

II. INTRODUCTION

A. Purpose

The purpose of the Colorado Greater Sage-grouse Conservation Plan (CCP) is to facilitate the conservation of greater sage-grouse (GrSG) and their habitats in Colorado. The plan will identify effective conservation measures and strategies to achieve this purpose. The CCP is guided by the philosophy that local work groups, composed of private landowners, public agency representatives, and other interested stakeholders, play a pivotal role in this conservation effort, which will cross jurisdictional and ownership boundaries.

The impetus for this plan is three-fold. First, there has been a widespread decline in GrSG distribution and abundance, both rangewide and in Colorado (Braun 1995, Connelly and Braun 1997, Braun 1998, Schroeder et al. 2004). The degree of decline appears to vary and its impact on the persistence of the species is a subject of debate. Nevertheless, GrSG are listed on the Colorado Division of Wildlife's Species of Concern list.

In addition, 4 petitions that would have affected GrSG in Colorado were submitted to the U.S. Fish and Wildlife Service (USFWS) to list the species (or a subspecies) as threatened or endangered under the Endangered Species Act (ESA). Three of these petitions were to list all GrSG as either endangered or threatened, and for all, listing the species was found "unwarranted" (U.S. Fish and Wildlife Service 2005). A court complaint was filed on July 14, 2006, from Western Watersheds Project, alleging that the USFWS 12-month finding is incorrect, arbitrary, and unwarranted by the facts. In December, 2007, the court granted the motion by the plaintiff and the USFWS will be required to review its earlier decision to not list the species. The fourth petition requested to list the eastern subspecies (*Centrocercus urophasianus urophasianus*) as endangered. The U.S. Fish and Wildlife Service found there was not substantial information that listing the subspecies was warranted, and specifically that there was insufficient evidence that the eastern sage-grouse is a valid subspecies or a "Distinct Population Segment" (U.S. Fish and Wildlife Service 2004). Regardless of the current status of GrSG petitions under the ESA, or of debate about the details of the species' status, sage-grouse conservation clearly deserves immediate attention by responsible conservation agencies.

Second, local work groups have formed in Colorado to address and undertake the conservation of 5 GrSG populations: Middle Park (MP), North Park (NP), Northern Eagle – Southern Routt Counties (NESR), Northwest Colorado (NWCO), and Parachute – Piceance – Roan (PPR). Three local conservation plans have been developed (MP, NP, NESR), 2 more will be completed in 2008 (NWCO and PPR), and effective conservation work has begun. Local conservation efforts may be sufficient to protect a single local population of GrSG, but collectively they may be insufficient to conserve the species statewide. In addition, local conservation plans typically do not consider broader scale issues such as regional population dynamics, dispersal, or landscape structure (e.g., habitat connectivity between populations or configuration of important habitat). A statewide perspective is needed to coordinate the local efforts throughout the state, and to address issues that are primarily statewide, and not local, in nature. For the Meeker –

White River (MWR) GrSG population, a local planning process has not yet begun, so the CCP will serve as the primary planning document for that area until a local plan is developed.

Third, the Colorado Division of Wildlife (CDOW) has signed a Memorandum of Agreement (MOU) with the Western Association of Fish and Wildlife Agencies (WAFWA) that, in part, obligates CDOW to complete a statewide GrSG conservation plan. In addition, CDOW committed to completion of such a plan under the multi-state Shrub-Steppe Grant (State Wildlife Grant), awarded in 2001.

It is intended that this plan will build upon the foundation established by the local conservation plans. This plan will supplement, not replace, local plans and the locally driven process that created them. The CCP will present the best available science for assessing target population goals and genetic diversity, as well as an assessment of possible tools to help reach these goals. This statewide plan will assist local work groups and other stakeholders by offering a statewide perspective in providing a listing of appropriate strategies and habitat improvements, refining techniques, and managing disturbances.

The CCP is neither a National Environmental Policy Act (NEPA) decision document, nor a federal recovery plan. Agency-specific use of this plan is outlined in each agency's respective signature page.

B. Goals of the CCP

The broad goals of this plan are general statements about what needs to be accomplished to achieve the plan's purpose. Some of these goals are accomplished primarily within the plan itself, but most will result from implementation of the plan's recommendations. The goals are presented in no particular order of priority:

- maintain, enhance, and/or restore sage-grouse populations and their habitats
- identify and discuss the primary issues potentially impacting sage-grouse populations
- base management recommendations on Colorado-based research and data, whenever possible
- manage for a healthy, sustainable sagebrush steppe ecosystem that will also benefit (and may prevent the decline of) other sagebrush obligate species
- encourage and support conservation actions that benefit GrSG and that promote diverse economic communities, or that minimize impacts to those communities
- provide coordinated sage-grouse conservation management across jurisdictional, ownership, and local work group boundaries
- provide statewide guidance, perspective, and recommendations on GrSG conservation to local work groups
- maintain an atmosphere of cooperation, participation, and commitment among wildlife managers, landowners, private and public land managers, other stakeholders, and interested public in the development and implementation of conservation actions
- foster and maintain statewide support to ensure continued GrSG conservation in Colorado

- incorporate future GrSG research findings and successful management practices into conservation actions

C. Plan Duration

The CCP is a long-term plan that will terminate when the GrSG is removed from the CDOW Species of Concern List. This list includes, “Any species or subspecies of native wildlife which (1) has been removed from the State threatened or endangered list within the last five years, (2) is a Federal candidate or is Federally proposed for listing and is not already state listed, (3) the best available data indicate a 5-year or more downward trend in numbers or distribution and this decline may lead to a threatened or endangered status, or (4) is otherwise determined to be vulnerable in Colorado” (Colorado Division of Wildlife 1999:3). Once the CCP is terminated, a management plan would be developed, and would be based upon this plan.

D. Adaptive Management

Background

Adaptive management (AM) is an approach to natural resources management that originated in the 1970s (see review of AM history in Aldridge et al. 2004). The concept of AM is in part a response to the need to manage natural systems in the face of uncertainty (Walters 1986, Walters and Holling 1990, Taylor et al. 1997, Lee 1999, Williams 2003, Stiver et al. 2006). That is, it is necessary to manage species and habitats even when the ideal information needed for optimal management is unavailable. This is unquestionably the situation for sage-grouse management. Many questions exist regarding even such basic information as how to estimate GrSG population trends (see “Abundance”, pg. 50), yet there is a pressing need to actively manage the species and its habitats. AM is designed to embrace the uncertainty present in most natural resource management decisions/scenarios by “incorporating it directly into a decision-making process along with the necessary monitoring and feedback for its resolution” (Williams 2003:3).

AM has been discussed a great deal within the conservation biology community (e.g., Walters 1986, Walters and Holling 1990, Taylor et al. 1997, Lee 1999, Johnson 1999, Moir and Block 2001, Wilhere 2002, Williams 2003, Aldridge et al. 2004, Jacobson et al. 2006), but different entities may define it differently. In its strictest sense, AM incorporates an experimental approach to management, with a feedback loop that uses management/research results to enhance management capability and/or effectiveness (Walters and Holling 1990, Lee 1999, Johnson 1999, Aldridge et al. 2004). There are other management approaches that integrate some aspects of AM, and these have been described in various manners (Johnson 1999, Aldridge et al. 2004). For instance, a simple “trial and error” approach incorporates a feedback loop (Walters and Holling 1990), as long as management actions and outcomes are recorded, evaluated, and modified to improve future outcomes. Aldridge et al. (2004:94) describe “passive adaptive management” as incorporating “long-term monitoring and learning from a gradually evolving management strategy”. Johnson (1999:[online]) refers to this method of management as the “monitor and modify approach”. In the most rigorous form of AM, or “active adaptive

management” (Walters and Holling 1990), different management strategies are designed and implemented as experiments with “controls, replication, and randomization” (Wilhere 2002:22); results help identify the strategies that are most effective in achieving the desired outcome.

In addition to incorporating an experimental approach to management and a feedback loop, some descriptions of AM include a strong stakeholder involvement component (Johnson 1999, Aldridge et al. 2004). Typically, stakeholders contribute throughout the AM process, beginning with the initial stages when issues, goals, objectives, and management actions are examined (Johnson 1999, Aldridge et al. 2004). Often this phase includes computer simulation and GIS modeling efforts to help synthesize and portray data, in order to better understand the issues and data needs to be addressed by management (Johnson 1999, Aldridge et al. 2004).

Benefits of Adaptive Management

All natural resources management benefits from any process in which results of actions are assessed, evaluated, and reapplied to the problem. As simple as this seems, traditional management has often neglected aspects of this feedback loop, particularly the results monitoring phase, which can be very expensive (Wilhere 2002, Aldridge 2004). AM, whether passive or active, offers a model which generally follows 5 steps: (1) the problem is assessed; (2) a plan (or a set of “experiments”/plans) is designed to address the problem in such a way that results will help resolve some of the uncertainty in the system; (3) the plan is implemented; (4) results are monitored and evaluated; and (5) the plan is adjusted according to the results, in order to best address the problem.

An AM approach generates a better understanding of the system being managed, which leads to improved future decisions and management (Taylor et al. 1997, Wilhere 2002, Williams 2003, Aldridge et al. 2004). It can “generate flexibility in institutions and stakeholders that allows managers to react when conditions change” (Johnson 1999:[online]), whether those conditions are biological, social, or both. Greater stakeholder involvement can improve local participation and encourage innovative solutions, thus, increasing plan effectiveness (Johnson 1999).

Difficulties in Adaptive Management

Two hallmarks of active AM are (1) an inherently high cost; and (2) a need for all those involved to be willing to accept risk in management scenarios (Taylor et al. 1997, Johnson 1999, Williams 2003, Aldridge et al. 2004, Jacobson et al. 2006). Including multiple stakeholders in all phases of the management requires a great deal of coordination and planning, as well as funds for holding workshops and other opportunities for ongoing communication and involvement (Johnson 1999). Designing multiple management strategies that can serve as experiments to help elucidate the uncertainty in the system is also time-consuming and fiscally expensive (Taylor et al. 1997, Lee 1999, Aldridge et al. 2004). Furthermore, being willing to accept a greater risk of unsuccessful management actions than under more traditional management approaches (in order to determine the most effective management actions), is difficult for many agencies, especially if the species or habitat of interest is considered “at risk” (Taylor et al. 1997, Aldridge et al. 2004).

Although the concept of active adaptive management has been embraced by much of the natural resources conservation community, it has been effectively implemented in few cases (Johnson 1999, Lee 1999, Williams 2003, Aldridge et al. 2004), due in part to cost and risk issues.

Adaptive Management and the CCP

The inclusion of adaptive management for sage-grouse conservation activities is an essential element of conservation actions in the USFWS's 2003 Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE; U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration 2003). PECE defines adaptive management as "a method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future conservation management actions according to what is learned." This definition leans towards a "passive" AM scenario. It appears appropriate for sage-grouse conservation efforts because it is flexible, improves management over time, and offers an important component to evaluate effectiveness of conservation actions. The adaptive management feedback loop is intentionally designed to (1) generate an evaluation of sage-grouse management and conservation actions and assumptions; (2) incorporate new information; and perhaps (3) lead to a modification of actions based on the newer information.

Whether to use a more "passive" or "active" AM approach within this plan has been considered. Johnson (1999) recommends using the simplest adaptive approach that appears appropriate. Taylor et al. (1997) recognize that not all management situations lend themselves well to the powerful experimental designs of active AM. Given the myriad of issues that may impact GrSG in Colorado (see "Issues Potentially Affecting GrSG", pg. 99) and the level of uncertainty in many key parameters (e.g., population estimation [see "Abundance", pg. 50], and minimum habitat patch size [see "How Habitat Issues are Addressed in the CCP", pg. 151]), experimental management schemes designed with controls, randomization, and replicates seem unfeasible.

This plan is currently designed with a passive AM approach, which is integrated within multiple strategy sections; there is no separate strategy section for AM. For many of the issues that may impact GrSG, we have generated objectives and/or strategies that recognize the incomplete level of knowledge on a topic and propose that research should be conducted to gain more information (see "Conservation Strategy", especially "Research" strategy, pg. 411). Monitoring populations and habitats is emphasized, facilitating our ability to track the results of management actions (see "Habitat Monitoring" strategy, pg. 354 and "Population Monitoring and Targets" strategy, pg. 399). The incorporation of knowledge gained through research and monitoring into management action is also provided for within multiple conservation strategies (see "Conservation Strategy" section, pg. 306, multiple topics). All these steps offer an informal, or passive, approach to adaptive management. A more active adaptive management process may be possible in some individual situations, or in the future to deal with changing issues. An active AM approach may need to be developed as the CCP is implemented. Development of such a process would be completed in the future, cooperatively with both the signatory agencies of the CCP and the local work groups.

The USFWS, when evaluating species for potential listing under the ESA, requires a detailed review, under PECE, of current proposed and past management actions. Essentially, the USFWS is suggesting that adaptive management be an integral part of species management activities by asking: (1) were the actions implemented, or are they likely to be?; (2) were the actions effective, or will they be, in meeting their goals for sage-grouse conservation?; (3) if actions were deemed ineffective, then how have efforts been modified?; and (4) are the modifications resulting in positive outcomes, or are they expected to? The passive adaptive management process within this plan will provide an objective, quantitative evaluation of the effectiveness of (1) management actions used in attaining strategies outlined in the CCP; and (2) inventory, monitoring, and research results and interpretation.

E. Mechanics of the CCP

Process

A statewide steering committee (SC) (Table 1) developed the concept and process for plan development. When “we” or “our” is used within the CCP, the reference is to the SC. The SC had broad representation from state and federal agencies in Colorado (Table 1). For development of conservation strategies in the plan, the SC was expanded to include an advisory member from each local work group (Table 2). The role of the SC members was to guide the development of the CCP and to represent their respective agencies or interest groups. After completion of the CCP, representatives from all agencies on the SC will continue to operate as a committee to address strategies (where specified) in the CCP “Conservation Strategy” (see pg. 306). The CDOW Director has the ultimate authority for the plan.

Table 1. Colorado Greater Sage-grouse Conservation Plan Steering Committee members.

Name	Agency / Role
Tony Apa	Colorado Division of Wildlife
John Gray	Meeting Facilitator
Julie Grode	U.S. Forest Service
Terry Ireland	U.S. Fish and Wildlife Service
Cathleen Neelan	Facilitator, North American Mediation Associates, LLC
Ed Neilson	Natural Resources Conservation Service
Brad Petch	Colorado Division of Wildlife
Pam Schnurr	Colorado Division of Wildlife
Robin Sell	Bureau of Land Management
Lyle Sidener	Colorado Division of Wildlife
Ann Timberman	U.S. Fish and Wildlife Service Refuge System
Barbara Ver Steeg	Technical Writer / Editor
Susan Werner	Colorado Division of Wildlife

Table 2. Advisory Members from local work groups who were added to the Steering Committee for conservation strategy development. The Meeker – White River GrSG area does not have a local work group.

Name	Local Work Group
Carl Herold	Northern Eagle – Southern Routt Counties
John Kossler	Middle Park
Mike Lopez	Parachute – Piceance – Roan
John Rich	North Park
Jean Stetson	Northwest Colorado

The SC reviewed numerous examples of statewide, rangewide, and local conservation plans. We relied heavily on the Gunnison Sage-grouse Rangewide Conservation Plan (Gunnison Sage-grouse Rangewide Steering Committee 2005) and GrSG conservation plans prepared by local work groups (MPCP 2001, NPCP 2001, NESRCP 2004, NWCOCP 2006, PPRCP 2008) for both format and some background content.

Models for both the decision-making process and public participation method follow a similar and related continuum (Fig. 1). As a decision becomes more of a consensus process, public participation increases. Most of the local Colorado GrSG plans employed a consensus approach in making decisions, with public participation including “direct negotiations among key stakeholders” (Fig. 1). The Gunnison Sage-grouse Rangewide Conservation Plan operated primarily in the middle of the continuum, with “repeated opportunity to provide input” on decisions, and a “series of public involvement steps” (Gunnison Sage-grouse Rangewide Steering Committee 2005).

The CCP used decision and public involvement processes towards the center right of both models. Decisions regarding the CCP were consensus decisions within the SC, and were based in part on stakeholder interests and concerns, with input from direct negotiations with key stakeholders (Fig. 1). Because the responsibility for GrSG management rests with state agencies and their federal cooperators, the decision ultimately is limited to them. Nevertheless, all agencies felt it was important to involve the public as much as possible in the CCP process, to garner support at the critical local level.

Decision by Vested Power Alone	Decision with Minimal Input for Informed Consent	Decision with Repeated Opportunity to Provide Input	Decision Based on Recommended Stakeholder Consensus	Stakeholder Consensus Decision Making
--------------------------------	--	---	---	---------------------------------------

DECISION-MAKING PROCESS

←less public involvement-----more public involvement→

PUBLIC PARTICIPATION METHODS

No Public Input or Involvement	Public Hearings for Comment on Proposed Action	Series of Public Involvement Steps with Focus/work Groups	Direct Negotiations among Key Stakeholders	Stakeholder Negotiations Leading to Implementable Decision
--------------------------------	--	---	--	--

©CDR Associates

Fig. 1. Models for the decision making process and public participation methods.

Plan Organization

The writing style used for the plan generally follows that of the Journal of Wildlife Management, although we used English, rather than metric, measurements throughout. A “Glossary” (pg. 428) of terms used in the plan and a “Literature Cited” section (pg. 447) follow the “Conservation Strategy”. The “Literature Cited” contains references cited throughout the plan, including appendices, except for Appendix H (“Literature Review: Oil and Gas Development Impacts on Prairie Grouse”) and Appendix K (“Population Viability Analysis Report”), which have their

own Literature Cited sections. Scientific names of organisms are not provided in the text if a common name exists; all scientific names are listed in Appendix M (arranged alphabetically by common name). A list of acronyms is provided (Appendix N), along with identification of groups listed under “Responsible Parties” in the Conservation Strategies. Lists of figures and tables immediately follow the “Table of Contents”.

Conservation Assessment

The “Conservation Assessment” is a description of (1) current knowledge regarding GrSG biology, distribution, abundance, and habitat; and (2) current status of the 6 Colorado GrSG populations.

Issues Potentially Affecting GrSG

In the section, “Issues Potentially Affecting GrSG”, we list and provide a review of scientific and management literature on the issues that may impact GrSG populations and/or habitat. Some of the topics identified may include both positive and adverse impacts to GrSG.

Analysis

The “Analysis” section is a collection of “tools” that may be used to help address some of the issues in GrSG conservation. Some of these are modeling or GIS exercises (e.g., “Population Viability Analysis”, identification of “Habitat Linkages”, “Avoiding Impacts: the Refuge Concept – Identifying Core Areas” regarding energy and mineral development), while others present a literature review and summary of the current knowledge of certain potential approaches to addressing issues (e.g., “Population Augmentation”, “Off-site Mitigation of Impacts” for energy and mineral development). In this section we also develop a “Habitat Model” and “Colorado GrSG Population Management Zones”.

Conservation Strategy

This section provides strategies and approaches to address the issues in GrSG conservation. It is intended that the strategies provided in this section provide enough detail for (1) topics that have not yet been addressed by existing local plans; and (2) GrSG population areas where no local plan yet exists. Managers should consult and implement appropriate strategies within this plan, and then should also read and apply strategies within the applicable local plan(s). In some cases, more detail will be offered by the local plans, and in other cases, this plan will be more specific. This approach will assure that both statewide issues and local conditions are recognized and addressed. The strategies are to be used in conjunction with the “GrSG Disturbance Guidelines” (Appendix B), which are intended to give direction to those undertaking activities in GrSG habitat (see following explanation of Appendix B).

Appendices

Among the information contained in the appendices are several key items that will be useful in GrSG habitat management; these are identified as the “Working Appendices”.

Appendix A: “GrSG Habitat Structural Guidelines” – In Appendix A we compiled GrSG habitat-use information to identify ranges of values of vegetation parameters found in suitable GrSG habitat. Specifically, there are 8 vegetation characteristics, including both understory and overstory parameters, identified for breeding and summer-fall habitat. There are 2 vegetation attributes for winter habitat. These guidelines should be used as “minimum standards” for assessing habitat suitability, and in all cases local site capability should be considered when assessing, enhancing, or restoring habitat. The guidelines are just that: they should serve as guidance, and should not be interpreted as absolute rules. The guidelines should be adjusted as new information is obtained.

Appendix B: “GrSG Disturbance Guidelines” – This appendix is written from the perspective of GrSG biology. That is, given what is known about adverse impacts of human activities on GrSG and their habitats, what steps can be taken to minimize or eliminate the impacts? These guidelines are intended to provide direction to those undertaking activities in GrSG habitat. They should be used in conjunction with the strategies. For instance, a strategy may state that a particular habitat should be avoided during a certain period, and then may refer the reader to the disturbance guidelines to clarify the season and area to be avoided. The strategy may also state that the habitat should be avoided *when technically feasible*, but the guidelines may state specifically that habitat should be avoided. This example highlights the crux of the problem when human activities must occur (from a societal perspective), and the activities can’t avoid impacting sage-grouse. The guidelines indicate how to avoid impacts to GrSG, using the current best available science. The strategies take into account technical reality; the ideal is to follow the guidelines, but the reality is in some cases that may not be possible. When necessary, adjustments should be made in using the guidelines, keeping in mind what the ideal is, and using innovative approaches to minimize impacts to GrSG populations and their habitat. In addition, the guidelines should be updated and modified as new information about GrSG, GrSG habitat, and human-caused impacts, becomes available.

Appendix C: “Habitat Monitoring Protocol” – Appendix C was written by the Gunnison Sage-grouse Rangewide Steering Committee. It serves as a guide to measuring habitat conditions (i.e., how to collect the information to use with Appendix A), and provides minimum collection procedures for structural data. Although the document refers to Gunnison sage-grouse habitat, it can/should also be used for GrSG.

Appendix D: “Recommendations Regarding Plant Species for Use in GrSG Habitat Management and Restoration” – This appendix contains tables from Monsen (2005) that provide detailed information on characteristics of plants that can be used in GrSG habitat restoration, including a table that identifies the relative value of different plant species to GrSG.

Appendix E: “Grazing Management Options for GrSG” – Appendix E is a list of potential options for managing herbivory in ways that benefit GrSG. The list is not considered complete, but is an example of options.

Appendix F: “Available Funding Opportunities for GrSG Habitat Conservation” – In this appendix we identify existing funding programs that may offer opportunities for assistance in GrSG habitat conservation.

Following the “Working Appendices” are 3 appendices directly related to energy and mining issues (“Energy and Mining Appendices”). Two of these are intended primarily as background information (Appendix G, “Energy and Mining Leasing and Development Process”; and Appendix H, “Literature Review: Oil and Gas Development Impacts on Prairie Grouse”. The third serves more as a working document:

Appendix I: “Suggested Management Practices Applicable for Oil and Gas Development, within Lease Rights” – This appendix offers examples of management practices that will alleviate disturbance to GrSG habitat resulting from oil and gas development, much like the list of grazing management options in Appendix E.

How to Use this Plan

Much of the plan is intended as background and analysis from which the conservation strategies are derived. For those who will be implementing this plan, the key sections are “Conservation Strategy” (pg. 306) and the accompanying “Working Appendices”: Appendix A (“GrSG Habitat Structural Guidelines”), Appendix B (“GrSG Disturbance Guidelines”), Appendix C (“Sage-grouse Habitat Monitoring Protocol”), Appendix D (“Recommendations Regarding Plant Species for Use in GrSG Habitat Management and Restoration”), Appendix E (“Grazing Management Options for GrSG”, and Appendix F (“Available Funding Opportunities for GrSG Habitat Conservation”). The background material can serve as a reference to clarify questions raised in specific implementation situations.

Implementation and Prioritization

Due to the short time frame provided for completion of this plan, prioritization of conservation strategies has not yet been accomplished. Within 6 months after the plan is signed, the signatory agencies will form an Implementation Team to embark on the development of an implementation plan. The implementation plan will rank and prioritize the strategies developed in this plan, according to importance to GrSG conservation in Colorado, and within current budgetary and regulatory constraints. Prioritization will occur at both statewide and population levels, since not all the strategies in this plan are relevant to each population. The Implementation Team will meet with local work groups to gather input on strategies that are most applicable and time-sensitive to GrSG conservation in their areas. This input will be considered during prioritization of strategies. The implementation plan will also establish a reporting timeline and process to gauge effectiveness of the CCP.

Public Participation Process

The existing GrSG local work groups were notified when the CCP planning process began. In addition, an “issue assessment” was conducted by a neutral facilitator, in which 30 - 50 stakeholders were contacted for one-on-one confidential interviews. The stakeholders were

individuals who were involved in development of the local conservation plans, representatives of organizations or special interest groups, petitioners, or others with vested interests in GrSG conservation in Colorado. The objective of these confidential interviews was to identify stakeholder interests and needs that might be addressed in the CCP. Results were summarized and provided to the SC for use when conservation strategy development began.

In May 2006, a 3-day conservation plan workshop was conducted and facilitated in Steamboat Springs by the Conservation Breeding Specialist Group. During this 3-day workshop, realistic potential conservation objectives and strategies were developed for 5 issues (Energy and Mineral Development, Grazing, Housing Development, Hunting, and Predation), to serve as a basis for the Conservation Strategy portion of the plan. Over 60 individuals participated in the workshop. Participants included at least 1 member of the local work group for each GrSG population area, as well as a diverse mix of interested and affected stakeholders. The workshop group that began developing Energy and Mineral Development strategies reconvened for 2 days in August, 2006, to complete their work; the issues under this topic are broad and complicated and required a great deal of work. The basic development of the conservation strategy section occurred following the workshop in May 2006. A member from each local work group was invited to participate in the SC's work on conservation strategies as an "Advisory Member" (Table 2, pg. 14).

In October, 2006, the Colorado Greater Sage-grouse Summit was held in Steamboat Springs. Over 125 individuals participated, including stakeholders from all GrSG population areas, as well as representatives of interested agencies and industries. This summit included a preview presentation and discussion of 10 issues in the conservation strategy section of the plan (Energy and Mineral Development, Fire and Fuel Management, Grazing, Housing Development, Hunting, Infrastructure, Lek Viewing, Predation, Recreational Activities, and Weeds), as well as an opportunity for the various work groups to share their successes and challenges in GrSG conservation efforts. Comments provided by summit participants were reviewed and modifications to the CCP were made to address most concerns.

The plan was released for a 30-day internal review by signatory agencies on March 15, 2007. During this review period, Advisory Members were also provided the opportunity for early comment. Prior to the release of the next draft, comments were reviewed, discussed, and incorporated, where appropriate.

The public was also given a 77-day opportunity to review and comment on a draft of the plan, which was released June 15, 2007. Comments were compiled, addressed, and incorporated, when appropriate, into the final plan. The final version of the plan was made available to all the local GrSG work groups.

Information and Data Sources

We primarily relied on peer-reviewed scientific literature and graduate theses/dissertations as supporting information in the CCP. However, as is the case for many wildlife species, important and reliable information for GrSG can be found in agency reports, both those with peer-review and those without. We used these agency sources when they were the only available

information, or when they contributed significantly to available information on a particular topic. In particular, we relied on reports from the CDOW for the most recent Colorado GrSG research results. Likewise, we used internet web sites for information when necessary, citing the dates the sites were accessed.

Scientific Assessment and Review

To address broad scale, complex issues, a group of scientists was used (Table 3). Individuals were selected for this team because of their impartiality and/or technical expertise in a relevant scientific area. The “subject experts” assisted in conducting an analysis of conservation needs for maintaining GrSG populations. “Conservation need” was interpreted broadly and included desired genetic diversity, and necessary habitat quantity and condition.

Table 3. Scientists who assisted in conducting analyses of GrSG population conservation needs for the GrSG Statewide Conservation Plan.

Discipline	Science Team
Sage-grouse Biology	Dr. Tony Apa, Colorado Division of Wildlife Dr. Michael Phillips, Colorado Division of Wildlife Dr. Tom Remington, Colorado Division of Wildlife
Genetics	Dr. Sara Oyler-McCance, U.S. Geological Survey/Denver University
Population Ecology (Modeling)	Dr. Philip Miller, Conservation Breeding Specialist Group
Ecology and Restoration of Sagebrush Rangelands	Dr. Ann Hild, University of Wyoming Steve Monsen, U.S. Forest Service Shrub Sciences Lab, retired Dr. Alma Winward, U.S. Forest Service, retired
Spatially Explicit Modeling of Housing Development	Dr. David Theobald, Natural Resource Ecology Lab, Colorado State University
Modeling Habitat Quantity and GrSG Population Size	Dr. Michael Phillips, Colorado Division of Wildlife

F. Socio-economic Considerations

State and federal agencies involved in implementation of the CCP coordinated with landowners, counties, and local governments to develop the best solutions for GrSG conservation, while maintaining social and economic values to the maximum extent possible. The CCP was developed to address issues of statewide concern for the GrSG, but is not intended to replace local conservation plans. Rather, it is intended to work within local conservation plan considerations of social and economic values.

In the event of federal listing of GrSG under the ESA, the USFWS would use the CCP and local conservation plans as the basis to develop a federal recovery plan (FRP). The FRP would also seek to maintain social and economic considerations to the maximum extent possible while ensuring the survival and recovery of GrSG. In fact, in the July 1, 1994, Federal Register (59 FR 34272), the USFWS issued a policy stating that the USFWS will involve stakeholders in FRP preparation to minimize the social and economic impacts of implementing recovery actions. There are also funding and incentive programs to facilitate socio-economic considerations and conservation of the GrSG (e.g., Appendix F, “Available Funding Opportunities for GrSG Habitat Conservation”).

Managing for sustainable local economies is a conservation approach that guides this plan because its authors and signatories believe that sustainable local economies are essential to successful conservation of the GrSG. Ultimately, the hope is to achieve “civic environmentalism” (Shutkin 2000:14) within GrSG range in Colorado. Shutkin (2000:22) asserts, “the best kind of American environmentalism fundamentally entails a holistic approach to environmental problems in that those problems and their solutions are seen as inextricably linked to social, political, and economic issues...”.

G. Management and Legal Authorities

There are many state, federal, and county regulations that offer protection to GrSG. Colorado has state laws and regulations to restrict possession of GrSG, and funding programs support population and habitat conservation actions. Several of the Colorado counties with GrSG populations have provisions, usually pertaining to housing development, for wildlife and/or sage-grouse conservation. A variety of federal agencies have laws, regulations, policies, and funding programs that authorize and support conservation actions for wildlife habitat and population management.

Colorado Division of Wildlife

The CDOW, a Division of the Colorado Department of Natural Resources, has responsibility for the management and conservation of wildlife resources within state borders, including the conservation and management of threatened and endangered species, as defined and directed by state laws (i.e., Colorado Revised Statutes, Title 33 Article 1). The CDOW has authority to regulate possession of the GrSG, set hunting seasons, and issue citations for poaching of GrSG.

Title 33 Article 1-101, Legislative Declaration states: “It is the policy of the State of Colorado that the wildlife and their environment are to be protected, preserved, enhanced and managed for the use, benefit, and enjoyment of the people of this state and its visitors. It is further declared to be the policy of this state that there shall be provided a comprehensive program designed to offer the greatest possible variety of wildlife-related recreational opportunity to the people of this state and its visitors and that, to carry out such program and policy, there shall be a continuous operation of planning, acquisition, and development of wildlife habitats and facilities for wildlife-related opportunities.”

In addition, the 5-year Strategic Plan for CDOW, adopted by the Colorado Wildlife Commission on January 11, 2002, emphasizes the importance of wildlife conservation. The Strategic Plan lists 10 management principles, or “core beliefs” that guide the agency in fulfilling its mission; these beliefs underscore the importance of wildlife conservation and maintenance of healthy, diverse and abundant wildlife. A specific section of this strategic plan addresses species conservation. The vision statement of this section states: “Recognizing the pitfalls of single species management, the CDOW will emphasize the development of management approaches encompassing multi-species communities across the landscape. The CDOW defines species conservation as conserving, protecting, and enhancing Colorado’s native wildlife, by taking the actions necessary to assure the continued existence of each species and thereby precluding or eliminating the need for state and/or federal listing. The CDOW will form partnerships with landowners, land management agencies, and others to manage, protect, enhance, and restore wildlife and their habitat. The CDOW will lead efforts to monitor wildlife communities and manage them as needed to prevent their decline. The CDOW will work aggressively with others to recover threatened and endangered species. The CDOW encourages partnerships to share in the vision to protect, enhance, and restore wildlife communities that need assistance to survive.”

Colorado Oil and Gas Conservation Commission

The Colorado Oil and Gas Conservation Commission (COGCC) is a state regulatory agency created by the Colorado General Assembly to promote development of the oil and gas resources throughout the state, consistent with the protection of public health, safety, and welfare. The law that created the COGCC provides for the COGCC to promulgate rules to protect the health, safety, and welfare of the general public in the conduct of oil and gas operations. Prior to 2007, the COGCC encouraged voluntary commitment to measures that prevent and mitigate impacts to wildlife.

House Bills (HB) 1341 and 1298 passed the Colorado General Assembly during the 2007 session and were signed into law. HB 1341 reconstitutes the membership of the COGCC and expands its policy focus to consider public health, environment, and wildlife impacts. HB 1298 is a companion measure to HB 1341. This bill revises section 34-60-102 of the Colorado Revised Statutes and requires the COGCC to use best management practices when permitting oil and gas facilities, and to consult with the CDOW to reduce impacts from oil and gas development. The law mandates COGCC to promulgate rules by July 1, 2008, in consultation with the Wildlife Commission, that establish standards for minimizing adverse impacts to wildlife resources affected by oil and gas operations, and to ensure the proper reclamation of wildlife habitat during and following such operations. Currently, the COGCC is in the process of developing draft rules to meet the requirements of HB 1298.

Colorado State Land Board

Colorado's 3 million acres of state trust lands were given to the state by the federal government in 1876 for specific purposes, such as the support of “common schools”, and to this day the lands

are leased for ranching, farming, mineral and energy production, and other uses. Proceeds are used to support 8 trusts, the largest of which benefits kindergarten-12th grade education in the state. All trust lands are managed by the Colorado State Board of Land Commissioners, a division of the Department of Natural Resources. The agency is overseen by a 5-person citizen board.

The Colorado State Land Board (SLB) is tasked with managing state trust lands. The Colorado Constitution, Article IX, Section 10, states:

“The people of the state of Colorado recognize (a) that the state school lands are an endowment of land assets held in a perpetual, inter-generational public trust for the support of public schools, which should not be significantly diminished, (b) that the disposition and use of such lands should therefore benefit public schools including local school districts, and (c) that the economic productivity of all lands held in public trust is dependent on sound stewardship, including protecting and enhancing the beauty, natural values, open space and wildlife habitat thereof, for this and future generations.”

Counties

Authority for regulating land use on non-federal lands was delegated to the 63 counties in Colorado in 1973. All units of local governments, including counties, cities, and towns, were given authority to regulate land use within their jurisdictions under an enabling statute called the Land Government Land Use Control Enabling Act, 29-20-101 *et seq.*, CRS 1973, commonly called House Bill (H.B.) 1043 (C.R.S. 29-20-101). The intent this statute was to clarify and provide broad authority to all units of local governments to plan for and regulate the use of the land within their jurisdictions. Two important provisions related to wildlife are those that authorize local governments to plan for and regulate the use of land by:

- Protecting lands from activities which would cause immediate or foreseeable material danger to significant wildlife habitat and from activities which will endanger a wildlife species; and
- otherwise planning for and regulating the use of the land so as to provide planned and orderly use of land and protection of the environment in a manner consistent with constitutional rights

Another enabling piece of legislation passed in 1974, the Colorado Land Use Act, commonly called H.B. 1041 (C.R.S. 24-65.1-101, *et seq.*, "Areas and Activities of State Interest."). This Act authorizes and encourages local governments to identify, designate, and adopt guidelines and regulations for the administration of areas and activities that are “areas of state interest”. These are areas which are of greater than local concern or which have statewide importance; significant wildlife habitats are included in the Act as areas that are an ‘activity’ eligible for consideration. The Act gives the authority to local governments, if they so chose, for regulating development as it affects those activities.

Local governments have the authority to engage in comprehensive planning through H.B. 1043. Most of the counties that have GrSG populations address wildlife and wildlife habitat concerns

within broad planning documents, such as county master plans (Garfield County Building and Planning Department 2000, Moffat County Planning Department 2003, Rio Blanco County Development Department 2002, Routt County Citizens 2003, Summit County Planning Department 2003, Eagle County Community Development 2005, Grand County Department of Planning and Zoning 1998, Lower Blue Planning Commission 2006).

Some counties have incorporated wildlife (and in some cases, specifically sage-grouse) concerns into more specific planning documents such as subdivision, development, or zoning regulations. The Eagle County Site Development Standards require a review by the CDOW for all planned developments, including sage-grouse production areas (Eagle County Planning Division 2006). Garfield County is in the process of revising its land use development regulations, and has developed a draft Garfield County Land Use Resolution, which is designed to implement the county's comprehensive plan. This resolution requires developers to consult with CDOW to avoid and/or mitigate adverse impacts to wildlife habitat (Garfield County Building and Planning Department 2005). Both the subdivision and zoning regulations in Routt County contain language that addresses wildlife habitat (Routt County Planning Commission 2006*a, b*). Rio Blanco County has a wildlife habitat overlay in its land use resolution and speaks to the need to protect wildlife habitat as part of maintaining quality of life in the county (Rio Blanco County Development Department 2002). Summit County has a Wildlife Habitat Overlay District in its development code, an area in which the county "seeks to fully protect wildlife habitats... from the significant adverse affects [sic] of development" (Summit County Planning Department 2006). Grand County also has a new Rural Land Use Process, which encourages clustering of rural developments, in part to protect wildlife habitat (Grand County Department of Planning and Zoning 2005).

In addition to regulations regarding subdivision, land use, and development, there are county regulations regarding weeds that have relevance to GrSG habitat management (for more detail, see "Weeds" issue section, pg. 198). The Colorado Noxious Weed Act (Title 35 Article 5.5 101-119 C.R.S. (2003)) outlines responsibilities for weed control in Colorado. The state assigns responsibility for weed control on private and state unincorporated lands to county governments through the county commissioners. Each county appoints a local advisory board that identifies noxious weeds in the county that will by rule be subject to integrated management. Weed control on incorporated land is the responsibility of the municipality governing board. The local governing bodies of all counties and municipalities are authorized to enter into cooperative agreements with federal agencies for the management of noxious weeds on federal lands.

Bureau of Land Management

The U.S. Department of Interior (USDI) Bureau of Land Management (BLM) has authority for conservation of GrSG through: (1) the Federal Land Management Policy Act (FLMPA) of 1976 (43 U.S.C. 1701 et seq.; 90 stat. 2743; PL 94-579; (2) the Sikes Act, Title II (16 U.S.C. 670 et seq.), as amended; and (3) the BLM Manual 6840, Special Status Species Management. Specifically, the FLMPA guidance on sensitive species authorizes that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air, and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will

provide food and habitat for fish and wildlife and domestic animals... (43 USC 1701 Sec. 102 (a) (8)).”

The greater sage-grouse is a BLM-designated sensitive species in Colorado. As such, specific guidance is outlined in the 6840 Manual. Section 12 of the 6840 Manual states, “Actions authorized by BLM shall further the conservation of federally listed and other special status species and shall not contribute to the need to list any special status species under provisions of the ESA, or designate additional sensitive species under provisions of this policy.” The Department of Interior Fish and Wildlife Policy: State-Federal Relationships (43CFR Part 24.4 (c)) states in part that “...the Secretary of Interior is charged with the responsibility to manage non-wilderness BLM lands for multiple uses, including fish and wildlife conservation. In addition, the CCP is consistent with the BLM’s “National Sage-grouse Conservation Strategy” (Bureau of Land Management 2004b).

National Park Service

The USDI National Park Service (NPS) has authority for conservation of the GrSG through the 1916 NPS Organic Act (16 USC 1) which charges the NPS with management of parks to “... conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” Additional authorities that guide the NPS are found in the General Authorities Act of 1970 (16 USC 1c(a)) and the Redwood Act of 1978 (16 USC 1a-1). The only National Park Service unit within the Colorado range of GrSG is Dinosaur National Monument, located within the Northwest Colorado GrSG population area.

NPS Management Policies and the NPS-77 Natural Resources Management Guideline state that the NPS will seek to perpetuate the native animal life as part of the natural ecosystem of parks. They further define Species of Concern as all native animal species within a park that face an immediate danger of losing their natural role in an ecosystem because of human-induced change. Regarding Species of Concern, NPS-77 states that the NPS should also look for opportunities to enter into cooperative and interagency agreements and memoranda of understanding with other federal and state agencies on research, monitoring, and management of the Species of Concern, and, where appropriate, promulgate regulations. The NPS must strive to protect the natural conditions and processes and the ecosystem integrity to the greatest extent possible for Species of Concern.

NPS-77 further states, “Management of Candidate species should, to the greatest extent possible, parallel the management of federally listed species.” The NPS Management Policies identifies the management of threatened or endangered plants and animals as follows: “The Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the ESA. The Service will fully meet its obligations under the NPS Organic Act and the ESA to both proactively conserve listed species and prevent detrimental effects on these species.”

Natural Resources Conservation Service

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) has authority for conservation of GrSG through: (1) the Soil Conservation and Domestic Allotment Act of 1936, as amended (PL 74-46), which gives authorities to the Soil Conservation Service (now called the NRCS) to conserve natural resources on agricultural lands; (2) the Food Security Act of 1985, Public Law 99-198, Title XII; (3) the Department of Agriculture Reorganization Act of 1994 (PL 103-354; 7 U.S.C. 6962); and (4) the Farm Security and Rural Investment Act (Farm Bill) of 2002 (PL 107-171), which authorizes programs to assist private land owners with conservation of wildlife, and promotes at-risk species habitat conservation.

Farm Bill programs administered by NRCS that have the most potential to benefit GrSG are: (1) the Wildlife Habitat Incentives Program (WHIP) 7 CFR Part 636; (2) the Environmental Quality Incentives Program (EQIP) 7 CFR Part 1466; (3) the Grasslands Reserve Program (GRP) 16 U.S.C. 3838n through 3838q; (4) the Conservation Security Program 7 CFR Part 1469; and (5) the Wetland Reserve Program (WRP) 16 U.S.C. 3837. For most Farm Bill programs, projects are selected by applying a ranking process to all applications. The ranking procedures give priority to projects that benefit declining species and species of concern over similar projects that do not have such benefits. NRCS also has planning responsibility for conservation projects funded with the Conservation Reserve Program (CRP) 7 CFR Part 704, another Farm Bill program which is administered by USDA, Farm Service Agency. CRP includes practices for wetland and riparian conservation that have potential to be beneficial for GrSG.

United States Forest Service

The USDA Forest Service (USFS) has authority for conservation of GrSG through: (1) the Multiple Use-Sustained Yield Act (MUSY) of 1960 (P.L. 86-517, 74 Stat. 215, 16 U.S.C 528(note), 528-531); (2) the Sikes Act of 1960 (P.L. 86-797, 74 Stat. 1052, 16 U.S.C. 670 et seq., as amended); (3) the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (P.L. 93-378, 88 Stat. 476, as amended; 16 U.S.C. 1600(note), 1600-1614); (4) the National Forest Management Act (NFMA) of 1976 (P.L. 94-588, 90 Stat. 2949, 16 U.S.C. 472 et seq.) and its implementing regulations (36 CFR 219); (5) Public Rangelands Improvement Act of 1978 (P.L. 95-514, 92 Stat. 1806, 43 U.S.C. 1901-1908); and (6) USDA Regulation 9500-4 and the Forest Service Manual (FSM) Chapter 2600.

Specifically, MUSY directs the USFS to administer the National Forests for outdoor recreation (including wilderness), range, timber, watershed, and wildlife and fish purposes, in cooperation with interested State and local governmental agencies and others. “Multiple use” means the harmonious and coordinated management of the various surface renewable resources so that they are utilized in the combination that will best meet the needs of the American people. The Sikes Act provides authority for cooperative planning, habitat improvement, and providing adequate protection for threatened or endangered species under the Endangered Species Act of 1973 or species considered to be threatened, rare, or endangered by the State agency. The RPA and NFMA provide for comprehensive, integrated planning that will provide for the diversity of plant

and animal communities to meet overall multiple-use objectives. USDA Regulation 9500-4 directs the USFS to manage “habitats for all existing native and desired nonnative plants, fish and wildlife species in order to maintain at least viable populations of such species.” In addition, USFS policy states: “To preclude trends toward endangerment that would result in the need for federal listing, units must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project.” (FSM 2621.2)

United States Fish and Wildlife Service

The USDI USFWS has authority for conservation of the GrSG through: (1) the ESA of 1973, as amended; (2) the Fish and Wildlife Act of 1956, as amended; and (3) the Fish and Wildlife Coordination Act, as amended. Congress, in Section 2 of the ESA, declares that there is value in having incentives for conservation, and Section 5 of the Act, as amended in 1978, provides authority for agencies to engage in conservation activities for the protection of candidate species. Section 6 of the ESA directs that the “Secretary shall cooperate to the maximum extent with the states...” (16 U.S.C. 1535(a)). The Secretary of Interior may also authorize states for monitoring the status of candidate species (16 U.S.C. 1535(c)). The Fish and Wildlife Act of 1956, as amended, and the Fish and Wildlife Coordination Act, as amended, give authorities to the USFWS for enhancement of all fish and wildlife species and mitigation of impacts to fish and wildlife, particularly from federal water development projects. In addition, The Federal Aid and Wildlife Restoration Act of 1937 (Pittman-Robertson Act), as amended, serves as the principal mechanism for providing federal assistance to states for the acquisition, restoration, and maintenance of wildlife habitat, for the management of wildlife areas and resources, and for research into problems of wildlife management (16 U.S.C. 669-669i).

USFWS National Wildlife Refuge System

The National Wildlife Refuge System (NWRS) has authority for conservation of GrSG through a myriad of legislation, starting with the National Wildlife Refuge Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 USC 668dd-668ee, which defines the NWRS and states that its mission is to administer a network of lands and waters for the conservation, management, and, where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States, for the benefit of present and future generations of U.S. citizens. The Refuge Improvement Act clearly defines a unifying wildlife conservation mission for the System and provides guidelines and directives for administration of the National Wildlife Refuge System. Other legislation guiding the Refuge System includes (1) Executive Order 12996: “Management and General Public Use of the National Wildlife Refuge System” (1996), which defines the mission, purpose, and priority public uses of the NWRS; (2) the Endangered Species Act (1973); (3) the Refuge Recreation Act; and (4) the Fish and Wildlife Act of 1956.

The collective guidance of this legislation is that the main goal of the NWRS is wildlife habitat conservation, and public uses may be provided when they do not (1) impede the original purpose

of the specific refuge; (2) harm the environmental health of the specific refuge; or (3) jeopardize endangered species and their habitats. In Colorado there are 2 National Wildlife Refuges (NWRs) located within GrSG occupied range: (1) Arapaho NWR in Jackson County; and (2) Browns Park NWR in Moffat County. These NWRs were established for migratory birds and other wildlife. Since sage-grouse populations can be an indicator of the health of sagebrush ecosystems, and the NWRS is responsible for management of wildlife and wildlife habitat (including sagebrush) on refuge lands, the USFWS has an interest and role in conservation of GrSG, and specifically with development of the CCP.

Memoranda of Understanding

In addition to the authorities listed above there are 2 MOUs that promote conservation of the GrSG. The first, between members of WAFWA, was signed in July 1999 to promote conservation and management of sage-grouse and the sagebrush habitat upon which they depend. The 1999 MOU was signed by members of 13 states and 2 Canadian provinces who are members of WAFWA, and included an action to develop conservation plans based on the local work group concept. The second MOU is between BLM, USFS, USFWS, and WAFWA. This MOU was signed in August 2000, and its purpose is to provide for cooperation among state, provincial, and federal agencies in development of a rangewide strategy for the conservation of sage-grouse and their sagebrush habitats. In August 2006, this MOU was extended until July 2007.

H. PECE Standards

The ESA requires the USFWS to assess conservation efforts to protect a species. The USFWS' PECE identifies criteria the USFWS will use in determining whether formalized conservation efforts that have yet to be implemented, or shown to be effective, contribute to making listing a species as threatened or endangered unnecessary (U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration 2003). This policy applies to conservation efforts identified in conservation agreements, conservation plans, management plans, or similar documents developed by federal agencies, state and local governments, tribal governments, businesses, organizations, and individuals, or a combination of the above. It is important to clarify that the PECE process applies to actions that may emerge from implementation of a plan such as the CCP, but not to the plan itself. The purpose of PECE is to ensure consistent and adequate evaluation of formalized conservation efforts and to guide development of conservation efforts that will sufficiently improve a species' status. Ultimately, successful PECE compliance for a given species would make listing the species unnecessary.

The PECE contains 9 criteria the USFWS will use to determine the "certainty that the conservation effort will be implemented", and 6 criteria the USFWS will use to determine the "certainty that the conservation effort will be effective" (U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration 2003:15101). These criteria should not be considered comprehensive evaluation criteria. The certainty that a formalized conservation effort will be implemented and effective may also depend on species-, habitat-, location-, and effort-specific factors. The USFWS will consider all appropriate factors in evaluating

formalized conservation efforts. The specific circumstances will also determine the amount of information necessary to satisfy these criteria.