Animal Conservation

ZSL LIVING CONSERVATION

Animal Conservation. Print ISSN 1367-9430

EDITORIAL

Putting the eco back in ecotourism

R. E. Donnelly[1], T. Katzner[2,3], I. J. Gordon[4], M. E. Gompper[5], S. Redpath[6], T. W. J. Garner[7], R. Altwegg[8,9], D. H. Reed[10], K. Acevedo-Whitehouse[7] & N. Pettorelli[7]

1 Department of Biology, Oglethorpe University, Atlanta, GA, USA
2 Division of Forestry and Natural Resources, West Virginia University, Morgantown, WV, USA
3 Timber and Watershed Laboratory, USDA Forest Service, Parsons, WV, USA
4 The James Hutton Institute, Invergowrie, Dundee, Scotland, UK
5 School of Natural Resources, University of Missouri, Columbia, MO, USA
6 Aberdeen Centre for Environmental Sustainability (ACES), University of Aberdeen & Macaulay Institute, Aberdeen, UK
7 Institute of Zoology, Zoological Society of London, London, UK
8 South African National Biodiversity Institute, Claremont, South Africa
9 Animal Demography Unit, Department of Zoology, University of Cape Town, Rondebosch, South Africa
10 Department of Biology, The University of Louisville, Louisville, KY, USA

Correspondence
Roarke Donnelly, Department of Biology, Oglethorpe University, 4484 Peachtree Road NE, Atlanta, GA 30319, USA.
Email: rdonnelly@oglethorpe.edu

doi:10.1111/j.1469-1795.2011.00468.x

In the 1980s, alarm began to spread about habitat loss, especially in tropical forests that supported a vast number of species. Fast and accelerating clearing over the previous two decades had reduced, isolated and degraded this habitat type (Aldhous, 1993; Skole & Tucker, 1993). Conservation proponents reacted by buying and protecting forest tracts; however, political will and funds were often insufficient to support viable plant and animal populations, to protect representative forest communities, or even to prevent the neighboring human populations from illicitly using resources in protected tracts (Goodman & Gonzales, 1990; Terborgh, 1999). Ecotourism developed, in part, as a complement to these conventional conservation methods.

The basic premise of ecotourism is simple and its potential extends well beyond tropical systems. Tourists pay to experience nature in a manner that respects the local culture and environment. The local economy and culture benefit, creating an enduring incentive for the locals to maintain the supply of tourists via natural resource conservation (Honey, 2008). The potential to harmoniously blend conservation and economic development engendered the support of many conservationists, national governments and international aid agencies in the 1990s (Honey, 2008). More recently, however, concern over the high costs of 'extensive' or 'inappropriate' ecotourism to biodiversity conservation (Kiss, 2004) has underscored the need to evaluate ecotourism's performance with respect to conservation and to better integrate this assessment with policy.

Ecotourism's conservation potential should be critically evaluated with an accessible, large, relevant and quantitative body of research. Hypothesis-based research should also include controls. Existing research seems to meet the first two criteria, as searches of databases ('Web of Science' and 'BIOSIS Previews') with the keyword 'ecotour*' yielded hundreds of publications for each database with little overlapped between the databases (e.g., ~10% of manuscripts found by Web of Science were found using the same keywords in BIOSIS Previews). The majority of these publications were generated by social scientists who worked with existing ecotourism enterprises and who quantitatively described trends or tested hypotheses related to issues such as effects on indigenous culture or distribution of tourism revenue (e.g. King & Stewart, 1996; He *et al*., 2008). Because many of the hypothesis-based studies also had appropriate controls (e.g. Kirkby *et al*., 2011), the ecotourism research from the social sciences appears to meet all of the criteria listed above. The assessment of the ecotourism research generated by natural scientists and focused on biodiversity conservation, on the other hand, might be perceived as less positive.

Adding the keyword 'biodiversity' to the aforementioned searches still returned 100–200 publications for each database. These results appeared to meet the criteria for literature accessibility and size. However, many of the publications fail to distinguish between ecotourism and nature-based tourism. This difference is critical because ecotourism intentionally provides incentives for tour guides, land owners and land managers to conserve biodiversity for the short and long term (Kiss, 2004). Such incentives are not cultivated by nature-based tourism or considered in the simulated tourist visits these studies often used to evaluate

tourism's effects. Studies that fail to make this distinction may identify tourism impacts on biodiversity and suggest mitigation measures (e.g. Williams *et al.*, 2009; Karp and Guevara, 2011). However, they do not measure ecotourism's ability to conserve biodiversity in a threatened habitat. Finally, others have noted that even the quantitative studies of ecotourism and biodiversity often lacked biologically meaningful data (e.g. demographic rates or changes in abundance) and/or proper controls (Kiss, 2004; Brockington, Igoe & Schmidt-Soltau, 2006).

This simple assessment of ecotourism research suggests that conservation biologists, unlike social scientists, are only beginning to make important contributions to this field of study. As this field grows, it should do so in a way that facilitates the calculation of net effects (positive, negative or neutral) reflecting the degrees to which ecotourism simultaneously meets goals related to economy, culture, environment and biodiversity. Calculation of net effects is largely unexplored and might have several potential benefits; it could prevent enterprises from pitting one goal against another and remove the unrealistic expectation that each enterprise will simultaneously meet all goals (Chan *et al.*, 2007). It might also encourage a search for synergies between relevant research disciplines like conservation and economics. For example, one could search for a threshold in the abundance of a charismatic vertebrate species that, when exceeded, is associated with a disproportionately large increase in the local population's annual income (c.f., elasticity analysis; Caswell, 2000). The net effect of one ecotourism enterprise could be estimated by generating a complete set of disciplinary studies or one interdisciplinary study. The latter method will be more difficult, but it has been done (e.g. Sheppard *et al.*, 2010) and may be supported by existing interdisciplinary educational programs (e.g. National Science Foundation 2011).

Even with the best research to guide programs, ecotourism is likely to fail without broad oversight, for instance through a certification policy designed to maintain key market forces and provide incentives for generating evidence that ecotourism is clearly benefiting the organisms and communities that serve as its central resources. Certification of ecotour suppliers serves the mutually reinforcing purposes of directing ecotourists to the services that they prefer and allowing ecotour suppliers to offset additional costs related to ecotourism goals (e.g. green buildings) with additional revenue. The persistent problem with certification is that it must have a uniform, international standard – like the star rating for hotels (Honey 2008) – to adequately serve a diverse set of ecotourists. While attempts to achieve this conformity have been made, conservation research has played a minor role in this process. In 1991 the Mohonk Agreement (Rainforest Alliance, 2011*a*) suggested a basic operational scheme and broad criteria for ecotour certification. More recently, the Global Sustainable Tourism Council (GSTC, 2011) followed up with a set of more specific global criteria for certification and a plan to become the international authority for ecotour accreditation (i.e. certification for the certifiers; Rainforest Alliance, 2011*b*).

As proposed, accreditation would ensure the international standard for certification criteria while allowing national or regional entities to assess how and to what extent each criterion should be met within their jurisdictions (Sanabria, 2002; GSTC, 2011). This process would balance stringency and adaptability, but it would not guarantee conservation benefits. For example, GSTCs suggests that 'businesses contribute to the support of biodiversity conservation' in 'natural protected areas and areas with high biodiversity value' (GSTC, 2011). These contributions are often funds that leak out of the region or are dedicated to other purposes (Sekercioglu, 2002; Honey, 2008), producing little local conservation effect. These dollars might be more effective if specifically directed to ecotourism research and implementation of research recommendations.

Despite the fact that ecotourism arose at least in part as a creative and socially responsible means for conserving biodiversity, a rigorous assessment of ecotourism's conservation potential is still awaited. This assessment will only be possible if the community of conservation biologists pursues research with the qualities discussed above and integrates that research with accreditation policy. The sooner we have the integrated research and policy, the sooner we can either leverage ecotourism's potential or abandon it for more useful conservation measures.

References

Aldhous, P. (1993). Tropical deforestation: not just a problem in Amazonia. *Science* **259**, 1390.

Brockington, D., Igoe, J. & Schmidt-Soltau, K. (2006). Conservation, human rights, and poverty reduction. *Conserv. Biol.* **20**, 250–252.

Caswell, H. (2000). Prospective and retrospective perturbation analysis: their roles in conservation biology. *Ecology* **81**, 619–627.

Chan, K.M.A., Pringle, R.M., Ranganathan, J., Boggs, C.L., Chan, Y.L., Ehrlich, P.R., Haff, P.K., Heller, N.E., Al-Khafaji, K. & Macmynowski, D.P. (2007). When agendas collide: human welfare and biological conservation. *Conserv. Biol.* **21**, 59–68.

Global Sustainable Tourism Council (2011). Criteria. Available at http://www.gstcouncil.org/resource-center/gstc-criteria.html (accessed February 6, 2011).

Goodman, S.M. & Gonzales, P.C. (1990). The birds of Mt. Isarog National Park southern Luzon Philippines with particular reference to altitudinal distribution. *Fieldiana Zool.* **60**, 1–39.

He, G., Chen, X., Liu, W., Bearer, S., Zhou, S., Cheng, L.Y., Zhang, H., Ouyang, Z. & Liu, J. (2008). Distribution of economic benefits from ecotourism: a case study of Wolong Nature Reserve for giant pandas in China. *Environ. Mgmt.* **42**, 1017–1025.

Honey, M. (2008). *Ecotourism and sustainable development: Who owns paradise?* Washington, DC: Island Press.

Karp, D. & Guevara, R. (2011). Conversational noise reduction as a win-win for ecotourists and rain forest birds in Peru. *Biotropica* **43**, 122–130.

King, D.A. & Stewart, W.P. (1996). Ecotourism and commodification: protecting people and places. *Biodivers. Conserv.* **5**, 293–305.

Kirkby, C., Giudice-Grenados, R., Day, B., Turner, K., Velarde-Andrade, L.M., Dueñas-Dueñas, A., Lara-Rivas, J.C. & Yu, D.W. (2011). The market triumph of ecotourism: an economic investigation of the private and social benefits of competing land uses in the Peruvian Amazon. *PLoS One* **5**, e13015.

Kiss, A. (2004). Is community-based ecotourism a good use of biodiversity conservation funds? *Trends Ecol. Evol.* **19**, 232–237.

National Science Foundation. (2011). Integrative graduate education and research traineeship. Available at http://www.igert.org (accessed March 25, 2011).

Rainforest Alliance. (2011*a*) . Mohonk Agreement: proposal for an international certification program for sustainable tourism and ecotourism. Available at http://www.rainforest-alliance.org/tourism/documents/mohonk.pdf (accessed February 2, 2011).

Rainforest Alliance (2011*b*). Verification services for tourism businesses. Available at http://www.rainforest-alliance.org/tourism/verification (accessed February 5, 2011).

Sanabria, R. (2002). Accreditation: certifying the certifiers. In *Ecotourism and certification: setting standards in practice*: 325–356. Honey, M. (Ed.). Washington, DC: Island Press.

Sekercioglu, C.H. (2002). Impacts of bird watching on human and avian communities. *Environ. Conserv.* **29**, 282–289.

Sheppard, D.J., Moehrenschlager, A., McPherson, J.M. & Mason, J.J. (2010). Ten years of adaptive community-governed conservation: evaluating biodiversity protection and poverty alleviation in a West African hippopotamus reserve. *Environ. Conserv.* **37**, 270–282.

Skole, D. & Tucker, C. (1993). Tropical deforestation and habitat fragmentation in the Amazon: satellite data from 1978 to1988. *Science* **260**, 1905–1910.

Terborgh, J. (1999). *Requiem for nature*. Washington, DC: Island Press.

Williams, R., Bain, D.E., Smith, J.C. & Lusseau, D. (2009). Effects of vessels on behaviour patterns of individual southern resident killer whales *Orcinus orca*. *Endangered Species Res.* **6**, 199–209.