idea that they can make a difference, and encourages them to continue making a difference for the rest of their lives.

Subscriptions are \$2 annually, which includes one issue. To subscribe, contact: *Tropical Tribune*, J.C. McKenna Middle School, 307 S. 1st Street, Evansville, WI 53536; <bbeedle@ehs.k12.wi.us>.

THE CRANES ARE FLYING: UPDATE ON THE INTERNATIONAL FLOCK OF CANOPY CRANES

WIND RIVER CANOPY CRANE RESEARCH FACILITY 2001

The Wind River Canopy Crane Research Facility (WRCCRF) was established in 1995 as a forest ecosystem observatory specializing in forest canopy access and whole system studies in a natural, tall stature, old-growth, temperate coniferous forest. It is a cooperative scientific endeavor between the University of Washington (Seattle, Washington), USDA Forest Service Pacific Northwest Research Station (Portland, Oregon) and Gifford Pinchot National Forest (Vancouver, Washington).

The mission of the WRCCRF is to provide a facility, canopy access, and data/information for those wishing to better understand the forest canopy within the context of forest science and management in its broadest sense. This is accomplished by expediting canopy research, fostering an environment for interaction and exchange of canopy information among scientists, providing information to outside management and lay communities, and providing a training area for those interested in canopy studies.

In support of the core access facility, we have installed a 12-ha stem mapped forest research plot, which is networked with the US Pacific Northwest Permanent Sample Plots system (PSP) (<http://www.fsl.orst.edu/lter/pubs/permplo.htm>). The PSP system is a network of mapped forest research plots including a 42-ha-system of old-growth mortality plots adjacent the WRCCRF. The WRCCRF is embedded in the T.T. Munger Research Natural Area (478 ha) and the Wind River Experimental Forest (4,208 ha), which provides unprecedented opportunity for comparisons with different aged forests and forests of different management regimes.

Researchers have used the facility for 95 research projects from 1995 through 2000. The major research areas include vertical organization of forest structure, vertical and seasonal organization of biological communities and processes, controls and dynamics of forest carbon flux with emphasis on

implications for global climate change, large tree physiology, and forest protection. In addition, the site is used for validation and field testing of ground-based forestry techniques and new remote sensing technology. The unique nature of the canopy crane has allowed many research projects that would be otherwise impossible.

We sponsor an Annual Scientific Conference that brings together active researchers working at the site (The 7th Annual WRCCRF Scientific Conference will be June 21, 22, 2001). Participation in the annual meeting is required of all scientists in order to provide a systematic, first-hand opportunity for exchange of information. The conference greatly facilitates interdisciplinary synthetic approaches to research at the site.

Dr. Fredrick Meinzer has recently joined the research effort as the Research Team Leader for Canopy Processes in Temperate Mesic Forests, US Forest Service Pacific Northwest Research Station (based in Corvallis, Oregon). Meinzer has initiated research regarding: height-dependent variation in tissue water relations characteristics of Douglas-fir (with Barbara Bond), impact of dwarf mistletoe on the hydraulic architecture and whole-tree water relations of western hemlock (with David Shaw), and hydraulic lift and hydraulic redistribution of water in young and old Douglas-fir (with Renee Brooks, Rob Coulombe and others).

David Shaw, Site Director; 1262 Hemlock Road, Carson, WA 98610; Phone: (509) 427-7028; Fax: (509) 427-7037; <dsaw@u.washington.edu>; <<http://depts.washington.edu/wrccrf/>>

PROJECT SURUMONI

PROJECT SUMMARY/HISTORY:

The Surumoni tower crane is located in the Amazonian lowland rainforest of southern Venezuela (3°10' N; 65°40' W; ca. 105 m a.s.l.). In operation since November 1995, the project name comes from the small blackwater river called the Surumoni, a tributary of the Upper Orinoco, where the crane is located. This site is 15 km west of the village of La Esmeralda. Some 500 m outside La Esmeralda is the "Centro de investigaciones Ambientales de Alexander v. Humboldt" (CAIAH), a government field station that provides housing facilities for scientists and students.

The project started as a Venezuelan-Austrian joint venture, in which the partners (Ministry of Environment and



Natural Resources [MARN], National Council for Scientific and Technologic Investigations [CONICIT] and the Austrian Academy of Sciences [AAS] signed an agreement that regulated the most important issues. The crane and the infrastructure were financed by the AAS. Upon the crane's installation, it became the property of MARN, but the crane and local infrastructure was main-



The Surumoni crane

tained, financed, and run by the AAS until August 2000, when the contract terminated.

The crane moves via rails, permitting access to any location within a 1.5 ha area. Major projects that have been carried out at Surumoni are 1) energy and water budget modeling, 2) diversity and dynamics of vascular epiphytes, 3) ant gardens, 4) specificity of arboricolous ants, 5) bioacoustics, and 6) ecomorphology and ecology of birds. Except for a plot inventory, there is little botanical and other general information about the site.

RECENT NEWS:

With the ending of the bilateral agreement, the administration of the crane has been passed to the Venezuelan MARN, which has since stopped all activities on legal and logistical grounds. It is planning to sign another five-year agreement, involving the same institutions, giving the Venezuelan government the necessary legal, logistic, and human resources to operate the facilities in La Esmeralda and at the crane site. In this case, the AAS would provide administrative and financial support, and all partners would coordinate the scientific program. Tentatively, the crane could be again operational in the fall of 2001.

FUTURE PLANS:

So far, the scientific focus has been strongly slanted towards canopy studies; however, there is broad agreement within the Venezuelan scientific community to open the investigation area and establish a Long-term Ecological Research (LTER) site in the region of La Esmeralda, including the Surumoni crane station, among others. The ecological

heterogeneity of the area (including savannahs, different lowland and montane forest types, and secondary areas (created by shifting cultivation)) offers a broad range of research opportunities and allows comparative investigations. Project teams, which so far have shown interest in the site, focus on climate monitoring, energy and water budget modeling, primary production, carbon and nutrient cycles, insect-plant mutualisms, and the biology, behavior, and evolutionary ecology of birds. Future research activities should also include applied sciences, as well as foster results that benefit the local communities.

Contact: *Christian Listabarth*; <c.listabarth@klivv.oeaw.ac.at>.

For more information, visit <<<http://www.oeaw.ac.at/klivv/surumoni>>>.

LEIPZIG CANOPY CRANE

In 1995, Prof. Dr. Morawetz (University of Leipzig) installed the first movable canopy crane on a rail track in Venezuela (Estado Amazonas). The function of the crane was to investigate canopy ecology in a tropical rainforest. Although there are numerous other canopy projects in tropical regions, there are only four such cranes in temperate zones.

To broaden the scope, the University of Leipzig has installed a new canopy crane in a floodplain forest northwest of Leipzig city (nature sanctuary "Burgau"). This project was established in cooperation with the Centre for Environmental Research Leipzig-Halle (UFZ) and the city of Leipzig.

Like the Venezuelan canopy crane, the Leipzig crane is a construction crane (Type Liebherr 71 EC), 40 m tall and with a jib of 45 m. The crane moves on a 120 m-long rail track. Two types of gondolas enable scientists the unique opportunity to perform long-term measurements and observations in a forest canopy area of about 1.5 ha.

The project area contains a species- and structure-rich forest that can be categorized as a near-floodplain forest of the upper fluvial zone. The use of old oak trees for timber, and the frequent cutting of other species for uses such as firewood, have had historical impacts on the area. These practices ended in 1870.

Since that time, tree species that were previously cut have been able to grow unhampered by human interference. Hence, the actual canopy is formed by very old oak trees (>250 y.) and younger species such as ash and lime (>130 y.). Unique about the stand is the amount of dead wood, which provides habitat for rare and threatened insect species, including beetles. This led to the designation of the area as a nature sanctuary.

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A team of scientists spanning numerous disciplines, including meteorology, ecology, zoology, and forestry, will participate in this innovative and multidisciplinary research project. Climatic processes on the canopy-atmosphere interface, as well as the impact of pollutants on forests in the vicinity of cities, will be investigated. Additionally, research projects on the little-known plant-animal interactions in the canopy, and especially questions related to biodiversity, will be explored. These investigations will not only focus on basic research, but on applied environmental aspects as well. The Leipzig Canopy Crane will play a key role in this project because it is the only means of enabling this kind of research.



Objectives of the research project include:

- To learn more about the structure, dynamics, and functions of the forest
- To gain more insight into interactions between the canopy and the nearby city
- To study interactions between animals and plants in the canopy in order to better understand functional biodiversity
- To study interactions between organisms of the canopy and the understory
- To learn more about the genetic variability of forest trees in order to assess competition in stands

In summary, the results of the research will provide insight into future strategies for the conservation and use of our forests. Furthermore, we will have a better assessment of the importance of floodplain forests for the ecology and climate of the city.

COORDINATION:

Prof. Dr. Wilfried Morawetz, Universität Leipzig Institut für Botanik; Spezielle Botanik & Botanischer Garten, Herbarium LZ, Johannisallee 21-23 D-04103 Leipzig; Phone: (0341) 9738591; Fax: (0341) 9738549; <morawetz@uni-leipzig.de>.

FUNDING:

Umweltforschungszentrum Leipzig-Halle GmbH; Permoserstraße 15 D-04318, Leipzig; Phone: (0341) 235-2242; Fax: (0341) 235-2791.

CO-OPERATION:

Stadt Leipzig Abteilung Stadtforsten; Stadtforstamt und Forstbehörde der Stadt Leipzig, Teichstraße 20 04092 Leipzig; Phone: (0341) 309410; Fax: (0341) 3094138.

SPONSORING:

Liebherr-Werk Biberach GmbH; Postfach 1663, D-88396 Biberach an der Riß; Phone: (07351) 410; Fax: (07351) 41225

ANNOUNCEMENTS

Flora & Fauna Field Guides for Your Walls:

Good Nature Publishing is creating a new field guide for your wall, titled "Northwest Old Growth Canopy". Art McKee, Director of Andrews Experimental Forest, has presented the following "starter list" of suggested species to include in this poster-sized field guide.

Below is a draft of the species list for the Canopy Field Guide draft. Please review the flora and fauna, and send any suggestions and/or edits to the address below.

Trees: Douglas-fir; Western hemlock; Western red cedar; Pacific silver fir; Pacific yew; Red alder; Black Cottonwood; Bigleaf maple

Lichens: *Lobaria oregana*; *Lobaria pulmonaria*

Vascular plants: Dwarf Mistletoe, *Arceuthobium campylopodum*, *A. douglasii*; Red huckleberry, *Vaccinium parvifolium*

Ferns: Licorice fern

Mosses: Help!!

Mammals: Tree vole; Little brown bat (other bats, too?); Pine marten; Chickaree; Northern flying squirrel

Birds: Northern spotted owl; Pileated woodpecker; Marbled murrelet; Northern goshawk; Common raven; Vaux's swift; Red-breasted sapsucker; Chestnut-backed chickadee; Golden-crowned kinglet; Stellar's jay; Red-breasted nuthatch; Varied thrush; Low in canopy: Winter wren; Blue grouse; Brown creeper; Swampy areas: Wood duck

Insects: Defoliators?; predators?; parasites/parasitoids?

Canopy arthropods: Spiders; soil critters in moss polsters??

Fungi: Endophytic?; pathogens?

Contact: Timothy Colman, Publisher; Good Nature Publishing Co., 1904 Third Ave. #415, Seattle, WA 98101; Phone: 1-800-631-3086, (206) 622-9522; Fax: (206) 622-3066; <tim@goodnaturepublishing>; <<http://www.goodnaturepublishing.com>>.

International Tropical Timber Organization (ITTO) plans new action agenda

ITTO is seeking input for a plan of action that will take it into the new century with a fresh sense of direction and purpose.

Currently, the Organization is guided in its work by the Libreville Action Plan, which spans 1998-2001. This Plan lists goals for each of the Organization's three technical committees and, within these, provides a set of actions for the Organization as a whole. Moreover, it notes those areas in which the Organization may encourage and assist the activities of individual members.

The consultants believe it would be helpful if the revised action plan were to contain more closely defined priorities and targets. They also favor a greater distinction between the policy and project work of the Organization.

The consultants are now seeking input from members and interested observers. In addition to general comments, specific comments on specific aspects of the Libreville Action Plan would be appreciated.

For more information, and to view/comment on the plan, contact: *ITTO, International Organizations Center-5th Floor, Pacifico-Yokohama, 1-1-1, Minato-mirai, Nishi-ku, Yokohama 220-0012, Japan; Phone: 81-45-223 1110; Fax: 81-45-223 1111; <tfu@itto.or.jp>; <www.itto.or.jp>*.

WEBSITES

Communicating Ecosystem Services

We are pleased to announce the launch of the Communicating Ecosystem Services website. The site is designed to help educators and scientists inform both the public and policymakers about the importance of healthy ecosystems and protecting biodiversity.

From the website, you may download the first two of the project's tool kits. Focusing respectively on water purification and pollination, the materials in each tool kit provide background information on the specific ecosystem service, as well as general tips and suggestions for developing presentations or writing articles for a non-scientific audience. The tool kits are also useful for citizen-scientist partnerships in helping to save threatened ecosystems in your local community.

The website also offers an array of materials to help you create a lively and visually-exciting presentation. You'll find beautiful photographs, useful PowerPoint slides, ideas for

games and demonstrations, and thought-provoking quotes and poetry. The website can also keep you up-to-date on project events and activities. Visit the site at: <<<http://esa.sdsc.edu/ecoservices>>>.

Official Website for 3rd International Canopy Conference

The 3rd International Canopy Conference is being held in Cairns, North Queensland, Australia from 23-28 June, 2002, at the Cairns International Hotel. We are pleased to announce an official website containing details and information about the event.

Currently, the organizers are working to get more detailed information and options on the site. These will include optional online registration for delegates, booking accommodations, and submitting and reading abstracts. The goal is to have this complete by July, 2001. The site will be continually updated.

Visit the site at: <<<http://www.premiers.qld.gov.au/about/science/canopyconference/>>>.

JOBS

Resident Faculty Position Announcement

The School for Field Studies, Center for Sustainable Development Studies, in Atenas, Costa Rica, has an opening for an Applied Tropical Ecologist. The anticipated start date for this full-time, year-round position is September, 2001.

The purpose of this residential field position is to teach U.S. university students critical environmental issues, to participate in the development and implementation of an interdisciplinary curriculum, and to oversee faculty-designed student research projects that address issues identified in the center's research direction. This position is lead faculty for the course "Tropical Ecology & Sustainable Development". The course, presented as a case study with other faculty, will cover applied tropical ecology. This includes two sub-themes: the ecological costs and benefits of alternative land uses such as organic agriculture, and protecting biodiversity in and around protected areas. Course topics addressing these themes will also be developed.

To apply: send CV and cover letter outlining relevant experience to: *Job Reference 1163, The School for Field Studies, 16 Broadway, Beverly, MA 01915, USA; Fax: 1-978-927-5127; E-mail to: <jobs@fieldstudies.org>*. For more information and qualification requirements, please access our web page at: <<www.fieldstudies.org>>. EOE.

RECENT CITATIONS IN CANOPY SCIENCE

[Ed. note: Since there is no central journal on canopy science, it is useful to publish citations on canopy studies in the recent literature. Some of the papers listed below were obtained from ICAN subscribers sending in reprints; most were discovered through monthly literature searches (AGRICOLA, CAB, and FORESTRY ABSTRACTS).

CANOPY STRUCTURE

- Ishii, H., J.H. Reynolds, D. Ford, & D.C. Shaw. 2000. Height growth and vertical development of an old-growth *Pseudotsuga-Tsuga* forest in southwestern Washington State, USA. *Canadian Journal of Forest Research* 30:17-24.
- Melville, H.I.A.S., A.E. Cauldwell, & J.d.P. Bothma. 1999. A comparison of two techniques for estimating tree canopy volume. *South African Journal of Wildlife Research* 29:113-117.
- Sillett, S.C., & T.R. Rambo. 2000. Vertical distribution of dominant epiphytes in Douglas-fir forests of the central Oregon Cascades. *Northwest Science* 74:44-49.
- Thomas, S.C., & W.E. Winner. 2000. A rotated ellipsoidal angle density function improves estimation of foliage inclination distributions in forest canopies. *Agricultural and Forest Meteorology* 100:19-24.
- Van Pelt, R., & J.F. Franklin. 2000. Influence of canopy structure on the understory environment in tall, old-growth, conifer forests. *Canadian Journal of Forest Research* 30:1231-1245.

FOREST STRUCTURE

- Ozawa, H., K. Itoh, & Y. Hori. 2000. Shoot structure and dynamics of saplings and canopies of three deciduous broad-leaved trees of a coppice forest in central Japan. *Trees. Structure and Function* 14:206-214.
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FOREST-ATMOSPHERE INTERACTIONS

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