

Saving Seeds: the Economics of Conserving Crop Genetic Resources *Ex Situ* in the Future Harvest Centres of the CGIAR by Bonwoo Koo, Philip G. Pardey, Brian D. Wright and others (2004), xxiii + 207 pp., CABI Publishing, Wallingford, UK and Cambridge, USA. ISBN 0 85199 859 3 (hbk), GBP 45.95/ USD 90.00.

Set against the value of global food supply, an annual bill of USD 5.7 million per year to secure 10% of the world's crop genetic resources that underpin this supply would seem a very modest request. This is the sum that the authors calculate would be necessary to annually support the conservation (mainly in seed banks) of over 660,000 accessions by the Future Harvest Centres of the Consultative Group on International Agricultural Research (CGIAR). Yet there is increasing concern that the long-term funding for this long-term work is insecure.

The aim of the book is to assess the scale of financial endowment necessary to yield sufficient interest to underwrite the CGIAR banks in perpetuity. It also serves to benchmark efforts to establish an endowment fund known as the Global Crop Diversity Trust which will act more widely in support of significant crop collections. Necessarily, the first step in the exercise has been to establish how much the CGIAR collections cost to maintain. The key authors have been careful to assemble the data in a consistent way. Bonwoo Koo is a research fellow of one of the Centres, the International Food Policy Research Institute. Philip Pardey is Professor of Science and Technology Policy at the University of Minnesota, and Brian Wright is Professor of Agricultural and Resource Economics at Berkeley. They are well placed to comment on this subject and have done so in a clear way. The first two chapters give background information on the scale of off-site (*ex situ*) crop genetic resources within the CGIAR network and outline the economics behind gene (mainly seed) banking.

There are 15 Future Harvest Centres, although only 11 have genetic resource collections. They are funded through the CGIAR by governments, foundations, and international and regional organizations. The CGIAR was founded in 1971 and has as its mission the achievement of sustainable food security and poverty reduction in developing countries. The five main collections that hold 87% of the Centres' accessions and on which data for this book are based are the Centro Internacional

de Mejoramiento de Maíz y Trigo, the International Center for Agricultural Research in the Dry Areas, the International Crops Research Institute for the Semi-Arid Tropics, the International Rice Research Institute, and the Centro Internacional de Agricultura Tropical. Each of these institutes is covered by a chapter and appended notes, providing exceptionally detailed and informative data about their operations and also an economic analysis. One of the greatest difficulties must have been deciding which costs were directly applicable to the gene bank work and which related more generally to the rest of the institute.

The final chapter draws all of the information together and concludes that an endowment of USD 149 million would yield sufficient annual revenue to secure the conservation and distribution of the current holdings of the CGIAR gene banks in perpetuity. The analysis indicates the expense of regeneration (the growing out of aged seeds to generate fresh material). For an average accession it accounts for over 60% of the operational costs in five of the banks. One of the major blights to effective *ex situ* crop conservation has been the too frequent regeneration of potentially long-lived seed accessions, with its expense, risk of loss and danger of selection and genetic drift. A number of the banks store to the acceptable, although not preferred, international standards. This means that collections will need to be regenerated more frequently because storage conditions are not optimal. The cost of upgrading these banks to the preferred standards has been estimated to be USD 20.8 million (of which USD 13.6 million has already been earmarked). The outcome of such investment must surely be to reduce regeneration and concomitant costs.

The Global Crop Diversity Trust endowment fund had received USD 29.2 million, just under half the sum pledged, by 15 April 2005. Obviously, there is some way to go before the CGIAR collections are financially secure let alone those in the 1,300 gene banks around the world that hold the remaining 90% of the world's accessions. Multiplying the endowment required for the CGIAR collections by ten is an oversimplification but gives a rough estimate of the sum required to underwrite all of the collections.

This is a well written and produced book. It provides a very thorough review of the economics of crop genetic resources banking and is likely to be a source of statistics for those writing about this branch of plant conservation.

This aside, the market for this specialist book will be limited outside the libraries of organizations with an interest in crop seed conservation, although it may prove interesting to economics students. Those that ought to study it are politicians. One and a half billion dollars to buy global peace of mind for future crop development is a snip.

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The Carolina Parakeet: Glimpses of a Vanished Bird by Noel F.R. Snyder (2004), xii + 153 pp., Princeton University Press, Princeton, USA and Woodstock, UK. ISBN 0 691 11795 0 (hbk), GBP 18.95.

This book is so much more than the definitive reference on the natural history, decline, and extinction of the Carolina parakeet. While not compromising scientific analysis of the causes of this loss, Snyder manages to weave an extremely engaging murder mystery story, challenges many accepted theories about this species, and adds a human element that makes it all the more real and tragic.

A large amount of previously published information on the basic ecology of the Carolina parakeet, particularly from Daniel McKinley, is collated here, yet many intriguing aspects of its biology remain tantalizingly uncertain, underlining the importance of the limited research that was done at the time. Snyder presents a wealth of evidence that this extinction saw the loss to the world of something considerably more unique than just another slight variant on the global parakeet theme. For example, could this, one of the few temperate members of its Order, have been a regular colonial – or indeed cooperative – nester, with the unique flexibility to not only use existing holes but also construct twig nests?

Significant new information is also added as a result of Snyder's historical research, most notably from numerous interviews conducted with elderly Florida residents who remembered Carolina parakeets from the 1910s and 1920s. I only wish that Snyder also had time to repeat this exercise in the area of North Carolina where the last convincing records of the species occurred. These personal accounts, interwoven with biographic information on some of the colourful characters of the time, paint a picture of a wild frontier central Florida unimaginable from the present day confines of strip malls and suburban sprawl. Moreover, these accounts bring the Carolina parakeet to life more than any biological treatise ever could. In conjunction with the convincing evidence presented that the species probably hung on up to at least

the late 1930s, and quite possibly well into the 1940s, the loss of this species feels painfully close.

A real strength of this book is that Snyder is not afraid to construct balanced but challenging arguments to fit the patchy and often conflicting data available, leading to some intriguing, if not always entirely convincing, hypotheses – such as that the parakeet may have been toxic to potential predators. For me, a significant value of the book is the analysis of the reasons for the decline and ultimate extinction of the Carolina parakeet, helping to piece together lessons that may aid in conservation battles not yet lost. The truth will probably never be known, but Snyder rightly points out that the demography of the decline best fits one caused by disease, in a population already weakened by hunting, loss of habitat (particularly nest trees), and invasive introduced honeybees. However, he is perhaps too generous in downplaying the importance of this latter threat, given the high rate of nest desertion that this has recently caused for the only marginally larger uvea parakeet of New Caledonia.

More than anything, this detective work reveals the gaping holes in scientific research at the time. While thus highlighting the importance of underpinning conservation efforts with solid science, Snyder is pessimistic that even today's best science and conservation efforts would have necessarily saved a species apparently under pressure from a complex cocktail of threats. Sadly, the recent apparent extinction of yet another species, the Po'o-uli, from the United States does seem to indicate that conservation funding and scientific understanding is not yet increasing at a rate commensurate with the decline of the world's biodiversity.

Conservation failures are all too rarely documented, so even this book's necessarily incomplete and speculative retrospective analysis does provide valuable lessons for future efforts. It should thus appeal to anyone, throughout the world, who is concerned about threatened species declines. Sections concerned directly with biology may prove a little dry for the non-scientific reader, but the text is generally readable. In fact, in many places I found the tragedy and mystery of the story to make for such captivating reading that it was hard to put the book down!

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The Story of Asia's Lions by Divyabhanusinh (2005), 259 pp., Marg Publications, Mumbai, India. ISBN 81 85026 66 1, INR 1850.00 / USD 49.00 / GBP 30.00.

Some years ago, I reviewed Divyanbhanusinh's book *The End Of A Trail: The Cheetah In India*, a remarkable book,

richly illustrated, documenting almost all that was known about the history and final extinction of the Indian cheetah. This new book is in the same mould: meticulous, well-written, and even more lavishly illustrated. The difference, of course, is that the lion, unlike the cheetah, was saved at the eleventh hour.

There is another difference also. The cheetah was depleted because it was much in demand as a helper in the hunt; the lion was the quarry itself. From the ancient civilizations of the Middle East via the Mughal period to the shikar craze of British India and the princely states, lions were sought out and destroyed in often unbelievable numbers. To bring about the downfall of the King of Beasts was to affirm the dominance of the civilized world over the mightiest that nature could pit against it. Our proud forbears left skilled and beautiful artworks, lovingly depicting what they were doing: Assyrian bas-reliefs, Mughal paintings, early twentieth century photographs. Divyanbhanusinh records all this in words and pictures, and he also records the growing movement to put a stop to this slaughter, to reverse the lion's decline, and even (more recently) to reintroduce it to parts of its former range. It was, he argues, the accession of the unworldly Rasulkhanji as Nawab of Junagadh in 1892 that really marked the turning-point; he was the one who secured the protection of lions in his dominion, and of Gir Forest as their sanctuary. Lord Curzon, Viceroy of India, was of the same mind, and in 1900 very publicly declined to visit the Gir to exercise his prerogative of shooting a lion, and gave his reasons. Although the occasional lion shikar was held even after Indian independence, the era of conservation had begun.

The author ranges widely over all aspects of lion lore: how Indian lions differ from African, how large they are, their genetic status, their importance in art (including on postage stamps), and why the lion rather than the tiger became the Indian National Emblem. Anyone with an interest in lions, or big cats in general, or the highs and lows of conservation planning, will want to have this book. It is well-produced yet reasonably priced.

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Parks in Transition: Biodiversity, Rural Development and the Bottom Line edited by Brian Child (2004), xviii + 267 pp., Earthscan, London, UK. ISBN 1 84407 068 9 (hbk), GBP 55.00, ISBN 1 84407 069 7 (pbk), GBP 17.95.

Parks are a focus of intense ongoing debate. At the core of the discussion is the relative primacy of biodiversity versus development goals. Broadly, while some insist that parks exist as the only means to protect biodiversity

from human use, others believe parks should be viewed as engines for development through sustainable use of park resources. *Parks in Transition* takes an unambiguous stance towards the latter view, maintaining that parks are a common pool resource set aside on behalf of society and must provide what societies need, i.e. jobs and economic growth with the proviso that no irreversible ecological change occurs. For example, the vast expanses of semi-arid savannahs of South Africa are ecologically and economically unsuited for crop and livestock production but support magnificent wildlife populations suitable for consumptive (trophy hunting) and non-consumptive (tourism) use. These conditions have offered unique opportunities to experiment with innovations in private conservation, community-based natural resource management, and commercialization of protected areas. Given the extreme pressures facing parks in many developing economies, the South African experience is relevant to practitioners seeking to improve the effectiveness of parks globally.

The book is an initiative of the South African Sustainable Use Specialist Group and draws on the collective experience of a large number of southern African conservationists. A core theme, assiduously reiterated throughout the book, is the 'economic success of wildlife production on private and communal lands which not only contributes to biodiversity but legitimizes wildlife as a primary form of land use'. In contrast, state-owned parks and agencies are characterized by economic and ecological failure largely attributable to centralized governance, lack of accountability, monitoring and clearly defined goals. The authors note that by switching the primary purpose of parks to economic development with a caveat that it should be sustainable (i.e. biodiversity conservation) would ultimately improve political, economic and social sustainability, and accountability and performance of parks, without necessarily threatening biodiversity. With an explicit paradigm shift in placing economics first and making conservation secondary, parks can play an important role in promoting economic development and 'even as rural development agencies, provided their mandate is clearly defined'. Following an introduction to the growth of modern nature conservation in South Africa, the book includes chapters on private land contribution to conservation, community-based natural resource management, performance of parks and park agencies, innovations in park management, who and what parks are for in transitional societies and the role of commercialization in achieving conservation goals.

There are several interesting features of the book that make it potentially useful to practitioners from the perspective of innovations in park and wildlife management. Detailed analyses of the performance of wildlife as

a land use on commercial or private land, and the legislative and economic reasons why wildlife utilization has been so effective in the semi-arid rangelands of southern Africa, are instructive. There are useful insights on the advantages of devolution and a shift in the role of governments from actively managing wildlife to providing a regulatory and institutional framework to create incentives for wildlife enterprise. The need for rigorous monitoring and adaptive management is consistently emphasized as a key requirement for the success of parks.

The book has certain drawbacks. Some chapters are long, repetitive and should have been edited more rigorously. The reader is unable to easily extract lessons embedded in the text, and is often left fatigued by the vigorous recurrence of the core theme and weak linkages between paragraphs. Some broad generalizations lack appropriate citations or examples, and a few irregularities are confusing. For example, state-owned parks appear to be measured against different and often, higher standards than private and communal reserves. The authors state in relation to parks that... 'biodiversity monitoring is unsystematic... There is considerable monitoring of large mammals, but examples of monitoring of nutrient and water cycles, soil and long-term vegetation health are rare'. Given the persistent assertion of the overall success of commercialization and devolution, it is unclear if private and communal reserves have adequately addressed this issue, especially since the authors note that 'wildlife production systems do not guarantee the maintenance of ecological processes'. In a similar vein, the issue of ecological/ecosystem representation is raised in the context of state-owned parks but not in the context of private or communal lands. The lack of reference to private conservation initiatives in other parts of the world (Costa Rica, for example) is disappointing. Clearly, however, there are useful lessons to be learned from South Africa's experiences and this book had the potential to contribute more effectively to such a process.

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Vietnam Ecotourism Map (2005), Fauna & Flora International, Cambridge, UK. ISBN 1 903703 13 1, GBP 7.00 plus p&p.

FFI's Vietnam Conservation Support Programme has published a comprehensive ecotourism map of Vietnam. A colourful and informative guide, the map identifies all national parks and nature reserves. While providing

information about local plant and animal species, it also offers tips on how to find them, and guidelines on how to be a responsible ecotourist. Six inset maps of protected areas complete with topography information, trails and various other points of interest are also provided. The Ecotourism Map also highlights conservation initiatives that are underway throughout Vietnam. All proceeds from sales go directly to support Vietnamese primate conservation initiatives that protect threatened species such as the western and eastern black-crested gibbons, Tonkin snub-nosed monkey, red shanked douc langur and Ha Tinh langur. Please contact David Beamont (david.beamont@fauna-flora.org or on +44 (0)1223 579332) to order.

The following publications have been received at the Editorial Office and may be of interest to readers:

Marine Protected Areas for Whales, Dolphins and Porpoises: A World Handbook for Cetacean Habitat Conservation by Erich Hoyt (2005), xx + 492 pp., Earthscan, London, UK. ISBN 1 84407 063 8 (hbk), GBP 75.00, ISBN 1 84407 064 6 (pbk), GBP 24.95.

Experimental Approaches to Conservation Biology edited by Malcolm S. Gordon & Soraya M. Bartol (2004), xv + 343 pp., California University Press, Berkeley and Los Angeles, USA and London, UK. ISBN 0 520 24024 3 (hbk), GBP 48.95.

Framing the Picture: An Assessment of Ramin Trade in Indonesia, Malaysia and Singapore by Lim Teck Wyn, Tonny Soehartono and Chen Hin Keong (2004), xvii + 128 pp., TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia. ISBN 983 99246 9 9 (pbk). Also available at http://www.traffic.org/news/press-releases/ramin_report.pdf

Environmental Education and Advocacy: Changing Perspectives of Ecology and Education edited by Edward A. Johnson and Michael J. Mappin (2005), xii + 333 pp., Cambridge University Press, Cambridge, UK. ISBN 978 0 521 82410 1 (hbk), GBP 55.00.

Balkan Biodiversity: Pattern and Process in the European Hotspot edited by Huw I. Griffiths, Boris Kryštufek and Jane M. Reed (2004), ix + 357 pp., Kluwer Academic Publishers, Dordrecht, The Netherlands. ISBN 1 4020 2853 9 (hbk), GBP 103.00/ USD 199.00.

Practical Ecology for Planners, Developers and Citizens by Dan L. Perlman and Jeffrey C. Milder (2005), xvi + 294 pp., Island Press, Washington, DC, USA. ISBN 1 55963 634 3 (hbk), USD 65.00, ISBN 1 55963 716 1 (pbk), USD 35.00.

Birds in Europe: Population Estimates, Trends and Conservation Status compiled by Ian Burfield and Frans van Bommel (2004), xxiv + 374 pp., BirdLife International, Cambridge, UK. ISBN 0 946888 53 1, GBP 30.00/USD 57.00.

Important Bird Areas in Asia: Key Sites for Conservation compiled by S. Chan, M.J. Crosby, M.Z. Islam, Rudyanto and A.W. Tordoff (2004), xvi + 297 pp.,

BirdLife International, Cambridge, UK. ISBN 0 946888 54 X, GBP 19.00.

Issues and Perspectives in Landscape Ecology edited by John Wiens and Michael Moss (2005), xiv + 390 pp., Cambridge University Press, Cambridge, UK. ISBN 0 521 83053 2 (hbk), GBP 75.00/USD 130.00, ISBN 0 521 53754 1 (pbk), GBP 38.00/USD 65.00.

Species at Risk: Using Economic Incentives to Shelter Endangered Species on Private Lands edited by Jason F. Shogren (2005), ix + 271 pp., University of Texas Press, Austin, USA. ISBN 0 292 70576 X (hbk), USD 50.00, ISBN 0 292 70597 2 (pbk), USD 21.95.