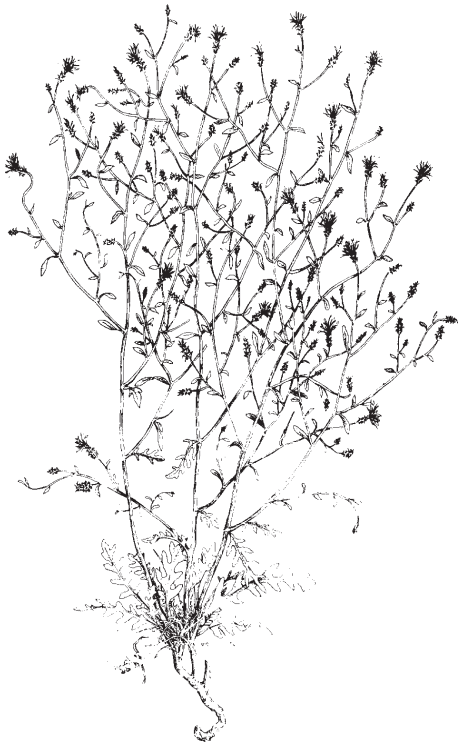
Section VII

Monitoring and Evaluation

Monitoring and evaluation indicate the condition of the WMA and report changes in vegetation trends. Monitoring and evaluation also record vegetation trends caused by weed management activities. Weed-free areas probably deserve more rigorous monitoring than known infestations.

I. Monitoring

Monitoring means repeated systematic observation.



Monitoring begins with the pooling of all available information (an inventory of known facts) to establish baseline data. This information may be obtained from cooperators' existing databases.

A. Purpose of a Monitoring System.
   1. Collect baseline field data on existing weed infestations and control practices.
   2. Compile data on which to base weed control decisions.
   3. Evaluate the effectiveness of treatments, including modifications to the design or maintenance of the system and the education and training program.
   4. Prevent reinvasion by returning to eradicated stands to determine if new plants have established.

B. Different Levels of Monitoring.

The following monitoring levels are dependent on the resources and manpower available. Low intensity (Level I) requires fewer resources and time than high intensity (Level III). Specific areas of each Weed Management Area may require different levels of monitoring. It is almost impossible to fully monitor all areas and/or species, thus prioritize what to monitor.

   1. Low Intensity (Level I) Objective: To detect new infestations and to assess the success of small scale chemical or mechanical control programs.
      a. Annually survey size and density of weed infestations and vegetation trends.
      b. Assess public opinion towards weeds and weed control.
      c. Assemble data on past and current weed control activities within the WMA.
      d. Annually update the distribution/density map discussed in *Section V*.
      e. Annually examine areas that are determined to be particularly susceptible to weed. infestations.
   2. Moderate Intensity (Level II) Objective: Assess the success of ongoing chemical, biological control, or prevention programs in order to evaluate the need for adjustments. Include the elements of Level I, plus:

a. Establish permanent transects to aid visual monitoring. *(See Appendix 8.)*
b. Establish photo points. Catalog and store photos so that they are useful for recording trends. *(See Appendix 8.)*
c. Collect weather data. This will require access to weather records and Palmer Drouth Index.
d. Evaluate the success of public education programs.
e. Monitor funding from various sources.
f. Assess the prevention effort.
g. Compare the success of application timing, rates, and methods of treatment with that of applications on similar areas.
h. Make an annual visual inspection for symptoms of damage to desirable plants.
i. Make post-treatment inspections to determine possible damage and the need for retreatment.

3 High Intensity (Level III) Objective: Assess the success of major, sensitive, or experimental control programs. Include the elements of Levels I and II, plus:

a. This level may require the use of statistical and chemical analysis.
b. Establish a computerized database. Geological Information Systems (GIS) lend themselves to this level of monitoring.
c. Automatic weather stations may be used to collect data.
d. May require more detailed maps.
e. Collect data on ground water, soils, health effects and impacts on wildlife management.

II. Evaluation

Evaluation is relating information obtained from monitoring to the objective of the Annual Operation Plan (AOP).

A. Use evaluation to determine:
   1. If the weed management program accomplishes the objectives of the AOP.
   2. If the AOP is still desirable and realistic. Evaluation requires analyzing information gained through monitoring, including benefits versus costs, comparing it with the cost/benefit of other alternatives, comparison with untreated areas, and projected costs of no action.

B. Evaluation should answer the following questions:
   1. Was the weed population adequately suppressed?
   2. Was the planned procedure used? If not, what was different and was it documented?

3. Was the cost of weed suppression equal to or less than the potential loss?
4. What was the affect on target organisms?
5. Were natural enemies affected by the treatment?
6. Were there any other side effects from the treatment?
7. Were the side effects included in the cost-benefit analysis?
8. Should the treatment be repeated or modified?
9. Should another kind of treatment be considered?
10. Was funding and manpower available at the appropriate time?
11. Was training adequate?
12. Were changes in the weed regime due to external factors?
13. Make changes to the AOP based on your evaluation.