

## **APPENDIX #1. Systematic review and analysis methodology**

In this appendix, we detail how the systematic review and analysis of the ACM literature was conducted. Our approach was informed by both synthesis based methodologies in social sciences with a qualitative orientation (Petticrew and Roberts 2006, Atkins et al. 2008, Rahimi, Vimarlund and Timpka 2009) as well as the guidelines set forth in biological conservation (Pullin and Stewart 2006, Pullin and Knight 2009). We specifically undertook the following steps.

**Step One: Question definition.** We began by identifying several aspects of ACM that lacked clarity or consensus. These aspects are conveyed in the objectives of the review: (1) to characterize the state of the ACM literature, (2) to enhance our holistic understanding of ACM, and (3) to examine relationships among aspect of ACM based on accumulated experiences to date. More specific questions were then formulated in association with the objectives. These include: the context(s) in which it is being undertaken, the orientation with which it is being investigated, its definition (purpose(s)), the components (variables) associated with it, the outcomes from the process or policy, its successes and failures, and ultimately, the relationships among these aspects and the outcomes.

**Step Two: Search protocol.** The second step of the systematic review is to design how the search will be conducted. This involves a series of decisions about how the data will be acquired and its relevance gauged. In an effort to be as comprehensive as possible we searched using the key terms: ecosystem or ecolog\* or environment\* or natural resource and ACM or adaptive co-management or adaptive collaborative management. To capture both peer-reviewed and non peer-reviewed (gray) literature, searches were carried out using academic databases (Google Scholar, SCOPUS, Proquest, Science Direct, JSTOR and Scholars Portal E-Journals), the personal libraries of the researchers and the internet. In the case of the latter, the search engine Google was used with the first 50 “hits” fully viewed and the next 50 were checked for relevance (Collaboration for Environmental Evidence 2010). The search for items was ceased when personal libraries of the researchers were exhausted and all identified sources for the searches were completed. An acknowledged limitation of the search is that only items in English and in print were considered.

**Step Three: Screening of results.** The initial search was liberal and yielded 414 citations for items. Criteria were then set to screen these initial citations, as per the suggestion of Petticrew and Roberts (2006). The title, abstract and keywords of the citations were then considered according to the criteria of date (between 1997 and present [May, 2010]), language (written in English), and relevance of topic (social-ecological systems, natural resource management, environment-human interactions). The uses of terms or labels in the search protocol were not judged by the researchers or used as a screening criterion because doing so would interfere with the objectives of the study. Consequently, 298 citations were excluded from the systematic literature review. The full text of each remaining item was retrieved and then further scrutinized for compatibility with the questions posed in this research. As an outcome of the screening process, 108 items were included in the systematic review and organized into a QSR NVIVO database. The term “items” is used to encompass the many forms of data included in this review (e.g., articles, reports, theses, books, book chapters, papers presented at conferences). As a rule,

each item was considered as an item of data. However, an important exception was made with the treatment of one book (Colfer 2005) and one thesis (Schultz 2009). These documents comprised multiple chapters and articles, but were treated as one item because of their coherent unifying framework.

Step Four: Analysis. A grounded theory approach was employed to analyze the data. Grounded theory originated with the work of Glaser and Strauss (1967) and stresses the uncovering of theory from data as generated through comparative analysis. In following Corbin and Strauss (2008:1), we use the term grounded theory in a generic sense to denote "...theoretical constructs derived from qualitative analysis". Using this method, analysis occurs through the iterative rounds of coding. Coding is a process by which textual data (usually) is read and concepts are extracted and their properties and dimensions developed (Miles and Huberman 1994, Charmaz 2000, Corbin and Strauss 2008). Accordingly, analyzing data for concepts in this research occurred through three types of coding:

- 1) Open coding took place in the first pass through the data and involves identifying and capturing all possibilities and potentials. Labels named to represent the concept extracted are affixed to textual passages.
- 2) Axial coding identifies patterns and establishes evidence (or lack of evidence). In revisiting the textual passages, similar concepts are grouped together and groups of concepts emerge with varying degrees of frequency and magnitude. In this paper we use the term "category" to denote the main classes of concepts and the term "theme" to describe groupings of concepts with respect to their relative frequency of mention.
- 3) Selective coding examines relationships and integrates core concepts to refine theoretical constructions. Throughout the findings presented in the paper selective passages are used as illustrative examples.