Eliciting Local Spatial Knowledge for Community-Based Disaster Risk Management:

Working with Cybertracker in Georgian Caucasus

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ABSTRACT

CyberTracker (CT) participatory field data collection software is used as an element of Participatory GIS for acquiring, geo-referencing, storing and transferring local spatial knowledge. It has been developed initially for animal tracking, ecological surveys and conservation management activities, but has extended into the social environment for health and welfare surveys, and it is being applied to social data collection about hazards, vulnerability and coping mechanisms in disaster risk management. This article provides a critical guide of CyberTracker under field conditions with representative participation. The practical experiences informing this critical review of field operations come from employing CyberTracker with staff of NGOs and local government agencies in a workshop in two hazard-prone communities in the Caucasus Mountains of Georgia.

Keywords: *Community Surveys, Disaster Risk, Georgia, Local Knowledge, Participatory GIS (Geo-Information Systems), Software Application, Vulnerability*

INTRODUCTION

The CyberTracker (CT) programme www.Cybertracker.org was originally developed by Louis Liebenberg for working with indigenous expert trackers in Southern Africa with superlative tracking skills and deep local spatial knowledge of their environments for wildlife tracking and monitoring. (Liebenberg et al., 1999; Tomaselli, 2001; CyberTracker Conservation, 2007; IPACC, 2007; Elbroch et al., 2011). CT is an open source software developed

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and extended into several other fields besides wildlife/ecological monitoring, and many other locations, besides Southern Africa.

There are some practical applications of CT including the following ones: two activities with Aboriginal Australian peoples working with environmental management of their lands - in the East Kimberleys (Pursche, 2004), and Arnhem Land (Ansell & Koenig, 2011). In forest management, the community-based forest monitoring in Nigeria (Bey, 2009) and in Cameroon (Helveta, 2009; Lewis & Nkuintchua, 2012) and community carbon forestry monitoring in Mexico (Peters-Guarin & McCall, 2011). In health and quality of life assessments, examples of CT application include mobile field mapping of health infrastructure and service provision in eastern Indonesia (Fisher & Myers, 2011), and children mapping environmental risks which they face in Portugal (Preto et al., 2011). Two urban cases are social surveys in upgrading informal settlements in Cape Town (Barry & Ruther, 2005), and using CT in a land registry system in Tanzania (Mithofer, 2006).

The CT software allows the design of screens to collect field data in a systematic way. The data entry can be programmed by clicking on icons or text following a sequence which is predefined by the user. The software was originally designed to be especially user-friendly for people unfamiliar with computers, even for people illiterate and innumerate. The interface is relatively straightforward to use, as its front end has been designed for ease of understanding, with a wide range of icons, with relatively little need for programming skills (Figure 1). The CT programme usually operates on a hand-held computer (PDA) such as a Palm OS handheld computer or an iPaq, connected by Bluetooth to a GPS unit. CT also functions with Smartphones. (Peters-Guarin & McCall, 2011). Data initially captured on the PDA or Smartphone can later be transferred easily to a Windows-based PC.

CyberTracker is open source and may be adapted by users for their own purposes and is gratis. When combined with free satellite imagery from Virtual Earth or Google Earth and open source free GIS software (such as ILWIS5), there are considerable financial advantages over relying on expensive (e.g. Ikonos, SPOT) or low resolution (e.g. Landsat) remote sensing products and on standard GIS software such as ArcPad or ArcView.

There are few cases in which CT has been used to acquire local spatial knowledge about hazards, vulnerability and coping mechanisms in disaster risk management, relating to floods, inundations and water-logging, storm surges, volcanic activity, township fires, bushfires, pest damage, avalanches, or mudflows as in this Caucasus case. Nonetheless, there is an application for mapping critical areas (see Figure 2), services, routes, and other issues for post-disaster relief (http://cybertracker.org/uses/disaster-relief), and exercises similar to that

Figure 1. Icon-based screens designed for disaster risk data capture