A Citizen's Guide to the Tule Elk of California

Tule Elk *(Cervus canadensis nannodes)* or formerly *(Cervus elaphus nannodes)*

A Flagship Species for North America A California Endemic (Native Species)

Photo: Julie Phillips (1982) - Reintroduced Tule Elk Santa Clara County

NATURE BECOMES OUR GUIDE

As we observe nature a new world unfolds before us. California's diverse flora (plants) and fauna (animals) as well as the complex social, economic and political issues that impact the state's natural resources allow California's students (and the public) to practice their problem solving and communication skills. Through on-site training at local schools, community centers and in the private sector, we soon learn the interface between nature and our day-to-day life.

A guide to educate an entire generation about California's natural history legacy including the present and future efforts to preserve, conserve and restore natural communities.

EDUCATIONAL ROLE OF THE TULE ELK

Reconnect our students, children and the public to nature through education as well as participating in the restoration and preservation of California's flagship species (the Tule Elk) and the other native species of plants and animals of California.

Common Name: Tule Elk, Wapiti

Scientific Name(s): ***Cervus canadensis nannodes^*** formerly: ***Cervus elaphus nannodes****

TAXONOMY

A science that names and identifies all species on earth
Kingdom Animalia (from sponges to humans)
Phylum Chordata
Subphylum Vertebrata (animal with a backbone)
Class Mammalia (mammal just like humans)
Order Artiodactyla (Even-Toed Ungulate)
Family Cervidae (Deer family - related to mule deer)
Genus: *Cervus*
Species: *canadensis*
Subspecies: *nannodes*

TULE ELK STATUS

The Tule Elk are a flagship species for California (the California Floristic Province, one of the world's 25 biodiversity hotspots or most endangered ecoregions) and North America. As a flagship species, Tule Elk are a symbol for conservation efforts in California over the last century. Tule Elk are also considered an important Focal or Umbrella Species as Tule Elk range and ecological niche covers such a large area of California's landscape. Protecting the landscape for large, free roaming species (like Tule Elk) enhances the conservation and protection efforts of so many other species of California.

The Tule Elk are a protected species and they are endemic to California (found only in California). Tule Elk are the smallest subspecies of the North American Elk.

There were originally 6 subspecies of North American Elk.
4 are still surviving today, the Roosevelt Elk *(Cervus canadensis roosevelti)*, the Rocky Mountain Elk *(Cervus canadensis nelsoni)*, the Manitoban Elk *(Cervus canadensis manitobensis)* and the Tule Elk *(Cervus canadensis nannodes)*. 2 are extinct, the Eastern Elk *(Cervus canadensis canadensis)* and the Merriam's Elk *(Cervus canadensis merriami).*

ECOLOGICAL ROLE OF TULE ELK

Tule Elk are both grazers and browsers and Tule Elk co-evolved with native species including California native bunchgrasses *(Stipa pulchra)*, California native oaks, shrubs and herbaceous forbs.

Tule Elk will help in the reestablishment of native perennial bunch grasses which coevolved with the Tule Elk and were historically transported from place to place in Tule Elk hooves.

TULE ELK BASICS FOR SURVIVAL:

1. Native grasses, forbs (nonwoody plants) and browse (woody plants) - feeding habits or niche
2. Location: Sea level to 3000' feet elevation
3. Dry, xeric environment - (adaptability)
4. Importance of valley floors and surrounding foothills
5. Importance of Oak woodlands for cover and browse (habitat)

Plant communities that are utilized by the Tule Elk throughout the Tule Elk Range of California:

1. Valley grassland: largely exotic grass
2. Oak savannah: blue & valley oak
3. Foothill woodland: blue oak, valley oak, digger pine (now gray pine)
4. Yellow pine forest: Ponderosa Pine
5. Chaparral: chamise, bigberry manzanita
6. Riparian

ECOLOGICAL GOAL OF TULE ELK

To reconnect and restore the landscape including oaks, native grasses and other native wildlife.

Landscape connectivity - a measure of the ability of wildlife (like Tule Elk) to move across the landscape over time. Tule Elk are essential to the long term restoration of California's native landscape, and serve a vital role as an umbrella species, for California's native grasslands, oak woodlands and landscape connectivity.

TULE ELK HISTORICAL RANGE

Historically Tule Elk were found as far south as Buena Vista area (Bakersfield) along the foothills of the Sierra to the east and west to the coastal areas and as far north as Mount Shasta.

TULE ELK LIFE CYCLE

August through late December is the rutting/breeding season and the bull elk rejoin the cow/calf group. The dominant bull breeds with the females (can be up to 30-50 females) and protects the cows from the other subordinate bulls. The subordinate bulls remain on the periphery of the herd and continuously challenge the dominant bull. The bull elk disperse after the rut and generally form bull bachelor groups. Some bulls may remain solitary through the winter and spring.

Female elk remain in a cow/calf group throughout the year with the exception of spring when the individual cow elk will leave the cow/calf group to give birth to generally a single calf (although twins have been observed occasionally). The gestation period is approximately 250-255 days. The cow elk will give birth in generally steep terrain with high cover. The cow and calf generally rejoins the herd after about 3 weeks.

Some cow elk have been observed travelling alone or
solitary and may move great distances across the land scape. Those solitary cow elk have been observed rejoining the herd. Loners or individual elk have been observed in Tule Elk herds as in other species.

ECOLOGICAL CHALLENGE OF TULE ELK

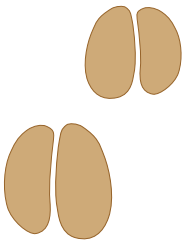
1. Restore and maintain the landscape for this large mammal
2. Habitat fragmentation
3. The Genetic health (loss of genetic variation) due to a population bottleneck
4. Illegal kills and poaching throughout the state
5. Education about the vital role of Tule Elk in the restoration of the native landscape

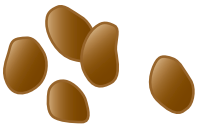
GENERAL DESCRIPTION

Color: Tan with reddish tone around neck area & white rump area; males deeper reddish tone and longer hair around the neck area. Smallest of North American Elk.

TRACK & SCAT

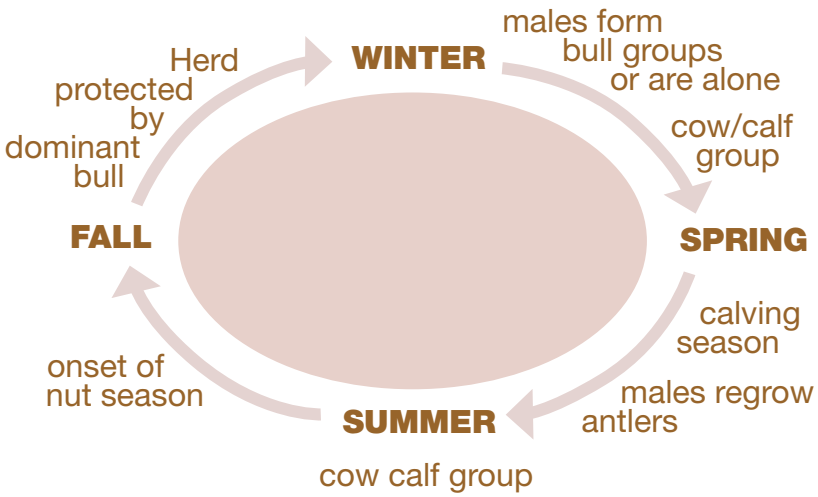
Elk track





Elk scat

TULE ELK YEARLY CYCLE/SEASONS



SUITABLE TULE ELK HABITAT

Primarily includes grasslands, valley floors, riparian, oak woodland, oak savanna, chaparral and other ecotones native to California.

Tule Elk are even-toed ungulates (split hoofed) that are mammals and member of the deer family.

Females are called cows (weigh between 350-425 pounds) and do not have antlers.

photo: Stu Phillips 2013 - Tule Elk subherd

Males are called bulls (weigh between 400-700 pounds.

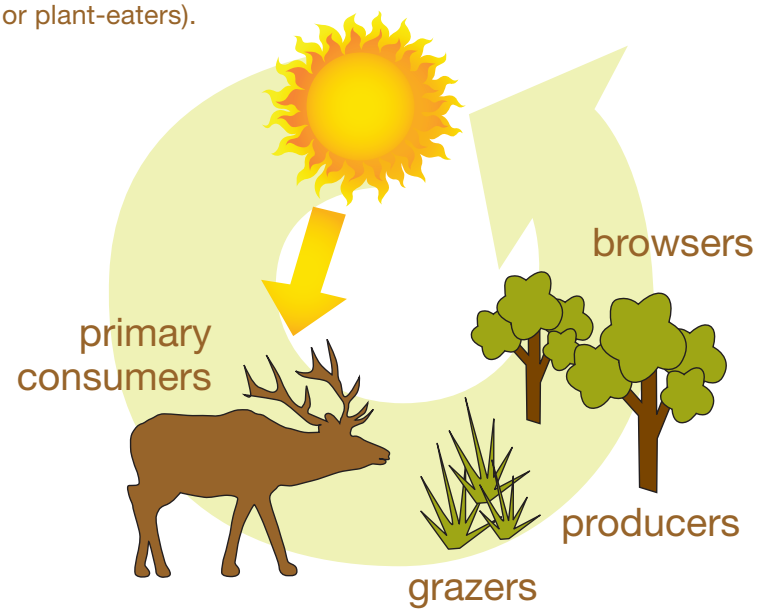
photo: Stu Phillips 2013 - Bull Elk

photo: Stu Phillips 2013 - Calves

Young are called calves and yearling males (to 2 years old) are called spikes (single point on each antler).

TULE ELK ROLE IN THE ECOSYSTEM

Tule Elk are Primary Consumers and Herbivores (feeds only on plants or plant-eaters).



TULE ELK CO-EVOLUTION

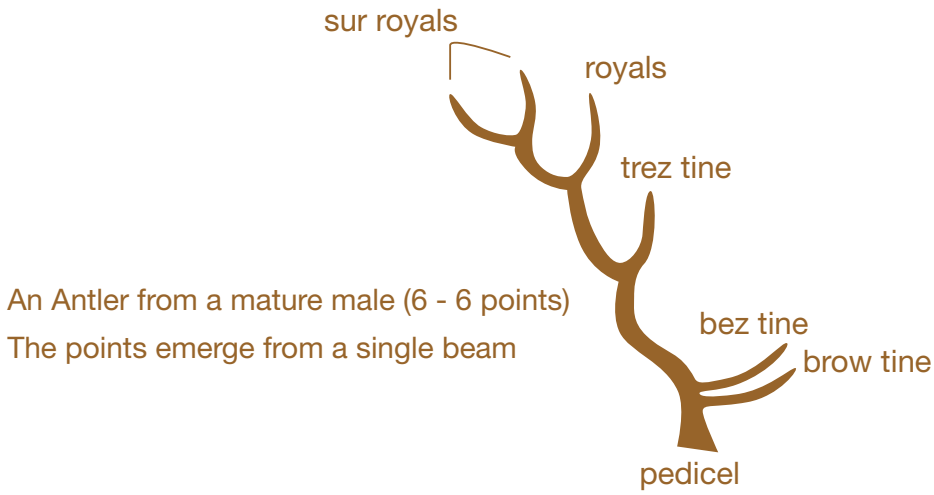
CA native oaks (Blue Oak, Valley Oak, California Live Oak), Purple Needle Grass, Deer Grass and other Californian natives.

TULE ELK ACTIVITY

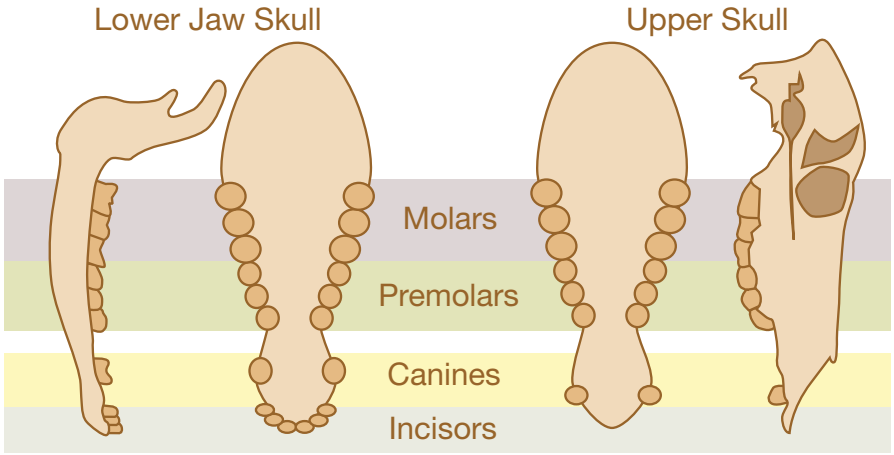
Feeding, standing, walking, bedded down, rutting/breeding and calving.

TULE ELK ANTLER CYCLE

Males have antlers and females do not. Antlers are made of bone and are shed and regrown each year. Spikes (young males of up to 2 years) generally have only a single point on each antler. Older bulls have more points generally reflecting their health and genetic makeup. Mature bulls have from 4-5 points up to 6 and 7 points on each antler.



TULE ELK DENTITION (dental formula)



Incisors	Canines	Premolars		Molars	Total
Upper =	0-0	1-1	3-3	3-3	14
Lower =	3-3	1-1	3-3	3-3	20
					Total = 34

Elk do not have upper incisors. The dental formula can be used to identify an Elk skull in the field.

DIFFERENCE BETWEEN TULE ELK AND DEER

Tule Elk and Mule Deer (also locally in Central Coast region called Black-tailed Deer) are both members of the Deer Family *(Cervidae)*. The Deer *(Odocoileus hemionus)* are smaller in body size (approximately 90-200 pounds) and are lighter in color, have much larger ears and a black tip on their tail. Tule Elk are much larger in body size than deer, have thicker and longer reddish hair around the neck area (mane) and the Tule Elk males have larger antlers with the points emerging from a single beam.

HERD ASSOCIATIONS

Tule Elk Herd Associations have been described as associations, aggregrations, groups and subgroups that are either stable, semistable or unstable. The literature and research implies that the elk herd is not a static, rigid unit but more a flutuating association of animals that varies in stability depending on local conditions and traditions.

TULE ELK HERD HOME RANGE

Tule Elk herd home range is defined as that area usually occupied during the herd's normal activities *(Franklin 1975)* and geographic areas encompassing a mosaic of sites reused by elk *(McCullough 1969)*. An area traversed by elk throughout four consecutive seasons *(Craighead 1973)*.

TULE ELK HOME RANGE SIZE

Home range is defined as that area utilized by the elk during all seasons of one year. Tule Elk are nonmigratory (as compared to other elk of North America). Tule Elk herd home range sizes varied according to location and local conditions and varied from 5km^2 (1.9mi^2) to 24km^2 (9mi^2) *(Phillips, J)*.

IMPACTS OF HUMAN DISTURBANCE ON TULE ELK

Tule Elk are extremely sensitive to human disturbance within their home range, including their seasonal ranges. Human disturbances include hunting, cattle grazing, increased human accessibility, herding and chasing elk, poaching, forage quality and quantity. *(Phillips, 1985, 1987, 2012; Hudson 1979; McCullough 1969; Bowyer 1981; Staines 1977; Hanson and Willison 1983; Stevens 1966)*.

KEY TULE ELK LEGISLATION

Behr Bill (1971) State Legislation. Tule Elk Preservation Act (1976) Federal Legislation. Conservation efforts: Friends of the Tule Elk (Beulah Edminston) citizen's group.

RESPONSIBLE AGENCY

California Department of Fish & Wildlife (CDFW) (state) and the U.S. Fish & Wildlife Service (USFWS) (federal).

photo: Stu Phillips 2013 - Tule Elk subherd

TULE ELK A CALIFORNIA ENDEMIC

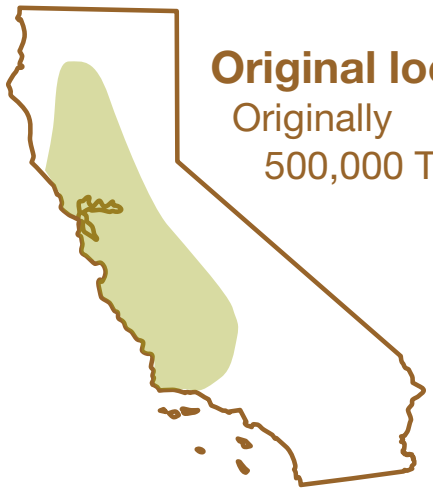
Focal & umbrella species - essential to the long-term restoration of the native landscape of California.

Tule Elk (Cervus canadensis nannodes), endemic to California, is the smallest subspecies of North American Elk. Endemic means found nowhere else on earth. Endemic to California means found only in California (a California native species).

Tule Elk were once abundant throughout most of Central California but by the 1870's, it was thought that Tule Elk were extinct. A small group of less than 20 elk were discovered and were gradually reintroduced statewide.

As of 2012, the statewide population had increased to approximately 4000+ Tule Elk in at least 24 locations statewide. According to CDFW.org (2012) there are 22 Tule Elk herds with 4000+ Elk.

Tule Elk are protected by The Public Trust Doctrine. According to The Public Trust Doctrine, Tule Elk and all wildlife are protected on both public and private lands for present and future generations as an integral component of the native landscape. Tule Elk cannot be chased, harassed, killed or injured on public or private land and hunting is only allowed according to State Game Laws. All citizens have a moral and ethical responsibility to protect all native species including Tule Elk.



Original locations
Originally
500,000 Tule Elk

1870s
less than
10 Tule Elk

2013 - present
Approximately
4,000 Tule Elk

From 1880's to 2013 only 4000 Tule Elk can be found throughout California (a subspecies of elk that once numbered 500,000).

Where have all the Tule Elk gone?

WHERE TO SEE TULE ELK HERDS IN CALIFORNIA

Sightings & Locations

As of 2013: 24 Tule Elk Herds & 4000 Tule Elk

CAPTIVE (FENCED) HERDS

Point Reyes National Seashore (National Park Service U.S. Department of the Interior) 1

Tupman State Elk Reserve 2

San Luis Island – SLNWR 3

SEMI-WILD HERDS

Grizzly Island 4

WILD, FREE-ROAMING HERDS POSSIBLE TO SEE ELK (PUBLIC LANDS AND/OR SEMI PRIVATE)

Point Reyes National Seashore Limantour Beach and Drakes Beach (National Park Service U.S. Department of the Interior) 1

Coyote Valley Landscape & Diablo range - Anderson Reservoir and Jackson Ranch (Santa Clara County Parks) and Coyote Ridge (VTA) 5

Gabilan Mountains (Fremont State Park) 6

Pacheco State Park & San Luis Reservoir 7

Carrizo Plains National Monument, La Panza & Chimineas Ranch CDFW Ecological Reserve (Hwy 166) 8

Wind Wolves Preserve 9

Coe State Park 10

Sunol East Bay Regional Park 11

Cache Creek 12

Covelo 13

Lake Pillsbury 14

Hopland 15

WILD, FREE-ROAMING HERDS ON PRIVATE AND/OR NOT ACCESSIBLE PUBLIC LANDS

Gabilan Mountains (Private Ranches) 16

San Antonio Valley and South Valley Ecological Area, CDFW lands 17

San Felipe Ranch (Private Ranch) 18

Isabel Valley 19

Coyote Ridge (VTA Lands, UTC & O'Connell Ranch) 20

San Antonio Reservoir (SF Water District) 21

FENCED HERDS ON PUBLIC LANDS (NOT ACCESSIBLE)

~~Concord Naval Station~~ (Elk Removed CDFW) ~~22~~

Fort Hunter Liggett 23

WILD, FREE-ROAMING HERDS NON-NATIVE HABITAT

Owens Valley herds 24

Jawbone Canyon 25

See Map Page 10

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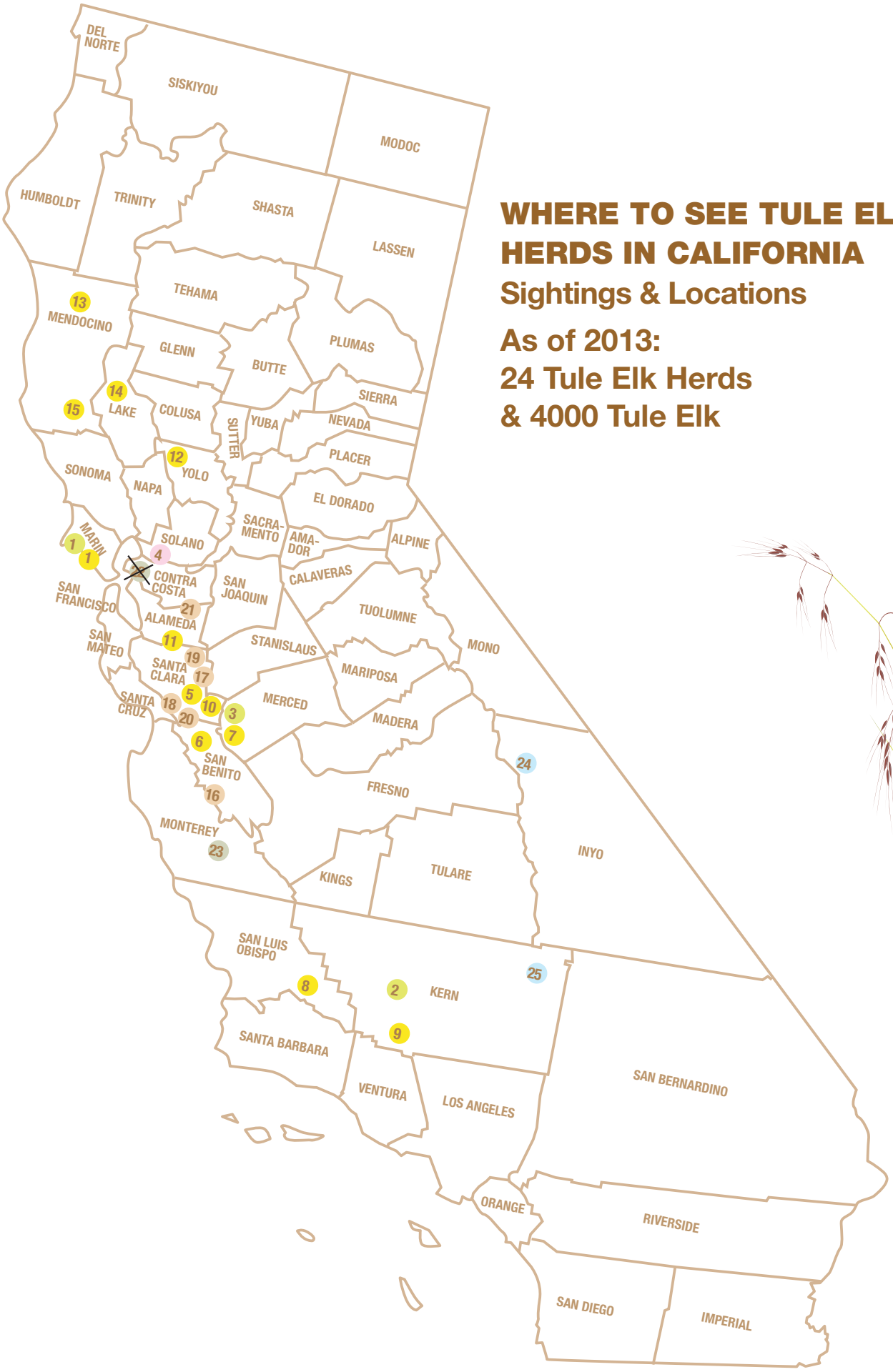

PURPOSE OF THE CITIZEN'S NATURE-BASED TEACHING GUIDES

Provide an opportunity for the public, families, teachers and students to learn the natural history of California, the beauty, inspiration and positive guiding force of nature, principles of environmental stewardship, interpretive techniques, leadership and team-building skills. The public, teachers and students become "interpreters" for the natural world providing a "literacy bridge" between the public and sound science, stewardship and nature. *Julie Phillips - Tule Elk Biologist since 1980*

photo: Stu Phillips - Bull Elk with cows

Julie Phillips is an Environmental Scientist, Tule Elk and Wildlife Biologist and Researcher, Nature-Based Living Trainer, California Nature Center(CNC) Director, California Community College Professor and an Environmental Educator. Julie has a M.A. in Biological Sciences from San Jose State University with a focus on wildlife management. She spent 7 years studying habitat utilization of Tule Elk, a subspecies of elk endemic to California, in the Mt. Hamilton region of the Diablo Range (including Isabel Valley, San Antonio Reservoir, Coe State Park, San Felipe Ranch and Pacheco Pass) and other areas of California including the Gabilan Range, Temblor Range and throughout the Carrizo Plains. Julie and Stu Phillips continue to study the current Tule Elk locations (comparing to established home range data from 30 years ago) to better understand Tule Elk natural history and the impacts of land use patterns and human disturbance on the long-range re-establishment of the Tule Elk throughout its historic range. Julie & Stu Phillips are also the founding members of the Tule Elk Foundation (TEF), a California nonprofit dedicated to educating the public, students, leadership and others about Tule Elk, a California endemic species and focal species of North America.

Other references:
Phillips, J. 1985, 1987, 1992, 2000-2013
McCullough, D. 1969
Murie, O.J. 1951
Phillips, W.E. 1976
California Dept Fish & Wildlife website (2013)
Ingles, L.G. 1965
Mittermeier, R.A., N.Myers, P.Robles Gil & C.G. Mittermeier 1999
