

## **2. Castle Country Adaptive Resources Management (CaCoARM) Sage-grouse Local Working Group**

The Castle Country Adaptive Resources Management (CaCoARM) Sage-grouse Local Working Group was organized in 2005 by Todd A. Black and Sarah G. Lupis. Ms. Lupis served as the technical writer and compiler of the Plan. CaCoARM is comprised of state and federal agency personnel, representatives from local government, non-profit organizations, academic institutions, private industry, and private individuals.

### **a. Local Legal Authority**

The Board of Commissions for Carbon, Emery, and Sanpete counties serve as the executive and legislative branches of local government. They have the authority to; 1) protect and promote the health, welfare, and safety of the people of these counties, 2) regulate land use, land planning, and quality and protection of natural resources, and 3) have duly adopted regulations and policies to exercise such authorities.

The Carbon County Master Plan - Public Lands and Resources Addendum makes the following statements relevant to wildlife and wildlife management in the County

1. Carbon County is home to numerous and abundant game and non-game animals and fish. We value fish and wildlife as a source of recreation and enjoyment, as well as one means to feed our families, and as a potential for tourism and recreation for visitors to hunt, fish and view wildlife.
2. Federal lands, woodlands and forests are key to maintaining a healthy population of fish and wildlife. Private land provides a substantial amount of wildlife habitat in Carbon County due to agriculture and water associated with private lands.
3. Opportunities for cooperation between the County, the UDWR, and federal agencies will be pursued. The County will assist agencies in disseminating information and implementing methods to increase the usability of public lands for fish and wildlife. Private land provides a substantial amount of wildlife habitat in Carbon County due to agriculture and water associated with private lands. Projects to improve game range on public land will benefit wildlife and livestock. Range and stream improvement projects using quality data and good science will be a priority.

The Emery County Plan (1999) contains the following provisions related to the natural environment in the County:

1. An important part of our rural lifestyle is the enjoyment of the outdoors, and the recreational and economic opportunities afforded by the wide open spaces of the public lands that surround us. In many ways our population is outdoor oriented. The use of surrounding public lands is an integral part of our economy, culture, and heritage.

2. The use of public lands is still crucial to the livestock industry, as well as to other sectors of our economy and culture, such as mining, logging, tourism, recreation, and other varied uses of public lands. The public lands are used for individual and family recreation activities, as well as for community-wide traditions such as "Easterin," and the rites of the annual deer hunt. We value the open spaces, the history, the accessibility, and nature related experiences that are part of our public lands heritage.

**b. Status of Local Population**

***Plan Area***

The Castle Country LWG Resource Area (Resource Area) is located in eastern Utah in Carbon, Emery, and parts of Sanpete counties (Figure 1). The Resource Area encompasses 1,906,443 acres (2978 mi<sup>2</sup>) managed by the USFS, BLM, SITLA, and private landowners. The Resource Area is defined by the Whitmore and Emma park area and state highway 191 to the north, Range Creek and the Nine Mile Canyon area to the East, the Manti Range and the Sanpete Valley to the west State Highway 6 to the South. The Resource Area has been subdivided into five subunits, corresponding to sage-grouse breeding complexes. These breeding complexes are based on geographic boundaries and groupings of leks. Most of these sites are located at an altitude greater than 7,000 feet. Although movement between complexes in some of the subunits is likely, the complexes represent discrete subpopulations of sage-grouse in the Resource Area.

The Resource Area is characterized by hot summers and cold winters. According to National Climate Data Center records collected at the Price Municipal Airport from 1968 to 2005, July is the hottest month with an average high temperature of 90.0°F; winter lows reach 13°F in January. The Resource Area is a primarily a dry area, receiving an average of only 9-10 inches of rain annually. The sites where the sage-grouse occur are wetter, with an average of 16-20 inches of rain annually.

***Landownership***

Approximately 90% of the Resource Area is public land. The remaining lands are private, Tribal, and state ownership (Table 7).

Table 7. Landownership in Utah’s Castle Country Adaptive Resources Sage-grouse Local Working Group Area Resource Area, 2007.

<b>Landowner*</b>	<b>Area (acres)</b>	<b>Area (Miles<sup>2</sup>)</b>	<b>% of Resource Area</b>
Bureau of Land Management	605031	945	32%
Private	740161	1156	39%
State of Utah	27674	43	1%
School Institutional Trust Lands Administration	160562	250	8%
US Forest Service	366754	573	19%
Tribal	345	0.5	<1%
* Water adds an additional 5646 acres (8 mi <sup>2</sup> ) and represents <1% of the Resource Area			

## *Sage-grouse Population Status and Distribution*

The UDWR began using lek counts to monitor sage-grouse populations in the Resource Area in 1968 (Figure 5). That year, a total of 6 male sage-grouse were counted on 2 leks. During these initial counts, the locations of only a few leks were known. In 1977, eleven leks in the Resource Area were counted for a total of 175 males. The estimated spring population size in 1977 was 700 adult birds. Sage-grouse populations in the Resource Area hit an historic peak in 1989 when 209 males were counted on 10 leks. This represents a total estimated spring population of 841 adult birds.

In 1999, the UDWR increased lek monitoring and search efforts to ensure all leks within the resource area were counted. Since 2000, the total number of males counted on leks has fluctuated around the 13 males/year average (Figure 6). The number of males counted fell slightly below the average during 2002 and 2004, likely due to drought conditions, and was slightly above the average in 2000 and 2006. In 2006, more sage-grouse males were counted on leks in the Castle Country than ever recorded. A total of 285 males were counted on 16 leks for an estimated total spring population of 1140 adult birds.

The historical population high of 1977 is still apparent, however, recent increases do not appear as significant, and the population appears to be stable, rather than increasing. This indicates that while the number of males counted on leks in the Resource Area is increasing, increases in total males counted could be attributed to increased counting and lek-searching efforts. In fact, 16 leks were counted in 2006, more than were ever counted in the Resource Area (range = 1 - 16).

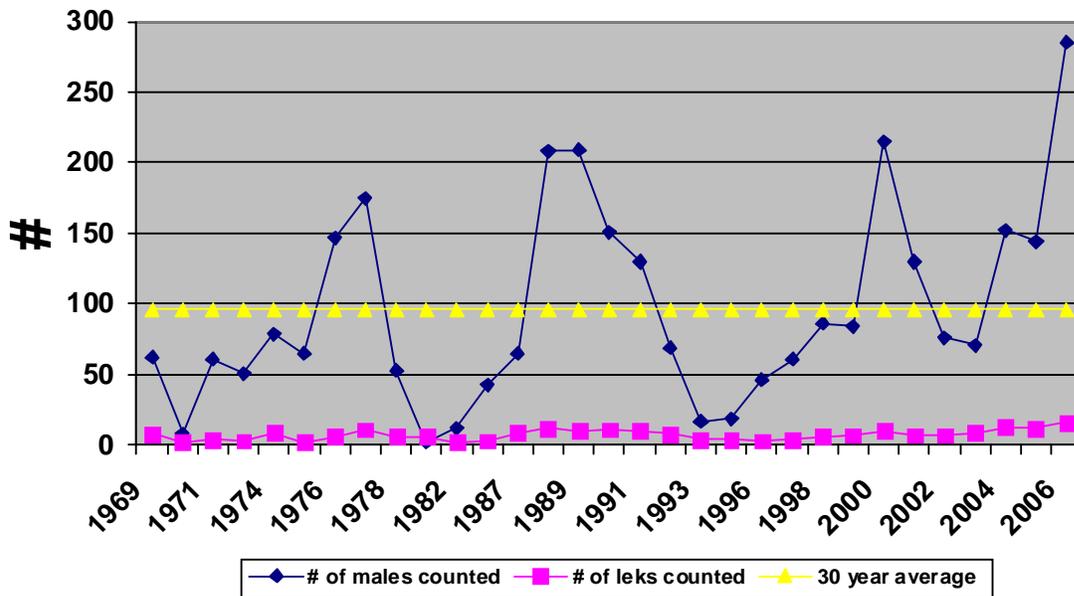


Figure 5. Maximum total number of males counted, number of leks counted, and 30-year average maximum total males counted on leks in the Castle Country Adaptive Resources Management Sage-grouse Local Working Group Resource Area, 1969-2006.

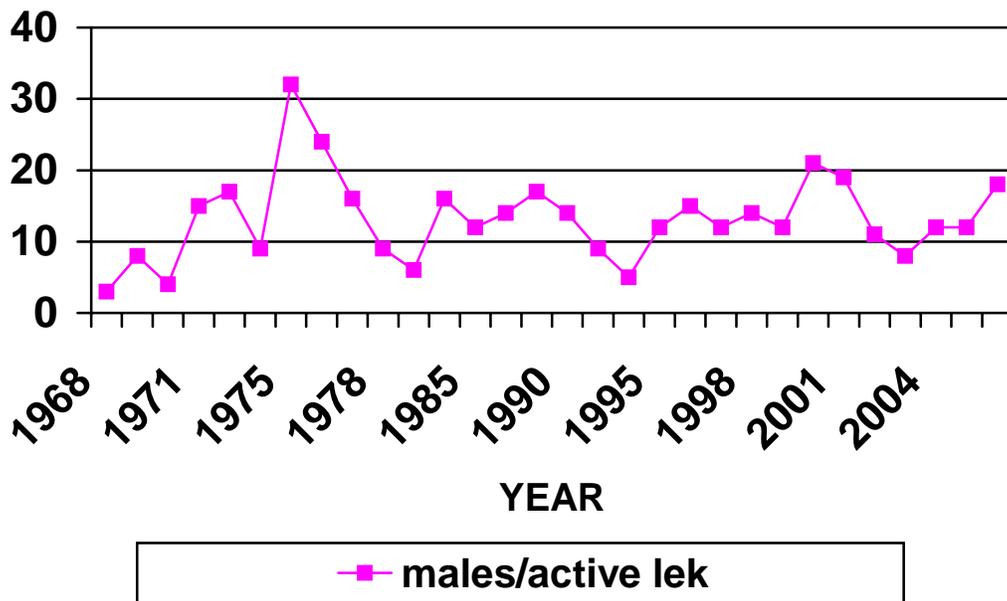


Figure 6. Average number of males counted per active lek in the Castle Country Adaptive Resources Management Sage-grouse Local Working Group Resource Area, 1968-2006.

**c. Key Ecological Indicators and Threats**

CoCaARM LWG participants identified key ecological aspects (KEAs) of sage-grouse ecology and biology and associated indicators (to measure KEAs), determined and ranked the range of variation for each KEA, and assessed the current and desired conditions for each KEA (Table 8). They then identified and ranked potential threats (Table 9).

Table 8. Greater sage-grouse key ecological aspects in Utah's Carbon, Emery, And Sanpete Counties, Castle County Adaptive Resources Management Sage-grouse Local Working Group, 2007. The 'Key Attribute' and 'Indicator' cells' are those defined by Greater Sage-grouse guidelines (Connelly et al 2000). The shaded cells represent the current condition as recorded by local working group members of a particular attribute and indicator as it relates to sage-grouse habitat and life history requirements.

Resource Area	Category	Key Attribute	Indicator	Poor	Fair	Good	Very Good	Current Indicator Status	Current Rating	Desired Rating	Date of Current Rating	Date for re-evaluation
Castle Country	Landscape Context	Connectivity of key habitat types	Condition of surrounding natural vegetation	Used habitat patches within each sub unit are sparse and dispersed creating barriers between used habitat patches.	Used habitat patches within each sub unit are isolated and narrowly connected.	<i>Habitat patches within each sub unit are of generally good and close proximity, but with some fragmenting features.</i>	All habitat patches within each sub unit are within a similar matrix and functionally connected.	Sage-grouse year round habitat in the CaCoARM AREA is generally well connected but has some fragmentation. Sage-grouse are able to move between seasonal habitats within the Resource Area	Good	Good	Feb-06	Feb-11
Castle Country	Landscape Context	Connectivity of Populations & Sub-populations	Distance to other populations within individual subunits during the yearly movement patterns of the sage-grouse	Populations within sub units do not interact with each other and are greater than 15 miles apart	<i>Populations within sub units occasionally interact and are 8-14 miles away</i>	Populations within sub units frequently interact and are 4-7 miles away	Populations within sub units regularly interact and are less than 4 miles away with regularly to regular mixing of individuals.	Connectivity within most of the subunits is approaching good. However, the little is know about the Manti sub unit. While these populations seem to be a long ways apart there may be some interaction between individuals during certain times of the year.	Fair	Fair	Feb-06	Feb-11
Castle Country	Condition	Summer/Late Brood-rearing Habitat Quality	Sagebrush canopy cover and density; understory composition; proximity to open patches and mesic sites and aspen sites dominated by herbaceous vegetation.	Little or no shrub land cover/density; little perennial grasses or forbs in dense sagebrush with no open patches or mesic sites.	<i>Little or high shrub land cover/density; poor perennial grass/forb cover in sagebrush with limited openings and mesic sites.</i>	<i>Open shrub land some perennial grasses/forbs in sagebrush with good perennial grass/forb content in openings; some mesic and aspen sites.</i>	Open shrub lands greater than 50% grasses/forbs dense cover in mesic and aspen sites; high species richness; a matrix of open patches and many mesic sites.	Shrublands are in good condition but the lack of wet/mesic sites is a limiting factor for distribution of the grouse in most of the sub units.	Fair	Good	Feb-06	Feb-11
Castle Country	Condition	Lek habitat quality.	Proximity to adequate sagebrush and openness on lek.	No appropriate cover w/in 400 m of most leks; significant encroachment of vegetation that would obscure visibility of the grouse on the leks sites.	Dispersed patches of sagebrush cover w/in 399-200 m of lek; some encroachment of vegetation that would obscure visibility of the grouse on the leks sites.	Large patches of sagebrush or other cover w/in 199-100 m of lek; with little encroachment of vegetation that would obscure visibility of the grouse on the leks sites	<i>Large patches of sagebrush or other cover less than 100 m of lek with no encroachment of vegetation that would obscure visibility of the grouse on the leks sites</i>	There is variability across the entire Resource Area. Most leks are in very good condition.	Very Good	Very Good	Feb-06	Feb-11

Castle Country	Condition	Nesting and early brood-rearing habitat quality.	Sagebrush canopy cover and density; understory composition; proximity to open patches dominated by herbaceous vegetation.	Inadequate sagebrush cover/density; little perennial grasses or forbs in dense sagebrush with no openings.	Inadequate or high sagebrush cover/density; poor perennial grass/forb cover in sagebrush with limited openings.	<b>Adequate sagebrush cover/density; some perennial grasses/forbs in sagebrush with good perennial grass/forb content in openings.</b>	High stature grasses in shrublands; dense cover; high species richness; a matrix of open patches that includes mesic sites.	Most areas are in Good condition during a "normal" year and look better in wet years	Good	Good	Feb-06	Feb-11
Castle Country	Condition	Winter Habitat Quality	Sagebrush canopy cover and height.	Majority sparse sagebrush cover or very small patches or majority very dense and tall (i.e."decadent"); sagebrush frequently covered by snow.	<b>Low stature and/or sparse sagebrush cover on westerly and southerly slopes and drainages or majority very dense and tall (i.e. "decadent"); sagebrush often covered by snow.</b>	<i>Less than 30% canopy cover of sagebrush on southerly and westerly aspects and few dense patches available; sagebrush rarely covered by snow.</i>	Widely distributed winter habitat throughout the Resource Area; canopy cover 20-30% sagebrush on southerly and westerly aspects w/avg. of 30" above snow depth	Winter habitat in fair condition many of the stands are getting old and decadent and need improvement. Winter habitat is not well distributed throughout the sub units.	Fair	Good	Feb-06	Feb-11
Castle Country	Size	Population Distribution	Distribution of leks	Leking habitat is not well utilized and are highly fragmented	<b>Some of the available leking habitat is occupied leks are distributed at about 4-6 mi radius</b>	<i>Most of the available leking habitat is occupied leks are distributed at about 2-4 mi radius</i>	All know leks are distributed (2 mi radius) distributed across all known leking habitat	Leks should be distributed where habitat is available. There are some areas where good habitat exists but leks do not. Range wide guidelines indicate that leks should be distributed about every 2-4 miles in good sage-grouse habitat.	Fair	Good	Jan-06	Jun-09
Castle Country	Size	Population Size	3-year running average number of males counted on leks	Less 75 males counted on all know leks	<b>76-125</b>	<i>126-200</i>	200+	Range wide guidelines. Three year average of number of male birds counted on leks is a good indicator of population size and trend.	Fair	Good	Jan-06	Jun-09
Castle Country	Size	Population Size	Number of leks	Less than 10 total leks in the entire area.	<b>10-13</b>	<i>14-20</i>	21-29	Greater then 30	Fair	Good	Jan-06	Jun-09

Table 9. Relative importance/contribution of threats to sage-grouse populations in Utah’s Carbon, Emery, and Sanpete Counties, Castle County Adaptive Resources Management (CoCaARM) Sage-grouse Local Working Group, 2007. Threats are described in the “Threat Analysis” section of this Plan. Rankings are as follows: L = low; M = medium; H = high; and VH = very high. Ranks are defined according to TNC (2005).

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	-	M	H	M	M	H	H	H

Encroachment								
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**d. Status of Conservation Strategies and Actions**

CoCaARM participants identified several conservation strategies and actions that could be implemented to enhance greater sage-grouse populations. Here CoCaARM partners report on specific actions completed or addressed in 2006/2007 but also identified steps to be taken to implement additional actions into subsequent years of the plan. If a strategy or an action number is missing from this report; it means that no action(s) were taken in 2006/2007 towards its completion. To access a copy of the CoCaARM conservation plan visit the following web site address: [http://utahcbcp.org/files/uploads/carbon/CaCoARM\\_final-01-07.pdf](http://utahcbcp.org/files/uploads/carbon/CaCoARM_final-01-07.pdf) The CoCaARM LWG will be reviewing and updating their Plan in early 2009

1. **Strategy** By 2011, make an assessment of pinyon/juniper stands in key sage-grouse habitat throughout the resource 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).  
**Status:** CaCoARM partners have made treatment plans and made assessments (lop and scatter, hand thinning) in West Tavaputs and Gordon Creek. These projects will be proposed and entered into the Utah Partners for Conservation and Development (UPCD) database.
  
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.  
**Status:** Skyline (Cooperative Weed Management Association) CWMA surveyed 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.  
**Status:** 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.  
**Status:** BLM evaluated subscribed fires specifically the Mathis Fire (wild fire) reseeded and re-seeding on private ground. All disturbed areas were reseeded.
  
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.  
**Status:** No action taken in 2007.
  - 3.2. **Action** Identify key elements of various water projects by developing partnerships to work cooperatively to develop new water sources.  
**Status:** Canyon Fuel Company, LLC SUFCO Mine and USFS are developing water in the Wildcat area. USU will be evaluating the project.
  - 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 Resource Area.

**Status:** No action taken in 2007.

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

**Status:** Canyon Fuel Company, LLC SUFCO Mine and USFS are developing water in the Wildcat area. USU will be evaluating the project.

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

**Status:** Initiated and ongoing.

**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.

**Status:** Initiated and ongoing.

**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.

**Status:** Ongoing.

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

**Status:** Ongoing.

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

**Status:** 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.

**Status:** No action taken in 2007.

**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.

**Status:** Ongoing.

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

**Status:** No action taken in 2007.

**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 Resource Area.

**Status:** Ongoing process with all partners in West Tavaputs and other UPCD projects Scofield areas.

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

**Status:** On-going.

**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.

**Status:** UDWR has monitored vegetation in some (Nutter Ranch) areas of projects implemented in 2007.

**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 lek 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

**Status:** On-going.

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

**Status:** Ongoing.

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

**Status:** 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.

**Status:** No action taken in 2007.

**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.

**Status:** Ongoing.

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

**Status:** No action taken in 2007.

**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 Resource Area.

**Status:** No action taken in 2007.

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

**Status:** No action taken in 2007.

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

**Status:** No action taken in 2007.

**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.

**Status:** Emma Park landowner (Butchers) cleared brush in and around a historical leking area.

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

**Status:** On-going. On the Horn Mountain there are historical leks where leking does not occur anymore that need to be evaluated.

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

**Status:** No action taken in 2007.

**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 Resource Area.

**Status:** Ongoing.

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

**Status:** Ongoing.

- 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.

**Status:** Pending. The Community Based Conservation Program (CBCP) newsletter “The Communicator” is currently fulfilling this role.
  - 8.2. Action:** Through 2016, include information about CaCoARM activities in County Extension newsletter.

**Status:** Ongoing. Meetings are announced in the newsletter.
  - 8.3. Action:** Work with NRCS, UDWR and SCD to schedule spring field tour of habitat management projects on private lands.

**Status:** Ongoing. The UDWR holds 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.

**Status:** No action taken in 2007.
  
- 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.

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

**Status:** Ongoing.
  - 9.3. Action:** Cooperate with partners’ planning efforts to minimize impacts on sage-grouse and sage-grouse habitat.

**Status:** Ongoing. The BLM EIS for West Tavaputs identifies actions to minimize energy development activities on sage-grouse. The LWG has provided input into the process..
  
- 10. Strategy:** Through 2016, increase population and habitat monitoring efforts for sage-grouse in the Resource 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.”

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

**Status:** UDWR biologists surveyed Ford Ridge and the West Tavaputs Wildcat and Horn Mtn. 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.

**Status:** Volunteers from the public to search for leks in Ford Ridge and the West Tavaputs.
  - 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.

**Status:** Volunteers from the public to search for leks in Ford Ridge and the West Tavaputs

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

**Status:** On-going. LWG members continue to monitor for dead birds. The UDWR will test birds encountered. No action taken in 2007 because no dead birds were found.

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

**Status:** No action taken in 2007.

**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.

**Status:** Quest Star pipe line was reseeded West Tavaputs. Emma Park roads were reseeded in and around Jensen's Simmons, and Critchlow property. Reclamation and reseeded Emma Park Soldier Creek side.

**11.2. Action:** Avoid placement of new roads and utilities near (0.25 miles Connelly et al.) lek sites (specific distances should be site specific).

**Status:** No new well sites were placed in 2007. This will be an on-going process.

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

**Status:** No perch deterrents were placed in 2007. The decision to use perch deterrents will be made pending review of on-going research in San Juan County.

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

**Status:** No tanks were installed in 2007.

**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.

**Status:** Ongoing. CaCoARM members participate on planning boards in Carbon and Emery County.

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

**Status:** Ongoing. CaCoARM members work for various planning departments within the county and brief them on sage-grouse and CaCoARM activities and concerns.

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

**Status:** Ongoing. CaCoARM members work for various planning departments within the county and brief them regarding sage-grouse and CaCoARM activities 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.

**Status:** Ongoing. CaCoARM members work for various planning departments within the county and brief them regarding sage-grouse and CaCoARM activities 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.

**Status:** On-going. See Strategy 12.

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

**Status:** Ongoing 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.

**Status:** Ongoing process with all partners.

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

**Status:** Ongoing 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.

**Status:** Ongoing 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.

**Status:** On-going. For example UDWR and USFS reseed P/J push on Wildcat bench,

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

**Status:** See Action 15.1

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

**Status:** BLM treated 10 acres in 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.

**Status:** Ongoing 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.

**Status:** No action taken in 2007

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

**Status:** No action taken in 2007.

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

**Status:** No action taken in 2007.

**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.

**Status:** No action taken in 2007.

- 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.  
**Status:** No action taken in 2007.
- 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.  
**Status:** USDA Wildlife Services conducts predator control in areas determined by the UDWR.
- 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.  
**Status:** On-going.
- 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.  
**Status:** No action taken in 2007.
- 17.5. Action:** Remove trees, remove/modify raptor perches, and maintain quality sagebrush habitat where predation concerns on sage-grouse have been identified.  
**Status:** No action taken in 2007.
- 17.6. Action:** Begin site-specific predation management considering all predator species (especially common ravens and red fox) where necessary and appropriate.  
**Status:** USDA Wildlife Services has implemented raven work in Emma Park. Predator control actions are coordinated with the UDWR.
- 17.7. Action:** Work with partners to identify additional sources of funding to continue current predator removal efforts.  
**Status:** No action taken in 2007.
- 18. Strategy** By 2011, make an assessment of pinyon/juniper stands in key sage-grouse habitat throughout the resource area.
- 18.1 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).  
**Status:** CaCoARM partners have made treatment plans and made assessments (lop and scatter, hand thinning) in West Tavaputs and Gordon Creek. These projects will be proposed and entered into the Utah Partners for Conservation and Development (UPCD) database.
- 19. Strategy:** By 2011, make an assessment of non-desirable vegetative species in sage-grouse habitats.
- 19.1 Action** Review and monitor all vegetative sampling data collected by all partners and monitor as needed.  
**Status:** Skyline (Cooperative Weed Management Association) CWMA surveyed musk thistle and hounds tongue in the Emma Park area to determine encroachment.
- 19.2 Action** Avoid using fire in sage-grouse habitats prone to invasion by cheatgrass or other invasive weed species.  
**Status:** No fires were used as treatments in areas prone to invasive species.
- 19.3 Action** Evaluate all wildfires and prescribed burns and reseed with species that are

adapted to the site and/or competitive with non-desirable plants.

**Status:** BLM evaluated subscribed fires specifically the Mathis Fire (wild fire) reseeded and re-seeding on private ground. All disturbed areas were reseeded.

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

**20.1 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.

**Status:** No action taken in 2007.

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

**Status:** Suffco and USFS are developing water in the Wildcat area.

**20.3. 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 Resource Area.

**Status:** No action taken in 2007.

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

**Status:** Suffco and USFS are developing water in the Wildcat area.

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

**Status:** No action taken in 2007.

**20.6. 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.

**Status:** No action taken in 2007.

**21. 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.

**21.1. 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.

**Status:** Ongoing process with all partners.

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

**Status:** Ongoing process with all partners.

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

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

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

**Status:** Ongoing.

**21.5. 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.

**Status:** Ongoing process with all partners.

**21.6. Action:** Identify research needs to address sagebrush treatments at 'lower' elevations where the majority of the nesting/brood rearing activity occurs.

**Status:** No action taken in 2007.

**21.7. 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 Resource Area.

**Status:** Ongoing process with all partners in West Tavaputs and other UPCD projects Scofield areas.

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

**Status:** Ongoing process with all partners.

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

**Status:** UDWR has monitored vegetation in some (Nutter Ranch) areas of projects implemented in 2007.

**22. 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 lek areas and habitat.

**22.1. 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

**Status:** Ongoing process with all partners.

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

**Status:** Ongoing process with all partners.

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

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

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

**Status:** Pending.

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

**Status:** On going process with all partners.

**22.6. Action:** Identify research needs to address sagebrush treatments at 'lower' elevations where the majority of the lek activity occurs.

**Status:** No action taken in 2007.

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

**Status:** No action taken in 2007.

**22.8. Action:** Work with agency partners to develop projects that would increase lek habitat quality in the Resource Area.

**Status:** No action taken in 2007.

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

**Status:** No action taken in 2007.

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

- 23.1. Action:** Open lek areas that have been invaded by sagebrush and other shrubs.  
**Status:** Emma Park landowner (Butchers) cleared brush in and around a historical leking area.
- 23.2. Action:** Map and inventory leks with potential for restoration.  
**Status:** On the Horn Mtn. there are historical leks where leking does not occur anymore that need to be evaluated.
- 23.3. Action:** Maintain and enhance desired conditions for leks.  
**Status:** No action taken in 2007.
- 24. Strategy** Increase cooperation and coordination between CaCoARM and public and private partners.
- 24.1. Action:** Work with the NRCS to review and potentially endorse NRCS WHIP and EQIP projects that would benefit sage-grouse in the Resource Area.  
**Status:** Ongoing process with all partners.
- 24.2. Action:** Continue to work with and identify key landowners within the Resource Area that have sage-grouse or sage-grouse habitat.  
**Status:** Ongoing process with all partners.
- 25. Strategy:** Increase informational and educational opportunities with local community and CaCoARM partners.
- 25.1. Action:** By 2008, develop informational handouts about sage-grouse ecology and CaCoARM activities.  
**Status:** Community Based Conservation Program (CBCP) newsletter.
- 25.2. Action:** Through 2016, include information about CaCoARM activities in County Extension newsletter.  
**Status:** No action taken in 2007.
- 25.3. Action:** Work with NRCS, UDWR and SCD to schedule spring field tour of habitat management projects on private lands.  
**Status:** UDWR holds a spring lek viewing opportunities on the Emma Park Road.
- 25.4. Action:** Coordinate workshops for private partners to share information about habitat enhancement, funding opportunities, and other relevant topics to be identified as needed.  
**Status:** No action taken in 2007.
- 26. Strategy:** Through 2011, work with industries involved in natural resource development within important sage-grouse use areas to minimize impacts.
- 26.1. Action:** Participate in county planning efforts for natural resource exploration and development to ensure that impacts to biodiversity are minimized.  
**Status:** Ongoing process with all partners.
- 26.2. Action:** Evaluate the interest and possibly develop a demonstration garden for the common vegetative species used in restoration.  
**Status:** Ongoing process with all partners.
- 26.3. Action:** Cooperate with partners' planning efforts to minimize impacts on sage-grouse and sage-grouse habitat.  
**Status:** Ongoing process with all partners. BLM EIS for West Tavaputs
- 27. Strategy:** Through 2016, increase population and habitat monitoring efforts for sage-grouse in the Resource Area.
- 27.1. Action:** Encourage public and private partners to use techniques from Connelly et al.

(2003a) “Monitoring of Greater Sage-grouse Habitats and Populations.”

**Status:** On going process with all partners

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

**Status:** UDWR surveyed Ford Ridge and the West Tavaputs Wildcat and Horn Mtn. areas.

**27.3. 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.

**Status:** Volunteers from the public to search for leks in Ford Ridge and the West Tavaputs.

**27.4. 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.

**Status:** Volunteers from the public to search for leks in Ford Ridge and the West Tavaputs

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

**Status:** No action taken in 2007 because no dead birds were found.

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

**Status:** No action taken in 2007.

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

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

**Status:** Quest Star pipe line was reseeded West Tavaputs. Emma Park roads were reseeded in and around Jensen’s Simmons, and Critchlow property. Reclamation and reseeded Emma Park Soldier creek side.

**28.2. Action:** Avoid placement of new roads and utilities near (0.25 miles Connelly et al.) lek sites (specific distances should be site specific).

**Status:** No new well sites in 2007 ongoing process.

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

**Status:** No perch deterrents were installed in 2007.

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

**Status:** No tanks installed in 2007

**29. 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.

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

**Status:** Ongoing

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

**Status:** Ongoing.

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

**Status:** Ongoing

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

**Status:** Ongoing

- 30. 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.
- 30.1. Action:** Participate in county planning efforts for oil and gas exploration and development to ensure that sage-grouse impacts are minimized.  
**Status:** Ongoing
- 30.2. Action:** Influence BLM/USFS/SITLA/private enterprise planning efforts to minimize impacts to sage-grouse.  
**Status:** Ongoing process with all partners. BLM EIS for West Tavaputs
- 31. 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.
- 31.1. Action:** Coordinate grazing management with livestock operators to reduce negative resource and timing conflicts on leks and prime nesting habitat when possible.  
**Status:** Ongoing process with all partners.
- 31.2. Action:** Apply grazing management practices to achieve desired conditions including maintenance of residual herbaceous vegetation appropriate for the site.  
**Status:** Ongoing process with all partners.
- 31.3. 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.  
**Status:** Ongoing process with all partners.
- 32. Strategy:** Maintain and, where possible, improve the perennial forb component in the understory.
- 32.1. Action:** Reclaim and/or reseed areas disturbed by treatments using seed mixtures high in native bunch grasses and desirable forbs.  
**Status:** P/J push reseeded Wildcat bench
- 32.2. Action:** Restore understory vegetation in areas lacking desirable quality and quantity of herbaceous vegetation where economically feasible.  
**Status:** P/J push reseeded Wildcat bench
- 32.3. Action:** Conduct vegetation treatments to improve forb diversity, (e.g., harrowing, aerating, chaining) and reclaim or reseed disturbed area, where appropriate.  
**Status:** BLM treated 10 acres in West Tavaputs by Bill Barrett Corp. (hand removal of encroaching p/j) as part of a mitigation requirement by BLM.
- 32.4. Action:** Develop management techniques to increase forb diversity and density in sagebrush steppe, within limits of ecological sites and annual variations.  
**Status:** Ongoing with all partners.
- 33. Strategy:** Minimize the amount of quality sage-grouse habitat eliminated by residential and commercial land development consistent with private property rights.
- 33.1. Action:** Participate with County land-use decision makers in identifying key sage-grouse habitats.  
**Status:** Ongoing
- 33.2. Action:** Maintain sagebrush environments of sufficient size and shape around developments in sage-grouse habitat.

**Status:** Ongoing

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

**Status:** Ongoing

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

**Status:** Ongoing

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

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

**Status:** No action taken in 2007.

**34.2. 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.

**Status:** Wildlife Services Actions within the Resource area (Brad Crompton to summarize 07/08).

**34.3. 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.

**Status:** Ongoing support by partners.

**34.4. 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.

**Status:** No action taken in 2007.

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

**Status:** No action taken in 2007.

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

**Status:** Wildlife Services Actions within the Resource area (Brad Crompton to summarize 07/08). Some raven work in Emma Park.

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

**Status:** No action taken in 2007.

#### **e. Habitat Improvements and Completed Conservation Actions**

The UDWR, in conjunction with UPCD, has implemented several habitat improvement projects in the Resource Area targeted at restoring or enhancing sage-grouse habitat. Prior to Plan completion, in 2004, approximately 1200 acres of habitat in the Resource Area were treated and 3760 acres were treated in 2005. Treatments were designed to enhance native grass/forb cover in the understory or restoring areas where big sagebrush had died off because of an extended drought. Additional habitat improvement projects were planned in 2006-2007. The UDWR anticipated treating 6532 acres in the Resource Area in 2006. The acreage and general location of habitat improvement projects completed by the end of 2007 in the CoCaARM can be found in Table 10. The location of habitat improvement projects completed in the CoCaARM LWG area is provided in Figure 7.

Table 10. Habitat improvement projects completed to mitigate sage-grouse threats identified by the Castle Country Adaptive Resources Management Sage-grouse Local Working Group 2005-2007.

<b>ID</b>	<b>Region</b>	<b>FY start</b>	<b>FY complete</b>	<b>Project Title</b>	<b>Treatment type</b>	<b>Threat code</b>	<b>Acres</b>
513	SER	2006	2006	Gordon Creek Roller Chopping	mechanically treat encroaching PY	21	199
229	SER	2004	2005	Price West Benches Porphyry Bench	re-seed and aerate dead sagebrush	5 ,18	1096
228	SER	2004	2005	Price West Benches Consumers/airport	re-seed and aerate dead sagebrush	2,5,18	2657
17	SER	2005	2006	Lower Fish Creek sagr habitat improvement	prescribed burn dixie harrow	1,2,9,15,18	417
762	SER	2007		Cedar Bench P/J Pushover Maintenance	apply velpar to individual trees	21	537

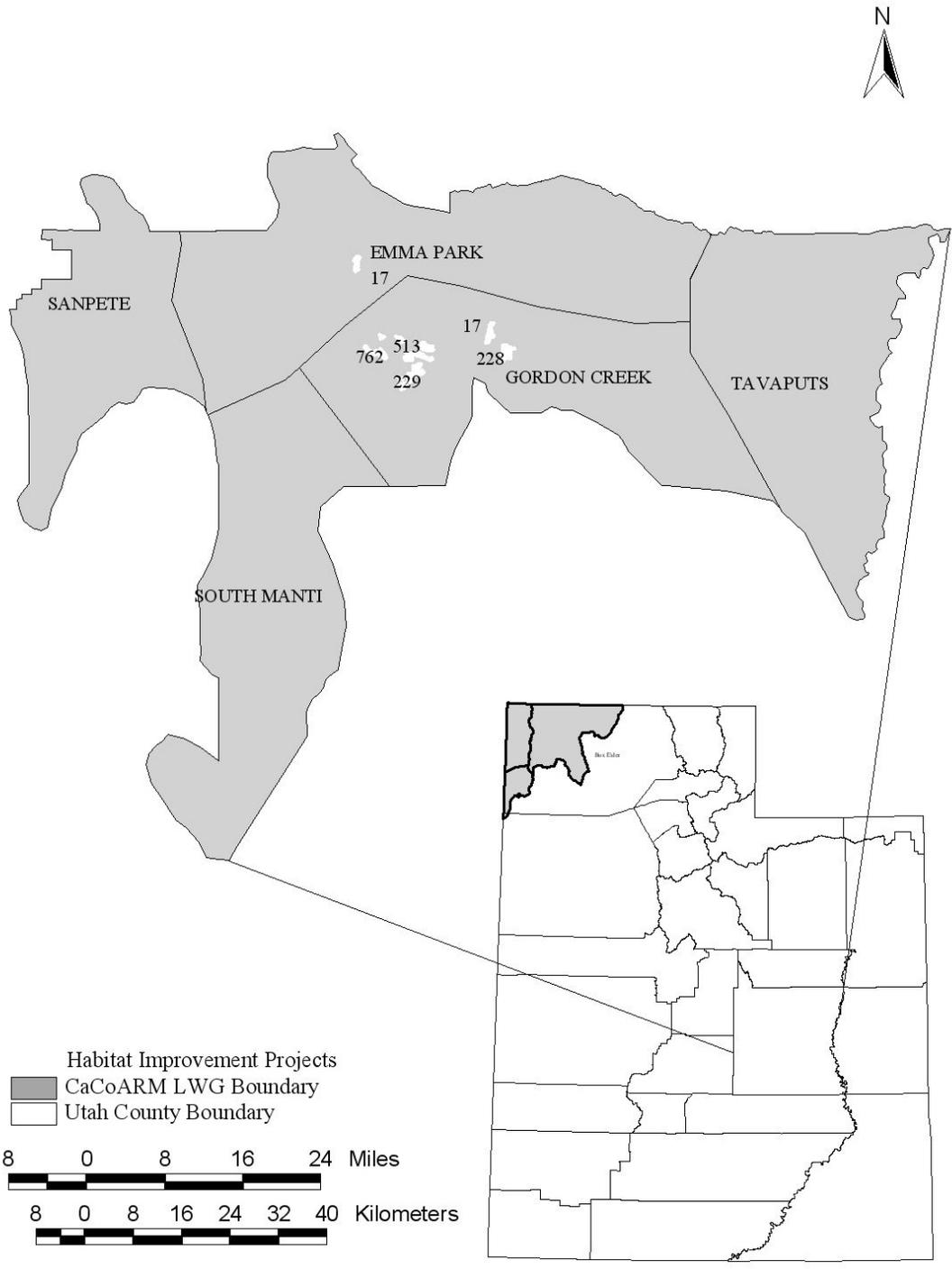


Figure 7. Location of habitat improvement projects completed to mitigate sage-grouse threats identified by the Castle Country Adaptive Resources Management Sage-grouse Local Working Group, 2004-2007.