

# 2022 Annual Tule Elk Count Report

The Wildlands Conservancy | Wind Wolves Preserve



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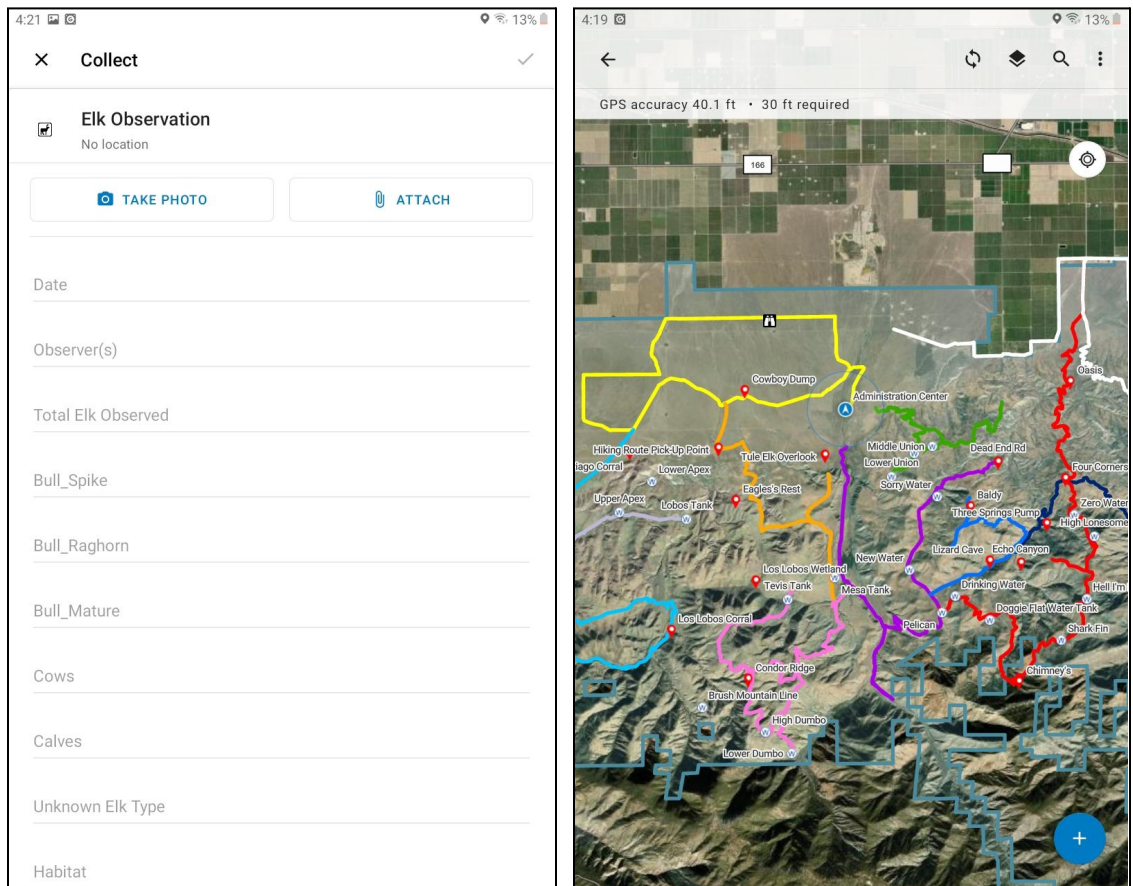
## Introduction

Prior to the 19th century, accounts from early explorers indicate that approximately 500,000 tule elk (*Cervus canadensis nannodes*) inhabited the Central Valley and Central Coast of California (California Department of Fish and Wildlife [CDFW], 2019). Market hunting and displacement by livestock caused a dramatic population decline between 1800 and 1870, and only a few animals remained in the Buena Vista Lake area near Bakersfield. A private ranch offered protection for the remaining animals, and the population grew. Numerous relocation attempts by several entities (U.S. Biological Survey, California Academy of Sciences, CDFW) took place in the 20th century, although many were unsuccessful. In 1998, The Wildlands Conservancy (TWC), in partnership with the CDFW, coordinated an effort to restore a population at Wind Wolves Preserve (WWP). Nineteen tule elk were initially released, and several translocations have taken place over the years. All translocated elk were marked with ear tags or radio collars managed by CDFW. Since 1998, the herd has increased significantly. Habitat improvements and rangeland enhancements such as wildlife troughs, riparian fencing, native plant restoration, rotational grazing management, and mineral blocks support the elk population and other wildlife. To monitor the population, herd health, and landscape improvements, TWC staff and volunteers conduct an annual tule elk count at the end of summer.

## Methods

On October 21, 2022, 60 TWC staff and volunteers participated in the 20th Annual Tule Elk Count. Participants were grouped and assigned to one of 12 driving routes according to proficiency in elk identification, vehicle suitability, and familiarity with ArcGIS FieldMaps, a data collection application for smart devices. Prior to the survey, participants received an introduction and orientation on safety, survey methods, elk identification, and data entry on FieldMaps. FieldMaps facilitates recording the most accurate location of the elk, and allows for photo documentation to be added to observation points. Survey equipment included android tablets, binoculars, cameras, spotting scopes, radios for communication, and 4-wheel drive vehicles. The survey began around 8:00 AM and concluded around 2:00 PM. Surveyors logged elk observations which included information on time, total elk observed, number of each elk type (mature bulls, rathorn bulls, spike bulls, cows, calves, unknown), presence and color of ear tags and/or collars, behavior, habitat type, and additional wildlife species (Figure 1). Participants communicated elk observations and movement via radios to avoid double counting. To increase efficiency and data accuracy, a minimum of two surveyors were assigned to each driving route. A higher number of surveyors per route decreases the likelihood of missing elk, increases accurate group count and demographic breakdowns, and allows for surveyors to take photos. Images submitted by surveyors are used by preserve staff as a final consideration for verifying data accuracy.

Post-processing included reviewing observation data for potential double counts and interpolating unknowns. Using ArcGIS Online (ESRI), we were able to immediately view the data in a map and toggle between nearby observations to determine if they were the same elk group based on time, group composition, and ear tag/collar notes. We applied the ratio of cows : calves : branched bull : spike bull to the totals of the unknown elk type and added those to the existing numbers for each elk type. For example, if 0.49 of the total positively identified elk were cows, we added 0.49 of the total unknown elk type, rounded to the nearest whole number, and added it to the number of positively identified cows. Additionally, we combined totals for rathorn and mature bulls, and labeled them as branch bulls. We used Microsoft Excel and Google Sheets for graphs, tables, and data analysis. Maps were configured on ArcGIS Pro (ESRI).



**Figure 1.** Screenshots of tule elk observation data form (left) and map (right) on ArcGIS FieldMaps.

## Results

Volunteers and TWC staff counted a total of 445 elk consisting of 140 branch bulls, 13 spike bulls, 28 calves, and 264 cows (Table 1, Figures 2 & 3). The branch bull category counts for elk identified as mature or raghorn. Of the 445 elk recorded, 104 were observed on neighboring properties, including a private ranch and Bitter Creek National Wildlife Refuge. The calf:cow ratio was 1. The ratio indicates an 11% recruitment for 2022.

**Table 1.** Tule elk counts between 1998 and 2022. No data available for survey years 1999 and 2001-2003.

<b>Year</b>	<b>Branch Bulls</b>	<b>Spike Bulls</b>	<b>Cows</b>	<b>Calves</b>	<b>Total</b>
1998					<b>19</b>
2000	5		20	4	<b>29</b>
2004	13	9	50	24	<b>96</b>
2005	18	8	56	33	<b>115</b>
2006	26	28	55	18	<b>127</b>
2007	53	18	154	46	<b>269</b>
2008	40	4	93	36	<b>173</b>
2009	42	14	104	36	<b>196</b>
2010	38	15	82	28	<b>163</b>
2011	48	10	137	50	<b>245</b>
2012	51	6	105	21	<b>183</b>
2013	55	10	160	39	<b>264</b>
2014	84	25	213	41	<b>363</b>
2015	80	11	119	37	<b>294</b>
2016	54	15	156	47	<b>272</b>
2017	45	12	176	43	<b>276</b>
2018	52	13	175	45	<b>285</b>
2019	80	11	171	34	<b>296</b>
2020	87	33	281	59	<b>460</b>
2021	154	65	235	23	<b>477</b>
2022	140	13	264	28	<b>445</b>



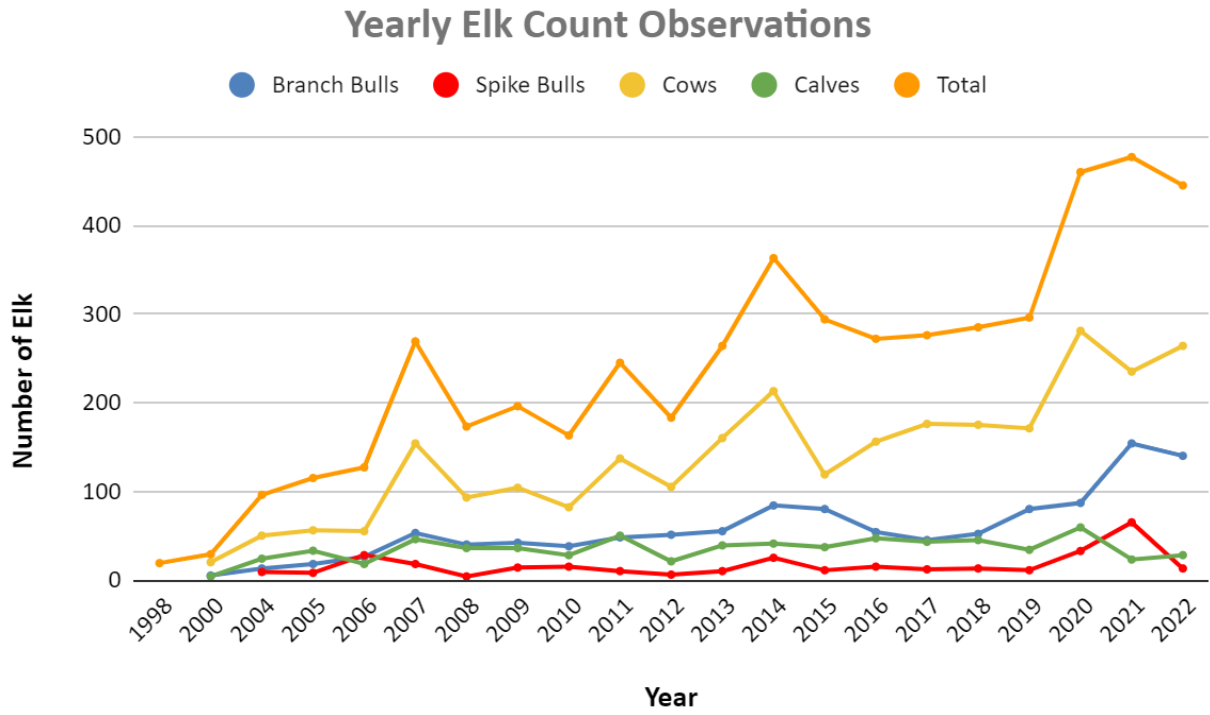


Figure 2. Wind Wolves Preserve elk counts, by elk type, 1998-2022.

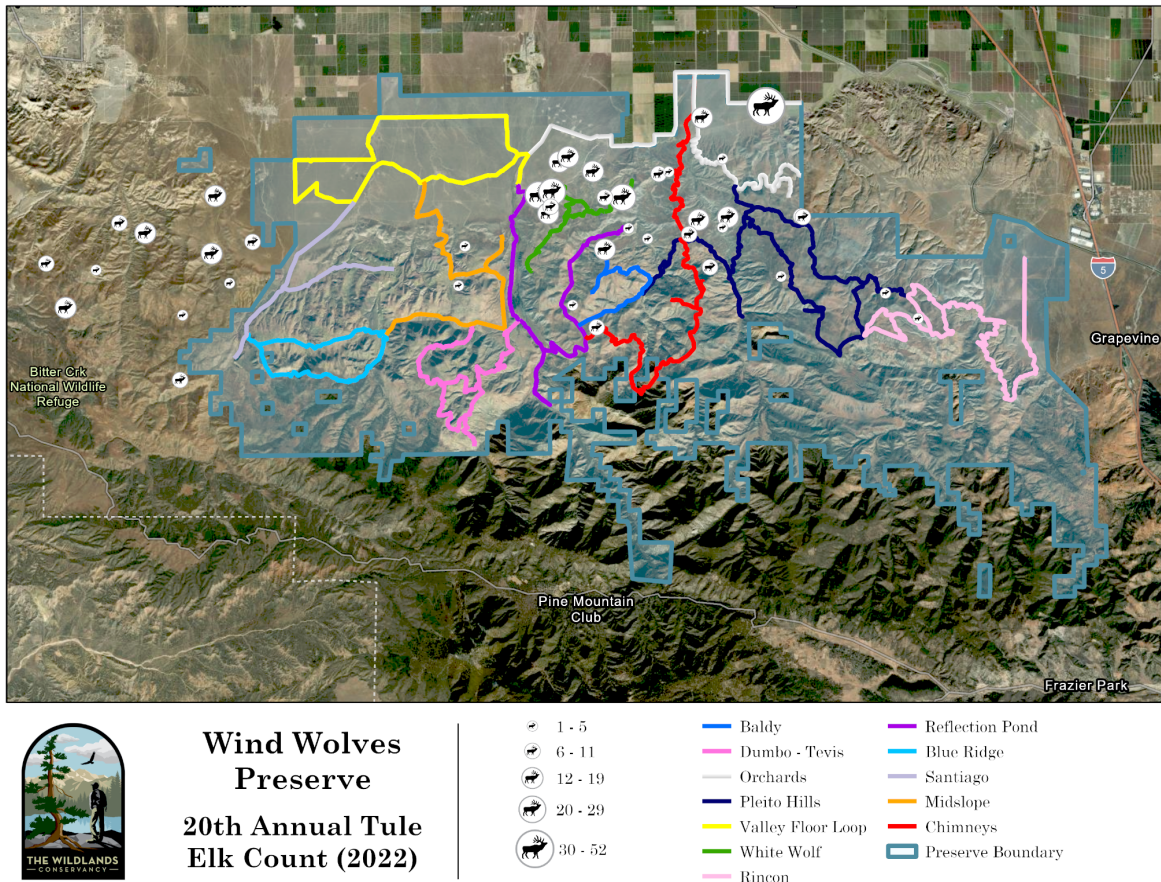


Figure 3. 2022 tule elk count survey routes and observations.



## Acknowledgements

The Wildlands Conservancy would like to thank everyone who volunteered their time and resources for this year's tule elk count. We could not complete this important monitoring effort without your help! A special thank you to Aaron Collier for taking the group photo, and for those who shared their photographs.

## Volunteer Photos



Harem along Orchards route. Photo by Gary Peplow (TWC docent)





Harem along White-Wolf route. Photo by Mitchell Coleman (Tejon Ranch Conservancy volunteer)



Tule elk along hills. Photo by Reeman Hammad (Tejon Ranch Conservancy volunteer)



## References

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