Chapter 52
Utilizing Amerindian Hunters' Descriptions to Guide the Production of a Vegetation Map

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ABSTRACT

Describing vegetation types is critical for managing natural resources and assessing ecosystem risk. Vegetation maps are historically produced by "Western experts," often ignoring local-level groups critical to resource management. Indigenous hunters, as resource managers, have strong connections to their landscapes and their descriptions of vegetation within their homelands can be useful in the map-making process. This project examined the usefulness of vegetation descriptions from Rupununi, Southern Guyana Indigenous hunters in the map-making process and how their descriptions were influenced by biophysical environmental attributes. A Landsat TM and ASTER DEM merged imagery of the Rupununi was classified using Indigenous hunters' vegetation descriptions to train the classification and assess accuracy. Based on the hunters' vegetation descriptions an eleven-class map was produced that covered the main vegetation types they described. Whereas "expert" maps rely on organized forest inventory data, Indigenous hunters' vegetation classifications were influenced by their interactions with the biophysical environment. The final map shows that Indigenous hunters may be important partners in the map-making process and play key roles in tropical forest management decision-making processes.

1. INTRODUCTION

Describing vegetation types associated with the distribution of natural resources is critical at a number of levels, including wider ecosystem management and the sustainable management of individual classes of natural resources. In the realm of ecological risk assessment, "vegetation type" has particular sig-

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nificance and is accepted as synonymous to "ecosystem types", "ecological communities", "habitats", and "biotopes" (Keith et al., 2013). Therefore describing vegetation types is critical in ecosystem risk assessment studies (Keith et al., 2013) allowing for the definition of ecosystem characteristics, including native biota, abiotic characteristics, spatial distribution and characteristic processes and interactions in gauging whether an ecosystem is threatened. Further, dissecting vegetation types to reveal forest types and other forms of flora is instrumental in understanding the potential geographical range of a species (e.g. Franklin, 2009; Pearson, 2007). In the sustainable management of multiple-use plant species, for instance, Peters (1996) suggested that defining forest types within which species are distributed and their associated abundance is vital. But often, interpreting the exact meaning of a forest type can be problematic across scientific disciplines (de Granville, 1988; Prance, 1979), let alone between Western experts and local-level experts such as Indigenous peoples. Interpreting the meaning of forest types is critical, especially in tropical settings where successful natural resource management, from wildlife to tree species, is accepted as the task of a wide group of resource managers, including scientists and Indigenous peoples (Chapin, Lamb, & Threlkeld, 2005; Stocks, 2005). This implies that the current dominant model of defining the vital parameters of management, such as forest types, through scientists or state-driven processes in a top-down approach (e.g., Fanshawe, 1952; ter Steege, 2001) may exclude the critical component of local people in the management process. Efforts to include Indigenous ideas in the map-making process, including defining vegetation types, will invariably enhance their role in sustainable resource management efforts. In an era where maps depicting forest types are derived from Geographic Information Systems (GIS) and remotely sensed data, such maps must be relevant to all users (Simms, 2010) particularly as they are increasingly used in resource management decision-making processes. GIS and remote sensing technologies provide opportunities for map users at all levels to be involved in the map-making process. This project examined the role of Indigenous hunters in describing vegetation for creating a map of the Rupununi region, Southern Guyana.

Recent efforts by the scholarly community to include local or Indigenous knowledge in scientific research (e.g., Luzar et al., 2011) have included the map-making process. In mapmaking, like scientific research, the challenge has been defending the legitimacy of local or Indigenous knowledge as a viable source of data. Local knowledge, by definition, is informed by culture as opposed to state "expert" or scientific knowledge which is informed by positivist science (Robbins, 2003). In response to the challenge over local knowledge's legitimacy, scholars, including Agrawal (1995), Robbins (2003) and Ross, Sherman, Snodgrass, Delcore, and Sherman, (2011) compared local and scientific knowledge and concluded that local knowledge has a legitimate place in scientific research. Ross et al., (2011), for example, provided a comprehensive overview of the differences and similarities between Indigenous knowledge and scientific knowledge, suggesting that both types of knowledge are influenced by social, cultural and political forces, yet Indigenous knowledge is often viewed as less legitimate. Nevertheless they argued that traditional knowledge has a significant place in natural resource management decision making processes. As a result, and especially in the map-making process, there are increasing efforts to include Indigenous and non-Indigenous conventions in the same maps (e.g., Pearce & Louis, 2008).

Local knowledge has been incorporated into GIS research in three primary ways (Robbins, 2003). Firstly, through the wave of counter-mapping efforts of the 1990s (Peluso, 1995; Robbins, 2003; Rundstrom, 2009), local knowledge and categories are used to challenge existing spatial management documents (Robbins, 2003). Peluso (1995) argued that official maps and documents in Indonesian Borneo removed traditional rights to forests. As a consequence, the only means Indigenous peoples had for asserting rights to such forests were through new maps utilizing local knowledge and emphasizing local land uses