EFFECTIVE ECONOMIC MANAGEMENT AND EVALUATION OF HUMAN-ELEPHANT CONFLICT: SRI LANKAN EMPIRICAL EVIDENCE AND ANALYSIS

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by

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A thesis submitted in the School of Economics, The University of Queensland in fulfilment of the requirement for the degree of Doctor of Philosophy

December 2003

ABSTRACT

Human-elephant conflict (HEC) is recognised as a common problem across the entire area in which the Asian elephant (*Elephas maximus*) ranges. Mitigating this conflict has become a major challenge in conserving this endangered species which has been listed on Appendix 1 by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1973. Fragmentation and loss of natural habitat are considered to be the major factors contributing to HEC in Asia. The example of Sri Lanka is illustrative. There has been a loss of nearly 50 percent of its dense forest cover during the last five decades. This massive loss of forest cover, with concomitant fragmentation of the remaining elephant habitat, has exacerbated HEC across the entire elephant range in Sri Lanka. Although several policies have been implemented in response, they show no sign of resolving the HEC-related issues satisfactorily. Thus, the issues involved with conservation of elephants and mitigation of HEC in Sri Lanka call for new strategies.

The main objective of this thesis is to examine the economic issues involved in conservation of the Asian elephant and mitigation of HEC in Sri Lanka in order to suggest effective economic management strategies to ensure the long-term survival of this species of wildlife. This study builds on the view that Sri Lanka's basic constraint in conserving elephants is that confinement of elephants to the existing protected area network is incompatible with the long-term survival of its wild elephant populations. Their survival depends on some access to farmlands in the vicinity of the protected areas, for instance access to move across farmland from one isolated habitat to another. However, utilisation of such private lands inevitably results in conflicts with farmers. Furthermore, such a policy can also have an adverse effect on elephants unless farmers are compensated adequately and promptly for the damage caused by elephants to encourage farmers to allow elephants some access to their farming lands. This thesis examines specifically whether by establishing a scheme financed by those who regard the elephant as an asset, it is possible to obtain a Paretian improvement in this situation. It also explores whether farmers in the areas where wild elephants interfere with agriculture would be willing to contribute to such an insurance scheme and to what extent.

The analyses presented in this thesis are based on the results from two sets of contingent valuation surveys. One involved a sample of urban residents in three selected major housing estates in the vicinity of Colombo city. The survey elicited their willingness to pay (WTP) for the conservation of the elephant and to contribute to a publicly funded insurance scheme to compensate farmers for the economic losses caused by this species. The other survey was conducted by taking a sample of HEC-affected farmers chosen from six selected villages in the Northwestern province of Sri Lanka. It elicited their WTP for the above scheme. It also assessed the farmers' attitude towards an integrated economic approach aimed at raising their tolerance of the presence of elephants on their farming lands. Together with the other fundamental statistical tools, both logit and probit regression models were estimated to analyse the respondents' responses to the payment principal questions and to identify factors that influenced their responses and value judgments.

The findings of this thesis indicate that there is a strong economic case for the conservation of wild elephants in Sri Lanka. It is argued that extinction of the current elephant population in Sri Lanka would result in a Kaldor-Hicks social loss. This implies that compared to the absence of wild elephants in Sri Lanka, the current situation involves a Kaldor-Hicks benefit. The results obtained from two major empirical analyses show that elephants in Sri Lanka are a net asset and not a net pest: the financial support of the urban residents to maintain the present population of elephants in Sri Lanka exceeds the estimated costs that elephants impose on farmers in the HEC-affected areas; the possible public support of farmers plus urban dwellers significantly exceeds the financial requirement of the insurance scheme proposed in this study for perpetuity. These results suggest that the community as a whole will experience a net economic benefit from ensuring the survival of wild elephants in Sri Lanka. Consequently, the results of these analyses also indicate that the nation will suffer a net economic loss if wild elephants become extinct in Sri Lanka. The overall findings of this study provide an improved economic assessment of the value of the elephant in Sri Lanka and a basis for wildlife authorities to explore new strategies and formulate appropriate policies for conserving this endangered species.