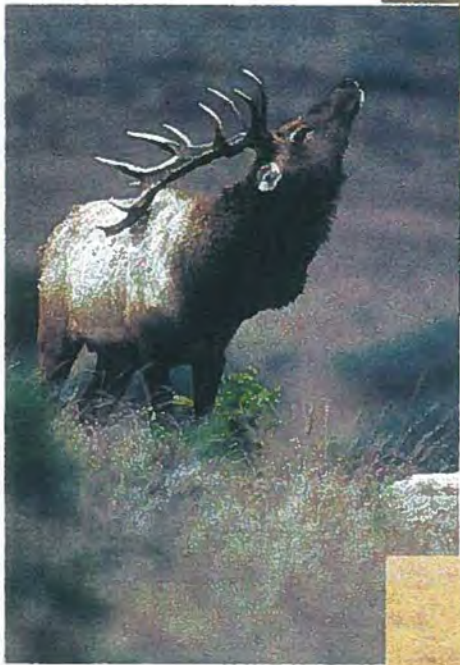


Point Reyes National Seashore  
Tule Elk Management Plan  
and  
Environmental Assessment



1998



## Appendix A

This appendix contains the Memorandum of Agreement between state and federal agencies on Point Reyes tule elk approved in February 1998.

**MEMORANDUM OF AGREEMENT  
BETWEEN THE CALIFORNIA DEPARTMENT OF FISH AND GAME  
AND  
NATIONAL PARK SERVICE  
POINT REYES NATIONAL SEASHORE  
RELATING TO THE MANAGEMENT OF TULE ELK**

**ARTICLE 1—BACKGROUND AND OBJECTIVES**

WHEREAS, National Park Service (NPS) and the California Department of Fish and Game (Department) have entered into previous agreements concerning the management of tule elk at Point Reyes National Seashore; and

WHEREAS, A Congressional Joint Resolution (P.L. 94-38, 90 Stat.1189, 16 United States Code section 673e) authorizes the Secretary of the Interior to cooperate with the State of California in making their lands under their respective jurisdictions of Interior Agencies reasonably available for the preservation and grazing of tule elk in such manner and to such extent as may be consistent with Federal law and develop a plan for tule elk restoration and conservation that is integrated with the Department's Statewide Tule Elk Management Plan; and

WHEREAS, 16 United States Code section 1 provides the NPS with its purpose which "is to conserve the scenery and the natural and historic objects and the wildlife therein" and the National Park Service Management Policies (NPS 1988) provide overall guidance on the management of wildlife populations on National Park Service lands; and

WHEREAS, 16 United States Code section 1131 provides the NPS with overall direction for management of wilderness areas such as Tomales Point; and

WHEREAS, the NPS with the cooperation of the Department under a previous agreement, reintroduced tule elk within the wilderness area of Tomales Point; and

WHEREAS, the NPS and the Department have recognized the desirability of restoring tule elk to suitable former ranges of this species within central California; and

WHEREAS, the Department, under the laws of California, has legal responsibilities for the management of wildlife and its habitats within the State of California; and

WHEREAS, each of the agencies involved have developed recognized skills, expertise, and experience in tule elk and wildlife management; and

NOW, THEREFORE, both parties agree as follows:

**ARTICLE II--STATEMENT OF WORK**

A: The NPS agrees to:

1. Complete the environmental and historical compliance, including public meetings, necessary for the implementation of the tule elk management plan.
2. Protect and preserve the tule elk population at Tomales Point consistent with NPS policies which state: "The National Park Service will seek to perpetuate the native animal life as part of the natural ecosystem of parks."
3. Conduct research to determine population dynamics, impacts on special status species, carrying capacity, regulation methods, threshold levels, range utilization and monitor the extent of Johnes disease in the Point Reyes elk herd and overall population size. Research will be identified in and prioritized through the development of the long-term management plan and adaptive management strategies.
4. Maintain, as necessary, the tule elk enclosure of approximately 2,600 acres on Tomales Point.
5. Convene scientific panels, as needed, to provide advice and guidance with management of the tule elk.

B. The Department agrees to:

1. Supplement the initial reintroduction of two bulls and eight cows at Tomales Point with animals of appropriate age and sex, if deemed desirable by both parties.
2. Provide technical services, including veterinary service, if necessary as determined by the Department, in the management of the tule elk herd.
3. Assist NPS in removing from Tomales Point all tule elk determined to be in excess of the established maximum carrying capacity for the enclosure, if deemed desirable by both parties.

4. Assist NPS in live-capture of elk for research and removal by direct and other means of reducing the elk population to an acceptable level below maximum carrying capacity at such suitable intervals as may be determined in the management plan.
5. Assist, if deemed desirable by both parties, with research related to tule elk management at Point Reyes.
6. Assist in overall annual surveys of the elk population.

**C. Both agencies agree to:**

1. Assist in the development of the long-term management plan for tule elk at Point Reyes National Seashore.
2. Evaluate the feasibility of reintroductions of tule elk to other locations using criteria for relocations as established by the Interagency Tule Elk Task Force. It is furthered agreed the sites will be compatible with the long-term goal of having free-ranging tule elk.
3. Make available to the other party any documents, reports, and information related to the management of tule elk.
4. Provide an overall liaison authorized to exchange information, assist with the development of study techniques, and attend joint meetings regarding tule elk management and research at Point Reyes National Seashore.

**ARTICLE III--TERM OF AGREEMENT**

- A. Unless earlier terminated pursuant to Article VIII, this Agreement shall become effective on the date of final signature, and shall continue in effect for a period not to exceed five years.
- B. This Agreement may be modified only by the written agreement of both parties.

**ARTICLE IV--KEY OFFICIALS**

**For the NPS:**

**Don L. Neubacher**  
Superintendent  
Point Reyes National Seashore  
Point Reyes, CA 94956

**Frank Dean**  
Assistant Superintendent  
Point Reyes National Seashore  
Point Reyes, CA 94956

**Bill Shook**  
Chief of Resource Management  
Point Reyes National Seashore  
Point Reyes, CA 94956

**For the Department:**

**Terry M. Mansfield, Chief**  
Wildlife Management Division  
Department of Fish and Game  
1416 Ninth Street  
Sacramento, CA 95814

**Brian Hunter, Regional Manager**  
Department of Fish and Game  
Post Office Box 47  
Yountville, CA 994599

No changes in key officials shall be made by either the NPS or the Department without written notification. The notification shall include an explanation in sufficient detail to permit evaluation of the impacts of such a change on the STATEMENT OF WORK as contained in ARTICLE II. Specific project coordinators shall be designated by the NPS and Department for each activity and project issued under this Agreement.

**ARTICLE V--PROPERTY UTILIZATION**

Not applicable.

**ARTICLE VI--PRIOR APPROVAL**

Not applicable.

**ARTICLE VII--REPORTS AND DELIVERABLES**

Delivery of all reports and documents required by Article II above shall be made as follows:

Place of delivery for the NPS:

Don Neubacher  
Superintendent  
Point Reyes National Seashore  
Point Reyes, CA 94956

Place of delivery for the Department:

Brian Hunter, Regional Manager  
Department of Fish and Game  
Post Office Box 47  
Yountville, CA 994599

**ARTICLE VIII--TERMINATION**

This Agreement can be terminated at any time and by any party. Any party desiring to terminate this Agreement must provide thirty days written notice to all other parties.

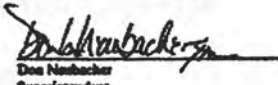
**ARTICLE IX--GENERAL AND SPECIAL PROVISIONS**

- A. During the performance of this agreement, the participants agree to abide by the terms of USDI-Civil Rights Assurance Certification, non-discrimination and will not discriminate against any person because of race, color, religion, sex or national origin.
- B. No member for delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit.

**ARTICLE X—AUTHORIZING SIGNATURES**

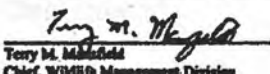
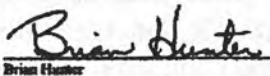
IN WITNESS WHEREOF, the parties hereto have signed their names and executed this Memorandum of Agreement.

**National Park Service**

 Don Neubacher Superintendent	<u>2/4/98</u> Date
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\_\_\_\_\_  
(signed) \_\_\_\_\_ 2/4/98  
Don Neubacher Date  
Superintendent

**Department of Fish and Game**

 Terry M. Mansfield Chief, Wildlife Management Division	<u>2/20/98</u> Date
 Brian Hunter Regional Manager	<u>2-13-98</u> Date

\_\_\_\_\_  
(signed) \_\_\_\_\_ 2/20/98  
Terry M. Mansfield Date  
Chief, Wildlife Management Division

\_\_\_\_\_  
(signed) \_\_\_\_\_ 2/13/98  
Brian Hunter Date  
Regional Manager

## Appendix B

The following alternatives were developed as part of the public scoping document for the 1992 environmental assessment *Control of Tule Elk Population at Point Reyes National Seashore*. While it was withdrawn from the approval process, the draft assessment and the response by the public helped formulate policy and direct strategies for tule elk at Point Reyes National Seashore.

### Control of Tule Elk Population at Point Reyes National Seashore (1992)

#### Alternatives

**1. No Action**

No effort is made to control the population of the elk herd at Tomales Point. Using the population model developed by Gogan, the herd will continue to increase at a near exponential rate. The elk population would temporarily exceed the carrying capacity of the range, perhaps by a considerable amount.

**2. Remove Fence and allow elk to disperse.**

With the Tomales Point fence removed, elk would initially disperse to the south. Eventually elk may migrate beyond the boundaries of the Seashore.

**3. Create additional fenced reserves within the Seashore.**

Additional acreage elsewhere within the Seashore could be fenced off and a number of elk could be transplanted to the new range. This would require the construction of additional elk fences.

**4. Relocate excess elk to areas outside the Seashore.**

As called for in the April 27, 1974 Memorandum of Understanding (this MOU has expired), California Department of Fish and Game (DFG) would remove any elk determined to be in excess of the maximum carrying capacity.

**5. Allow Public Hunting to reduce the number of elk.**

A public hunt, regulated by DFG, would harvest elk on a yearly basis so that the carrying capacity of the elk range is not exceeded.



**6. Remove excess elk on a yearly basis.**

After the fall census is conducted, the number of elk to be removed is determined. Rangers or individuals under cooperative agreement or contract, reduce the number of elk necessary to bring the population down to carrying capacity.

Option A: Elk shot near roads will be removed and delivered to non-profit charity for use as food resource.

Option B: All elk carcasses would be recovered and donated to charity.

Option C: Contract recovery of elk carcasses, and donated to charities.

Option D: Cooperate with Native Americans to recover elk carcasses. The Native Americans may keep a portion of the meat recovered and the remainder of the meat is donated to charities.

**7. Reduce the reproductive rate of the elk currently within the Seashore.**

Reduction of reproductive rates of the elk herd may be accomplished by one of two methods. Sterilization would require intensive surgical procedures, involving capture, anesthesia and field surgery. A second method to reducing the reproductive rates would involve the remote delivery of chemical-contraceptives.

**8. Introduce additional predators.**

Wolves (non-natives) could be introduced and/or additional mountain lions (native) could be relocated in order to control the elk population.

## Appendix C

This appendix extracts the "Concluding Remarks" and "Recommendations" sections from the *Report of the Scientific Advisory Panel on Control of Tule Elk at Point Reyes National Seashore*, dated October 18, 1993.

### CONCLUDING REMARKS

We recognize that this report leaves many issues unresolved. This is because the current status of the elk population is uncertain, and the future trends not entirely predictable. Only better information and time will address the fundamental issue: will the tule elk herd on Tomales Point naturally regulate or is active management required? We cannot give a prescription at the present time. The best we can do is to lay out the alternatives and recommend a course of action that will address alternate outcomes of this experiment in population growth. The crisis stage has not yet been reached, but the time to act is now. There are no perfect solutions and good information and hard work are necessary to establish the best program, taking into account NPS policies and public acceptance.

The NPS faces some difficult problems. How can elk impacts on critical areas be measured, and what threshold (that if exceeded, active intervention is indicated) should be adopted? Only careful study of specific impacts can address these issues. And, should active intervention prove to be required, is it preferable to maintain a large population near carrying capacity, or a smaller population well below carrying capacity? Clearly the method of control will strongly influence the choice.

## **RECOMMENDATIONS:**

1. We recommend that the elk herd be permitted to self-regulate with regard to population size unless some predefined threshold of impact upon habitat has been exceeded. We strongly recommend that the NPS establish the habitat impact threshold as soon as possible. Threshold criteria could be based upon:

- a) a reduction in residual dry matter in critical areas below the levels that would protect the soil,
- b) excessive localized impacts such as trailing in localized critical areas, and
- c) excessive impact on threatened and endangered flora and fauna.

Without this standard, there is no basis for determining whether active management (e.g. culling or contraception) or passive management (e.g. natural population regulation) is appropriate.

The consequences of not establishing a threshold are possible excessive damage to the habitat and natural systems that are incompatible with the NPS goals for management of Tomales Point.

2. We view the integrity of the ecosystem as the predominant goal of elk management. Therefore, we recommend that if necessary, agency culling be employed as the ultimate control method to hold elk numbers to the predefined habitat impact threshold. If alternative controls can be achieved, either by natural regulation, translocation or contraception, culling may not be necessary.

3. The only current management technique available for controlling the elk population is agency culling of animals assuming that public hunting is not an option. Translocation and reproductive control are both potential management techniques but cannot be implemented at present due to a lack of baseline information. Therefore, we recommend implementation of the following research initiatives to increase management options.

- a) Establish a pilot study to assess the feasibility of utilizing contraceptives as a means of population control.
- b) Initiate a program of fecal culture and necropsy to establish the current status of Johne's and other important livestock diseases in the population. This is required in order to evaluate the feasibility of translocation of animals outside of the National Sea Shore.

4. We recommend that the habitat and animal monitoring programs be expanded. This is essential to establish the validity of the current estimate of range carrying capacity of 350 animals and the feasibility of population control with contraceptives. The plant monitoring program needs to include critical areas, e.g. areas of high physical impacts, water sources and threatened and endangered plants. Better information on total size of the herd and the sex/age composition need to be obtained. For example, changing the survey date and implementing ground surveys to obtain sex/age composition would help achieve this goal.
5. We recommend the addition of 2-3 female elk every elk generation to maintain genetic variation within the population. The first addition of new elk should be made as soon as possible.
6. The long-range goal of elk management at PRNS should be the re-establishment of free-ranging elk throughout the seashore and associated public lands. This would involve elimination of exotic cervids and removal of the fence across Tomales Point. NPS and CDFG should develop a long-range management plan with the goal of achieving a large, healthy, free-ranging elk population subjected to a minimum of management intervention.

## Appendix D

In this appendix is extracted the alternatives given in the environmental assessment titled *Live Capture and Population Dynamics Study of Tule Elk at Point Reyes National Seashore* dated October 18, 1995.

### Alternatives

#### **A. Proposed Action - Implement a comprehensive, scientifically sound program of ecological monitoring for Tomales Point and the Tomales Point tule elk herd.**

The proposed action entails a minimum of four coordinated studies, with the potential for additional components. The main objective of the monitoring plan is to: 1) determine the population size, population and reproductive dynamics, age/sex structure and spatial utilization of the tule elk, 2) establish an ecological impact threshold for Tomales Point, 3) determine the impact upon the endangered Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*) and 4) evaluate exotic disease and the reproductive biology of tule elk for possible hormonal contraceptive testing. The National Park Service (NPS) and the National Biological Service (NBS) will conduct item 1 over a five year period and item 2 over a two year period. Myrtle's silverspot ecology, item 3, will be implemented by the Center for Conservation Biology, Stanford University over two years. The fourth component, hormonal receptivity to immuno-contraception and exotic disease evaluation, will be accomplished by a group of researchers from University of California at Davis.

The first component of the elk monitoring program will be implemented in the fall of 1995 with the capture, marking and release of 20 female elk. A combination ground and aerial census will be conducted in the fall of the year to determine minimum population size (Beyer and Golightly 1994). Elk will be located by aerial search and immobilized by the use of a ballistic net (net-gun) deployed from a light helicopter. Helicopter net-gun capture has been used on a variety of ungulate species ranging from antelope to Rocky Mountain elk, and has been demonstrated to present the least risk of injury to animals in relation to other capture methods. In a study of desert bighorn sheep, net gunning was employed to capture 137 sheep with a loss of only 1 animal (0.7%) to capture myopathy and 2 animals (1.5%) to injury. (Jessup et al. 1988). In a similar capture operation for white-tailed deer, one animal (0.1%) died as a result of injury (Potvin and Laurier 1988). By comparison, in a Texas study of desert mule deer captured with projectile dart administered immobilizing drugs, 15% of all captured deer suffered mortality within 24 hours (Krausman et al 1987). Animal loss must be considered as a possibility in the capture and restraint of any wildlife. The method chosen statistically offers the shortest stress period on animals with the statistically demonstrated minimum mortality rate.

Captured elk will be fitted with breakaway radio collars to allow long-term monitoring of movement and habitat utilization. At the time of capture, biological samples will be taken to evaluate general health, genetics and presence/absence of livestock disease. Marked tule elk individuals will be monitored continually utilizing radio telemetry to determine habitat utilization, social grouping and reproductive status. Marked elk bearing offspring will be located and calves will be captured utilizing hand nets and fitted with radio-transmitter ear tags to facilitate tracking. Calves will be followed for the duration of the project to determine calf mortality and recruitment rate. In the fall an additional 20 female elk will be captured and tagged to increase the sample size and improve the statistical strength of the study

In years two and three of the monitoring program a study will be implemented to determine the ecological threshold beyond which impacts occur which could degrade the overall quality of habitat on Tomales Point. This ecological threshold would be one of the measures used to determine the point at which elk population size has exceeded the capacity of the habitat. Paralleling this study will be an evaluation of the population distribution and habitat usage of the Tomales Point elk reserve by the endangered silverspot butterfly. This monitoring program will aid in the evaluation of this species within Point Reyes National Seashore and in determining the affect of an increasing elk population upon silverspot viability.

**B. No Action**

A no action alternative would allow tule elk to follow population cycles within the Tomales Point elk reserve without manipulation or intervention. Monitoring activities would be limited to annual census. Habitat information beyond minimal species composition and forage utilization would not be acquired. The actual or potential impact upon the endangered Myrtle's silverspot butterfly would remain unknown.

**C. Capture and Release Tule Elk through Chemical Restraint**

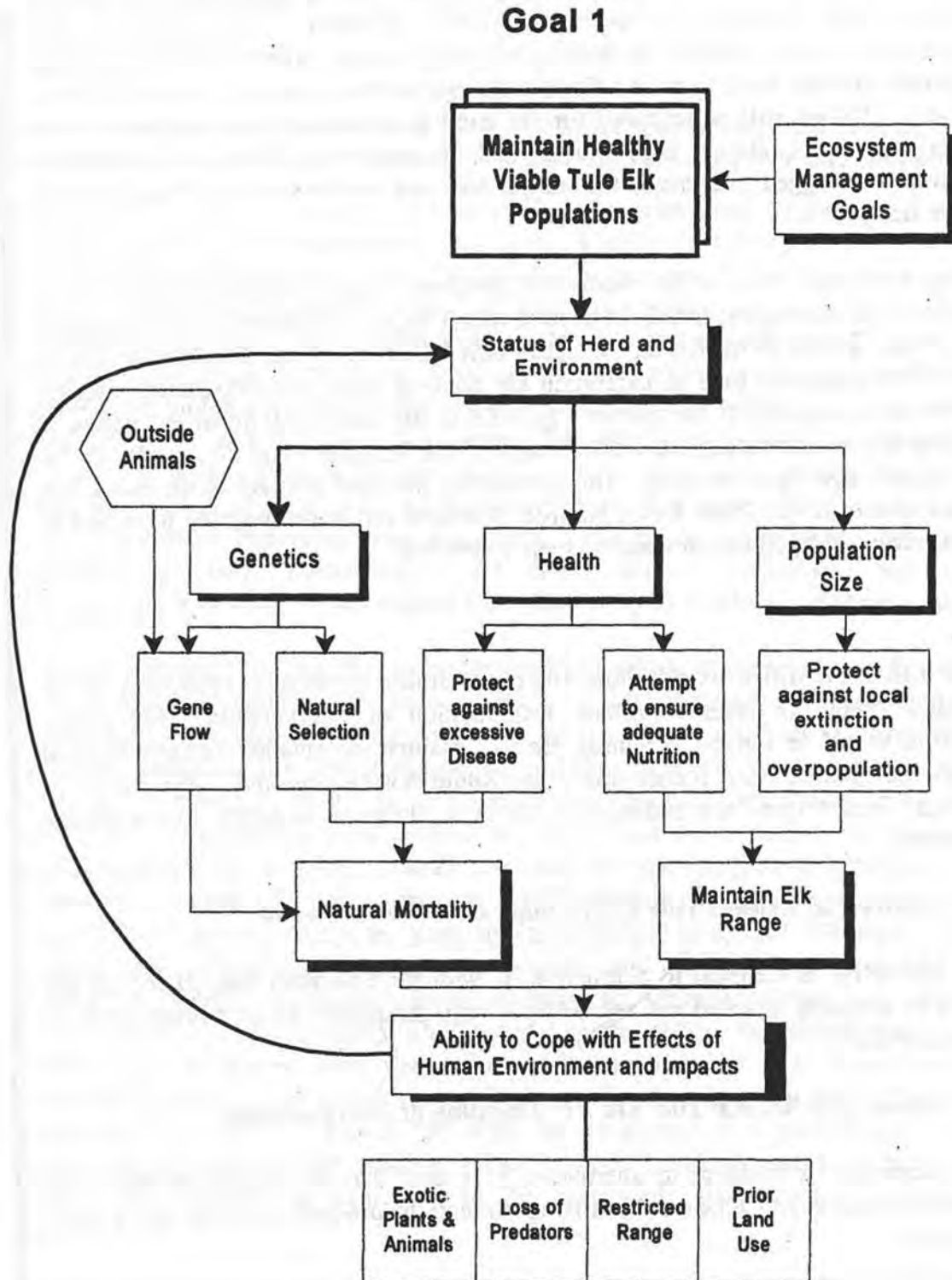
This alternative is identical to alternative A. with the exception that 20 female elk would be captured, marked and released utilizing tranquilizer drugs administered by projectile dart.

**D. Capture and Release Tule Elk Via Trapping or Drive-netting.**

This alternative is identical to alternative A. except that 20 female elk would be captured, marked and released by driving animals to pre-positioned corral or drop net traps.

# Appendix E

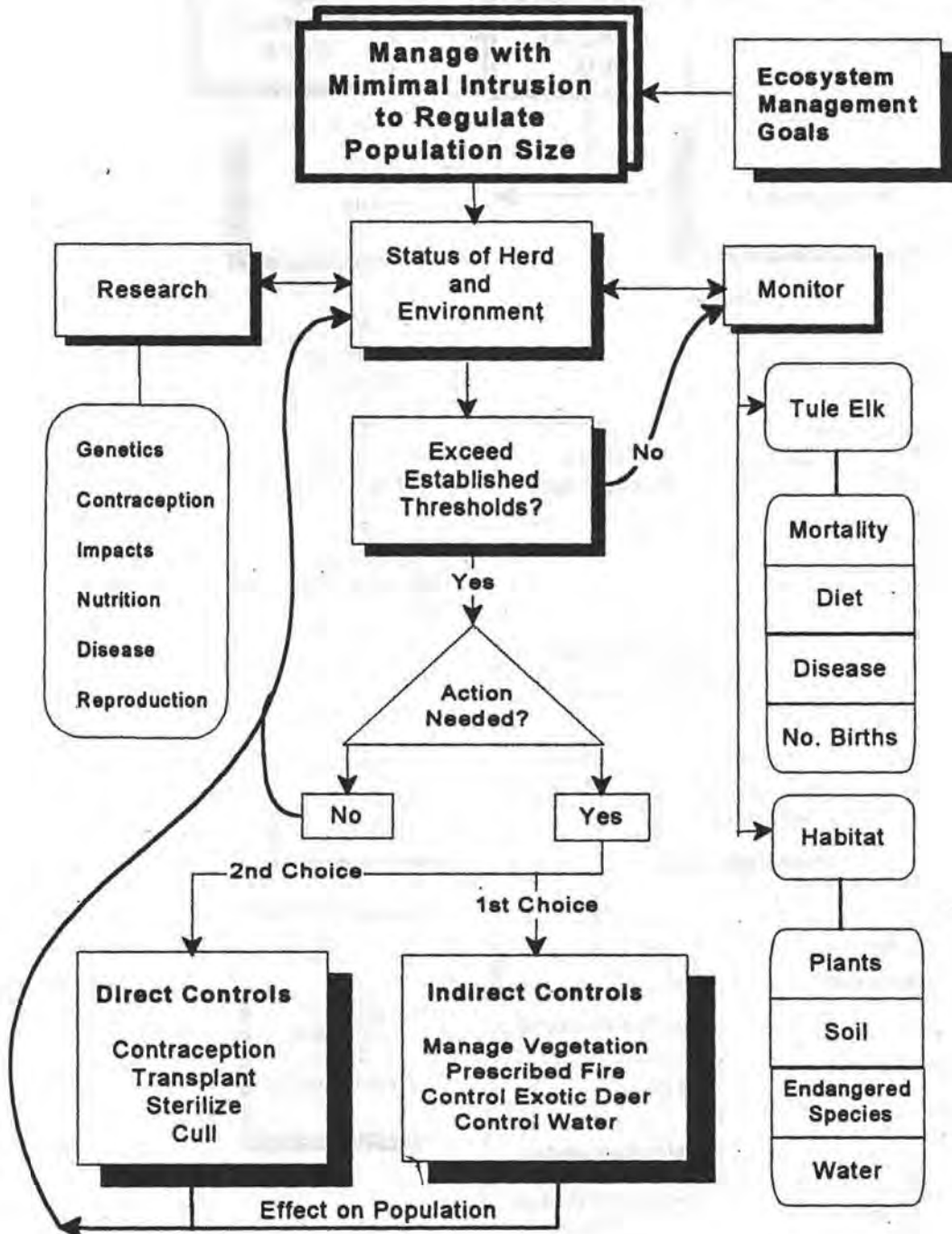
Flow chart of Goal 1: Maintain viable and healthy populations of tule elk at Point Reyes. See text starting on page 39.



# Appendix F

Flow chart summary of Goal 2: Manage tule elk using minimal intrusion to regulate population size, where possible, as part of natural ecosystem processes. See text starting on page 40.

## Goal 2





# Appendix G

Flow chart for Goal 3: Provide for a free-ranging herd in Point Reyes by 2005, over as large an area as is feasible. See text starting on page 40 for further explanation.

