

AN INTRODUCTION TO ADAPTIVE MANAGEMENT

IN THIS SECTION, we first define adaptive management. We then outline some of the conditions that warrant taking an adaptive management approach in conservation projects.



What Is Adaptive Management?

Adaptive management is a relatively new concept — one that has only recently begun to gain popularity in the mainstream conservation community. But what is it? Some people may ask, “Isn’t adaptive management simply good management? Doesn’t it merely involve trying something and then if it doesn’t work, using your common sense to adapt and try something else?” We believe that adaptive management is good management, but that not all good management is adaptive management. We also believe that adaptive management requires common sense, but that it is not a license to just try whatever you want. Instead, adaptive management requires an explicitly experimental — or “scientific” — approach to managing conservation projects as outlined in the following definition:

Adaptive management incorporates research into conservation action. Specifically, it is the integration of design, management, and monitoring to systematically test assumptions in order to adapt and learn.

This definition can be expanded as follows:

- a) Testing assumptions** is about systematically trying different actions to achieve a desired outcome. It is not, however, a random trial-and-error process. Instead, it involves first thinking about the situation at your project site, developing a specific set of assumptions about what is occurring and what actions you might be able to use to affect these events. You then implement these actions and monitor the actual results to see how they compare to the ones predicted by your assumptions. The key here is to develop an understanding of not only which actions work and which do not, but also why.
- b) Adaptation** is about taking action to improve your project based on the results of your monitoring. If your project’s actions did not achieve the expected results, it is because either your assumptions were wrong, your actions were poorly executed, the conditions at the project site have changed, your monitoring was faulty — or some combination of these problems. Adaptation involves changing your assumptions and your interventions to respond to the new information obtained through monitoring efforts.
- c) Learning** is about systematically documenting the process that your team has gone through and the results you have achieved. This documentation will help your team avoid making the same mistakes in the future. Furthermore, it will enable other people in the broader conservation community to benefit from your experiences. Other practitioners are eager to learn from your successes and failures so that they can design and manage better projects and avoid some of the hazards and perils you may have encountered. By sharing the information that you have learned from your project, you will help conservation efforts around the world.

Our definition of adaptive management includes a framework of specific *conditions* that warrant an adaptive management approach, *steps* for the process of adaptive management, and *principles* for the practice of adaptive management. This framework, which is described in the remainder of this guide, is summarized in the box on the next page.

Summary of the Framework for Adaptive Management Presented in This Guide

Definition of Adaptive Management

Adaptive management incorporates research into conservation action. Specifically, it is the integration of design, management, and monitoring to systematically test assumptions in order to adapt and learn.

Conditions That Warrant an Adaptive Management Approach

Condition 1: Conservation Projects Take Place In Complex Systems

Condition 2: The World Is a Constantly and Unpredictably Changing Place

Condition 3: Our “Competitors” Are Changing and Adapting

Condition 4: Immediate Action Is Required

Condition 5: There Is No Such Thing as Complete Information

Condition 6: We Can Learn and Improve

Steps in the Process of Adaptive Management

START: Establish a Clear and Common Purpose

STEP A: Design an Explicit Model of Your System

STEP B: Develop a Management Plan That Maximizes Results and Learning

STEP C: Develop a Monitoring Plan to Test Your Assumptions

STEP D: Implement Your Management and Monitoring Plans

STEP E: Analyze Data and Communicate Results

ITERATE: Use Results to Adapt and Learn

Principles for the Practice of Adaptive Management

Principle 1: Do Adaptive Management Yourself

Principle 2: Promote Institutional Curiosity and Innovation

Principle 3: Value Failures

Principle 4: Expect Surprise and Capitalize on Crisis

Principle 5: Encourage Personal Growth

Principle 6: Create Learning Organizations and Partnerships

Principle 7: Contribute to Global Learning

Principle 8: Practice the Art of Adaptive Management

Conditions That Warrant an Adaptive Management Approach

Adaptive management is driven by the serious challenges that all conservation practitioners face. It has been developed to help conservation project managers make sense of seemingly confusing and chaotic situations that they face on a daily basis, and to provide a framework to learn systematically from their successes and failures as well as those of others. In this section we describe some of the most prevalent conditions encountered by many project managers as they attempt to achieve their goals and objectives — conditions that necessitate an adaptive management approach to conservation project management.

Condition 1: Conservation Projects Take Place in Complex Systems

Conservation practitioners need to deal with a wide range of factors and circumstances as they implement and manage field projects. At any given site, there are dozens if not hundreds of factors that influence the status of biodiversity and its conservation. There are geophysical factors like climate, weather, winds and currents, and soils. There are ecological factors like regeneration rates and predator-prey interactions. There are social factors like culture, demographic and family structures, and religion. There are political factors like the type of government and the willingness of national governments to address local problems. There are economic factors like cash needs, employment opportunities, exchange rates, and markets. There are institutional factors like the strength of leadership in project organizations and the ability of project team members to work together. And there are random factors like diseases, economic crashes, or earthquakes and volcanoes that can completely destroy projects. It is not an exaggeration to say that conservation projects take place in perhaps some of the most complex systems that humans have ever dealt with.

Condition 2: The World Is a Constantly and Unpredictably Changing Place

This complex world in which conservation projects take place is also constantly changing. It is generally fairly easy for humans to adapt to predictable change in the natural world like the rising and setting of the sun, the cycles of the tides, and the seasonality of snows or monsoon rains. Other sorts of natural change, like Pleistocene



glaciation and deglaciation, though less predictable, occur over time scales longer than the attention span of humans. Whereas these changes may have affected our evolution, they do not exist in our conscious minds. Change, of course, affects not only the natural world, but the human one as well. Changes in life expectancies, market expectations, political systems, and human hopes all can impact conservation projects, which historically have been ill equipped to adapt to a changing world. Furthermore, not all change is linear and predictable. Volcanoes, El Niño, plant epidemics like the Irish potato famine fungus, and alternate stable states in ecological systems all represent the types of change that prove difficult for humans to control or understand. Yet these types of change are pervasive in the natural world and even more common in the world of human affairs where economic crashes or political coups can almost overnight radically alter the landscape in which project teams must operate. The existence of change of any sort, let alone non-linear change, makes adaptability an essential element of conservation projects. Surprise does not always have to be an enemy; it can also be an ally if you know how to turn it into an opportunity to accomplish your goals.

Condition 3: Our “Competitors” Are Changing and Adapting

The need to stay one step ahead of the competition is clearly evident in the world of conservation projects. Logging firms change and adopt new tactics. Poachers use new traps. Commercial land developers are forever finding ways of getting around zoning laws. Big business, like sugar producers or oil companies, manipulate public opinion by changing public image through the use of expensive advertising. It’s a battle. The conservation community — including conservation practitioners and managers — must adapt to compete. Unfortunately, with rare exceptions, conservation projects are most often managed by governmental agencies or non-governmental organizations (NGOs) that have far fewer financial and human capital resources than their competitors. As a result, project teams have to be “smarter” in order to succeed and get the most out of the resources that they have. Organizations, like human beings, can often survive by sticking to one strategy or by changing through a trial-and-error process. However, those organizations that are most strategic and can adapt the best and most efficiently have the greatest chance of thriving and getting and staying ahead of the competition.

Condition 4: Immediate Action Is Required

Despite the constantly and usually unpredictably changing world and despite incomplete information, we must never stop conserving biodiversity and managing resources. This is because humans will never stop our seemingly inexorable consumption of the earth’s biosphere and geosphere. Fishers will not stop fishing, loggers will not stop logging, and human populations will not stop growing in size and resource consumption. Therefore, conservation projects helping park directors, resource managers, and community conservation groups cannot flag in their efforts. To stop is to surrender.

Condition 5: There Is No Such Thing as Complete Information

The success of humans has, in large part, been possible due to our abilities to gather and interpret information. In early millennia it was information derived from animal tracks and smoke signals, whereas, we are now using satellite-based cameras and the Internet. In many parts of our lives, particularly personal ones, we are used to operating with less than complete information. Despite this, we typically expect assurance that conservation or development decisions will be based on complete information. Unfortunately, measuring and fully understanding biodiversity at a given site is a difficult, if not impossible, undertaking. Likewise, social, economic, and political information related to human populations living in or around the area of concern is rarely complete. As a result, complete knowledge cannot be a necessary precondition to design and implement conservation policies or activities. Conservation practitioners do not have the luxury to wait until all the biological, ecological, and social characteristics of a given area are known and understood before they implement project activities. Most often, they



must act using only existing information — and they must act quickly to counter some pressing threat. Incomplete knowledge of biological and social conditions should not be a barrier to action, but should be used as efficiently and wisely as possible to design effective interventions. Important gaps in knowledge must be identified and addressed early in the conservation project in order to make the best decisions throughout the life of the project.



Condition 6: We Can Learn and Improve

Against the prospect of continuing change, human consumption, and habitat alteration is the proven fact that humans can and have improved their ways of living lightly on the earth. The challenge is to stimulate novelty, build in flexibility, adaptability and learning, and help conserve the remains of the biodiversity left in an already heavily influenced world. Success will ultimately only happen to the degree to which we can learn and use what we have learned to improve our conservation efforts.