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**Adaptive Management in Biodiversity Conservation: does it increase efficiency, effectiveness, and impact?**

*A concept submitted to the Conservation Measures Partnership by the Conservation Standards Effectiveness Learning Group*

*NB: A full proposal would be submitted to CMP and other donors/interested parties for support.*

## Introduction

Conservation organizations are often asked by senior leaders and donors for evidence that applying adaptive management (AM) approaches, such as the Conservation Standards, results in more effective and efficient conservation projects. While there have been past efforts to conduct evaluations (e.g., the CMP Evaluation, the FOS evaluation) and to explore what evidence exists (e.g., CMP-Moore’s *Making the Business Case Learning Initiative* and *Conservation Standards Effectiveness & Impact Learning Initiative*), the evidence is still limited and often based on subjective or anecdotal information. We propose to design and implement a more rigorous medium- and long-term research project to start tackling this deficit.

## Background and rationale

Adaptive management is a systematic approach used across a host of sectors to improve management practices by implementing plans in ways that maximize opportunities to learn from experience. For the purpose of this project, our definition of adaptive management mirrors that of Shea *et al*. (2014): “Adaptive management is a structured, iterative, decision-making approach for dynamic problems that acknowledges uncertainty and aims to reduce this uncertainty in order to improve outcomes.”

We aim to undertake research that will test certain assumptions about applying adaptive management approaches in conservation, e.g., the CMP Conservation Standards. First and foremost, we will test the assumption that adaptive management increases efficiency and effectiveness leading to greater positive and sustained impact. Also, we will consider and test other assumptions such as that applying adaptive management lessens the risk of selecting the wrong ‘solutions’ and optimizes the use of resources and time.

Other sectors have also wrestled with “proof of concept” to advocate for adaptive leadership, and with what qualifies as acceptable ‘evidence’ to assess the effectiveness of adaptive management, including sustainable development (Hernandez et al. 2019), health (Shea et al. 2014), and military (Cojocar 2012) to name just a few. In our study, we will look to the literature in some similar sectors as well as within conservation to better understand the value and complexity of different methodologies and to assess the extent to which they have ‘proven’ the concept, and/or accepted it as sensible and beneficial practice.

## Proposal

We envisage a research project that would involve a consortium of organizations and several approaches, which are briefly outlined below. There is much more work to be done in Q1 2022 to further develop the approaches/methods, those responsible, the timeline, and commitments and we have organized a small design group to advance these ideas. The final proposal will be designed in a way that firms up commitments that have been proposed in this early design phase, and appeals to donors, including strengthening and clarifying current collaborators and identifying additional willing collaborators, fundraising for in-kind or match funds, and identifying a set of ‘case study projects’ that could be used in the study.

Our core research question is: “Does applying adaptive management in conservation increase efficiency and effectiveness and lead to greater positive and sustained impact?”

## Approach and Methods [abridged]

Our intention is that this study grows into a collaboration between CMP, Parks Canada, University of Lausanne, TNC (NZ), Odd Industries, IUCN- CPSG, and other academic, donor and conservation organizations still to be recruited. We believe that having diverse organizations as part of this study will enlarge the ‘sample size’ and enrich the research and findings. The eventual roles of each organization/institution will be determined in 2022. We will approach centers associated with the Collaboration for Environmental Evidence, the Center for Evidence-based Conservation, and Conservation Evidence to explore the possibilities of collaboration. We are hoping to develop a partnership with an established online platform where we could house the growing evidence resource library. The scope, approach and specific methodology would be ‘selected’ by the appropriate partner and this initiative would advise or support the implementation depending on need.

At the present time, we are considering four approaches. These four approaches have been proposed by different members of the design group and have yet to be fully fleshed out. In Q1 2022, we will discuss each approach with potential collaborators and determine how we would get the ‘best’ information and discuss the feasibility of moving forward. Selection of the ‘best’ approach may be different for each collaborating partner and the depth of the analysis they are looking for and willing to undertake. For now, we will aim to move forward with two approaches - *retrospective and comparative*- as soon as we have more fully developed the research design in early 2022, and that CMP and some key collaborators approve and commit resources.

### Potential approaches

*A retrospective approach* would involve using available evidence on conservation impacts, such as published impact[[1]](#footnote-0) evaluations, combined with surveys and/or interviews with practitioners to determine the relationship between conservation effectiveness (impact) and the use of the CS or an equivalent AM approach. The sample size necessary to provide statistically sound results will be determined. This approach would be doable in the short- and medium-term, though would ideally require data from a relatively large sample of projects from CMP, CCNet and partner organizations. It would require having data on project outcomes ideally from rigorous methods such as impact evaluation, and an assessment of the level to which the CS (or an equivalent AM approach) was applied. This information could be derived from reviews of project planning documents, surveys, or interviews with those associated with the management of the projects. Surveys or interviews could also be used to collect qualitative information on the implementation of the CS and project effectiveness and efficiency, to complement existing quantitative data on project impacts. With this approach, we aim to understand if using the CS affected project efficiency, effectiveness, and impact.

*A comparative approach* would use data from ‘similar’ projects that have and have not used the CS. Parks Canada is interested in being involved in this study and has (approx.) 20 projects with exposure to the CS (the “treatment” group) and many more that have not yet been exposed to the CS (the “comparison” group). Parks Canada projects are also collecting quantitative data on “project objectives achieved”. The study would use a mixed methods approach relying on quantitative data on project objectives, as well as interviews or surveys to help clarify both the level of implementation of the CS and other measures of project effectiveness and efficiency. This approach would be similar to a retrospective approach in that it would rely on audits, impact evaluation, reports and interviews or surveys to collect insights from individuals involved. This presents a unique, relatively cost-effective opportunity to conduct such a study as some of the data is already available, and participants on the working group from Parks Canada would have direct access to project data as well as project staff for potential surveys or interviews.

*A forward-thinking counterfactual or experimental approach* would involve randomly assigning a set of projects to treatment (CS) and control (non-CS) groups, and then tracking project costs and impacts over time. Such a study would ideally pull from a large enough sample of projects that other factors influencing project impacts (e.g., geography, budget, staff capacity, length of time since project initiation) would be balanced in the treatment and control groups. Since collecting data on project costs and impacts requires time, such a study is by far the most ambitious and would require a more substantial budget and several years (at least) of effort but would probably yield the strongest evidence. This would require fundraising or identifying a donor or partner who is highly motivated to implement such an experimental design and long-term data collection effort. For this approach, TNC New Zealand may be a candidate and possibly some business partners who have recently taken up using an adapted version of the Conservation Standards developed by IUCN.

*A case study and value of information approach* (see Shea et al. (2014)) is also under consideration. This approach uses case studies to test “the value of adaptive management in selecting an intervention by using the expected value of perfect information (EVPI) which estimates the value to the decision maker of resolving one or more uncertainties a priori to the implementation of specific information”. We would need to explore the difficulties of applying this approach before considering whether an adequate number of conservation projects have the data/information necessary.

*For all approaches,* a quick assessment (or audit) will need to be undertaken to understand (and control for) implementation of adaptive management and have a standardized survey questionnaire or key informant interview questions. In addition, having access to audits, evaluations or technical or other associated reports would be useful. For a subset of projects used in this study (only those with habitat-related goals), we are discussing potential engagement of [LEMU](https://le.mu/) (Odd Industries) to ‘map’ the change in ecosystem status from start to end, or current year (if 10-years or over) as an independent view of the impact. We recognize that this would tell us something about the outcome variable, and not whether any changes observed would have happened with/without adaptive management and specific interventions.

The final selection of which approach or approaches we may initiate will be informed by which approach will provide a) the strongest evidence, b) the willingness and capacity of a partners such as Parks Canada to participate and/or share data and results; and c) practical considerations including staff/consultants availability, time, and funding constraints. Parks Canada is interested in sharing a proposal with their senior managers early in 2022 and will benefit from using the CSEI concept and proposal. The University of Lausanne is also interested in collaborating and have provided some initial ideas that will be further discussed in early 2022. For the approaches selected, appropriate efforts will be made to ‘control’ external or confounding factors that may influence the results of the study. Different methods will be considered such as: random sampling, large sample size, ‘matching’ like projects, and statistical methods.

**Resources and Timeline**

We are proposing an ambitious research project which will depend on close collaboration and commitment of several partners and will evolve over time. In 2022, the CSEI learning initiative initially proposes to elaborate the research design/plan to include *the retrospective and comparative approaches* that are briefly described above. In addition, CSEI will reach out to potential partners, donors, and members of CMP to explore the interest in participating, supporting and whether and how to pursue other approaches. Specifically, CSEI will actively engage with Parks Canada to finalize a proposal for their senior leadership team and support its implementation as needed.

**Expected Outputs**

1. A full proposal developed and search for funding support underway in 2022.
2. New evidence of the value of adaptive management for conservation from various approaches (as described above) over the lifetime of the study with at least one approach underway during 2022.
3. A research and learning collaboration sharing information, data, and results.
4. Peer-review and other publications summarizing the results, depending on full proposal implementation.

**Budget & Justification**

We will develop a budget for implementation of the research in the full proposal. However, we are seeking $25,000 to support the CSEI Initiative (2022) as initial core support, please see the [CSEI Scope of Work 2022](https://docs.google.com/document/d/1zLrJKcWbB4gak_N1QkxoUA8N-rbUxhaU/edit?usp=sharing&ouid=118335362000790985481&rtpof=true&sd=true). In addition, other ‘matching’ funds that address Parks Canada needs for project development (beyond what CSEI can offer) and for undertaking the analysis are also sought.

**Useful References**

Cojocar, W.J. (2012). Adaptive leadership in the military decision making process. Texas A&M University, San Antonio, Texas, USA.

Hernandez K, B Ramalingam, and L Wild. 2019. Towards Evidence-informed Adaptive Management; A Roadmap for Development and Humanitarian Organizations. ODI Working Paper 565.

Shea K, Tildesley MJ, Runge MC, Fonnesbeck CJ, Ferrari MJ (2014). Adaptive Management and the Value of Information: Learning via Intervention in Epidemiology. PLoS Biol 12(10): e1001970. Doi:10.1371/journal.pbio.1001970.

1. Impact here refers to both status of biodiversity and outcomes such as threat reduction. [↑](#footnote-ref-0)