ADAPTIVE RESOURCE MANAGEMENT: USING IDAHO AS AN EXAMPLE OF HOW STATES CAN IMPLEMENT EFFECTIVE POLICIES

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I. INTRODUCTION

In order to create effective environmental and natural resource policy in the face of uncertainty in the continuing conditions for dynamic ecological systems, Idaho must work with other levels of government to create a basic structure for implementing adaptive resource management policies and programs through an overarching definition of adaptive resource management procedure and a cross-agency data base. This article will focus on how adaptive resource management is currently defined and implemented and will use Idaho as an example of how adaptive management should be implemented in order to be effective. The conclusion addresses the strengths and shortcomings of the current policies, identifying how adaptive management could and should change for the better on the increasingly important state level.

Natural resource and environmental law is an area that is highly regulated by both the federal and state governments. In spite of the variety of laws from state to state, the National Environmental Protection Act (NEPA) has been used as the default go-to statute for determining environmental issues.[1] In fact, states have enacted their own versions to deal with natural resources issues for conservation, recreation, and consumptive purposes.[2] Although NEPA and state environmental protection acts provide a useful service and give a structured procedure for the implementation of environmental rules and regulations—a procedure which has been refined by the courts[3]—law in the natural resource and environmental realm is still lacking the scientific experimentation necessary to determine what the best course of action is for certain ecosystems or environments in both the long and short term.[4]

In response to some of the shortcomings of NEPA, "natural resource scientists, managers, and policymakers have increasingly endorsed 'adaptive management' of land and natural resources."[5] As a result of these influences, adaptive resource management has become a mandatory aspect of many laws at both the federal and the state level.[6] However, the actual implementation of adaptive resource management has become a concern due to the lack of consistency in the policies and the application of the policies to projects where it results in more harm than good.[7] These negative aspects of the implementation are only compounded by the lack of case law addressing adaptive management policies. As a result, adaptive resource management does not have an overarching stated procedural process to make it as formulaic to implement as NEPA.

This lack of consistency and understanding is concerning because adaptive management policies are more effective in dealing with contemporary resource management problems than general policies.[8] Adaptive resource management should be implemented when there is a lack of knowledge about the sustainability of the environment or the potential long or short-term effects in specific environmental conditions because this will allow for more comprehensive ecosystem management and sustainability. As a policy, "adaptive management promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood."[9] Adaptive management allows for different environmental variables to influence ecosystems over long periods of time and records the data to better predict future conditions or im-

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1. Richard Lazarus, *The National Environmental Policy Act in the U.S. Supreme Court: A Reappraisal and a Peek Behind the Curtains*, 100 GEO. L.J. 1507, 1520 (2012).

2. *See, e.g.*, IDAHO CODE ANN. §§ 39-101 to - 130 (West 2014).

3. *See* Lazarus, *supra* note 1.

4. *See generally* National Environmental Policy Act (NEPA), 42 U.S.C.A. § 4321 (West 2006) (showing what the current system is for evaluating an environmental impact of a law under NEPA); *see also* CENTER FOR PROGRESSIVE REFORM, MAKING GOOD USE OF ADAPTIVE RESOURCE MANAGEMENT 1, 5 (April 2011), www.progressivereform.org/articles/Adaptive_Management_1104.pdf.

5. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 1.

6. *Id.*

7 *Id.*

8. J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 437 (2010).

9. Byron K. Williams et al., *Adaptive Resource Management: The U.S. Department of the Interior Technical Guide* (2009), *available at* www.doi.gov/ppa/upload/TechGuide.pdf.

plications.[10] Therefore, this article addresses the importance of understanding adaptive resource management policies and programs in order to achieve the intended results.

Part II of this article examines the basics of adaptive resource management, including how the law has defined the process and general examples of the language used to implement an adaptive resource management strategy. This section will describe the process of implementing an adaptive management policy and how much of the current legislation and regulation is ineffective in stating a successful means to implement the agency plans over the long-term.

Part III discusses how adaptive management policies are currently implemented, interpreted, and analyzed. This section will focus on how federal courts have interpreted the policies and what programs have been seen as failures and successes. Although this will be a general analysis, this section will focus on cases and programs that have a direct relationship to the northwest region and Idaho's resources.

Part IV centers on Idaho as an example of adaptive resource management policies. Part A discusses Idaho's ownership and how that affects adaptive resource management issues. Part B discusses how adaptive management has affected Idaho's environment on federal, regional, and state levels. This section will evaluate how the three branches of government have interpreted adaptive resource management and implemented it within the state. Part C analyzes how Idaho is dealing with a particular climate change issue and how these programs could apply to other similar climate change problems currently at issue. Part D will focus on Idaho as an example of how adaptive resource management could be implemented in order to be effective. In essence, it will identify the strengths and shortcomings already evident in adaptive resource management policies employed in the state. The conclusion discusses how adaptive resource management should be implemented when there is a sufficiently stated plan and government cooperation on all levels for the common goal of providing the maximum benefit to resources and ecosystems as a whole.

II. DEFINING ADAPTIVE RESOURCE MANAGEMENT

In the current scheme, legislative and regulatory adaptive resource management is not defined consistently. In order to ensure the policies are effective, the definition of adaptive resource management must be clarified. Adaptive management plans deal with a wide variety of resources and ecosystems, meaning each plan must be specifically outlined to ensure that the individual project needs are understood.[11] However, before even this can happen, the original statute or the administrative rules must define adaptive resource management in terms that relate to the goal to be achieved.[12] This will—hopefully—ensure that all actions undertaken

10. Addie Haughey, *Managing for the Unknowns: Adaptive Resource Management*, GEO. PUB. POL'Y REV. (Apr. 15, 2012), http://gppreview.com/2012/04/15/managing-for-the-unknowns-adaptive-resource-management/.

11. *See* Anne Hecht & Mary J. Parkin, *Integrating Research and Management*, 72 J. WILDLIFE MGMT. 1279, 1279 (2008); *see also* CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 4–5.

12. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 4–5.

by the project will be made with the end goal in mind. Because laws, legislative or administrative, rarely define the parameters of adaptive management strictly,[13] the policies must be informed by the individual agency definitions. As can be expected, this is where discrepancies are found.

To demonstrate how inaccurately adaptive management has been defined by some agencies, the first step is to create an understanding of what adaptive management actually is. Understanding and consistently defining adaptive resource management is critical for effective policy implementation in Idaho. Therefore, agencies in the area must understand the basic steps of adaptive resource management,[14] how statutes and regulations define it,[15] and how northwest states specifically define it.[16] By consistently defining adaptive resource management, policies can become more effective in their implementation.

A. The Basic Steps in Adaptive Resource Management

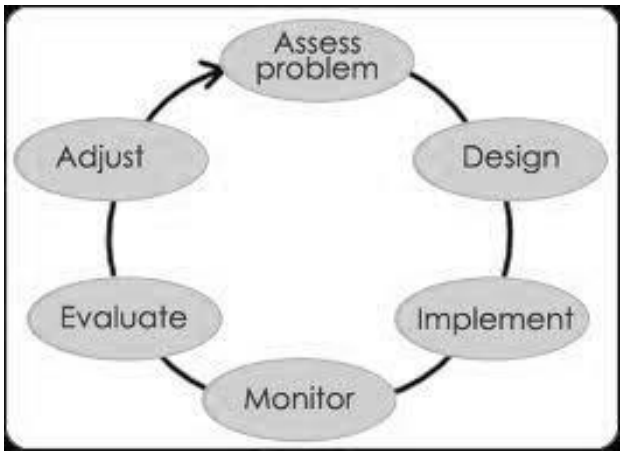
Although there is a basic model for adaptive resources management plans, many different projects or agencies employ variations on the basic model to suit their needs.[17] However, the most comprehensive examination of adaptive resource management on the federal level and the most important adaptive resource management outline for the purposes of this paper is the Department of Interior (DOI) Technical Guide explanation.[18]

The DOI specifies the limited circumstances in which adaptive management strategies should be used.[19] The DOI stresses that adaptive resource management should be used to manage ever-changing ecosystems and resources when there is an incomplete understanding of how the systems are changing.[20] The DOI also places an emphasis on the fact that all plans should be scientific based.[21] This means that the actor should have controllability. Meaning, the agency or actor should be able to control and manage each resource within the system to gain accurate knowledge on how each resource affects another.[22] Contrary to popular belief, adaptive management strategies are not meant to be a simple trial and error system.[23] Rather, these policies are meant to gain valuable information from each error

13. *See* discussion *infra* Parts II.B, II.C.
14. *See infra* Part II.A.
15. *See infra* Part II.B.
16. *See infra* Part II.C.
17. Williams, *supra* note 9, at 1.
18. Williams, *supra* note 9, at v (stating the basic definition as "Adaptive management [is a decision process that] promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a 'trial and error' process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders").
19. *Id*. at 9, 15.
20. *Id.* at 4.
21. *Id.* at 62.
22. *Id.* at 62–63.
23. *See* Williams, *supra* note 9, at 3.

and to apply that to an adjusted plan to improve the overall ecosystem quality.[24] Overall, adaptive resource management applies knowledge on more than one resource in an ecosystem to change the plan for the best conservation and preservation results while achieving other goals.

Diagram of the adaptive management process[25]



[26]

Adaptive resource management is organized into six steps.[27] The basic adaptive resource management diagram seems simple enough, but not surprisingly the separate phases of adaptive resource management have caused various issues during implementation.[28] In spite of these difficulties, this diagram is still the basic framework for how projects should be implemented.[29] Additionally, it should be noted that this cycle, the adaptive management process, is cyclical.[30] Each phase should be completed several times throughout the duration of a project to make sure that the overall goals are still reflected in the data and potential outcomes.[31] Through an analysis of each step, it is evident where the issues arise in both defining and implementing adaptive resource management.

In order to complete step one—assessing the problem—the rule or regulation maker needs to decide on the goal of the project.[32] Essentially, it must be clear what result is supposed to be achieved through the observation and implementation of the project in the ecosystem.[33] Without a specific goal the other steps will be-

24. *Id.* at 24; CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 1, 5.
25. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 1, 5.
26. Williams, *supra* note 9, at 3.
27. *See infra* Part II.A.
28. Williams, *supra* note 9, at 18.
29. *See infra* Part II.A.
30. Williams, *supra* note 9, at 18.
31. *Id.*
32. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 1, 5.
33. Williams, *supra* note 9, at 24–25.

come ineffective.[34] The goal should be easily identified in the rule, and should serve as the basis for the design process.[35]

Designing the project is a more comprehensive process. The design should be explicit about the objectives to achieve.[36] The design phase however, is not just the legislative or administrative function. The design should be scientific—it should address assumptions about the ecosystem, and any uncertainties that could be potential factors on the outcome of the project. [37] In spite of the importance of the scientific background and experiment procedures, the legal aspects must also be clearly defined.[38] The requirements and options of the project manager(s) should be clearly outlined.[39] If the description of the research methods is not clearly stated in a way that the manager can interpret what is expected, then there is little value to the research gained.[40] The design phase must establish a scientific method and a means to achieve it while addressing all other plan considerations. Most of this phase is done through modeling.[41]

Implementation involves the delicate trade-off between learning about the ecosystem and resource conservation.[42] Because of this, managers should have the discretion to decide what to implement.[43] Though this sounds easy enough, there are issues when the manager is ill-informed.[44] This step is where the legal emphasis on adaptive resource management is centralized.[45] Because of the variations in programs, the enacting statute or regulation is where lawyers find their guidance for whether the actual program falls within constraints of the agency's power.[46] Although this is an important step in the adaptive resource management process, it is one of the least comprehensive. It is the step that comes after in the cycle that makes adaptive resource management a useful natural resource policy.

Monitoring an adaptive resource management project is the crux to a program's success.[47] After all, adaptive management is based on scientific learning.[48] This step, combined with the adjustment of the policy, is what separates adaptive management from NEPA.[49] NEPA requires only a precursory evaluation of what impact a law or regulation will have on an environment.[50] Adaptive resource management, although it has a goal, does not assume to know the long-term effects of an environmental decision.[51] The monitoring step is meant to achieve several general goals of adaptive resource management including: evaluating the process to-

34. *Id.* at 32.
35. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 2.
36. Williams, *supra* note 9, at 24.
37. *Id.* at v, 24–25.
38. *Id.* at 28.
39. Hecht & Parkin, *supra* note 11, at 1279.
40. *Id.*
41. Williams, *supra* note 9, at 30.
42. *Id.* at 49.
43. *Id.* at 26.
44. *Id.*
45. *Id*. at 38–39.
46. Williams, *supra* note 9, at 39.
47. *Id*.
48. *Id.* at 32.
49. *See generally* National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 (2006).
50. *Id.*
51. Williams, *supra* note 9, at 33.

wards achieving the plan's objectives; determining the resource status in order to identify the necessary management actions; to create an increased understanding of the resource dynamics; and to help improve or refine the models.[52] The failure to effectively gather information on the project's or resource's effect on the ecosystem makes adaptive resource management a useless process.

Monitoring is also required in order to complete the fifth step of the process: evaluating the project.[53] Evaluation requires analyzing the data collected through monitoring.[54] This is a purely scientific process that looks at how the implemented policies are affecting the goals.[55] It should be obvious that there is an overlap between the monitoring and evaluation phase—neither can be completely independent of each other. The basic distinction is that the monitoring is needed before an evaluation can take place.[56] Both steps revolve around the same data, the difference is what each step means to the adaptive resource management process. Monitoring is purely the collection of data through observation of the policy, and though it is meant to achieve certain goals, evaluation is the most important of these for the individual project.[57]

Adjustment is the easiest step to define. After monitoring and evaluation are complete, the plan is adjusted to better suit the goals of the adaptive resource management policy.[58] Basically, the agency or actor begins the process over with all the new information gathered to achieve the goals by the most effective and efficient means.[59] This however, has proven to be the hardest step to achieve in the adaptive resource management process.[60] In order for this step to be achieved, every other step must be completed, and not only completed, but comprehensively executed.[61]

As with monitoring, adjustment is a step that is also intertwined with evaluation. The evaluation process should show if there are "triggers" that demand a change in the policy, or a change in the management strategies overall.[62] These triggers will help to show when changes are necessary and can help to create a system for when changing the approach to the resource management better serves the goals of the legislative or administrative rule.[63]

Interestingly enough, the Bureau of Land Management (BLM), which is under the U.S. DOI,[64] has a completely different approach to applying adaptive management policies.[65] The BLM—instead of focusing on the six-step process and

52. *Id.*
53. *Id.* at 31.
54. *Id.* at 35.
55. *Id*. at 32.
56. *Id.* at 31–35.
57. Williams, *supra* note 9, at 35.
58. *Id.* at 50.
59. *Id.* at 36.
60. *Id*.
61. *Id.*
62. Haughey, *supra* note 10.
63. *Id.*
64. *Bureaus & Offices*, U.S. DEP'T OF THE INTERIOR, http://www.doi.gov/bureaus/index.cfm (last visited Sept. 13, 2014).
65. *Monitoring for Adaptive Management*, U.S. DEP'T OF THE INTERIOR: BUREAU OF LAND MGMT., http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/Monitoring_for_Adaptive_Management.ht

adaptive resource management policies as a whole—focuses primarily on the monitoring step of the process.[66] The BLM uses a policy called Assessment, Inventory, and Monitoring (AIM) to implement adaptive resource management.[67] The BLM stresses the importance of AIM to supplement management policies already in place to achieve a single objective.[68] By implementing AIM, the BLM has a goal to create "a consistent set of monitoring data for multiple resources at multiple scales."[69] The BLM highlights five benefits of AIM,[70] the most important of which is that the data is "capture[d], store[d], and analyze[d]" in a database.[71] The goal of AIM is information—to provide information "efficiently and effectively [to] meet *local, regional and national . . . needs*."[72]

These differences, although slight, show how adaptive management definitions and policies change depending on which entity is implementing the statutory or regulatory plan. These differences across government branches, as demonstrated above, or even within the same branch, are part of the issue in creating an effective policy in states where natural resources are controlled by several actors. Without a clear definition or policy steps, it becomes difficult for state or federal actors with differing adaptive resource management policies to come to an agreement on how programs should be implemented or even if the programs are effective in achieving their goals.

B. Statutory and Regulatory Language Defining Adaptive Resource Management

The varying approaches to adaptive resource management utilized by different actors causes a decrease in program success because there is not a basic program style that has proven effective, meaning that each program will face slightly different problems. These different programs and problems result in a decreased ability for agencies to aid each other by explaining how to solve issues that arise within a basic adaptive resource management process. The differences in the policies above show that adaptive management is treated differently in practice depending on the actor.[73] However, adaptive management is not only treated differently in practice but is defined and used differently depending on who is creating the general policies. In order to understand the issues with adaptive management, it is important to start from the varying legal definitions and approaches.

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ml (last updated Jan. 13, 2014) (the picture used on the page for demonstrating this adaptive management monitoring approach is the Upper Columbia in Idaho).

66. *Id.*

67. *Id.*

[68] *Id.*

69. *AIM Questions & Answers*, DEP'T OF THE INTERIOR: BUREAU OF LAND MGMT., http://www.blm.gov/wo/st/en/prog/more/Landscape_Approach/AIM_FAQ.html#WhatDiff (last updated Jan. 13, 2014).

[70] *Id.*

71. *Id.*

72. *Monitoring for Adaptive Management*, *supra* note 65 (emphasis added).

73. *See infra* Part II.A.

1. How Federal Statutes Approach Adaptive Resource Management

The major problem with adaptive resource management is that the process is poorly defined by statute, thus it becomes difficult to determine the roles of the actors or to effectively implement adaptive management policies on the ground. Most federal statutes are vague when defining adaptive resource management, whether generally or how it applies to a specific plan. Additionally, almost none of the federal statutes provide an actual framework for how each adaptive resource management plan will be implemented.

For example, The Federal-Aid Highways Act allows for the "[d]evelopment of programmatic mitigation plans."[74] These plans are meant to "address the potential environmental impacts of future transportation projects."[75] However, when referring to adaptive management policies within the statute, the text only provides for "protocols that involve monitoring predicted impacts over time and adjusting mitigation measures in response to information gathered through the monitoring."[76] Besides this, the statute does not elaborate on what it means by adaptive resource management plans.[77] The program stresses the importance of evaluating and mitigating potential environmental impacts, and though it references adaptive resource management policies, it does not explain how these will play a role in the creation or implementation of the statute.[78] These types of statutes make it difficult to determine the role of adaptive resource management in effectively addressing environmental concerns. By not defining the exact procedures required, the probability of a successful adaptive resource management policy is diminished.

In contrast, an example of a more comprehensive federal statute is the Southwest Forest Health and Wildfire Prevention Act.[79] Under this act, Congress defined "adaptive ecosystem management" as:

> a natural resource management process under which planning, implementation, monitoring, research, evaluation, and incorporation of new knowledge are combined into a management approach that—is based on scientific findings and the needs of society; treats management actions as experiments; acknowledges the complexity of these systems and scientific uncertainty; and uses the resulting new knowledge to modify future management methods and policy.[80]

The act went further to say that monitoring and evaluation would be achieved by "implementing active ecosystem management practices at the landscape level."[81] Although this statute incorporates a more comprehensive statement of what adaptive management is, it is evident that the legislature will need to refine the statute to effectively define the process by which the policies are actually implemented.

74. 23 U.S.C. § 169(a) (2012).
75. *Id.*
76. 23 U.S.C. § 169(c)(5) (2012).
77. 23 U.S.C. § 169 (2012).
78. *Id.*
79. 16 U.S.C. §§ 6701–6707 (2012).
80. 16 U.S.C. § 6703(1)(A)(i)–(iv) (2012).
81. 16 U.S.C. § 6706(a)(1)(A) (2012).

Overall, these two statutes stress the differences in how adaptive management is stated as a policy. Further, comparing these two shows how even the same actor, in this case Congress, can change how it defines and approaches adaptive resource management issues. These statutes strongly identify the shortcomings in creating a tethered national policy for implementing adaptive management programs.

2. How Federal Regulations Approach Adaptive Resource Management

Similar to federal statutes, federal regulations rarely define adaptive resource management in the same clear terms. The result is that adaptive resource management varies from agency to agency, and therefore varies from rule to rule. Essentially, the varied administrative processes cause the agencies to promulgate different rules and implement vastly different programs on the ground. This leads to an even more convoluted interpretation of the adaptive management process.

Previously this paper addressed the importance of NEPA in environmental policy.[82] In the federal regulations responsible for the implementation of NEPA, the Department of the Interior has recognized the importance of adaptive resource management strategies.[83] The section states that "[b]ureaus should use adaptive management, as appropriate, particularly in circumstances where long-term impacts may be uncertain and future monitoring will be needed to make adjustments in subsequent implementation decisions."[84]

A previous draft of the regulation stated simply that "[t]his section incorporates adaptive management as part of the NEPA planning process."[85] However, this draft was changed to contain the more specific language in 43 CFR § 46.145.[86] This is because many of the drafters were concerned that the regulation did not clearly explain how adaptive management would be used during the implementation of NEPA.[87] In fact, legislators brought up numerous concerns regarding the use of adaptive management policies in the implementation of NEPA, including: costs, the lack of information, the reliance of future conditions, and the omission of a detailed monitoring plan.[88] Despite all of these concerns, most commenters on the regulation supported the idea of incorporating adaptive resource management into the process.[89]

The current language of the regulation addresses the monitoring concerns, stating that a NEPA analysis that employed an adaptive resource management approach "should identify the range of management options that may be taken in response to the results of monitoring and should analyze the effects of such op-

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[82] Lazarus, *supra* note 1.

83. *See* 43 C.F.R. § 46.145 (2013).

84. *Id.*

85. Implementation of the National Environmental Policy Act (NEPA) of 1969, 73 Fed. Reg. 61292 (proposed Oct. 5, 2008) (to be codified at 43 C.F.R. pt. 46.145).

[86] 43 C.F.R. § 46.145 (2013).

87. *Id.*

88. *Id.*

89. *Id*.

tions."[90] This gives a very general understanding of what is required to create a successful adaptive management strategy. The result is that this leaves agencies to interpret what is required under a combined NEPA/adaptive resource management strategy.

Even in regulations where the goal is clear, adaptive resource management is still rarely defined as narrowly as it should be. In dealing with navigation and navigable waters, federal regulations state that the policy is to use an adaptive management plan.[91] The regulation calls for:

> A management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success.[92]

This adaptive management plan gives a general overview of what adaptive management is—which is more than most regulations do—however, it gives no indication of how these policies are supposed to be achieved.[93] It does not define the party that is responsible for determining when to implement policies or when to adjust them.[94] This regulation has even more of an impact when looking at the resource it is regulating. Navigable waters are a portion of the freshwater available in the United States, an ever more scarce resource.[95] The effect of any policy or action regarding this resource has wide-ranging effects.

When extrapolating the effect of this limited procedural information to similar regulations that control other just as vital resources, it is evident how the differences between these policies could disrupt one or more ecosystems in the long run. These types of statutes can have long-lasting and detrimental effects on large swaths of resources if the policies are ineffective. Therefore, this limited amount of direction is at least partly responsible for the varying policies and the administrative failures in implementing adaptive resource management. More importantly, the failure to address these shortcomings could have more dire effects in the future. This is important to Idaho, because a large portion of the state is federally owned,[96] meaning federal adaptive resource management plans, including their definitions and process, will consistently be used throughout the state. Additionally, federal actions within Idaho will affect the citizens' ability to interact with certain natural resources and could change overarching ecosystems, affecting state policy.

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90. 43 C.F.R. § 46.145 (2013) (The regulation goes further to say that "[t]he environmental effects of any adaptive management strategy must be evaluated in this or subsequent NEPA analysis").

91. 33 C.F.R. § 332.4(c) (2013).

92. *Id.*

93 *See generally id.*

94 *See generally id.*

95. *See* Grace Wyler, *All Around the US, Risks of a Water Crisis are much Bigger than People Realize*, BUSINESS INSIDER (May 22, 2013, 3:58 PM), http://www.businessinsider.com/us-drought-water-scarcity-2013-5.

96. *Policy Analysis Group: Idaho Land Ownership Map*, UNIVERSITY OF IDAHO, http://www.uidaho.edu/cnr/pag/idaho-land-ownership-map (last visited Feb. 6, 2014).

C. How Northwest States Define Adaptive Resource Management

Differences in adaptive resource management definitions and policies between federal statutes and federal regulations causes the implementation and treatment of adaptive resource management at the regional and state level to vary as well. At this point, the paper has addressed only the federal shortcomings in defining and implementing adaptive resource management. However, in order to further understand Idaho's treatment of the policy, it is important to look at the regional development.[97] This is essential because many policies in the Northwest states deal with an overlapping resource.[98] How another state approaches adaptive resource management affects Idaho's treatment of the same resource.[99] Therefore, this section examines how Montana and Washington treat adaptive resource management in statutes and regulations and the effect on Idaho.

1. How Montana's Approach to Adaptive Resource Management Affects Idaho

As a border state with Idaho, Montana has many shared resources and the adaptive management policies employed within the state effect other Northwest states including Idaho's resources. Montana provides an example of a combined resource with Idaho that was regulated through adaptive resource management: the gray wolf.[100] Montana created an administrative rule for the purpose of "[c]omit[ting] to preservation of the gray wolf as a resident wildlife."[101] This rule stressed the importance of "conservation and management strategies" to achieve this goal.[102]

In addition to committing to gray wolf preservation, the Montana adaptive management regime provided for a tangible gray wolf resource goal that recognized the grey wolf's wide range over multiple states.[103] Montana determined that adaptive resource management in this rule meant "wolf conservation and management strategies that will maintain a recovered population and assure natural connectivity and genetic exchange among the wolf populations in Canada, Montana, *Idaho*, and Wyoming."[104] Montana recognized the overlap of the gray wolf between states, and attempted to create a strategy to allow the wolf to flourish within their entire habitat.[105]

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97. Although not specifically addressed in this paper, an Oregon statute states, "Adaptive management mechanisms; ecosystem services markets; mitigation strategies . . . State agencies are *encouraged* to adopt and incorporate *adaptive management mechanisms* in their programs in order to support the maintenance, restoration and enhancement of ecosystem services." OR. REV. STAT. § 468.587(1) (2009) (emphasis added).

98. *See* 33 C.F.R. § 332.4(c).

99. *See generally* MONT. ADMIN. R. 12.9.1302 (West 2014).

100. *See* MONT. ADMIN. R. 12.9.1301(1) (West 2014).

101. *Id.*

102. *Id.*

103. *See* MONT. ADMIN. R. 12.9.1302 (West 2014).

104. *Id.* (emphasis added).

105. *See id.* The irony of this statute, is that at the same time, both the populations of Idaho and Montana were split on whether the gray wolf should be endangered. *See* Jeff Black, *Protected no Longer, More than 550 Gray Wolves Killed this Season by Hunters and Trappers*, NBC NEWS (Mar. 6, 2013,

Similar to Montana, Idaho had a statute that identified animals that legally could be taken.[106] On the list of big game animals that could be hunted was the gray wolf.[107] The statute went further to say that either sex could be taken.[108] At the time the Montana adaptive resource management statute was enacted, the gray wolf was listed as endangered on the federal list; however, as soon as the wolf was de-listed, both states created laws allowing for reduction in wolf populations.[109] Montana in response to the federal delisting created a regulation allowing the "lethal control of the gray wolf."[110] As a result, there was a drastic increase in the gray wolves killed by hunters.[111]

The importance of these statutes is how they overlap. Not only did federal law influence Montana passing the adaptive management statutes to ensure that the wolf would not continue as an endangered species, federal law also controlled Idaho statutes.[112] However, the adaptive management of the gray wolf in Montana affected the resource in Idaho.[113] The protection of the wolf in Montana would create an increased population in the entire habitat.[114] However, if Idaho had a policy that contradicted this, neither state would realize their goals: one would promote the growth in the wolf population, while the other would negate that growth by allowing increased exploitation of the resource.

This recognition of the influence of one state's policy on another state's resources shows the importance of consistent policies between the states. Without state cooperation, none of the adaptive management goals that deal with shared resources—almost all goals—are likely to be realized.

2. How Washington's Approach to Adaptive Resource Management Affects Idaho

Washington statutes demonstrate an interesting aspect in defining adaptive resource management. In two statutes dealing with the conservation of two very different resources—the forests[115] and salmon[116]—the Washington Legislature defined adaptive resource management in exactly the same terms: "'Adaptive management' means reliance on scientific methods to test the results of actions taken so that the management and related policy can be changed promptly and appropriately."[117]

6:22PM), http://usnews.nbcnews.com/_news/2013/03/06/17213786-protected-no-longer-more-than-550-gray-wolves-killed-this-season-by-hunters-and-trappers?lite.

106. IDAHO ADMIN. CODE r. 13.01.08.300 (2013).
107. *Id.*
108. *Id.*
109. MONT. ADMIN. R. 12.9.1305 (West 2014); *see* Black, *supra* note 102..
110. MONT. ADMIN. R. 12.9.1305 (West 2014).
111. Black, *supra* note 105.
112. *See id.*
113. IDAHO DEPT. OF FISH & GAME, IDAHO WOLF POPULATION MANAGEMENT PLAN, 27-28 (2008), *available at* http://fishandgame.idaho.gov/public/docs/wolves/plan08.pdf.
114. *See id.*
115. WASH. REV. CODE ANN. § 76.09.020 (West 2014).
116. WASH. REV. CODE ANN. § 77.85.010 (West 2014).
117. *Id.*; WASH. REV. CODE ANN. § 76.09.020.

This shows that the Washington legislature recognizes at least some need for consistency in adaptive resource management policies throughout the state. However, this definition is lacking. While the Washington legislature recognizes some need for consistency, this definition fails to address the procedures and steps, and gives a rudimentary definition of what constitutes adaptive resource management.

However, Washington has passed other statutes that take a more comprehensive definition of adaptive resource management.[118] In fact one statute seems to lay out all of the steps outlined in the DOI technical guide—even if not in the stated in the same terms.[119] Although the statute does not go into depth on each step, it creates a strong requirement to the adherence to a successful basic adaptive management framework. The most important aspect of the statute however is where it creates a "procedure for *adaptive management* that evaluates the effectiveness of the plan to meet its measurable public resources objectives, reflects changes in the best available science, and provides changes to its habitat management strategies . . . in a timely manner and schedule."[120] This section seems to require triggers to determine when a change in the adaptive management plan is necessary.[121] This section also creates mandatory long-term management plans.[122] In further support of the adjustment step of the process, Washington law requires that the finding from the adaptive management plan be incorporated into law.[123]

This comprehensive act provides an example of a strong statutory system for the implementation of effective adaptive resource management policies. This gives not only goals in the terms of adaptive management, but it also lays out the process to achieve these goals. Overall, it provides an example for how statutes should be constructed to provide the best possible structure for an adaptive management plan from its origin.

Additionally—in relation to Idaho—Washington is not only an example of how adaptive management statutes should be structured, it also deals with resources that both states share. One of the important adaptive management regulations that govern a shared resource between Washington and Idaho is adaptive

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[118] *See e.g.*, WASH. REV. CODE ANN. § 76.09.350(1)(c)(i)–(xiii) (West 2014)

119. *Id.* (The statute states that: "Each pilot project shall have a landscape management plan with the following elements: (i) An identification of public resources selected for coverage under the plan and measurable objectives for the protection of the selected public resources; (ii) A termination date of not later than 2050; (iii) A general description of the planning area including its geographic location, physical and biological features, habitats, and species known to be present; (iv) An identification of the existing forest practices rules that will not apply during the term of the plan; (v) Proposed habitat management strategies or prescriptions; (vi) A projection of the habitat conditions likely to result from the implementation of the specified management strategies or prescriptions; (vii) An assessment of habitat requirements and the current habitat conditions of representative species included in the plan; (viii) An assessment of potential or likely impacts to representative species resulting from the prescribed forest practices; (ix) A description of the anticipated benefits to those species or other species as a result of plan implementation; (x) A monitoring plan; (xi) Reporting requirements including a schedule for review of the plan's performance in meeting its objectives; (xii) Conditions under which a plan may be modified, including a procedure for adaptive management; (xiii) Conditions under which a plan may be terminated.").

120. WASH. REV. CODE ANN. § 76.09.350(1)(c)(xvi) (West 2012) (emphasis added).

[121] *See* WASH. REV. CODE ANN. § 76.09.350(1)(c) (West 2012).

[122] *See id.*

123. WASH. REV. CODE ANN. § 76.09.370(6) (West 2012).

management in watershed analysis.[124] Both Washington and Idaho use water resources from the Columbia River Basin.[125] Therefore, the regulation of water in either state can have an impact on the resource available to the other.

The watershed statute addressing adaptive resource management demands that "the analysis process . . . [have] cooperation among resource managers."[126] However, the issue with this statute arises from the "voluntary, cooperative approaches to address impacts of cultural resources."[127] Although the statute allows the board to "seek additional protection to prevent adverse impacts" if it finds that the voluntary approaches are not accomplishing the purpose, it gives no means to do so.[128] The emphasis on monitoring aside, this is not an effective use of adaptive resource management.

Idaho and Washington share many overlapping resources.[129] The fact that water is just one of the many, shows that voluntary cooperation between states is not a legitimate management means to achieving real goals. Rather, the states must be required to act together. Though Washington provides a statutory structure we should admire, the regulatory implementation of adaptive resource management leaves a system to be desired. Resources this large and important to state environments and economies demand a regional adaptive management plan to ensure that all needs are met.[130]

These differences in adaptive resource management definitions and policies between the federal government and state governments, and even between state governments, causes the implementation and treatment of adaptive resource management to vary as well.[131] As a result, federal and state governments need to determine and state the basic policies and procedures for implementing effective programs. Because this defined process is still lacking, there are both recognized successes and failures in adaptive management programs.[132]

III. CURRENT TREATMENT OF ADAPTIVE RESOURCE MANAGEMENT

Consistent approaches to defining adaptive resource management reduces the uncertainty in adaptive management projects, allowing agencies to instead en-

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124. *See, e.g.*, WASH. ADMIN. CODE. § 222-22-010(4) (2013).

125. WASH. DEP'T OF ECOLOGY ET AL, COLUMBIA RIVER BASIN: LONG-TERM WATER SUPPLY AND DEMAND FORECAST 20 (2011), https://fortress.wa.gov/ecy/publications/publications/1112011part1.pdf. (last visited Sept. 8, 2014). "The amount and timing of water entering Washington state within the Columbia River Basin is highly impacted by existing infrastructure and management in British Columbia, Idaho, Montana, and Oregon." *Id.*

126. WASH. ADMIN. CODE § 222-22-010(4) (West 2013).

127. *Id.* ("Adaptive management in a watershed analysis process requires advances in technology and cooperation among resource managers. The board finds that it is appropriate to promulgate rules to address certain cumulative effects by means of the watershed analysis system, while recognizing the pioneering nature of this system and the need to monitor its success in predicting and preventing adverse change to fish, water, and capital improvements of the state and its political subdivisions.").

128. *Id.*

129 *See* WASH. DEP'T OF ECOLOGY, *supra* note 125, at 8, 20.

130 *See* Robert L. Glicksman, *Ecosystem Resilience to Disruptions Linked to Global Climate Change: An Adaptive Approach to Federal Land Management*, 87 NEB. L. REV. 833, 873 (2009).

131 *See, e.g.*, Glicksman, *supra* note 130; WASH. DEP'T OF ECOLOGY, *supra* note 125.

132 *See, e.g.*, Glicksman, *supra* note 130; WASH. DEP'T OF ECOLOGY, *supra* note 125..

sure that projects are effective in achieving their outlined goals. There are a variety of methods for rating the effectiveness of adaptive management.[133] One important method for determining a policy's effectiveness has been an evaluation of the public response to a program.[134] Through evaluations of how programs have been publically perceived, including a discussion of the projects that influence Idaho, agencies begin to identify and understand whether adaptive resource management programs achieve the desired goals.[135] An additional tool for determining a policy's effectiveness is analyzing court decisions on whether adaptive resources management policies are valid.[136] The analysis will look at how the courts evaluate the project and whether the court has found that a program falls within the statutory power provided for the project.[137] In this section we will look at only a few examples that demonstrate successes and the failures in adaptive resource management in the west.[138] By evaluating only a few examples that demonstrate successes and the failures in adaptive resource management in the west, agencies can inform future projects and increase their overall effectiveness.

A. Broad Examination of Adaptive Resource Management Programs

One of the most recognized adaptive resource management plans implemented by the federal government is the Glen Canyon Dam.[139] The plan was created to "provide an organization and process for cooperative integration of dam operations, downstream resource protection and management, and monitoring and research information." [140] Though the dam existed before, in the 1990s it became an adaptive resource management project.[141] The project created a decision making group to address the organization and implementation of the process.[142] The decision-making-body includes representatives from "federal agencies, Native American tribes, state agencies, environmental groups, recreation interests, and contractors."[143]

Though this plan in the beginning seemed to be a pioneer for adaptive resource management, contemporary response has shown that this is not the case.[144] Critics of the program have claimed that the ecological damage caused by the dam

133 *See* discussion *infra* Parts III.A, III.B.

134 *See* discussion *infra* Part III.A.

135 *See* discussion *infra* Part III.A.

136 *See* discussion *infra* Part III.B.

137 *See* discussion *infra* Part III.B.

138 *See* discussion *infra* Part III.B.

139 *See* U.S. DEP'T INTERIOR, *Glen Canyon Dam: Adaptive Management Program*, https://www.usbr.gov/uc/rm/amp/ (last visited Sept. 22, 2014).

140. *Id.*

141. *See* U.S. DEP'T INTERIOR, *Glen Canyon Dam Adaptive Management Program: Background Information UC Region*, https://www.usbr.gov/uc/rm/amp/background.html (last visited Sept. 22, 2014).

142. *Id.*

143. GARY K. MEFFE ET AL., ECOSYSTEM MANAGEMENT: ADAPTIVE, COMMUNITY-BASED CONSERVATION 100 (2002).

144. April Reese, *Colorado River Adaptive Management Program Needs Overhaul, Critics Say*, N.Y. TIMES (May 7, 2009), http://www.nytimes.com/gwire/2009/05/07/07greenwire-colorado-river-adaptive-management-program-nee-12208.html; April Reese, *Iconic Status Can't Spare Grand Canyon from Myriad Threats*, N.Y. TIMES (April 19, 2010), http://www.nytimes.com/gwire/2010/04/19/19greenwire-iconic-status-cant-spare-grand-canyon-from-myr-86051.html.

has not been dealt with, and therefore the plan "has failed to live up to its congressional mandate."[145] Critics have cited several major issues for the ineffectiveness of the dam regulation, including segregated voting blocs, increases in cost, and the general battle over whether to minimize or increase the flows form the dam.[146] Despite critics voicing these concerns in 2009, many of those issues are still evident in the current dam management policy.[147] However, this plan is still active, and in 2014 there is a scheduled high flow experimental release.[148]

Another generally recognized failure is the Comprehensive Everglades Restoration Plan (CERP).[149] Although the CERP did not originate in the northwest, its importance to adaptive resource management cannot be overlooked because its failure illustrates the necessity of removing politics from adaptive resource management.[150] In addition to its political failures, the plan was focused on "modeling and data collection rather than learning…and resolving uncertainties."[151] This focus did not allow for adjustment.[152] This failure shows the importance of removing politics from agency action, especially in the adjustment phase of an adaptive management plan.[153]

Previously we addressed the importance of the Columbia River Basin to the Northwest.[154] In 1984, The Northwest Power Planning Council incorporated adaptive management to "fish and wildlife recovery in the Columbia River Basin."[155] The major problem with this is founded in biological uncertainty, and the attempt to create a restoration project on this large a scale without proper infrastructure.[156] This specifically affects Idaho by listing the "Snake River salmon population under the Endangered Species Act."[157] The research from this will allow Idaho to determine the best means to promote growth in the salmon population while achieving other goals. This one project on a large-scale has the potential to create very effective localized policies. However, the potential and the actualization

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145. Reese, *supra* note 144.

146. *Id.*

147 *See generally id.*

148. U.S. DEP'T INTERIOR, *Bureau of Reclamation - Upper Colorado Water Operations: Current Status: Lake Powell*, http://www.usbr.gov/uc/water/crsp/cs/gcd.html (last visited Sept. 22, 2014).

149. *See* Matt Sedensky, *Everglades Restoration: Federal Report Shows Little Progress, Dire Outlook*, HUFFINGTON POST, (last updated Aug. 21, 2012, 5:12 AM), http://www.huffingtonpost.com/2012/06/21/everglades-restoration-fe_n_1615850.html.

150. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 4; JOURNEY TO RESTORE AMERICA'S EVERGLADES, *Adaptive Management Integration Guide: The Comprehensive Everglades Restoration Program*, A-5 (March 2011), http://www.evergladesplan.org/pm/pm_docs/adaptive_mgmt/062811_am_guide_final.pdf [hereinafter *Comprehensive Everglades Restoration Program*].

151. *Comprehensive Everglades Restoration Program*, *supra* note 150, at A-5.

152 JOURNEY TO RESTORE AMERICA'S EVERGLADES, *supra* note 150, at 11.

153. CENTER for PROGRESSIVE REFORM, *supra* note 4, at 4.

154 *See supra* Part II.C.2.

155. John M. Volkman & Willis E. McConnaha, *Through a Glass, Darkly: Columbia River Salmon, The Endangered Species Act, and Adaptive Management*, 23 ENVTL. L. 1249, 1249 (1993), *available at* heinonline.org/HOL/LandingPage?handle=hein.journals/envlnw23&div=69&id=&page=.

156. Kai N. Lee & Jody Lawrence, *Adaptive Management: Learning from the Columbia River Basin Fish and Wildlife Program*, 16 ENVTL. L. 431, 431 (1986), *available at* http://heinonline.org/HOL/LandingPage?handle=hein.journals/envlnw16&div=23&id=&page=.

157. Volkman & McConnaha, *supra* note155.

are very different. Currently, the effectiveness is dwarfed by Idaho Fish and Game policies.[158]

Although the Federal government has implemented several adaptive resource management plans, one of the major federal plans that effects Idaho is the Northwest Forest Plan.[159] This plan is quite comprehensive and deals with several different resources located in the Northwest.[160] This plan was also one of the earliest large-scale adaptive management plans.[161] In 1994, the basic goal of the plan was to create a means for substantial timber harvest while maintaining the ecosystem to support the wildlife and plant life.[162] This paper discusses five of the projects included under a subsection of this plan—The Little River Adaptive Management Ares—all of which effect the northwest as a whole.[163] The sole purpose of this is to understand how many different resources can be regulated through one grant of legislative power. In looking at these examples it is obvious that the success of the project will have either destructive or restorative effects depending on how or whether it succeeds.[164] This shows the importance of the success of a project on both the small and large scale for ensuring the protection of resources and the environment.[165]

The reason for looking at the small-scale projects of the Northwest Forest Plan is to show how many of the projects deal with very specific resources. It is also to show how these projects must interact,[166] not only with each other but also with the state and local governments and private land owners that are affected. The Little River Adaptive Management Project deals with land where sixty three percent is federal and thirty seven percent deals with private ownership, magnifying the importance of intergovernmental cooperation.[167]

The first small project is the Fall Creek Riparian Restoration.[168] This project's goal is to use tree planting as a means to reestablish conditions on twenty acres of land that previously were burned, destroying the trees and the seed life.[169] Overall this is a small scale project, taking up very little of the forest as a whole.[170] The second project is the Glide School Partnership for Education and Ecosystem

158. *See infra* Part VI.B.

159 MEFFE ET AL, *supra* note 143, at 103.

160 *See id.*

161. *Id.*

162. *Id.*

163. *Id.* at 104.

164 *See id.*

165 MEFFE ET AL., *supra* note 143, at 104.

166. Although this section of the paper lists only five smaller aspects of the project there are many more that make up the entirety of the Little River Adaptive Management Area Research and Monitoring: Sugar Pine Maintenance Restoration, Late-Successional Forests Prone to Fire, Diversity in Douglas-fir Plantations, Restoration of Compacted Soils, Water Quality Monitoring, Spawning Gravel Sedimentation Monitoring, Proportional Size Class Thinning, Retrospective Thinking Study, Restoration of the Umpqua Mariposa Lily, Community Partnerships, E-Mile Regeneration Harvest and Commercial Thin, Effect on Fire Landscape Patterns and Processes, and Juvenile Fish Outmigration Monitoring. *Little River Adaptive Management Area Research and Monitoring*, ADAPTIVE MANAGEMENT AREA NETWORK ARCHIVE (last updated July 24, 2001), http://www.reo.gov/ama/research/lilriv.htm [hereinafter *Little River*].

167. MEFFE ET AL., *supra* note 143, at 105.

168. *Id.*

169. *Id.*

170 *See id.*

Management.[171] This project has two distinct goals: to educate local student in regards to natural resources and ecosystems, and to use the students' observations to determine water quality information.[172] The third project deals with the protection of a native species found in Oregon: the Restoration of the Umpqua Mariposa Lily.[173] This project uses "prescribed burning, tree girdling, and thinning of competing vegetation" to achieve the goal, obviously effecting the surrounding ecosystem.[174] The fourth project is the Sampson Butte Commercial Thinning, which uses thinning practices to determine which policy results in the improved growth and vigor of the trees.[175] The goal is to "create a greater structural diversity in the forest."[176]

In general, adaptive management is influential in the two major aspects of the large-scale Northwest Forest Plan: administration of the lands for experimentation, and the procedure for implementation and revision of the plan's management.[177] The plan was described by the Ninth Circuit, specifically regarding the preservation of the spotted owl, as "developed on sound scientific analysis as an effective method to conserve."[178] However, the plan was, and is still, the subject of frequent litigation.[179] The procedure for implementation and revision of the plan is what has sparked the litigation claims regarding the Northwest Forest Plan.[180] Essentially, the experimentation is a valid exercise of the power granted by the act, but there are restrictions on how the environment can be studied.[181]

These three long-term projects represent only a small fraction of the adaptive management programs in the northwest; in fact, these only demonstrate a small fraction of the federal programs in the northwest.[182] Therefore, these programs—whether successes or failures[183]—are only demonstrative of how the results of individual programs can be under their particular circumstances. Each program provides more insight on how to effectively organize, implement, and manage the next adaptive resource management project, insight that can be further refined by the courts.

B. How Courts have Dealt with Defining Adaptive Resource Management

As adaptive management becomes a more influential environmental policy, more challenges regarding adaptive management will arise in the courts. Because adaptive management has not been clearly defined, and the data collected in

171 *Id.*
172. *Id.*
173. MEFFE ET AL., *supra* note 143, at 105.
174. *Id.*
175 *Id.*
176. *Id.*
177. Ruhl & Fischman, *supra* note 8, at 449–50.
178. *Ecosystem Management, The Northwest Forest Plan, and Old-Growth Dependent Species*, DEP'T JUSTICE (last updated Sept. 2014), http://www.justice.gov/enrd/4712.htm [hereinafter DEP'T JUSTICE].
179. *Id.*; *See, e.g.*, Gifford Pinchot Task Force v. U.S. Fish and Wildlife Serv., 378 F.3d 1059 (9th Cir. 2004).
180. DEP'T JUSTICE, *supra* note 178; Ruhl & Fischman, *supra* note 8, at 445.
181. *See* DEP'T JUSTICE, *supra* note 178; Ruhl & Fischman, *supra* note 8, at 445.
182 *See, e.g.*, *Little River*, *supra* note166.
183 *Id.*

many cases is extremely scientific, courts will face many issues in determining how to decide the outcome of a given case.[184] The difficulty will be in addressing whether the adaptive management policy complies with the law and only acts under the legislative power given. However, for the purposes of this paper, the only issue with the courts that is concerning is how strictly courts require the adaptive management procedures to be defined and followed.

The Supreme Court has determined that a biological opinion by an agency is reviewable by the courts.[185] As a general rule, the courts give deference to the agencies that implement statutes through their rules and regulations.[186] This would seem to create a system where adaptive management strategies are left to the agencies to create and implement without interference from the courts; however, this has not been seen during the litigation of adaptive management issues.[187] As of 2010, The United States has lost more than half the cases regarding adaptive resource management.[188] Adaptive management projects—because they are so open-ended—must show that they meet the "substantive management criteria required by law."[189]

In 2004, new amendments were adopted attempting to relax two monitoring policies under the Northwest Forest Plan, the most important of which was the "survey and manage" requirements to monitor the projects effect on over 400 different species.[190] A district court overturned the amendments to the Northwest Forest Plan and determined that the procedures were necessary to achieve an adaptive management plan.[191] This ruling has a broad impact on the Northwest since the program is a large-scale adaptive resource management policy that effects several states and several resources.[192] The court required increased procedural specificity, an issue that would not have presented if federal cooperation had already resulted in a defined procedure for adaptive management programs.[193]

Another case that affected the Northwest was heard in 2006.[194] The United States District Court for the District of Idaho addressed a claim from the Western Watershed Project alleging that the United States Forest Service "failed to do a proper environmental analysis of the impacts of grazing."[195] In order to determine the validity of the claims, the court first went through an in depth NEPA analysis despite the Forest Service stating that the success of their project was based on

184. *See generally* Ruhl & Fischman, *supra* note 8, at 445.

185. Bennett v. Spear, 520 U.S. 154, 161 (1999).

186. 5 U.S.C. § 706 (2012) ("The reviewing court shall-- hold unlawful and set aside agency action, findings, and conclusions found to be--arbitrary, capricious, an abuse of discretion.").

187 *See, e.g.*, Bennett, 520 U.S. at 161.

188. Ruhl & Fischman, *supra* note 8, at 445.

189. *Id.*

190. Pac. Coast Fed'n of Fishermen's Ass'ns v. Nat'l Marine Fisheries Serv., 482 F. Supp. 2d 1248, 1251–53 (W.D. Wash. 2007); Nw. Ecosystem Alliance v. Rey, 380 F. Supp. 2d 1175, 1197–98 (W.D. Wash. 2005) (dealing specifically with the "survey and manage" requirement).

191. Nw. Ecosystem Alliance, 380 F. Supp. 2d at 1192–93.

192 *See id.*

193 *Id.*

194 W. Watershed Project v. U.S. Forest Serv., No. CV-05-189-E-BLW, 2006 WL 292010, at *1 (D. Idaho Feb 7, 2006).

195. *Id.*

adaptive resource management strategies.[196] The Forest Service maintained that adaptive management was the "key to correcting [the] impacts" from grazing.[197]

The Forest Service based their adaptive management strategy on three principles: (1) achievement of realistic, clearly defined objectives; (2) ongoing monitoring to assess progress toward those objectives; and (3) the flexibility to alter management when adequate progress is not being achieved."[198] Though these strategies encompassed many of the steps of adaptive resource management, it failed to "define the protocols it would use or describe the monitoring"[199]—a key factor in the court's decision.[200]

The court determined that because the adaptive management policy failed to state the specific standards for monitoring, it was impossible to determine whether the Federal Forest Service had followed the program.[201] The court ruled, that because of the lacking definition and policy standard, the forest service violated the National Forest Management Act because it failed to explain the strategies and the protocols by which it would achieve its mandate.[202]

This shows the importance of defining adaptive resource management for each project and creating a very structured and understood approach to implementing the policies. Without this, the courts are left to speculate as to what the rules or regulations require. This is one of the major causes of adaptive management programs failure in the courts.[203] Once again, the importance of defining adaptive management cannot be overstated for the success of a program or policy.

IV. HOW IDAHO APPROACHES ADAPTIVE RESOURCE MANAGEMENT

In order to understand how Idaho should apply adaptive resource management, before analyzing definitions, public responses, or court decisions, it is important to understand how adaptive management is currently treated in the state. Therefore, this section addresses Idaho's land ownership, current adaptive resource management programs, and a climate change program. In concluding, this section addresses the best means for Idaho to implement adaptive resource management policies in the future.

A. The Importance of Idaho's Land Ownership on Adaptive Resource Management

Idaho is important as an example for how adaptive resource management strategies can be applied effectively because of the relationship between the federal,

196. *Id.* at *10.
197. *Id.*
198. *Id.* at *2.
199. *Id.*
200 W. Watershed Project, No. CV-05-189-E-BLW, 2006 WL 292010, at *2.
201. *Id.* at *10.
202. *Id.*
203 *See*, Ruhl & Fischman, *supra* note 8, at 445.

state, and tribal governments, and private parties as land owners.[204] In order for adaptive resource management to be effective in a state such as Idaho—where all of these actors have a valid interest in the land rights and uses[205]—the cooperation between these entities becomes the most important factor. The goal is to make sure competing interests do not become competing policies.

The Federal Government owns a little over sixty percent of the land in Idaho.[206] Meaning, the federal government owns a large portion of Idaho's natural resources.[207] In fact, the U.S. Government "manages nearly three-quarters of the Idaho forest."[208] In contrast, the state and other public agencies own ten percent, forest products companies own five percent, and private land owners hold only ten percent.[209]

The image below shows the importance of federal and state interaction, as well as agency interaction. The varying land owners all interact with the resources in the state and can have an effect on the adaptive management processes undertaken by other agencies.[210] The reason this map[211] is so important is that it shows how varied the ownership of the state is and how federal, state, and private interests might compete for the availability of resources, the preservation of ecosystems, and economic gains.

204 *Ownership of Idaho's Forestland*, IDAHO FOREST PRODS. COMM'N, http://www.idahoforests.org/ownall.htm (last visited Oct. 1, 2014).

205 *See* Hellar v. Cenarrusa, 682 P.2d 539, 562, 106 Idaho 586, 609 (1984).

206. IDAHO FOREST PRODS. COMM'N, *supra* note 204. Despite the popular belief of politicians in Idaho, the percentage of Idaho owned by the federal government will not be reduced any time soon by transfers to the state. *See, e.g.*, *The Idaho Debates 2014*, IDAHO PUB. TELEVISION, http://idahoptv.org/elections/2014/ (last visited Sept. 8, 2014).

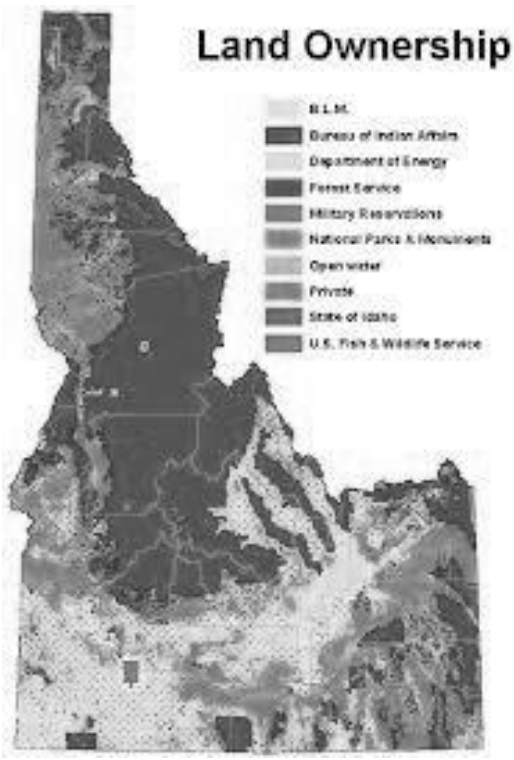
207. IDAHO FOREST PRODS. COMM'N, *supra* note 204.

208. *Id.*

209. *Id.*

210 *See generally id.*

211 *Policy Analysis Group: Idaho Land Ownership Map*, UNIV. OF IDAHO, http://www.uidaho.edu/cnr/pag/idaho-land-ownership-map (last visited Nov. 22, 2014).



Adaptive resource management places an emphasis on ecosystem management—essentially it focuses on the interplay of various types of natural resources.[212] The issue with this in Idaho is that the natural resources are governed, as with most states, by separate departments.[213] These departments tend to focus on the conservation, preservation, and management of a specific resource without necessarily considering the impact on other resources.[214]

As with any general principle, there are exceptions to this rule.[215] The Idaho Forestry statutes specifically address the need to ensure that forest management policies do not have adverse effects to the watershed system in any given area.[216] The statute seems to require the state forestry department to monitor the implemented policy's effects on the watershed and adjust them when needed to ensure

212. Williams, *supra* note 9, at 1.

213. *See, e.g.*, *Water Rights*, IDAHO DEP'T OF WATER RES., http://www.idwr.idaho.gov/WaterManagement/default.htm (last visited Sept 8, 2014); *Home*, IDAHO DEP'T OF LANDS, www.idl.idaho.gov (last visited Oct. 1, 2014); *About Us*, IDAHO FISH & GAME, http://fishandgame.idaho.gov/public/about/ (last visited Oct. 1, 2014).

214. *See, e.g.*, *Welcome!*, IDAHO DEP'T OF WATER RESOURCES, http://www.idwr.idaho.gov/ (last visited Oct. 1, 2014); *About Us*, IDAHO DEP'T OF LANDS, http://www.idl.idaho.gov/land-board/about-idl/index.html (last visited Sept 22, 2014); *Fish and Game Mission Statement*, IDAHO FISH & GAME, http://fishandgame.idaho.gov/public/about/commission/?getPage=186 (last visited Oct. 1, 2014).

215. *E.g.*, IDAHO CODE ANN. § 38-710 (West 2014).

216. *Id.* ("[T]he University of Idaho, the forest, wildlife and range experiment station is authorized to conduct investigations and research into the production, protection, utilization and management for continuous use of all forage and range resources found thereon, and the direct and indirect effects of the use of these resources upon erosion and watershed protection.").

that there is no water erosion.[217] Again, this does not conform to the recognized procedures for an effective adaptive resource management policy,[218] but it is a step in the right direction.

Despite not having a formal adaptive management policy for resources within the state as a whole, many of the various natural resource departments are required through state legislation to implement policies that are very similar.[219] These policies help to form a basic procedure, which will strengthen the resolve between agencies to work together, and will provide agencies with a basic structure for how to complete projects.

Although Idaho is lacking in providing an overall database to determine the most effective ways to manage certain resources, it does take steps in the right direction to ensure that departments are using information collected by other sources, even if these departments are required to do it in a round-a-bout way.[220] An example is the Idaho Forest Service experiment station.[221] This station combines the information from several different agencies to create a means for the agencies to access individual resources and ecosystem responses.[222] However, this experiment station does not produce information from all agencies in the state, and in fact, it only compiles information from some of the state agencies.[223] This still leaves a lack of information on the private and federal level.[224]

Idaho also applies adaptive resource management strategies on an individual level.[225] Although again, these strategies are not specifically called adaptive resource management.[226] In Idaho, water belongs to the state.[227] However, water rights are determined through prior appropriation.[228] This is not always the most economically beneficial system—and since the combination of surface and groundwater resources, the state has determined that in some cases this should be a factor in who is able to receive that water right.[229] When dealing with conjunctive management in Idaho, it is done on an individual basis to make sure senior water rights are protected.[230] However, junior water rights are given the option to mitigate

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217. *Id.*

218. *See generally*, Williams, *supra* note 9, at 1.

219. IDAHO CODE ANN. § 38-714 (West 2014).

220. *See, e.g.*, IDAHO CODE ANN § 38-703 (West 2014) ("It shall be the duty of the . . . experiment station of the state of Idaho to institute and conduct investigations and research . . . to conduct cooperative investigation and research with the board of land commissioners, the state fish and game commission, the Idaho department of agriculture, other schools.").

221. *Id.*

222. *Id.*

223. *Id.*

224. *See id.*

225. IDAHO ADMIN. CODE r. 37.03.11.043(3)(k) (1994) (dealing with mitigation plans when resolving priority rights under conjunctive management of water in Idaho, stating "[w]hether the mitigation plan provides for monitoring and adjustment as necessary to protect senior-priority water rights from material injury").

226. *See id.*

227. IDAHO CONST. art. XV, § 1; IDAHO CODE ANN. § 42-226 (West 2014) ("Ground Waters are Public Waters.").

228. IDAHO CODE ANN. § 42-226 (West 2014).

229. IDAHO CODE ANN. § 42-234 (West 2014).

230. IDAHO CODE ANN. § 42-106 (West 2014). Notable exceptions include general adjudications (Snake River Basin Adjudication and the North Idaho Adjudication), but this is not important for this argument.

damages to the priority user.[231] In allowing a junior user to do so, however, the courts look to several factors, including whether the mitigation plan allows for monitoring and adjustment based on water availability to make sure the amount of water given to the senior water user is not less than their water right amount.[232] This "monitoring and adjustment" is an adaptive management means to achieve the goal of ensuring that resources are available for those who have a right to them, and that water is put to the most beneficial use.[233] By including this type of information in central repositories, the flow and depletion of water in a given area will be better understood. This shows that adaptive resource management matters on all levels of resource ownership within the state.

Idaho has already begun to integrate state and federal land management.[234] In 1996, the Idaho Legislature created the State Board of Land Commissioners.[235] It was the goal of this board to work with the United States Forest Service to reach an agreement on the exercise of power between the state and federal agency.[236] In order to accomplish this, the State Board of Land Commissioners created a task force to determine "alternative methods of federal land management in Idaho."[237] As a result, the task force determined that "in the past three decades the . . . intangible and intrinsic values from federally administered lands, has not met the changing expectations . . . of Idaho citizens in particular."[238] The task force further determined that the current system "destabilized Idaho communities . . . and reduced environmental quality."[239] Their final recommendation was that "[t]he State Board of Land Commissioners should pursue a pilot project(s) testing one or more of the action alternatives for federal land management."[240]

In general, Idaho has made headway in implementing rules and policies to create an effective means for successful adaptive resource management programs.[241] However, there are still steps to take in order to create the combined infrastructure necessary for cooperative adaptive resource management programs. Additionally, programs should be defined as adaptive resource management and then should be required to follow a general procedure to ensure all resources are taken into consideration and the most effective policies are used.

B. Idaho Adaptive Resource Management Programs

Idaho has already implemented several successful adaptive resource management programs requiring coordination between different government entities that aid in identifying the strengths and weaknesses of current programs and pro-

231. IDAHO ADMIN. CODE r. 37.03.11.043 (1994).
232. *Id.* r. 37.03.11.043(3)(k).
233. *Id.*
234. *E.g.*, *Federal Lands Task force Report*, IDAHO FOREST PRODS. COMM'N (1998), *available at* http://www.idahoforests.org/fedtask.htm.
235. *Id.*
236. *Id.*
237. *Id.*
238. *Id.*
239. *Id.*
240. IDAHO FOREST PRODS. COMM'N, *supra* note234.
241. *Id.*

vide a base to improve upon.[242] By identifying the strengths and weaknesses of current programs, there will be a better base to improve from, which will allow Idaho to improve policies as a state whether or not regional cooperation can be achieved in the near future. Although cooperation and consistency is the focal point of this paper, Idaho should still make strides to improve adaptive resource management policies where it can on the state level.

The Idaho Department of Fish and Game has had widely acknowledged success in implementing adaptive resource management policies.[243] This agency within Idaho has implemented two effective plans: fish hatcheries and elk management.[244]Importantly, the Idaho Department of Fish and Game has created a new plan for fish hatcheries.[245] The plan is set to last for five years and is extremely comprehensive, identifying how specific actions will be taken regarding the type of fish that is monitored.[246] The mission for the plan comes from Idaho Code Section 36-103:

> All wildlife, including all wild animals, wild birds, and fish, within the state of Idaho, is hereby declared to be the property of the state of Idaho. It shall be preserved, protected, perpetuated, and managed. It shall only be captured or taken at such times or places, under such conditions, or by such means, or in such manner, as will preserve, protect, and perpetuate such wildlife, and provide for the citizens of this state and, as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping.[247]

The program has taken this mission statement provided by statute and has formed it into a coherent adaptive management project.[248] From this mission statement, the IDFG has created four long-term goals: (1) "[s]ustain Idaho's fish and wildlife and the habits on which they depend," (2) "[m]eet the demand for fish and wildlife recreation," (3) "[i]mprove public understanding of and involvement in…management," and (4) to "[e]nhance the capability of the department" to perform its duties.[249] Though these may seem vague, the plan that is based off them is 386 pages, and includes a break-down for each different habitat and each type of fish.[250] Overall, the plan contains sufficient information to understand the procedure and long-term goals of the project.[251]

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242. IDAHO DEP'T OF FISH AND GAME, *Monitoring and Adaptive Management*, *in* IDAHO COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY (2005) [hereinafter MONITORING AND ADAPTIVE RESOURCE MANAGEMENT], *available at* http://fishandgame.idaho.gov/public/docs/compWildStrategy/monitorAdaptive.pdf.

243. *Id.*

244. *Id.* at 6, 7.

245. IDAHO DEP'T OF FISH & GAME, FISHERIES MANAGEMENT PLAN 2013-2018: A COMPREHENSIVE GUIDE TO MANAGING IDAHO'S FISHERIES RESOURCES (2012) [hereinafter FISHERIES MANAGEMENT PLAN 2013-2018], *available at* http://fishandgame.idaho.gov/public/fish/planFisheries.pdf.

246. *See generally id.* (IDFG has eight hatcheries and three facilities that stock fish. IDFG is concerned with the genetic purity of wild/natural trout stocks in addition to fish health in hatchery stocks.).

247. IDAHO CODE ANN. § 36-103(a) (West 2013).

248. FISHERIES MANAGEMENT PLAN 2013-2018, *supra* note 245, at 12.

249. *Id.* at 13–15.

250. *See id.*

251. *See id.*

Another widely acknowledged success in adaptive resource management in Idaho is the Idaho Elk Management Plan.[252] The plan was created in 1992 to "optimize the harvest of antlerless elk."[253] The program was created to regulate the hunting of antlerless elk and the correlation to crop damage.[254] In addition, biologists were included in the study to help them understand how the elk populations grow when combined with other environmental factors.[255] Overall, the program was created to fill in a critical information gap of the relationship of antlerless elk hunting to total antlerless elk mortality in the area.[256]

When implementing the plan, the Idaho Forest Service divided over ten percent of the state into eleven different plots.[257] Each plot was then assigned a different harvest level,[258] meaning a regulation on the amount of antlerless elk that could be killed during a particular hunting season.[259] Although the basic formation of the plan established very strict parameters for each plot, the forest service was not able to implement it at total randomness as required by a strictly scientific experiment.[260] In this case, the agency had to take into account political goals and other adaptive management programs.[261] Additionally, hunter variables caused a slight skew in the data.[262]

Monitoring of the project continued each year, but after six years, the agency determined that higher harvest ratios improved the calf/cow relationships and that the harvest mortality was compensatory.[263] Essentially, the study determined that higher levels of harvesting were more beneficial overall to the elk population and the surrounding environment.[264] The research, as is common with scientific studies, determined that more monitoring and research was necessary to fully understand the trends.[265] However, as a result of the monitoring, Idaho Fish and Game adjusted the policy and determined that antlerless elk harvest rates in all the plots would be a minimum of ten percent of the population.[266] This adjustment reflected the findings of the study, which concluded that a higher harvest was more beneficial.[267] As a result, the agency changed its policies to allow an increased hunting rate.[268]

Due to this program's success, Idaho Fish and Game approved a revised ten-year plan for elk management.[269] The new plan began in January 2014, and is a

252. MEFFE ET AL., *supra* note 143, at 101–03.
253. *Id.* at 101–02.
254. *Id.* at 102.
255. *Id.*
256. *Id.*
257. MEFFE ET AL., *supra* note 143, at 102.
258. *Id.*
259. *Id.*
260. *Id.* at 103.
261. *Id.*
262. MEFFE ET AL., *supra* note 143, at 103.
263. *Id.*
264. *Id.* at 102.
265. *Id.*
266. *Id.*
267. *See id.*
268. MEFFE ET AL., *supra* note 143, at 102.
269. IDAHO DEP'T OF FISH & GAME, IDAHO ELK MANAGEMENT PLAN, *available at* fishandgame.idaho.gov/public/wildlife/?getpage=324 (last visited Oct. 1, 2014).

result of "evaluating elk population data, hunter desires, and incorporating public input."[270] The goal is to continue to benefit the elk populations and the State of Idaho as a whole.[271] In this new plan, Fish and Game has identified several partners it will engage with to accomplish effective elk management, including: "the Governor's office, elected officials, federal and [other] state agencies, conservation organizations, private landowners, [and] hunters."[272] The plan continues to use the elk management zones established in the 1992 plan, and continues to establish the variables necessary to understand and control the elk population.[273]

However, as with any project, there has been negative feedback.[274] Recently, an article was published focusing on the "problems faced by Clearwater River basin elk" in Idaho.[275] The article cited issues with the newly proposed elk management plan because of the dramatic increases in natural predators in the ecosystem, including bears, mountain lions, and the ever-controversial gray wolf.[276]

Overall, these projects show the ways in which adaptive management has been effective in the state and where it can be improved.[277] The thorough analysis of each ecosystem is vital for success and continued monitoring makes the programs even more effective as demonstrations of adaptive resource management. Although these studies address major natural resources within the state, they still do not address one of the major issues facing natural resources today—climate change.[278]

C. An Idaho Case Study on Climate Change and Adaptive Management

Although it is true that Earth's climate has dramatically changed throughout history, the current changes are cause for concern because it is occurring at a rate much faster than seen traditionally.[279] These changes have already had an effect on the global environment: "[g]laciers have shrunk, ice on rivers and lakes is breaking up earlier, plant and animal ranges have shifted and trees are flowering sooner."[280] These and additional effects will continue to change and affect the environment and ecosystems to the potential detriment of plants and wildlife, and eventually, humans.[281]

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270. *Id.* at 2.

271. *Id.*

272. IDAHO DEP'T OF FISH & GAME, A GUIDE TO IDAHO'S 2014 ELK PLAN 3 [hereinafter ELK PLAN], *available at* fishandgame.idaho.gov/public/wildlife/?getpage=324.

273. *Id.* at 5.

274 *See* Eric Barker, *N. Idaho Officials Eye Clearwater River Basin Elk*, THE WASHINGTON TIMES (Feb. 2, 2014), http://www.washingtontimes.com/news/2014/feb/2/n-idaho-officials-eye-clearwater-river-basin-elk/?page=all.

275. *Id.*

276. *Id.*

277 *See id.*; FED. LANDS TASK FORCE, *supra* note 227.

278 *See, e.g.*, FED. LANDS TASK FORCE, *supra* note 227; ELK PLAN, *supra* note 264.

279. *Global Climate Change: Vital Signs of the Planet-Evidence*, NASA, http://climate.nasa.gov/evidence/ (last visited Sept. 10, 2014).

280. *Id.*

281. *Id.*

Climate change has been observed within the Northwest United States, with an increase in temperature of 1.3 degrees Fahrenheit from 1895 to 2011.[282] Additionally, the trend for increased temperature show signs of extrapolating into the next century.[283] Climate change is affecting the most important and valuable resource in any ecosystem because it is vital for life—water.[284] Water is an excellent resource to use as an example for the changes in environment and ecosystems caused by climate change.[285]

The average river and stream flows in the Northwest are responsible for the sustained lifecycles of the plant and wildlife.[286] Because of the increased temperatures associated with climate change, the timing and volume of streamflows have altered over the past few decades causing decreases in annual water availability overall.[287] Again, a trend that shows no sign of slowing.[288] These general increases in the temperature of the region has directly affected water availability of water in basins, especially those reliant on snowmelt for streamflow.[289] The reduced flows in these basins will require policy makers to prioritize and exchange the objectives of a reservoir system.[290] The response to climate change for these changing water resources will depend on a multitude of factors, including "elevation, aspect, geology, vegetation, and changing land use."[291] Without including all of these factors, as well as water-based industries, into a comprehensive adaptive management plan, it is unlikely that an agency can effectively implement policy to counter-act the increased issues caused by climate change.

Studies have postulated that by the 2080 decade hydropower in the Northwest will need to be reduced by twenty percent in order to reserve instream flow for fish throughout the Columbia River Basin.[292] However, even with changes to protect the endangered species and other fish populations with Northwest rivers—including the salmon, steelhead, and bull trout in Idaho[293]—the changes in seasonal streamflow and the increase in water temperature will create conditions for disease and mortality rates will rise within the fish populations.[294]

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282. PHILIP MOTE ET AL., CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 489 (2014), *available at* http://nca2014.globalchange.gov/report/regions/northwest [hereinafter NAT'L CLIMATE ASSESSMENT].

283. *Id.*

284. *Climate Impact on Water Resources*, EPA (Aug. 13, 2014), http://www.epa.gov/climatechange/impacts-adaptation/water.html [hereinafter *Climate Impact on Water*]; *Water: World's Most Valuable Stuff*, THE ECONOMIST, (2010), *available at* http://www.economist.com/node/16163366.

285 *See Climate Impact on Water*, *supra* note 284.

286. NAT'L CLIMATE ASSESSMENT, *supra* note 282, at 488. .

287. C.H. Luce et al., *The Missing Mountain Water: Slower Westerlies Decrease Orographic Enhancement in the Pacific Northwest USA*, 342 SCIENCE 1360, 1360 (2013), *available at* http://www.sciencemag.org/content/342/6164/1360.

288. NAT'L CLIMATE ASSESSMENT, *supra* note 282, at 489.

289. *Id.*

290. *Id.* at 491.

291. *Id.* at 489.

292. *Id.* at 491.

293. *Threatened and Endangered Species*, IDAHO GOVERNOR'S OFFICE OF SPECIES CONSERVATION, http://species.idaho.gov/thr_endgr.html (last visited Sept. 22, 2014).

294. NAT'L CLIMATE ASSESSMENT, *supra* note 282, at 491.

In addition to the wide-ranging impacts on water resources, climate change will also drastically impact forests, endangered species, and agriculture.[295] This is why climate change is one of the major forces driving adaptive resource management policies.[296] Researchers are using case studies to anticipate and determine the outcomes of specific policies and programs in order to counteract the effects of climate change.[297] Although there are many varied programs to address this issue in the United States, and the world as a whole, one of these programs is focused in the northwest region.[298] This combined program between Washington and Idaho is a strong example of how adaptive management can work and why Idaho needs to have strong adaptive management policies with a clear goal in mind.[299]

Scientists have predicted that climate change in the northwest will result in wetter and cooler springs, and hotter and drier summers.[300] As a result of these forthcoming issues with climate change, the United States Department of Agriculture (USDA) through the National Institute of Food and Agriculture awarded a five-year, twenty million dollar grant to "understand and plan for a changing climate in the Pacific Northwest" in 2011.[301] The research team is led by a University of Idaho entomologist, but the team includes researchers from University of "Idaho, Washington State University and Oregon State University, and the USDA Agricultural Research Service."[302]

The grant is focused on the effect of climate change on agriculture, in particular, wheat and barley.[303] The USDA chose the Palouse region in northeastern Idaho and west Washington because of precipitation, "soil variability and water movement."[304] The long-term goal "is to create a comprehensive and extensive infrastructure to support research, outreach and education that will support agricultural sustainability in the region".[305] As is expected from the breadth of the topic, the project leader has identified the "task [as] enormous and complex."[306]

The importance of the study is further compounded by the importance of agriculture in the region. In 2009, the "Northwest grew [thirteen] percent of the

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295. *Id.*

296. Daniel Schramm & Akiva Fishman, *Legal Framework for Adaptive Natural Resource Management in a Climate Change*, 22 GEO. INT'L ENVT'L L. REV. 491, 491 (2010).

297 *See id.*

298. Ag. Weekly, *Climate-Change Research Grant to Support Study of Nitrogen, Water Use Efficiency in Farming*, IDAHO WHEAT (July 29, 2011), http://www.idahowheat.org/news/default.asp?id=4662.

299 *See id.*

300. Bill Loftus, *$20 million research project unites Northwest scientists tracking effects of climate change on agriculture*, UNIV. OF IDAHO COLLEGE OF AG. AND LIFE SCIENCES, http://www.uidaho.edu/cals/news/feature/climate-change-grant (last visited Sep. 22, 2014) [hereinafter *$20 Million Research Project*]; *see also Climate Change in the Pacific Region*, U.S. FISH & WILDLIFE SERV., http://www.fws.gov/pacific/climatechange/changepnw.html (last updated Oct. 19, 2011).

301. *Recipe for Success: $20 Million Grant Supports Collaborative Climate Research*, UNIV. OF IDAHO (Feb. 18, 2011), http://www.uidaho.edu/newsevents/item?name=recipe-for-success-20-million-grant-supports-collaborative-climate-research [hereinafter *Recipe for Success*].

302. *Id.*

303. Bill Loftus, *Regional Approaches to Climate Change in Pacific Northwest Agriculture*, UNIV. OF IDAHO COLLEGE OF AG. AND LIFE SCIENCES PROGRAMS & PEOPLE, http://www.cals.uidaho.edu/edcomm/magazine/winter2012/grant.asp (last visited Sept. 22, 2014) [hereinafter *Regional Approaches to Climate Change*].

304. Ag. Weekly, *supra* note 298.

305 . *Recipe for Success*, *supra* note 301.

306. *Id.*

nation's wheat and [eighty] percent of the country's soft white wheat exports."[307] In 2009 alone, wheat and barley production in the Pacific Northwest generated $1.5 billion in sales.[308] As a result, the program also recognizes another goal of the region, to increase agricultural production overall.[309] The increase in agricultural production is needed to feed the growing population.[310] The project manager believes that agricultural production can be doubled by 2050.[311] However, the issue arises when attempting to increase yield by this percentage with climate change concerns.[312]

This project is meant to help the Northwest's farmers and businesses to anticipate and respond to the challenges created by climate change.[313] A small town farmer addressed the importance of this critical issue and solidified the necessity of the study when he said, "[t]he more [we] study, the more critical analysis we have, the better we understand it and the better we can adapt".[314]

One portion of the program began as an offshoot of a previous and effective collaborative adaptive resource management policy.[315] The original program was formed in 1975 when Washington, Idaho, and Oregon began Solutions to Environmental and Economic Problems (STEEP) as a research project to reduce soil erosion.[316] From this experiment and data collection, one goal of the agricultural project was aimed at cutting soil erosion by seventy-five percent.[317] Building upon this is a means to aid the creation of sustainable farming.[318]

Another subset of the larger program was awarded $4.6 million and was created for a collaborative study of "how nitrogen and water ability vary within Palouse wheat fields."[319] The hope of this program is that scientists will begin to understand how nitrogen fertilizers can be used on croplands in a way that will reduce the production of nitrous oxide, one of the top four greenhouse gases in the world.[320] Human output of nitrous oxide is primarily caused by agriculture and the output of this gas has only increased in the last few decades.[321] Many scientists attribute this rise in the gas to the increased use of nitrogen based fertilizers since the end of World War II.[322] The use of these types of fertilizers has also increased crop production and the reduction in the amount of crops produced each year would cause serious food production shortages.[323]

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307 *Id.*
308 *$20 Million Research Project*, *supra* note 300.
309. *Id.*
310. *Id.*
311 *Id.*
312. *Id.*
313. *Id.*
314. *Regional Approaches to Climate Change*, *supra* note 303.
315 *Recipe for Success*, *supra* note 301.
316. *Id.*
317 *Id.*
318. *Id.*
319. Ag. Weekly, *supra* note 298.
320. *Id.*
321. *Id.*
322. *Id.*
323. *Id.*

The project's director, David Brown, has identified some of the major project components: (1) "[l]andscape analyses to generate maps of soil and crop properties as well as soil moisture dynamics; (2) [m]odeling to simulate crop growth, organic matter decomposition, water movement, nutrient uptake and more; and (3) [e]xperiments to determine yields and greenhouse gas emissions as a function of crop density, water availability, temperature and soil properties."[324] In order to achieve these goals, researchers are hoping to learn to "apply [the] nitrogen more efficiently."[325]

Although the 2011 program has been recognized as novel for the value of the grant, it is also unique in how large the scope is.[326] This program consists of several smaller adaptive resource management programs, but still maintains the overall goal of creating sustainable agriculture in the face of the challenges of climate change.[327] This program serves an important function for Idaho's economy and environment. By creating a program that addresses hard-science experimentation on a large-scale with multiple variables and regional cooperation, the USDA funded program allows for the possibility of real knowledge for regional stability despite the changing climate.[328]

However, this type of program will barely scratch the surface in addressing issues caused by climate change in Idaho. Without applying adaptive management strategies to the environment, focusing on water in particular, Idaho will face disastrous ramifications. Idaho will not only lose a large portion of its economy through hydropower, agriculture, and recreational sports,[329] but could potentially face issues providing basic human necessities to the population. Although this is a long way out from the present day situation, the delay in applying a comprehensive strategy that takes into account the effect on the entirety of the ecosystem and acknowledges where programs could be better will ensure that this archetype future comes into existence. Identifying the areas where this type of adaptive plan could be effective is the first step.

D. How Idaho should Implement Adaptive Resource Management to Create Effective Policy

Not only is it essential for the Idaho state government to continue to successfully implement projects, it must create projects that can be as successful. However, it must do so with the combined federal and regional support, since it is evident that adaptive resource management projects within the state do not only affect Idaho, but also have a large impact on the Northwest's resources and ecosystems as a whole.[330]

In order to create accurate and successful natural resource conservation through adaptive management policies, Idaho should create a statewide process for

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324. *Id.*
325. Ag. Weekly, *supra* note 298.
326. *Recipe for Success*, *supra* note 301.
327. *Id.*
328. *Id.*
329. NAT'L CLIMATE ASSESSMENT, *supra* note 282, at 488.
330. *See supra* Part II.C.

implementing adaptive resource management projects. Idaho needs to create a statute that thoroughly defines adaptive resource management and the basic process through which it should be implemented. This should be a form of cross-cutting statute that affects all agency law that deals with adaptive resource management policies.[331]

To further the consistent application and improved application of adaptive management in multi-jurisdictional western settings, a data base addressing adaptive management projects and their effects on ecosystems is needed.[332] The Idaho state legislature should create a "central repository or data base system to store, manage, and disseminate all the monitoring data."[333] The process of sharing and processing information will both increase the efficiency of the programs, and will hopefully decrease the costs by eliminating redundant research on the same types of resources and ecosystems.[334] This system will make it easier for all the actors in the state to make sure not only that they are not repeating a program, but that the actors are working toward common goals in the same area.[335]

Agency structure is also important for the effectiveness of an adaptive resource management program.[336] If an agency has administrative deficiencies, these will be reflected in the plan. Therefore, the success of an adaptive management program also hinges on the political actors in the state.[337] Agencies who employ adaptive management strategies must be backed publically by the legislative and executive branches.[338] Without this, agencies will not only face the time-consuming task of an adaptive management program, but will also be forced to fight at each step of the process to continue the plan.[339] These two branches must avoid politics during these projects and give agencies and actors time to go through the entire adaptive resource management cycle.

As a more general factor to adaptive management programs, the goal of the adaptive management process must be one that can actually be accomplished by the process.[340] This seems like a simple and evident requirement. However, in many cases, the blanket approach of try, fail, and try again is disguised as adaptive management. Adaptive management should be focused on long-term goals based on experimentation.[341] This is why goals regarding climate change or resource interaction are excellent broad topics for adaptive resource management programs. In order for adaptive resource management to work, it must be the result of a scientific monitoring process.[342]

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331. *See* Robin Kundis Craig & J.B. Ruhl, *Designing Administrative Law for Adaptive Management*, 67 VAND. L. REV. 1 (2014) (addressing how adaptive resource management faces administrative issues that prevent effective implementation).

332 MONITORING AND ADAPTIVE RESOURCE MANAGEMENT, *supra* note 242, at 3.

333. *Id.*

334. *Id.* at 8.

335 *See id.* at 3.

336 *See* Williams, *supra* note 9, at 13–14.

337. *Id.* at 22–23.

338. CENTER FOR PROGRESSIVE REFORM, *supra* note 4, at 5.

339 *See generally id.*

340. Williams, *supra* note 9, at 25.

341. *See id.*

342. *See id.* at 52–53.

These suggestions reflect only overall examples that will help the state manage its resources better. This next portion will focus on how Idaho should implement the process, whether done through legislation or a formulaic approach for regulations. As a general rule, all legislation and regulation should address the six steps set out by the DOI.[343] This will make sure the plan is not only defined but that the needs and means to adjust are also easily recognizable.

First, as is evident from a large portion of this paper, the goals when assessing the problem must be stated as clear and explicit as possible, and must define what is hoped to be gained from the specific process.[344] These goals should also address the responsibility to preserve the ecosystem, since this is the overall goal of adaptive resource management.[345] When designing the project, the plan should "tailor the strategy to the problem."[346] There must be specific requirements to know exactly what is required in the adaptive management process.[347] This is supported by judicial findings on adaptive management.[348] The court must be able to determine whether the plan is being followed solely by the actions of the government and the wording of the plan.[349] The plan must create a workable strategy to ensure that changes take place when new information shows that it is necessary.

Implementing the plan is largely based on funding. Adaptive management policies require more resources.[350] Overall, it is an expensive resource conservation process.[351] In order for a plan to be effectively implemented, there must be sufficient funding for all stages of the plan.[352] Therefore, the state legislature and agency must ensure that the funding is available before it begins the project. Implementation also requires that each variable area is set up according to the strict parameters created in the design phase.[353] Any deviation from the plan, and the results will be skewed.[354] The data will therefore be an inaccurate representation of the adaptive management goal, and could cause the adjustment phase, or other programs based on the data, to be ineffective.

Monitoring, although highly data based, should also incorporate the knowledge each agency has on the resource. The data should be systematic and ongoing building off the individual steps and observations.[355] In order to achieve this goal, it is important agencies produce reports that interpret data and the effectiveness of the monitoring and management efforts.[356] Monitoring should not just be the storage of data, but the interpretation of it as well.

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343. *See generally id.*
344. *See id.* at 25.
345. *See* Haughey, *supra* note 10.
346. Center for Progressive Reform, *supra* note 4, at 10.
347. *See Western Watershed Project*, 2006 WL 292010, at *10.
348. *See id.*
349. *See generally id.*; Ruhl & Fischman, *supra* note 8.
350. Center for Progressive Reform, *supra* note 4, at 5.
351. *See id.* at 5–6.
352. *See id.* at 13.
353. *See* Williams, *supra* note 9, at 35.
354. *See id.*
355. *See generally* Dep't of Interior, ADAPTIVE MANAGEMENT SET-UP PHASE STEP 5: MONITORING PROGRAM (2013), *available at* www.doi.gov/initiatives/AdaptiveManagement/documents/Step5.pdf.
356. *See generally id.*

When evaluating the project, it is important to make sure that only certain actors are involved. For example, stake holders who may have had input in the original formation of the plan should not be included in the evaluation.[357] This allows for too many conflicting viewpoints to become a part of the process, and allows for the fate of the ecosystem to turn on short-term politics.[358] Instead of many participants in evaluation, a committee should be responsible for determining the effectiveness of the program. This committee, for the same reasons as removing stake holder opinions, should not be run by political actors. Rather scientists should determine whether the project is meeting its goals and providing valuable information. Scientists are in a better position to understand the ecosystem response, and to make non-biased opinions about the benefit to the environment.[359]

In addition, evaluation should have a set time-frame so that ineffective programs are not allowed to continue on. Evaluation should happen at frequent intervals, and should be based on the goals and design of the program. It should be noted that a NEPA analysis should not be used, because the analysis of "no significant impact"[360] or completing an environmental assessment is not the same as effective management. In fact, adaptive management hopes in some cases that there is a significant impact—although it would not violate NEPA because it would be an improvement not a degradation.[361] Plans should, and must, take into account that courts will look to NEPA as a first glance at whether the regulation is permitted by law.[362]

When adjusting the program, the data and knowledge must be applied to make the correct changes.[363] However, this may not just include ecosystem changes. Adjustments might also need to be made regarding the management structure of a given project. In order for adjustment to be successful, there must be hard triggers to determine when the program will be adjusted to produce the desired results.[364] In these cases, there should already be a predetermined response to certain ecosystem issues.[365] The purpose of adjustment is to refine the project to further represent the project goal.[366]

Although Idaho has made strides to successfully complete some of these steps, there is still a long way for the state to go in ensuring the preservation, conservation and effective use of its resources on a larger scale. Successful programs do not mean that there is an overarching effective policy. By perfecting the defini-

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357. *See Adaptive Management Integration Guide: The Comprehensive Everglades Restoration Program*, JOURNEY TO RESTORE AMERICA'S EVERGLADES, A-5 (March 2011), http://www.evergladesplan.org/pm/pm_docs/adaptive_mgmt/062811_am_guide_final.pdf.

358. *See id.*

359. *See* KEYSTONE CENTER & CENTER FOR SCIENCE, POLICY, & OUTCOMES, NEW ROLES FOR SCIENCE IN ENVIRONMENTAL DECISION MAKING: DISCUSSION PAPER, § I (March 2000), *available at* http://archive.cspo.org/products/reports/keystone.html.

360. *See* National Environmental Policy Act (NEPA), *supra* note 49.

361. *See id.*

362. *See Western Watershed Project*, 2006 WL 292010, at *2–6; *see generally* Ruhl & Fischman, *supra* note 8.

363. *See generally* ADAPTIVE MANAGEMENT SET-UP PHASE STEP 5: MONITORING PROGRAM, *supra* note 355.

364. Haughey, *supra* note 10.

365. *Id.*

366. *See id.*

tion and procedure, Idaho can ensure that adaptive resource management aids in the conservation and preservation of vulnerable or nonrenewable resources.

V. CONCLUSION

It is evident from Federal Agency law, Idaho state law, and Idaho agency regulations, that all lands and actors within the state are effected by adaptive resource management policies. In order to ensure that these policies are effective two objectives should be completed: a defined procedure for adaptive resource management programs and a state-wide data base with the potential for future expansion to include regional and federal sources on resources within the state.

Defining a basic adaptive resource management procedure that is applicable in all circumstances will allow agencies to know exactly how to comply with their legislative mandate and how to promulgate rules that are specific enough to hold up in court. Additionally, this will allow agencies to report on the process, identifying what works with adaptive resource management and what should be improved. A definition of the process will make programs more effective and make sure the programs are completed because there will be oversight.

When looking at the multitude of actors involved in regulating the natural resources within the state, many with rights that overlap, it becomes even more essential that a state-wide database be kept and updated regarding the experiments and monitoring stages for each natural resource and their interplay. However, the state is only the first level. There is a need for increased cooperation among all regulating entities that have access to resources within the state. Eventually, the goal in Idaho should be to create a centralized database that addresses each specific natural resource. This centralized database would allow exploration of which policies are effective, and would allow for all adaptive resource management policies—whether federal, state, or local—to coordinate and create one combined system for management. Without employing this shared database, actors will continue to try management processes that have been proven to be ineffectual, costly, and thus will continue the cycle of resource waste. This will only be compounded by the failure for each actor to follow the basic steps of an adaptive resource management process.

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