

**Utah's Adaptive Resources Management
Greater Sage-grouse Local Working Groups**

Accomplishment Report

2008



Photo by Todd Black

June 2009

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Submitted to

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Preface

This report summarizes the status and 2008 accomplishments of Utah's Adaptive Resource Management Greater Sage-grouse (*Centrocercus urophasianus*, hereafter referred to as sage-grouse) Local Working Groups (LWGs). These groups were facilitated by staff affiliated with the Utah Community-Based Conservation Program (CBCP). This report incorporates the information requested under 50 CFR Chapter IV, US Fish and Wildlife Service (USFWS) Policy for Evaluation of Conservation Efforts (PECE) When Making Listing Decisions (USFWS 2003). Specific topics addressed by the LWGs plans include:

1. Staffing, funding, funding sources, and other resources necessary to implement LWG's plans.
2. Legal authority of the partners to implement the plan.
3. The legal procedural requirements (environmental reviews) needed to implement the plans and how this will be accomplished.
4. Authorizations or permits that may or will be needed and how these will be obtained.
5. The type and level of voluntary participation (number of landowners involved, types of incentives used to increase participation).
6. Regulatory mechanisms (laws, ordinances, etc.) that may be necessary to implement the plans.
7. A statement regarding the level of certainty that the funding to implement the plans will be obtained.
8. An implementation schedule to include incremental completion dates.
9. A copy of LWG's approved management plans (These reports are available on our web site www.utahcbcp.org).

The conservation plans discuss the level of certainty that the management efforts identified and implemented will be effective. Specific topics addressed in the conservation plans include:

1. The nature and extent of threats to be addressed by the LWG's plans and how management efforts will reduce the threats described.
2. Explicit objectives for each management action contained in the plans and dates for achieving.
3. The steps needed or undertaken to implement management actions.
4. The quantifiable, scientifically valid parameters by which progress will be measured (e.g., change in lek counts, improved habitat conditions).
5. How the effects of the management actions will be monitored and reported.
6. How the principles of adaptive management resource management are being implemented.

The LWG sage-grouse conservation plans, previous annual reports, and meeting minutes can be accessed at www.utahcbcp.org.

Executive Summary

The Community-based Conservation Program (CBCP) encompasses the historical range of sage-grouse in Utah as identified in the 2002 (2009 revised) Strategic Management Plan for Sage-grouse (Figure 1). The plan, approved by the Utah Wildlife Board on 1 June 2002 *revised 2009), mandated the organization of local sage-grouse working groups (LWGs) to develop and implement sage-grouse conservation plans. The Utah Division of Wildlife Resources (UDWR) in cooperation with Utah State University Extension (USUEXT), private landowners, public and private natural resource, wildlife management, and conservation agencies and organizations have implemented the CBCP.

In 2008, Utah's Adaptive Resources Management Greater Sage-grouse (hereafter referred to as sage-grouse) LWGs continued implementation of their Sage-grouse Conservation Plans (Plan). The LWGs include representatives from state and federal agencies of land and resource management, non-governmental organizations, private industry, local communities, and private landowners.

In this report we summarize efforts of the LWGs to implement the conservation strategies and actions outlined in their Plans. These strategies meet the guidelines set forth by the US Fish and Wildlife Service (USFWS) in their Policy for Evaluation of Conservation Efforts (PECE) standards. The conservation strategies and action address the five USFWS listing factors as they apply to sage-grouse in each LWG area. Plan recommendations and guidance are voluntarily being implemented by all LWGs. The LWGs meet regularly to review actions and encourage adoption of Plan conservation strategies and actions. In 2008, greater emphasis was placed on identifying population and habitat conditions and issues specific to each LWG conservation area.

In this report, each LWG presents a table of ranked threats that currently or potentially affecting sage-grouse and sagebrush habitats in their area. This threat analysis, combined with recommended strategies and actions, provided a framework for LWGs to implement their Plans over the next ten years. Plans are being implemented using an adaptive resource management approach. As new information emerges from local and range wide conservation efforts, the LWGs are using it to update management strategies, and priorities in their area. As of January 2008, 10 Utah LWGs have completed sage-grouse conservation plans. These plans and a summaries of LWG activities can be found on-line at www.utahcbcp.org.

Staffing

Project Director: Terry A. Messmer, Professor and Associate Director, Jack H. Berryman Institute and Quinney Professorship for Wildlife Conflict Management, UMC 5230, Utah State University, Logan, Utah 84322-5230. Phone 435-797-3975, Fax 435-797-3796, E-mail terry.messmer@usu.edu

Project Staff: S. Nicole Frey, Research Assistant Professor, Jack H. Berryman Institute, Department of Wildland Resources, Utah State University (station in the Department of Biology – Southern Utah University, Cedar City), Mr. Todd Black and Ms. Lorien Belton, Community-based Conservation Extension Specialists, Dr. David Dahlgren, Post-Doctoral Fellow, and Rae

Ann Hart, Assistant to an Executive, Department of Wildland Resources, Utah State University, Logan.

Funding: In July 2006, Utah State University entered into a 5 year agreement with the Utah Division of Wildlife Resources (UDWR) to develop and facilitate the Utah Community-Based Conservation Program. This agreement provides up to \$140,000 annually in funding and in-kind matches through June 30, 2011, to conduct the program. Additional funding of up to \$160,000 a year is provided through by the Jack H. Berryman Institute through Utah State University Extension. Additional support in terms site and agency specific grants and contracts in the amount of \$200,000 were entered into in 2008 to support local working group activities, project monitoring and evaluation.

Legal Authority

The LWG Plans implement Utah's Sage-grouse Strategic Management Plan (Strategic Plan) that was approved by the Utah Wildlife Board in 2002 (UDWR 2002, revised 2009).

Project Goals

1. Protect, enhance, and conserve Utah sage-grouse populations and sagebrush-steppe ecosystems.
2. Establish sage-grouse in areas where they were historically found and the current sagebrush-steppe habitat is capable of maintaining viable populations (Utah Sage-Grouse Management Strategic Plan 2002).
3. Protect, enhance, and conserve other sensitive wildlife species that inhabit Utah sagebrush-steppe ecosystems.
4. Sustain and enhance socio-economic conditions in affected local communities.
5. Complete actions that make listing sage-grouse as threatened or endangered unwarranted and/or assist in recovery if the species are listed.
6. Increase local stakeholders and community involvement and ownership in the species conservation planning processes.
7. Increase LWGs awareness, appreciation, and the application of the use of science in making land use and population management decisions.

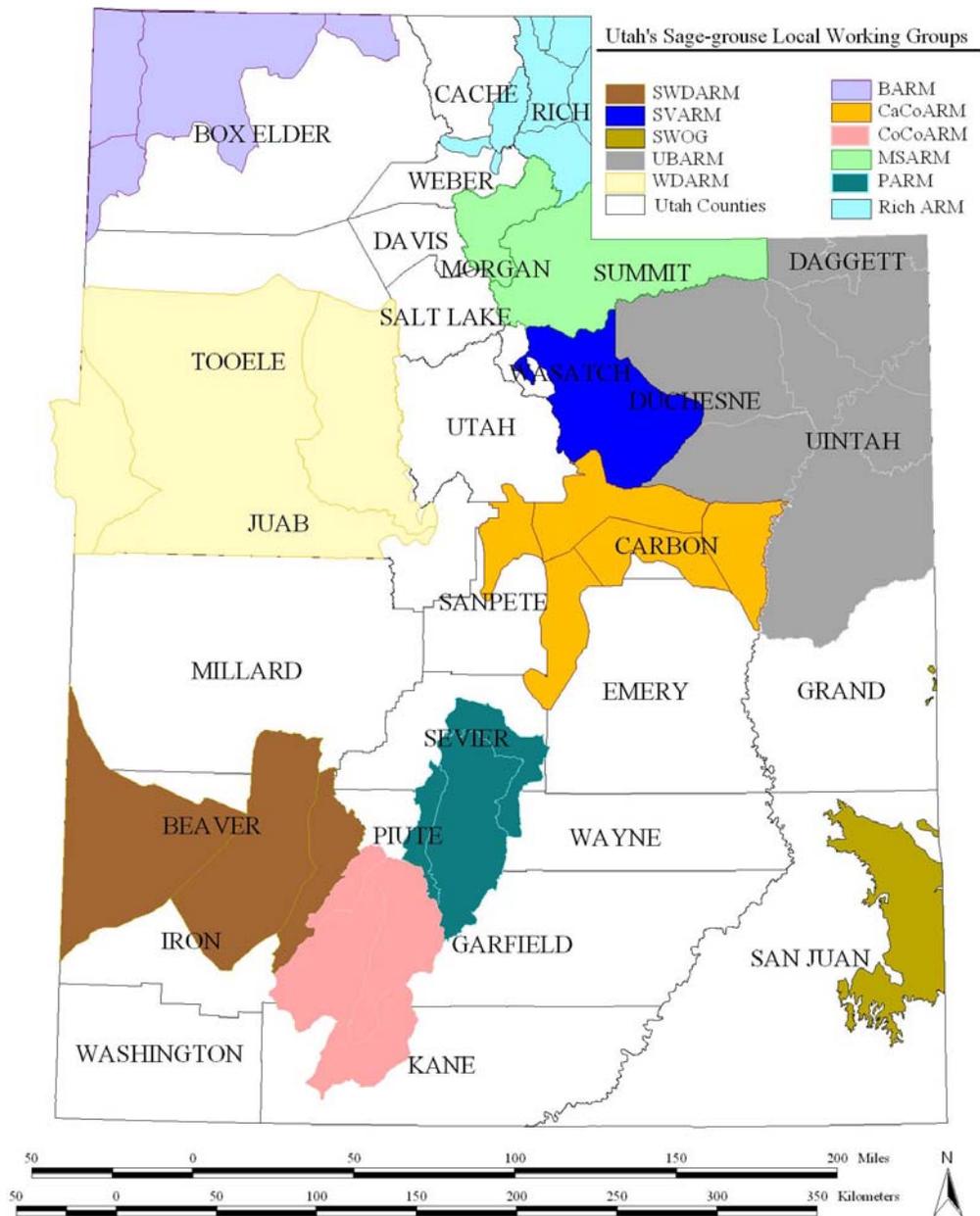


Figure 1. Utah Sage-grouse Conservation Areas, Utah Strategic Management Plan for Sage-grouse (UDWR 2009). (Note this report summarizes conservation actions completed to benefit greater sage-grouse. Thus no it does not include Gunnison sage-grouse conservation actions. This species inhabits San Juan County).

Castle Country Adaptive Resources Management (CaCoARM) Sage-grouse Local Working Group

The Castle Country Adaptive Resource Management Plan (CaCoARM) Sage-grouse Local Working Group was organized in 2004 by Mr. Todd A. Black.

CaCoARM is comprised of state and federal agency personnel, representatives from local government, non-profit organizations, academic institutions, private industry, and private individuals.

In 2008, the group met formally three times to discuss strategies and actions and receive research updates. No field tour was held in 2008 due to the long prolonged spring and snow and conflicting schedules.

This information below summarizes efforts made by individual and partners to address threats and strategic actions for the Castle Country Greater Sage-grouse Local Conservation Plan October 2006. This adaptive plan is in effect until the year 2016. CaCoARM partners reported on specific actions completed or addressed in 2008 and identified steps to be taken to implement additional actions into subsequent years of the plan.

Please note that if a strategy or an action number is missing from this report or no comments are reported under an action; it means that no action(s) were reported in 2008 towards its completion. For the complete list of threats identified by the CaCoARM group, see page 64 of the conservation plan located on line at

http://utahcbcp.org/files/uploads/carbon/CaCoARM_final-01-07.pdf



Figure. 3. The Castle Country Adaptive Resource Management (CaCoARM) Sage-grouse Local Working Group Conservation Area consists of 1,906,443 acres located in eastern Utah.

Conservation Strategies and Actions: 2008 Accomplishments

1. **Strategy** By 2011, make an assessment of pinyon/juniper stands in key sage-grouse habitat throughout the conservation area.
 - 1.1. **Action:** Revisit and make recommendations to treat or retreat as needed pinyon/juniper removal sites (west Tavaputs, Horn Mountain, Price Airport (West) benches, Gordon Creek area, Sanpete County area).

CaCoARM partners completed projects in these areas in 2008. The group discussed and felt it important to continue work in this area focusing on SITLA grounds.

2. **Strategy:** By 2011, make an assessment of non-desirable vegetative species in sage-grouse habitats.

2.1. Action: Review and monitor all vegetative sampling data collected by all partners and monitor as needed.

Skyline Cooperative Weed Management Association (CWMA) treated (musk beetle) and sprayed musk thistle and hounds tongue in the Emma Park area to determine encroachment.

2.2. Action: Avoid using fire in sage-grouse habitats prone to invasion by cheatgrass or other invasive weed species.

No fires were used as treatments in areas prone to invasive species.

2.3. Action: Evaluate all wildfires and prescribed burns and reseed with species that are adapted to the site and/or competitive with non-desirable plants.

No fires occurred in the conservation area in 2008.

3. Strategy: By 2011, assess mesic vegetation sites and identify potential new water projects.

3.1. Action: Identify key elements of various water/erosion projects by developing partnerships to work cooperatively to maintain existing water sources (natural and or man made) and control erosion.

3.2. Action: Identify key elements of various water projects by developing partnerships to work cooperatively to develop new water sources.

SUFCA Mine and USFS are proposing to develop water sources in the Wildcat area. This work was scheduled for 2008 but has been delayed.

3.3. Action: Work with the NRCS and private partners to develop NRCS, WHIP, and EQIP projects that would increase mesic sites and brood-rearing habitat quality in the Conservation Area.

Dixie Harrow work was completed on private property north of Scofield in upland habitat to increase wet meadow area.

3.4. Action: Work with agency partners to develop projects that would increase mesic sites and brood-rearing habitat quality in the Resource Area.

SUFCA Mine and USFS are proposing developing water sources on Wildcat Knoll. Dixie Harrow work was completed on private property north of Scofield in upland habitat to increase wet meadow area.

3.5. Action: Work with private and public partners to monitor effects of water improvement projects on vegetation and sage-grouse habitat use.

3.6. Action: During times of drought, coordinate with public and private partners to maintain water available for sage-grouse during late summer and early fall in areas used by sage-grouse during this time.

4. Strategy Through 2016, identify key public/SITLA and private lands in the Resource Area (specific locations to be selected) that are recognized by the group as critical to be protected and/or managed to effectively conserve/improve sage-grouse nesting/brood rearing habitat.

4.1. Action: Encourage the use of group defined, desired conditions for state and federal lands and influence management actions in order to move toward those conditions.

On going process with all partners.

4.2. Action: Support partner efforts for special designations that protect sage-grouse nesting/brood rearing habitat on public/SITLA and private lands.

On going process with all partners.

4.3. Action: Use available grouse and brood telemetry data to identify key nesting/brood rearing habitat areas within the Emma Park subunit.

UDWR has completed this information in Emma Park and West Tavaputs.

4.4. Action: Support partner efforts to rehabilitate historical nesting/brood rearing habitat within Sanpete subunit.

Dixie Harrow work was completed on private property north of Scofield in upland habitat to increase wet meadow area—also will include grazing management plan.

4.5. Action: Pursue habitat improvement projects (to meet desired conditions) on public/SITLA and private lands in areas used by sage-grouse for nesting/brood rearing habitat.

On going process with all partners.

4.6. Action: Identify research needs to address sagebrush treatments at ‘lower’ elevations where the majority of the nesting/brood rearing activity occurs.

No action taken in 2008—some preliminary data should be available from USU and UDWR research late 2009.

4.7. Action: Work with the NRCS and private partners to develop NRCS, WHIP, and EQIP projects that would increase nesting/brood rearing habitat quality in the Conservation Area.

Dixie Harrow work was completed on private property north of Scofield in upland habitat to increase wet meadow area—also will include grazing management plan.

4.8. Action: Work with agency partners to develop projects that would increase brood-rearing habitat quality in the Conservation Area.

On going process with all partners.

4.9. Action: Work with private and public partners to monitor effects of habitat improvement projects on vegetation and sage-grouse nesting/brood rearing habitat use.

UDWR has monitored vegetation in some (Nutter Ranch) areas of projects implemented in 2008.

5. Strategy: Through 2016, identify key public/SITLA and private lands in the Resource Area (specific locations to be selected) that are recognized by the group to be protected and managed to conserve and improve sage-grouse lekking areas and habitat.

5.1. Action: Encourage the use of group defined desired conditions for state and federal lands and influence management actions in order to move toward those conditions

On going process with all partners.

5.2. Action: Support partner efforts for special designations that protect sage-grouse lek habitat on public/SITLA and private lands.

On going process with all partners.

5.3. Action: Use available grouse and brood telemetry data to identify key lek habitat areas within the Emma Park subunit.

UDWR has completed (2007) this information in Emma Park, Scofield, and West Tavaputs.

5.4. Action: Support partner efforts to rehabilitate historical lek habitat within Sanpete subunit.

5.5. Action: Pursue habitat improvement projects (to meet desired conditions) on public/SITLA and private lands in areas used by sage-grouse for lek habitat.

On going process with all partners.

5.6. Action: Identify research needs to address sagebrush treatments at ‘lower’ elevations where the majority of the lek activity occurs.

5.7. Action: Work with the NRCS and private partners to develop NRCS, WHIP, and EQIP projects that would increase lek habitat quality in the Conservation Area.

No action taken in 2008—group will work to identify areas in 2009.

5.8. Action: Work with agency partners to develop projects that would increase lek habitat quality in the Conservation Area.

No action taken in 2008—group will work to identify areas in 2009.

5.9. Action: Work with private and public partners to monitor effects of these habitat improvement projects on vegetation and sage-grouse lek habitat.

No action taken in 2008—group will work to identify areas in 2009.

6. Strategy: Change lek vegetation conditions to allow for predator recognition and visibility.

6.1. Action: Open lek areas that have been invaded by sagebrush and other shrubs.

Work continued on Emma Park landowner (Butchers) cleared brush in and around a historical lekking area on approximately 40 acres.

6.2. Action: Map and inventory leks with potential for restoration.

Work continued in 2008 on the Horn Mtn. to search historical leks where lekking does not occur anymore that need to be evaluated.

6.3. Action: Maintain and enhance desired conditions for leks.

Work continued on Emma Park landowners cleared brush in and around a historical lekking area on approximately 40 acres.

7. Strategy Increase cooperation and coordination between CaCoARM and public and private partners.

7.1. Action: Work with the NRCS to review and potentially endorse NRCS WHIP and EQIP projects that would benefit sage-grouse in the Conservation Area.

On going process with all partners.

7.2. Action: Continue to work with and identify key landowners within the Resource Area that have sage-grouse or sage-grouse habitat.

On going process with all partners.

8. Strategy: Increase informational and educational opportunities with local community and CaCoARM partners.

8.1. Action: By 2008, develop informational handouts about sage-grouse ecology and CaCoARM activities.

Community Based Conservation Program (CBCP) newsletter.

8.2. Action: Through 2016, include information about CaCoARM activities in County Extension newsletter.

8.3. Action: Work with NRCS, UDWR and CD to schedule spring field tour of habitat management projects on private lands.

UDWR held a spring lek viewing opportunities on the Emma Park Road.

8.4. Action: Coordinate workshops for private partners to share information about habitat enhancement, funding opportunities, and other relevant topics to be identified as needed.

9. Strategy: Through 2011, work with industries involved in natural resource development within important sage-grouse use areas to minimize impacts.

9.1. Action: Participate in county planning efforts for natural resource exploration and development to ensure that impacts to biodiversity are minimized.

On going process with all partners.

9.2. Action: Evaluate the interest and possibly develop a demonstration garden for the common vegetative species used in restoration.

On going process with all partners.

9.3. Action: Cooperate with partners' planning efforts to minimize impacts on sage-grouse and sage-grouse habitat.

On going process with all partners. BLM EIS for West Tavaputs.

10. Strategy: Through 2016, increase population and habitat monitoring efforts for sage-grouse in the Conservation Area.

10.1. Action: Encourage public and private partners to use techniques from Connelly et al. (2003a) "Monitoring of Greater Sage-grouse Habitats and Populations."

On going process with all partners

10.2. Action: Through 2009, search additional areas (TBD by the group) for new active lek sites.

UDWR surveyed Ford Ridge and the West Tavaputs, Wildcat Knoll, and Horn Mountain.

areas.

10.3. Action: Work with UDWR to enlist and coordinate private volunteers and/or other agency biologists to search for new leks and conduct lek counts on active leks.

UDWR personnel and volunteers from the public to search for leks in Ford Ridge/Emma Park and the West Tavaputs—USU graduate students and technicians conducted leks searches on Wildcat Knolls and Horn Mountain.

10.4. Action: Coordinate with UDWR, public, and private partners to conduct terrestrial lek searches in areas suspected to contain undiscovered active leks. These sites include the area around Scofield Reservoir, portions of the Tavaputs Plateau, and portions of the South Manti populations.

UDWR personnel and volunteers from the public to search for leks in Ford Ridge/Emma Park and the West Tavaputs—USU graduate students and technicians conducted searched on Wildcat Knolls and Horn Mountain.

10.5. Action: Through 2016, test dead sage-grouse for West Nile Virus and any other parasites/pathogens of importance.

No dead birds were found in 2008.

10.6. Action: Coordinate with UDWR to conduct aerial surveys in areas (Tavaputs and Scofield areas) suspected to contain undiscovered active leks.

UDWR conducted an aerial lek survey on the Tavaputs.

11. Strategy: By 2016, minimize effects of roads and utilities in areas used by sage-grouse.

11.1. Action: Re-vegetate utility corridors with sage-grouse seed mixes.

More work will continue with re-seeding efforts on private landowners in the Emma Park area. Reclamation and reseeded Emma Park Soldier creek side. Quest re-seeded the pipeline on the West Tavaputs. UDWR re-seeded an old road in the lower fish creek area.

11.2. Action: Work with appropriate agencies to avoid placement of new and or existing roads and utilities near (0.25 miles Connelly et al.) lek sites (specific distances should be site specific).

New BLM RMP stated specific regulations with regards to roads.

11.3. Action: Where possible, install perch deterrents on tall structures located in areas used by sage-grouse.

No tall structures were identified and no action taken in 2008.

11.4 Action: Where practical, install low-profile tanks in areas used by sage-grouse.

No tanks installed in 2008

11.5 Action: Work with appropriate agencies to identify and implement seasonal closures of roads as needed to protect critical sage-grouse habitat.

Roads were closed during winter months on West Tavaputs—this action will continue and will be on going.

12. Strategy: Through 2016, avoid locating homes or cabins within important sage-grouse use areas, within limits of private property rights. When necessary development does occur, work to minimize impacts to biodiversity.

12.1. Action: Participate in county planning efforts for home and cabin development to ensure that biodiversity impacts are minimized.

CaCoARM members sit on planning boards in Carbon and Emery County.

12.2. Action: Educate County planning departments about where important sage-grouse use areas are located.

CaCoARM members work for various planning departments within the county and keep them apprised of sage-grouse and CaCoARM activates and concerns.

12.3. Action: Establish easements or other land protection in crucial habitat.

CaCoARM members work for various planning departments within the county and keep them apprised of sage-grouse and CaCoARM activates and concerns.

12.4. Action: Work with county planners and county council to establish zoning ordinances for crucial habitat that protect those areas from inappropriate development.

CaCoARM members work for various planning departments within the county and keep them apprised of sage-grouse and CaCoARM activates and concerns.

13. Strategy: Through 2016, avoid locating oil and gas roads or pads near lek sites. Where impacts do occur, implement interim reclamation to well sites as soon as practical.

13.1. Action: Participate in county planning efforts for oil and gas exploration and development to ensure that sage-grouse impacts are minimized.

On going process with all partners. BLM EIS for West Tavaputs.

13.2. Action: Influence BLM/USFS/SITLA/private enterprise planning efforts to minimize impacts to sage-grouse.

On going process with all partners. BLM EIS for West Tavaputs.

14. Strategy: Provide for a use level and management system of domestic livestock grazing that maintains and improves both the long-term stability of sage-grouse populations and habitats and the livestock industry in the Resource Area.

14.1. Action: Coordinate grazing management with livestock operators to reduce negative resource and timing conflicts on leks and prime nesting habitat when possible.

On going process with all partners. Dixie Harrow work was completed on private property north of Scofield in upland habitat to increase wet meadow area—also will include grazing management plan. Bill Barrett Cooperation voluntary rested the Stone Cabin allotment.

14.2. Action: Apply grazing management practices to achieve desired conditions including maintenance of residual herbaceous vegetation appropriate for the site.

On going process with all partners.

14.3. Action: Encourage implementation of grazing systems that provide for areas and times of deferment, while taking into consideration the resource capabilities and needs of the livestock operator.

On going process with all partners.

15. Strategy: Maintain and, where possible, improve the perennial forb component in the understory.

15.1. Action: Reclaim and/or reseed areas disturbed by treatments using seed mixtures high in native bunch grasses and desirable forbs.

USFS continued work south of Joes Valley Reservoir and into the Black Dragon area to seed and treat these areas. Also the area around Hayes Wash, Coal Creek and Wood Hill area.

15.2. Action: Restore understory vegetation in areas lacking desirable quality and quantity of herbaceous vegetation where economically feasible.

15.3. Action: Conduct vegetation treatments to improve forb diversity, (e.g., harrowing, aerating, chaining) and reclaim or reseed disturbed area, where appropriate.

Plans for West Tavaputs by Bill Barrett Corp. (hand removal of encroaching P/J) as part of a mitigation requirement by BLM.

15.4. Action: Develop management techniques to increase forb diversity and density in sagebrush steppe, within limits of ecological sites and annual variations.

On going with all partners.

16. Strategy: Minimize the amount of quality sage-grouse habitat eliminated by residential and commercial land development consistent with private property rights.

16.1. Action: Participate with County land-use decision makers in identifying key sage-grouse habitats.

16.2. Action: Maintain sagebrush environments of sufficient size and shape around developments in sage-grouse habitat.

16.3. Action: Encourage the voluntary use of conservation easements and other land protection vehicles with willing sellers in sage-grouse habitats.

16.4. Action: Educate rural residents about the importance of good grazing management in keeping small tracts weed free and capable of providing habitat for wildlife.

Dixie Harrow work was completed private property north of Scofield in upland habitat to increase wet meadow area—also will include grazing management plan.

17. Strategy: Minimize the impact of excessive predation, especially in areas used by sage-grouse for nesting and brood-rearing.

17.1. Action: Plan and conduct research to determine the population-level effects of predation on sage-grouse.

USU research on Wild Cat Knolls and Horn Mountain is looking at predation on nesting grouse.

17.2. Action: Where sage-grouse population-level effects from predation are clearly identified, plan and implement site-specific predation management as necessary. Incorporate a monitoring plan to determine success.

Group is waiting for UDWR biologist to summarize Emma Park data.

17.3. Action: Support efforts of USDA-WS to remove coyotes, red foxes, and ravens in areas used by sage-grouse for nesting and brood-rearing during spring and early summer.

On going support by partners.

17.4. Action: Modify power lines and wood fence posts (to remove raptor perches) in important sage-grouse areas where feasible and where predator concerns have been identified.

17.5. Action: Remove trees, remove/modify raptor perches, and maintain quality sagebrush habitat where predation concerns on sage-grouse have been identified.

17.6. Action: Begin site-specific predation management considering all predator species (especially common ravens and red fox) where necessary and appropriate.

Group discussed specific areas to do work in and around Emma and Whitmore Park area and on the Wild Cat Knolls and Horn Mountain area. UDWR will coordinate with WS.

17.7. Action: Work with partners to identify additional sources of funding to continue current predator removal efforts.

Major Needs and Concerns

Concerns remain over oil and gas development in the Resource area, particularly near the Emma Park area. Additionally, CaCoARM is concerned about the isolated populations of grouse on the Horn and Wild Cat Mountains. USU is collected DNA samples to determine if these two populations are linked to other populations in the conservation area.

Summary of Sage-grouse Conservation Threats

In 2007, CoCaARM identified and ranked major threats to sage-grouse conservation in the conservation area (Table 2). This threat ranking is used by CoCaARM to prioritize conservation actions. The ranking will be reviewed in 2009 to ensure immediacy.

Table 2. Relative importance/contribution of threats to sage-grouse populations in Castle County Adaptive Resources Management (CoCaARM) Sage-grouse Local Working Group Conservation Area. (L = low; M = medium; H = high; and VH = very high).

Threat	CaCoARM Resource Area							
	Reduced Population Size	Population Distribution	Reduced Lek Habitat Quality	Reduced Nesting/Early Brood-rearing Habitat Quality	Reduced Summer/Late Brood-rearing Habitat Quality	Reduced Winter Habitat Quality	Reduced Connectivity of Seasonal Habitat Types	Reduced Connectivity of Populations & Sub-populations
Hindrance of ability to maintain local management	M	M	M	M	M	M	M	M
Power lines, Fences, & Other Tall Structures	M	M	H	M	M	M	M	M
Oil and Gas Development	M	M	M	M	M	M	M	M
Roads	L	M	M	M	L	M	H	H
Prolonged drought and or extreme Weather shifts	L	-	L	H	H	H	-	-
Lack of proper range management	L	L	M	M	M	M	M	M
Incompatible Fire Management Practices	-	H	H	H	H	H	H	M
Incompatible Livestock Grazing (domestic and wild ungulate)	-	L	L	H	H	L	-	-
OHV Recreation	-	M	H	M	M	L	L	L
Invasive/Noxious Weeds	-	M	M	VH	VH	H	M	L
Parasites and Disease	H	H	-	-	-	-	-	-
Predation	VH	H	-	-	-	-	-	-
Vegetation Management	-	-	H	H	H	H	H	M
Pinyon-Juniper and shrubby species Encroachment	-	M	H	M	M	H	H	H