

INVADERS OF THE SAGE SEA

Invasive plants from a filmmaker's perspective.

By Norm Nelson

In 1995 a lightning-caused fire hit the newly established Snake River Birds of Prey National Conservation Area in Southern Idaho. Much of the area was burned for a second time as the fire consumed acreage along the canyon rim. The fire was so severe it scorched deep into surface soils destroying native seed beds. It eliminated sage brush varieties over acres of recovering flatlands, and in the end killed two experienced fire fighters.

Much of the landscape remained black into the next spring. Paiute ground squirrels disappeared, the black-tailed jackrabbit population plummeted, and a cheatgrass monoculture took over this once bountiful prey base habitat for hawks, eagles and falcons. Drought influenced all these natural systems adding to the long term impacts.

This critical habitat was just a pin hole on the fire effect map after the 1999 fires of the Great Basin that burned 1.7 million acres of sage, salt desert, and grasslands. The results of such fires and their cause could not be ignored by ranchers, conservationists, recreationalists, and government agencies who were strapped for funds and resources to deal with the impacts.

In May of 2002 I read a newspaper article about restoration experiments in the Snake River Birds of Prey National Conservation Area, where BASF corporation was experimenting with Plateau, a herbicide that attacks cheatgrass but does not affect crops as does the Oust herbicide. I felt the herbicide might be a way of fighting this new fire regime and cheatgrass invasion. As I learned more it became obvious that herbicides are only a single tool in the complex battle against alien plant species.

In recent years my company had completed three film projects on birds of prey in the Snake River canyon environment. Our old filming locations were now completely black or covered in vast cheatgrass stands. We couldn't find any jackrabbits and some of the larger ground squirrel burrow complexes showed no sign of tracks. The BLM had

done considerable restoration work using drills in the area but had meager results due to spring drought conditions. Fire effect and drought conditions had taken a toll on the birds of prey area that I had never witnessed in all the years I hunted, fished, and filmed in its varied terrain.

As I thought more about doing a film on this dilemma, I gravitated toward a few casual meetings with local wildlife officials and weed control specialists. They were keen on the issue, forceful, and convinced me that the Great Basin itself was in ecological decline across the central sagebrush tracts. Almost all wildlife species estimates for the future showed declining populations. I kept hearing the point that national forests have less wildlife diversity than sage associated communities, yet get all the attention, while the magnificent deserts, grasslands, and sage country continue to burn while being unappreciated by the general public. This point of view demanded more serious research.

Information was easy to access as I set out on developing a film outline. My contacts overwhelmed me with information, but I soon became frustrated with the details and complexities of the invasive plant story alone. It was fascinating but not very photogenic.

A Different Approach

This set me on a new course to develop a film that would answer the questions on invasive plants and entertain a wide audience with wildlife species as the affected characters. As I learned about the demise of sage grouse, stress on big game animals, small rodents, and the predators that depend upon them, it became obvious that telling the story from a wildlife perspective could present the magnitude of the invasive plant problem and be entertaining. I envisioned slow motion shots of cock sage grouse strutting on their leks in golden light, big horn sheep migrating in desolate country, macro time-lapse photography of alien plants growing, birds of



Cheatgrass monoculture in the background invading healthy sage along Snake River.

prey attacking rodents, and wildfire filling the screen. By taking a natural history approach, I began to feel more confident as I researched and wrote 'Invaders of the Sage Sea.'

I have had enthusiastic cooperation and interest from university professors, BLM/Forest Service wildlife and range specialists, plant ecologists, and others. The treatment is being reviewed by these experts in order to create an accurate story. Even so, politics have entered the search for information.

For example, some experts say crested wheatgrass, which is used to restore burned areas, is just as bad as cheatgrass because it is introduced. Others ask, "would you rather have erosion and cheatgrass or a plant that provides forage while successfully competing with cheatgrass?" How do you handle the grazing issue that has become so polarized? I hope to address the film as an entertaining look at a scientific situation without resorting to the simplified environmental film blaming man and political parties for ecosystem impacts. I may end up basing the story around fire, the invasive plants that cause them, and how this impacts wildlife.

Cheatgrass is no longer the prime suspect, the experts have convinced me that many annual or noxious plants impact habitats, fire cycles, grazing lands, and sage grassland communities. Annual invasive grasses are expanding but noxious plants like yellowstar thistle, skelton weed, and knapweed will follow presenting even more difficult challenges for control. As I talk with people my list of alien plants grows longer further confusing the priorities needed

to script scenes. A filmmaker from South Carolina has taken an interest since the East is fighting a battle with plants like 'kudzu' an aggressive vine, leafy spurge, and the loss of long needle pine forests. Perhaps a national film could be developing.

Regardless, there is no shortage of terrific filming opportunities. For example, cheatgrass will germinate and grow within three days in a laboratory. With time-lapse photography the plant's entire germination could be witnessed by filming one film frame every 30 minutes over 4 days. Using extreme macro photography the very small gray hairs of the sage brush leaf could be seen as they cool the plant by reducing evaporation from wind and heat. Filming ground squirrel behavior could explain how both native and invasive seeds are carried and spread through out the disturbed soils of their burrows. Their waste fertilizes soil and their population feeds predators, making them key members of the sage ecosystem's cycle of life.

No animal or bird seems to be a more dramatic indicator of sagebrush habitat health than the sage grouse. Dependent on the sagebrush plant the grouse feeds on it in winter, nests in its protective network of arms, and uses its canopy for thermal protection in winter and shade in summer.

Also, the insect population found in sagebrush country provides the necessary protein source for sage grouse hatchlings. Sage grouse have never populated salt desert, rock, or other sage deficient habitats because they lack all these essential elements.



Norm Nelson discovering a native grass in a cheatgrass monoculture in the Snake River Birds of Prey Conservation Area near Kuna, Idaho.

So much science has been done on the Great Basin and so many severe droughts, fires, and invasive plants have threatened its ecological health that an effort is now being made to apply science and cooperation through the BLM's Great Basin Restoration Initiative. It creates partnerships with academia, researchers, land users, the public at large and other non-government organizations; all united behind the goal of a biologically healthy and sustainable landscape that provides social and economic opportunities to people living in the Great Basin.

This encouraging initiative, yet to be funded, focuses on proactive treatments to resolving the myriad of problems that exist. The old approach of putting out fires and then rehabilitating the burned lands and fighting invasive species once they become established is not good enough. Fixing the land before fire or weeds can take over is the solution.

This initiative looks at the Great Basin as a whole and calls for no net loss of existing sagebrush or salt desert systems. Prescribed burns will be used to mimic the familiar mosaic of different ages of emerging native plants where appropriate. Native plants will be used where feasible to restore important and responsive lands first. Fire experts emphasize that rangeland fuels must be modified to resemble natural conditions otherwise the need for more people, equipment, and taxpayers dollars to fight wildfires will continue to spiral upwards with no end in sight. Invasive plants will continue to expand further degrading the land. Without our intervention, this declining trend will continue, making restoration even more difficult and expensive in the future.

The proposed film could contribute to a better appreciation for the people, wildlife and their habitats in the largely forgotten sage lands. A film chronicle done today would educate a rather apathetic audience and be a valuable tool in the future as we look back on our success or failure in this grand task.

The Film's Story

The following is the basic story line for 'Invaders of the Sage Sea.' We continue to look for distinctive scenes that will combine wildlife and invasive plants into a compelling natural history film.

We begin on the Russian steppes, flourishing with a hardy plant called Downy Brome '*Bromus tectorum*' a grass able to withstand extreme cold, drought, and poor soil. It quickly produces a viable seed and plentiful seedbed in early spring eliminating competition from other plants.

The seeds of Downy Brome came by grain shipments to the Pacific Northwest and were detected in 1889. Grain mixed with downy brome seed spread through accidental losses along railroads in the 1930's. The plant took to Great Basin soil and weather conditions quickly. The seed is encased in a thorn like sheath and was easily attached to cattle, sheep, and wildlife grazers as they roamed vast tracts of Great Basin sage and grass lands. Once detected by ranchers the plant was called 'cheatgrass' as it obviously took moisture and nutrients from soils in the early spring before native plants and crops had a chance to mature. Cheatgrass put on seed and died as summer approached. This covered the landscape in a flammable mat of dried debris that was instantly ignited by lightning storms. As the Great Basin burned the seed bank of cheatgrass remained hearty and with the coming of the next spring it claimed the parched land. As this cycle expanded, unimpeded by nature or man, cheatgrass and other alien plants were able to take over 60 million acres of the Great Basin. What was once a sea of sagebrush and grass spreading to the distant horizon now appeared as a lifeless desolate landscape dominated by a single plant that impacted the entire wildlife life cycle. Other plants began to take hold in wetlands, riparian areas, and in sensitive soils that were disturbed by unregulated livestock grazing.

Without sagebrush for cover and food many species of wildlife began to perish. With no native grasses or forbs small mammals could not put on fat for winter, sage grouse lost cover and food, grazing animals had to migrate over larger areas to find winter forage. As livestock continued to trample fragile blue bunch grasses and microbiotic soil crusts invasive plant seed slipped into the soil and easily germinated. Livestock, vehicles, and wildlife moved across the Great Basin and spread the invasive plant seed further and further inland. Then the fires began, and they were followed by healthy invasive plant communities of such magnitude that man soon lost control.

The crisis of invasive plants is now at a point where wildlife, like the scrub dependent sage grouse, are endangered with only pockets of viable habitat remaining. Birds of prey that depend on small mammals now produce smaller clutches of young, and large grazing animals cannot find winter forage across once healthy sagebrush stands. Since native plants cannot compete with cheatgrass and its new fire cycle more and more wildlife habitat has become a monoculture with new invasive plant species working to kill once productive landscapes. Cheatgrass germinates in places so plants that die from drought are replaced by other seeds that are ready to grow, germination is unending. Noxious plants are equally aggressive.

Scrambling for native plant seed, new techniques for reseeding, using herbicides, and rehabilitating burned areas, man is now faced with a challenging course against the authority of adaptive invasive plants. Signs of success are emerging as man combines prescribed fire with reseeding, herbicides with planting native seeds, and a better understanding of the needs of the wildlife species that depend on the Great Basin.

Man is confronted with the loss of entire ecosystems, once bountiful wildlife resources, and viable grazing lands. As he applies a myriad of technology, and a better understanding of the ecology of invasive plants he has an opportunity to turn the tide on this new threat to the wildlife sanctuary that is the Great Basin.

Author's Note: During my research I have been most impressed with the sophistication of the people who study and work on restoration. Many of their techniques for land recovery have shown success. They seem to have strong agendas for combating the problem with science, seed, fire, and herbicides. Combining the exploits of these people, with a magnificent array of wildlife species, wildfire impacts, and a truly forbidding opponent in invasive plants, one could produce a natural history film of real significance. I look forward to meeting this unique opportunity in 2003.

For information on the 'Invaders of the Sage Sea' documentary film project contact Norm or Tyler Nelson at Echo Films, 407 W Bannock, Boise, ID 83702, phone 208 336 0349 or e-mail echofilm@mindspring.com