

roots



Botanic
Gardens

Conservation

International

Education

Review

BOTANIC GARDENS

Public and Adult Education

- Ecotourism – Fad or Future for Botanic Gardens?
- Environmental Ambassador – Shenzhen Fairy Lake Botanical Garden
- Spreading the Word using Volunteers
- Providing Work Experience for the Unemployed – Kirstenbosch
- Educating Adults A Worldwide View

18

July 1999

Public and
Adult Education

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Subscriptions

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Forthcoming Issues

Roots 19 - Ethnobotany - Last submission dates: Articles - June 18, 1999 News - July 6, 1999
Roots 20 - Evaluation - Last submission dates: Articles - February 18, 2000, News - March 17 2000

Adult and public education programmes

- providing diversity

■ Editorial

While adults and families make up the largest proportion of visitors to botanic gardens, it is often on programmes for school children that botanic garden educators concentrate their efforts. This approach is limited in that we don't have time to sit back and wait for future decision-makers to 'grow up' and certainly without public money and support many of our botanic gardens couldn't continue to exist.

Articles in this edition of Roots address several aspects of public and adult education and illustrate the diversity of choices available to botanic gardens. David Morgans introduces us to ecotourism, a relatively new field of tourism which is, as yet, untapped by botanic gardens. As he explains, ecotourism encompasses the concept of holistic sustainability, which is ecologically, culturally, socially and economically sustainable. Botanic gardens can have a role to play in ecotourism by assisting it to expand from traditionally non-urban environments into the cities.

Increasingly botanic gardens have found the need to compete with other attractions for people's attention. Staff at Missouri Botanic Garden, for example, use 'live' interpretation in the form of staffed demonstration carts to engage their visiting public. Susan Mintz and Sandra Rode explain that one of the most important considerations is to ensure that the content of each presentation is relevant to people's everyday lives.

However, not all botanic gardens are able to provide face to face interpretation using existing staff. Increasingly volunteers are playing a vital role in botanic garden interpretation. Using volunteers is a very effective way of increasing environmental awareness within the

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Alors que les adultes et les familles constituent la majorité des visiteurs de jardins botaniques, c'est souvent sur des programmes pour scolaires que les éducateurs de jardins botaniques concentrent leurs efforts. Cette approche est limitée, dans le sens où nous n'avons pas le temps de nous retourner ni même d'attendre les décideurs pour progresser. Sans l'argent et l'appui du public beaucoup d'entre nous n'existeraient certainement déjà plus.

Les articles dans cette édition de Roots traitent de certains aspects de l'éducation des adultes et du public en général et illustrent la diversité des choix qui s'offrent aux jardins botaniques. David Morgans nous présente l'écotourisme, un domaine relativement nouveau, jusqu'à présent non exploité par les jardins botaniques. Comme il l'explique, l'écotourisme englobe le concept holistique du développement durable, qui est écologiquement, culturellement, socialement et économiquement acceptable. Les jardins botaniques pourraient avoir un rôle à jouer dans cet écotourisme en aidant à son élargissement depuis les environnements traditionnels non urbains jusqu'aux grandes citées.

De plus en plus les jardins botaniques ont trouvé le besoin de se mesurer à d'autres attractions publiques. Par exemple, le personnel du Missouri Botanic Garden crée des interprétations vivantes à l'aide de "chariots de démonstration" afin de mieux impliquer le public en visite. Susan Mintz et Sandra Rode expliquent qu'il est important de considérer le contenu de chaque représentation comme pertinent aux yeux du public dans sa vie de tous les jours.

Toutefois, tous les jardins botaniques ne peuvent pas provoquer de telles

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Mientras los adultos y las familias son con diferencia los que más visitan los Jardines Botánicos, es en los escolates donde los educadores concentran sus programas de educación. Este enfoque es limitado ya que no tenemos tiempo de esperar hasta que nuestros futuros políticos se hagan adultos, y desde luego sin apoyo y financiación pública, muchos de nuestros Jardines Botánicos no podrían seguir existiendo.

En esta edición de Roots, se tratan diversos aspectos de la educación de adultos y la diversidad de opciones de que se dispone en los jardines botánicos. David Morgans nos introduce en el ecoturismo, un campo relativamente nuevo todavía sin desarrollar en los Jardines Botánicos. Como él explica, el ecoturismo está dentro del concepto de la sostenibilidad holística, que es ecológicamente, culturalmente, socialmente y económicamente sostenible. Los Jardines Botánicos pueden tener un papel que jugar en el ecoturismo ayudando a extender los núcleos rurales tradicionales dentro de las ciudades.

Los jardines botánicos tienen, cada vez más, la necesidad de competir con otras atracciones que seducen al público. El personal del Jardín Botánico de Misuri, por ejemplo, utiliza interpretación 'en vivo' con carros móviles para atraer al público visitante. Susan Mintz y Sandra Rode explican que una de las consideraciones más importantes es asegurar que el contenido de cada presentación es relevante para las personas en su vida diaria.

Sin embargo, no todos los Jardines Botánicos están capacitados para proporcionar interpretación cara a cara utilizando su personal. El uso de

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community. Once the volunteers have been trained they in turn become the trainers. Not only do they educate visitors to the gardens but they also share their new found knowledge with friends and family. At the Royal Botanic Gardens, Sydney, Australia, Janelle Hatherly explains the value of empowering volunteers to be interpreters therefore allowing RBG Sydney to extend its face to face services and offer a wider variety of interpretive experiences.

In his recent trip to the United States and Canada, Dr Ian Darwin Edwards, from the Royal Botanic Garden, Edinburgh, Scotland, undertook some benchmarking into the use of volunteers in education and interpretation. In this issue of Roots, he reports on his trip and explains the cost and commitment involved in working with volunteers and also the benefits of doing so.

Botanic gardens do not only have a role in informal adult and public education but also in a more formal sense. Dr Roy, from National Botanical Institute in Lucknow, India explains how the institute is involved in teaching life science and botany to Master of Science students. In addition they have courses for specialist people to further develop their skills.

The challenge for botanic garden is to provide a diversity of adult and public education programmes that appeal to a broad audience. This can assist botanic gardens in fulfilling their mission to promote sustainability within the community.

Lucy Sutherland
BGCI

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confrontations avec le personnel actuel. De plus en plus de bénévoles jouent un rôle vital dans les visites guidées des jardins botaniques. L'emploi de bénévoles est une façon efficace d'éveiller la conscience environnementale dans la communauté. Une fois formés, les volontaires peuvent devenir à leur tour instructeurs. Ils n'éduquent pas seulement les visiteurs du jardin mais partagent aussi leur nouvelle connaissance avec leurs familles et leurs amis. Au Jardins Botaniques Royaux de Sydney, Australie, Janelle Hatherly explique l'importance qu'il y a à responsabiliser les bénévoles à être interprètes et donc l'importance qu'il y a, pour les Jardins Botaniques Royaux de Sydney d'élargir ses services individuels et d'offrir une variété étendue d'expériences interprétatives.

Dans son dernier voyage aux États-Unis et au Canada, le docteur Ian Darwin Edwards du Jardin Botanique Royal d'Edinburgh, Écosse, a entrepris d'étudier et de comparer l'utilisation des bénévoles en éducation et interprétation dans les jardins. Dans ce numéro de Roots, il fait un compte-rendu de son voyage et explique le coût et l'engagement qu'impliquent le travail avec des bénévoles et les bénéfices encourus.

Les jardins botaniques ne jouent pas qu'un rôle informel dans l'éducation des adultes et du public. Le Docteur Roy, de l'Institut National de Botanique à Lucknow, en Inde, raconte comment l'institut est impliqué dans l'enseignement des sciences de la vie et de la botanique pour les Maîtres de Conférence stagiaires. De plus, pour aller plus avant dans leur apprentissage, certains cours sont assurés par des spécialistes.

Le défi, pour les jardins botaniques, est de pourvoir une certaine diversité dans les programmes éducatifs destinés aux adultes, afin de s'attirer une plus grande audience, ce qui peut les aider à satisfaire leurs missions dans la promotion, au sein de la communauté, du développement durable.

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voluntarios es una vía muy efectiva para aumentar los conocimientos ambientales dentro de la sociedad. Una vez los voluntarios han sido formados comienzan a ser educadores. Los voluntarios no solo educan a los visitantes del Jardín sino que además transmiten sus conocimientos a sus amigos y familia. En el Real Jardín Botánico de Sidney, Australia, Janelle Hatherly explica el valor que tiene preparar a los voluntarios para ser intérpretes, esto permite por consiguiente que el Jardín Botánico de Sidney amplíe sus servicios personalizados y ofrezca una gran variedad de experiencias interpretativas.

El Dr. Ian Darwin Edwards del Real Jardín Botánico de Edimburgo, en su reciente viaje a Estados Unidos y Canadá, estableció algunos puntos de referencia dentro del uso de los voluntarios en la educación e interpretación. En esta edición de Roots Dr. Edwards comenta su viaje y explica el costo y el compromiso de trabajar con voluntarios, así como los beneficios que se pueden obtener.

Los Jardines Botánicos no solo desempeñan la función de la educación informal de adultos y público en general, sino que también se dedican a la formal. El Dr. Roy del Instituto Botánico Nacional de Lucknow, India, explica como el instituto está involucrado en enseñar botánico y ciencias naturales para estudiantes que realizan el Master en Ciencias. Ellos además imparten cursos para que los especialistas aumenten sus conocimientos.

El reto para los Jardines Botánicos consiste en proporcionar una gran diversidad de programas destinados a adultos y público en general que interesen a la máxima audiencia. Esto puede ayudar a los Jardines Botánicos en su misión de promover la sostenibilidad dentro de la sociedad.

News up date

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Congress Update

Have you registered for the 4th International Congress on Education in Botanic Gardens? If not please email, fax or phone us to get a copy of the second circular. A range of excellent keynote speakers and presenters have been programmed to provide interesting papers and interactive workshops. Keynote speakers include John Huckle, Kathleen Gordon, Edelmira Linares, Professor M.S. Swaminathan and Sir Partha Sarathy.

Below: Dr P. Pushpangadan (left) and Dr J. Thomas (Tropical Botanic Garden and Research Institute) are very busy preparing for the 4th International Congress on Education in Botanic Gardens.



India, well known for its biological and cultural diversity is a perfect venue to be discussing the importance of botanic gardens as centres of excellence for Education for Sustainability. A key outcome from this congress will be the development and production of International Guidelines for Education for Sustainability in

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Mise à jour - Congrès

Êtes-vous enregistré pour le 4ème congrès international sur l'éducation dans les jardins botaniques? Si ce n'est pas le cas, vous pouvez nous contacter par mail, fax ou téléphone afin de recevoir un bulletin d'inscription. Une réunion d'excellents conférenciers et présentateurs est établie pour de captivantes assemblées et des ateliers interactifs. Seront présents John Huckle, Kathleen Gordon, Edelmira Linares, le professeur M.S. Swaminathan et Sir Partha Sarathy.

L'Inde, bien connue pour ses diversités culturelle et biologique, est un rendez-vous parfait pour discuter de l'importance des jardins botaniques, comme centres d'excellence pour l'éducation au développement durable.

Le principal résultat de ce congrès sera le développement et la mise en place d'une ligne de conduite internationale pour l'éducation pour le développement durable dans les jardins botaniques. Enregistrez-vous dès à présent et tirez les avantages de cette opportunité, pour partager les idées et les techniques, s'impliquer dans le développement de cette directive qui, globalement aidera les jardins botaniques.

Examen interne

Le BGCI entreprend actuellement un examen interne de ses services. Les domaines suivants sont révisés : publication, formations, étude de marché et promotion, recherche de financement, cotisations, évolution des banques de données.

Certains de nos membres nous aident dans cette entreprise, afin de s'assurer que notre action, pour le prochain

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Puesta al día de las Jornadas

¿Se ha inscrito ya en las IV Jornadas Internacionales de Educación en los jardines botánicos? Si no es así, le rogamos que nos envíe un correo electrónico, un fax o llámenos para solicitar una segunda circular. Con el fin de ofrecer ponencias interesantes y talleres interactivos, se ha programado un grupo excelente de ponentes y presentadores clave, entre los que se incluyen John Huckle, Kathleen Gordon, Edelmira Linares, el catedrático M.S. Swaminathan y Sir Partha Sarathy.

La India, famosa por su diversidad biológica y cultural, constituye un punto de confluencia perfecto para debatir la importancia de los jardines botánicos como centros bien cualificados para la enseñanza de la sostenibilidad. Además, un resultado clave de estas Jornadas será el desarrollo y la elaboración de directrices internacionales para la enseñanza de la sostenibilidad de los jardines botánicos.

Revisión interna

Actualmente, Conservación de Jardines Botánicos Internacional (CJBI) está realizando una revisión interna de sus servicios. Las áreas revisadas incluyen publicaciones, cursos de formación, marketing y promoción, iniciativas para recaudación de fondos, categorías de afiliación y ampliación de la base de datos.

Varios socios nos están ayudando en esta modificación para asegurar que, en el nuevo milenio, nuestra labor vaya dirigida a temas contemporáneos en los jardines botánicos y a la función que desempeñan en la conservación de las plantas y en la educación medioambiental.

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botanic gardens. So why not register now and take advantage of this opportunity to share ideas and techniques, be challenged and involved in the development of guidelines that will assist botanic gardens globally.

Internal review

Botanic Gardens Conservation International is currently undertaking an internal review of its services. The areas being reviewed include publications, training courses, marketing and promotion, fund raising initiatives, membership categories, and database development.

Several of our members are assisting us with this review to ensure that our operation in the new millennium is addressing contemporary issues in botanic gardens and their role in plant conservation and environmental education.

Education for Sustainability Guidelines

One major project for BGCI this year is to work with botanic gardens educators to develop a set of guidelines on education for sustainability for botanic gardens. Several educators from around the world have agreed to facilitate workshops at the 4th International Congress in Education in Botanic Gardens focussing on aspects of education for sustainability. The development of these guidelines will provide botanic gardens with the opportunity to be in the forefront of this initiative and lead other environmental education organisations in setting standards and guidelines for this important field of study.

Slide Library

Recently Lorna Cuncliffe Lister, a professional cataloguer, has volunteered her skills to catalogue the slides in BGCI's collection. The slide library is a very important resource that is used regularly by staff for publications, presentations, marketing and promotion. Good quality slides are always appreciated at BGCI and members who have extra copies of

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millénaire, s'adresse aux jardins botaniques en termes de problèmes contemporains et sur leur rôle dans la conservation des plantes et l'éducation à l'environnement.

Directives pour l'éducation sur le développement durable

Un des projets les plus importants, pour le BGCI cette année est de travailler avec les éducateurs des jardins botaniques sur la réalisation d'un ensemble de directives concernant l'éducation au développement durable. Plusieurs éducateurs, du monde entier ont consenti à promouvoir des ateliers, basés sur les aspects de cette éducation, au prochain congrès international. Ces directives permettront aux jardins botaniques, en tant qu'instigateurs de l'initiative, d'amener les autres organisations d'éducation environnementale à un arrangement et à une politique de conduite pour cet important champ d'études.

Diapothèque

Récemment Lorna Cuncliffe Lister, une bibliothécaire professionnelle, a proposé ses services pour cataloguer la collection de diapositives du BGCI. Cette diapothèque est une source d'illustrations, régulièrement utilisée par le personnel pour les publications, les présentations, la promotion et le lancement des produits. Les diapos de bonnes qualités sont toujours appréciées et les membres, désireux d'enrichir la collection, sont encouragés à envoyer des doubles dont il sera fait usage. Les droits d'auteur seront respectés. Bien préciser les crédits photographiques.

AUSTRALIE

Un rôle important

Le rôle des "Amis du Jardin Botanique d'Albury" est de promouvoir la conservation de la biodiversité. La principale menace pour la biodiversité, dans la région d'Albury est la salinité et l'érosion des sols et les jardins botaniques travaillent avec le réseau "Greening Australia seedbanks" (banques de graines pour le

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Enseñanza de las directrices para la sostenibilidad

Este año, uno de los proyectos más importantes de CJBI es trabajar con educadores de jardines botánicos, para desarrollar un número de pautas de enseñanza de la sostenibilidad en jardines botánicos. Varios educadores de todo el mundo se han puesto de acuerdo para facilitar talleres, en las Jornadas de Educación en los jardines botánicos, enfocados en aspectos de este tipo de enseñanza. El desarrollo de dichas pautas proporcionará a los jardines botánicos la oportunidad de estar en la vanguardia de esta iniciativa y de guiar a otras organizaciones que se dediquen a la educación medioambiental, con el fin de que éstas establezcan modelos y directrices para este importante campo de estudio.

Biblioteca de diapositivas

Recientemente, Lorna Cuncliffe, bibliotecaria profesional, ha ofrecido voluntariamente sus habilidades, para catalogar las diapositivas en la colección de CJBI. La biblioteca de diapositivas es una fuente importante de la que el personal hace uso constantemente para realizar publicaciones, presentaciones, marketing y promoción. CJBI invariablemente valora diapositivas de buena calidad y animamos a los socios, que tengan diapositivas de más, a que las manden, para guardarlas en la biblioteca, para el uso de la organización. Se admitirán derechos de autor y se reconocerá al fotógrafo, donde se requiera.

AUSTRALIA

Los Amigos desempeñan un papel importante

La función de los Amigos del Jardín Botánico de Albury es la de promover la conservación de la biodiversidad. En los alrededores de Albury, las principales amenazas de la biodiversidad de la región son la salinidad y la erosión. Así, los jardines botánicos están trabajando en bancos de semillas junto con la red Greening Australia, con el fin de proporcionar una fuente local de semillas para

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slides are encouraged to send them in to be kept in the slide library for BGCI's use. Copyright will be acknowledged and credit to the photographer where requested.

AUSTRALIA

Friends Play an Important Role

The role of the Friends of Albury Botanic Garden is to promote the conservation of biodiversity. Around Albury the main threat to biodiversity in the region is salinity and erosion and the botanic gardens are working with the network of Greening Australia seedbanks to provide locally sourced seeds for re-vegetation projects. The Friends are involving themselves in promoting and supporting endangered species and habitat projects, such as the in situ protection of the Crimson Spider Orchid (*Caladenia concolor*) and the Box - Ironbark campaign. Future plans for the Friends include developing publications on local flora and fauna to convey messages showing the benefit of conserving native vegetation and re-vegetating with local native plants. For further information contact: Albury Botanic Gardens PO Box 323 Albury NSW 2640 Australia. Tel: (61) 2 60238241 Fax: (61) 2 604106527.

Partnership Work in Botanic Gardens

The Royal Tasmanian Botanical Gardens (RTBG) have been working with the Parks and Wildlife Service and Coastcare to conduct a two-day environmental education course at the botanical gardens. Participants experienced practical sessions exploring key environmental concepts using the model 'Earth Keepers' programme from the Institute of Earth Education. One of the leaders of the course was Andrew Smith, formerly Education Officer at RTBG and now Manager Community Partnerships Parks and Wildlife Service. For further information contact: Royal Tasmanian Botanical Gardens, Queen's Domain, Hobart Tasmania 7000, Australia. Tel: (61) 02 346299 Fax: (61) 02 347719.

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verdissement australien) pour encourager les projets de re-végétalisation à partir de graines d'origine locale. "Les Amis" se sont engagés d'eux-mêmes dans l'encouragement et le soutien de projets sur les plantes et les habitats menacés tels que la protection in situ de l'orchidée "araignée pourpre" (*Caladenia concolor*) et la campagne "Box-Ironbark". Les futurs projets des "Amis" concernent la réalisation de publications sur les flore et faune locales, aux messages démontrant l'avantage de la conservation de la végétation locale et de la re-végétalisation à partir de plantes indigènes. Pour de plus amples informations, contactez : Albury Botanic Gardens PO Box 323 Albury NSW 2640 Australia. Tel: (61) 2 60238241 Fax: (61) 2 604106527.

Un travail de partenariat dans les jardins botaniques

Le Jardin Botanique Royal de Tasmanie (RTBG) travaille avec le Parks and Wildlife Service and Coastcare (Parc et Service de la Vie Sauvage et Conservatoire des Côtes) pour mener à bien un stage de deux jours sur l'éducation à l'environnement dans les jardins botaniques. Les participants, déjà expérimentés, ont exploré les concepts clefs environnementaux. à partir du modèle Earth Keepers (Sauveurs de la Terre) du programme de l'Institute of Earth Education (Institut de l'Éducation de la Terre). Un des maîtres du stage est Andrew Smith, jadis responsable en éducation au RTBG, et désormais en charge du Service de Partenariats au Park and Wildlife Service. Pour de plus amples informations, contactez: Royal Tasmanian Botanical Gardens, Queen's Domain, Hobart Tasmania 7000, Australia. Tel (61) 02 346299 Fax: (61) 02 347719.

Les plus importants jardins unis pour soutenir l'éducation

"The Council of Heads of Australian Botanic Gardens" (Le conseil des plus importants jardins botaniques australiens) a proposé à tous les jardins botaniques australiens des

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proyectos de revegetación. Los Amigos se comprometen a promover y ayudar en proyectos de especies en peligro de extinción y de hábitats, tales como la protección in situ de la Orquídea serpiente carmesí (*Caladenia concolor*) y la campaña Box-Ironbark. En los planes futuros de esta organización se incluye la elaboración de publicaciones sobre la fauna y la flora locales, para así transmitir mensajes que muestren los beneficios de la conservación de vegetación y la repoblación de plantas autóctonas. Para más información, diríjase a: Albury Botanic Gardens, PO Box 323, Albury NSW 2640, Australia. Tf: (61) 2 60238241 Fax: (61) 2 604106527.

El trabajo en equipo en los jardines botánicos

Los Reales Jardines Botánicos de Tasmania (RJBT) han trabajado junto con el Servicio de parques y fauna y el Servicio de cuidados costeros, para dirigir un curso de educación medioambiental de dos días, en los jardines botánicos. Los asistentes realizaron sesiones prácticas para ahondar en los conceptos medioambientales clave haciendo uso del programa modelo "Earth Keepers" [Vigilantes de la Tierra], de la Escuela de Geología. Uno de los directores del curso fue Andrew Smith, ex director cultural de los RJBT y ahora director del Servicio municipal de asociaciones de parques y fauna. Para más información al respecto, diríjase a: Royal Tasmanian Botanical Gardens, Queen's Domain, Hobart, Tasmania 7000, Australia. Tel: (61) 02 346299 Fax: (61) 02 347719.

Los directores de los jardines botánicos se unen para ayudar en la enseñanza

El Consejo de directores de jardines botánicos australianos ha ofrecido becas, para el desarrollo profesional del personal, a todos los jardines botánicos australianos. El personal de quince de estos jardines regionales hizo solicitudes para enviar cada uno a un miembro del personal al Jardín Botánico Nacional de Australia en Canberra, durante una semana, para

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Garden Heads Unite to Support Education

The Council of Heads of Australian Botanic Gardens has offered staff career development grants to all Australian Botanic Gardens. Staff from 15 regional botanic gardens applied to send one staff member to the Australian National Botanic Garden in Canberra for one week to attend an intensive education course. The course will enable regional botanic gardens to increase community awareness of the need for conservation of biodiversity and highlight local treasures, problems and solutions. The course was run in April 1999 and highlighted interpretation and presentation skills. For further information contact: Albury Botanic Gardens PO Box 323 Albury NSW 2640 Australia. Tel: (61) 2 60238241 Fax: (61) 2 60416527.

Educators work as a team across Australia

The Royal Botanic Garden Sydney has successfully been awarded a federal grant from the Department of Communication and the Arts. The grant is to take the Wollemi Pine - Dinosaur Tree Interactive slide presentation on tour around Australia to seven of its major capital city botanic gardens. Janelle Hatherly, Manager of Community Education at RBG Sydney, has been liaising with the Education staff in Brisbane, Melbourne, Canberra, Adelaide, Darwin, Perth and Hobart. All of who are very excited about promoting conservation through the travelling display as well as the wonderful networking opportunities that it will provide. For further information contact: Janelle Hatherly, Royal Botanic Gardens Sydney, Mrs Macquaries Road, Sydney NSW 2000 Australia Tel: (61) 2 92318111 Fax: (61) 2 9251 4403.

CAMEROON

Ethics through Outreach

The environmental education unit of Limbe Botanic Garden, as part of its outreach programme, organises children's workshops consisting of 8 sessions. The aim of the workshops is

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bourses pour le développement de carrière du personnel. Les personnels de 15 jardins botaniques régionaux ont choisi un des leurs afin qu'il suive durant une semaine un cours d'éducation intensif au Jardin Botanique National Australien à Canberra. Ce cours permettra aux jardins botaniques de mieux sensibiliser leurs communautés à la nécessité de conserver la biodiversité, avec en point d'orgue les richesses, les problèmes et les solutions locales. Ce cours qui débutera en avril 1999 mettra en valeur les qualifications d'interprétation et de présentation de chacun. Pour de plus amples informations, contactez : Albury Botanic Gardens PO Box 323 Albury NSW 2640 Australia. Tel: (61) 2 60238241 Fax: (61) 2 60416517.

Éducateurs... travail d'équipe sur l'ensemble du pays

Le Jardin Botanique Royal de Sydney s'est vu décerné une bourse fédérale du "Département de la Communication et des Arts" (Department of Communication and the Arts). Cette bourse a été attribuée pour un diaporama interactif sur le Pin Wollemi - fossile vivant -, itinérant à travers l'Australie jusqu'aux sept villes principales abritant un jardin botanique. Ainsi, Janelle Hatherly, responsable de l'éducation public au Jardin Botanique Royal de Sydney a travaillé de concert avec le personnel éducatif de Brisbane, Melbourne, Canberra, Adélaïde, Darwin, Perth et Hobart. Tous les participants étaient vraiment impatients de promouvoir la conservation à travers une exposition itinérante et de découvrir les merveilleuses opportunités qu'apporte le réseau. Pour de plus amples informations, contactez : Janelle Hatherly Royal Botanic Gardens Sydney Mrs Macquaries Road Sydney NSW 2000 Australia Tel: (61) 2 92318111 Fax: (61) 2 9251 4403.

CAMEROON

L'unité Éducation Environnementale du Jardin Botanique de Limbe, dans une partie de son programme d'aide aux

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asistir a un curso de enseñanza intensivo, que permitirá a los jardines botánicos regionales aumentar la concienciación sobre la necesidad de conservación de la biodiversidad y realzar los tesoros locales, los problemas y las soluciones. Dicho curso tendrá lugar en abril de 1999 y subrayará las habilidades interpretativas y de presentación. Para más información, diríjase a: Albury Botanic Gardens, PO Box 323, Albury NSW 2640, Australia. Tf: (61) 2 60238241 Fax: (61) 2 60416517.



Los educadores de toda Australia trabajan en equipo

El Real Jardín Botánico de Sydney (RJBS) ha recibido con éxito una concesión federal del Ministerio de Comunicación y Cultura. Dicha concesión consiste en llevar, alrededor de Australia, a siete de los jardines botánicos principales de las capitales, la presentación de las diapositivas interactivas "El pino wolemi - el árbol dinosaurio". Janelle Hatherly, directora de enseñanza de la comunidad del RJBS, se ha coordinado con el personal educativo de las ciudades de Brisbane, Melbourne, Canberra, Adelaide, Darwin, Perth y Hobart. Todos ellos están muy entusiasmados,

Above:
RBG Sydney
Education
Officers and the
Wollemi Pine are
ready to be
released to go on
tour to seven
botanic gardens
around Australia.

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to acquaint the children with general environmental ethics and involve them in some positive practical activities. To date, two workshops have been successfully organised. The first focussed on The Forest and its Complexities. Using lectures, games, painting, drama and song, participants were introduced to the different vegetation types of Mount Cameroon, the different layers of the tropical rainforest and the essential elements that enable these forests to exist. The second workshop focussed on growing plants. Participants studied the different plant parts, discovered the different conditions needed for germination and learnt about pollination, fruiting and seed dispersal. The children were encouraged to grow their own seeds and monitor the seeds' growth by recording their findings on a worksheet.

For further information contact:
James Ewane, Limbe Botanic Garden,
PO Box 437, Limbe, Cameroon.
Tel: (237) 33 2620
Fax: (237) 33 2493.

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nécessiteux, organise des ateliers pour les enfants en 8 sessions. Le but de ces ateliers est de présenter aux enfants l'éthique de l'environnement et de les impliquer dans de pertinentes activités pratiques. Jusqu'à présent, deux ateliers ont été organisés avec succès. Le premier était basé sur la forêt et ses difficultés. A travers lectures, jeux, peinture, théâtre et chansons, les enfants ont abordé les différents types de végétations montagnardes du Cameroun, les différentes strates de la forêt tropicale et les éléments essentiels à la vie des forêts. Le deuxième atelier était basé sur la croissance des plantes. Les enfants ont pu y étudier les différentes parties anatomiques d'un végétal, découvrir les différentes conditions nécessaires à la germination et apprendre des choses sur la pollinisation, la fructification et la dissémination des graines. Les enfants ont été encouragés à faire leur propre semis, à surveiller la germination et la pousse des plantes et à noter leur observations.

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tanto por promocionar la conservación a través de la exposición itinerante como por las maravillosas oportunidades de conexión de redes que ésta proporcionará. Para más información, dirijase a: Janelle Hatherly, Royal Botanic Gardens Sydney, Mrs Macquaries Road, Sydney NSW 2000, Australia. Tel: (61) 2 92318111 Fax: (61) 2 9251 4403.

CAMERÚN

Ética a través del Conocimiento

La unidad de educación medioambiental del Jardín botánico de Limbe organiza, como parte de un programa para llegar al público, talleres para niños consistentes en ocho clases. El objetivo de estos talleres es informar a éstos de la ética general del medio ambiente e implicarles en algunas actividades prácticas positivas. Hasta el momento, se han organizado con éxito dos talleres. El primero enfocado en el tema "El bosque y sus complejidades". Con la utilización de

Right:
Budding
Horticulturists!
Children
attending the
workshop at
Limbe Botanic
Garden display
the plants they
grew.



News

CHINA

Fairy Lake - An Ambassador for the Environment

The Environment Protection Bureau of Guangdong Province has recognised the importance of Shenzhen Fairy Lake Botanic Garden by naming it as one of the eight environmental education bases of Guangdong Province. As a base, Fairy Lake now has the responsibility to do more for environmental education and popular science education, in particular increasing the community's knowledge of plants.

Some of the activities developed have included Environment Protection Summer Camps and Environment Protection Ambassador. The Environment Protection Ambassador activity was a joint activity conducted by Hong Kong and main land China. The participants, both teachers and students, visited Shenzhen and several other cities on the mainland to see Fairy Lake Botanic Garden, some middle schools and a farm. The visit to Fairy Lake concentrated on biodiversity conservation, rare and endangered plant conservation, environmental education in botanic gardens and how to develop environmental education programmes in schools. For further information contact: Feng Hailing, Shenzhen Fairy Lake Botanic Garden, Shenzhen, Liantang 518004, PR of China. Tel: (86) 755 573 6614 Fax: (86) 755 573 8647.

EUROPE

Participants of the European seminar 'A Future for Europe's Nature and Biodiversity' made a plea for a millenium partnership to counteract the rapid decline of European nature. This plea included developing long term goals in order to start an international conservation and restoration process involving nature conservationists, financial and economic experts, NGO's and land users. The outcome of the conference will be presented to the European Union, the Council of Europe and the United Nations. For further information contact: Rob Wolters,

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Pour de plus amples informations, contactez : James Ewane, Limbe Botanic Garden, PO Box 437, Limbe, Cameroon. Tel: (237) 33 2620 Fax: (237) 33 2493.

CHINE

Fairy Lake - Un ambassadeur pur l'environnement

Le bureau pour la protection de l'environnement de la province de Guangdong a reconnu l'importance du Jardin Botanique Shenzhen Fairy et a été nommé comme l'une des 8 bases de l'éducation pour l'environnement de la province de Guangdong. Ainsi Fairy Lake a la possibilité de faire plus pout l'éducation a l'environnement et en sciences populaires, en particulier en accroissant la connaissance des populations relatives aux plantes.

Certaines des activités développées inclues la protection à l'environnement des camping d'été et Ambassadeur pour la protection de l'environnement. L'activité d'ambassadeur pour la protection de l'environnement est conduite conjointement par Hong Kong et d'autres provinces chinoises. Les participants, à la fois des professeurs et des étudiants ont visité Shenzhen et plusieurs autres villes de la province pour voir le Jardin Botanique Fairy Lake, quelques écoles secondaires et une ferme. La visite à Fairy Lake comprenait la conservation de la biodiversité ainsi que celle de plantes rares et en dangers, l'éducation à l'environnement dans les jardins botaniques et comment développer des programmes sur l'éducation à l'environnement dans les écoles. Pour plus d'informations contacter: Feng Hailing, SFLBG Shenzhen, Liantang 51 8004 PR of China Tel: (0755) 573 6614 Fax: (0755) 573 8647.

EUROPE

Les participants du séminaire Européen "Un futur pour l'Europe de la Nature et de la Biodiversité" lance un appel pour un partenariat lors du troisième millénaire afin d'enrayer la dégradation rapide de l'environnement en Europe. Cet appel propose de définir des

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conferencias, juegos, pintura, teatro y canciones, se introdujo a los asistentes a los diferentes tipos de vegetación de Mount Cameroon, las distintas capas de la selva tropical y los elementos esenciales que permiten que existan estos bosques. El segundo taller se centró en el cultivo de plantas y, en éste, los alumnos estudiaron las distintas partes de una planta, descubrieron las condiciones necesarias para la germinación y aprendieron polinización, el concepto de frutar y dispersión de semillas. Se animó a los niños a cultivar sus propias semillas y a observar el proceso sobre el papel.

Para más información, dirijase a: James Ewane, Limbe Botanic Garden, PO Box 437, Limbe, Camerún. Tel: (237) 33 2620 Fax: (237) 33 2493.

CHINA

Fairy Lake: un embajador del medio ambiente

La Oficina de protección del medio ambiente de la provincia de Guangdong ha reconocido la importancia del jardín botánico Fairy Lake de Shenzhen nombrandolo unas de las ocho sedes de enseñanza medioambiental de dicha provincia. Como tal, Fairy Lake tiene la responsabilidad de hacer más por las enseñanzas medioambiental y científica no especializada, en particular mediante el aumento del conocimiento de las plantas.

Algunas de las actividades que se han desarrollado han incluido campamentos de protección del medio ambiente y el Embajador de la protección medioambiental, una actividad conjunta dirigida entre Hong Kong y el continente chino. Los participantes, tanto profesores como alumnos, fueron a Shenzhen y otras ciudades del continente, para visitar el jardín botánico Fairy Lake, algunos institutos y una granja. La visita a Fairy Lake se concentraba en la conservación de la biodiversidad y de las plantas poco comunes y en peligro de extinción, en educación medioambiental en los jardines

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Executive Director, European Centre Nature Conservation. Tel: (31) 6 536 91866 Website: www.ecnc.nl

FRANCE

First national botanic garden education workshop

The Laboratoire de Biologie Végétale, Jardin Botanique Yves Rocher and Jardins Botaniques de France et des Pays Francophones hosted the first national workshop focusing on education in botanic gardens in France. Held between 9 and 11 June 1999 at La Gacilly, the workshop addressed several themes including conservation education, teaching techniques for school children, tertiary students and the general public and exhibitions and displays. Lucy Sutherland, representing BGCI, presented a paper on the role of botanic gardens worldwide in education.

GERMANY

3rd Meeting of botanic garden educators

The two-day workshop for German speaking botanic garden educators, held during last year's meeting of the Association of Botanic Gardens at the Bern Botanic Garden (Switzerland), was very successful. Over 50 educators took the opportunity to exchange materials and experiences and to participate in a number of lively hands-on tours. Ms Renate Grothe from the Centre of School Biology in Hannover was also elected on to the executive board as a representative of garden educators.

The next education workshop will be incorporated into this year's annual meeting of botanic gardens, which will be held at the University of Kiel Botanic Garden, Germany. The meeting will take place from 23-26 September 1999 and the education sessions will focus on succulent plants and surviving strategies in the desert. For further information contact: Ms Renate Grothe, Verband Botanischer Gärten e.V. - Brandmeierstr. 16, 30655 Hannover, Germany. Tel: (49) 0511 649 9761.

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d'objectifs à long terme pour entamer des actions internationales de conservation et de restauration des milieux naturels regroupant les protecteurs de la nature, les experts financiers et économiques, les ONG, et les différents utilisateurs de l'espace naturel. Le résultat de la conférence sera présenté à l'Union Européenne, au Conseil de l'Europe, et aux Nations Unies. Pour toute information, prendre contact avec: Rob Wolters, Executive Director, European Centre Nature Conservation. Tel: (31) 6 536 91866 Website: <http://www.ecnc.nl>

FRANCE

Premier séminaire national sur l'éducation dans les jardins botaniques

Le laboratoire de Biologie végétal, le Jardin Botanique Yves Rocher, et Jardins botaniques de France et des Pays Francophones accueillent le premier séminaire national faisant le point sur l'éducation dans les Jardins Botaniques Français. Ces rencontres se tiendront du 9 au 11 Juin 1999 à la Gacilly, les ateliers aborderont plusieurs thèmes dont l'éducation à la conservation, l'enseignement technique destiné aux enfants du primaire, aux étudiants du troisième cycle, et au grand public, les expositions et les manifestations. Lucy Sutherland, représentante du BGCI, présentera une communication sur le rôle des Jardins Botaniques, au niveau international, dans l'éducation.

ALLEMAGNE

Seconde rencontre des animateurs de Jardins Botaniques.

Les deux jours d'atelier pour les animateurs des Jardins Botaniques germanophones, instituer l'année dernière durant l'assemblée de l'Association des Jardins botaniques au Jardin botanique de Berne (Suisse), a été un succès. Plus de 50 animateurs ont eu l'opportunité d'échanger des outils éducatifs et leurs expériences, et participer à de nombreuses visites très animées. Madame Renate Grothe, du Centre de Biologie pour les Scolaires à

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botánicos y en cómo elaborar programas de enseñanza medioambiental en los colegios. Para más información, dirijase a: Feng Huiling, Shenzhen Fairy Lake Botanic Garden, Shenzhen, Liantang 518004, República de China. Tel: (86) 755 573 6614 Fax: (86) 755 573 8647.

EUROPA

Los participantes del seminario europeo 'Naturaleza y Biodiversidad, un Futuro para Europa' hicieron una petición para que se creara una Asociación del Milenio que se opusiera al rápido deterioro del medio ambiente europeo. En esta petición se incluyó el desarrollo de un gran número de objetivos que lograrán una conservación internacional y un proceso de restauración en donde estuviesen implicados ecologistas, expertos en economía y finanzas, ONG y agricultores. Las conclusiones de la conferencia serán presentadas a la Unión Europea, al Consejo de Europa y a las Naciones Unidas. Para más información, contactar con: Rob Wolters, Executive Director, European Centre Nature Conservation Tel: (31) 6 536 91866 Website: www.ecnc.nl

FRANCIA

Primer taller de enseñanza del Jardín botánico nacional

El Laboratorio de biología vegetal, el jardín botánico Yves Rocher y Jardines botánicos de Francia y de los países francófonos organizaron el primer taller de enseñanza nacional enfocado en la enseñanza en los jardines botánicos franceses. El taller, que tiene lugar el 9 y el 11 de junio de 1999 en La Gacilly, dirige varios temas, entre los que se encuentran educación para la conservación; enseñanza de técnicas a niños de primaria, a estudiantes de secundaria y al público en general; exhibiciones y muestras. Lucy Sutherland, representando a CJBI, presenta una ponencia sobre el papel que desempeñan los jardines botánicos en la educación, en todo el mundo.

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KENYA

Interpreting succulents

The National Museums of Kenya has developed a succulent garden as part of its ongoing Nairobi Botanic Garden Project. The garden will be a showcase of some of the country's succulents. Work on interpretation has now begun. For further information Abel Atiti National Museums of Kenya, Nairobi Botanic Gardens PO Box 40658 Nairobi Tel: (254) 2 742131 Fax: (254) 2 74 2424.

NEW ZEALAND

Pot luck sessions!

Public and Adult education at the Dunedin Botanic Garden include a weekly plant question and answer session held in the Information Centre (opened in September 1996). These sessions, which are called 'Pot Luck' (because any plant topic can be discussed) are open to the public and are free of charge. They are informal and are run by the Botanic Garden's Curator and Information Services Officer. Each week a topic or plant of interest in the garden is chosen to discuss. Often a guest or 'expert' is also invited to speak about their specialist subject. People are encouraged to bring along plant identification problems or garden questions and the staff endeavour to answer them. For further information contact: The Dunedin Botanic Garden, PO Box 5045, Lovelock Avenue, Dunedin, New Zealand Tel: (64) 3 477 4000 Fax: (64) 3 4743594.

SOUTH AFRICA

Encouraging visitors to make discoveries

The guided walk programme at Natal National Botanical Garden offers a variety of activities to attract visitors to the garden and enable them to make discoveries. Some of the activities include a spider hunt and an early morning bird identification and appreciation walk. Other activities focus on the medicinal use of South African plants and a Holiday Club for

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Hannovre, a été également élue au conseil d'administration comme représentante des animateurs des Jardins Botaniques.

Il en résulte qu'un second atelier sera incorporé à la rencontre annuelle des Jardins Botaniques, qui se tiendra à l'Université du Jardin Botanique de Kiel, en Allemagne. La rencontre se tiendra du 23 au 26 Septembre 1999, et les sessions sur l'éducation seront centrées sur les plantes succulentes et les stratégies de survie dans les déserts. Pour toute information, prendre contact avec: Ms Renate Grothe, Verband Botanischer GSigmarten e.V. - GeschSigmartsstelle: Brandmeierstr. 16, 30655 Hannover, Germany. Tel: (49) 0511 649 9761.

KENYA

Interprétation sur les succulentes

Le Muséum National du Kenya, dans le cadre du projet de Jardin Botanique de Nairobi, aménage un jardin de plantes succulentes. Le Jardin sera une vitrine présentant quelques plantes succulentes du pays. Le travail d'interprétation commence maintenant! Pour toute information, prendre contact avec: Abel Atiti National Museums of Kenya, Nairobi Botanic Gardens PO Box 40658 Nairobi Tel: (254) 2 742131 Fax: (254) 2 741424.

NOUVELLE-ZÉLANDE

Les sessions "sans façon"!

L'éducation du public et des adultes au Jardin Botanique de Dunedin comprend une session hebdomadaire de questions et de réponses sur les plantes qui se tiennent au Centre d'Information (ouvert depuis 1996). Ces sessions, dénommées "sans façon" (parce que n'importe quel thème sur les plantes peut être discuté) sont ouvertes au public et sont gratuites. Les discussions sont informelles et sont conduites par le Conservateur et les Animateurs du Service d'Information. Chaque semaine un thème, ou une espèce intéressante du Jardin, est choisi comme thème de discussion. Souvent un convive ou un expert est invité pour parler de leurs

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ALEMANIA

3 Reunión de los educadores de Jardines Botánicos

La Asociación de Jardines Botánicos organizó año pasado en el Jardín Botánico de Berna (Suiza), con gran éxito, los dos días de talleres para los educadores de los Jardines Botánicos de habla alemana. Más de 50 educadores tuvieron la oportunidad de intercambiar material y experiencias, y de participar en un gran número de actividades prácticas. Renata Grothe del Contro de Biología de Hannover fue elegida miembro del Consejo Directivo como representante de los educadores de los Jardines.

El próximo taller de educación se celebrará en el Jardín Botánico de la Universidad de Kiel (Alemania) durante la reunión anual de Jardines Botánicos. La reunión tendrá lugar del 23 al 26 de Septiembre de 1999 y las sesiones de educación se centrarán en las plantas suculentas y las estrategias de supervivencia en el desierto. Para más información, contactar con: Ms Renate Grothe, Verband Botanischer Gärten, e.V.- Brandmeierstr. 16, 30655 Hannover, Germany. Tel: (49) 0511 649 9761.

KENIA

Interpretación de plantas carnosas

Como parte del proyecto en marcha del jardín botánico de Nairobi, el Museo Nacional de Kenia ha construido un jardín de plantas carnosas, que constituirá un escaparate de algunas de las plantas carnosas autóctonas. En este momento, se empieza a trabajar en la interpretación. Para más información, dirijase a: Abel Atiti, National Museums of Kenya, Nairobi Botanic Gardens, PO Box 40658, Nairobi. Tel: (254) 2 742131 Fax: (254) 2 742424.

NUEVA ZELANDA

Clases de Pot Luck

En el jardín botánico de Dunedin, la enseñanza pública y de adultos incluye

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children between the ages of 6-11. The night walks through the garden are one of the most popular activities and participants get to see the gardens from a different perspective, as the nocturnal wildlife becomes active. For further information contact: John Roff, Natal National Botanical Garden, PO Box 21667, Mayors Walk, Pietermaritzburg 3208, South Africa. Tel: 27 (0) 331 44 3585 Fax: 27 (0) 331 44 1284.

Work experience for the unemployed

Kirstenbosch Botanical Garden is offering a six month course for unemployed youth to provide training and experience in running guided school visits in a botanic garden. After an initial five-day training course, participants will observe experienced education officers teaching groups in the garden. They will also be able to assist with lessons as teachers' aides. The period from February to June will provide work experience and further training opportunity. In addition to a test, participants will be required to develop and teach a lesson of their own in the garden before the end of June. Staff hope that this course and the work experience it provides will assist the participants to find work. For further information contact: Ms Ally Ashwell National Botanical Institute Kirstenbosch, Private Bag X7, Claremont, Cape Town South Africa 7735. Tel: (27) 21 762 1166 Fax: (27) 21 797 1919.

Annual Environmental Education Conference

The Environmental Education Association of Southern Africa is conducting their annual conference from 7-10 September 1999. The conference entitled 'Growing Together' will provide a focus for assessing past growth, individual professional development and collective growth as environmental education community/ies. For further information contact: Di Gruneberg, Rhodes University Education Department, Grahamstown 6140, South Africa. Tel: (27) 46 603 8393 Fax: (27) 46 622 8028.

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sujets de prédilection. Les gens sont invités à amener les plantes qui leur posent des problèmes d'identifications, ou à poser des questions s'ils ont des problèmes de jardinage, et l'équipe tente de leur répondre. Pour toute d'information, prendre contact avec: The Dunedin Botanic Garden, PO Box 5045, Lovelock Avenue, Dunedin, New Zealand Tel: (64) 3 4774000 Fax: (64) 3 4743594.

AFRIQUE DU SUD

Encourager les visiteurs à faire des découvertes

Le programme des promenades guidées du Jardin Botanique National du Natal propose une variété d'activités pour inciter les visiteurs à venir au Jardin, et leur permettre d'y faire des découvertes. Certaines activités comprennent une chasse aux araignées, l'identification des oiseaux actifs à l'aurore, et une découverte sensible du milieu. D'autres activités sont centrées sur l'utilisation médicinale des plantes d'Afrique du Sud, ou comprennent un club de vacances pour les enfants âgés de 6 à 11 ans. Les marches de nuit dans le Jardin sont l'une des activités les plus appréciées, car les participants voient le Jardin d'une autre façon, et découvrent comment la faune sauvage devient active la nuit. Pour plus d'information, prendre contact avec: John Roff, Natal National Botanical Garden, PO Box 21667, Mayors Walk, Pietermaritzburg 3208, South Africa. Tel: (27) 331 44 3585 Fax: (27) 331 44 1284.

Expérience du travail pour les chômeurs

Le Jardin Botanique de Kirstenbosch, offre six mois de cours à de jeunes chômeurs pour leur fournir une formation et une expérience dans l'encadrement de visites guidées, au sein du Jardin Botanique, pour les scolaires. Après une formation initiale de cinq jours, les participants accompagnent des animateurs expérimentés lors de visites guidées dans le Jardin. Ainsi ils apprennent à assister les professeurs dans leurs leçons. La période de Février à Juin

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una clase semanal de preguntas y respuestas sobre plantas, que tiene lugar en el Centro de información, abierto en septiembre de 1996. Estas clases, llamadas Pot Luck [Suerte de mezclas], porque cualquier tema sobre las plantas puede ser discutido, están abiertas al público y la entrada es libre. Son extraoficiales y las dirigen los directores del jardín botánico y los de los servicios de información. Cada semana se elige, en el jardín, un tema o una planta de interés que tratar y, a menudo, también se lleva a un invitado o "experto" a hablar de su especialidad. Se anima al público a aportar problemas de identificación de plantas o preguntas sobre jardines, que el personal procura responder. Para más información, dirijase a: The Dunedin Botanic Garden, PO Box 5045, Lovelock Avenue, Dunedin, Nueva Zelanda. Tel: (64) 3 4774000 Fax: (64) 3 4743594.

SUDÁFRICA

Animar a los visitantes a que hagan descubrimientos

El programa de excursiones guiadas a pie, del jardín botánico nacional de Natal, ofrece una variedad de actividades, con el fin de atraer visitantes al jardín y permitirles hacer descubrimientos. Algunas de éstas incluyen la búsqueda de serpientes, la identificación de pájaros, de madrugada, y una excursión de apreciación. Otras actividades están enfocadas en el uso médico de las plantas sudafricanas y en un club de vacaciones para niños entre las edades de 6 a 11 años. Los paseos nocturnos a través de los jardines son unas de las más famosas actividades, los asistentes pueden verlos desde una perspectiva diferente, a medida que la fauna nocturna despierta. Para más información, dirijase a: John Roff, Natal National Botanical Garden, PO Box 21667, Mayors Walk, Pietermaritzburg 3208, Sudáfrica. Tel: 27 (0) 331 44 3585 Fax: 26 (0) 331 44 1284.

Prácticas para desempleados

El jardín botánico Kirstenbosch ofrece un curso de seis meses dirigido a jóvenes desempleados, para

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Food Security Garden

The Tlholego Development Project involves the establishment of a Permaculture Food Security Garden at households in Rustenburg. This project involves training people in improving their soil, water harvesting, contour tree planting, collection of indigenous food and medicinal plants and finding ways of storing food. Other topics include the preparation of food for self reliance and eco-tourism development. An Eco-village Institution for training, tours and consulting has been established. Plans are currently being developed for watershed management including the Molokware Archeological site, wildlife conservation, and farm worker hamlets and common land use. For further information: Tlholego Development Project, PO Box 1668, Rustenburg 0300, South Africa.



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fournira de nombreuses occasions de mise en pratique et de formation. En fin, et en guise de test, il sera demandé aux participants de mettre au point et d'enseigner, par eux-mêmes, une leçon dans le Jardin avant la fin du mois de Juin. L'équipe espère que cette formation et l'expérience pratique aideront les participants à trouver du travail. Pour toute information, prendre contact avec: Ms Ally Ashwell National Botanical Institute Kirstenbosch Private Bag X7 Claremont Cape Town South Africa 7735. Tel: (27) 21 762 1166 Fax: (27) 21 797 1919.

Conférence annuelle sur l'Éducation à l'Environnement

L'association Sud-Africaine pour l'Éducation à l'Environnement organise sa conférence annuelle du 7 au 10 Septembre 1999. La conférence, intitulée "Grandir Ensemble" fera un bilan pour permettre l'évaluation de la croissance individuelle passée, l'évolution professionnelle et collective comme communauté d'Éducation à l'Environnement.

Pour toute information, prendre contact avec: Di Gruneberg, Rhodes University Education Department, Grahamstown 6140, South Africa. Tel: (27) 46 603 8393 Fax: (27) 46 622 8028.

Un Jardin Conservatoire pour les plantes alimentaires

Le projet de développement Tlholego concerne la création, et le maintien perpétuel, d'un Jardin Conservatoire des plantes alimentaires domestiques à Rustenburg. Ce projet vise à former les gens pour leur apprendre à amender leur sol, collecter l'eau, faire le contour des arbres plantés, cultiver les plantes alimentaires et médicinales locales, et stocker la nourriture. D'autres thèmes incluent la façon de préparer la nourriture soi-même, et le développement par l'écotourisme. Un Eco-Village, pour la formation, les visites, et les conseils, a été créé. Des projets sont couramment développés pour l'aménagement de la ligne de partage des eaux incluant le site archéologique de Molokware, la conservation de la vie sauvage, la création de hameaux de fermiers,

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proporcionar formación y experiencia en organizar visitas escolares guiadas en un jardín botánico. Después de un curso inicial de cinco días, los participantes observarán a educadores con experiencia dando clase a grupos en el jardín. También los asistentes podrán ayudar con lecciones de apoyo a los profesores. En el periodo de febrero a junio se ofrecerán prácticas y más oportunidades de formación. Además de realizar un examen, se requerirá a los alumnos que elaboren y presenten una clase de su propia cosecha. El personal espera que dicho curso y las prácticas ofrecidas ayudarán a los asistentes a encontrar trabajo. Para más información, dirijase a: Ms Ally Ashwell, National Botanical Institute Kirstenbosch, Private Bag X7, Claremont Cape Town, Sudáfrica, 7753. Tf: (27) 21 762 1166 Fax: (27) 21 797 1919.

Congreso anual de educación medioambiental

La Asociación de educación medioambiental de Sudáfrica, dirige el congreso anual, del día 7 al 10 de septiembre de 1999. El congreso, titulado "Creciendo juntos", constituirá un foco para evaluar los progresos pasados y el desarrollo profesional individual y la expansión colectiva como asociación/es de enseñanza medioambiental. Para más información, dirijase a: Di Gruneberg, Rhodes University Education Department, Grahamstown 6140, Sudáfrica. Tf: 27 (0) 46 603 8393 Fax: 27 (0) 46 622 8028.

Jardín de seguridad alimenticia

El proyecto de desarrollo Tholego implica el establecimiento de un jardín de seguridad alimenticia de permacultura en casas particulares de la ciudad de Rustenburg. Este proyecto consiste en formar a las personas para abonar el suelo, recolectar agua, plantar un contorno de árboles, reunir alimentos autóctonos y plantas medicinales y descubrir formas de almacenar la comida. Otros temas incluyen la preparación de comida para fomentar

Left: Artist in residence, Sally Imbert, recreates a Roman mosaic at Birmingham Botanical Gardens and Glasshouses.

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UNITED KINGDOM

Artist in Residence

As part of the public education programme in Birmingham Botanical Gardens, two artists in residence have recreated an authentic Roman mosaic situated in the reconstruction of a villa garden. Visitors enjoyed discovering how gardens were designed in Roman times and were able to help the artists with their work.

For further information contact:
Birmingham Botanical Gardens Study Centre, Westbourne Road, Edgbaston Birmingham B15 3TR, UK.
Tel: (44) 121 454 0784
Fax: (44) 121 454 7835.

Making paper

The University of Oxford Botanic Garden has recently appointed an Artist in residence. Polly Minett, a local paper maker, will work at the garden two days per week for the next year. Her time will be spent working with sixth form students, teacher training, adults and children making paper from plant fibres. She will also develop her own work throughout the project entitled 'The Four Seasons'.

For further information contact:
Louise Allen University of Oxford Botanic Garden, Rose Lane Oxford OX1 4AX.
Tel/Fax: (44) 1865 276 920.

Special Report

Sue Baughan and Peter Batty are embracing the challenge of working with young adults between 14 and 18 years. The SEED project (Support for Education in Environment and Development) is the education project of the Leicester University Botanic Garden and Attenborough Arboretum. The SEED project is piloting a new activity that contributes to the curriculum for 14-18 year olds, and to the process of partnerships between Leicester schools. This new activity, 'Special Report', is a simulation activity. First piloted in September 1998, it aims to provide an activity through which the students can develop their team working and decision-making skills as well as grapple with issues of global

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l'utilisation des terres en commun. Pour toute information, prendre contact avec: Thlolego Development Project, PO Box 1668, Rustenburg 0300, South Africa.

ROYAUME-UNI

Artistes en résidence

Faisant partie du programme d'éducation du public au Jardin Botanique de Birmingham, deux artistes en résidence ont recréé une authentique mosaïque romaine dans le cadre de la reconstitution d'un jardin de villa. Les visiteurs aiment à découvrir comment les jardins étaient conçus au temps des Romains, et seraient prêts à aider les artistes dans leur travail. Pour toute information, prendre contact avec: Birmingham Botanical Gardens Study Centre, Westbourne Road, Edgbaston Birmingham B15 3TR, UK.
Tel: (44) 121 454 0784
Fax: (44) 121 454 7835.

Fabrication de papier

L'Université du Jardin Botanique d'Oxford a récemment nommé une artiste à résidence. Polly Minett, une productrice locale de papier, travaillera deux jours par semaine l'année prochaine. Son temps sera partagé à travailler avec les étudiants des classes de premières et de terminales, encadrer des formations pédagogiques, enseigner aux enfants et aux adultes la fabrication du papier à partir de fibres végétales. Elle développera également son propre travail au travers d'un projet intitulé "les quatre saisons". Pour toute information, prendre contact avec: Louise Allen University of Oxford Botanic Garden, Rose Lane Oxford OX1 4AX. Tel/Fax: (44) 1865 276 920.

Reportage spécial

Sue Baughan et Peter Batty lancent le défi de travailler avec de jeunes adultes âgés de 14 à 18 ans. Le projet "SEED" (support pour l'Education à l'Environnement et le Développement) est le projet éducatif du Jardin Botanique de l'Université de Leicester et de l'Arboretum Attenborough. Le projet SEED propose une nouvelle animation qui contribue aux programmes scolaires des 14/18 ans,

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la confianza en sí mismos y el desarrollo del turismo ecológico. Además, se ha creado una aldea ecológica que ofrece formación, excursiones y consultas. Actualmente, se están elaborando planes de dirección de cuencas incluyendo el yacimiento arqueológico de Molokware, la conservación de la fauna, caseríos de granjeros y el uso de suelo común. Para más información, diríjase a: Thlolego Development Project, PO Box 1668, Rustenburg 0300, Sudáfrica.

GRAN BRETAÑA

Artistas residentes

Como parte de un programa de enseñanza pública, en el jardín botánico de Birmingham, dos artistas residentes han creado un mosaico romano auténtico situado en la reconstrucción del jardín de una casa. Los visitantes disfrutaron descubriendo cómo se diseñaban los jardines botánicos, en tiempos de los romanos, y pudieron ayudar a los artistas en su trabajo. Para más información, diríjase a: Birmingham Botanical Gardens Study Centre, Westbourne Road, Edgbaston Birmingham B15 3TR, Gran Bretaña. Tf: 44 (0) 121 454 0784
Fax: 44 (0) 121 454 7835.

Fabricar papel

Recientemente, el jardín botánico de la Universidad de Oxford ha nombrado a una artista residente. La fabricante local de papel Polly Minett, que trabajará, dos días a la semana en el jardín, durante el próximo año. Pasará este tiempo asesorando a alumnos de 16 a 18 años, formando al profesorado, y a niños y a adultos, haciendo papel de fibras de plantas. Además, durante todo el tiempo, elaborará su propio trabajo, el proyecto titulado Las cuatro estaciones. Para más información, diríjase a: Louise Allen, University of Oxford Botanic Garden, Rose Lane, Oxford OX1 4AX. Tf y Fax: 44 (0) 1865 276 920

Informe especial

Sue Bauhan y Peter Batty están adoptando el desafío de trabajar con jóvenes entre 14 y 18 años, en SEED

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citizenship. It is also an ideal activity that enables two schools to work together and integrate.

The activity involves two groups. Prior to the gardens visit one group is given the information they need to create their roles and become the people of Botanica, a fictional country. The other group play the role of journalists. Evaluation of the activity has found that it is a rich and flexible educational resource, offering opportunities for personal development and cross curriculum work in English, drama, media studies etc. The activity can also be used for teacher training. For further information contact: Sue Baughan (SEED Project Coordinator) and Peter Batty (Education Consultant), Leicester University Botanic Garden, Stoughton Drive South, Oadby, Leicester, LE2 2NE UK. Tel: (44) 116 271 2933 Fax: (44) 116 271 2933.

UNITED STATES

With a kit...it's a picnic!

Scientific knowledge doubles every seven years - how do we communicate all this information and not put children off science for life? Staff at Missouri Botanical Garden have developed kits that offer teacher lesson plans and supplies for hands on science activities that engage students in the process of science and promote critical thinking skills. One kit for Grades 5-8 focuses on mathematics with a multicultural context and includes a wide variety of games and challenges from many continents. For further information contact Missouri Botanical Garden, Education Division, PO Box 299, St Louis, MO 63166. Tel: 1 (314) 577 5144 Fax: 1 (314) 577 9521.

...Join the Coolest Club in Town!

The Desert Museum in Arizona has started a club for children between 6-12 years who are wild about nature. The Los Coatis Club is named after the Coatumundis which is a desert animal related to racoons. Coatis are active, intelligent, curious and full of energy - what a perfect animal to name a children's club after! Children receive a

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et au processus de partenariat entre les écoles de Leicester. Cette nouvelle activité, appelée Reportage Spécial, est une fiction. Menée pour la première fois en Septembre 1998, elle a pour objet de fournir une animation grâce à laquelle les étudiants peuvent développer leurs sens du travail en commun, leur aptitude à la prise de décision, et la prise en main de leur citoyenneté. C'est également une activité idéale pour permettre aux deux écoles de travailler ensemble et de façon intégrée.

L'animation implique deux groupes. Préalablement à la visite au Jardin, un groupe donne les informations dont il a besoin pour créer leurs rôles et devenir des habitants de Botanica, un pays imaginaire. L'autre groupe joue le rôle de journalistes. Le bilan de cette animation montre que c'est une activité riche et flexible, qui offre l'opportunité aux personnes de développer et de mettre en pratique leurs connaissances en Anglais, en théâtre, en journalisme... Cette animation peut être utilisée également pour des formations pédagogiques. Pour toute information, prendre contact avec: Sue Baughan (SEED Project Coordinator) and Peter Batty (Education Consultant), Leicester University Botanic Garden, Stoughton Drive South, Oadby, Leicester, LE2 2NE UK. Tel: (44) 116 271 2933 Fax: (44) 116 271 2933.

ÉTATS-UNIS

Avec un Kit...c'est une partie de plaisir!

Les connaissances scientifiques doublent tous les sept ans. Comment faire pour diffuser toutes ces informations et ne pas laisser définitivement les enfants en dehors de la science? L'équipe du Jardin Botanique du Missouri a réalisé un kit qui offre des pistes de cours pour les instituteurs, et fournir des activités pratiques en science qui permettent aux élèves de s'investir dans les processus scientifiques et développer leur sens critique. Un kit, pour les classe de 5 à 8 ans, est centré sur les mathématiques, avec un contexte multiculturel incluant une grande variété

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(Support for Education in Environment and Development) [Ayuda a la educación en el medioambiente y el desarrollo], un proyecto del jardín botánico de la Universidad de Leicester y la Arboleda de Attenborough, que ofrece actividades que contribuyen al programa de estudios de dichos jóvenes y al proceso de asociación entre los colegios de la ciudad de Leicester. El "informe especial", una nueva operación simulatoria, que se dirigió por primera vez en septiembre de 1998 y que pretende ofrecer una actividad a través de la cual los alumnos puedan desarrollar el trabajo en equipo y su capacidad de decisión, además de tratar de resolver cuestiones de ciudadanía mundial. También se trata de una operación ideal para permitir que dos colegios trabajen juntos y se integren.

En la acción toman parte dos grupos, uno de los cuales, antes de visitar el jardín, recibe la información necesaria para crear los papeles que van a hacer y los alumnos se convierten en habitantes de Botanica, una ciudad imaginaria, mientras que el otro grupo hace el papel de periodistas. En una evaluación de la actividad, se ha descubierto que se trata de un recurso educativo rico y flexible, que ofrece posibilidades de desarrollo personal y es convalidable con el programa de estudios de Lengua Inglesa, Teatro, Periodismo, etc. Para más información, dirijase a: Sue Baughan, coordinadora del proyecto SEED, y Peter Batty, asesor educativo, Leicester University Botanic Garden, Stoughton Drive South, Oadby, Leicester, LE2 2NE, Gran Bretaña. Tf: 44 (0) 116 271 2933 Fax: 44 (0) 116 271 2933.

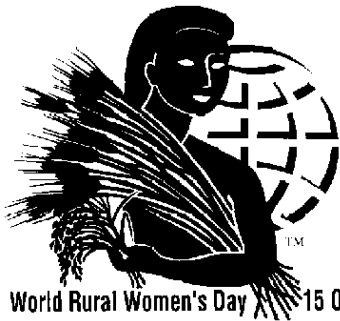
ESTADOS UNIDOS

Con un equipo, es como coser y cantar

El conocimiento científico se duplica cada siete años y no sabemos como transmitir toda esta información sin desanimar a los niños, de por vida. El personal del jardín botánico de Misuri ha elaborado equipos que ofrecen programas lectivos y suministros para actividades científicas prácticas, los

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quarterly newsletter, discounts at the Gift Shop and Museum classes and programs and their very own Coati day at the Desert Museum. They also get a membership card, T-shirt, patches and an explorer kit. For further information contact Arizona-Sonora Desert Museum, 2021 N. Kinney Road, Tucson, Arizona 85743.
Tel: (1) 520 833 3025
Fax: (1) 520 883 2500.



EVENTS

World Rural Women Day

World Rural Women day on October 15 is part of a global awareness campaign to increase knowledge and empowerment - a partnership project with the International Federation of Agricultural Producers. At the 4th UN World Conference on Women in Beijing, 1995, international NGO's proposed to designate a special day each year to highlight the largely unrecognised contribution of rural women, mainly farmers, to food security and the development of rural areas. Each year a poster is disseminated around the world and events to mark this day are organised nationally and independently by different organisations according to their own priorities and traditions. For further information contact: Women's World Summit Foundation (WWSF), PO Box 2001, 1211 Geneva 1, Switzerland.
Tel: (41) 22 738 6619
Fax: (41) 22 738 8248.

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de jeux et de défis de plusieurs continents. Pour toute information, prendre contact avec: For further information contact Missouri Botanical Garden, Education Division, PO Box 299, St Louis, MO 63166.
Tel: (1) 314 577 5144
Fax: (1) 314 5779521.

Rejoignez le Club le plus sympathique de la ville!

Le Desert Museum en Arizona démarre un Club pour les enfants de 6 à 12 ans qui sont passionnés par la nature. Le Club s'appelle "Los Coatis" en raison du Coatumundis qui est un animal du désert apparenté au raton laveur. Les Coatis sont actifs, intelligents, curieux et plein d'énergie. C'est le nom idéal a donné à un Club d'enfants!. Les enfants reçoivent une lettre d'information trimestrielle, ont droit à des réductions à la boutique, aux classes et aux programmes du Muséum, et une grande journée du Club au Desert Museum. Ils reçoivent également une carte d'adhérent, un Tee shirt, un endroit réservé, et un kit d'exploration. Pour toute information, prendre contact avec: Arizona-Sonora Desert Museum, 2021 N. Kinney Road, Tucson, Arizona 85743.
Tel: (1) 520 833 3025
Fax: (1) 520 883 2500.

ÉVÉNEMENTS

Journée mondiale pour les femmes du monde rural

La journée mondiale pour les femmes du monde rural, programmée le 15 Octobre, est un projet en partenariat avec la Fédération Internationale des producteurs Agricoles. Elle fait partie d'une campagne de sensibilisation pour mieux informer le public sur ce problème et constituer une force de pression. En 1995 à Pékin, lors de la quatrième Conférence Internationale des Femmes des Nations Unies, l'Organisation Non Gouvernementale Internationale a proposé de désigner un jour spécial chaque année pour mettre en valeur le travail largement non reconnu, des femmes rurales pour la plupart agricultrices, dans la production des ressources alimentaires et le développement des zones rurales.

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cuales atraen a los alumnos al proceso de la ciencia y promueven las habilidades críticas. Uno de los equipos, dirigido a los cursos del segundo ciclo de primaria, se centra en las matemáticas en un contexto multicultural e incluye una amplia variedad de juegos y desafíos de muchos continentes. Para más información, dirijase a: Missouri Botanical Garden, Education Division, PO Box 299, St Louis, MO 63166, Estados Unidos. Tf: 1 (314) 577 5144 Fax: 1 (314) 577 9521.

¡Únete al club más fabuloso!

El Museo del desierto, en Arizona, ha fundado un club para niños de 6 a 12 años, locos por la naturaleza. El club Los Coatis debe su nombre al Coati, un animal del desierto relativo al mapache. Estos animales son activos, inteligentes, curiosos y están llenos de energía _no puede haber un animal más perfecto para dar su nombre a un club infantil. En el Museo del desierto, los niños reciben una hoja informativa trimestral, se les ofrecen descuentos en la tienda de regalos, clases y programas del museo, y un día dedicado al Coati para ellos, en el recinto. También se les dan carnets de socio, camisetas, parches y un equipo de explorador. Para más información, dirijase a: Arizona-Sonora Desert Museum, 2021 N. Kinney Road, Tucson, Arizona 85743, Estados Unidos. Tf: (1) 520 833 3025 Fax: (1) 520 833 2500

ACONTECIMIENTOS

Día mundial de la mujer campesina

El día mundial de la mujer campesina, el 15 de octubre, forma parte de una campaña de concienciación global para incrementar el conocimiento y la concesión de competencias. Se trata de un proyecto conjunto con la Federación internacional de productores agrícolas. En el IV Congreso mundial de la mujer de la ONU, en Pekin, en 1995, las ONG internacionales propusieron la designación de un día, cada año, dedicado a destacar la contribución, no reconocida, en su mayor parte, de

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Appointments

Australia

We are sad to announce that Ms Julie Foster has left her position as Education Officer at the Australian National Botanic Gardens, Canberra. Julie contributed tremendously to the development of the education programme at ANBG and will be greatly missed. She was also a terrific supporter and contributor to the BGCI Education Programme. Julie has taken up a position at the National Science and Technology Centre, which is situated in Canberra close to the gardens.

Wales

Ms Chris Millican was appointed in April 1999 as the first Education Officer to the National Botanic Garden of Wales. Chris's background is in education. She was a biology teacher and Head of Science for Porthcawl Comprehensive School in South Wales. Although the botanic garden does not formally open until May 2000, Chris will be busy running guided tours and preparing educational material. BGCI wishes her every success in this challenging post.

Apology

In the resources section of Roots 17 (Education for Sustainability), the title of the Teacher's Pack produced by the Regional Botanic Garden - CICY, Mexico was wrongly named. The name of the pack is 'Living Beings and their Classification'. We apologise to CICY for this error.

Nouvelles

Chaque année, une affiche est diffusée dans le monde entier et, pour marquer ce jour, des événements sont organisés par les Etats, ou de façon indépendante par différentes organisations selon leurs propres priorités et traditions. Pour toute information, prendre contact avec: Women's World Summit Foundation (WWSF), PO Box 2001, 1211 Geneva 1, Switzerland. Tel: (41) 22 738 6619 Fax: (41) 22 738 8248.

NOMINATIONS

Australie

Le BGCI a le triste regret de vous annoncer que Mme Julie Foster quitte son poste de responsable du Service Éducatif du Jardin Botanique National d'Australie à Canberra. Julie a largement contribué au développement des programmes éducatifs à l'ANBG et manquera grandement. Julie vient d'intégrer le Centre National de Science et de Technologie, qui est situé à Canberra juste à côté du Jardin Botanique.

Pays de Galle

Madame Chris Millican a été nommée en avril 1999 comme responsable du Service Éducatif du Jardin Botanique National des Pays de Galles. Chris a de l'expérience en matière d'éducation. Elle a été professeur de biologie et responsable des programmes de Science pour le collège d'enseignement secondaire de Portcawl au Sud du Pays de Galles. Bien que le Jardin Botanique ne sera ouvert qu'à partir de Mai 2000, Chris est déjà très occupée par la préparation des visites guidées et des outils pédagogiques. Le BGCI lui souhaite beaucoup de succès pour ce poste très stimulant.

Rectificatif

Dans le chapitre "Lecture" du n°17 de Roots (Education au Développement Durable), le titre de la mallette pédagogique pour les professeurs produit par le Jardin Botanique Régional (CICY, Mexico) n'était pas le bon. Le titre de la mallette est "les êtres vivants et leur classification". Nous nous excusons auprès du CICY pour cette erreur.

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las mujeres del campo, principalmente las granjeras, a la seguridad alimenticia y al desarrollo de las áreas rurales.

Cada año se divulga un póster por todo el mundo y diferentes organizaciones disponen, de acuerdo con sus prioridades y tradiciones, acontecimientos para señalar este día, en el ámbito internacional y de manera independiente. Para más información, dirijase a: Women's World Summit Foundation (WWSF), PO Box 2001, 1211 Geneva 1, Suiza. Tf: 41 (22) 738 6619 Fax: 41 (22) 738 8248.

Nombramientos

Australia

CJBI lamenta anunciarles que doña Julie Foster ha dejado su puesto como educadora en los Jardines botánicos nacionales de Australia, en Canberra. Julie contribuyó en gran medida al desarrollo del programa de enseñanza de este jardín botánico, por lo que, se la echará enormemente en falta. Recientemente, Julie ha ocupado un puesto en el Centro nacional de ciencia y tecnología, situado en Canberra, cerca de dichos jardines.

Gales

Christine Millikan ha sido nombrado en Abril de 1999, directora de educación del Jardín Botánico Nacional de Gales. Sus antecedentes profesionales están en la enseñanza y anteriormente fue profesora de biología y directora de investigación en Porthcawl Comprehensive School del Sur de Gales. Aunque el Jardín Botánico no abre sus puertas hasta Mayo del 2000, Chris estará preparando una guía de recorridos y material educativo. BGCI le desea lo mejor en este nuevo destino.

Fe de erratas

En la sección Recursos del n°17 de Roots, Educación para la sostenibilidad, el título de la información para profesores, producida por el jardín botánico regional CICY, de Méjico, era erróneo. El título correcto es "Seres vivos y su clasificación", por lo que, pedimos disculpas a CICY por este error.

Ecotourisme - Le Mode ou L'avenir du Tourisme? Les jardins botaniques ont-ils un rôle a y jouer?

Ecoturismo – ¿Moda o Futuro del Turismo? ¿Hay un papel para los Jardines Botánicos?

Ecotourism - Fad or Future for Tourism?

Is there a role for Botanic Gardens?

■ Summary

Ecotourism was first coined as a term in 1983 to describe a new form of nature travel which today has grown into a world wide phenomena and an important niche tourism market. Ecotourism represents the 'greening' of tourism, the cutting edge of ideas, actions and technologies which will lead the way for a more ecologically, economically, socially and culturally sustainability tourism industry.

This paper will delve into the principles of ecotourism, explain why there is so much interest in this burgeoning tourism market, present some key challenges for the ongoing success of ecotourism and hopefully set a basis from which to assess the implications for botanic gardens.

What is Ecotourism?

Hector Ceballos-Lascurain is credited with coining the term 'ecotourism' in 1983 when describing a new form of nature travel. Since that time numerous definitions have been offered to describe ecotourism and a sample of the range of definitions is provided in Table 1.

The definitions in Table 1 reveal something of the evolution of the concept of ecotourism and, in particular, highlight its key elements, namely:

- dependent on the natural environment
- ecologically sustainable
- contributes to the protection of natural areas
- environmental understanding through education & interpretation
- culturally sustainable
- sustains local communities
- involves recreation, adventure & enjoyment.

Table 1 - Ecotourism definitions

'Ecotourism is tourism which combines the elements of education, recreation and adventure with the aim of observing and experiencing nature' (Laarman & Durst 1987).

'Tourism to natural areas that fosters environmental understanding, appreciation and conservation and sustains the culture and well being of communities' (Young 1992).

'Ecotourism is responsible travel to natural areas that conserves the environment and sustains the well-being of local people' (Blangy & Wood 1992; Ecotourism Society definition).

'Ecologically sustainable tourism that fosters environmental and cultural understanding, appreciation and conservation' (Ecotourism Association of Australia 1992).

'Ecotourism is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features- both past and present) that promotes conservation, has low impact, and provides for beneficially active socio-economic involvement of local populations' (Ceballos-Lascurain 1993; IUCN definition).

'Ecotourism is nature-based tourism that involves education and interpretation of the natural environment and is managed to be ecologically sustainable' (National Ecotourism Strategy 1994 & Queensland Ecotourism Plan 1997).

Ecotourism is clearly a niche or specialist area of the wider tourism market. As Figure 1 reveals, ecotourism can best be pictured as a subset of nature-based tourism (occurring in a natural setting but without the specific educative and ecological, cultural & social sustainability awareness of ecotourism) which in turn is a subset of the wider tourism industry.

A common misconception about ecotourism is that it is necessarily about being small scale. There are many large ecotourism resorts, using

best practice energy and waste minimisation technologies, providing innovative interpretive programs and involving local communities in a meaningful manner, that are leading the way in embodying the key elements of ecotourism. The emphasis of ecotourism is therefore not about scale but about different 'styles' of ecotourism (eg. self reliant/small group/popular) encompassing the concept of holistic environmental sustainability, which is ecologically, culturally, socially and economically sustainable.



National Ecotourism Strategy in 1994 and since that time most state governments have adopted state strategies to reflect the intent of the national plan. In Queensland the State Government released the Queensland Ecotourism Plan in 1997 and created the first dedicated Environmental Tourism Department within an Australian State Government tourism agency (Tourism Queensland) to oversee the implementation of the plan.

Ecotourism in relation to tourism (adapted from Tourism Qld 1997)

In a relatively short space of time ecotourism has become a world wide phenomenon. Why is this the case and why is ecotourism increasingly playing a key role in the development of the tourism futures of both developed and developing nations?

Why the Interest in Ecotourism?

A key reason for the growing focus on ecotourism is that it represents the 'greening' of tourism, the cutting edge of ideas, actions and technologies which will hopefully lead the way for a more sustainable future for the wider tourism industry. Equally, ecotourism is a response to the demands of an increasingly environmentally aware global community. A community that not only wants to be environmentally responsible at home but also when they are on holidays.

Of course this growing interest in ecotourism is not only about ecological, cultural and social sustainability, there is also an economic imperative. Although there is a general lack of definitive research and data about the importance and economic contribution of ecotourism, it has been estimated that ecotourism could account for between 40% to 60% of the world wide international tourism market and as much as a 25% of a nation's domestic tourism (Filion et al., 1992). In Australia, where there is a strong and thriving ecotourism industry, it has been estimated that ecotourism generates a turnover of AUD\$250 million per annum and provides 4 500 full-time jobs (Cotterill 1995). Bird-watching is an important segment of ecotourism and the

following statistics quoted by Ceballos-Lascurain (1998) reveal something of its significance:

- during 1994/95 54 million people in the USA took part in bird-watching compared with 21 million in 1982/83
- between 1990 and 1997 the American Birding Association membership grew from 6 000 to 20 000 with 65% of members taking more than 10 birding trips per annum and spending on average US\$3 000 on their trips
- the 8 week Sandhill Crane migration has been estimated to be worth US\$60 million per annum to the state of Nebraska.

Also in the USA, the USDA Forest Service estimates that in 1996 830 million people visited US National Forests, and by the year 2000 the 78 million hectares of National Forests will generate US\$3.5 billion from timber sales and a staggering US\$100 billion from recreation (Mitchell, 1997). In Australia anecdotal evidence suggests the ecotourists spend up to 50% more than the average tourist and stay up to twice as long.

The significance of ecotourism is further highlighted by the world-wide acceptance of the term by industry and governments of all levels. Ecotourism associations have been established throughout the world, with influential groups including The Ecotourism Society established in the USA in 1990 followed closely by the Ecotourism Association of Australia in 1991. There are many other active groups in countries such as Brazil, Kenya, Japan, Estonia and Indonesia. In Australia the Federal Government adopted a

Ecotourism is undoubtedly a burgeoning niche market within the world tourism industry. Unfortunately, ecotourism is also a much abused concept, with many tourism organisations and operators cashing in on the marketing advantages of ecotourism, with little recognition of its key ideals and principles. So what has to be done to ensure that ecotourism is not just another marketing angle and realises its true potential?

Can Ecotourism Meet the Challenge?

For ecotourism to be more than just a fad and to play a pivotal role in the sustainable development of tourism world-wide, it is suggested that there are six key challenges that the ecotourism industry needs to address.

The first challenge is to deliver practical ecologically sustainable tourism. There is considerable rhetoric in tourism and academic circles about ecological sustainability within the tourism industry but not enough definitive advice and guidance of how to convert the theory into practice. Ecotourism establishments and tour operators need practical and economically viable recommendations about up-to-date technologies, techniques and procedures which will enable them to satisfy the principles of ecotourism and be at the forefront of best practice ecotourism.

The second challenge is to effectively recognise, through appropriate research, the previously discussed different styles of ecotourism. It is important that the particular needs of each ecotourism style, in terms of facilities required, extent of involvement, group sizes, level of

interpretation, desired environmental settings etc., are understood and delivered. As with any form of tourism it is important to tailor the tourism product to the customer. This is particularly the case for a specialist market like ecotourism where the customers are generally well educated and discerning. Any mis-matching of the eco-product and the ecotourist could severely limit the capability to deliver on the key principles of ecotourism.

Ensuring that there are real and long lasting economic contributions to conservation is the third challenge for the ecotourism industry. As a high proportion of ecotourism activity occurs in or around government controlled protected areas (eg. national parks, state forests, marine parks, water supply reservoirs and catchments etc.), there are moral, equity and sound business reasons why the industry should contribute to the ongoing protection and management of these areas. The moral imperative relates to the ecotourism industry 'putting their money where their stated principles are' by contributing to the sustainability of natural areas and assets. The equity argument revolves around the premise that if private sector tourism operations are making commercial gain from a public reserve, either directly through use or indirectly through marketing or association, then there should be a financial return to the public body managing that reserve. Finally, from a

sound business perspective it makes good sense for ecotourism operations to contribute to the protection of the reserves they are operating in and which are a key basis of their business.

Challenge number four is concerned with ensuring that ecotourism delivers effective interpretation of environmental, cultural and resource management values. Interpretation must be more than just a one-way transfer of information, it should be about explanation, stimulation, provocation, revelation and understanding in a manner that personally involves the ecotourist in an interesting and enjoyable fashion. This is a difficult assignment, even in face-to face situations, but particularly so when interpreters have to rely on non-personal techniques like signage and brochures. However this is the challenge of interpretation, and a key goal for ecotourism, to enhance people's attitudes and actions towards their environment. In many instances this could be the major contribution of ecotourism, by exposing a wider cross-section of the community to the need to value and protect their natural and cultural areas, resources and heritage.

The fifth challenge is to ensure genuine cultural and social sustainability. There needs to be a real commitment by the ecotourism industry to cultural understanding in terms of valuing and learning from the past and involving and working in partnership with indigenous communities and respecting their cultures and beliefs. In communities where western and traditional cultures coexist the ecotourism industry has the potential to provide real leadership on issues of cultural integrity and greater harmony and integration between cultures. From a social perspective, ecotourism must be inclusive of local communities by ensuring that their operations are reflective of community needs and aspirations, and benefit those communities wherever possible in terms of economic development and job creation.

The final challenge concerns the role of governments in the ecotourism industry and the need to develop good working relationships and partnerships between the public and private sectors.

As much of the resource base of the ecotourism industry is under some form of government control (eg. national parks etc.) then so to is the future of much of the industry in government hands. The bureaucratic nature of most government agencies and their general lack of appreciation of contemporary business practices, has traditionally lead to high levels of distrust and poor communications between the public and private sectors. On the other hand there is often a lack of understanding from the private sector of the constraints imposed on the public sector by ever increasing levels of open and accountable government. For the ecotourism industry in particular it is imperative that the government and private industry sectors work together to ensure there is the right policy framework and the most effective and efficient operational environment if ecotourism is to reach its full potential for all sectors of the community.

Conclusion

It would be presumptuous of this paper to specify a role for botanic gardens in ecotourism, as the readers of this review are far better qualified to determine that. However, it is hoped that, in outlining the guiding principles of ecotourism and presenting some key challenges for the industry, a clearer picture of ecotourism has been provided. With this better understanding in hand it may be easier to speculate the role botanic gardens might play in the ecotourism industry and how both parties might benefit from such closer involvement.

As repositories of the earth's plant life, key players in promoting a more responsible environmental attitude by the community and a vital resource for community relaxation and enjoyment, the role of botanic gardens complements the goals and principles of ecotourism. In particular, the many urban based botanic gardens could play an important role in the expansion of ecotourism from traditional non-urban settings into the cities. This could be crucial to the future of ecotourism as increasingly the world's population is being concentrated in urban centres and for many of these communities, city botanic gardens

Below:

Interpretation is an essential element of ecotourism - Ranger guided tour at Kingfisher Bay Resort, Fraser Island Queensland Australia (Advanced Accreditation, National Ecotourism Accreditation Program)



might represent the only, or at least regular, opportunity to visit a natural or near natural setting. Furthermore, as the seats of power and decision making are also generally based in these centres, it is in these conurbations where the fate of nations and their environments are ultimately determined. For these reasons alone botanic gardens might represent a key opportunity for tourism operations to better service the needs of a large segment of their market while at the same time delivering on the key principles of ecotourism where they might be best recognised. From the botanic gardens perspective ecotourism could be an excellent opportunity to expose the gardens, their purpose and messages to a wider range of visitors and generate much needed additional income for their ongoing management and development.

In recognition of all of the principles and challenges outlined in the preceding analysis, it is argued that ecotourism is certainly more than just a fad and could in fact be the exemplar of ecologically sustainable development. Ecotourism, more so than any other industry, has the credentials to lead industry, government and the community in the quest for ecologically sustainable development, and botanic gardens could play a key role in this vital pursuit.

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- défis, solutions au succès imminent de l'écotourisme et si tout va bien, fixera les fondements à partir desquels seront estimées les implications des jardins botaniques.

● Resumen

El ecoturismo que fue por primera vez usado como un término en 1983 para describir una nueva forma de viajar a la naturaleza, se ha convertido hoy en día en un gran fenómeno mundial y en un importante recurso del mercado turístico. El Ecoturismo representa lo "verde" del turismo, el filo cortante de ideas, acciones y tecnologías que le llevará hacia una industria turística más ecológica, económica, social y culturalmente sostenible.

Este artículo profundizará en los principios del ecoturismo, explicará por qué hay tanto interés en este mercado turístico en desarrollo, presentará algunas claves para el éxito actual y sentará las bases para poder evaluar sus consecuencias en los jardines botánicos.

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▲ Resumé

L'écotourisme fut inventé, pour la première fois en 1983 pour décrire une nouvelle forme de voyage nature, qui aujourd'hui est devenu un phénomène mondial et un marché touristique important. L'écotourisme est, en tant que tourisme "vert", le fer de lance des idées, actions et technologies qui amèneront à une industrie du tourisme culturellement, sur le plan écologique, économiquement et socialement plus "politiquement correct".

Cet article approfondira les principes de l'écotourisme, expliquera pourquoi il y a tant d'intérêt dans ce marché naissant. Il présentera aussi quelques

INBioparque - Learning While Recreating

■ Summary

The mission of the National Biodiversity Institute is to promote knowledge and awareness of biodiversity for conservation and to improve the quality of life. In order to develop 'bioliteracy' within society; tools and infrastructure are needed to deliver messages to as many people as possible in an enjoyable and interactive manner. Due to this need INBio park is in the process of being created.

INBio park will be an educational and recreational space that will promote and inform people about the national parks, biodiversity and ecosystems of Costa Rica as well as the work of the National Biodiversity Institute. The park will have interpretative trails and displays of living collections of different species. Only fifteen minutes away from the capital city of Costa Rica, visitors will be able to learn about and enjoy nature.

The National Biodiversity Institute (INBio) is a scientific institution with a social orientation. It is non-profit organisation and is for the public good. The mission of INBio is to promote a new awareness of the value of biodiversity, and thereby achieve its conservation and use to improve the quality of life.

INBio generates knowledge about biodiversity. It communicates and promotes this information in ways that are designed to be responsive to a broad spectrum of national and international users. One of INBio's main objectives is to support bioliteracy, which it defines as: 'a learning process through time that leads the individual to value biodiversity, adopt an ethic of

respect for life and assume responsibility for the management and conservation of all living beings and ecosystems. To promote changes of behaviour that favour a harmonious relationship with nature to achieve human sustainable development.' To fulfil this mission, adequate tools and infrastructure are needed to disseminate the information to as many people as possible and in an enjoyable and interactive manner. This is the reason for the creation of INBioparque situated in the colonial town of Santo Domingo de Heredia, 10-15 minutes by car away from San José. The land was formally a coffee plantation that had been abandoned for many years.

INBioparque's main objectives will be:

- To inform about, and promote Costa Rica's biodiversity, conservation efforts and national parks.
- To show representative samples of the country's ecosystems and biodiversity, using live collections of several species for non-formal educational purposes.
- To create a Biodiversity, Conservation and National Parks Information Center that may serve as the initial stage of the tourists' agenda.
- To inform about INBio's activities, thus, enhancing Costa Ricans' appreciation of biodiversity resources.

INBioparque will be a recreational and educational place that will have permanent interactive bioexhibits of Costa Rica's biodiversity, national parks and ecosystems, as well as of INBio's activities. The park will also include an outdoor area with interpreted nature trails and live collections of several species, where visitors can learn and enjoy nature

close to Costa Rica's capital city. Local people in particular, are very excited about the creation of INBioparque, which will provide them with an interesting and educational location in which to spend their free time.

The main users of INBioparque will be:

- schoolchildren interested in learning about biodiversity and ecological interactions
- high-school students interested in increasing their biodiversity knowledge
- university students interested in enhancing their specialized biodiversity knowledge
- adults who want to learn about biodiversity during their spare time
- Costa Rican families who want to enjoy themselves while learning
- foreign visitors who come to Costa Rica to enjoy themselves while learning about the country's biodiversity and national parks
- organized groups who want to enhance their knowledge about Costa Rica's biodiversity and conservation issues.

Many species are capable of adapting to various climatic conditions, therefore it is possible to create different live collections. It will not be possible however, to recreate specific ecosystems precisely as some microclimates are difficult to imitate due to poor soil conditions, topography, humidity and rainfall.

However, partial imitation of some ecosystems will be possible by cultivating and grouping some species that can grow in Santo Domingo's environment. The species will be

distributed in four life zones: 1) a rain forest, 2) a dry forest, 3) a pre mountainous forest of Central Valley and 4) a lagoon. There will also be an area dedicated to domesticated biodiversity with a butterfly farm and medicinal, aromatic and ornamental plants and fruit trees. Approximately five hectares (50,000 m²) of land is available to develop this project.

There are also plans to develop habitats for some animal species such as insects, birds, reptiles, fish, amphibians and small mammals. A wetland-lagoon will be built to provide shelter for some of the amphibians, mammals and fish that need a wet environment. It will also serve as an educational tool to teach topics such as food chains and life cycles.

Exhibits of live social insects; such as bees and ants, some beetles, spiders and scorpions, will be built along the trails, as well as a small live butterfly collection to explain the concept of metamorphosis.

INBioParque is an initiative to carry out activities with the goal of supporting bioliteracy and a place where the visitors can learn about biodiversity and have fun at the same time. It will open its doors to the public next November.

▲ Resumé

L'Institut National de la Biodiversité a pour mission d'encourager la connaissance et la sensibilisation du public sur la conservation de la biodiversité et d'améliorer la qualité de la vie. Afin de développer la 'bio-instruction' dans certains secteurs socioculturels de la société, d'y transmettre ses messages au plus grand nombre de personnes possible, des outils et des infrastructures sont nécessaires. Pour répondre à ce besoin se crée le parc INBio.

Le Parc INBio sers un espace éducatif et récréatif qui promotionnera et informera le public au sujet des parcs nationaux, de la biodiversité et des écosystèmes du Costa Rica, mais aussi sur le travail de l'Institut National de la Biodiversité.

Le Parc montera aussi, à l'aide de collections vivantes et interprétatives, de plein air, comment à quinze minutes seulement de la capitale du Costa Rica, les visiteurs pourraient 'apprendre' la nature et s'en divertir.

● Resumen

El Instituto Nacional de Biodiversidad tiene la misión de divulgar el conocimiento sobre biodiversidad y a la vez promover una nueva conciencia sobre el valor de la misma, para lograr su conservación y mejorar la calidad de vida del ser humano. Para cumplir con la misión de apoyar la bioalfabetización de algunos sectores de la sociedad se necesitan herramientas acordes con la necesidad de llevar el mensaje a la mayor cantidad posible de personas, para esto se creará el INBioParque.

El INBioParque será un espacio educativo y recreativo que promocionará e informará sobre los parques nacionales y la biodiversidad

de Costa Rica. Además, el INBioParque contendrá áreas de exhibiciones permanentes sobre la biodiversidad, los parques nacionales y los ecosistemas de Costa Rica, así como la labor del INBio. El INBioParque contará también con un área al aire libre con senderos interpretados y muestras de colecciones vivas de diferentes especies, en la que se podrá tanto aprender como disfrutar de la naturaleza a quince minutos de la ciudad capital de Costa Rica.

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Below: INBio Parque is well designed to cater for a variety of visitors.



Personalize Interpretation : Un peu plus qu'une simple ballade dans un parc ?
¿Algo más que un paseo por el parque?

More than a Walk in the Park? Demonstration Carts

■ Summary

Increasingly botanical gardens are being challenged to build public understanding of complex conservation issues. Plant collections are beautiful object lessons, however, they are silent as visitors raise questions, trade ideas, and voice incorrect conclusions. At the same time, gardens seek to draw repeated visits by their public. Short, story-based presentations on science themes, using props to involve visitor in 'hands-on' learning represent one successful approach to both challenges. Eco-Cart demonstrations, like those developed at Missouri Botanical Garden, USA, are easily produced at any site.

A Common Dilemma

'Why don't we have *this* kind of tree in Missouri?' a young visitor wonders, after discovering that biodiversity is greater in the tropics.

'How can "dirt and gravel" purify water?' another ponders as she stares at a terrarium 'ecosystem'.

'I told you! It's the people who are having all those babies who are destroying our environment,' a third

exclaims after watching a counter tick off increases in population and dropping acreage of rain forest.

Garden staff wince as they overhear statements like these. As educators, we are pleased that visitors are thinking. At the same time we are chagrined to hear their erroneous conclusions.

Visitor's questions often require complex answers. The very best exhibit can only provide so much information. And the lesson the visitor takes home may not be the one intended.

As botanical gardens assume a greater role in helping the public make sense of global environmental change, they are increasingly challenged to help their visitors understand complex conservation issues. While their plantings can present biodiversity, and their collections may exhibit fascinating adaptations, plants cannot speak for themselves. How can we engage visitors, and answer their questions, while using the power of these collections?

Eco-Cart demonstrations at Missouri Botanical Garden successfully address this challenge. These demonstrations use several approaches that are known to have great power in stimulating learning: a) live presenters talk with visitors; b) visitors participate in the presentations; c) the content of each presentation is linked back to visitor's daily lives; and d) visitors leave with a memento of their contact.

Bringing the Message Home

In 1990, Missouri Botanical Garden began renovating exhibits in its

conservatory complex to help visitors understand the biomes represented in conservatory plantings. The garden also sought to help visitors understand the global processes and local conditions that determine the health of our environment in its new Brookings Interpretive Center.

The setting that was to be created was dramatic. As visitors entered the center from the Climatron, they would confront a startling sight. A life-size bulldozer would roar aggressively in front of a backdrop of charred tree stumps. The sight would be disorienting, even discouraging, after a walk through lush rain forest. Behind the bulldozer, textual and interactive exhibits would present ideas the silent plants in the conservatory could not explain.

Because the best interactive exhibit cannot be as engaging as a well-prepared, enthusiastic live human being, the garden also sought funding to create a series of short, live demonstrations that would actively involve visitors in exploring a single science concept. The McDonnell Foundation generously funded the development of informal Eco-Cart demonstrations and their associated props, for use with both public and school audiences in a small amphitheatre within the center.

Linking Science and Environmental Action

The McDonnell Foundation supported this project to increase public understanding of how ten major science concepts are linked to modern environmental problems. All these concepts fall well within the natural subject matter for botanical gardens.



Right:
When not in use
the EcoCart can
be easily moved
and stored with
the aid of rollers.

Science Concept	Environmental Problem/Understanding
Photosynthesis	Plants are the base of all life on earth and must be protected.
Decomposition	We must recycle what we use because nutrients recycle.
Food chains	All life depends on energy from the sun. When we eat meat we eat food that requires more energy in its production.
Plant products	We all depend on the diversity of plants in the tropical rain forests.
Biodiversity	What causes loss of species?
Water cycles	We must avoid polluting the water we will reuse one day or clean it.
Energy	We must conserve energy because our fuel supplies are limited.
Chemical reactions	Burning fossil fuels affects the health of people far away.
Ecosystems	The health of everything and everyone on life is interlinked.
Adaptations	The rate of change in many places threatens to drive many species extinct.

Table 1: Linking science concepts to environmental problems

The topics range from photosynthesis and decomposition to chemical reactions and energy. Some are readily illustrated; others are very abstract—such as energy. Each relates to a pressing environmental quality issue such as sustainability of food supplies, availability of metals, air pollution, and availability of fuel supplies. (Table 1)

Instructional Sequence

Each Eco-Cart demonstration has been designed to use a learning cycle model of instruction, presented in the context of a skit or story that will capture visitors' imaginations. The outline for each Eco-Cart demonstration includes the following elements:

- an intriguing demonstration to build visitor interest
- a storyline that helps visitors see how this scientific process or phenomenon affects their lives
- a narrative device in the skit that helps visitors participate throughout the lesson
- a sequence for introducing new concepts
- an environmental application of the science concept
- a physical memento or handout to carry home.

The demonstration on photosynthesis, for example, opens with the presenter obtaining an assignment to perform some industrial espionage. She is enlisted to find out how sugar is being

produced in a leaf. When she hands out sunglasses as a disguise, the audience knows that they are invited to help her. She opens an envelope filled with molecules of carbon dioxide, water, and oxygen and asks the group to put them inside a cloth "leaf". When another pocket in the leaf is zipped open, there are glucose molecules. After this, participants look at microscope slides showing stomates and chloroplasts, and watch her complete some experiments with indicators to show that plants use carbon dioxide, and produce oxygen. Participants take home a sugar packet, as a reminder of what plants make for us.

Hands-on Approach

As each Eco-Cart demonstration was scripted, staff considered ways that visitors might actively participate. Could they hold a worm during a presentation on decomposition? Could they physically sort food products that come from plant and animal sources for themselves? Could they feel waste heat by clapping vigorously during a presentation on energy? Whenever the staff could imagine a simple way that visitors might do, instead of the presenter, this mode of presenting a concept was selected.

This active instructional style was selected because humans rely heavily on all our senses to 'gather'

information. We know that adults like ourselves, and as much as children, find touching real objects highly engaging. Garden visitors enjoy feeling the texture of a hairy sugar palm as much as they do lingering over the sight of a blossoming rose. By encouraging them to touch, smell, and handle objects we can open minds and stamp the messages we deliver into visitors' memories.

Audience-Driven Decisions

Because the Eco-Cart Demonstrations serve a very diverse audience, the demonstrations avoid technical language and assume visitors have little prior knowledge of their topics. We want families, foreign visitors, and long-standing members all to find the presentations of interest. Furthermore, we want presentations to enhance, not detract from the quality of visits to the garden. Garden staff therefore scripted each informal presentation to last no more than 15-25 minutes. Presentations are scheduled in periods when visitation is highest, in order to serve the largest possible audience.

Visitor Response

And how effective have the Eco-Carts been in engaging visitors in learning? Visitors are so attracted to the props displayed on the portable carts that it is hard for the demonstrators to leave their posts! The visitors raise all types of questions, both in these informal interactions and the compact presentations. Clearly, the combination of clever stories, intriguing objects, and a personable presenter succeeds in engaging visitors' interest.

The steadily increasing attendance indicates that word of mouth is beginning to draw participants. This indicates that the demonstrations will help Missouri Botanical Garden achieve another goal we share - to encourage visitors to return.

In the initial months of each presentation, the garden has adjusted each script to the knowledge most visitors display and to remove logistical problems. In the months ahead, the garden will begin to more rigorously measure how well the demonstrations build understanding.

Conclusion

Using a story with a scientific theme and a 'take-home' ecological message makes the Eco-Cart demonstrations very effective. Television shows often rely on gimmicks that are dangerous or difficult for viewers to duplicate, whereas the Eco-Carts use simple experiments and props to do the same. Eco-Cart demonstrations can readily be replicated at any garden that wishes to engage its visitors in active learning.

▲ Résumé

Les jardins botaniques sont de plus en plus mis au défi d'apporter au public une connaissance des enjeux complexes de la conservation. Si nos collections végétales sont de beaux objets pédagogiques elles restent malheureusement sans réponses quand les visiteurs posent des questions, échangent des idées et

expriment des conclusions fausses. Pourtant les jardins botaniques cherchent aussi à attirer les visiteurs pour des visites régulières. Des présentations courtes, parlantes sur des thèmes scientifiques utilisant des objets permettent d'impliquer le visiteur de manière concrète en répondant de façon efficace à ces deux challenges. Les démonstrations Eco-Cart comme celles mise en oeuvre au Jardin Botanique de Missouri aux USA sont faciles à reproduire ailleurs.

● Resumen

Cada vez más, se anima a los jardines botánicos a fomentar el conocimiento de los complejos problemas de conservación. Por un lado, nuestras colecciones de plantas constituyen un bonito artículo de enseñanza, pero permanecen silenciosas ante preguntas planteadas por los

visitantes, ideas comerciales y conclusiones incorrectas expresadas. Por otro lado, al mismo tiempo, los jardines buscan diseñar visitas repetidas por el público. En este sentido, las presentaciones basadas en historias cortas sobre temas científicos con el uso apoyos, para implicar al visitante en aprendizajes prácticos, representan un acercamiento exitoso para ambos desafíos. Es posible también realizar muestras ecológicas móviles, como las desarrolladas en el jardín botánico de Missouri, EE.UU.

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Right:
At the Tropic
Café visitors
dissect a
hamburger, this
helps the visitor
to relate the
science concepts
(food chain) to
their daily lives.



Accueil du public

Acceso al público

Access to the People

■ Summary

The botanic garden of the National Botanical Research Institute (NBRI), Lucknow is the third largest and one of the oldest botanic gardens in India. The major functions of the garden are - conservation, floriculture and education. The education programmes are used to communicate knowledge, feelings, ideas and information to the public. The garden runs educational courses and training programmes, publishes materials and organises flower shows and open days for a wide range of audiences, including students, teachers, connoisseurs and the general public.

Introduction

The National Botanical Research Institute (NBRI), Lucknow is one of the National Institutes of the Council of Scientific and Industrial Research (CSIR), New Delhi, India. The Botanic Garden of NBRI was laid out around

1800 A.D. It is the third largest (25 hectare) and one of the oldest botanic gardens in India. The garden houses a large diversity of plant species, comprising 7,000 taxa representing 210 families, from various tropical and sub-tropical areas. The three major functions of the botanic garden are - conservation, floriculture and education (Sharma et al. 1996).

Botanic Garden Education Programmes - their importance

Education may be defined as the process of bringing out desirable changes into the behaviour of human beings by acquiring knowledge through instruction or study in order to achieve a definite goal (Dahama and Bhatnagar 1991). As society develops, it becomes imperative that the cumulative knowledge, experience and skills necessary for various developments should be passed on to the new generations or the people who need them. Educational programmes are a

means of communication which enable people to share knowledge, feelings, ideas and information in such a way that each learner perceives a common understanding of the meaning and use of the message communicated (Leagan 1961).

Given that botanic gardens worldwide are visited by millions of people each year, they provide a unique opportunity to influence people towards plant conservation and the environment as a whole. Educational programmes can be effective tools for disseminating information, knowledge and raising awareness. Considering the importance of educational programmes carried-out by botanic gardens, BGCI published a set of guidelines on environmental education (Willison 1994).

The importance of Environmental Education was first emphasised in 1969 at UNESCO - Biosphere Conference (Paris). More recently in



Left:
A field of flowers
is created at the
Chrysanthemum
and Coleus
Show.

1992 at UNCED, Rio de Janeiro, Brazil where Agenda 21 (Chapter 36) states that environment and development education should be made available to people of all ages. Modern economic development and social progress depend on scientific research and its application by passing the knowledge on to the public through education and training (United Nations 1963).

Since early times, learning from nature has always been a part of the human developmental process. Botanic gardens with their array of plant specimens serve as living class rooms. Being able to see and touch real plants can have a greater impact on students' perceptions and can have far reaching consequences, in comparison to other more passive teaching methods. The science that is taught traditionally on the basis of text books does not generate confidence and competence in the learner (Rossman 1996). As such, botanic garden education programmes have immense importance.

The NBRI Botanic Garden Education Programmes

Student and Teacher Education

Students and teachers from the schools, colleges and universities of Lucknow, as well as other cities of India, frequently visit NBRI Botanic Garden. The main purpose of these educational tours is to acquaint visitors with the diversity of plant species from the well identified germplasm collection. Visitors can study the variety of trees and their form, leaf and flower structures and collect information on the family, origin and distribution of particular plant species. NBRI Botanic Garden provides support to class room teaching and an excellent opportunity for the physical study of the theoretical lessons taught.

Since 1997, the botanic garden has run a course on Ornamental Horticulture for the M.Sc. Life Science students of Lucknow University. This course provides a unique opportunity for students to study both the theory and practical aspects of Ornamental Horticulture and has opened a new chapter in our botanic garden education programme. To facilitate the teaching of life science and botany in

schools and colleges, plant specimens of representative families are provided for identification and preparation of herbarium specimens.

Limited amounts of plant materials are provided to different institutions, universities and national laboratories for conducting studies and research and development work. Surplus plant materials are sold to plant lovers and connoisseurs.

Adult Education

Short training courses are organised on several aspects of Ornamental Horticulture, Commercial Floriculture and Garden Management. These courses are mainly for horticultural officers, managers/garden supervisors from public and private sectors, national institutes and government departments.

Public Education

Two flower shows are organised annually in the botanic garden during January and December. They attract about twenty thousand people and 500 exhibitors from different parts of the country. The main purpose of organising flower shows is to show case the botanic garden's research and development activities on floriculture to the public. The shows also help to encourage the people to grow plants, raising their awareness of utility and importance of plants and flowers in daily life besides their importance for conservation.

The botanic garden also participates in the flower shows and science exhibitions organised by other government departments by staffing and education stall. Selected cultivars of ornamental plants, in particular those developed by the botanic garden, are displayed besides plants of economic and rare importance. This is an excellent opportunity to interact with the public as a whole.

Each year, the botanic garden observes the 28th February and 26th September as 'Open Days' for celebrating 'National Science Day' and to commemorate the 'Foundation Day' of Council of Scientific and Industrial Research (CSIR), the parent body of NBRI respectively. The purpose of the open days is to promote the research



and development work of the Institute to the public. Laboratories, plant houses and conservatories are kept open for local people and students of schools, colleges and universities to view. Scientists explain the important activities they undertake and talk about the utility of plants and their significance for the conservation programme.

Information generated as a result of the research and development work on the different activities of the botanic garden, for example agro-technology of floricultural crops, bonsai techniques, cultivation of house plants etc., has been documented in the form of leaflets, pamphlets, bulletins and books. All these are available to the public on request.

In addition to published materials, the garden organises radio, T.V. talks and lectures on environmental education, conservation and ornamental horticulture with the aim of disseminating information to as wide an audience as possible.

Interaction with Other Botanic Gardens and Institutions

The garden maintains a computerised record of its total living germplasm collection. Information on each plant species is well documented with its botanical name, family, origin, status and salient features. Any institution or organisation in need of information on any of the documented plant species or cultivars for education or any other purpose can contact the botanic garden.

Right: University students attend one of NBRI's educational courses.

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▲ Resumé

Le Jardin Botanique de l'Institut National de Recherches Botaniques (NBRI) de Lucknow est le troisième jardin botanique indien par sa taille et l'un des plus vieux jardins botaniques de l'Inde. Les principales missions du jardin sont Conservation, Floriculture et Education.

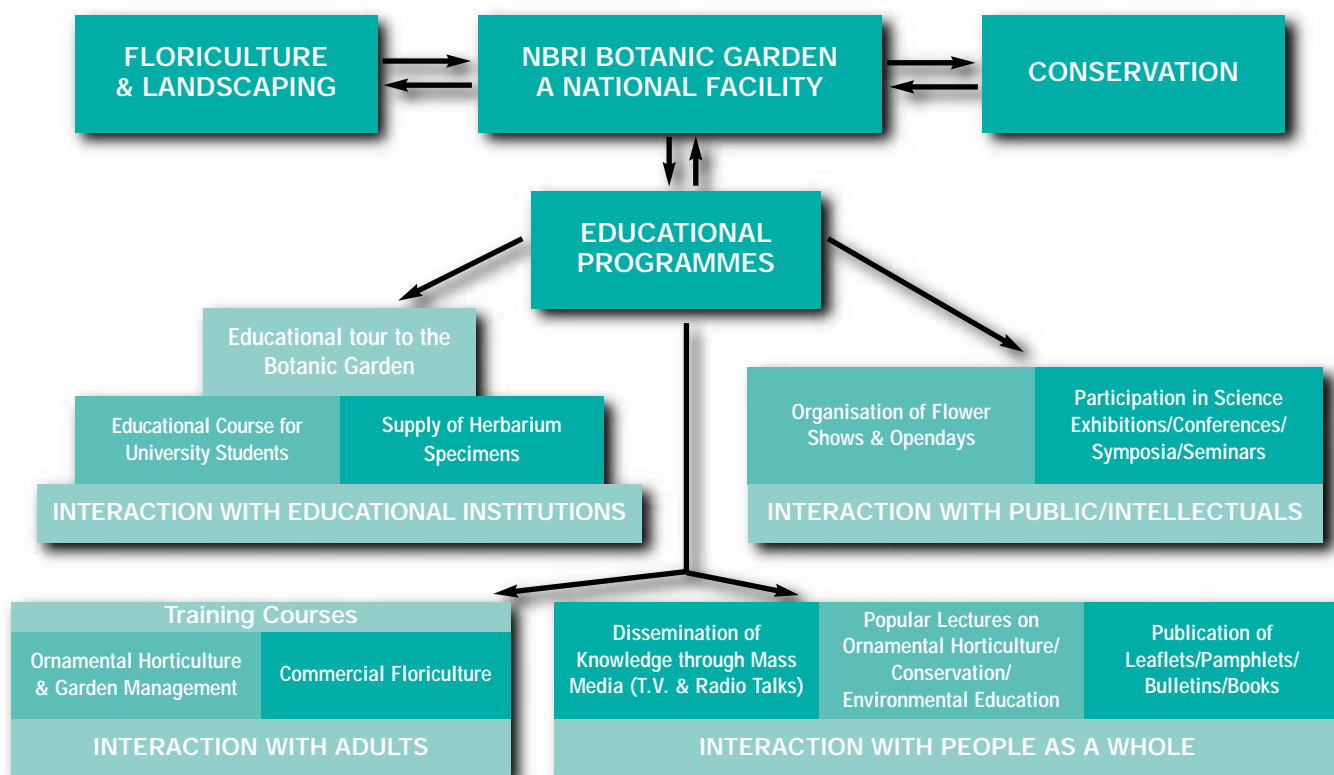
Les programmes pédagogiques permettent de communiquer au grand public sensibilité, connaissance, informations et idées. Le jardin organise des programmes et des ateliers pédagogiques, édite des documents et organise des expositions et des journées portes ouvertes pour

un large public : étudiants, professeurs, amateurs éclairés et le grand public.

● Resúmen

El jardín botánico de la Escuela Nacional de Investigación Botánica, en la ciudad de Lucknow, es el tercero más grande y uno de los jardines botánicos más antiguos de la India. Las funciones principales que desempeña este jardín son: conservación, floricultura y educación. Se utilizan los programas educativos para transmitir al público el conocimiento, las opiniones, las ideas y la información. El jardín organiza cursos educativos y programas de formación, publica material y organiza exposiciones florales y días de puertas abiertas para una gran variedad de audiencias incluidos estudiantes, profesores, expertos y público en general.

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Aschematic Diagram of the Educational Programmes of NBRI Botanic Garden

USA – Etats-Unis – EE.UU.**Arizona-Sonora Desert Museum**

- Wet and wild river ecology
- Springtime wildflower hike
- Desert-Alert Field Research Programme - explore how Seri Indians and their Mexican neighbours harvest native plants used in basketry, carvings and healing traditions
- Arizona's Prehistoric past

Arizona-Sonora Desert Museum

- Ecologie des milieux humides et sauvages
- Promenades printanières champêtres
- Programme de recherche Desert-Alert Field (Alerte à la désertification des champs) - explorer les façons dont les indiens Seri et leurs voisins mexicains recolent les plantes indigènes utilisées en vannerie, gravure et médecine traditionnelle
- Passé préhistorique de l'Arizona

El Museo del desierto Arizona-Sonora

- Ecología del río húmedo y salvaje
- Caminata de la flor silvestre de primavera
- Programa de investigación del campo Desierto-Alerta: ahondar en cómo los indios Seri y sus vecinos mejicanos cosechan plantas autóctonas utilizadas en cestería, grabados y tradiciones curativas
- Pasado prehistórico de Arizona

Morris Arboretum of the University of Pennsylvania

- Chinese Herbs to Ease the Ageing Process
- Coiled Pine Needle Basketry

Morris Arboretum de l'Université de Pennsylvanie

- Plantes médicinales chinoises pour le bien être des personnes vieillissantes
- Aiguilles de Pin enroulées pour vanneries

La Arboleda Morris de la Universidad de Pensilvania

- Hierbas chinas para aliviar el proceso de envejecimiento
- Cestería de aguja del pino serpentin

Colombia – Colombie – Colombia**Alejandro Humboldt Botanic Garden**

- Organic gardening

Jardin Botanique Alejandro Humboldt

- Horticulture fondamentale

El jardín botánico Alejandro Humboldt

- Jardinería orgánica.

Ecuador – Equateur – Ecuador**OMAERE**

- Valuing indigenous botanical knowledge
- Raising awareness of the use of alternative plant resources

OMAERE

- Evaluer les connaissances indigènes de la botanique
- Eveiller la conscience sur l'utilisation alternative des ressources végétales

OMAERE

- Valoración del conocimiento botánico indígena
- Aumentar la concienciación del uso de recursos de plantas alternativas

Mexico – Mexique – Méjico**UNAM Botanic Garden**

- Medicinal Plants of Mexico - their uses and traditional remedies
- Plants used in dying

Jardin Botanique UNAM

- Plantes médicinales du Mexique - leurs utilisations dans les remèdes traditionnels
- Plantes utilisées dans les cérémonies mortuaires

El jardín botánico UNAM

- Plantas medicinales de Méjico: usos y remedios tradicionales
- Plantas utilizadas al morir

Argentina – Argentine – Argentina**Arturo E Ragonese Botanic Garden**

Re-valuing botanical illustration

Jardin Botanique Arturo E Ragonese

Nouvelle estimation de l'illustration botanique

El jardín botánico Arturo E. Ragonese

Revaloración de ilustraciones botánicas

Scotland – Écosse – Escocia**Royal Botanic Garden Edinburgh, Scotland**

- Fantastic fungi - identification of fungi and an understanding of their ecology
- Textile design and print making
- Wood engraving

Jardin Botanique Royal d'Edimbourg

- Fantastiques Champignons - Identification de champignons et compréhension de leur écologie
- Confection textile et fabrication de teintures
- Gravure sur bois

El Real jardín botánico de Edimburgo, Escocia

- El hongo fantástico: identificación del hongo y comprensión de su ecología
- Diseño textil y elaboración de impresiones
- Grabar la madera

UK – Royaume-Uni – Gran Bretaña**University of Oxford**

- Plant Power family trail - helping you find out more about the plants you use in everyday lives
- Paper making using plant fibres

Université d'Oxford

- Pouvoir des Plantes ; Sentier familial - qui vous aide dans la découverte des plantes que vous utilisez dans la vie de tous les jours
- Fabrication de papier à partir de fibres végétales

La Universidad de Oxford

- Recorrido de la familia sobre las propiedades de las plantas: para ayudarlo a descubrir más sobre las plantas que utiliza en la vida diaria
- Fabricación de papel utilizando las fibras de las plantas

Ghana – Ghana – Ghana**Aburi Botanic Garden**

- The importance of spices
- The benefits of cashew production

Jardin Botanique d'Aburi

- De l'importance des épices
- Les bénéfices de la production d'Acajou

El jardín botánico de Aburi

- La importancia de las especias
- Los beneficios de la producción del anacardo

Cameroon – Cameroon – Camerún**Limbe Botanic Garden**

- Sustainable harvesting
- Cultivating medicinal plants

Jardin Botanique de Limbe

- De la moisson pour le développement durable
- Cultiver les plantes médicinales

El jardín botánico de Limbe

- Cosecha sostenible
- Cultivo de plantas medicinales

Educating Adults - A worldwide view

Formation pour adultes - Un regard mondial

Enseñanza de adultos: una perspectiva mundial

Russia – Russie – Rusia**Botanic Garden of the Irkutsk State University**

- Protecting the environment
- Exploring the Lake Baikal region

Jardin Botanique de l'Université de l'Etat d'Irkutsk

- Protection de l'environnement
- Exploration de la région du Lac Baikal

El jardín botánico de la Universidad estatal de Irkutsk

- Protección del medio ambiente.
- Exploración de la región del lago Baikal

India – Inde – La India**Tropical Botanic Garden & Research Institute**

- Empowering women in the community to cultivate herbs for health

Institut de Recherche et Jardin Botanique Tropical

- Donner les pleins pouvoirs aux femmes de la communauté pour cultiver les plantes médicinales à des fins sanitaires

El jardín botánico tropical y la Escuela de investigación

- Otorgar a la mujer de la comunidad la competencia de cultivar plantas para la salud

Kenya – Kenya – Kenia**National Museums of Kenya**

- Courses for tour guides - know your trees and how to run a guided tour
- Darwin Plant Conservation Strategy Course for East Africans working in conservation

Muséum National du Kenya

- Cours pour Guides Tour - Connaître vos arbres et comment réaliser vos visites (Guides Tours)
- Darwin Plant Conservation Strategy Course (Cours sur la Stratégie Darwin pour la Conservation des Plantes) pour les africains de l'est qui travaillent à la conservation

Museos nacionales de Kenia

- Cursos para excursiones guiadas: conozca sus árboles y cómo dirigir una excursión guiada
- Curso de estrategias de conservación de plantas Darwin, para africanos del Este que trabajen en conservación

China – Chine – China**Xishuangbanna Tropical Botanic Garden**

- Ethnobotany for Buddhist monks

Jardin Botanique Tropical de Xishuangbanna

- Ethnobotanique pour moines Bouddhistes

El jardín botánico tropical de Xishuangbanna

- Etnobotánica para monjes budistas

Singapore – Singapour – Singapur**National Parks Board**

- Growing plants in hydroponics
- Basic and advanced horticultural courses

National Parks Board

- Cultiver des plantes sur hydroponiques
- Cours d'horticulture de base et avancés

El Consejo de parques nacionales

- Cultivo de plantas con el sistema de hidroponía
- Cursos básicos y avanzados de horticultura

Australia – Australie – Australia**Adelaide Botanic Garden and Herbarium**

- Community based quiz trail - focusing on biodiversity, ethnobotany and environmental issues

Jardin Botanique et Herbarium d'Adélaïde

- Jeu de piste - questionnaire pour le public - basé sur les thèmes de biodiversité, d'ethnobotanique et d'environnement

El jardín botánico y herbario Adelaine

- Recorrido de preguntas y respuestas basadas en la comunidad: enfocado en biodiversidad, etnobotánica y cuestiones medioambientales

Are you looking for some new ideas for activities that appeal to adults? Have a look around the world and discover a few examples of the wide range of activities and courses currently being offered by botanic gardens worldwide.

Quelques exemples du large panel de cours proposé aux adultes par les différents jardins botaniques du monde entier.

¿Necesita nuevas ideas que les interese a los adultos? Eche un vistazo alrededor del mundo y descubra algunos ejemplos de la amplia gama de actividades y cursos que se ofrecen en los jardines botánicos del globo.

Volunteers in Education and Interpretation - the American Experience



Above:
Don't leave your
volunteers out
too long in the
sun! ('The
Docent'
sculpture at the
Sonoran Desert
Museum, Tucson
Arizona)

■ Summary

In America, volunteers are found working beside paid staff in a very wide variety of positions in botanic gardens and other public institutions. Education volunteers, called docents, give guided tours, visit schools and help to interpret themes or exhibits through static displays, often using artefacts or 'biofacts' as visual aids. The recruitment, training and management of large teams of

volunteers is handled in a professional way which takes into consideration aspects such as job satisfaction, personal recognition and health and safety issues. People volunteer for many different reasons and it is essential to understand what an individual wants to gain from the experience as well as what they can offer. All the organisations I visited in America felt that volunteers were cost-effective but I was also reminded that they were not free and that all of the costs should be properly assessed before launching a new scheme.

A Terrific Opportunity

In the early summer of 1998, I spent six weeks on the west coast of United States and Canada visiting a variety of public organisations where volunteers were actively involved in environmental education or interpretation. The trip was made possible through the generous support of a Winston Churchill Travelling Fellowship. The aim was to learn from the American experience in recruiting, training and managing education volunteers. The idea was prompted by a proposed plan to increase the number of education volunteers at the Royal Botanic Garden Edinburgh (RBGE) - an idea which has since become a reality.

My American itinerary covered six cities - San Francisco, Santa Barbara, Portland (Oregon), Seattle, Vancouver and Victoria and included nineteen top class zoos, botanic gardens, museums, marine aquaria and national parks. There were, of course, similarities in the way volunteers were managed at various organisations but there were also many differences, which provided the study with interesting comparisons.

What Do Volunteers Do?

The above question could be answered quite simply with two words: 'Virtually everything!' During my discussions with volunteer organisers I found volunteers doing a wide variety of jobs, from serving in bookshops to servicing the plumbing! I encountered educational volunteers (usually called docents in America) welcoming visitors, leading guided tours, giving talks, providing demonstrations and working with school groups. Although they most often operated on site, some docents were also involved in outreach programmes.

One of the most attractive volunteer jobs I encountered was campsite host with the National Parks Service in California's Kings Canyon. Retired people with their own recreational vehicles, spend up to two months each summer living, rent free, on campgrounds helping other campers enjoy their visit. This is a voluntary job I want to do in my retirement!

Some places with very large numbers of visitors have found that guided tours are impractical and have opted instead for static interpretative stations. The docents often use visual aids, artefacts or 'biofacts' (bits of living organisms, such as skulls, bones, pelts or seed pods) to help tell a story relevant to the exhibit or area. At Monterey Bay Aquarium (MBA) the 2 million people who visit each year can experience a dialogue between a docent and volunteer diver. The docent takes questions from visitors which are answered in turn, via an intercom system, by the diver who is hand-feeding fish and sharks inside a huge glass tank.



Partly the difference is historical. The volunteer scheme at SBBG started with only 16 volunteers ten years ago but now there are 75 docents and other volunteers working in positions throughout the garden. As the volunteer organisation has grown it has gained more autonomy to limit the administration load on Sally Isaacson, the paid volunteer manager. A similar system of devolved management is found in the majority of organisations I visited.

In the case of MBA the volunteers came before the organisation. The Aquarium was financed by the Packard family (of Hewlett-Packard computers) and Mrs Packard was an active volunteer in a number of local institutions. She wanted the volunteers integrated into the structure from the beginning and so training the initial group of volunteers began two years before the doors of the MBA opened to the public.

Van Dusen Botanic Garden (VDBG) in Vancouver dates from 1966 when local people came up with a plan for a botanic garden to block property developers from building condominiums on the green field site. This group of residents eventually formed the VDBG Association which manages the garden along with City of Vancouver Park Board. Both the organisations have offices and paid staff on site but despite potential problems the sharing of responsibilities between volunteers, paid staff, the city and the association seems to work well.

What Are Some of the Costs?

Although volunteers are, by definition, unpaid I was constantly reminded that they are not free. Some of the volunteer costs include:

- staff time - recruiting, training and administering volunteers
- materials, eg volunteer handbooks
- uniforms
- incentives - social functions, long service awards, free admission
- insurance
- travel expenses.

In order to be effective the benefits accrued from using volunteers must

Who Volunteers and Why?

In North America, and especially on the Pacific coast of the USA and Canada, the tradition of volunteering in the community is deeply ingrained within society. Volunteers are from all walks of life and ages. The youngest volunteer I met was 13 and oldest in her eighties. There is no such thing as a typical volunteer but it is possible to divide most people into one of four broad groups:

1. older, retired people or non-working partners in single income families
2. younger people looking for work experience
3. community service volunteers (from the scouts, clubs, companies, etc)
4. teenage volunteers and student interns.

The first group includes many people who having moved to the west coast in retirement and have looked to volunteering to fill a space in their lives formerly filled by work or family. The latter group includes high school students who receive a basic training before helping other students on class visits. This novel mentoring system

works well at Washington Park Zoo (WPZ), Portland, where teenagers run science stations as part of the Zoo Watch programme.

How are Volunteers Managed Within an Organisation?

Roger Yerke of WPZ told me 'Without volunteers we would be dead in the water...' and most of the education directors I met expressed a similar sentiment. Clearly volunteers are very much appreciated by core staff who they may outnumber by as much as 3:1. How the two groups interact with each other is crucial.

At MBA volunteers have similar terms and conditions as employees. Elsewhere, eg Santa Barbara Botanic Garden (SBBG), volunteers have been encouraged to form a more or less autonomous organisation with its own elected council, committees, constitution and programme. Former education director at SBBG, Mary Carroll, explained that she could offer professional advice and use her persuasive charm to influence the volunteer council but ultimately it is the elected representatives and not the staff who have the final word.

Left:
Volunteers sell seeds and give out advice at Van Dusen Botanic Garden Vancouver, British Columbia.

outweigh the costs to an organisation. Only two of the organisations I visited have carried out a financial analysis. MBA calculate the cost at \$5.8/hour, while at WPZ it is a modest \$0.90/day. Despite the big difference both organisations feel this represents good value for money.

What Has Happened Since I Arrived Home?

North America and Britain are culturally very different and while volunteering is clearly very successful in the western United States and Canada I couldn't assume that it would be as successful in Scotland. However, in the seven months since my American trip I have been working with colleagues in the Public Education Department of the RBGE to recruit and train a team of volunteers to work in the garden's busy

Below:
Teenagers
volunteer at the
Zoo Watch
Science Station
at Washington
Park Zoo,
Portland,
Oregon.

exhibition hall. Volunteers now provide an interface between the garden and the public by greeting visitors with a friendly welcome, answering questions, helping people get the most from the hands-on exhibits and carrying out routine maintenance. The current team of 35 exhibition hall volunteers are already proving to be every bit as valuable as their American counterparts. I suspect it will not be very long until we wonder how we ever managed without their willing and generous support.

For those of you already making use of volunteers in education and interpretation what I have written above will not come as a revelation. However, I believe everyone benefits from seeing how things happen in other parts of the world and I wonder if you know volunteers who would like to exchange ideas with the new and enthusiastic recruits at Edinburgh? Suggestions for setting up links with education volunteers in other places would be very welcome.

▲ Resumé

Aux USA les volontaires travaillent aux côtés du personnel permanent dans les jardins botaniques et autres institutions publiques. Les volontaires dans le domaine de l'éducation appelés docents (guides qualifiés) s'occupent des visites guidées, se rendent dans les écoles, et aident le personnel permanent à monter des expositions ou des panneaux d'interprétation. Le recrutement, la formation et la gestion de larges équipes de volontaires est pris en charge de façon professionnelle en prenant en considération les divers aspects suivants : satisfaction du travail, reconnaissance personnelle, et problèmes d'hygiène et sécurité. Un volontaire s'implique pour différentes raisons et il est important de comprendre ce qu'il attend de cette expérience et de voir ce qu'à son tour il peut offrir. Toutes les organisations consultées aux USA pensent que l'emploi de volontaires est intéressant financièrement mais pas entièrement dénué de charges financières et que ces charges doivent être correctement évaluées avant de s'engager plus avant.

● Resumen

En América encontramos voluntarios que trabajan, en jardines botánicos y otras instituciones públicas, junto con personal remunerado en una variedad de cargos muy amplia. Los voluntarios de la enseñanza, llamados docentes, dan recorridos guiados, visitan colegios y ayudan a interpretar temas o exhibiciones, a través de exposiciones estáticas, utilizando, con frecuencia, artefactos o "biofactos" como apoyo visual. La selección, formación y dirección de grandes equipos de voluntarios se maneja de una manera profesional que toma en consideración aspectos tales como satisfacción en el trabajo, reconocimiento personal, además de cuestiones de salud y seguridad. La gente se ofrece voluntaria por muchas razones diferentes y se hace esencial el entendimiento, tanto de lo que quiere ganar el individuo como de lo que puede ofrecer. En todas las organizaciones americanas que visité opinaban que los voluntarios son rentables, pero se me recordó que no son gratis, por lo que, debería calcularse debidamente el lanzamiento de un nuevo proyecto.

Acknowledgements

I would like to thank everybody who helped make my stay in America so enjoyable and rewarding especially Diane Butler, Mary Carroll, Betsy Clebsch, Dr James Covell, Francis Field, Betsy Flack, Russell Hartman, Rosalind Henning, Annette Huddle, Sally Isaacson, Dr Bruce Macdonald, Paula McCall, Judith Newton, Alison Spriggs, David Tarrent, Nancy Turner and Roger Yerke. I am indebted to the Winston Churchill Trust for their generous support and continued encouragement.

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Les nouveaux guides verts : au jardin botanique de Sydney

Nuevos Guías Verdes para el Real Jardín Botánico de Sydney

Green Guides



a love of the botanic gardens and an enjoyment of meeting new people. They generate goodwill and community support in their interaction with visitors and strive to:

- promote an appreciation and understanding of plants and their importance in our everyday lives
- create an awareness of the importance of biodiversity, and the need to protect rare and endangered species and threatened habitats
- raise awareness of our cultural heritage and
- increase understanding of the botanical and horticultural work of the Royal Botanic Gardens Sydney.

Left:
Green Guides,
Education staff
and Director
Frank Howarth
with Dr Ian
Blackburne
Chairman of the
Royal Botanic
Gardens and
Domain Trust at
the Launch of
the Green
Guides in June
1998.

■ Summary

As Sydney prepares for the Olympic Games in the year 2000 the Royal Botanic Gardens Sydney is preparing to accommodate the expected increase in tourist numbers. 36 Green Guides are being trained to provide directions, general orientation and on-site interpretation. They join a long standing group of Volunteer Guides who are horticulturally and scientifically trained and take the general public and specialist groups on tours of the Gardens. Green Guides, like Volunteer Guides, are part of the Community Education Unit.

To date Green Guides have provided on-site interpretation at the world's first cultivated Wollemi Pine, staffed a six week indoor exhibition entitled *The Secret Garden: little known plants from our nursery*, and assisted with holiday activities such as *Twilight Walks* and our ever popular children's theatre program. They also conduct visitor surveys when requested.

The Royal Botanic Gardens in the heart of Sydney is a wonderful scenic tourist attraction. Located next to the Opera House and on Sydney Harbour it boasts a superb collection of about 8,000 species and cultivars and a long and colourful history as Australia's oldest scientific institution and the site of Australia's first European farm.

In anticipation of expanded tourist numbers leading up to the Olympics in the year 2000 and other millenium events the Royal Botanic Gardens Sydney has recently established a team of volunteer 'green guides'. Green Guides are being trained to provide directions, general orientation, on-site interpretation and to assist with hospitality matters. They join our long standing Volunteer Guides who are horticulturally and scientifically trained to take the general public and specialist groups on tours of the gardens.

Green Guides, like Volunteer Guides, are part of the Community Education Unit. Guides share an interest in plants,

Volunteer Guides offer free guided walks seven days a week as well as paid walks for special interest groups and have been doing so since 1978. Green Guides provide a complementary service by offering face to face interpretation at fixed points around the gardens. This latter approach is proving to be very successful because it caters for the needs of the many visitors who are 'just passing through' or are in the gardens for a short break from commitments in the central business district.

Green Guides regularly stand by the world's first cultivated Wollemi Pine in the Rare and Threatened Garden and answer questions, hand out information leaflets and present interesting touch specimens. As a result, hundreds of visitors each week learn about this endangered species and issues to do with its conservation.

Green Guides have also staffed a six week indoor exhibition entitled *The Secret Garden: little known plants from*

our nursery. Their availability enabled over two thousand visitors to see and learn about 30 of our rare or more unusual plants. Comments in the Visitors' Book were glowing and asked for 'more please!'

Green Guides also assist Education Officers with holiday activities such as Twilight Walks and our ever popular children's theatre program. They also happily conduct visitor surveys when requested.

Green Guides are now being trained to interpret the Plant of the Week as well as the Australian Rainforest collection in the Tropical Centre. Visitors pay for admission to this pyramid glasshouse and are sure to appreciate the value added by interpretive staff.

Currently there are 36 Green Guides and they have mainly been recruited from the Friends of the Gardens. Training for Green Guides is ongoing and takes place every two weeks with talks, slide shows, walks and other activities about all aspects of the gardens. Volunteer Guides are also invited to attend and contribute to these sessions.

It is clear that all guides contribute significantly to public education while expanding their own understanding of the world of plants. Their professional

development is about to be enhanced further by a *National Conference of Volunteer Guides in Botanic Gardens* to be hosted by the Royal Botanic Gardens Sydney in October 1999.

This conference will be a wonderful opportunity for guides to improve their interpretive techniques and share ideas and information with guides from regional and city botanic gardens all over Australia and New Zealand. The guides themselves are organising all aspects of the conference and during the four/five day event in October 1999 they will conduct tours, coordinate activities and play host to approximately 120-200 people. By holding a conference such as this, strong networks are established and excellence in volunteer management practices is promoted.

▲ Resumé

Le compte à rebours est lancé pour les jeux olympiques de Sydney en l'an 2000 et les Jardins Botaniques Royaux se préparent à accueillir des visiteurs en plus grand nombre. 36 guides verts sont en formation pour apprendre à communiquer des notions simples comme les indications d'orientation, d'information et d'interprétation. Ils rejoignent un groupe plus ancien de guides volontaires qui ont reçu une

formation horticole et scientifique et qui guident les différents groupes dans le jardin. Les guides verts et les guides volontaires font partie de l'équipe pédagogique. A ce jour, les guides verts ont fourni une aide à l'interprétation du premier pied de Pin de Wollemi cultivé au monde, ont travaillé lors d'une exposition de 6 semaines intitulée le Jardin Secret : quelques plantes peu connues de notre pépinière et fourni une assistance lors d'activités menées pendant les vacances comme la promenade sous les étoiles ou lors de notre très populaire programme de théâtre pour enfants. Ils réalisent aussi des enquêtes auprès du public.

● Resúmen

A medida que Sydney realiza la cuenta atrás para los Juegos Olímpicos del año 2000, el Real jardín botánico de Sydney se prepara para alojar el esperado incremento del número de turistas. Se está formando a treinta y seis guías verdes para proporcionar indicaciones, orientación general e interpretaciones in situ. Éstos se unen a un grupo de guías voluntarios veteranos, que han recibido formación en horticultura y ciencias, para llevar al público en general y a los especialistas a visitar los jardines.

Hasta la fecha, los guías verdes han ofrecido interpretaciones en el lugar en el que se encuentra el primer pino Wolemi cultivado en el mundo, han llenado una exposición de puertas adentro, durante una semana, titulada, El jardín secreto: plantas desconocidas de nuestro vivero, y han ayudado en actividades vacacionales tales como los Paseos Nocturnos y nuestro ya famoso programa de teatro para niños. Además, presentan encuestas de visitantes, cuando se les pide.

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Right: Robin McIntyre, one of the RBG Sydney's Green Guides, provides 'on the spot' interpretation about the Wollemi Pine to a visitor.



Les jardins Botaniques et la diffusion des connaissances scientifiques
 Jardines botánicas y el conocimiento de la ciencia: un marco para la gestión

Botanic Gardens and the Public Understanding of Science: a Management Framework

■ Summary

Botanic garden education staff worldwide were consulted about the issues which affect the success of education programmes. The results of this research have been developed to establish an 'ideal educational profile' of botanic gardens, to be considered during the development and running of garden education activities.

This paper summarises the dissertation 'Botanic Gardens and the Public Understanding of Science' written by the author as part of the MSc in Communicating Science at Techniquest, Britain's leading hands-on science discovery centre in Cardiff and the University of Glamorgan, Wales.

Introduction

The aim of the research was to investigate the role of public education in botanic gardens and to explore the activities undertaken by gardens in the public understanding of science. Through the identification of the elements which contribute to successful events programmes and consideration of management practice and educational learning theory, the intention was to form an 'ideal educational profile' of a botanic garden, which could be used throughout the world.

The Public Understanding of Science

The public understanding of science is an area into which botanic gardens have expanded in recent years although traditionally most of the activities in the public understanding of science have focused on medical and physical sciences. Exhibits in hands-on



Left:
 Indoor activities
 at Durham
 University
 Botanic Garden

science centres have invariably been based on physical science phenomena, whilst plants and plant science have been neglected, partly due to the slow response rates of most plants to stimuli. This should not be a problem for botanic gardens. Although gardens may have traditionally had an aura of 'hands-off' about them, their plant collections are unique scientific resources, and should be used to their fullest extent when being displayed to the public.

Many botanic gardens have already become involved in activities in the public understanding of science (as opposed to events organised

essentially as part of the garden's education programme). For example, Oxford University Botanic Garden, UK and the Royal Botanic Garden (RBG) Kew at Wakehurst Place, UK have run events as part of the UK's Science, Engineering and Technology week, and RBG Edinburgh, Scotland, organises events for the Edinburgh International Science Festival.

The standard for many public understanding of science activities has been set by events relating to the physical sciences. Biological and botanical sciences need to attain this standard in order to be successful today - it is not acceptable simply to

have posters to read. Activities need to be developed which promote biological science in a manner that will attract and interest the public, and only through this will biology be given an equal role in the public understanding of science.

What Methods Were Used?

Practitioners in the field were consulted using case studies, questionnaires and interviews. Eleven gardens responded to a questionnaire, which was distributed to just under thirty botanic gardens worldwide, and detailed interviews were held with staff of three

UK botanic gardens. Staff were asked about the important elements in ensuring successful educational activities. The research included an in-depth consideration of educational learning theory and management strategies, in order to consider the variety of influences which affect the running of public education in botanic gardens.

What Was Discovered?

Botanic gardens vary widely in the breadth and depth of events programmes offered. Guided tours were the most widely used activity for public

education and were also identified by practitioners as being one of the most powerful tools for increasing the public understanding of science in botanic gardens. However, educational activities consist of more than guided tours and include self-led trails, lectures, hands-on workshops and drop-in sessions, adult education programmes, family gardens and other special events. The ability of gardens to offer activities may depend on factors such as staffing, funding and resources, and although individual activities have separate strengths and weaknesses, many can be transferred between gardens with only minor alterations.

Right:
At the 'Touch
and Tell'
Sunflower,
visitors listen as
different parts of
the plant
describe their
function.



It seems that very little evaluation has been done on the educational effectiveness of the separate activities, and this should certainly form the focus for further research in the field. Whilst the activities undertaken all form the public face of an education programme, it is important to realise that a successful public education programme relies on more than the events offered. The research identified three topics of particular importance when organising activities in botanic gardens which, combined with the actual events offered, are essentially the core aspects of a successful botanic garden education programme:

- communication (between staff; between staff and visitors and; between visitors)
- resources (botanical and staff resources)
- facilities (eg. including factors such as having an education centre, the provision of disabled access and the location of visitor toilets).

An Educational Profile for Botanic Gardens

The topics identified during the research were developed with respect to learning and management theories to form an ideal educational profile for botanic gardens. This profile has been determined to help establish a framework for the provision of successful education programmes, and gardens should consider each of the points below in order to achieve a high standard for their education programmes. This profile incorporates the following seven points:

- 1 A clear set of aims and objectives for the botanic garden, and for the education mission within the botanic garden.
- 2 Staff resources - enthusiastic staff, a full-time education officer, staff willingness to share their expertise, staff training in areas such as communication and customer care, and staff development through networks such as Botanic Gardens Conservation International.
- 3 Pro-active publicity through the issue of press releases which gain coverage and an up-to-date network of named teacher contacts.
- 4 A range of imaginative special events which consciously attract

particular audiences, e.g. new visitors to the garden.

- 5 A comprehensive range of ongoing activities to complement the special events and to maintain year-round interest in the garden. This should not be treated as less important than the special events.
- 6 A clear communication strategy for all aspects of educational work in the garden incorporating communication with visitors and communication with the botanic garden.
- 7 Continued development and improvement of activities through ongoing research, monitoring and evaluation of the education programmes.

Aims and objectives of education programmes

The identification of the role of education within the garden's mission is one of the most important factors that must be considered. How is education incorporated into the overall role of the garden? What are the aims of the education programme? Only when these issues have been clarified and understood by all relevant parties can a programme be developed which is oriented to fulfilling the aims. Isaf (1995) highlights the importance of a focused purpose when providing teacher-training courses, and this applies equally to all events. Without a defined aim, the development of public understanding of science programmes within gardens will in all likelihood be incoherent and confusing.

Conclusions

The ideal educational profile of a botanic garden is a useful checklist for the development and running of education programmes and activities within botanic gardens. Each of the areas indicated in the educational profile contributes to a successful public education programme. It is important that due attention is paid to each section, to ensure that the resources available to botanic gardens can be used effectively and successfully in running public education programmes.

Further information or a complete copy of the author's dissertation can be obtained by contacting the author.

Reference

Isaf, A. (1995). Teacher Training: Introduction. *Roots* 11:2-3. Botanic Gardens Conservation International UK.

▲ Résumé

Les personnels chargés de l'éducation ont été consultés au niveau international sur ce qui fait le succès des programmes éducatifs. Les résultats de cette recherche ont permis d'établir le profil pédagogique idéal des jardins botaniques qui serait à considérer pour tout développement d'activités pédagogiques.

Ce texte résume les conclusions du travail des auteurs effectué dans le cadre d'un Master of Sciences en Science de la Communication à Techniquet premier centre de communication par l'expérience à Cardiff et à l'Université de Glamorgan, Pays de Galles.

● Resúmen

Se ha consultado a personal educativo de todo el mundo acerca de los problemas que afectan al éxito de los programas de enseñanza. Se han desarrollado los resultados de esta investigación, con el fin de establecer el "perfil educativo idóneo" de los jardines botánicos, que se examinará durante el progreso y la organización de las actividades educativas.

Este artículo resume la tesina Los jardines botánicos y la comprensión de la ciencia, realizada por su autor como parte de un Máster en Ciencias de la Comunicación de Techniquet, el principal centro práctico de investigaciones científicas de Gran Bretaña, en Cardiff y en la Universidad de Glamorgan, Gales.

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Tourism

Role Play

■ Summary

Based on a current real-life scenario in Brisbane Forest Park (BFP) Australia, this role play was designed for senior high school and university students with the aim of increasing their understanding and awareness about the needs and issues faced by nature based organisations. Once the scene is set, students are assigned different character roles. They are given time for preparation, and then invited to a meeting to work out a strategy for the park. The role-play concludes with a short debriefing session.

Introduction

Developing educational programmes that target young adults is a challenge and many educators and interpreters use role play to try and convey concepts to young adults in a more interesting and involving manner.

This role play was designed for senior high school and university students with the aim of increasing their understanding and awareness about the needs and issues faced by different nature based operators, with regard to nature based tourism, their competitors and the needs of different clients. The activity is based on a current real-life scenario in Queensland, Australia. It is important to let students know this as it adds a realistic component to the activity.

Resources

A place in which to hold a 'formal' meeting with table and chairs
Character cards (see below) for the following:

Brisbane Forest Park (BFP) Manager (played by the Interpretation Officer)
Student Roles

1. BFP staff member (chair of the meeting)
2. Local resident
3. Japanese tourist
4. Billabong Wildlife Sanctuary staff member
5. School student
6. Queensland Travel and Tourist Corporation (QTC) representative

If there are more than six students participating in the role-play two students can play the same role or if the group is larger than 12 two meetings can be held consecutively.

Outline of Activity

The Interpretation Officer introduces him or herself as the Manager of Brisbane Forest Park and outlines the scenario to the students (see scenario information). Roles are assigned to each of the students and they are given 5-10 minutes to prepare for the meeting. Students take their place at the meeting which is chaired by one of their colleagues, who has been assigned to the role of a Brisbane Forest Park staff member. The chair sits at the head of the table. The students, in their roles, are asked to work out a strategy for the park. The chair presents the strategy to the Manager of BFP. A short debriefing session is held to discuss the activity.

Time Schedule

The exact time taken on each component varies depending on the group, their interests and involvement. It is important to ensure that there is enough time allocated at the end of the session for recommendations to be presented and a debriefing to take place.

Introduction to activity and roles assigned to students (5 minutes)
Students get into character and

prepare for the 'meeting' (10 minutes)
Student playing the role of the BFP staff member chairs the meeting (30 minutes)
Chair presents the results of the meeting to Brisbane Forest Park Manager (10 minutes)
Debriefing session (5 minutes).

Scenario

(introduced by the Manager of BFP - alias the Interpretation Officer)

Until recently there were two wildlife centres within close proximity to Brisbane city: Billabong Wildlife Sanctuary and Walk-about Creek Wildlife Centre.

Billabong Wildlife Sanctuary, which has now closed, attracted a variety of visitors including school groups (country and city), local people with international guests and Australian, German (largest market), Korean and Japanese tourists. Walk-about Creek Wildlife Centre, based at Brisbane Forest Park (BFP) Headquarters, attracts mainly Brisbane residents, in particular families, some of whom are entertaining international guests, and school groups. BFP has always considered Billabong Wildlife Sanctuary as one of its major competitors because of its easy access and proximity to the city and public transport. Now that Billabong Wildlife Sanctuary has closed, an opportunity has opened up for BFP to tap into the client market created by Billabong. In response to this, BFP staff decided to organise a meeting with key representatives of client groups to work out a strategy for BFP to promote Walk-about Creek Wildlife Centre. The aim is to attract clients, who previously visited Billabong Wildlife Sanctuary, before they seek similar experiences elsewhere with other competitors. The outcomes of the meeting are to develop a set of strategies for increasing visitation to this ecotourism venue.

Character cards and Scene Setting

Brisbane Forest Park Employee (chair)

Walk-about Creek Wildlife Centre, located a BFP, has just been expanded to enable more animals to be displayed and to include an interpretive component that highlights the need to protect native flora and fauna and the importance that water plays to all life. Since its initial opening in 1990 however, visitor numbers have steadily dropped from 45,000 visits per year to 25,000 over an eight-year period.

You are the Chair of this meeting. You have invited all these people together to help you develop a strategy for increasing visitation to Walk-about Creek Wildlife Centre. It is important to remember that all ideas for interpreting the centre must convey the value of water to life.

At the moment there is only a limited budget for marketing, however you want to develop a series of actions that you can recommend to the Manager of Brisbane Forest Park to convince him or her of the importance of 'you have to spend money to make money', thereby enabling you to get an increase in your budget for marketing and targeting international clients.

Why not start the meeting by setting a few ground rules? Eg. When one person is talking everyone else must listen. Also consider going around the table and asking everyone to introduce themselves, this way they will all feel involved. To start the discussion you might like to consider asking the following questions:

- What types of people would be attracted to Walk-about Creek Wildlife Centre?
- What are people willing to pay for a visit to an attraction like Walk-about Creek Wildlife Centre?
- What makes people keep returning to centres like the Walk-about Creek Wildlife Centre?
- How do we go about marketing to these key client groups?

Remember it is your job to pull together everyone's ideas into a series of action points that you can recommend to the Manager of BFP.

Local Resident

You are a local Brisbane resident who is very interested in Australian fauna. Think about:

- Your age, hobbies/interests, if you have children/grand children etc.
- Why did you visit Billabong Wildlife Sanctuary in the past?
- What you are willing to pay to visit to a natural area?
- How often you visit attractions like Billabong Wildlife Sanctuary annually?
- How far are you willing to travel in a day to visit attractions in your local area?

Japanese Tourist

This is your second visit to Australia. Think about

- Your age and profession.
- How often do you travel?
- What are the key animals and attractions that encourage you to visit somewhere like Billabong Wildlife Sanctuary in Australia?
- What are you willing to pay for a visit?
- How far you are willing to travel in a day to visit attractions?
- How long you would stay in a city like Brisbane for Holidays?

Billabong Wildlife Sanctuary Employee

You worked at Billabong Wildlife Sanctuary for 5 years and are very knowledgeable about animal displays. You have a good understanding of international tourists and the 'icon animals' they are attracted to.

Think about:

- Which animals attract tourists?
- What people expect when they go to see live animals. For example, do they like to touch the animals? Get their photos taken in front of them?
- What else tourists are interested in - Visiting a cafe? Buying a souvenir? etc.

School Student

You attend a local school student. Think about:

- Your age, interests, personality and socio-economic situation.
- What makes school excursions interesting and fun?
- What kinds of attractions you like to see on weekends?
- What kinds of activities you like to do?

Queensland Travel and Tourist Corporation (QTTC) Representative

Tourism is your primary concern, in particular nature-based tourism. Your agency, QTTC, seeks out attractions of a high standard as an 'ambassador' for Queensland. It also encourages people to extend their stay and explore further, so boosting Queensland's economy. QTTC wants facilities that attract people with a variety of budgets. Think about:

- What types of attractions are going to contribute to the Brisbane economy?
- What icons will attract international guests?
- What ideas you have for visits to suit a range of budgets?

▲ Resumé

Ce jeu de rôle a été conçu pour des élèves de lycée et pour les étudiants universitaires qui visitent le Parc forestier de Brisbane. Le but de cette activité est d'accroître la connaissance et la prise de conscience des tour operators impliqués dans la préparation de voyages ayant pour thème la nature et l'écotourisme sur la gestion et la protection de l'environnement tout en répondant aux besoins des clients. Ce jeu de rôle met en scène un acteur/éducateur qui présente la scène et attribue différents rôles aux étudiants. Après une courte préparation de 5/10 minutes, les étudiants se rencontrent pour débattre une stratégie pour le parc. Le jeu de rôle se termine par une courte session de conclusions

● Resúmen

Este juego de roles, basado en un marco auténtico actual de Australia, se diseñó para estudiantes del bachillerato superior y universitarios, que visiten el Parque forestal de Brisbane. El objetivo de esta actividad es aumentar el conocimiento y la conciencia de éstos

sobre cuestiones a las que se enfrentan los trabajadores de la naturaleza y del ecoturismo, en lo que se refiere a satisfacer las necesidades de los clientes, al mismo tiempo que protegen y controlan el medio ambiente. Para realizar esta actividad, el interprete-educador se encarga de montar el escenario y de asignar los diferentes papeles a los alumnos, que, después de prepararse durante un intervalo de cinco a diez minutos, se reúnen, moderados por uno de sus compañeros, con el fin de elaborar una estrategia para el parque. Finalmente, este juego de roles concluye con una breve sesión de repaso.

Lucy Sutherland developed this activity in 1998 whilst working as the Management Officer (Public Contact) for Brisbane Forest Park, Queensland, Australia. Lucy is now the Education Officer for BGCI. The Walk-about Creek Wildlife Centre has been awarded Advanced Ecotourism Accreditation under the National Ecotourism Accreditation Program in Australia.

Disponibles

Resources

Recursos

resources

The Green Heart "Just so" Style Tales About Plants From Around the World

Graham B. (1998) Birmingham Botanical Gardens and Glasshouses, Birmingham UK. Tel: (44) 121 4540784 Fax: (44) 121 454 7835. Cost £2 plus postage and packaging.

The importance of plants to our everyday lives can easily be forgotten. The Green Heart project sought to address this by working with a group of Year 8 pupils to write stories based on the diversity of unusual shapes and forms displayed by plants from around the world. The result of the project is a booklet of stories in which the detail is a mixture of research and fantasy. It is a wonderful example of what can be achieved and is a useful resource for those who want to encourage young people to look more closely at plants.

Only Made of Wood

Keaney, B. (1998) Forest Education Initiative, Southgate Publishers, c/o Biblios PDS Ltd, Star Road, Partridge Green, West Sussex RH13 8LD, UK. Tel: (44) 1403 710851 Fax: (44) 1403 711143.

Only Made of Wood is a resource aimed at 5-7 year olds. It consists of an illustrated storybook and a photocopiable teacher's book full of ideas for indoor and outdoor activities focusing on trees, wood, paper and the woodland environment. The activities aim to develop skills and knowledge over a wide range of curriculum areas. The storybook tells the tale of a wooden rocking horse that comes to life and takes two children on a magical woodland adventure. The

disponibles

Le coeur vert, les plantes du monde entier abordées à la manière de légendes

Graham B. (1998) Birmingham Botanical Gardens and Glasshouses, Birmingham UK. Tel: (44) 121 4540784 Fax: (44) 121 454 7835. Cost £2 plus postage and packaging.

On oublie vite l'importance des plantes dans notre vie quotidienne. Le projet coeur vert s'adressait à un groupe d'élèves de 8 ans qui ont travaillé sur des histoires basées sur la diversité et l'originalité des silhouettes et des formes des plantes du monde entier. Le résultat est un recueil d'histoires contenant un mélange de recherche et de fantaisie. C'est un merveilleux exemple de ce que l'on peut obtenir avec des jeunes enfants et un moyen efficace de les encourager à regarder les plantes de plus près.

Fait de bois

Keaney, B. (1998) Forest Education Initiative, Southgate Publishers, c/o Biblios PDS Ltd, Star Road, Partridge Green, West Sussex RH13 8LD, UK. Tel: (44) 1403 710851 Fax: (44) 1403 711143.

Fait de bois est un support qui s'adresse aux enfants de 5-7 ans. C'est un livre d'histoires illustré et un livre du maître photocopiable, plein d'idées pour mener des activités tant d'intérieur que d'extérieur, axées sur le bois, le papier et l'environnement forestier. Les activités cherchent à développer des habiletés et des connaissances axées sur de nombreux thèmes du curriculum. Le livre d'histoires raconte la légende d'un cheval à bascule en bois qui prend vie

recursos

The Green Heart "Just so" Style Tales About Plants From Around the World

Graham, B. (1998) Birmingham Botanical Gardens and Glasshouses, Birmingham, Gran Bretaña. Tf: (44) 121 4540784 Fax: (44) 121 454 7835. Precio: 2 libras más envío y embalaje.

Con facilidad se olvida la importancia de las plantas en nuestra vida diaria. El proyecto Corazón Verde buscó estudiar este problema mediante el trabajo con un grupo de alumnos de octavo para escribir, para escribir historias basadas en la diversidad de configuraciones y formas poco comunes que muestran las plantas de todo el mundo. El resultado del trabajo es un folleto de historias en las que los detalles son una mezcla de investigación y fantasía. Se trata de un estupendo ejemplo de lo que se puede conseguir y un recurso útil para animar a los jóvenes a mirar más de cerca las plantas.

Only Made of Wood

Keaney, B. (1998) Forest Education Initiative, Southgate Publishers, c/o Biblios PDS Ltd., Star Road, Partridge Green, West Sussex RH13 8LD, Gran Bretaña. Tf: 01403 710851 Fax: 01403 711143.

Se trata de una fuente dirigida a niños de 5 a 7 años. Cosiste en un libro de cuentos ilustrado y un libro para el profesor, que puede fotocopiar, lleno de ideas para actividades al aire libre y en el interior, centradas en los árboles, la madera, el papel y el medio ambiente del bosque. El objetivo de las actividades es el desarrollo de las

resources

teacher's book contains more than forty activities and twelve photocopiable worksheets for children.

Learning About Biodiversity: A first look at the theory and practice of biodiversity education, awareness and training in Canada

Ham, L. and Kelsey E. (1998)
Biodiversity Convention Office,
Environment Canada, 351 St. Joseph
Boulevard, 9th Floor, Hull, Quebec,
Canada K1A0H3. Email: bco@ec.gc.ca

This bilingual report, in English and French, looks at the way in which people learn about biodiversity, its importance and the role that they can play in its conservation. It recognizes that people must interpret biodiversity within a context that is both meaningful and familiar to them. The first part of the report investigates trends and influences from contemporary educational theory and the implications of various conceptual frameworks on the ways in which biodiversity education is understood and practiced. The second part gives examples of biodiversity education in action in Canada, highlighting a number of innovative and creative initiatives that introduce people to the concept of biodiversity and get them involved in its stewardship. This report is a valuable resource for educational practitioners and conservation organisations keen to design effective and well targeted biodiversity education, training and awareness policies and programmes.

Capacity-Building: An Approach to People-Centred Development

Eade, D, (1997), Oxfam Publishing, c/o BEBC, PO Box 1496, Parkstone BH12 3YD, UK. Tel: (44) 1202 712933 Fax: (44) 1202 712930. Price £8.95/\$14.95

This book considers specific and practical ways in which NGOs can contribute to enabling people to build on the capacities they already possess. It reviews the types of social organisation within which NGOs might

disponibles

et emmène deux enfants dans les bois, vers des aventures magiques. Le livre du maître contient plus de 40 activités et 12 fiches de travail photocopiables pour les enfants.

Etudier la biodiversité : rapide examen de la théorie et la pratique de l'éducation, la prise de conscience et la formation sur la biodiversité au Canada

Ham. L. and Kelsey E. (1998)
Biodiversity Convention Office,
Environment Canada, 351 St. Joseph
Boulevard, 9th Floor, Hull, Quebec,
Canada K1A0H3. Email: bco@ec.gc.ca

Ce rapport bilingue anglais-français traite de la façon dont les gens apprennent ce qu'est la biodiversité, son importance et le rôle qu'ils peuvent jouer dans sa conservation. Il constate que les gens doivent appréhender la biodiversité dans un contexte à la fois significatif et familier pour eux. La première partie du rapport analyse les tendances et les influences des théories actuelles sur l'éducation et les implications de diverses trames conceptuelles conçues et utilisées en éducation à la biodiversité. La seconde partie donne des exemples d'actions d'éducation à la biodiversité pratiquées au Canada, soulignant des initiatives innovantes et créatives, pour initier le public au concept de biodiversité et les impliquer dans sa gestion. Ce rapport est une ressource précieuse pour les praticiens de l'éducation et les organismes concernés par la conservation et motivés par la création d'actions d'éducation à la conservation efficaces et bien ciblées, de formations, de programmes et de politiques de sensibilisation.

Augmenter son potentiel : une approche du développement centrée sur les populations

Eade, D, (1997), Oxfam Publishing, c/o BEBC, PO Box 1496, Parkstone BH12 3YD, UK. Tel: (44) 1202 712933 Fax: (44) 1202 712930. Price £8.95/\$14.95

Ce livre traite des méthodes pratiques et spécifiques appliquées par les ONG

recursos

habilidades y el conocimiento de una amplia variedad de áreas. Por una parte, el libro de cuentos relata la historia de una mecedora que se convierte en objeto animado y lleva a dos niños a vivir una aventura en un bosque mágico, por otra, el libro para el profesor contiene más de cuarenta actividades y tres hojas de ejercicios que pueden fotocopiar para los niños.

Learning About Biodiversity: A first look at the theory and practice of biodiversity education, awareness and training in Canada

Ham, L. y Kelsey E. (1998).: Biodiversity Convention Office, Environment Canada, 351 St. Joseph Boulevard, 9th Floor, Hull, Quebec, Canada K1A0H3. Correo electrónico: bco@ec.gc.ca

Este informe bilingüe, en inglés y en francés, da una mirada a la forma en la que la gente aprende acerca sobre biodiversidad, la importancia de ésta y el papel que desempeñan ellos en la conservación. El informe reconoce que las personas han de interpretar la biodiversidad dentro de un contexto que para ellos sea, tanto significativo como familiar. La primera parte de éste investiga las tendencias e influencias de la teoría educativa contemporánea y las implicaciones de varios marcos, en la manera en la que se comprende y se practica la enseñanza de la biodiversidad. La segunda parte ofrece ejemplos de enseñanza de la biodiversidad que se utiliza en Canadá, destacando algunas iniciativas innovadoras y creativas para introducir a la gente en el concepto de biodiversidad e implicarlos en la administración de éste. Este informe constituye una fuente valiosa para los educadores y para las organizaciones de conservación interesadas en diseñar una enseñanza de la biodiversidad efectiva y bien dirigida, formación y políticas y programas de concienciación.

Capacity-Building: An Approach to People-Centred Development

Eade, D. (1997) Oxfam Publishing, c/o BEBC, PO Box 1496, Parkstone

■ resources

consider working, and the provision of training in a variety of relevant skills and activities. The first section introduces the topic and identifies issues that need to be taken into account while the second section covers the kinds of capacities that are critical for development. Relevant to any organisation involved in capacity-building, this book will enable readers to reflect more critically about their role in this process.



Caring for our Future: Action for Europe's Environment

European Commission, Directorate-General XI Environment, Nuclear Safety and Civil Protection with the support of European Environment Agency, Copenhagen, (1998), Office for Official Publications of the European Communities, L-2985, Luxembourg. ISBN 92-828-2889-1. Price ECU20 excluding VAT.

Caring for our Future has been produced to keep people fully informed of the huge environmental challenges facing Europe and its citizens. Consisting of 25 fact sheets covering different environmental issues, it

▲ disponibles

pour rendre les populations capables d'augmenter le potentiel qu'elles possèdent déjà. Il passe en revue les types d'organisations sociales dans lesquelles les ONG sont susceptibles d'intervenir et l'éventail des formations à mettre en place dans différents domaines d'activité et de savoir-faire. La première partie introduit le sujet et identifie les problèmes qui doivent être pris en compte, tandis que la seconde partie identifie les types de potentiels à prendre en compte dans le développement. Intéressant toute organisation impliquée dans le développement, ce livre permettra à ses lecteurs d'avoir une vision plus critique de leur rôle dans ce processus.

Prendre soin du futur : actions pour l'environnement en Europe

Commission Européenne, Direction Générale de l'Environnement, Sûreté Nucléaire et Protection Civile, avec le soutien de l'Agence Européenne de l'Environnement, Copenhague (1998), Bureau des Publications Officielles de la Communauté Européenne, L- 2985, Luxembourg. ISBN 92-828-2889-1. Prix= 20 écus HT

Prendre soin du futur a été produit pour informer le mieux possible le public sur les enjeux importants de l'environnement auxquels sont confrontés l'Europe et ses habitants. Composé de 25 fiches documentaires traitant de différents problèmes d'environnement, il souligne les actions menées par les Institutions Européennes et examine les responsabilités de chacun. L'édition est toute en couleur, facile à lire. Un très bon support d'enseignement.

Conditions matérielles : un portrait de famille à l'échelle mondiale

Peter Menzel (1994) Sierra Club Books, 85 Second Street San Francisco CA 94105-3441. ISBN 0-87156-430-0

● recursos

BH12 3YD, Gran Bretaña. Tf: +44 (0) 1202 712933 Fax: +44 (0) 1202 712930. Precio: 8,95 libras/ 14,5 dólares.

Este libro estudia las formas específicas y prácticas en las que las ONG pueden contribuir a permitir que la gente aumente las capacidades que ya poseen. En él se examinan los tipos de organización social dentro de los cuales éstas podrían considerar trabajar y la provisión de la preparación para varias habilidades y actividades relevantes. La primera sección introduce el tema e identifica cuestiones que es necesario tener en cuenta, mientras que la segunda, cubre los tipos de capacidades críticas para el desarrollo. Este libro es importante para cualquier organización que trabaje en el aumento de las capacidades y permitirá a los lectores reflejar, de manera más crítica, el papel que desempeñan en este proceso.

Caring for our Future: Action for Europe's Environment.

European commission (1998) El Directorate-General XI Environment, Seguridad nuclear y Protección civil con el apoyo de la Agencia europea del medio ambiente, Copenhagen, Office for Official Publications of the European Communities, L-2985, Luxemburgo. ISBN 92-828-2889-1. Precio: 20 EUR sin incluir IVA.

Este trabajo se produjo con el fin de mantener al público enteramente informado de los enormes problemas medioambientales a los que se enfrentan Europa y sus ciudades. Consiste en veinticinco hojas informativas que cubren diversas cuestiones medioambientales, ofrece una idea general de las acciones tomadas por las instituciones europeas y examina las responsabilidades del individuo. Además, está producido en color totalmente y tiene una lectura muy amena. Se trata de una fuente excelente para la enseñanza.

Material World: A Global Family Portrait

Menzel, Peter (1994) Sierra Club Books, 85 Second Street, San

resources

outlines the actions taken by European institutions and examines the responsibilities of individuals. It is produced in full colour throughout and is very readable. An excellent resource for teaching.

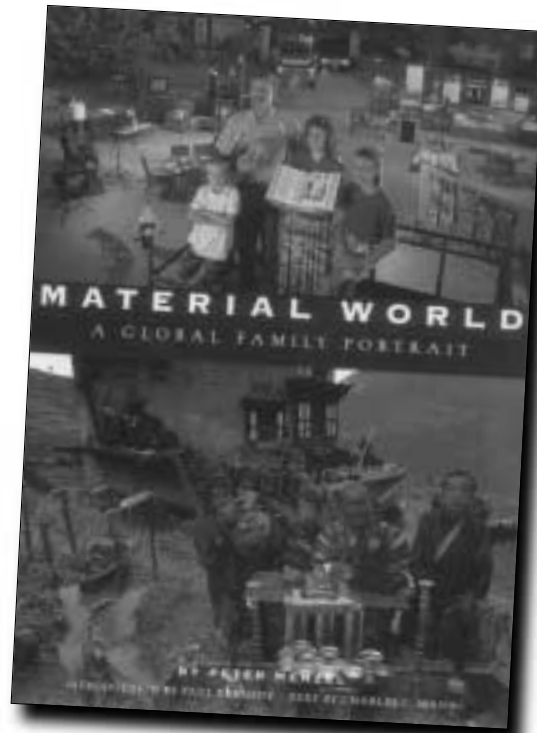
Material World A Global Family Portrait

Peter Menzel (1994)
Sierra Club Books,
85 Second Street
San Francisco
CA 94105-3441.
ISBN 0-87156-430-0

'What follows is a bold and imaginative experiment - an attempt to capture, through photos and statistics, both the common humanity of the peoples inhabiting our Earth and the great differences in material goods and circumstances that make rich and poor societies (Paul Kennedy Introduction p.7)'. Material World A Global Family Portrait illustrates and documents the material world from families throughout the world. Photographers travelled to 30 nations and lived with a family for a week. At the end of the week a family portrait was taken to illustrate the family with all their possessions.

This book is fascinating on many different levels. From the visual perspective one can quickly see and compare the possessions of each culture. The contrasting priorities are highlighted when reading about the father or mother's most valued possession or wishes for the future. Not only is this book a valuable personal resource but it is also an excellent teaching resource, enabling students to examine contrasting cultures and ways of living in every day life. For example, time has a different meaning in each culture. In one part of the world it takes 3 hours per day to go

disponibles



'Il s'agit d'une expérience audacieuse et imaginative pour tenter de saisir, à travers photos et statistiques des gens ordinaires habitant notre planète, les grandes différences d'une société à l'autre dans les biens matériels et les conditions qui font qu'une société est riche ou pauvre' (Paul Kennedy, intro p7). Cet ouvrage, illustrations et documents à l'appui, montre les possessions matérielles de familles du monde entier. Des photographes ont exploré 30 pays en vivant dans une famille durant une semaine. A la fin de la semaine, une photo de famille est prise, montrant la famille et ses biens. Ce livre est fascinant à différents égards. Visuellement, on peut rapidement voir et comparer les biens de chaque culture. Ces différences sont encore plus explicites quand on lit ce que le père ou la mère considère comme son bien le plus précieux ou leurs souhaits pour l'avenir. Ce livre est non seulement intéressant en soi, mais c'est aussi un excellent support d'enseignement, permettant aux étudiants d'appréhender les

recursos

Francisco CA 94105-3441.
ISBN 0-87156-430-0

'Lo que les presentamos a continuación es un experimento audaz e imaginativo: un intento de capturar, a través de fotografías y estadísticas, tanto la condición humana de los habitantes de nuestra Tierra como las grandes diferencias en los bienes materiales y en las circunstancias que hacen que una sociedad sea pobre o rica (Introducción de Paul Kennedy, p.7)'. La obra ilustra y documenta el mundo material sacado de familias de todo el mundo. Los fotógrafos viajaron a treinta países y vivían con una familia durante una semana, al final de la cual se tomaba un retrato, para ilustrar a la familia junto con sus pertenencias.

Se trata de un libro fascinante en muchos aspectos. Desde el punto de vista visual, se pueden ver y comparar rápidamente las pertenencias de cada cultura y, cuando leemos la posesión más valorada por el padre o la madre o los deseos para el futuro, se destaca el contraste de prioridades. Esta obra no sólo constituye una valiosa fuente personal, sino que también es un estupendo recurso de enseñanza, que permite a los alumnos analizar los contrastes de las culturas y las formas de vivir el día a día. El tiempo, por ejemplo, adquiere un significado distinto en cada cultura. En una parte del mundo se tardan tres horas en ir y volver al colegio y cuatro horas cada dos semanas en ir caminando al mercado de la ciudad más cercana comparado a veinte km. de distancia, mientras que en otra, después de un desayuno de dos pepsis, dos cigarrillos, una taza de té y una vitamina, se calcula perfectamente el trayecto para coger el tren de cercanías, para llegar cuarenta y cinco segundos antes de que llegue el tren. Recomendamos este libro encarecidamente.

Cuadernos de enseñanza medioambiental

Universidad de Alcalá, Servicio de publicaciones, Real jardín botánico Juan Carlos I, Campus de la Universidad, Ciudad Residencial,

resources

back and forth to school and 4 hours every two weeks walking to the market in the nearest town 40 km away. After a breakfast of 2 peeps, 2 cigarettes, 1 cup of coffee, and 1 vitamin, the trip to catch the commuter train is perfectly timed to arrive 45 seconds before the train arrives! This book is highly recommended.

Environmental teaching workbooks

University of Alcalá, Publications Service, Juan Carlos 1 Royal Botanic Garden, University Campus, Ciudad Residencial, Bloque A-13, puertas 1 y 2. Ca. Nac. II, Km 31,900. E-28805 Alcalá de Henares, Madrid, Spain.

Since 1995, the Juan Carlos 1 Royal Botanic Garden has developed a set of environmental teaching workbooks for use with secondary school pupils, age 12-16. Each workbook contains a section for teachers and for students and details are provided on the: objectives of the activities, the curriculum areas they fit into, estimated time taken to do them, ideas for developing them, evaluation and teaching material required. Each workbook covers a separate topic. These include: 1) Reforestation, 2) Lichens: bio-indicators, 3) Plants associated with Christmas 4) Interior Plants, 5) Plant Classification and Nomenclature, 6) Forestry I: Gymnosperms, 7) Forestry II: Angiosperms, 8) Riverbank vegetation: River Henares, 9) Environmental Impact, 10) Medicinal Plants, 11) Plants of Economic Interest, 12) Popular Parties and Traditions. The workbooks can be photocopied for educational purposes providing the Juan Carlos 1 Royal Botanic Garden is credited.

Sustainable Development

CDROM - network compatible, operates under Windows 3.1/95. Technical specification required is: 486, 33MHz, 8MB RAM, VGA + 256 colours or greater. Matrix Multimedia Ltd., 10 Hey St. Bradford, BD7 1DQ, UK. Tel/fax: (44) 1274 730808. Email: sales@MatrixMultimedia.co.uk

disponibles

différences entre les cultures et les modes de vie au quotidien. Par exemple, le temps a une signification différente dans chaque culture. Dans certaines régions du monde, il faut 3 heures chaque jour pour aller et revenir de l'école et 4 heures de marche tous les 15 jours pour aller au marché dans la ville la plus proche, à 40 km. Après un petit déjeuner composé de 2 pepsi, 2 cigarettes, 1 tasse de café et 1 vitamine, le trajet pour attraper le train de banlieue est parfaitement minuté pour arriver 45 secondes avant le départ! Ce livre est vivement recommandé.

Cahiers d'exercices pour l'enseignement de l'environnement

University of Alcalá, Publications Service, Juan Carlos 1 Royal Botanic Garden, University Campus, Ciudad Residencial, Bloque A-13, puertas 1 y 2. Ca. Nac. II, Km 31,900. E-28805 Alcalá de Henares, Madrid, Spain.

Depuis 1995, le Jardin Botanique Royal Juan Carlos a développé une série de brochures pour l'enseignement de l'environnement, utilisables par des élèves du secondaire de 12-16 ans. Chaque cahier d'exercice contient une partie pour l'enseignant et une partie pour l'élève et donne des détails sur les objectifs des activités, les parties du curriculum qu'elles concernent, l'estimation du temps nécessaire pour les faire, des idées pour les développer, le matériel nécessaire pour l'enseignement et l'évaluation. Chaque livret traite d'un sujet précis : 1) Reforestation 2) Lichens bioindicateurs 3) Les plantes de Noël 4) Plante d'intérieur 5) Nomenclature et classification des plantes 6) Sylviculture : Gymnospermes 7) Sylviculture : Angiospermes 8) Végétation des bords de rivière : la rivière Henares 9) Impact sur l'environnement 10) Plantes médicinales 11) Plantes d'intérêt économique 12) Pratiques et traditions populaires. Les cahiers d'exercices peuvent être photocopiés dans un but éducatif avec l'accord du Jardin Botanique Royal Juan Carlos.

recursos

Bloque A-13, puertas 1 y 2. Ca. Nac. II, Km 31.900. E-28805, Alcalá de Henares, Madrid.

Desde 1995, el Real jardín botánico Juan Carlos I ha elaborado una serie de cuadernos de enseñanza medioambiental, para su uso por alumnos de 12 a 16 años de edad. Cada cuaderno contiene una sección para profesores y para estudiantes. Los detalles se ofrecen en los apartados: objetivos de las actividades, áreas del programa de estudios en las que encajan, tiempo estimado para realizarlas, ideas para desarrollarlas, evaluación y material de enseñanza requerido. Cada cuaderno cubre un tema distinto, entre los que se incluyen: 1) Repoblación forestal, 2) Liqueños: bioindicadores, 3) Plantas asociadas con la Navidad, 4) Plantas de interior, 5) Ciencias forestales I: gimnospermas, 7) Ciencias forestales II: angiospermas, 8) Vegetación de los márgenes del río: Río Henares, 9) Efecto medioambiental, 10) Plantas medicinales, 11) Plantas de interés económico, 12) Fiestas populares y tradiciones. Además, se ofrece la posibilidad de fotocopiar los cuadernos para propósitos educativos, siempre y cuando se reconozca al Real jardín botánico Juan Carlos I.

Sustainable Development

CDROM compatible a la red, trabaja con Windows 3.1/95. Especialización técnica requerida: 486, 33MHz, 8MB RAM, VGA y 256 colores o mayor. Matrix Multimedia Ltd., 10 Hey St. Bradford, BD7 1DQ, Gran Bretaña. Tf/fax: +44 (0) 1274 730808. Correo electrónico: sales@MatrixMultimedia.co.uk

Este CDROM se centra en la interacción de las personas y el medio ambiente que les rodea. Está dividido en cinco campos:

- El efecto humano: examina detenidamente cómo amenazamos diferentes medios ambientes.
- Agenda 21: analiza los temas principales de la sostenibilidad y las cuestiones debatibles por los jefes de estado de todo el mundo.
- Alternativas futuras: echa una ojeada

resources

This CDROM focuses on the interaction of people and their environment. It is divided into five areas:

- The Human Impact, which looks at the way in which we threaten different environment.
- Agenda 21, which examines the main themes of sustainability and the issues discussed by world leaders.
- Future Alternatives, which looks at alternatives to help conserve the environment
- Action Case Studies, which looks at case studies at local, national and European level
- Support materials, which contain a set worksheets and investigations designed to aid research into sustainability.

Although there are interactive exercises for students, this CDROM is very heavy on information provision biased towards sustainability. The 300 photographs and 50 pages of A4 text however, provide stimulating starting points for discussion. They can also be downloaded by students and used as resources in reports and projects.

Web sites

Sierra Club

<http://www.sierraclub.org/education>

The Sierra Club is a non-profit, member-supported public interest organisation that promotes conservation of the natural environment by influencing public policy decisions. Its environmental education website contains links to thought provoking articles on environmental education, exemplary education resources and a large number of other environmental education web sites.

Plants for a Future

<http://www.scs.leeds.ac.uk/pfaf/index.html>

Plants for a Future is a resource centre for rare and unusual plants, particularly economic plants. It owns two pieces of land in Devon and Cornwall, UK, where it practices permaculture. Its emphasis is on creating an ecologically sustainable environment. The centre has a database of useful plants

disponibles

Développement durable

CDROM - network compatible, operates under Windows 3.1/95.

Technical specification required is: 486, 33MHz, 8MB RAM, VGA + 256 colours or greater.

Matrix Multimedia Ltd., 10 Hey St. Bradford, BD7 1DQ, UK.

Tel/fax: +44 (0)1274 730808.

Email: sales@MatrixMultimedia.co.uk

Ce CDROM a pour thème l'interaction entre l'homme et son environnement. Il est divisé en 5 parties :

- L'impact de l'homme, avec des regards sur la manière dont nous traitons différents types d'environnement
- Agenda 21, qui examine les principaux thèmes du développement durable et les problèmes débattus par les responsables à l'échelle mondiale.
- Les solutions alternatives qui peuvent aider à la conservation de l'environnement
- Etudes de cas d'actions à l'échelle locale, nationale et européenne
- Matériel pour aider la recherche dans le domaine du développement durable, avec un jeu de fiches de travail et d'investigations.

Même s'il y a des exercices interactifs pour les étudiants, ce CDROM est néanmoins très riche en informations dans le domaine du développement durable. De plus, les 300 photos et les 50 pages A4 de texte constituent des déclencheurs efficaces de discussions. Tout peut également être photocopié par les étudiants et être utilisé dans des rapports ou des projets.

Sur le Web

<http://www.sierraclub.org/education>

Le Sierra Club est une organisation sans but lucratif, déclarée d'utilité publique qui milite pour la conservation de l'environnement naturel en influençant les décisions politiques. Son site web d'éducation à l'environnement permet des liens vers des articles provocateurs sur l'éducation à l'environnement, des modèles de ressources en éducation et un vaste choix d'autres sites web d'éducation à l'environnement.

recursos

a las alternativas existentes para ayudar a conservar el medio ambiente.

- Actividad de estudios de casos prácticos: examina los estudios de casos prácticos en los ámbitos local, nacional y europeo.
- Materiales de apoyo: contiene un conjunto de hojas de ejercicios e investigaciones diseñadas para ayudar en la investigación de la sostenibilidad.

Aunque ofrece ejercicios interactivos para los alumnos, este CDROM posee una gran provisión de información dirigida a la sostenibilidad. Sin embargo, las trescientas fotografías y el texto de cuarenta páginas ofrecen puntos de partida estimulantes para debatir y los alumnos pueden descargarlos para hacer uso de éstos como fuentes en informes y trabajos.

Páginas web

Sierra club

<http://www.sierraclub.org/education>

Sierra club es una organización de interés público sin ánimo de lucro, que recibe ayuda de sus socios y promueve la conservación del medio ambiente natural ejerciendo influencia en decisiones políticas públicas. La página web de educación medioambiental contiene conexiones a artículos que hacen pensar sobre la educación medioambiental, a fuentes de enseñanza que sirven de ejemplo y a un gran número de otras páginas web de enseñanza medioambiental.

Plantas para el futuro

<http://www.scs.leeds.ac.uk/pfaf/index.html>

Plantas para el futuro es un centro de recursos de plantas insólitas, especialmente las plantas económicas, que posee dos terrenos en las regiones de Devon y Cornwall, Gran Bretaña, en los que practican la permacultura. Ellos conceden mucha importancia a la creación de un medio ambiente sostenible ecológicamente. El centro ofrece una base de datos de plantas útiles, que contiene más de 7.000 especies, a las que se puede acceder on-line, además de un gran número de

resources

containing over 7000 species which can be searched online, as well as a number of useful information leaflets on plant uses, in several languages.

Tourism Concern

<http://www.gn.apc.org/tourismconcern/>
Tourism Concern brings together people who have an active concern for tourism's impacts on communities and their environment. Its website is easily accessible and lists the resources it has to offer - books, magazines, papers worldwide, videos and teaching resources. It also has a range of articles on ecotourism from around the world that can be read on-screen.

Zoological Society of San Diego

<http://www.sandiegozoo.org/>
Although, as expected, this web site is concerned mainly on animals, it provides plenty of ideas for educational activities that botanic gardens could offer their public on the web. There is also an interesting section entitled 'Plant Place' that details the plants grown and used at the zoo and where they can be located. The site contains a lot of images so can take a while to load.

disponibles

<http://www.scs.leeds.ac.uk/pfaf/index.html>

Plantes pour le futur est un centre de ressources pour les plantes rares et insolites, en particulier les plantes économiques. Il possède deux terrains dans le Devon et en Cornouaille (Royaume Uni) où il pratique la permaculture. Son objectif est la création d'un environnement écologiquement durable. Le centre possède une base de données permettant de rechercher 7000 plantes utiles ainsi que de nombreuses notices d'information précieuses en plusieurs langues sur les plantes utiles.

<http://www.gn.apc.org/tourismconcern/>
Impact touristique regroupe les personnes qui se soucient activement de l'impact du tourisme sur les communautés et leur environnement. Son site web est facilement accessible, il dresse la liste des ressources qu'il peut offrir : livres, magazines, journaux du monde entier, vidéo et matériel pour l'enseignement. On peut y lire sur l'écran tout un choix d'articles sur l'écotourisme partout dans le monde

<http://www.sandiegozoo.org/>
Bien que, sauf exception, ce site web concerne essentiellement les animaux, il fournit de nombreuses idées éducatives que les jardins botaniques peuvent proposer à leur public sur le web. Il y a également une partie intéressante intitulée "la place des plantes" qui détaille les plantes cultivées et utilisées dans les zoos et où on peut les trouver. Le site contient un bon nombre d'images, le chargement peut être long.

recursos

folletos informativos provechosas, en varios idiomas, sobre los usos de las plantas.

Concienciación del turismo

<http://www.gn.apc.org/tourismconcern/>
Concienciación del turismo reúne a gente interesada activamente en los efectos del turismo en las comunidades y su medio ambiente. Se puede acceder fácilmente a su página web, que contiene una lista de las fuentes que ofrece: libros, revistas, documentos de todo el mundo, videos y recursos de enseñanza. También ofrece un conjunto de artículos de todo el mundo sobre ecoturismo, que pueden leerse en pantalla.

Sociedad zoológica de San Diego

<http://www.sandiegozoo.org/>
Aunque, como es de esperar, esta página web centra su interés principalmente en los animales, proporciona un gran número de ideas para actividades educativas que los jardines botánicos podrían ofrecer al público en la red. También posee una interesante sección titulada 'Plant Place' [La casa de la planta], en la que se detallan las plantas que se cultivan y se utilizan en el zoo y los lugares en los que pueden colocarse. La página contiene un gran número de imágenes, por lo que, puede tardar un poco en cargar.

How to join Botanic Gardens Conservation International

the mission of BGCI is to build a world network for plant conservation. It was founded in 1987 and now includes over 500 member institutions in 110 countries, working together to implement the Botanic Gardens Conservation Strategy and a new International Agenda for Botanic gardens.

Garden members receive our regular publications BGCNews (Botanic Gardens Conservation News) and Roots (Education Review) and a wide range of other publications, materials and services, such as The Darwin Technical Manual for Botanic Gardens and BG-Recorder 2, a computer software package for plant records. Corporate members receive BGCNews and Roots, access to wider partnerships, advice on conservation issues and opportunities for collaboration in key projects. Associate members and Conservation donors receive BGCNews and Roots while Individual members have a choice of BGCNews or Roots. Members are invited to The International Botanic Gardens Conservation Congress and The International Congress on Education in Botanic Gardens, held every three years.

If you support the mission of BGCI and would like to belong to this world network for plant conservation, please join BGCI using this form. With your support, we can make a difference.

Membership category and payment methods

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D		Garden member (budget US\$ 750,000-1,500,000)	275	400	400
E		Garden member (budget below US\$ 750,000)	140	200	200
F		Garden member in developing country	65	100	100
G	Corporate	Gold member	5000	7500	7000
H		Silver member	1000	1500	1350
I	Associate	Associated institution	65	100	100
J	Individual	Conservation donor	140	200	200
K		Individual member (BGCNews or Roots - please circle	35	50	50

Payment may be made by cheque payable to Botanic Gardens Conservation International or by VISA/Mastercard sent to BGCI, 199 Kew Road, Richmond, Surrey, TW9 3BW, U.K. or Fax: +44 (0) 8332 5956.

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