

8. Strawberry Valley Adaptive Resource Management (SVARM) Sage-grouse Local Working Group

The Strawberry Valley Adaptive Resource Management Sage-grouse Local Working Group was organized in 2004 and is facilitated by Todd A. Black and Sarah G. Lupis. Ms. Lupis also served as the technical writer and compiler of the Plan itself. SVARM is comprised of state and federal agency personnel, representatives from local government, non-profit organizations, academic institutions, private industry, and private individuals. The agencies, organizations, and individuals who contributed to the Plan through their participation in SVARM are listed in the LWG Plan.

a. Local Legal Authority

The Wasatch County Council and the Duchesne County Commission 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 Wasatch and Duchesne 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 including the review and approval or denial of proposed activities and uses of land and natural resources (Wasatch County Commission 2005). The Wasatch County Code (Section 16.28.05) contains the following provisions related to wildlife:

Wildlife studies may be required in any large-scale development being planned within any foothill, canyon or rural area, prior to any development, to determine the presence of critical or important wildlife habitat. The foothills and canyon areas provide important wildlife habitat for a wide variety of animal and bird species. As a result of past development activities, many habitat areas have been impaired, altered, or fragmented. The following requirements have been developed to promote and preserve valuable wildlife habitats and to protect them from adverse effects and potentially irreversible impacts.

(1) Applicability.

- (a) The requirements of this chapter shall apply to large-scale (more than five (5) lots or units) developments being planned on property that contains wildlife habitats designated as Critical and High Value Use Areas. If information is not available, a wildlife study should be done to make this determination. The Planning Department may have this study reviewed by the Utah State Division of Wildlife Resources.
- (b) Maintain buffers between areas dominated by human activities and core areas of wildlife habitat.
- (c) Facilitate wildlife movement across areas dominated by human activities by maintaining connections between open space parcels on adjacent and near-by parcels, locating roads and recreational trails away from natural travel corridors used by wildlife such as riparian areas and prohibiting fencing types that inhibit the movement of wildlife species, except directly adjacent to the structures in order to protect adjacent landscaping features.

- (d) Mimic features of the local natural lands vegetation in developed areas by retaining pre-development, high quality habitat to the maximum extent feasible, including large patches of natural, vegetated areas that have not yet been fragmented by roads or residential development; minimizing the levels of disturbance to trees, the under story, and other structural landscape features during construction; designing lots in a fashion consistent with local natural habitats by landscaping with native vegetation; enhancing the habitat value of degraded pre-development landscapes.
- (e) Clustering of development to limit the areas to be disturbed.

The Duchesne County Code (Duchesne County 1997, amended 2005) contains the following provisions related to wildlife:

- a. Wildlife management agencies, public land management agencies and the County shall work together to manage big game populations.
- b. Wildlife agencies shall find effective ways to mitigate and compensate landowners for damage caused by big game animals on private property. Duchesne County recognizes that the Utah Division of Wildlife Resources is mandated by Utah Code to mitigate damage to agricultural crops, equipment and improvements and that a process to do so is in place.
- c. Wildlife populations shall not be increased nor shall new species be introduced until forage allocations have been provided and an impact analysis completed for the effects on other wildlife species and livestock.
- d. Reduction in forage allocation resulting from forage studies, drought, or other natural disasters will be shared proportionately by wildlife, livestock and other uses.
- e. Increases in forage allocation resulting from improved range conditions shall be shared proportionally by wildlife, livestock and other uses.
- f. Wildlife target levels and/or populations must not exceed the forage assigned in the RMP forage allocations.
- g. Predator and wildlife numbers must be controlled to protect livestock and other private property and to prevent population decline in other wildlife species.
- h. Resource-use and management decisions by federal land management and regulatory agencies should support state-sponsored initiatives or programs designed to stabilize wildlife populations that may be experiencing a scientifically proven decline in numbers.

b. Status of Local Population

Plan Area

The SVARM Resource Area is located in Wasatch and Duchesne counties in northeastern Utah. The Resource Area encompasses the greater Strawberry Valley area. It is bounded on the south by Reservation Ridge and the Wasatch-Utah county boundary, on the east by Indian Canyon, the north by Highway 35, and on the west by Strawberry Ridge (Figure 1). The Resource Area encompasses approximately 948,568 acres, managed primarily by

the U.S. Forest Service (USFS) and private land owners. The predominant land uses in the area include livestock grazing, recreation, mineral development, summer home development, fishing, hunting, and big game spring, summer, and winter range.

Landownership

Land in the Resource Area is owned and/or managed by several entities including private landowners, federal agencies, state agencies, and tribal governments (Table 31). The greatest percentage of land is owned or managed by the USFS and private landowners.

Table 31. Landownership in Utah’s Strawberry Valley Adaptive Resources Management Sage-grouse Local Working Group Resource Area, 2007.

Landowner*	Acres	Miles²	Percentage of SVARM Resource Area*
Bureau of Land Management	2,079	3.2	0.2
Indian Reservation	76,595	119.7	7.9
Private	370,224	587.5	38.2
State Institutional Trust Lands (SITLA)	29,735	46.5	3.1
U.S. Forest Service	360,382	563.1	37.2
State	108,950	170.2	11.2
*Total SVARM area (969,040 acres, 1,514 mi ²) includes land covered by water.			

d. Sage-grouse Population Status and Distribution

Greater sage-grouse were once abundant in the Resource Area. In the 1930s, flocks of 400 to 500 birds were flushed along Windy Ridge during early winter and the population was estimated to be between 3,000 and 4,000 birds (Griner 1939). The UDWR began monitoring sage-grouse populations by annually counting males on leks in 1970 (Figures 21-22). That year, a total of 127 male sage-grouse were counted on four leks. Under the assumption that 75% of all males in the population were observed and counted, and assuming a sex ratio of 1.67 females to each male, the estimated population size in spring of 1970 was about 440 birds. In 1999 the sage-grouse population in the Strawberry Valley was estimated to be 250-350 birds, representing a population decrease of 88-94% from population estimates of the 1930s. Several factors may have contributed to population declines between the 1930s, 1970s (when lek counting began) and 1999, including habitat degradation from livestock grazing, loss and degradation of habitat caused by aerial herbicide (2,4-D) spraying, and loss of mesic habitat from incised stream channels, channel diversions, and other factors that would have lowered the water table.

During 1981 and 1982, UDWR biologists studied sage-grouse populations in the Resource Area. In 1982, they estimated a summer population of no more than 350 birds. That year, there were two active leks in the area. The loss of two leks since 1970 is further indication of population declines. Aerial photographs of the area indicate that willow habitat along riparian corridors was eliminated between 1964 and 1971. The

UDWR reported that ‘past herbicidal treatments of large expanses of sagebrush have been extremely detrimental to nesting and brood habitat [of sage-grouse].’ They further concluded that ‘Loss of habitat is believed to be the major factor responsible for the reduction in the grouse population. Quality and quantity of sagebrush habitat has been reduced in the Resource Area in both Strawberry Valley and on winter ranges to the east. Habitat loss has resulted from cultivation, herbicidal spraying of sagebrush, road and housing construction, construction of campgrounds, reservoir enlargement, and associated increased human activities.’

Another study on sage-grouse in the Resource Area was conducted from 1986–1989 by USFS personnel. This study estimated the population to be between 160 and 185 birds and concluded that population declines were primarily due to loss of riparian habitat, herbicide treatments on sagebrush, and expansion of the reservoir. Expansion of the reservoir eliminated one of the two remaining leks.

Overgrazing by domestic livestock, often cited as a potential reason for sage-grouse population declines, does not appear to have contributed to more recent sage-grouse population declines in the Resource Area. Following transfer of approximately 57,000 acres of land to the Uinta National Forest in 1988, all livestock grazing was removed from the Strawberry Grazing Association lands. Intensive stream bank rehabilitation efforts were initiated along with restoration of riparian habitats.

Research conducted by BYU graduate students since 1998 has illustrated the importance of red fox predation on sage-grouse survival and raven predation on nest failure. This research has demonstrated how predation is likely the main factor responsible for low recruitment of juvenile birds.

Red fox predation was a major limiting factor in the recovery and expansion of the resident sage-grouse population in Strawberry Valley. Red fox were suspected to be the cause of extremely low (30% for females and 29.7% for males) adult survival and almost complete reproductive failure from 1998–1999. Red foxes became common in the Resource Area in the 1980s and are currently controlled by USDA WS. BYU’s research has demonstrated that habitat used by sage-grouse broods, meets requirements for productive sage-grouse brood rearing habitat.

Several species of potential nest predators are known to occur in the Resource Area including common raven, red fox, raccoons, skunks, and badgers. However; artificial nest studies conducted in 2003 demonstrated that raven populations were likely having a significant impact on sage-grouse nesting success. Ravens were implicated in the depredation of 97% of artificial nests in the study. Starting in 2003, USDA WS is responsible for controlling raven populations during sage-grouse nesting season through the use of poisoned egg baits.

In an effort to reverse the downward sage-grouse population trends in the Resource Area and to recover the population, 38, 34, and 70 female sage-grouse were translocated into the Strawberry Valley in 2003, 2004, and 2005 respectively. Sage grouse were trapped in

the spring on and around leks on Parker Mountain in south-central Utah, and from Diamond Mountain in northeastern Utah. Sage-grouse were transported overnight to the Strawberry Valley and were released by opening the boxes in live sagebrush at the edge of the only known active lek in the valley in order to provide them with visual breeding cues and the opportunity to intermix with actively strutting resident sage-grouse. To date, no mortalities have occurred during the capture, transport, or release phase of the translocations. Preliminary results show exceptional survival, nest initiation, nest success, and overall growth of the translocation population. Pre-translocation population estimates were between 100-120 birds, and the current population estimate, just three years later, is between 300–350 birds.

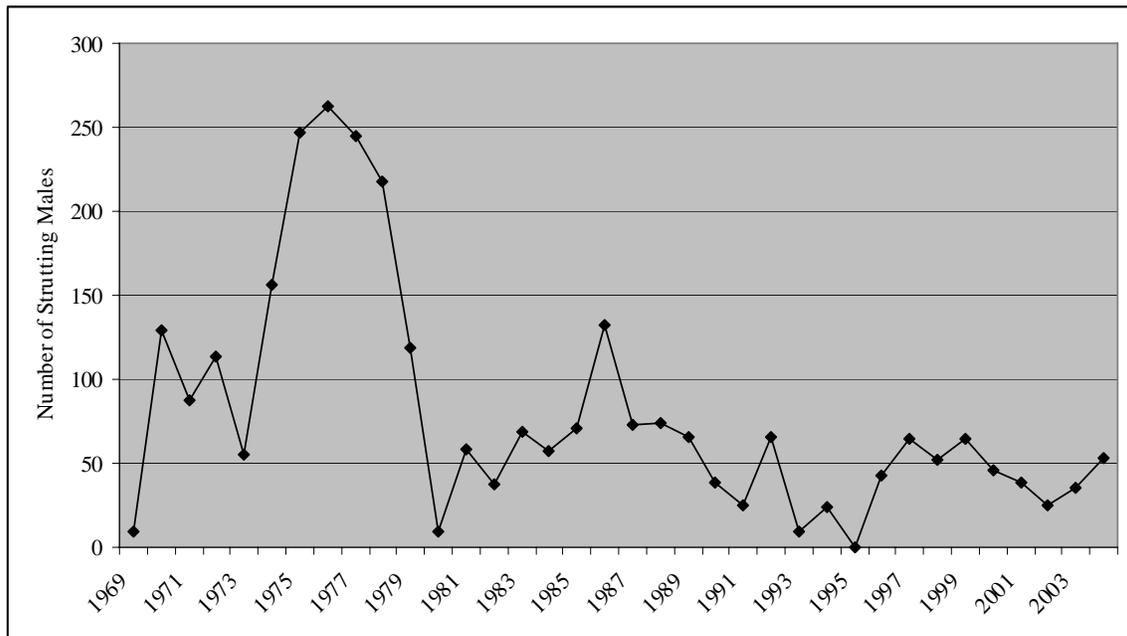


Figure 22. Maximum total number of males counted on leks in the Strawberry Valley Adaptive Resources Management Sage-grouse Local Working Group Resource Area, 1969-2005.

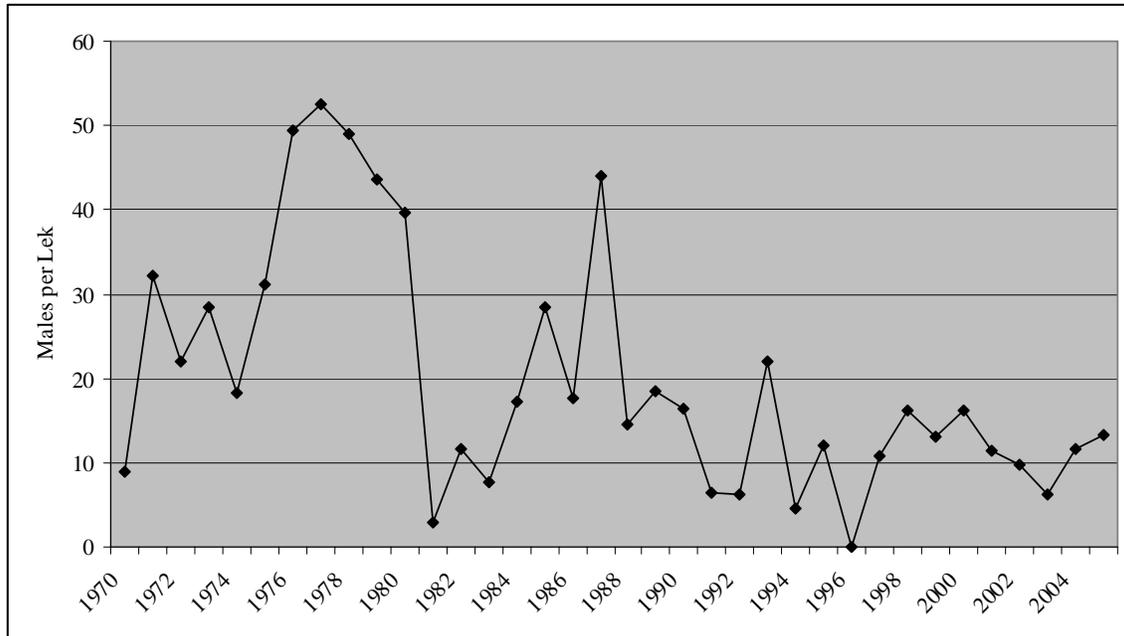


Figure 23. The number of males per lek in the Strawberry Valley Adaptive Resources Management Sage-grouse Local Working Group Resource Area, 1970-2005.

c. Key Ecological Indicators and Threats

SVARM 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 32). They then identified and ranked potential threats (Table 33).

Table 32. Greater sage-grouse key ecological aspects in Utah's Wasatch and Duchesne Counties, Strawberry Valley 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 Desired Rating
Strawberry Valley	Landscape Context	Connectivity of Populations & Sub-populations	Frequency of interactions with other populations	Population does not interact with any other population	<i>Population has some/low levels of interaction with other populations</i>	Population has several/moderate level of interactions with other populations	Regular mixing of individuals	Fair amount of interaction between populations. Most interaction facilitated by translocation efforts; natural interactions may be low as a function of low population density. Natural interactions limited to birds in Strawberry and Wildcat, Current Creek	Fair	Fair	5-Dec	16-Jul
Strawberry Valley	Condition	Brood-rearing Habitat	Sagebrush canopy cover; forb cover; vegetation composition; insect diversity and abundance; availability of mesic sites.	Low insect diversity and abundance; little to no (<5%) sagebrush canopy cover; monocultures ; no mesic sites available.			High forb cover and diversity; high insect abundance and diversity; 5-20% sagebrush canopy cover; mesic sites available.	Except for the lagging effects of drought conditions affecting the supply of water in late summer and fall, habitat conditions during this season are in good shape. Research conducted by BYU indicates that breeding habitat is abundant and in good condition	Good	Fair	5-Dec	16-Jul
Strawberry Valley	Condition	Late Summer/Fall Habitat Quality	Vegetative cover; availability of water; sagebrush canopy cover	Sparse vegetative cover in understory; little to no (<5%) sagebrush canopy cover; little to no water or mesic sites.	Fair...	Good...	Mesic sites readily available; diverse, high density understory vegetation; very good sagebrush canopy cover.	Except for the lagging effects of drought conditions affecting the supply of water in late summer and fall, habitat conditions during this season are in good shape. Research conducted by BYU indicates that late summer/fall habitat is abundant and in goo	Good	Good	5-Dec	16-Jul

Strawberry Valley	Condition	Lek habitat quality.	Open areas with sagebrush in close proximity	Too much and/or too little sagebrush surrounding lek site; sagebrush encroaching into lek area.	Fair...	Good...	Open area within 150 meters of sagebrush with 15-25% canopy cover and >25% grass cover.	Although only one active lek in Strawberry Valley, it appears to be in good condition. Little knowledge of lek quality in other parts of the Resource Area.	Good	Good	5-Dec	16-Jul
Strawberry Valley	Condition	Nesting Habitat Quality	Sagebrush height and canopy cover; understory cover.	Sagebrush <8-12" tall with <5% shrub cover; <5% residual or live grass cover in understory.	Sagebrush <8-12" tall 5-10% canopy cover, 5-10% residual or live grass cover in understory.	Sagebrush >20" tall with 10-15% sagebrush canopy cover; 10-15% residual of live grass cover in the understory.	Sagebrush >20" tall; approximately 25% sagebrush canopy cover; >15% residual or live grass in understory.	Research conducted by BYU indicates nesting habitat is in good condition. Need more information about nesting habitat in other parts of the Resource Area.	Good	Good	5-Dec	16-Jul
Strawberry Valley	Condition	Winter Habitat Quality	Sagebrush canopy cover and height; aspect	40-60% sagebrush canopy cover or <5%; north and east slopes; sagebrush always covered by snow.	5-10% or 25-40% sagebrush canopy cover; north and east slopes; sagebrush frequently covered by snow.	<i>10-20% sagebrush canopy cover; south and west slopes; sagebrush occasionally covered by snow.</i>	15-25% sagebrush canopy cover; south and west slopes; sagebrush rarely covered by snow.		Fair	Good	5-Dec	16-Jul
Strawberry Valley	Size	Population Distribution	Distribution of leks	1 lek per 10,000 acres & 100% of leks located in Strawberry Valley	<i>4/10,000 acres & 35% of leks located outside Strawberry Valley</i>	<i>8/10,000 acres & 45% of leks located outside Strawberry Valley</i>	10+/10,000 acres & 50% of leks located outside of Strawberry Valley	Although little information is available regarding sage-grouse in the Resource Area outside of Strawberry Valley itself, the group suspects that most, likely almost 100% of leks are located in Strawberry Valley itself.	Poor	Fair	5-Nov	10-Mar
Strawberry Valley	Size	Population Size	3-year running average maximum number of males counted on leks	<30	30-150	<i>150-300</i>	300+	2003-2005 average total males counted on all leks in the Resource Area = 80	Fair	Good	5-Nov	10-Mar

Strawberry Valley	Size	Population Size	Number of active leks	0-3	5-Apr	8-Jun	9+	In 2005 there were 4 active leks in the Resource Area	Fair	Good	5-Nov	10-Mar
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Table 33. Relative importance/contribution of threats to sage-grouse populations in Utah’s Wasatch and Duchesne Counties, Strawberry Valley Adaptive Resources Management 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	Aspects of Sage-grouse population in the SVARM Resource Area							
	Reduced Population Size	Population Distribution	Reduced Nesting Habitat Quality	Reduced Brood-rearing Habitat Quality	Reduced Summer/Fall Habitat Quality	Reduced Winter Habitat Quality	Reduced Connectivity of Seasonal Habitat Types	Reduced Connectivity of Populations & Sub-populations
Drought and Weather	M	M	H	H	H	L	M	L
Existing and New Fences	L	L	L	L	L	L	L	L
Home and Cabin Development	H	H	M	M	M	M	H	VH
Power lines & Other Tall Structures	M	H	H	H	H	M	H	H
Renewable & Non-renewable Energy Development	M	M	M	M	M	M	M	M
Roads	M	H	H	H	H	M	H	H
Historic Vegetation Treatments	M	H	M	M	M	H	M	L
Hunting	L	L	-	-	-	-	-	-
Fire	L	L	L	L	L	L	L	L
Livestock Grazing	L	L	L	L	L	L	L	L
OHV Recreation	M	M	H	H	H	VH	M	M
Invasive/Noxious Weeds	-	-	L	M	M	H	L	-
Parasites and Disease	M	M	-	-	-	-	-	-
Predation	VH	VH	H	H	M	M	M	M
Pinyon-Juniper Encroachment	M	M	M	L	L	M	M	M

d. Status of Conservation Strategies and Actions

SVARM participants identified several conservation strategies and actions that could be implemented to enhance greater sage-grouse populations. Here SVARM 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 SVARM conservation plan visit the following web site address:

<http://utahbcbp.org/files/uploads/SVARM/SVARMfnl-10-06-web.pdf>. The SVARM LWG will review and update their Plan in early 2009

1. **Strategy:** Provide a system and the reasonable extent of domestic livestock grazing that maintains and improves both the long-term stability of Greater Sage-Grouse populations, and habitats and the livestock industry in the Resource Area.
 - 1.1. **Action:** Coordinate grazing management with livestock operators to reduce resource and timing conflicts on leks and prime nesting habitat when possible.

Status: See action 1.3.
 - 1.2. **Action:** Apply grazing management practices to achieve desired conditions including maintenance of residual herbaceous vegetation appropriate for the site.

Status: See action 1.3.
 - 1.3. **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: The UDWR implemented a rest-rotation grazing system on the Wallsburg Wildlife Management Area (WMA) in 2005. The Wallsburg serves as a demonstration site for area livestock producers.

1.4. **Action:** Manage livestock to enhance riparian conditions.

Status: On-going. Indian Creek and Strawberry River have been/will be fenced to restrict livestock access to riparian areas. The Indian Creek project is complete. The Strawberry River project will begin in 2008. NEPA has been completed.

2. **Strategy:** Maintain and, where possible, improve grass/forb component in the understory in nesting and brood-rearing areas.

2.1. **Action:** Reclaim and/or reseed areas disturbed by treatments when necessary, using seed mixtures with appropriate grasses and desirable forbs.

Status: On-going. The Trout Creek project has been reseeded using a UDWR approved seed mixture.

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

Status: On-going. The Trout Creek and Big Hollow projects were implemented to enhance/restore the herbaceous understory in the areas.

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

Status: On-going. See action 2.3.

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

Status: On-going. The Trout Creek and Badger Hollow projects.

3. **Strategy:** Enhance existing riparian areas or create small wet areas to improve nesting and brood-rearing habitat.

3.1. **Action:** Identify opportunities or needs to create small wet areas, implement such projects where economically feasible.

Status: The UDWR has implemented several small projects on the Wildcat WMA. Similar work is being conducted on the Strawberry Reservoir project. In 2006, the UDWR cleaned out and rebuilt 7 livestock ponds in the sage-grouse brood rearing area on the Wildcat WMA so they would hold water and create more wet meadow habitat for brood rearing through out the summer. Five of the 7 ponds worked on were successful at storing water throughout the summer. One pond was very successful, dramatically improving the water availability and wet meadow area for over 5-10 acres. In 2006 similar efforts were completed on the Currant Creek WMA, Cut Off Road Unit (site of the old upper Saleratus lek near Fruitland). An additional 6 ponds were rebuilt, of which only 3 held water into late summer. As of June 2008, 5 of the 6 ponds currently hold water.

3.2. **Action:** Design and implement livestock grazing management practices to benefit riparian areas.

Status: On-going. This action will be part of the Strawberry River project to be implemented in the Fall of 2008. Since 2005, the UDWR has worked on the Currant

Creek WMA and with adjacent landowners to install riparian fences, drift fences, etc. These fences have reduced livestock grazing in the riparian corridor along Currant Creek. In 2008, the UDWR changed the livestock grazing program on the Tabby Mtn WMA to a high intensity/short duration grazing program to benefit riparian and wet meadow areas on the WMA. The Tabby Mtn WMA is winter, spring, and brood rearing grouse habitat.

3.3. **Action:** Modify or adapt pipelines or developed springs, to create small wet areas.

Status: In 2005, the UDWR constructed a sage-grouse "drinker" off a recently buried irrigation pipeline on the Cut Off Road parcel of the Currant Creek WMA (west side of Fruitland near old Upper Saleratus lek. The drinker is designed to provide water throughout the summer and to overflow into an old wet meadow area and pond that was dried up when the irrigation ditch was piped. It is in a high use grouse area.

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

Status: In 2005, a pasture aerator project was completed on about 100 acres in cooperation with NRCS on private property (Little Red Creek Cattle Co. property) west of Fruitland to reduce basin big sagebrush in wet meadows. The intent was to open up the old wet meadows and improve the herbaceous understory. The project was effective.

3.5. **Action:** Protect existing wet meadows and riparian areas where necessary.

Status: On-going. This action has been included in the Strawberry River Headwaters and the Indian Creek project. NRCS cooperated on an additional dixie harrow project that was completed in 2006 or 2007 on Joyce Baileys private property between Currant Creek and Trout Creek to open up old wet meadows that were being encroached.

3.6. **Action:** Manage vegetation and artificial structures to increase water-holding capability of areas.

Status: On-going. DWR implemented as part of the Wildcat WMA project. See the description of Wildcat and Cut Off Road pond projects above. The UDWR has plans to clean out and repair around 15 additional ponds on those WMAs in the next year or two.

3.7. **Action:** Install catchment structures to slow run-off, hold water, and eventually raise water tables.

Status: In spring 2006 , 75 "gully plug / water dispersers" were installed in the Santaquin Draw sage-grouse area on the Tabby Mtn WMA.

4. **Strategy:** Manage pinyon/juniper stands to reduce encroachment into sagebrush/grass communities

4.1. **Action:** Remove encroaching trees and tall shrubs mechanically (chainsaws, chaining, etc.) or by other methods, to maintain visibility at lek sites and security from predation in other seasonal habitats.

Status: On-going. This work was completed on the Allen Smith Grassland Reserve Easement along Hwy 208. Other chaining projects have been completed as part of the

Rabbit Gulch project. The following pinyon-juniper projects have been completed in the Strawberry Valley workgroup area.

2004-

1. Santaquin Draw 1,500 acre anchor chaining and reseeding - remove dead sagebrush from 2003 die off. Tabby Mtn WMA
2. Mill Hollow 300 acre anchor chaining and reseeding - remove pinyon-juniper to re-establish sagebrush.
3. Lower Red Creek sagebrush seeding on Allan Smith property near lek - aerial seeding into dead sagebrush strips to re-establish sagebrush on grouse winter range.

2005-

1. Gray Wolf mountain - 480 acre anchor chaining and reseeding - remove pinyon-juniper to re-establish sagebrush.
2. Golden Stairs - 185 acre anchor chaining and reseeding - remove pinyon-juniper to re-establish sagebrush.
3. Allan Smiths - 325 acre Dixie Harrow treatment and reseeding to re-establish healthy sagebrush.
4. Rabbit Gulch Lop and scatter- 400 acres - chainsaw removal of encroaching pinyon-Juniper to protect sagebrush areas.

2006-

1. Coyote Draw/Lower Red Creek Lop and Scatter- 1,200 acre - chainsaw removal of encroaching pinyon-juniper to protect sagebrush areas.
2. Fruitland Lop and Scatter - 500 acres - chainsaw removal of encroaching pinyon-juniper to protect sagebrush areas.
3. East Santaquin - 500 acre anchor chaining and reseeding - remove pinyon-juniper to re-establish sagebrush.

2007-

1. Rabbit Gulch Lop and Scatter - 700 acres -chainsaw removal of encroaching pinyon-juniper to protect sagebrush areas.
2. Blacktail Mountain - 450 acre anchor chaining and reseeding - remove pinyon-juniper to re-establish sagebrush.
3. Sand Wash - 350 acre anchor chaining and reseeding - remove pinyon-juniper to re-establish sagebrush.

4.2. **Action:** Brush-cut or treat with other mechanical methods specified areas and reclaim or re-seed as necessary.

Status: On-going. See action 4.1

4.3. **Action:** Coordinate with State Forester to expand defensible space programs to improve sage-grouse habitat where possible.

Status: A project is been completed in the Fruitland area as part of the Utah Division of State Forestry , Fire, and Lands Community Wildfire Protection Plan. Under this plan the community removed pinyon-juniper trees and trimmed back oakbrush to

open the canopy and reduce wildfire risks. This project was conducted in an area inhabited by sage-grouse.

Ken Ludwig is the contact.

5. **Strategy:** Improve lek vegetation conditions to allow for predator recognition and visibility.
 - 5.1. **Action:** Open lek areas that have been invaded by sagebrush and other shrubs.
Status: The Road Hollow lek was Dixie harrowed in 2004 to increased sage-grouse visibility.
 - 5.2. **Action:** Map and inventory leks with potential for restoration.
Status: BYU and UDWR are actively searching the area for new leks.
 - 5.3. **Action:** Maintain and enhance desired conditions for leks.
Status: On-going.
 - 5.4. **Action:** Coordinate vegetation management to maintain desired conditions
Status: On-going.
 - 5.5. **Action:** Evaluate/monitor treatment effects.
Status: On-going. Vegetation response to treatments are being monitored by UDWR range trend crews.

6. **Strategy:** Maintain and improve habitat conditions in winter range.
 - 6.1. **Action:** Treat decadent stands of sagebrush (harrowing, aerator, brush beating, chain, spike), where appropriate, to create uneven aged stands of sagebrush across the Resource Area.
Status: On-going. See action 4.1. the Badger Hollow treatment planned for the fall of 2009 will enhance winter range.
 - 6.2. **Action:** Establish easements or other land protection in crucial sage-grouse use areas.
Status: On-going. 2007 - Allan Smith Conservation Easement - around 5500 acres of sage grouse winter range permanently protected from development. Cooperators: UDWR, NRCS, RMEF, etc. 2005 - CUP mitigation commission acquired 1700 additional acres of sage grouse habitat from Larry Fitzgerald adjacent to Wildcat WMA .
 - 6.3. **Action:** Work with county planners and county council to establish zoning ordinances for crucial winter habitat that protect those areas from inappropriate development.
Status: On-going. See Local Legal Authority section of this report.

7. **Strategy:** Protect crucial habitat from inappropriate development.
 - 7.1. **Action:** Work with county planners and county council to establish zoning ordinances for crucial habitat that protect those areas from inappropriate development.
Status: On-going. See action 6.3.
 - 7.2. **Action:** Establish easements or other land protection in crucial habitat.
Status: On-going. See action 6.2.
 - 7.3. **Action:** Work with USFS and other federal agencies to protect crucial sage-grouse habitat from renewable and non-renewable energy development.

- Status:** On-going. An EIS has been prepared and submitted for public comment. This EIS identifies actions/measures that would be implemented to mitigate the effects of oil/gas development on sage-grouse in the area.
- 7.4. **Action:** Maintain or reestablish sagebrush patches of sufficient size and appropriate shape, to support sage-grouse between agricultural fields.
- Status:** On-going.
- 7.5. **Action:** Work with NRCS and others to maintain and enroll important sage-grouse habitats involved in Farm Bill programs currently in agricultural production.
- Status:** NRCS is working with local landowners to access project funding through the WHIP program. Allen Smith Grassland Reserve (GRP) is part of this effort.
- 7.6. **Action:** Encourage use of sage-grouse friendly seed mixes, including bunchgrasses, forbs, and big sagebrush, in plantings.
- Status:** On-going. All habitat projects completed in the area are reseeded with a UDWR developed seed mixture that was developed to benefit sage-grouse.
- 7.7. **Action:** Encourage interest and enrollment of key sage-grouse habitats in the Farm Bill programs.
- Status:** On-going.
8. **Strategy:** Minimize impacts of noxious and invasive weeds.
- 8.1. **Action:** Identify areas where noxious/invasive weeds are encroaching on sage-grouse habitat
- Status:** On-going. Projects include Desert Hollow and Wasatch County – CWMA Cooperative Weed Management Area. Under the CWMA numerous partners are working to minimize the impacts of noxious and invasive weeds on rangeland habitats in the LWG area.
- 8.2. **Action:** Treat areas where noxious/invasive weeds and non-desirable introduced species (e.g. smooth brome) have become, or are at risk of becoming, a factor in sage-grouse habitat loss or fragmentation.
- Status:** On-going. Strawberry Valley Thistle Project – Coop Creek Knapweed Project – Wallsburg/McAfee Mountain Knapweed – Squaw Creek Thistle Project.
- 8.3. **Action:** Work with existing weed management programs to incorporate sage-grouse habitat needs.
- Status:** On-going. See action 8.2.
- 8.4. **Action:** Identify large areas of noxious/invasive weeds and non-desirable introduced species (e.g. smooth brome), that are not meeting sage-grouse habitat needs and reseed where appropriate.
- Status:** On-going. See action 8.2
- 8.5. **Action:** Manage burned areas, transportation, utility, and pipeline corridors, and vegetation treatments to minimize undesirable vegetation where possible.
- Status:** On-going. The wildfire that occurred in 2007 on the Currant Creek WMA near the old upper Saleratus lek area was treated with Plateau to prevent establishment of cheatgrass and other annuals and then re-seeded with a sage-grouse friendly seed mix.
- 8.6. **Action:** Work with County weed board to increase awareness of weed problems in sage-grouse and other important wildlife habitat.

Status: On-going through county wide CWMA.

9. **Strategy:** Minimize impacts of utility lines, fences, and roads in sage-grouse habitat.

9.1. **Action:** Avoid new construction during important periods and re-route lines where technically and economically feasible to avoid impacts.

Status: On-going.

9.2. **Action:** Schedule maintenance to avoid important periods, however, maintenance in emergency situations will be unrestricted.

Status: On-going. In Nov. 2006 Moon Lake Electric planned to reconstruct a power line on the Cut Off Road parcel of the Currant Creek WMA (sage grouse area) The UDWR required them to complete the work by mid Dec. instead of stretching it out all winter as planned.

9.3. **Action:** Install raptor deterrents when applicable

Status: Pending the outcome of research being conducted in San Juan County.

10. **Strategy:** Minimize sage-grouse habitat loss to oil and gas activities.

10.1 **Action:** Increase/encourage participation by private oil/gas industry in SVARM.

Status: Pending. Currently there is minimal oil/gas development, The draft EIS identifies potential issues and mitigation strategies.

10.2.**Action:** Encourage use of central tanks and locate those in areas with least impact to sage-grouse.

Status: Pending. See action 10.1.

10.3.**Action:** Use directional drilling where feasible to minimize surface disturbance, particularly where well density exceeds 1:160 acres.

Status: Pending. See action 10.1.

10.4.**Action:** Minimize pad size and other facilities to the extent possible, consistent with safety.

Status: Pending. See action 10.1.

10.5.**Action:** Plan and construct roads to minimize duplication.

Status: Pending. See action 10.1.

10.6.**Action:** Cluster development of roads, pipelines, electric lines and other facilities.

Status: Pending. See action 10.1.

10.7.**Action:** Minimize noise disturbance (directing mufflers, glass packs, etc.) in and near lek and nesting habitat.

Status: Pending. See action 10.1.

10.8.**Action:** Use existing, combined corridors where possible.

Status: Pending. See action 10.1.

10.9.**Action:** Use early and effective reclamation techniques, including interim reclamation, to speed return of disturbed areas to use by sage-grouse.

Status: Pending. See action 10.1.

10.10 **Action:** Reduce long-term footprint of facilities to the smallest possible.

Status: Pending. See action 10.1.

10.11 **Action:** Avoid aggressive, nonnative grasses (e.g. intermediate wheatgrass, pubescent wheatgrass, crested wheatgrass, smooth brome, etc) in reclamation seed mixes.

Status: Pending. See action 10.1.

10.12**Action:** Eliminate noxious weed infestations associated with oil and gas development disturbances.

Status: Pending. See action 10.1.

10.13**Action:** Minimize width of field surface roads.

Status: Pending. See action 10.1.

10.14**Action:** Avoid ridge top placement of pads and other facilities.

Status: Pending. See action 10.1.

10.15**Action:** Use low-profile, above-ground equipment, especially where well density exceeds 1:160 acres.

Status: Pending. See action 10.1.

10.16**Action:** Avoid breeding/nesting season (March 1 – June 30) construction and drilling when possible in sage grouse habitat.

Status: Pending. See action 10.1.

10.17**Action:** Limit breeding season (March 1 – May 1) activities near sage grouse leks to portions of the day after 9:00 a.m. and before 4:00 p.m.

Status: Pending. See action 10.1.

10.18**Action:** Reduce daily visits to well pads and road travel to the extent possible in sage-grouse habitat.

Status: Pending. See action 10.1.

10.19**Action:** Utilize well telemetry to reduce daily visits to wells, particularly where well density exceeds 1:160 acres.

Status: Pending. See action 10.1.

10.20**Action:** Locate compressor stations off ridge tops and at least 2,500 feet from active sage-grouse leks, unless topography allows for closer placement.

Status: Pending. See action 10.1.

10.21**Action:** Avoid locating facilities within a quarter mile of active sage-grouse leks, unless topography allows for closer placement.

Status: Pending. See action 10.1.

10.22**Action:** Plan for and evaluate impacts to sage-grouse of entire field development rather than individual wells.

Status: Pending. See action 10.1.

10.23**Action:** Study, and attempt to quantify, impacts to sage-grouse from oil and gas development.

Status: Pending. See action 10.1.

10.24**Action:** Evaluate need for near-site and/or off-site mitigation to maintain sage-grouse populations during oil and gas development and production, especially where well density exceeds 1:160 acres.

Status: Pending. See action 10.1.

10.25**Action:** Implement near-site and/or off-site mitigation as necessary to maintain sage-grouse habitat quality.

Status: Pending. See action 10.1.

10.26**Action:** Share sage-grouse data with industry to allow planning to reduce impacts.

Status: Pending. See action 10.1.

- 11 **Strategy:** Minimize the impact of extraordinary predation.
- 11.01 **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:** See action 9.3.
- 11.02 **Action:** Remove trees, remove/modify raptor perches, and maintain quality sagebrush habitat, where predation concerns on sage-grouse have been identified.
- Status:** No action.
- 11.03 **Action:** Begin site-specific predation management considering all predator species (especially common ravens and red fox) where necessary and appropriate.
- Status:** On-going. USDA Wildlife Services has been conducting red fox and raven control in the Strawberry Valley per UDWR guidance. The SVARM Plan discusses this effort and reports on its success.
- 11.04 **Action:** Work with County planners and private developers to incorporate trash minimization and domestic animal control measures in CCNRs.
- Status:** Pending.
- 12 **Strategy:** Improve knowledge of diseases and parasites in sage-grouse populations.
- 12.01 **Action:** Collect sage-grouse parasite and disease organism samples while handling birds for other research, when possible.
- Status:** On-going. The UDWR is coordinating with SVARM.
- 12.02 **Action:** Monitor radio-collared and other sage-grouse for West Nile Virus and other disease outbreaks.
- Status:** On-going. The UDWR is coordinating with SVARM.
- 13 **Strategy:** Improve knowledge of genetics in sage-grouse in minimum viable populations.
- 13.01 **Action:** Collect samples for genetic research from all known breeding complexes (including hunted and un-hunted areas) when possible.
- Status:** On-going. The UDWR is coordinating with SVARM.
- 14 **Strategy:** Increase size of sage-grouse population in the Resource Area.
- 14.01 **Action:** Continue translocation efforts as called for by UDWR, BYU, and other participating agencies and organizations
- Status:** On-going. The UDWR is coordinating with SVARM.
- 14.02 **Action:** Continue existing predator management activities as called for by UDWR, USDA-WS, BYU, and other participating agencies and organizations.
- Status:** On-going. The UDWR is coordinating with SVARM.
- 15 **Strategy:** Maintain and increase long-term habitat and population monitoring and research.
- 15.01 **Action:** Maintain long-term habitat monitoring sites on the Resource Area (as monitored by the Utah Big Game Range Trend Studies program).
- Status:** On-going. The UDWR is coordinating with SVARM.
- 15.02 **Action:** Maintain and increase radio-monitoring of translocated sage-grouse.

Status: On-going. The UDWR is coordinating with SVARM.

15.03 **Action:** Work with agency partners to maintain and increase funding for research and monitoring

Status: On-going. The UDWR is coordinating with SVARM.

15.04 **Action:** Continue to monitor sage-grouse populations through use of lek counts

Status: On-going. The UDWR is coordinating with SVARM.

15.05 **Action:** Increase lek search activities to find new lek sites in the Resource Area

Status: On-going. The UDWR is coordinating with SVARM.

15.06 **Action:** Work with USDA-WS to monitor populations of sage-grouse predators.

Status: On-going. The UDWR is coordinating with SVARM.

16 **Strategy:** Increase public education about sage-grouse ecology, conservation, and management.

16.01 **Action:** Work with Audubon Society to increase educational opportunities regarding sage-grouse in the Resource Area.

Status: SVARM is working with Utah Audubon to designate the Strawberry Valley as an important bird area.

16.02 **Action:** Develop educational materials (brochures, presentations, etc.) and deliver to Friends of Strawberry Valley, Strawberry Anglers Association, Daniels Summit Lodge, Strawberry Water Users and other potential stakeholders to increase awareness

Status: On-going. Some public activities include SVARM participation in the annual Strawberry Valley festival. The USFS maintained a booth at the Festival and reported on the Badger Hollow project. Michael Bornstein has conducted several youth programs at the Mepollen Elementary School. SVARM participated in a field tour of the area that was sponsored by the Utah Section of the Society for Range Management (SRM). In October 2007, the LWG area was included in a field tour held in conjunction with the SRM sponsored Ecological Site Workshop. .

16.03 **Action:** Encourage use of signage in appropriate areas to increase awareness of crucial sage-grouse habitats.

Status: On-going. The UDWR is coordinating with SVARM.

16.04 **Action:** Develop sage-grouse identification materials for distribution to recreationists, bird watchers, and other stakeholders

Status: Pending.

17 **Strategy:** Minimize negative impacts of incompatible OHV (ATVs, snowmobiles, 4WD trucks, etc.) recreation and other recreation on sage-grouse populations and habitats.

17.01 **Actions:** Work with County planners and other agencies to restrict seasonal OHV access to crucial sage-grouse use areas

Status: To date no restrictions are in place. SVARM will work with partners to develop and educational program in 2008 to address these concerns.

17.02 **Actions:** Coordinate with enforcement agencies (Sheriff, parks, USFS, COs) to increase awareness of negative impacts to sage-grouse

Status: On-going.

17.03 **Action:** Create opportunities and use existing avenues to increase awareness in participating public about negative impacts of OHV use in crucial sage-grouse areas

Status: Pending. To be initiated in 2008.

17.04 **Action:** Coordinate with enforcement agencies to increase awareness of poaching and to minimize sage-grouse poaching opportunities

Status: On-going. The UDWR is coordinating with SVARM.

17.05 **Action:** Encourage use of signage to identify areas closed to hunting; language in proclamation that specifies closed area

Status: On-going. The UDWR is coordinating with SVARM.

18 **Strategy:** Maintain and increase coordination and communication between state and federal agencies and private partners.

18.01 **Action:** When possible, present all brush management projects at regional UPCD meetings in advance, to facilitate information sharing and coordination

Status: On-going. The UDWR is coordinating with SVARM.

18.02 **Action:** Annually provide maps of crucial sage-grouse habitat to SVARM partners

Status: On-going. The UDWR is coordinating with SVARM.

18.03 **Action:** Meet annually to visit habitat projects in the field

Status: On-going. The UDWR is coordinating with SVARM.

18.04 **Action:** Hold annual coordination meeting prior to the start of spring field season

Status: On-going. The UDWR is coordinating with SVARM.

18.05 **Action:** SVARM representative to report on UDWR-USFS coordination meetings

Status: On-going. The UDWR is coordinating with SVARM.

18.06 **Action:** Coordinate with the County through public lands coordinator and committee

Status: On-going. The UDWR is coordinating with SVARM.

18.07 **Action:** When possible, comment, as a group, on proposed actions that may impact sage-grouse or their habitats

Status: On-going. The UDWR is coordinating with SVARM.

e. Habitat Improvements and Completed Conservation Actions

The UDWR and USFS have implemented several habitat improvement projects in the Resource Area targeted at restoring or enhancing sage-grouse habitat. In 2004, approximately 1,400 acres of habitat in the Resource Area were treated, and an additional 300 acres were treated in 2005. Treatments were aimed at reducing sagebrush canopy in a mosaic pattern to enhancing native grass/forb cover in the understory. Additional habitat improvement projects are planned for 2006. The UDWR anticipates treating 2,690 acres in the Resource Area in 2006. The location of some habitat improvement projects is given in Figure 24. Table 34 lists the acreage and general location of habitat improvement projects implemented in 2004 and 2005 and proposed for 2006 by the UDWR.

Table 34. Habitat improvement projects implemented to mitigate sage-grouse threats identified by the Strawberry Valley Adaptive Resources Management Sage-grouse Local Working Group, 2004-2006.

Year	Project Name	Acres
2004	Santaquin Draw	1,400
	Road Hollow Lek	5+
2005	Gray Wolf Mountain	300
2006	Coyote Draw	1,200
	Fruitland	500
	2-Bar	520
	Alan Smith seeding	450
	Trout Creek	



Figure 24. Location of habitat projects completed to mitigate sage-grouse threats in the Strawberry Valley Adaptive Resources Management Sage-grouse Local Working Group Resource area, 2006-2007.