

Saltcedar Task Force

Convened by the New Mexico Environment Department
Derrith Watchman-Moore, Deputy Secretary, Chair
December 2003 to April 2004

Executive Summary

On January 7, 2003 Governor Bill Richardson requested that the New Mexico Environment Department convene a task force to look at the problem of managing Saltcedar infestations in New Mexico. The New Mexico Department of Agriculture is convening a new task force in July, 2004. Because of the creation of the broader task force, the Saltcedar Task Force limited its scope of work to Saltcedar removal by herbicides *only*.

Overall findings. The Saltcedar Task Force was presented with a large amount of highly technical information from a very wide variety of disciplines presently involved in the management of Saltcedar. There is a great deal to learn from these groups that are capable of providing a huge amount of historical and factual knowledge.

Procedurally, numerous sovereigns are involved in the removal of Saltcedar, a variety of laws must be taken into account and no one entity or governing body has control over the entire process. Each of these entities will make the ultimate decisions regarding their land.

Substantively, the Task Force found that there presently is neither a fully developed strategy for watershed restoration and management, nor the funding appropriated/dedicated to pay for restoration plans. Sound science dictates that the monitoring protocol and restoration plans should come out of a broader design plan for the watershed. While watershed restoration and monitoring are beginning, they are not fully in place yet. Project managers pointed out that the watershed restoration and management plans are outside the scope of the work they were asked to do. They indicate that their project was focused on Saltcedar removal. The majority of their efforts and funding went towards this goal.

Question 1 – *Are herbicides being applied in a fashion that fully prevents unintended application on private or public lands, or unintended movement of the chemicals into water supplies or waterways in ways that could create economic or ecological damage?*

There is no way to *fully* prevent unintended application or ecological damage. Project managers report that herbicides were applied in a manner consistent with state and federal laws to minimize the potential for off-site impacts. However, even with proper application, unintended consequences may occur. Technical speakers indicated that with proper application in compliance with the pesticide label, potential undesired environmental impacts are not zero, but are typically considered negligible. The project managers and many of the speakers believe that the economic damage associated with non-target vegetation damage is expected to be offset by the benefits associated with the Saltcedar removal.

Question 2 – *Is the herbicide application program being effectively planned both to make the public aware when herbicides will be used, and to follow up with necessary restoration activity that will prevent erosion and assure establishment of appropriate species? Are monitoring programs adequate?*

The planning, follow up, restoration and monitoring aspects of the Saltcedar removal projects are evolving. There were deficiencies in these areas in the early stages of the project, and there have been improvements in each of these areas to date. There continues to be room for improvement in all of these areas in the project.

On-site project managers for sites that had developed their own overall monitoring and restoration plans were able to incorporate the Saltcedar removal process into the larger work that they had planned. Other program managers for sites without overall monitoring and restoration plans either have not yet developed a plan for the restoration of their lands, are waiting to see what will regenerate on the lands naturally, or are looking for ways to move their projects forward past Saltcedar removal. Project managers see the two year window in which the area treated must remain untouched as an opportunity to plan the next steps of the project.

The project managers reported to the Task Force that twenty six public meetings were held. The Task Force members heard comments by several members of the public about the limitations posed by public meetings and their effectiveness in reaching much of the general public. The project management staff continues to look for more effective ways to reach the general public with information about the projects.

Particularly as the projects matured, the project management staff met with individual landowners to create project plans at each site. This appeared to be a positive step in the process. Task Force members recommend that project managers develop landowner information packets to better assist in the education of the specific landowners as they enter into a project.

The monitoring programs are not yet adequate. In some areas pre-treatment monitoring had been done by the landowners. Other landowners did little or no pre-treatment monitoring. The Task Force heard speakers indicate that science protocol dictates that monitoring should be done on-site, using baseline data from the site. The monitoring work informs the parties about the progress towards the ultimate outcome identified in the initial plan. This protocol has not been utilized to date in the Saltcedar removal project.

Question 3 – *Do we need further research into whether the Saltcedar eradication program will produce the water quantity benefits that it advertises?*

Yes, all Task Force members agree that further research is need regarding whether the Saltcedar eradication program will produce the water quantity benefits that it advertises. A number of peer reviewed scientific studies have been conducted examining efforts undertaken in this state and others. Task Force members and interested parties do not agree on what results to take from this research. Further studies are underway by scientists that should continue to refine our understanding of the physical interactions that affect flows.

Task Force members were unanimous in concluding that all of the benefits of Saltcedar removal should be considered. Additional benefits were discussed such as a reduction in fire risk, an increase in habitat value and an increase in recreational value of land. Further research is needed to quantify these benefits.

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Report

On January 7, 2003 Governor Bill Richardson requested that the New Mexico Environment Department convene a task force¹ to look at the problem of managing Saltcedar infestations in New Mexico. The New Mexico Department of Agriculture is convening a new task force² in July, 2004. The new Task Force will look more expansively at all issues related to Saltcedar management and how Saltcedar management fits within the broader policy issues raised in watershed restoration, health and viability.

Limitations of Course and Scope. Because of the creation of the broader task force, the Saltcedar Task Force limited its scope of work to Saltcedar removal by herbicides *only*. The Saltcedar Task Force did not consider other methods of treatment of Saltcedar infestations. In addition, the Saltcedar Task Force cut short its meeting schedule in order to complete its work and pass the information onto the newly created task force. The Saltcedar Task Force met three times, heard comments from a wide variety of interested parties at each meeting, but was not a formal fact finding or investigative body. Comments by Task Force members and interested parties who wished to submit comments are attached.³

Much of the information on the Saltcedar control programs was provided by the New Mexico Association of Conservation Districts which has managed the state funds appropriated for FY 2002-2004, the federal funds and grant funds provided for Saltcedar control in central and southeastern New Mexico. The Department of Agriculture provided the oversight for these programs. Two people intimately involved in the Saltcedar removal programs were on the Task Force: Debbie Hughes, the Executive Director of the New Mexico Association of Conservation Districts and Frannie Miller from the Department of Agriculture (designated by Julie Maitland). (The organizations directly involved in managing the Saltcedar removal for FY 2002 -2004 are referred to here as “program managers.”)

Overall findings. The Saltcedar Task Force was presented with a large amount of highly technical information from a very wide variety of disciplines presently involved in the management of Saltcedar. There is a great deal to learn from these groups that are capable of providing a huge amount of historical and factual knowledge.⁴ In fact, the New Mexico Interagency Weed Action Group

¹ See Attachment 1, list of all Task Force members

² House Bill 2 of the 2004 Legislative session, sections 140 and 142, page 225 established the work of the task force.

³ See Attachment 2 for comments of Steve Harris, Task Force member, April Fletcher, interested party, Nyleen Troxel Stowe, Project Manager for Lower Rio Grande Salt Cedar Control Project, William See, Project Manager for the Pecos Salt Cedar Control Program and Dr. Ann McCampbell, interested party.

⁴ Many sections of this report came from a report from the *New Mexico Strategy for Long-term Management of Exotic Trees in Riparian Areas for Five River Systems*, created by the New Mexico Interagency Weed Action Group (NMIWAG).
Saltcedar Task Force
Final Report
4/14/2004
Page 1

(NMIWAG), an ad-hoc group of federal and state resource management agency representatives and university research specialists involved with invasive weed management, has worked to create a strategy for long-term management of exotic trees in riparian areas for five river systems. This report is presently being reviewed by the members of that group and others before final editing and printing.⁵

Procedurally, the Saltcedar Task Force also found that the issue of Saltcedar management is complicated by the numerous jurisdictions involved in the process. Saltcedar removal is requested on all types of land from state land, to the federal land, to tribal land, to land in private ownership. This creates levels of complication in management. Numerous sovereigns are involved, a variety of laws must be taken into account and no one entity or governing body has control over the entire process. Each of these entities will make the ultimate decisions regarding their land. The New Mexico Association of Conservation Districts were selected to run the Saltcedar removal program because of their ability to work with all types of entities, including the state, the federal agencies, the tribes and private landowners. The NMIWAG group was organized in 1999 to try to address the variety of invasive weed action challenges and programs of mutual concern. Speakers identified a need for the Saltcedar Task Force and the newly formed task force to coordinate with the existing groups.

Substantively, the Task Force acknowledged that Saltcedar removal is only one part of a broader management scheme to restore watershed. The Task Force found that there presently is neither a fully developed strategy for watershed restoration and management, nor the funding appropriated/dedicated to pay for restoration plans. Sound science dictates that the monitoring protocol and restoration plans should come out of a broader design plan for the watershed. While the issue of watershed restoration and monitoring are beginning to be looked at, they are not fully in place yet.

Project managers pointed out that the watershed restoration and management plans are outside the scope of the work they were asked to do. They indicate that their project was focused on Saltcedar removal. The majority of their efforts and funding went towards this goal. There have been two primary projects for Saltcedar removal that the project management staff has been responsible for: one in the Pecos River and one on the Lower Rio Grande. Project managers and other indicated that overall the Saltcedar removal process has operated smoothly, particularly on the Lower Rio Grande effort and in the later stages of the Pecos River project. Each recent project has developed an individual plan for Saltcedar removal.

There has not been an extensive discussion about the benefits and limitations of a systemic plan for the entire picture of watershed restoration, following the initial steps of Salt Cedar removal. On-site project managers for sites that had developed their own overall monitoring and restoration plans, such as the Sevilleta National Wildlife Refuge, were able to incorporate the Saltcedar removal process into the larger work that they had planned. Other program managers for sites without overall monitoring and restoration plans either have not yet developed a plan for the restoration of their lands, are waiting to see what will regenerate on the lands naturally, or are looking for ways to move their projects forward past Saltcedar removal.

For a partial listing of the groups working on Saltcedar removal issues either through NMIWAG or participant developing research priorities, see Attachment 3.

⁵ See footnote 4 and Attachment 3.

As the Governor requested, this Task Force has answered three questions articulated by the Governor in his letter of January 7, 2003.

Question 1 – *Are herbicides being applied in a fashion that fully prevents unintended application on private or public lands, or unintended movement of the chemicals into water supplies or waterways in ways that could create economic or ecological damage?*

Short Answer. There is no way to *fully* prevent unintended application or ecological damage. Project managers report that herbicides were applied in a manner consistent with state and federal laws to minimize the potential for off-site impacts. However, even with proper application, unintended consequences may occur. Technical speakers indicated that with proper application in compliance with the pesticide label, potential undesired environmental impacts are not zero, but are typically considered negligible. Technical speakers cited information from the Environmental Protection Agency that shows the impacts to be largely localized and transient. The project managers and many of the speakers believe that the economic damage associated with non-target vegetation damage is expected to be offset by the benefits associated with the Saltcedar removal.

Preliminary Inquiry. A preliminary inquiry prior to answering the question presented is whether herbicides can be safely applied to remove Saltcedar. Some speakers reported to the Task Force that they are very suspicious of the safety of herbicides in general.⁶ Several members of the Task Force and the interested parties indicated that the herbicides used in the removal of Saltcedar are safe if applied appropriately and in accordance with label requirements. Other members of the Task Force indicated that a number of public health experts are concerned that the process for approving toxic herbicides may be insufficiently rigorous. In particular, these public health experts are concerned about the action of undisclosed “inert ingredients.” The public health experts with these concerns argue that a reasonable approach is to apply the ‘precautionary principle,’ prescribing broadcast herbicide in cases where other treatment methods are not feasible. A variety of Saltcedar removal techniques, both using herbicides and not using herbicides, has been implemented by project managers.

In its limited scope of work, the Saltcedar Task Force did not examine in detail the other methods for managing Saltcedar other than herbicides. However, there was a consensus among the speakers presenting to the Task Force that all methods for removing Saltcedar should be examined and utilized. Some projects are better treated with a large scale use of herbicides and some may require none at all.

The project used two different herbicides to treat Saltcedar: Imazapyr (Arsenal) and Triclopyr (Garlon 3A and Garlon 4). Two special local needs registration (24C) were obtained to allow the aerial application of Arsenal near water in this program, one for the Rio Grande project and the other for the Pecos River project.⁷

⁶ Jack Noel, an interested citizen, and others spoke about their concerns surrounding the use of herbicides at the December, 2003 meeting of the Task Force. We attach here as Attachment 4 a written discussion regarding the safety of herbicide use.

⁷ A copy of one of the labels is attached in its entirety as Attachment 5. The specified counties for use are: San Miguel, Guadalupe, De Baca, Chaves, Eddy, Taos and Rio Arriba, Santa Fe, Sandoval, Bernalillo, Valencia, Socorro, Sierra, Dona Ana and McKinley counties.

Technical speakers indicated that Imazapyr products such as Arsenal are broad spectrum herbicides that effectively control many different plant species. They are regarded as “relatively nontoxic” to fish, birds and other animals, particularly after dilution for actual application.

Technical speakers also explained that the selectivity of the herbicide Garlon combined with the method of application pose very little threat to desirable vegetation in the immediate area. The application of Garlon is accomplished through the use of cut stump and injection applications to treat individual plants. As a result, there is very little potential for affecting non-target plants or animals. The Garlon formulations are selective herbicides. This means that they will affect woody and broad leaf vegetation but will have little or no effect on grasses. These herbicides are not soil-active. Desirable vegetation, even when it is immediately adjacent to treated Saltcedars or Russian Olive is not likely to be affected.

Differences in type of herbicide application. These herbicides were, and continue to be, applied in three different ways:

- Garlon formulations through directed application methods, typically targeted at individual trees,
- Arsenal through both foliar ground applications to specific trees, and
- through aerial application applying Arsenal by helicopter to kill large infestations of Saltcedar (and sometimes Russian Olives), where they are growing in monocultures.

Garlon, applied using a directed application method, can be applied at almost any time during the growing season. However, it is not as effective in the spring when the sap is flowing.

The aerial use of Arsenal has been used on densely populated groves of Saltcedar. The Task Force was shown photographs of acres of land in which the Saltcedar forms densely populated groves in which little or nothing other than Saltcedar (and sometimes Russian Olive trees) is growing in or near streambeds. Arsenal is applied during the fall season when plant growth is at a minimum. The dying Saltcedar is then left in place for two to three years to reduce re-growth of the plant. Arsenal affects two amino acids, found only in plants, and limits the plant’s ability to adequately grow new sprouts if left undisturbed. Without the ability to re-sprout, the plant cannot store enough nutrients to survive more than two or three winters. The use of the herbicides Arsenal has been touted as 90-95% effective at killing Saltcedar and some other plants species.

Ground application. When the application of Garlon formulations is localized, as it is when it is applied using directed application to individual plants, there have been no significant undesirable impacts. The herbicide moves quickly down into the roots and breaks down fairly rapidly in the environment. In one or two early applications there were some complaints about diesel odor coming from the diesel oil that was initially used in mixture with some Garlon 4 applications. These complaints were resolved by changing to a vegetable oil.

Aerial application. When a broader application method (such as an aerial application of Arsenal) has been used, there has been more controversy, particularly in the early stages of the project. In a few incidences of aerial application of Arsenal that occurred during the early stages of the project, there were complaints of misapplication/inadvertent application. Project managers indicated to the Task Force that there was an inadvertent application on some Bureau of Land Management land, when some acres were sprayed prior to completion of the Environmental Assessment.

Additionally, two landowners in Chaves County⁸ believe that their grass has been damaged by the treatment of Saltcedar on their land. It is difficult to identify what went wrong, or what combination of things went wrong, in these situations. The strong comments to the Task Force by one of these landowners indicated that a few landowners did not expect the adverse affects to grasses that took place on their land. There are a variety of possible explanations for the situations that occurred.

- The herbicides could have been misapplied and inadvertently applied to sites with grasses;
- There could have been a miscommunication between the project managers and the land owners regarding the amount of acreage to be sprayed aerially;
- There could have been a miscommunication about the effect the pesticide would have on all plants and the length of time needed for the land to rejuvenate; and
- Finally drought conditions may have played a role in the loss of desired vegetation.

Many other landowners have participated in this program with little issues regarding anticipated associated effects and actual results. These other landowners spoke to the Task Force as well and explained that they understood the risks associated with the program and anticipated the results that took place after aerial spraying.

The project managers have made improvements to the aerial application processes. The project managers reported that they create individual project plans with all landowners now and meet personally with the landowners to avoid miscommunication. They were successful in spraying an area for Saltcedar within endangered species habitat that left the endangered species habitat intact. The project managers reported that they have utilized targeted aerial applications such as helicopter applications, utilizing Global Positioning System technology. This has allowed for great accuracy in application. Project managers installed the helicopter application with additional safeguards against human error.⁹

Water application. The Task Force heard discussion regarding a new label for Arsenal for aquatic applications called “Habitat.” This herbicide has recently been approved by the EPA. The Task Force understands that the “Habitat” label is only just now being approved by the states. It may not yet be available in New Mexico. The Task Force further understands that the use of this Arsenal formulation has been discussed at other hearings such as a recent New Mexico Water Quality Control Commission hearing. The Task Force did not investigate any issues regarding use of “Habitat.”

Question 2 – *Is the herbicide application program being effectively planned both to make the public aware when herbicides will be used, and to follow up with necessary restoration activity that will prevent erosion and assure establishment of appropriate species? Are monitoring programs adequate?*

Short Answer. The planning, follow up, restoration and monitoring aspects of the Saltcedar removal projects are evolving. There were deficiencies in these areas in the early stages of the project, and there have been improvements in each of these areas to date. There continues to be room for improvement in all of these areas in the project.

⁸ Gary Lynch, a rancher from the southern part of the state spoke about the issues on his land at the December, 2003 meeting.

⁹ See report by Nyleen Troxel Stowe on the status of the project attached a comment in as Attachment 2.

On-site project managers for sites that had developed their own overall monitoring and restoration plans, such as the Sevilleta National Wildlife Refuge, were able to incorporate the Saltcedar removal process into the larger work that they had planned. Other program managers for sites without overall monitoring and restoration plans either have not yet developed a plan for the restoration of their lands, are waiting to see what will regenerate on the lands naturally, or are looking for ways to move their projects forward past Saltcedar removal. Project managers see the two year window in which the area treated must remain untouched as an opportunity to plan the next steps of the project.

The project managers reported to the Task Force that twenty six public meetings were held. The Task Force members heard comments by several members of the public about the limitations posed by public meetings and their effectiveness in reaching much of the general public. The project management staff continues to look for more effective ways to reach the general public with information about the projects.

Particularly as the projects matured, the project management staff met with individual agencies and landowners to create project plans at each site. This appeared to be a positive step in the process. Task Force members recommend that project managers develop landowner information packets to better assist in the education of the specific landowners as they enter into a project.

The monitoring programs are not yet adequate. In some areas pre-treatment monitoring had been done by the landowners. Other landowners did little or no pre-treatment monitoring. The Task Force heard speakers indicate that science protocol dictates that monitoring should be done on-site, using baseline data from the site. The monitoring work informs the parties about the progress towards the ultimate outcome identified in the initial plan. This protocol has not been utilized to date in the Saltcedar removal project.

Planning Specific to Saltcedar Removal. The program to remove Saltcedar was limited in time by the constraints of the funding sources. This is particularly true with the state funding which was subject to reversion to the general fund if not spent by 2004. Landowners spoke to the Task Force about believing there was an urgency to begin the projects on the land so that funding was used. In some instances, the landowners felt rushed to begin a project before an overall plan for the area, initial monitoring, or restoration and monitoring plans were in place.

Particularly with regards to restoration, the project managers made a decision to use the existing funding for Saltcedar removal and then utilize future resources for restoration. There is a continued effort to receive additional funding through grants, federal funding, and through requests for state funding. The project managers have anticipated using the two-to-three year rest period for the land following an aerial application to create restoration plans.

Little Overall Planning in the Watershed. Overall, the Task Force found that the herbicide application program essentially is operating as a project unto itself with its focus on Saltcedar removal. Program managers stated that this limited scope of work was the extent of what they were asked to do. The program managers indicated that this limited scope of work has allowed most of the funding to be spent on the ground, actually removing Saltcedar. However, it is clear that unless the landowner had an overall plan of watershed restoration in place, the broader picture of watershed restoration, and overall health and viability of the land were not considered as part of the project.

Jurisdictional challenges. As mentioned in the introductory section above, the Saltcedar Task Force also found that the issue of Saltcedar management is complicated by the numerous jurisdictions involved in the process. Saltcedar removal is requested on all types of land from state land, to the federal land, to tribal land, to land in private ownership. This creates levels of complication in management because of the number of sovereigns involved, the variety of laws that must be taken into account and the fact that no one entity or governing body has control over the entire process.

Question 3 – *Do we need further research into whether the Saltcedar eradication program will produce the water quantity benefits that it advertises?*

Yes, all Task Force members agree that further research is need regarding whether the Saltcedar eradication program will produce the water quantity benefits that it advertises. A number of peer reviewed scientific studies have been conducted examining efforts undertaken in this state and others. Further studies are underway by scientists that should continue to refine our understanding of the physical interactions that affect flows.

Task Force members and interested parties do not agree on what results to take from this research. Denise Fort, a Task Force member, indicates that the research in this area generally fails to support claims of increased flows due to Saltcedar removal. April Fletcher, an interested party in the Task Force proceedings and an employee of the United States Fish and Wildlife Service, states that current literature and research shows that while there has been some recovery on some sites, there has been little or no recovery on others. She states that some factors that need to be examined include (1) the total amount of evapotranspiration which is occurring on a particular site before Saltcedar removal; (2) the kind and density of replacement vegetation; (3) other water usages occurring at the time of, or after, Saltcedar removal, and (4) the natural fluctuations of ground water.

Task Force members were unanimous in concluding that all of the benefits of Saltcedar removal should be considered. Additional benefits were discussed such as a reduction in fire risk, an increase in habitat value and an increase in recreational value of land. Further research is needed to quantify these benefits.

List of Attachments

1. List of Task Force members
2. Comments:
 - a. Steven Harris, Task Force members
 - b. April Fletcher, Interested Party to the Task Force and employee of United States Fish and Wildlife Service
 - c. Nyleen Troxel Stowe, Project Manager Lower Rio Grande Salt Cedar Control Project.
 - d. William See, Project Manager Pecos River Salt Cedar Control Program
 - e. Ann McCampbell, M.D., Interested Party to the Task Force and chair of the Multiple Chemical Sensitivities Task Force of New Mexico
3. *Overview of the New Mexico Interagency Weed Action Group's Long-term Strategy for Control of Riparian Woody Invasive Species.*

Saltcedar and Russian Olive Research Priorities and Links to Demonstration Areas in New Mexico.
4. Supplemental Labeling for Arsenal
5. Discussion between various Task Force members and interested parties regarding the relative safety of herbicides. *See also* comment by Dr. McCampbell on this topic.
6. *How to Quantify the Water Salvaged by Removal of Salt Cedar and Other Phreatophytes from New Mexico Waterways*, Sterling Grogan, draft.