



**REPRODUCTION OF THE NOXIOUS WEED POISON
HEMLOCK (*CONIUM MACULATUM*) FOLLOWING THE
CUTTING OF ITS REPRODUCTIVE STALKS**

OR

**DOES POISON HEMLOCK HAVE AN ACHILES HEEL
THAT CAN BE EXPLOITED FOR MANAGEMENT?**

Second Progress Report

Submitted to

Lynn Riedel
P. O. Box 791
Boulder, CO 80306
riedell@ci.boulder.co.us

Prepared by

Alan T. Carpenter, Ph.D., President
Land Stewardship Consulting, Inc.
2941 - 20th Street
Boulder, CO 80302
(303) 443-8094 phone
(303) 449-9514 fax
atcarpen@infi.net

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2003 Activities

As noted in last year's progress report, the treatments were imposed on the poison hemlock plants too late in the 2002 growing season for the results to be meaningful. Therefore, the study was repeated in 2003 but with some modifications. In 2003, poison hemlock plants were clipped only at the base. I eliminated the treatment in which the plants were clipped immediately below the flowering structures, because I found in 2002 it was just as easy to clip the entire plant. Furthermore, clipping the entire plant would probably have a greater negative effect on the target plant than clipping only the reproductive portions. I also eliminated the shovel cut treatment because it was very difficult to actually sever the poison hemlock plant stalks with a shovel without greatly disturbing the soil at the base of the cut plants. Therefore, I clipped the entire poison hemlock plant stalks. I imposed this treatment at three different phenological stages: flower bud, flowering, and immature fruit. As in 2002, poison hemlock plants tagged in 2003 were located along the lower portions of the Sanitas Valley Trail.

On May 25, 2003, fifty poison hemlock plants that had reproductive stalks were selected in a stratified random manner, with plants selected at approximately 1 - 5 meter intervals throughout the study area to ensure a representative sample. Each selected plant was marked with a pin flag inserted into the soil 10 cm north of the target plant. Plants selected were all in the flower bud phenological stage, meaning that the flower buds were closed and had not opened. All fifty plants selected were clipped at ground level with a pair of shears. This is termed the "May basal clip" treatment. All of the plants selected were robust and appeared to be healthy.

On June 16, 2003, an additional fifty poison hemlock plants that had reproductive stalks were selected in a stratified random manner, with plants selected at approximately 1 - 5 meter intervals throughout the study area to ensure a representative sample. Each selected plant was marked with a pin flag inserted into the soil 10 cm north of the target plant. Plants selected all had more than 50% of their flowers at anthesis. The flowers and flower buds were not counted; rather, I made a quick visual inspection of each plant to determine if over half of the flowers were at anthesis. All fifty plants selected were clipped at ground level with a pair of shears. This is termed the "June basal clip" treatment. All of the plants selected were robust and appeared to be healthy.

Also on June 16, I inspected the plants clipped and marked on May 25. All of those plants appeared to be dead; i.e., they lacked any green tissue and were desiccated.

On July 13, 2003, an additional fifty poison hemlock plants that had reproductive stalks were selected in a stratified random manner, with plants selected at approximately 1 - 5 meter intervals throughout the study area to ensure a representative sample. Each selected plant was marked with a pin flag inserted into the soil 10 cm north of the target plant. Plants selected all had immature fruits (green in color) and no flowers or flower buds. All fifty plants selected were clipped at ground level with a pair of shears. This is termed the "July basal clip" treatment. All of the plants selected were robust and appeared to be

healthy.

Also on July 13, I inspected the plants tagged and clipped on May 25 and on June 16. All but two of the clipped plants appeared to be dead; i.e., they lacked any green tissue and were dessicated. All of the others appeared to be dead.

Preliminary Conclusions

The initial results of the 2003 clipping study were very encouraging. Few of clipped poison hemlock plants were unable to survive the clipping treatment, regardless of phenological stage. I anticipate that none of the clipped plants will survive until 2004, because the plants that did survive the clipping treatment during the summer of 2003 had few leaves and appeared to be very weak. If this turns out to be the case, it appears that clipping poison hemlock plants when they are in bud could be a practical way of controlling this noxious weed species occurrences without using herbicides. Clipping the stalks was easy with a pair of sharp shears. In addition, the stalks could possibly be left in the field after they are clipped during the bud stage because the flower buds might not be able to produce viable fruits on a severed stem. However, I did not collect any data to evaluate this possibility. It is possible that environmental conditions in 2003, especially precipitation and temperature, were somehow unusually unfavorable for the clipped poison hemlock plants, and thus, resulted in an exceptionally high mortality of the clipped plants.

In May 2004, I will locate the plants clipped in 2003 and evaluate the status (dead or alive) of the clipped plants. I will submit a final report by December 31, 2003.