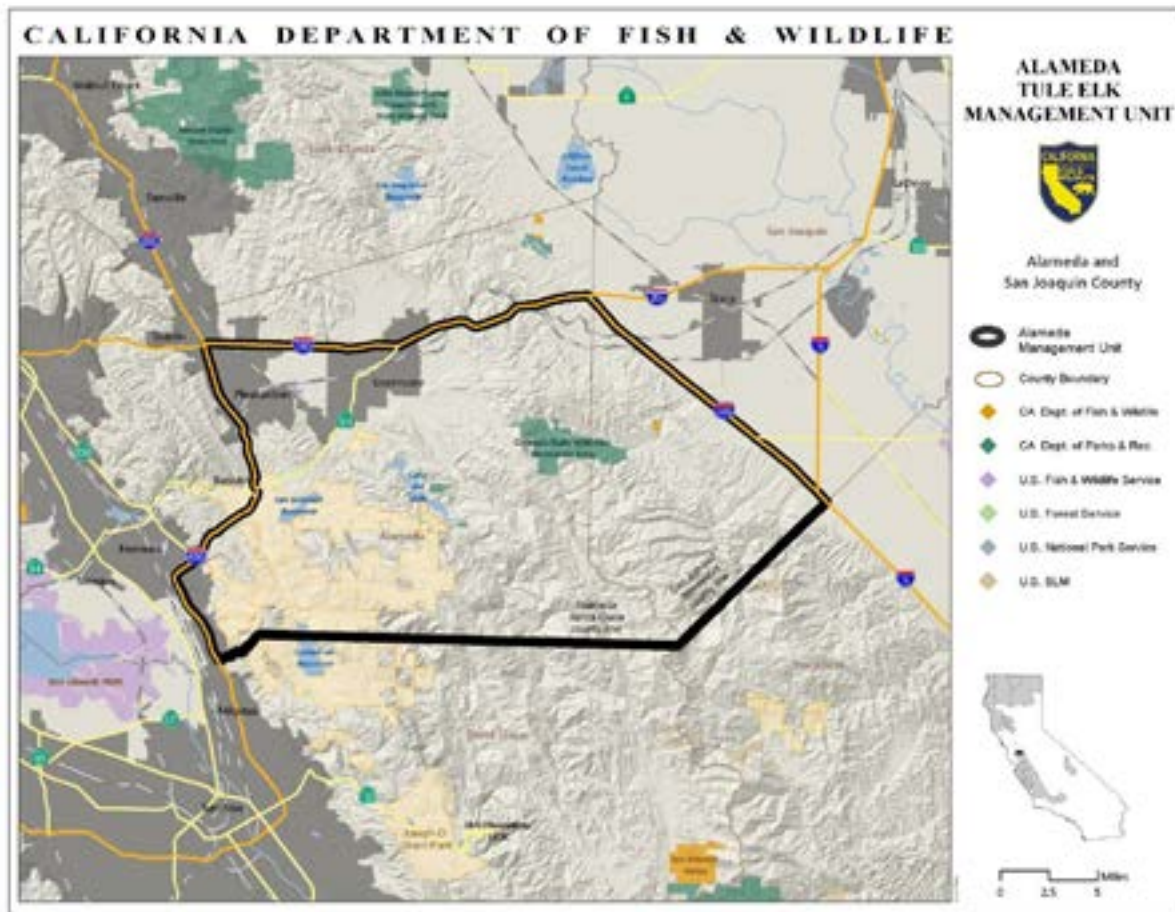


## Alameda-San Joaquin Tule Elk Management Unit



## **Alameda–San Joaquin Tule Elk Management Unit**

### **Description**

The Alameda-San Joaquin Tule Elk Management Unit (Unit) consists of those portions of Alameda and San Joaquin counties south of Highway 580 and east of Highway 680. The Unit contains approximately 276,000 acres and is immediately north of the Santa Clara County (Mt. Hamilton) management unit. The Unit is within the Bay Delta and Central Coast Province, as identified in the California State Wildlife Action Plan (California Department of Fish and Wildlife 2015). Vegetation consists of woodlands dominated by blue oak (*Quercus douglasii*) and interior live oak (*Q. wislizeni*), with large areas of annual grasslands and some mixed oak/gray pine (*Pinus sabiniana*) woodlands. Riparian habitat dominated by arroyo willow (*Salix lasiolepis*) is common along perennial and seasonal stream corridors. Large municipal water reservoirs are found in Alameda County. Lower elevations contain grasslands; higher elevations contain mixed oak/gray pine woodlands, some of which are invaded by junipers (*Juniperus* spp).

Tule elk (*Cervus canadensis nannodes*) occur in the Coast Ranges at elevations from 200 to 2,500 feet. Over 80% of the Unit is privately owned, but state, regional and local parks, and watersheds managed by San Francisco Water Department (SFWD) provide elk habitat. Elk are found within the Unit at or near the following locations: San Antonio Reservoir, Apperson Ridge, Sunol and Connolly-Corral Hollow ranches.

Public use of regional and local parks within the Unit involves passive recreational activities such as hiking, bicycling and horseback riding. The Department of Parks and Recreation (CDPR) administers Carnegie State Vehicle Recreational Area for off-road-vehicle ORV use.

### **Elk Distribution and Abundance**

Sixty five tule elk from the Owens Valley were released near Mt. Hamilton in southern Santa Clara County from 1978-1981. Elk dispersed from release sites into portions of Alameda, Merced, San Joaquin, Santa Clara and Stanislaus counties and have formed four distinct subherds as follows: Horse Valley, Isabel Valley (both in Santa Clara County), San Antonio Reservoir and Alameda/San Joaquin. Additionally, since 1981, tule elk have been released at other locations in San Benito, Merced and Monterey counties.

The California Department of Fish and Wildlife (Department) has not annually monitored elk population parameters over the entire Unit. Helicopter surveys, cancelled in 2010, resumed in 2016 and are scheduled on a three-year rotation; these should be augmented with ground surveys in cooperation with local land agencies and private

landowners. Annual spring ground counts for the Connolly-Corral Hollow ranches ranged from a low of 38 to a high of 137 elk (Table 1). Additionally, elk were counted during Department helicopter surveys in Alameda and San Joaquin counties (Table 2). The current population estimate for the Unit is 100 elk and the population has ranged from approximately 100 to 200 animals based on past observations and reports from landowners and public agencies.

## **Management Goals, Objectives, and Actions**

Management goals for this Unit are to 1) In consideration of current habitat capacity, other land uses, and long term environmental changes, improve elk habitat conditions and population levels; 2) enhance opportunities for the public to use and enjoy elk (e.g. hunting and wildlife viewing); and 3) alleviate human-elk conflicts. Specific objectives and actions for each goal are listed below. Department regional and headquarters staff will perform the identified actions.

### **Goal 1. In consideration of current habitat capacity, other land uses, and long term environmental changes, improve elk habitat conditions and population levels.**

The Department considers the elk population to be in decline, primarily due to five years of drought conditions. Population management for this Unit includes efforts to increase elk numbers where suitable. Current harvest is low and considered conservative.

Currently, elk heavily utilize private lands which may cause conflict with landowners. Where elk are tolerated, expansion of elk use of private lands is one method to successfully increase elk populations. Private lands where the presence of elk may be tolerated or encouraged include woodlands, ownerships enrolled in the Private Lands Management (PLM) program, and other properties where elk are desired by the landowner. Where suitable and unoccupied elk habitat exists, management actions should facilitate natural dispersal to reestablish elk where conflicts will be minimal.

Enhancing elk habitat to induce early seral vegetation is critical to increasing elk populations. Natural disturbance, such as fire, promotes a mix of habitat types and successional stages including forest openings that benefit elk. To achieve these objectives, the Department will collaborate with state and local agencies and private landowners.

#### Objective 1.1. Estimate population abundance, distribution, habitat use, and demographics by 2023, to provide managers with additional information to make adaptive management decisions.

##### **Action 1.1.1**

Continue helicopter surveys (augmented with ground surveys conducted in cooperation with local landowners). Surveys should occur on a three-year rotation. **Ongoing.**

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Action 1.1.2

Affix radio telemetry (GPS/VHF) collars on a sufficient sample size of elk to estimate seasonal range, individual groups, habitat use, movements, population connectivity, population size, density, age structure, fecundity (birth rates), mortality (death rates), sex ratio, assist with evaluating harvest strategies, and prioritize private land conservation values.

Expected completion: 2023.

Action 1.1.3

Collaborate with academia, non-governmental organizations (NGOs), and others to collect population, distribution, and composition data in an effort to inform management decisions that would benefit elk. Expected completion: 2023.

Action 1.1.4

Develop innovative technologies to estimate population parameters such as fecal DNA and unmanned aerial vehicle surveys. Expected completion: 2023.

Objective 1.2. Increase elk populations by at least 15% where human-elk conflicts are expected to be minimal, by 2028.

Action 1.2.1

Map habitat that can support elk and overlay with areas currently reporting human-elk conflicts to identify areas of potential management actions. Expected completion: 2022.

Action 1.2.2

Coordinate with public land agencies and private landowners to identify habitat enhancement projects and livestock grazing practices to benefit elk. Ongoing.

Objective 1.3. Enhance or increase elk habitat by at least 5% by 2028.

Action 1.3.1

Map current elk habitat to detect change over time and guide management decisions. Expected completion: 2021.

Action 1.3.2

Meet annually with SFWD, CDPR, California Department of Forestry and Fire Protection, NGOs, and private landowners to identify opportunities to conserve and enhance elk habitats. Ongoing.

Action 1.3.3

Utilizing elk habitat and distribution data, work with state and local

agencies, and private landowners to identify specific areas for prescribed burns to benefit elk. **Ongoing.**

Action 1.3.4

Work with PLM program participants to use prescribed fire and/or cutting to reduce juniper encroachment at higher elevations containing oak/gray pine woodlands. **Ongoing.**

Action 1.3.5

Work with CDPR to identify appropriate mitigation for planned expansion of the Carnegie State Vehicle Recreational Area. **Deadline based on schedule for environmental review and implementation of the project.**

Action 1.3.6

Collaborate with academia to collect habitat use data to identify areas utilized by elk and recommend management actions that would enhance or increase acreage of these areas. **Expected completion: 2023.**

Action 1.3.7

Participate in landscape level planning efforts, to the extent possible, to identify potential impacts and make recommendations that would benefit elk and elk habitats. **Ongoing.**

Action 1.3.8

Provide PLM operators with a list of specific habitat enhancement recommendations for elk during annual inspections. On subsequent visits, Department staff will evaluate and provide feedback on the effectiveness of habitat enhancement efforts and suggest necessary improvements. **Ongoing.**

Objective 1.4. Implement a cause-specific mortality study and determine if identified factors are limiting population growth (e.g., predation/disease), by 2023.

Action 1.4.1

Collaborate with academia on mortality study and determine the feasibility of enlisting graduate students to assist in the project. **Expected completion: 2021.**

Objective 1.5. Determine genetic diversity of the population by 2023.

Action 1.5.1

Distribute DNA collection kits to elk hunters for submittal of DNA samples to map elk genetics across the Unit. **Ongoing.**

Action 1.5.2

Collect DNA samples as opportunities arise (mortalities or as part of

collaring activities). **Ongoing.**

Action 1.5.3

Use genetic monitoring results and GPS collar data to identify and prioritize areas for potential translocations and habitat connectivity projects. **Expected completion: 2023.**

Objective 1.6. Maintain a population of 150-350 elk with a minimum ratio of 25 bulls per 100 cows.

Action 1.6.1

Provide bull and antlerless hunting opportunities at levels that allow for long-term expansion of the elk population and provide landowners with incentives to support having elk on their properties. **Ongoing.**

Action 1.6.2

Review monitoring, management, and research data on an annual basis and adjust population objectives as appropriate. **Ongoing.**

**Goal 2. Enhance opportunities for the public to use and enjoy elk (e.g. hunting and wildlife viewing).**

The Department will continue to work with conservation partners to inform the public about elk and elk management within the Unit, and promote various recreational opportunities such as hunting, wildlife viewing, photography and nature study.

Providing public elk hunting opportunities within the Unit is challenging. The Unit contains enough elk to support public hunting, but elk generally reside on private land not open to hunting and inaccessible to the public. Regional and local parks prohibit hunting, and public access for regulated hunting only occurs on private ranch lands. General elk hunting was suspended within the Unit in 2011 due to access issues and elk distribution. Current elk harvest is one bull per year through the PLM program.

The Department has identified regulated hunting as the primary tool to both manage elk populations and provide public recreation opportunities. Through regulations, hunting can influence elk distribution and population parameters. Timing and duration of hunt periods, hunt boundaries, tag designations (i.e., bull, antlerless or either-sex tags), quotas, and method of take (e.g., general methods, archery only, muzzleloader only) can affect hunter success, elk population numbers, and age/sex compositions within the Unit. The quality and quantity of elk demographic data and desires for hunter opportunity are other considerations in recommending and/or adopting elk hunting regulations. Each year, the Department considers modifications to hunt zone boundaries, tag quotas, hunt periods, and methods of take. One option is to allocate private-land-only tags that focus harvest on private property to alleviate conflicts.

Another potential recreational and population management strategy involves the Shared

Habitat Alliance for Recreational Enhancement (SHARE) program. Under this program, participating landowners receive compensation and liability protection in exchange for allowing access to (or through) their land for public recreational use and enjoyment of wildlife. The SHARE program receives funding from application fees for access permits. Other projects to improve public hunting access on private land have yet to be implemented within the Unit, but as additional landowners learn about the SHARE program, public access opportunities for elk hunting may increase. Private land is essential to the survival of tule elk within the Unit.

There is a potential for agricultural/private property conflicts, thus the current population management strategy utilizes limited hunting to provide landowners an incentive to accommodate the needs of tule elk. The current harvest strategy has not yet emphasized controlling population numbers, as private property conflicts to date have been minor.

Objective 2.1. Maintain elk hunting opportunities where compatible with population objectives.

Action 2.1.1

Complete a new elk hunting environmental document to evaluate additional hunting opportunities. **Expected completion: 2020.**

Objective 2.2. Work with state and local agencies and NGOs to install one elk interpretive sign by 2024.

Action 2.2.1

Meet with state and local agencies to evaluate the possibility of adding an elk interpretive sign. **Expected completion: 2021.**

Objective 2.3. Provide information on the Department web page to inform the public about elk and elk viewing opportunities by 2020.

Action 2.3.1

Work with agencies and NGOs to provide information on elk and elk viewing. **Expected completion: 2020.**

**Goal 3. Alleviate human-elk conflicts and elk depredation complaints.**

To date, human-elk conflicts have been minimal. If the elk population approaches the maximum objective for the Unit, additional actions to control population numbers may become necessary. Periodic complaints have involved competition with livestock for forage and fence damage. The PLM program has provided an incentive for participants to modify livestock grazing and otherwise accommodate elk within the Unit. Additionally, elk fence crossing structures can be installed in areas where fence damage is attributed to elk.



However, if elk distribution expands or population numbers increase, damage and agricultural conflicts could escalate. Controlling population numbers and damage/land use conflicts with regulated hunting may become more challenging because of the prevalence of private land within the Unit. The SHARE program is a potential population management strategy that can improve public access to private (or landlocked public) land. The SHARE program may also assist in controlling elk population numbers and managing damage/land use conflicts that involve elk on private land.

Regulated hunting provides valid recreational opportunities and can assist landowners with human-elk conflicts. The hunting program, currently, is not designed to reduce population numbers over the entire Unit, although short-term reductions may occur within localized areas. Annual harvests can be adjusted to address human-elk conflicts. Where substantial human-elk conflicts occur, elk population control, landowner incentives, non-lethal elk exclusion/deterrence tactics, and additional management actions may be implemented while maintaining a viable elk population. Providing and improving opportunities for landowners to benefit from having elk on their property may improve their tolerance of elk. Through Cooperative Elk Hunting, PLM, and the SHARE program, landowners with human-elk conflicts can partially offset losses through access fees for hunting and other recreational activities.

The Department will emphasize the use of regulated hunting to address chronic and/or large-scale elk depredation problems, where feasible. In areas where a hunting program is not feasible, the Department will work with landowners to implement non-lethal techniques such as fencing and hazing to help alleviate chronic elk depredation problems. Combining elk hunting opportunity with issuance of depredation permits is possible if hunting and other methods to alleviate the conflict are not successful. The Department may issue depredation permits when readily identifiable animals cause property damage.

#### Objective 3.1. Continue to monitor human-elk conflicts on private property.

##### Action 3.1.1

Map areas of human-elk conflicts and assess potential for alleviating damage by stabilizing localized elk populations through regulated hunting, where feasible. **Ongoing.**

##### Action 3.1.2

Collaboratively develop best management practices (BMPs) designed to alleviate conflicts. **Expected completion: 2021.**

##### Action 3.1.3

Document and continue to respond to human-elk conflicts and provide the reporting party a list of preventative techniques and actions to alleviate conflict, including BMPs (once established). **Ongoing.**



#### Action 3.1.4

Collaborate with United States Department of Agriculture Wildlife Services and the Department's Office of Communication, Education, and Outreach to develop and distribute information pamphlets to increase awareness of nonlethal techniques to reduce damage caused by elk.

Expected completion: 2022.

#### Action 3.1.5

Issue elk depredation permits consistent with statute, regulation, and Department policy at locations experiencing substantial elk depredation.

Ongoing.

### **Herd Viability**

Elk reoccupied the Unit as a result of dispersal from the Mt. Hamilton area in Santa Clara County. It is plausible that natural interchange with the Santa Clara unit to the south can occur and there is a potential for exchange of individuals between San Joaquin and Alameda counties. Elk have persisted within the Unit for decades and continue to be found in the same general areas (e.g., Sunol, San Antonio Reservoir, Connolly-Corral Hollow ranches). Survey results suggest some variation in population numbers, but it is unclear whether such surveys are indicative of actual fluctuations in the population.

Highways 580 and 680 provide barriers to elk dispersal to the north and west; historical habitat immediately north and west of these barriers no longer contains tule elk and is unsuitable because of urban development. Individual animals appear healthy and the elk population within the Unit is viable, based on their persistence within the Unit for decades. However, translocation of individual elk into the Unit from other locations could occur in the future, should the need arise.

### **Summary of Annual Harvests**

In 1998, the Fish and Game Commission (Commission) authorized tule elk hunting under the PLM program for the Connolly Ranch. In 1999, the Connolly Ranch PLM license was expanded to include the adjacent Corral Hollow Ranch (combined, these ranches total over 11,000 acres). In 2010, the Commission authorized public tule elk hunting within the Unit with a limited quota of one bull tag. However, elk are not accessible to public hunters and there has been no public harvest within the Unit.

Reported harvest for the Unit from 1998-2016 can be found in Table 3. Reported harvest consisted primarily of bulls; the mean annual harvest comprised less than five percent of the reported minimum population size.

PLM program participants within the Unit have not increased since 1999. Continuing the current conservative harvest strategy will have minimal effect on population size as only three antlerless elk have been taken since 2008.

## **Unit Highlights**

While tule elk are well established within the Unit, opportunities for public hunting may remain minimal, except opportunities related to the SHARE program may increase, if warranted. A partial listing of research/monitoring within the Unit includes the following:

### **Unit Specific Research**

Phillips, J.A. 1985. Acclimation of reintroduced tule elk in the Diablo Range, California. Thesis, San Jose State University, California, USA.

**Literature Cited:**

California Department of Fish and Wildlife. 2015. California state wildlife action plan, 2015: a conservation legacy for Californians. Edited by Armand G. Gonzales and Junko Hoshi, Ph.D. Prepared with assistance from Ascent Environmental, Inc., Sacramento, California, USA.

## Data Tables/Figures

**Table 1. Results of Annual Spring Tule Elk Ground Surveys of the Connolly and Corral Hollow Private Lands Management Area Ranches, San Joaquin County, 1997-2015.** Surveys are typically completed in March prior to calving.

Year	Number of Elk Observed				Total
	Bulls	Cows	Calves	Not Classified	
1997	20	47	19	0	86
1998	35	32	9	2	78
1999	36	52	6	15	109
2000	36	73	9	15	133
2001	27	110	0	0	137
2002	12	71	2	10	95
2003	24	68	4	17	113
2004	21	92	4	8	125
2005	21	71	2	0	94
2006	19	88	13	0	120
2007	11	54	12	0	77
2008	21	45	3	0	69
2009	9	53	13	9	84
2010	23	73	4	0	100
2011	5	50	0	6	61
2012	8	25	5	0	38
2013	7	33	4	0	44
2014	5	34	0	0	39
2015	2	35	5	0	42

**Table 2. Helicopter Survey Results for Alameda and San Joaquin Counties.**

Date	Total Elk Counted	Survey Type
2006	58	CDFW Helicopter
2011	80	CDFW Helicopter
2016	66	CDFW Helicopter

**Table 3. Alameda–San Joaquin Tule Elk Management Unit, Reported Private Lands Management Area Harvests (1998-2017), and 2010 Public Tag Quotas and Harvests.**

Year	Public Bull		Public Antlerless		Reported PLM Harvests		
	Tags Issued	Harvest	Tags Issued	Harvest	Bull Harvest	Antlerless Harvest	Number of Ranches
1998					3	0	1
1999					4	3	1
2000					4	0	1
2001					4	2	1
2002					4	2	1
2003					4	3	1
2004					3	4	1
2005					3	2	1
2006					3	2	1
2007					3	3	1
2008					3	1	1
2009					2	0	1
2010	1	0			2	0	1
2011					2	0	1
2012					2	1	1
2013					2	1	1
2014					0	0	0
2015					1	0	1
2016					1	0	1
2017					2	0	1
Totals	1	0			52	24	