

Visitor Use and Impact Monitoring: An Adaptive Design Model

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Visitor use and impacts are a significant management concern in many protected areas. Command of visitor use and behavior is vital to sustaining the ecological health of protected area resources and the quality of visitor experiences; through communication of visitor issues protected areas garner funding and administrative support. While visitor use and impact monitoring has been recognized as an integral part of adaptive management strategy and an essential component in management planning frameworks such as Limits of Acceptable Change (LAC) and Visitor Experience and Resource Protection (VERP), there has been insufficient guidance for establishing and sustaining such programs. As a result limited progress has been made to develop long-term effective monitoring programs to inform management decisions (Cole & Wright 2004, Warnken & Buckley 2000). Change in budget, personnel and even catastrophic environmental events uproot monitoring programs.

Because of the drastic differences in impact concerns, environmental attributes, availability of park personnel and volunteers, and changing information needs, protected-area impact monitoring programs, if they are to be efficient and sustainable, must be adaptive to these constraints while maintaining integrity and utility in yielding useful information (Ringold et al. 1996, Smit 2003). This presentation posits a conceptual model that illustrates essential elements, considerations and process of an adaptive design for visitor use and impact monitoring. Examples of elements include multiple-tier monitoring triggered by anticipated or unexpected change, adaptive sampling design, prioritization of indicators, and refined indicator measures based on monitoring results.

Figure 1 illustrates the key components of an adaptive monitoring program. Protected areas must develop monitoring programs out of environmental and institutional history. A small protected area is made up of soils, climate, flora, and fauna all before facilities, programs, infrastructure and people are added to the equation. The background and understanding of these systems is the foundation of any monitoring program. Once there is a general understanding of the physical and cultural location the real work on a monitoring program can begin. The protected area goals and resources are then taken into account to determine priority of indicators, sampling, and methods to be considered in the monitoring program. These elements of the monitoring program priorities can be analysed in preliminary sampling research to determine the effectiveness of proposed techniques.

Origins of a monitoring plan should not be considered the only way in which monitoring can be carried out at this location. From current resources and goals the initial plan should optimize the priorities and available resources and resource conditions of the protected area. A multi tiered program should be drafted to anticipate change in the environment (i.e. anticipated natural disaster such as hurricane or earthquake in prone areas or flooding in low lying study areas) and resources (budget or staffing cuts) which may influence the monitoring program negatively. The tiered system should also provide for positive changes which allow for expansion and enrichment of monitoring programs.

The resulting original monitoring program is more comprehensive and ready to adapt to the changes that are known in advance or happen overnight. The compressing and expanding style of monitoring al-

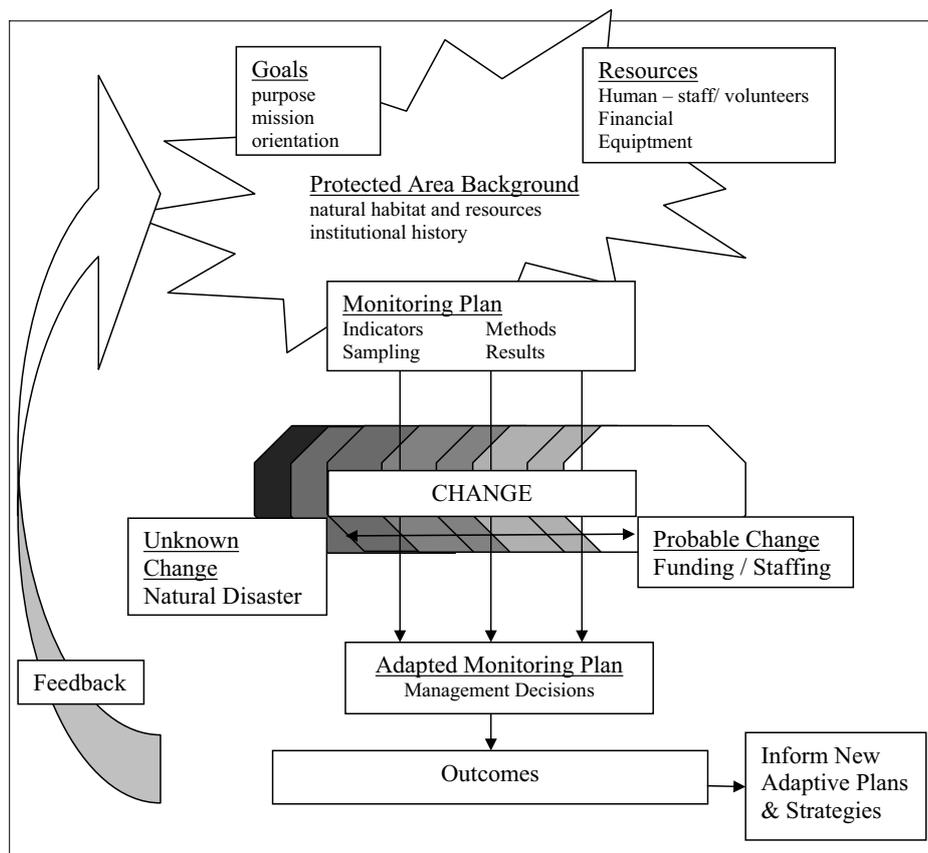


Figure 1: Adaptive Monitoring conceptual model.

allows for programs to continue monitoring during and after times of social or environmental crisis. The new adaptive plan is already primarily drafted before a disaster strikes. The lessons learned through that change from initial monitoring to adapted monitoring can be used to inform how well the plan could be adapted and what the original protected area can do to refine and use the knowledge learned to inform other planners, managers, and stakeholders. Examples from protected areas of the United States and Australia will be provided in this presentation to illustrate the adaptive design model.

Ecosystems and political systems suffer constant change there is a need to have relatively uniform monitoring for longitudinal understanding. Building an adaptive monitoring plan that is designed to change, yet emphasize ecological priorities and consistent methods the understanding of those protected areas can truly begin. The reactivity of the natural environments must be understood if visitors are to be given the best possible experiences when visiting protected areas. Constancy built into an adaptive plan will foster this much needed area of learning about our treasured protected places.

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