



The influence of livelihood dependency, local ecological knowledge and market proximity on the ecological impacts of harvesting non-timber forest products

Melita Z. Steele^a, Charlie M. Shackleton^{a,*}, R. Uma Shaanker^{b,c}, K.N. Ganeshaiah^{b,c}, Sarah Radloff^d

^a Dept. of Environmental Science, Rhodes University, Grahamstown 6140, South Africa

^b Ashoka Trust for Research in Ecology and the Environment, Bangalore 560065, India

^c Department of Crop Physiology, University of Agricultural Sciences, GKVK Campus, Bangalore 560065, India

^d Dept. of Statistics, Rhodes University, Grahamstown 6140, South Africa

ARTICLE INFO

Article history:

Received 25 March 2014

Received in revised form 17 July 2014

Accepted 17 July 2014

Available online 5 August 2014

Keywords:

Communal
Direct-use value
Governance
Management
Open access
South Africa

ABSTRACT

It is well established that non-timber forest products make significant contributions to rural incomes throughout most of the developing world. NTFP use frequently raises concerns about the sustainability of, or ecological impacts associated with, NTFP harvesting, as well as local contextual factors which may limit or reduce the impacts. Here we test the conceptual model first advanced by Uma Shaanker et al. (2004) relating to the factors that may limit or exacerbate the ecological impacts associated with NTFP harvesting. These were the extent of local dependence on NTFPs, the degree of marketing and the level of local ecological knowledge. Data were collected via household questionnaires and ecological surveys of woody plants from eight villages throughout South Africa. We found no significant relationships between measures of ecological impact with local ecological knowledge or market proximity and engagement. There was a strong positive relationship between ecological impacts and NTFP dependency as indexed through mean annual direct-use value for NTFPs. This indicates that the higher the dependency and demand for NTFPs, the greater is the possibility of high impacts to the local environment. However, other contextual drivers not included in the original Uma Shaanker et al. (2004) model may also play a role, particularly the strength of local resource governance institutions.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

There is a wealth of case studies from around the world on the contribution of non-timber forest products (NTFPs) to local livelihoods (Vedeld et al., 2007; Shackleton et al., 2007; Saha and Sundriyal, 2012). The precise values and percentages from different regions and studies (Angelsen et al., 2014) are frequently not directly comparable because of the different NTFPs included and the varying methods that were used (Shackleton et al., 2011). Nonetheless, most point to the fact that the proportion of total household incomes provided by NTFPs is significant, with estimates ranging between 10% and 90%, and usually characterised by a higher contribution for poorer households than wealthier ones (e.g. Cavendish, 2000; Davidar et al., 2008; Rijal et al., 2011). This applies for the safety-net function, trade income and for direct consumption. However, whether or not NTFPs are therefore a viable option for poverty alleviation or prevention strategies continues to be debated, and requires more work across a greater range of contexts (Belcher and Schrekenberg, 2007; Shackleton et al., 2007; Ainembabazi et al., 2013).

The contribution of NTFPs to poverty alleviation or diversification of livelihoods is dependent upon their sound management and

sustainable use (Agrawal, 2007). If the abundance or productivity of NTFP species is impaired, then the potential contributions to local livelihoods will diminish over time (Uma Shaanker et al., 2004; Thang et al., 2010; Mutenje et al., 2011). Examples of overuse and diminishing stocks abound (see review by Ticktin, 2004; Thang et al., 2010). Negative impacts may be manifest at any of several scales, from genetic shifts up to large-scale ecosystem impacts (Hiremath, 2004; Uma Shaanker et al., 2004). But examples of the opposite, i.e. sustainable use, can also be found (e.g. Shackleton, 2001; Stanley et al., 2012), and therefore caution must be made against generalisations. Rather, predictive frameworks are required to help identify the contexts and circumstances in which sustainability bounds are likely to be breached and when not, so that pre-emptive actions can be considered. Even when faced with declining stocks there may be a short-term increase in incomes due to higher unit prices driven by increasing scarcity of the resource (e.g. Shackleton et al., 2002a), but in a context of weak management and harvesting, higher prices are likely to accelerate the rate of decline.

Whether or not a specific NTFP or the land upon which it is located is sustainability managed depends upon a host of ecological, social and economic factors (Uma Shaanker et al., 2004; Mutenje et al., 2011; Ticktin and Shackleton, 2011). Examples of ecological factors include the abundance and distribution of the resource, its regeneration, recruitment and maturation rates, availability of substitutes and so on.

* Corresponding author. Tel.: +27 46 603 7001.

E-mail address: c.shackleton@ru.ac.za (C.M. Shackleton).