

**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.

Parker Mountain Adaptive Resource Management (PARM) Local Sage-grouse Working Group

The Parker Mountain Adaptive Resource Management Plan (PARM) Sage-grouse Local Working Group was organized in 1997 by Dr. Terry Messmer. PARM is currently facilitated by Mr. Todd Black. The PARM is comprised of state and federal agency personnel, representatives from local government, non-profit organizations, academic institutions, private industry, and private individuals. At that time the group met quarterly to discuss the status of greater sage-grouse on Parker Mountain. The first decision the group made was to radio-collar hens to determine nesting ecology, habitat use, and reproduction. After a 2 year study, the group learned that nesting and brood success was low and this was probably related to poor nesting and brooding rearing cover. The PARM obtained a NRCS Wildlife Habitat Incentive Program cost-share challenge grant. PARM used these funds to implement and evaluate 2 mechanical and one chemical methods to reduce sagebrush canopy cover as a means of increasing grass and forb cover. The success of these management experiments set the stage for PARM to design and implement other conservation actions. A history of PARM actions, annual reports, meeting minutes, and their conservation plan can be found on-line at <http://utahcbcp.org/files/uploads/parm/PARMfnl-10-06-web.pdf>

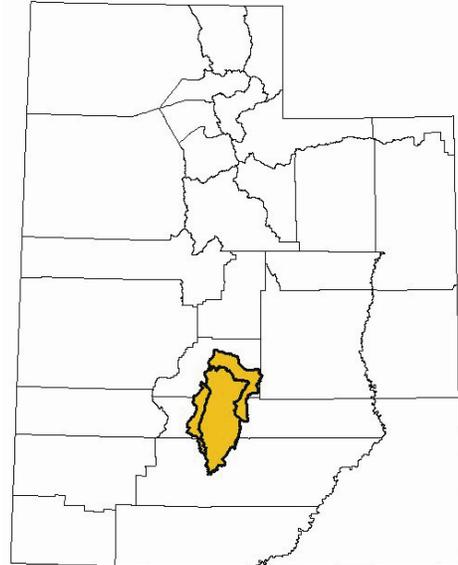


Figure 6. The Parker Mountain Adaptive Resource Management (PARM) Sage-grouse Local Working Group Conservation Area consists of 1,789,644 acres located in south-central Utah.

In 2008, the group met formally three times to discuss strategies and actions and receive research updates. Additionally, one field tours were held to view and discuss research efforts and implanted actions and strategies. The information below summarizes efforts made by individual and partners to address threats and strategic actions for the Parker Mountain Greater Sage-grouse Local Conservation Plan, October 2006. This adaptive plan is in effect until the year 2016. PARM partners not only reported on specific actions completed or addressed in 2006/2007 but also identified steps to be taken to implement addition 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 have been provide under an action time it means that no action(s) were reported in 2008 towards its completion. For the complete list of threats identified by the PARM group, see page 64 of the conservation plan located on line at <http://utahcbcp.org/files/uploads/parm/PARMfnl-10-06-web.pdf>

Conservation Strategies and Actions: 2008 Accomplishments

1. Strategy: By 2011, assess pinyon-juniper stands in the PARM Resource Area.

1.1. Action: As a PARM group revisit and make recommendations to treat as needed pinyon/juniper sites (North Mytoge Mountain and North of the Fish Lake turn off).

Under the direction of PARM members the Bureau of Land Management (BLM) used Dixie harrow to treat 5000 acres (7 mile allotment) north and east of North Mytoge Mountain. Additionally the Praetor Slope (south of Koosharem Reservoir) area was identified and small P/J trees were identified and treated using hand thinning by Dedicated Hunter Volunteers and supervised by Utah Division of Wildlife Resources (UDWR) habitat managers. In 2008 the SITLA block around Sand Ledges about 2000 acres was assessed and decisions made to treat P/J in these areas to create and enhance potential sage-grouse habitat. USFS personel assessed areas in and around Cedar Creek approximately 2000 acres in the Fish Lake sub-unit. Preliminary work is being done Solomon Basin (2000 acres) and Government Creek.

2. Strategy: By 2011, make an assessment of non-desirable/invasive vegetation in sage-grouse habitats.

2.1. Action: Review and monitor all vegetative sampling by all partners and more specifically with UDWR range trend data.

In 2006/2007 UDWR in conjunction with Utah State University Extension (USU/EXT) placed vegetation study plots in Terza Flats and Tommy Hollow to assess the effectiveness of re-seeding these areas. In 2008 these plots were assessed and read again.

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

No prescribed or control burns in the PARM area in 2008

2.3. Action: Evaluate all wildfires and prescribed burns and reseed with forage kochia or other fire-resistant species where appropriate to prevent establishment of cheatgrass.

No prescribed or control burns in the PARM area in 2008

2.4. Action: Identify areas where undesirable vegetation is encroaching on sage-grouse habitat.

PARM members have identified halogeton presence along county maintained roads at lower elevations as a major threat and concern. Additional efforts have identified cheatgrass in localized camp sites and disturbed areas. PARM partners will identify specific areas during the next 3 years. An area north of Koosharem Cemetery on BLM lands was identified as an area of concern to watch over the next few years.

2.5. Action: Treat areas where undesirable vegetation has become, or is at risk of becoming, a factor in sage-grouse habitat loss or fragmentation.

See action 2.1. PARM partners are working towards this action through study with PARM members with study plots in Terza Flats and Tommy Hollow. No Action taken in 2008

2.6. Action: Work with existing weed management programs to control noxious weeds in the Resource Area.

PARM members have identified halogeton presence along county maintained roads at lower elevations as a major threat and concern. Additional efforts have identified cheatgrass in localized camp sites and disturbed areas. PARM partners will identify specific areas during the next 3 years. Additionally, PARM partners hand treated musk thistle on Parker Knoll. BLM treated Russian knapweed the main Black Point road. Monitoring shows no return of the species in the area. Wayne County weed crew is spraying black henbane on BLM lands on smooth Knoll allotment North Timbered Knoll. In 2008 UDWR and County weed crew sprayed halogeton (2 times) and seeded the area along the long hollow road (east of the county landfill). USFS sprays for thistle and other noxious weeds on USFS properties on the south end of the Parker Subunit.

2.7. Action: Identify large areas of introduced plant species that are not meeting sage-grouse habitat needs and reseed with native species where appropriate.

In 2006/2007 UDWR in conjunction with Utah State University Extension (USU/EXT) placed vegetation study plots in Terza Flats and Tommy Hollow to assess the effectiveness of re-seeding these areas. In 2008 these plots were assessed and read again.

2.8. Action: Identify areas where pinyon or juniper trees are encroaching on good quality sagebrush habitat and treat as needed.

In 2008 the BLM Dixie Harrowed ~3000 acres in and around the North Narrows area removing some P/J in the upper end of the treatment area (North Narrows UPCD project). BLM is also doing contract work of hand thinning of P/J in this same area—on going work.

2.9. Action: Manage fire, transportation, and vegetation treatments to minimize undesirable vegetation where possible.

No prescribed or wildfires in the PARM area in 2008.

3. Strategy: By 2011, complete an assessment on the condition of available water sources and identify potential new water improvement/development projects.

3.1. Action: Manage vegetation and artificial structures to increase water-holding capabilities of likely habitat.

PARM identified bush spring pond as an area to be improved. Parker Mountain Grazers built one new pond south of Jakes Knoll, repaired breach on Ottys Pond (Ottos Reservoir sage-grouse lekking area) on the Cedar Peak allotment and cleaned out sediments in dog lake pond on the dog lake allotment (USFS lands). In 2008 Parker Grazers cleaned and re-clayed

existing ponds in 1 in the Parker Lake Allotment, 1 in the Buttes Allotment, and Flossy Lake Allotment. New ponds were built: South Jakes Knoll pond and the Oscar Pond north of Jakes Knoll.

3.4. Action: Locate/identify projects to minimize potential loss of water table associated with wet meadows.

3.5. Action: Identify key elements of various water projects by developing partners to work cooperatively to maintain existing water sources/wet meadows.

In 2008, PARM partners discussed the need to maintain existing wet meadow enclosures on the USFS properties—specifically Antelope Springs and Big Lake.

4. Strategy: By 2011, identify key public, SITLA, and private lands in the Resource Area (specific locations to be selected) that are managed so as to conserve/improve sage-grouse nesting/brooding habitat.

4.1. Action: Encourage use of PARM defined conditions for state and federal lands to influence management actions to move toward improved conditions for sage-grouse.

In order to achieve this action PARM partners determined that we need to have USU graduate work summarized to identify acres treated, treatment sites, and evaluation of these areas. It would be ideal to have document/guidelines that indicate this is what we have done and what we know and management recommendations here. Also look at NRCS WHIP plan. USU will work with graduate students to publish an extension bulletin in 2009 on this work.

4.2. Action: Support partner efforts that manage sage-grouse nesting habitat on public, SITLA, and private lands.

On going, PARM partners support and encourage efforts to improve grouse nesting habitat.

4.3. Action: Use available grouse and brood telemetry data to identify key nesting habitat areas within the Parker Mountain subunit.

In order to achieve this action PARM partners determined that USU graduate work needs to be summarized to identify acres treated, treatment sites, and evaluation of these areas. Use existing GIS data and nesting/brood rearing locations to address these issues.

4.4. Action: Pursue habitat improvement projects (to meet PARM defined conditions) on SITLA lands in areas used by sage-grouse for nesting habitat.

In 2008 SITLA treated 60 acres with Spike on the South Buttes enclosures. Additionally 50 acres were treated in and around the South Buttes area using sheep to control rabbit brush and improve nesting conditions.

4.5. Action: Identify research needs to address sagebrush treatments at 'lower' elevations where the majority of these nesting activities occur.

In 2006/2007 UDWR in conjunction with Utah State University Extension (USU/EXT) placed vegetation study plots in Terza Flats and Tommy Hollow to assess the effectiveness of re-seeding these areas. These sites were monitored and read again in 2008. While the blue gramma grass showed a good response, no significant changes were noticed with the seeded or non-seeded areas.

4.6. Action: Use mechanical or chemical treatments to reclaim and/or reseed areas (when necessary) using suitable seed mixtures.

BLM used Dixie harrow to treat 5000 acres (7 mile allotment) north and east of North Mytoge Mountain and additional acreage on the Praetor Slope (south of Koosharem Reservoir). BLM reseeded and Dixie Harrow (north of Koosharem town and North of Greenwich to Burrville). USFS Pollywog Lake treated 80 acres in '07 and will do more in '08. Brush was treated by mowing with and additional sites Fish Lake Basin of approximately 400 acres. Additional work was done on this area in 2008 and is about $\frac{3}{4}$ completed and will continue again in 2009. Sheep Valley ~350 acres was treated (mower) as well and was completed.

4.7. Action: Where economically feasible, restore understory vegetation in areas lacking desirable quality and quantity of herbaceous vegetation.

BLM used Dixie harrow to treat 5000 acres (7 mile allotment) north and east of North Mytoge Mountain and additional acreage on the Praetor Slope (south of Koosharem Reservoir). BLM reseeded and Dixie Harrow (north of Koosharem town and North of Greenwich to Burrville).

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

BLM used Dixie harrow to treat 5000 acres (7 mile allotment) north and east of North Mytoge Mountain and additional acreage on the Praetor Slope (south of Koosharem Reservoir). BLM reseeded and Dixie Harrow (north of Koosharem town and North of Greenwich to Burrville). USFS Pollywog Lake treated 80 acres in 07 and will do more in '08. Brush was treated by mowing with and additional sites Fish Lake Basin of approximately 400 acres.

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

In order to achieve this action PARM partners determined that USU graduate work needs to be summarized to identify acres treated, treatment sites, and evaluation of these areas. Use existing GIS data and nesting/brood rearing locations to address these issues. In order to achieve this action PARM partners determined that USU graduate work needs to be

summarized to identify acres treated, treatment sites, and evaluation of these areas. Use existing GIS data and nesting/brood rearing locations to address these issues.

5. Strategy: By 2011, identify key public, SITLA, and private lands in the Resource Area (specific locations to be selected) that are managed so as to conserve/improve sage-grouse lekking habitat.

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

PARM partners identified areas in and around black point lek complex that need to address increasing shrub numbers and density. USU sent DWR (Jason Robinson) a data sheet designed to monitor the condition of habitat in and around leks—including photos.

5.2. Action: Encourage use of PARM defined conditions for state and federal lands to influence management actions to move toward improved conditions for sage-grouse lekking habitat.

In order to achieve this action PARM partners determined that USU graduate work needs to be summarized to identify acres treated, treatment sites, and evaluation of these areas. Use existing GIS data and nesting/brood rearing locations to address these issues. USU sent DWR (Jason Robinson) a data sheet designed to monitor the condition of habitat in and around leks—including photos.

5.3. Action: Support partner efforts that manage sage-grouse lekking habitat on key public, SITLA, and private lands

PARM partners are encouraged the use supplement to increase winter grazing efforts by sheep in the Black point lek complex. PARM partners identified 3 specific sites on Black Point that needs to have some brush reduction work done on the lekking sites. USU Extension will follow up with BLM on this.

5.4. Action: Pursue habitat improvement projects (to meet PARM defined conditions) on SITLA lands in areas used by sage-grouse for lekking habitat.

SITLA put sage-grouse discouragers on the fence in and around Morrell pond lek where sage-grouse were colliding/striking into this fence. PARM partners identified 3 specific sites on Black Point that needs to have some brush reduction work completed to open lekking sites.

6. Strategy: Through 2011, avoid natural resource development (oil/gas exploration and development) within important sage-grouse use areas. If development does occur, work with private industry to minimize impacts and follow recommended actions below.

No action was taken on **action items 6.1—6.21** because no natural resource development took place within the resource area during 2008.

7. Strategy: Through 2011, identify high use areas available to sage-grouse during the late summer and early fall brood rearing time period.

7.1. Action: Use available grouse and brood telemetry data and remote sensing data to identify key brood rearing habitat areas within the Parker Mountain subunit.

In order to achieve this action PARM partners determined that USU graduate work needs to be summarized to identify acres treated, treatment sites, and evaluation of these areas. Use existing GIS data and nesting/brood rearing locations to address these issues.

8. Strategy: Through 2016, identify measures to manage key wintering areas available for sage-grouse.

8.1. Action: Use available winter grouse telemetry data and local knowledge to map these areas.

In order to achieve this action PARM partners determined that USU graduate work needs to be summarized to identify acres treated, treatment sites, and evaluation of these areas. Use existing GIS data and nesting/brood rearing locations to address these issues.

8.2. Action: Work with public and private partners to identify winter locations.

PARM partners directed UWDR/USU EXT to get more wintering locations on birds and work to have a mapping day where PARMs expert knowledge would be used to identify areas.

9. Strategy: By 2009, maintain or increase populations of sage-grouse in the Conservation Area.

9.1. Action: Support and encourage the prevention of illegal harvest of sage-grouse on public lands throughout the year.

PARM partners will work with UDWR to develop and implemented an action plan to address this issue.

9.2. Action: Support continued sport hunting within current UDWR models.

PARM partners supported UDWR recommendations for 2008 sage-grouse permit allocation numbers.

9.4. Action: Continue with annual PARM group counting/classification efforts with sage-grouse lek surveys.

In conjunction with UDWR, PARM partners conducted their annual 1 day lek counting efforts on Parker Mountain in April 2008. These efforts will continue in 2009.

9.5 Action: Work with other Local Working Groups and the State UDWR office to develop a translocation effort state wide to look increasing genetic heterogeneity and expanding existing population distribution. Thirty sage-grouse were captured from Parker Mountain and translocated to Anthro Mountain to augment the population in this area. This work is being evaluated by DWR and USU.

10. Strategy: Through 2009, search additional areas (TBD by PARM) for new/previously undiscovered sage-grouse lekking sites

10.2. Action: Coordinate with UDWR, public and private partners to conduct terrestrial lek searches in areas (Bear Valley, north of Koosharem Reservoir, north/Mytoge Mountain, Greenwich) suspected to be undiscovered lekking areas.

In 2008 PARM partners and volunteers searched areas in and around Koosharem and Rex's Reservoir. Additional areas were searched Mytoge Mountain and Greenwich.

10.3. Action: Continue with and expand annual PARM group counting/classification efforts to include the entire Resource Area.

In conjunction with UDWR, PARM partners conducted their annual 2 day lek counting efforts on Parker Mountain in April 2008. These efforts will continue in 2009. In conjunction with UDWR, PARM partners conducted their annual 2 day lek counting efforts on Parker Mountain in April 2008. These efforts will continue in 2009.

11. Strategy: Increase cooperation and coordination between PARM members and other public and private partners.

11.1. Action: Continue with quarterly PARM meetings.

Through quarterly meetings PARM partners did, and will continue to meet this action item.

11.2. Action: Annual review and assessment of PARM plan.

Through quarterly meetings PARM partners did, and will continue to meet this action item.

11.4. Action: Develop means to inform, involve, and educate the local communities as to the efforts of PARM and sage-grouse.

USU/EXT publishes quarterly newsletters highlight PARM activities. Additionally, the Utah Farm Bureau published an article of a recent PARM range tour in their 2008 newsletter.

12. Strategy: By 2016, work to decrease the populations of sage-grouse predators, especially in areas used for nesting and/or brood-rearing.

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

In 2008, USDA-WS did egg routes this spring as provided by PARM partners. USDA-WS put up 60 M44 guns in wintering sage-grouse areas.

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

Through quarterly meetings PARM partners did, and will continue to meet this action item.

13. Strategy: Provide an appropriate level and system for 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.

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

Research is continuing looking into to this with USU PhD candidate Mike Guttery and will continue through 2009.

13.3. 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.

Through quarterly meetings PARM partners did, and will continue to meet this action item.

14. Strategy: Minimize impacts of utilities lines in sage-grouse habitat.

Action 14.1—14.3. No action due to lack of development taking place within the resource area.

15. Strategy: Improve knowledge of disease in sage-grouse populations.

15.2. Action: Monitor radio-collared and other sage-grouse for West Nile Virus and other disease outbreaks.

Task was completed by USU graduate students and will continue in subsequent years. No disease birds were identified in 2008.

16. Strategy: By 2016 work to begin to improve understanding of the relationship between livestock grazing and sage-grouse in the Resource Area.

16.1. Action: Conduct study on the affects of different types of livestock use, time of use, and intensity of use on sage-grouse populations.

Research is continuing looking into to this with USU PhD candidate Mike Guttery. Results anticipated by July 2010. In 2008 new graduate student Gretchen Hochnedel started in the fall to continue looking at grazing research efforts.

Major Needs and Concerns

One of the most pressing research needs on Parker Mountain is to look at the effects of increased predation on this population. Intensive predation management that occurred in the area in the past (associated with the sheep industry) is being curtailed. Additionally, USDA-WS had been addressing raven populations for the past several years but may not continue at current levels. The big question that remains unanswered is: Can this population continue to increase without predation management?

Summary of Sage-grouse Conservation Threats

In 2006, PARM identified and ranked major threats to sage-grouse conservation in the conservation area (Table 5). This threat ranking is used by PRM to prioritize conservation actions. The PRM will review the threat ranking in 2009 to ensure immediacy.

Table 5. Relative importance/contribution of threats to sage-grouse populations in Parker Mountain Adaptive Resources Management (PARM) Sage-grouse Local Working Group Conservation Area. (L=low; M=medium; H=high; and VH=very high).

Threat	Aspects of Sage-grouse population in the PARM Resource Area						
	Reduced Population Size	Population Distribution	Reduced Lek Habitat Quality	Reduced Brood-rearing Habitat Quality	Reduced Winter Habitat Quality	Reduced Connectivity of Seasonal Habitat Types	Reduced Connectivity of Populations & Sub-populations
Powerlines, Fences, & Other Tall Structures	M	M	M	L	M	H	H
Natural resource exploration and development	H	H	M	H	H	VH	VH
Grazing practices the are detrimental to the habitat (domestic/wild)	H	H	L	H	H	M	M
Drought & Weather	H	H	L	H	M	M	M
Lack of proper range management	L	M	L	H	M	M	M
Hunting Pressure	L	L	L	L	L	L	L
Altered Fire Regimes	L	L	M	M	L	H	M
Livestock Grazing	L	L	L	H	L	L	L
Incompatible OHV Recreation	L	M	L	L	L	M	M
Invasive/Noxious Weeds	M	M	M	VH	H	M	L
Parasites & Disease	VH	VH	L	L	L	L	H
Extraordinary Predation	VH	H	L	L	L	L	M
Vegetation Management	H	M	H	H	H	H	M
Pinyon-Juniper Encroachment	M	M	M	M	M	M	M
Inability to maintain local control and input	H	H	H	H	H	H	H