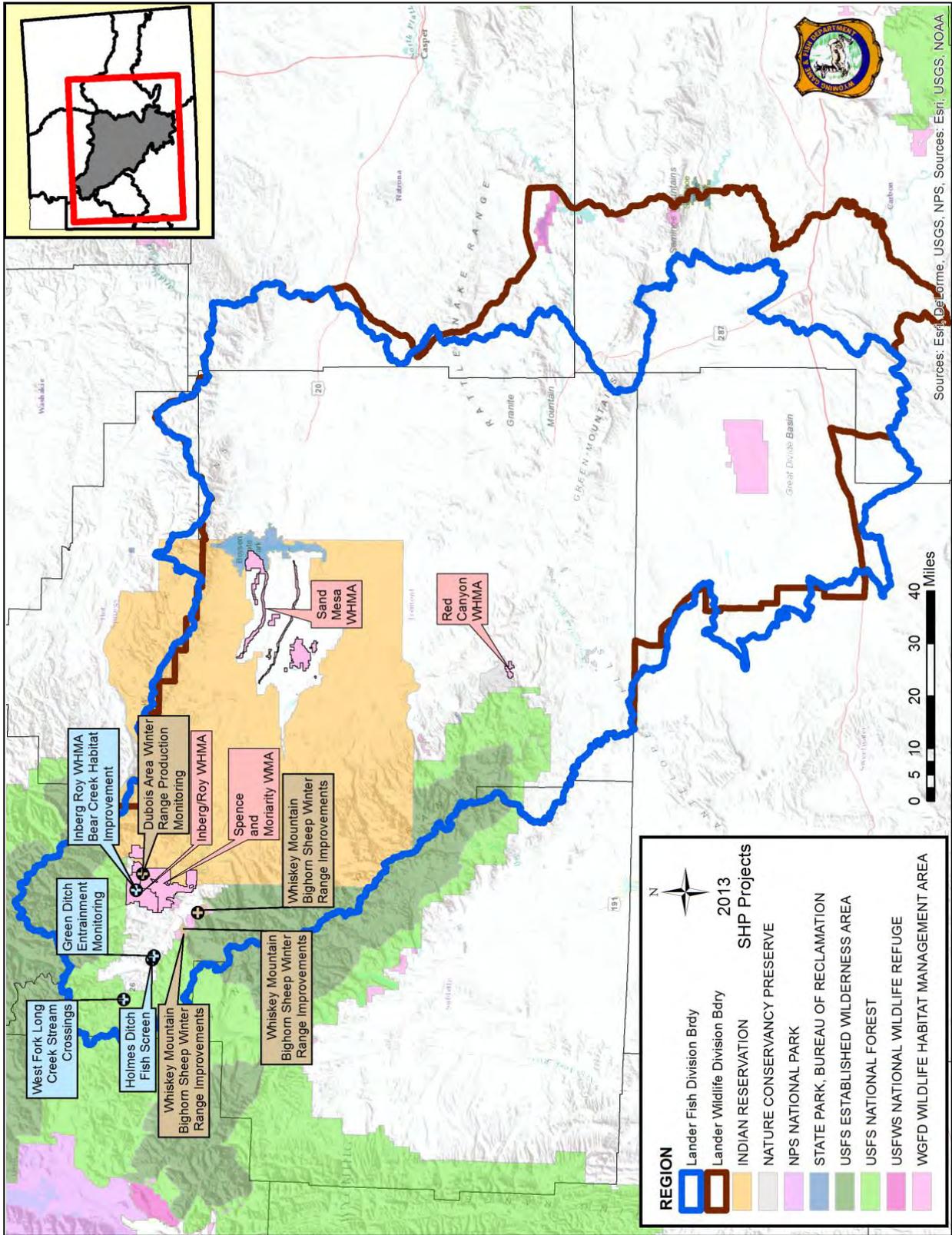


LANDER REGION



West Fork Long Creek Stream Crossings (Goal 2) – Nick Scribner

Since 2010 WGFD has been assisting the USFS in removing and replacing two culverts on West Fork Long Creek northwest of Dubois to provide for upstream fish movement. NEPA planning was completed in 2010 with survey and designs completed by the USFS in 2011. The lowest culvert, which was a complete barrier and only 6 ft wide, was replaced with an 18 ft wide by 75 ft long culvert (Figure 73). The culvert was partially buried so the widest dimension would be near the streambed in order to span the entire bankfull channel. Streambed material was placed in the bottom of the culvert to provide a natural environment (Figure 74). This design allows the stream to function naturally, reduces future maintenance activities, and provides easy movement for fish and other wildlife. The culvert further upstream is a partial barrier and will be removed in 2014 and replaced with a low water crossing due to low traffic volume. The upstream culvert



Figure 73 – Over 20,000 cubic yards of material were moved prior to placement of the new culvert bottom.

Holmes Ditch Fish Screen (Goal 3) – Nick Scribner

A screen installation on Holmes Ditch was completed in summer 2013 and was fully operational for the latter half of the irrigation season (Figure 75). This irrigation diversion is located approximately six miles northwest of Dubois off the Wind River. Historically this ditch had annual maintenance issues because of a leaking headgate and it entrained many fish each irrigation season. Local water users approached TU and WGFD in 2010 to search for and develop solutions. As a result, One Fish Engineering was hired to design a fish screen for installation in the ditch. Designs were developed, reviewed and finalized in 2011 and construction began in December 2012 with dirt work and concrete poured to house the screen. A new headgate and trash rack were installed to reduce debris entering the ditch and allow complete water shut-off when

was scheduled for construction in 2013, but inclement weather during the fall made construction impossible. Yellowstone cutthroat trout and other aquatic species will be able to access the entire 4.3 miles of West Fork Long Creek after project completion.



Figure 74 – Looking upstream through the new culvert, large rocks and other bed material allow the stream to function naturally through the culvert.

Local water users approached TU and WGFD in 2010 to search for and develop solutions. As a result, One Fish Engineering was hired to design a fish screen for installation in the ditch. Designs were developed, reviewed and finalized in 2011 and construction began in December 2012 with dirt work and concrete poured to house the screen. A new headgate and trash rack were installed to reduce debris entering the ditch and allow complete water shut-off when

irrigation is done each year. Other than a couple minor modifications, the screen has operated well. Irrigators are receiving their water and entrained fish are returned back to the Wind River (Figure 75). This project will help improve fish populations in the Wind River, leading to additional public fishing opportunities.

Green Ditch Entrainment

Monitoring (Goal 1) – Nick Scribner

Green Ditch is the largest irrigation diversion on the Wind River upstream of the Wind River Indian Reservation and is located one mile downstream of the Holmes Ditch. The Green Ditch irrigates approximately 1,000 ac. with nearly half of the acres on one ranch and the rest spread out between many small landowners. Entrainment sampling was done in 2012 and 2013 to calculate fish loss. Over 80 days of sampling yielded about 1,100 fish caught in an entrainment net. Approximately 80% of them were mountain whitefish (Figure 76) with various sucker and trout species comprising the other 20% of fish



Figure 75 – The Holmes Ditch screen guides entrained fish back to the river via a pipe. A paddlewheel operates a hydraulic pump that moves 6 wiper blades along the screen to clear debris.



Figure 76 – Large catch of mountain whitefish in 2012. Most mountain whitefish captured were 2-3 inches long.

captured. We used modified fyke nets (Figure 77) with 0.2 inch mesh size set 100 yards downstream from the headgate to collect fish as they moved down the irrigation canal. We found entrainment rates were not related to irrigation flows, but there were seasonal movements, especially of mountain whitefish. Most mountain whitefish were caught in a one-month period between mid-July and mid-August. Our highest single catch over the two years was 170 fish in a 12-hour period. These data suggest a screen is highly warranted on

Green Ditch to reduce fish loss from the Wind River to irrigation. Funding efforts are underway to survey and develop screen designs for implementation in 2015.



Figure 77 – Lander aquatic habitat biologist Nick Scribner holds a large brown trout captured in Green Ditch. A fyke net visible in the background was used to capture fish.

Inberg Roy WHMA Bear Creek Habitat Improvement (Goal 2) – Nick Scribner

Approximately 600 feet of streambank were improved in 2013 on Bear Creek near Dubois. This drainage provides crucial Yellowstone cutthroat trout habitat, especially for spawning trout. The primary issue addressed was eroding banks: five eroding banks were impacting adjacent and

downstream habitat. Bank Erosion Hazard Index (BEHI) surveys were completed in 2012 and allowed determination of erosion rates to identify and prioritize streambanks where improvements were needed. One of the banks was estimated to contribute up to 60 tons of soil per year due to erosion during high flows (Figure 78). All of the troublesome stream banks had similar features: steep, devoid of vegetation, highly erosive, and providing very little habitat value. To improve these banks,



nearby conifer trees were felled and placed at the toe of the banks and secured in place with

Figure 78 – A Bear Creek bank prior to construction was steep, highly erosive, and provided very little fish habitat.



Figure 79 – After construction the bank is less steep and more conducive to vegetation establishment. Wood at the toe limits erosion and provides fish cover.

large boulders, bank material, and cable. This wood absorbs the power of the water, protects the bank from further erosion and provides overhead fish cover. In addition, banks were shaped and seeded to decrease the slope and kick-start vegetation establishment (Figure 79).

Whiskey Mountain Bighorn Sheep Winter Range Improvements (Goal 2) – Alyson Courtemanch, Greg Anderson, and Brian Parker

The Whiskey Mountain bighorn sheep herd underwent a pneumonia die-off in winter 1990/1991 and suffered low lamb recruitment for the following two decades. However, the past two years have shown promising improvements in lamb:ewe ratios, with 42:100 being observed in 2012. Winter range improvement projects will further support reproduction and survival. The goal of this project is to improve forage production and nutritional content on 450 acres of bighorn sheep crucial winter range. Approximately 290 acres on Sheep Ridge will be treated with fertilizer to increase production and protein content of forage. Approximately 160 acres will be treated on Torrey Rim with herbicide to reduce competition from unpalatable plant species, such as sulfur buckwheat and phlox (Figure 80). Funding support has been provided by WBGGLC bighorn sheep account and implementation will take place in summer 2014.



Figure 80 – Example of an area where mat-forming plants are competing with palatable plants (grasses) on bighorn sheep winter range.

Dubois Area Winter Range Production Monitoring (Goal 2) – Alyson Courtemanch, Greg Anderson

Biologists and wardens from the WGFD, with the assistance of USFS and BLM biologists, have been recording forage production and utilization on bighorn sheep and elk winter ranges in the Dubois area since the 1970’s. These efforts have produced a unique and robust data set of production and utilization trends.

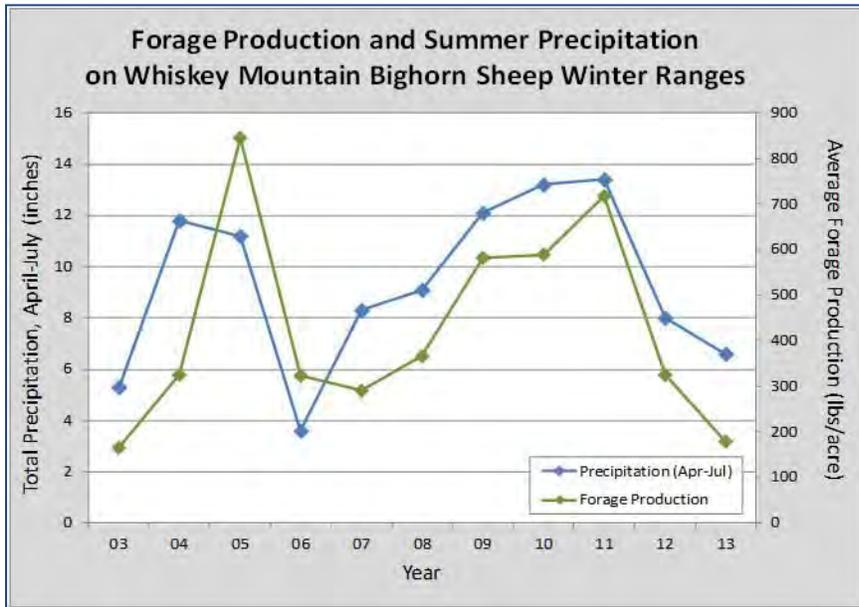


Figure 81 – Annual forage production and summer precipitation trends on Whiskey Mountain bighorn sheep winter ranges from 2003-2013.

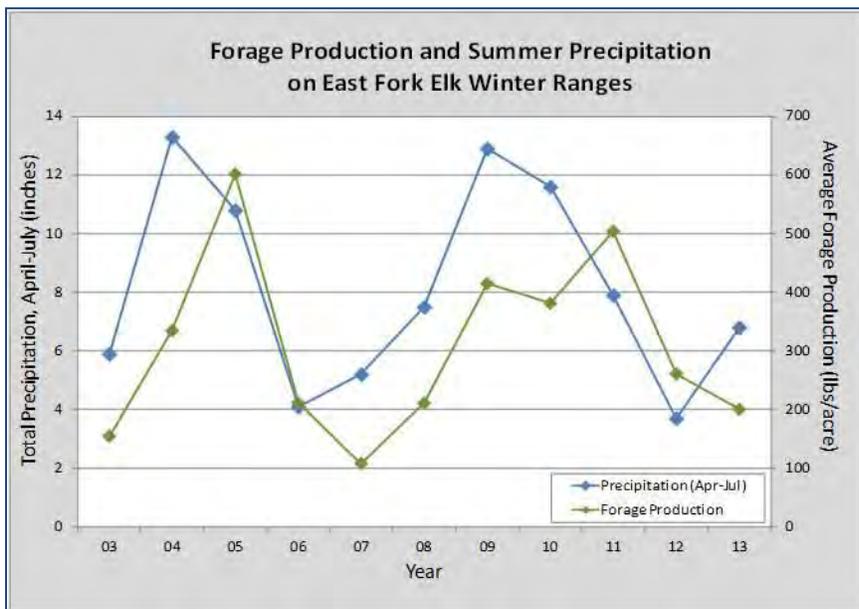


Figure 82 – Annual forage production and summer precipitation trends on East Fork elk winter ranges from 2003-2013.

Forage production tracks closely with total spring and summer precipitation. In 2013, the Dubois area experienced another dry summer, which limited forage production on big game winter ranges. Bighorn sheep winter ranges on Whiskey Mountain produced an average of 179 lbs/acre of forage, which is the lowest recorded during the last ten years (Figure 81). Elk winter ranges in the East Fork area fared slightly better with an average of 202 lbs/acre (Figure 82). Overall, forage production in 2013 was only 49% of the previous 10-year average. Forage production, coupled with winter snow conditions and the body condition of ungulates in early winter, largely influence over-winter mortality rates. Understanding trends in forage production can assist in adjusting management of these herds, as needed.

Inberg/Roy WHMA (Goal 2) – Derek Lemon, Brad Sorensen, Skye Shaw, Matt Pollock, Brian Parker

Phase 1 of the Dennison Meadows pipeline and restoration was completed during the fall of 2010. Approximately 4,500 feet of transport ditch was converted to buried pipeline. Phase 2



began in the spring of 2011, two of the four meadows were re-farmed with palatable, drought-tolerant herbaceous species and field spreader ditches were replaced with gated pipe. An analogous treatment for the remaining two meadows began in late summer/fall of 2012. This phase of the project was finalized in the spring of 2013. Pipeline installation will greatly increase water use efficiency, which will benefit Yellowstone cutthroat trout, while meeting needs of supplemental forage production for wintering elk (Figure 83).

Figure 83 – Gated pipe on Dennison Meadow.

Spence and Moriarity WMA (Goal 2)

Restoration of the Duncan Bench pivot fields began during the fall of 2011. Approximately 200 acres of the Duncan Bench has been planted with drought-tolerant grass species since project inception. A contract was awarded in the fall of 2012 for reclamation services. The contractor drilled an upland wheatgrass mix and subsequently crimped straw mulch on approximately 80 acres (Figure 84). The mulch amendment will provide increased organic matter, moisture retention and combat wind erosion (Figure 85). An adjacent 100 acres was drilled for comparative purposes, in addition to the area targeted by the reclamation services during spring 2013, followed by an additional 80 acres in the fall of 2013.



Figure 84 – Drilling seed on Duncan Bench.



Figure 85 – Duncan Bench in July 2013 after crimping and seeding.

Six flumes along the Wiggins Ditch were relined with half round pieces of corrugated metal pipe, and new concrete inlet and outlet structures (Figure 86). The Wiggins Ditch provides water for over 360 acres of irrigated meadows in crucial elk, mule deer and pronghorn winter range (Figure 87).



Figure 86 – Installation of new flume.



Figure 87 – Location of the six flume.

- As part of the Spence & Moriarity Ten-Year Plan, irrigated fields/meadows are being farmed to increase forage palatability, combat noxious weeds and ultimately generate hay for use on elk feedgrounds. 2013 efforts are described below.
- Bain Meadow- approximately 50 acres was farmed and converted from ditch irrigation to gated pipe irrigation systems (Figure 88)
- Long Meadow- farming began on approximately ten acres; fall 2013
- Pease Meadow- farming began on approximately 25 acres; fall 2013 (Figure 89)
- North Andy's Meadow- farming began on approximately 15 acres; fall 2013
- Headwaters Weed Spraying applied herbicide across approximately 400 acres of irrigated meadow to control noxious weeds in early June. Additionally, Fremont County Weed & Pest sprayed a variety



Figure 88 – Bain Meadow.

of noxious weed species on irrigated meadows and rangeland starting in July and continuing thru the fall 2013 (Figure 90).



Figure 89 – Pease Meadow.

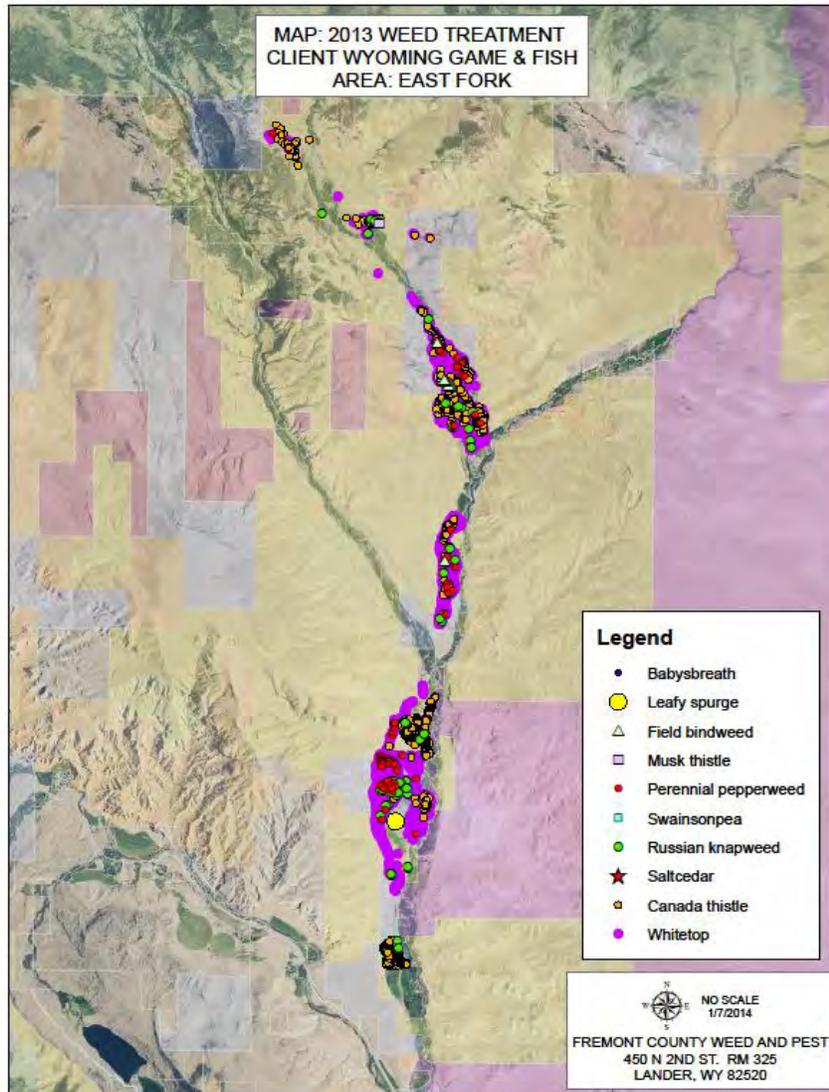


Figure 90 – S&M WMA weed treatment map

- A fence contract was awarded to construct approximately two miles of fence in the Mountain Meadows area of Spence & Moriarity WMA. This fence will help exclude trespass livestock and maintain productive elk habitat. Construction will begin in the spring of 2014 and be completed by August 1, 2014.
- Approximately 2,700 feet of irrigation ditch was converted to gated pipe in order to increase water use efficiency and irrigation distribution efficiency (Figure 91). Gated pipe installation will benefit previously planted areas of Long Meadow and result in increased forage production for wintering big game, greater noxious weed control and ultimately increased hay available for elk feedgrounds.



Figure 91 – Long Meadow gated pipe.

- Volunteers from the Rocky Mountain Elk Foundation and Wyoming Wildlife Federation assisted Department personnel in removing a remaining length of elk fence on the boundary between Inberg/Roy WHMA and Spence & Moriarity WMA (Figure 92). The elk fence was constructed prior to the Commission acquiring Spence & Moriarity WMA. Removal of the elk fence will allow for unimpeded movement of winter elk in this area.

Whiskey Basin WHMA (Goal 2)

120 acres on two different meadows were irrigated on Whiskey Basin WHMA. Approximately 90 acres of the Basin Meadow was hayed in July 2013 in order to promote herbaceous vigor and palatability and supply hay to Bench Corral feedground. Fremont County Weed and Pest sprayed 4.6 acres of noxious weeds on Whiskey Basin WHMA.

Approximately 15 horses (37.5 AUMs) from the CM Ranch grazed the Basin Meadow from November through December 2013 in lieu of grazing their BLM allotments. This agreement results in increased forage availability within core bighorn sheep winter range to be used by wintering bighorn sheep rather than CM Ranch horses. 2013 was the fourth year of the latest five-year agreement.



Figure 92 – Boundary fence removal.

Ocean Lake WHMA (Goal 2)

Approximately twenty-acres of grass were planted at the Shop field at Ocean Lake WHMA. Farming activities serve as grazing lease AIPA payment. As per the Ocean Lake grazing plan, 260 AUMs were consumed in January 2013 on the irrigated meadows in the Shop and Maxon areas. The grazing lease is a five-year winter rotation used to maintain irrigated meadows and promote waterfowl nesting.

Ponds 1 and 2 were drained during the fall of 2012 in preparation for the prescribed burns that occurred in February 2013. Burns served to retard cattail encroachment and increase open water available for waterfowl (Figure 93). Goose nests throughout Ocean Lake were bedded, as well.



Figure 93 – Ocean Lake WHMA controlled burn.

Information and Education (Goal 4) – Rene Schell

In the Lander region, I&E Specialist, Rene Schell, produced many news releases and other media involving habitat. She also conducted education programs highlighting habitats around the state, habitat work the Department does, and the importance of all of this to Wyoming's wildlife. These efforts are summarized below:

- Numerous radio interviews on KTAK/KVOW about habitat projects and improvements on Ocean Lake WHMA, habitat condition in the region and how that relates to herd health.
- Sent out several news releases on aquatic habitat improvements completed in the region.
- Taught 50+ adults and children about macroinvertebrates and stream habitat at the Paintrock Hunter Mentor Day in Worland, WY.
- Assisted ten 4th-6th graders in adopting a local Riverton fishing pond, cleaning up the surrounding trash, and sinking Christmas trees for fish habitat.
- Gave a presentation to elementary students on aquatic habitats
- Taught Lander 4th graders about terrestrial habitat, food webs, and the importance of WGFD habitat projects as they relate to wildlife.

- Taught and assisted several sessions (100 + grade school kids) with stream trailer on stream health and habitat improvements that can positively affect streams.
- Published several regional newsletters highlighting regional habitat projects and how they hope to positively affect wildlife.
- Assisted habitat and regional biologists with vegetation sampling in the Dubois area.
- Spoke to numerous publics at public meetings and casual encounters about local drought conditions, mule deer health, and habitat conditions around the Lander region.