Supplemental material for

"Experience with a hard and soft participatory modeling framework for social-ecological system management in Mt Everest (Nepal) and K2 (Pakistan) protected areas", by F Salerno, E Cuccillato, P Caroli, B Bajracharya, EC Manfredi, G Viviano, S Thakuri, B Flury, M Basani, D Panzeri; published in *Mountain Research and Development* (MRD) vol 30 no 2 (May 2010)

Table S1. Main guidelines adopted for the formalization of cognitive maps.

GENERAL RULES			
Model versions	The different versions of maps produced during this phase need to be stored and catalogued following rules that allow documentation of the evolution of the cognitive process. For instance we suggest: *[model name][version][yy][mm][dd] [author initials].*		
Model components	The quantitative model is composed of one or more maps, including the relevant documentation according to the protocol. The documentation includes the following sections:		
	Section	***Description***	
	Aims	General and specific aims of the model	
	Narrative description	Textual explanation of the concept map	
	Time step	The time step over which the system changes	
	Spatial disaggregation	How space should be represented	
	Links to other models	Information coming from or going to other models	
	Assumptions	Description of what is taken for granted	
	Management levers	Variables available for a manager to change or influence the system towards desired outcomes	
	Data requirements	Data required to describe concepts and relationships among them	
	Management-oriented research	Description of research requirements emerging from the process	
Flow of information	Maps should show the flow of information from inputs to management outcomes. However, it is essential that feedback interactions are also captured and highlighted. For instance we suggest: maps follow a vertical frame.		
Data requirement	The documentation of the last formal version of the conceptual contains data required for the subsequent quantitative translation.		
RULES FOR DIAGRAMMING			
Concepts	Each node of the map represents a concept (an idea) of the modeled system. In the standardization process, each concept on the map is associated with the relevant type:		
	Concept type	***Color***	
	Input data	Yellow	
	Intermediate variables	Pink	
	Connection to other submodels	Orange	
	Indicators of performance	Green	
	Policy levers	Blue	
	Economic aspects regarding policy	Red	
	Space and time disaggregation	Grey	
Relationship type	The nodes are connected with connectors (arrows, arcs) provided with labels indicating a linking phrase:		
	Relationship	***Linking phrases***	***Description***
	Causal	*+, -, +/-*	Used to describe positive, negative relationships or when they can be either positive and negative depending on specific conditions.
	Spatial	*through, near, within, is-next-to, from, to*	Used to describe spatial relationships. Example: tourists go though valleys.
	Time	*before, after, during, delays*	Used to describe temporal relationships. Example: birds migrate during winter.
	Action	*creates, destroys*	Used to describe relationships of population dynamics. Example: tigers predate deer. In this case, predate is used as a synonym for destroy.
	Undefined	*influence*	Used to describe relationships that are known but cannot be described according to the linking phrases available. This is a generic type of relationship and should be used only when all the other options available have been checked and discarded.
	Unknown	*?*	Used to describe relationship of unknown nature. The narrative description must be provided as text. The use of "unknown" relationship should be as limited as possible.