DIVIDE RANCH

2022 Landowner Letter

Rangeland Monitoring Network

Point Blue Conservation Science

Dear Mike and Kathy Landini,

Thank you for participating in Point Blue Conservation Science's state-wide Rangeland Monitoring Network (RMN; https://www.pointblue.org/tools-and-guidance/farming-ranching/).

Point Blue's RMN program is designed to be a long-term effort on each site. Each ranch's data contributes to our state-wide data set, helping us to understand rangeland ecosystems across the state and how they are changing over time. Our baseline sampling at Divide Ranch occurred in 2015, the 2018 data was RMN's first re-sample, and the data presented here is from 2022 and is the 2nd re-sample at Divide Ranch. Field work was conducted by myself and two technicians, My-Lan Le and Dabid Garcia; photos are from all three of us.

The purpose of this letter is to summarize the data we have collected on your ranch. It is broken down into the following sections:

1. **Cover letter**– this overview, includes detailed Table of Contents on next page
2. **Ranch Fact Sheet** – one page about the soil, plants, and birds on your ranch
3. **Figures and Maps** – these present the various data collected on your ranch from 2015-22
4. **FAQs** – ranch observations and state-wide patterns; interpreting your ranch's data
5. **Appendices** – Plant and Bird Lists for your property

These data are best interpreted within the context of a ranch plan (adaptive/ holistic management plan, carbon farm plan, agency management plan, etc.). This landowner letter is meant to help you understand the condition of your land relative to your ecological goals, which hopefully informs future decision-making processes.

Thank you so much for participating in our Rangeland Monitoring Network! I have deeply enjoyed all the hours spent collecting ecological data on your ranch, and am grateful for the opportunity to do so. I hope the information presented here is useful and interesting to you. Please reach out with any questions or feedback.

Best,

Sophie Noda
Working Lands Ecologist
Point Blue Conservation Science

Table of Contents



From left to right: Adobe lily, *Fritillaria pluriflora*, California Rare Plant Rank: 1B.2; Shooting star, *Primula sp*. (formerly *Dodecathenon*); Pitgland tarweed, *Holocarpha virgata*. All stunning CA native plants!

Divide Ranch Fact Sheet – 2022

SOIL

Textures: Clay, clay silt, silt clay loam

Soil Organic Carbon (SOC): At Divide Ranch, shallow SOC (0-10 cm) averaged 1.4% and deep SOC (10-40 cm) averaged 0.58%. From 2018-22, shallow SOC **declined by 18%** and deep SOC **declined by 28%**. In 2015-18, shallow SOC **declined by 9%** and deep SOC **did not change**. Overall, from 2016 to 2022, shallow SOC **declined by 25%** and deep SOC **declined by 28%**. We have observed a loss in SOC throughout most of the RMN, which we hypothesize is due in large part to the drought California has been experiencing (see FAQ for more info).

Compaction: At Divide Ranch, soil points showed no evidence of compaction. 3 out of 4 points were under the target NRCS target for bulk density, and all points were well below the 10-minute NRCS target infiltration time. The 1 point that was above the target for bulk density was only 0.02 g/cc above the target.

PLANTS

Diversity: We detected 94 plant species at Divide Ranch in 2022. We detected an average of 47 species per point.

Abundance: At Divide Ranch, the top 5 most abundant plant species (and their average % cover) were: 45% oat grass *(Avena fatua)*, 18% red-stemmed filaree *(Erodium cicutarium)*, 15% Blue oak *(Quercus douglasii)*, 10% Red brome *(Bromus rubra)*, and 9% bulbous bluegrass *(Poa bulbosa)*.

Perennial Grass: At the time of the survey, Divide Ranch had an average of 9% perennial grass cover. Perennial grass detected at the survey sites were bulbous bluegrass *(Poa bulbosa)*, Harding grass *(Phalaris aquatica)*, Melic grass (Melica sp.), and Pine bluegrass (*Poa secunda)*. **Annual Grass:** Divide Ranch had 64% annual grass cover. Annual grass cover is primarily wild oats, then red brome, and soft chess. **Forbes:** Divide Ranch has 4% perennial forb cover and 39% annual forb cover on average. **Trees & Shrubs:** Divide Ranch had 18% cover of woody plants at the sites surveyed. Tree species included manzanita, grey pine, blue oak. For a complete list of plants detected see Appendix.

Bare Ground: An average of 6% bare ground between points.

***Orange = Cal-IPC listed Invasive Species or non-native species | Green = native species or desirable finding**

BIRDS

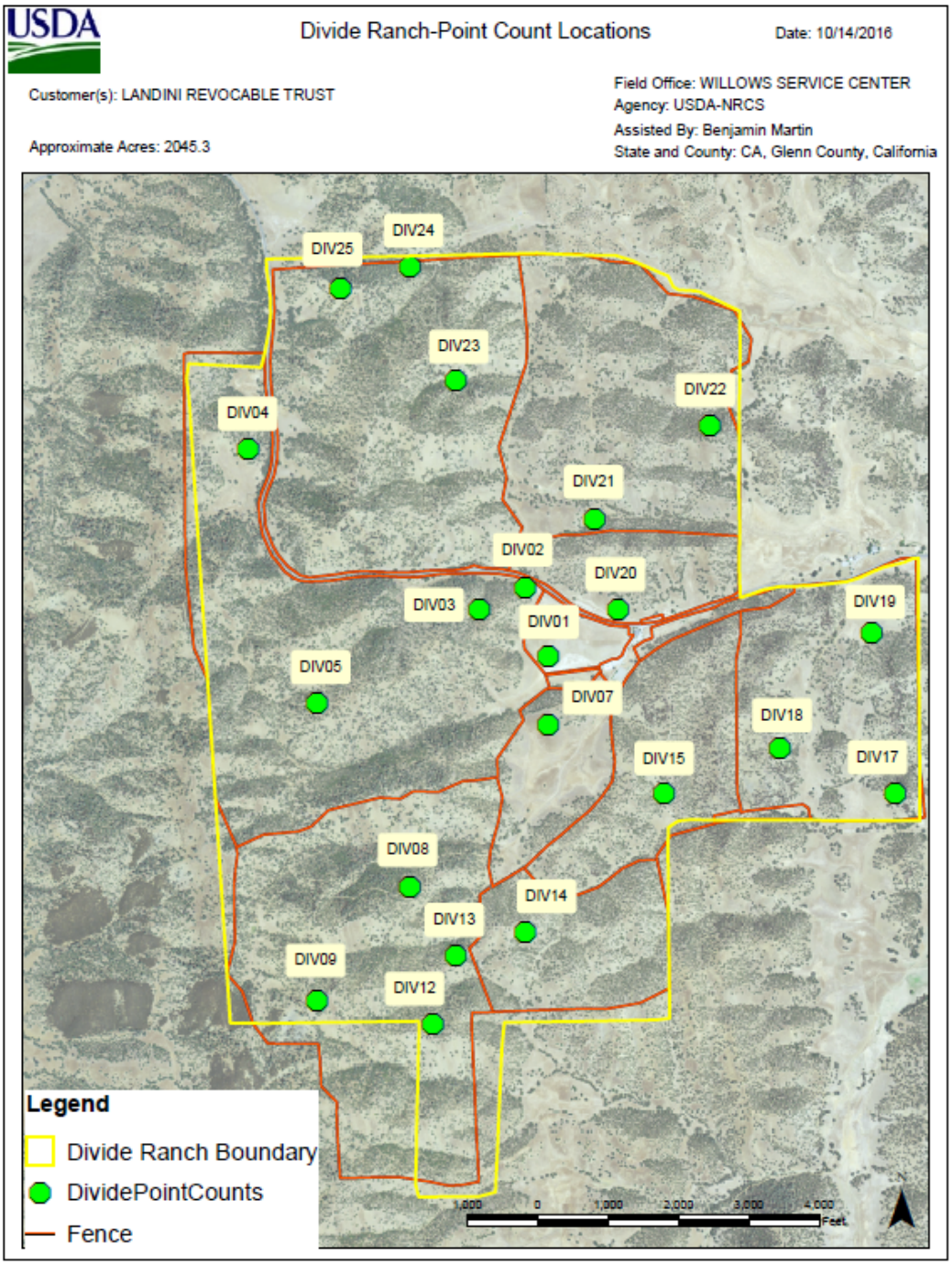
Diversity: We detected 34 bird species at Divide Ranch. There was an average of 8.9 species per point, an increase from 2015 where we detected 4.78 species per point, on average.

Abundance: The top 5 most common bird species detected at Divide Ranch were: Oak titmouse (35), Acorn Woodpecker (29), White-breasted Nuthatch (24), Ash-throated Flycatcher (22), Mourning Dove (20).

Changes in community composition: Western Meadowlark, Oak Titmouse, Western Bluebird, Acorn Woodpecker, Western Kingbird, and White-breasted Nuthatch are 5 species that increased in abundance from 2015-22. Lark Sparrow, Song Sparrow, and Ash-throated Flycatcher saw decreases in abundance.

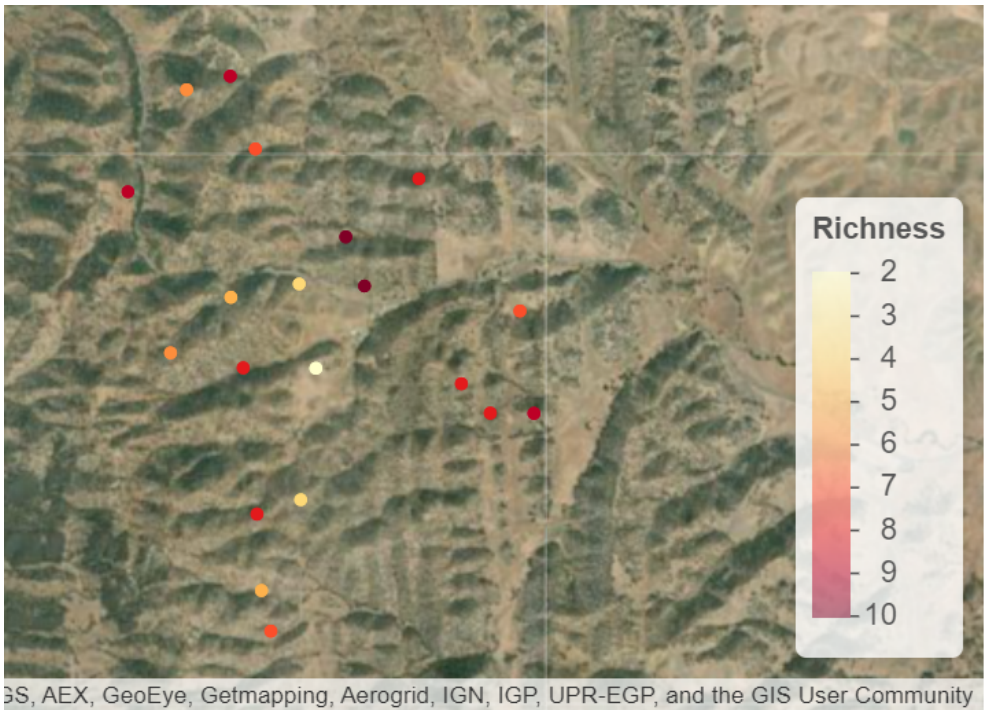
Maps and Figures

Maps



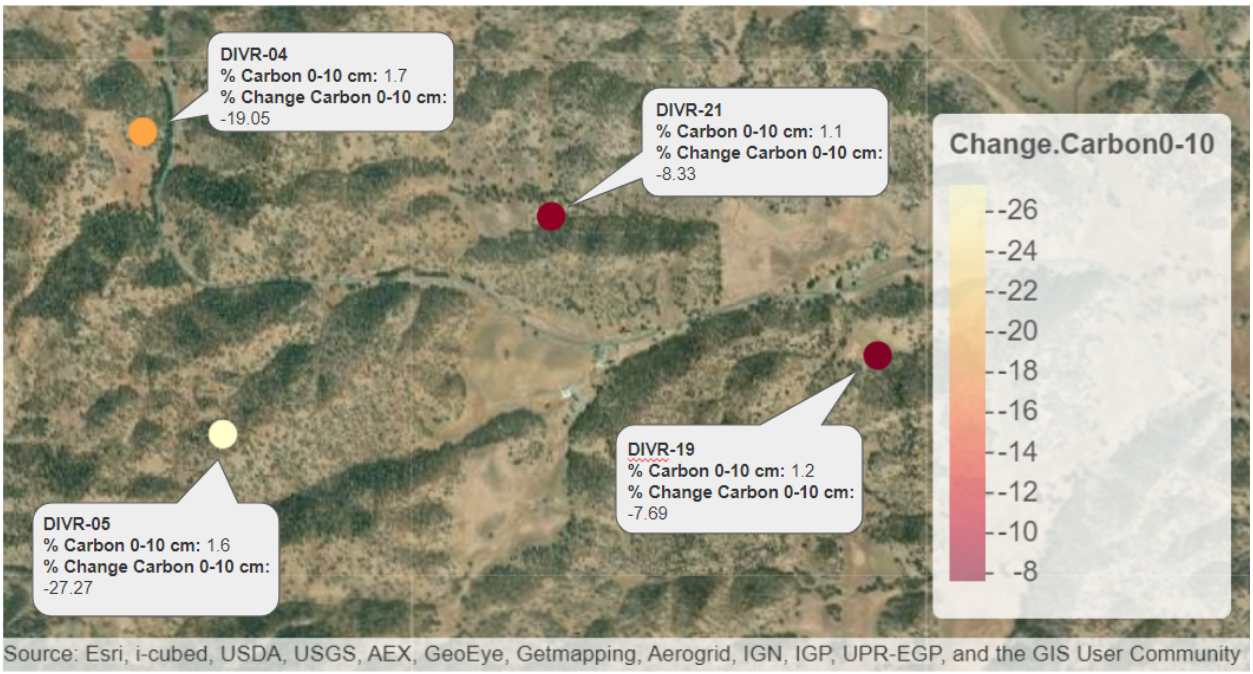
Map 1. Divide Ranch sampling points where Point Blue staff monitored birds. Points -04, -05, -19, and -21 were visited for soil sampling and vegetation monitoring as well.

Bird Species Richness



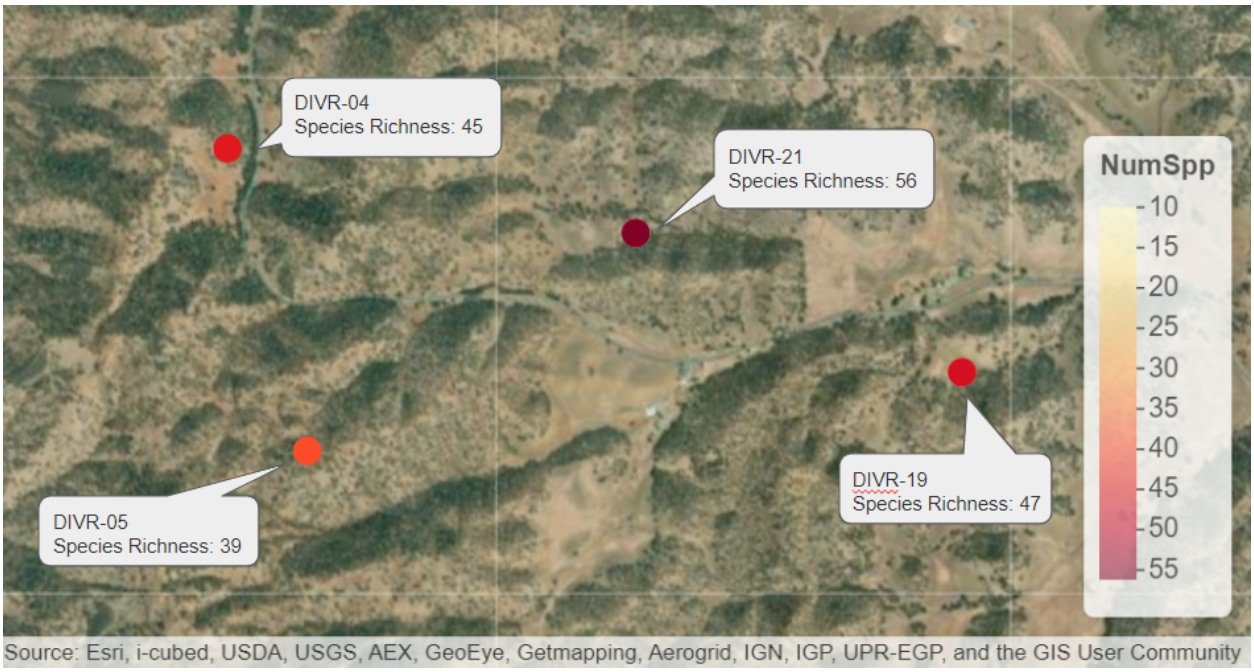
Map 2. Bird species richness (number of species) observed within at each point in 2022.

Shallow Soil Organic Carbon



Map 3. Change in surface carbon (0-10 cm) from 2019 to 2022.

Vegetation Species Richness



Map 4. Species richness (number of species) of plants detected during vegetation surveys in 2022.

Figures Part 1: Soil

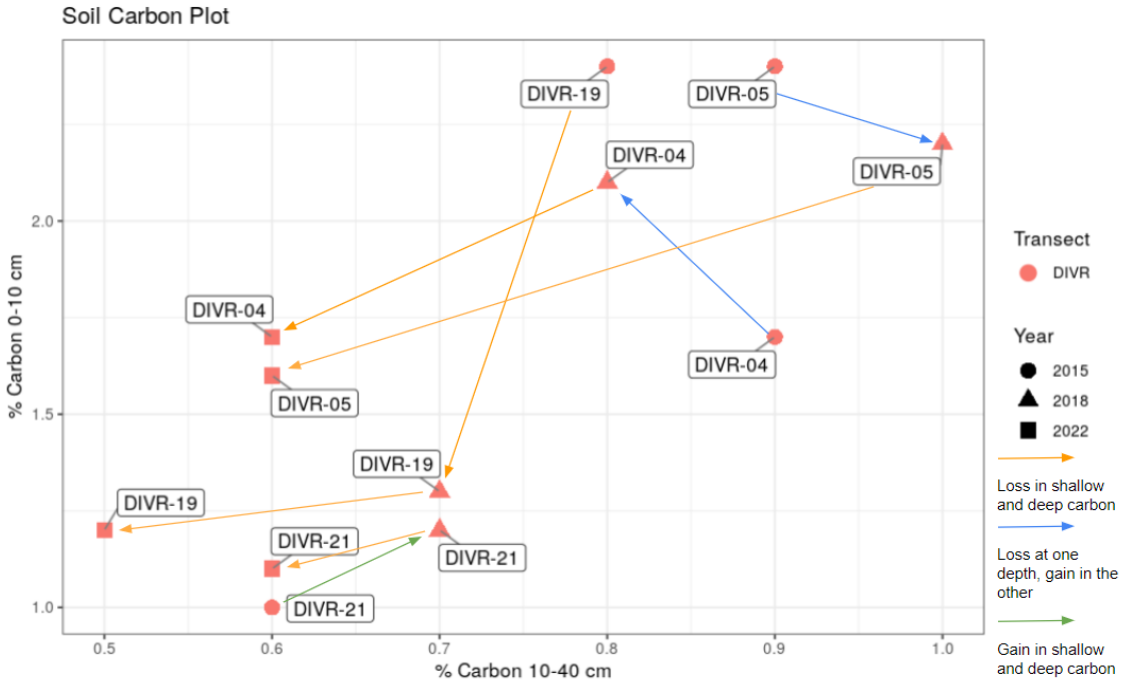


Figure 1. Change in soil carbon from the 2015 and 2018 sampling event to now, 2022. Note a decline in both shallow and deep carbon, which follows network-wide declines in carbon that we have observed.

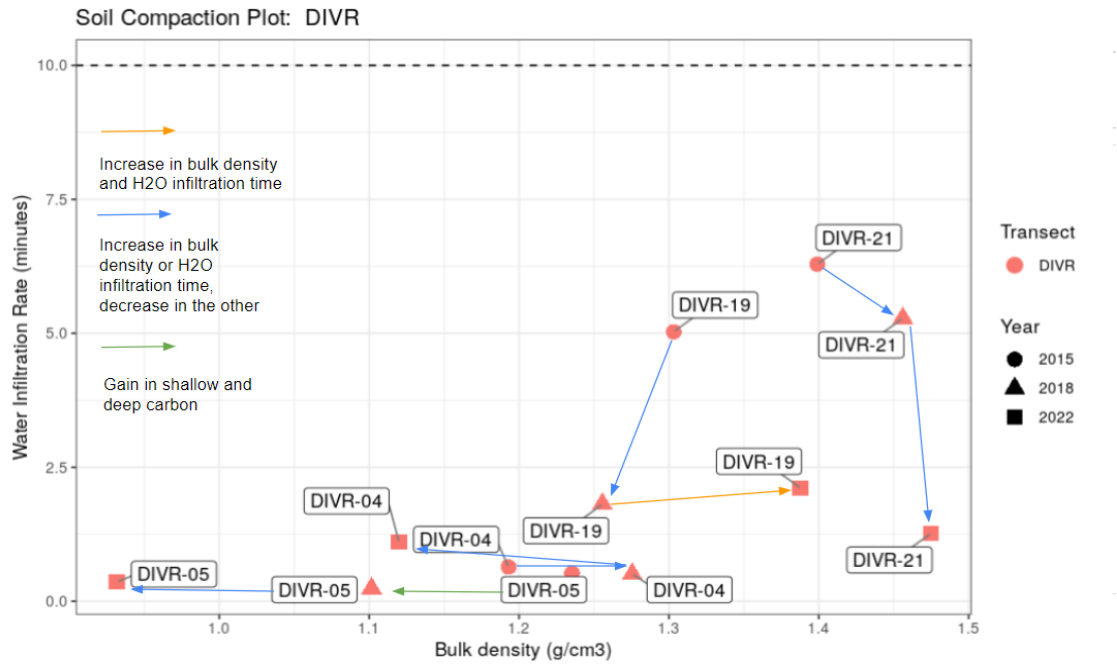


Figure 2. Scatter plot of soil compaction in 2015, 2018, and 2022 with water infiltration times on the Y axis and bulk density on the X axis. Note a decrease in bulk density in 3 out of 4 points and a stable or decreasing water infiltration time at all points.

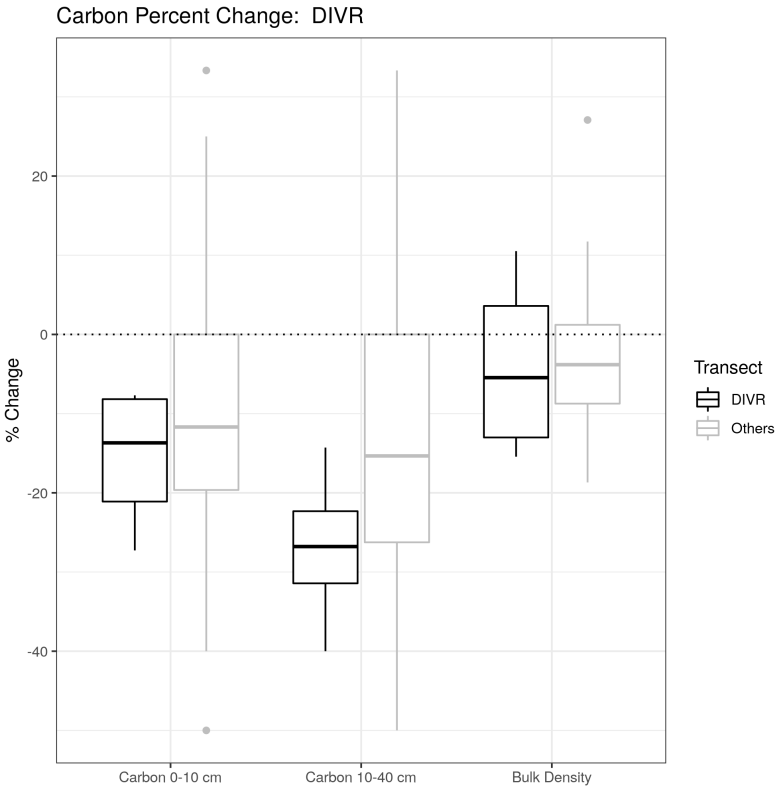


Figure 3. Box and whiskers plot of the percent change in carbon and bulk density from the 2018 sampling event to 2022. Average percent change 2018-22 at all RMN ranches in the Sacramento Valley region are in gray. Note that a decreased bulk density indicates less compaction, which is positive as more pore space allows for more root growth, water holding capacity, and microbe and fungal life. The boxes show the upper and lower quartiles (the interquartile range is where 50% of the data are found), the line inside is the median, and the whiskers are the minimum and maximum.

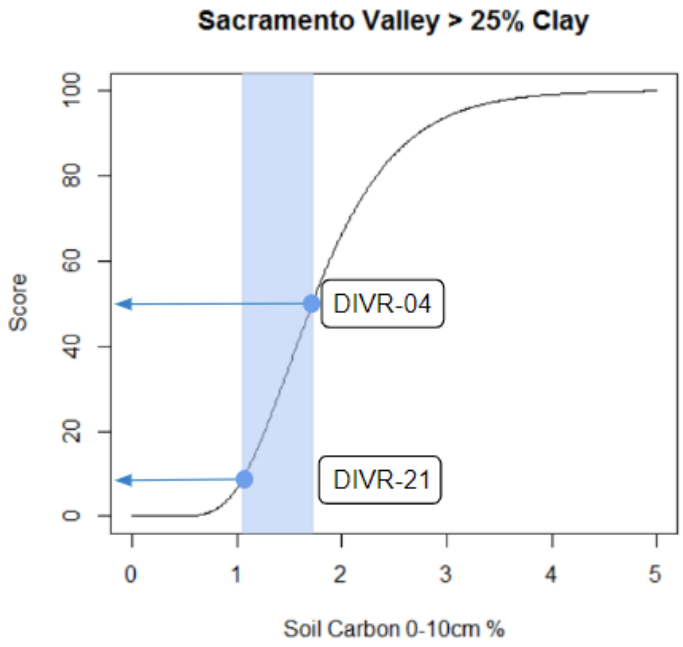


Figure 4. Divide Ranch soils range from 1.1%-1.7% SOC at the 0-10 cm depth and are represented by the blue bar on the soil health curve. They span from the 10th percentile to 50th percentile among soils of a similar clay content within the region (since clay content is a factor that influences a soil's ability to hold SOC).

The soil health curves were developed by Point Blue soil ecologist Dr. Chelsea Carey and shows the range of what we have observed in the Rangeland Monitoring Network. We make assumptions that our data collection is representative of CA Rangelands.

Figures Part 2: Vegetation

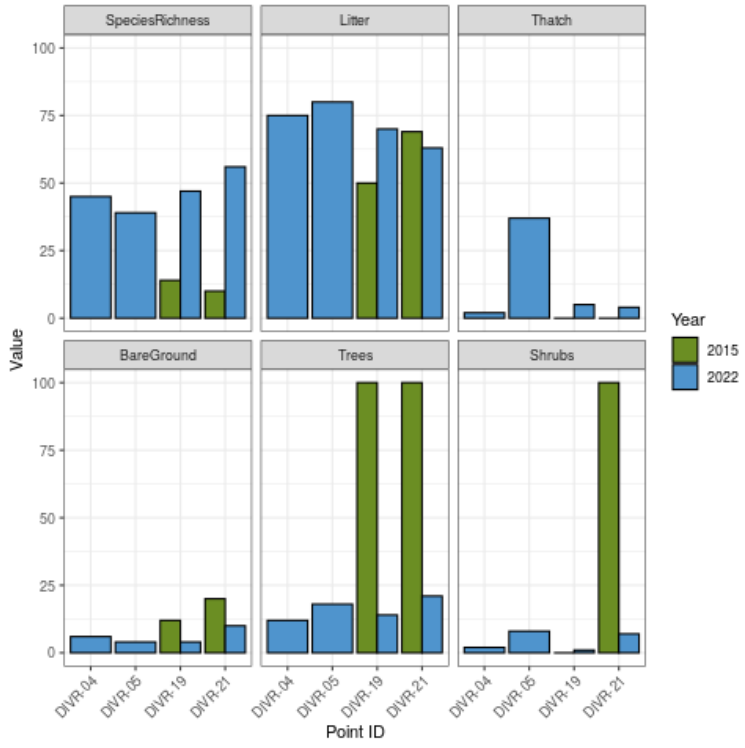


Figure 5. Cover summary of points sampled in 2022. Note that in the case of Species Richness, the Y-axis represents number of plant species, however for all other variables the Y-axis represents percent cover.

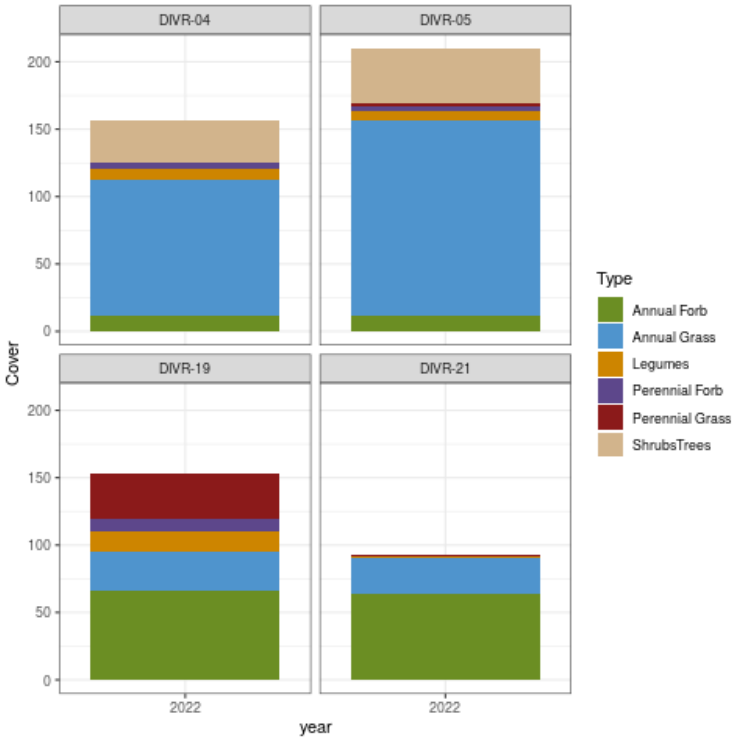


Figure 6. Bar graph with bins showing the % cover of functional groups at each point in 2022. Note that % cover exceeds 100% because we can hit multiple species on each pin drop and vegetation is often layered.

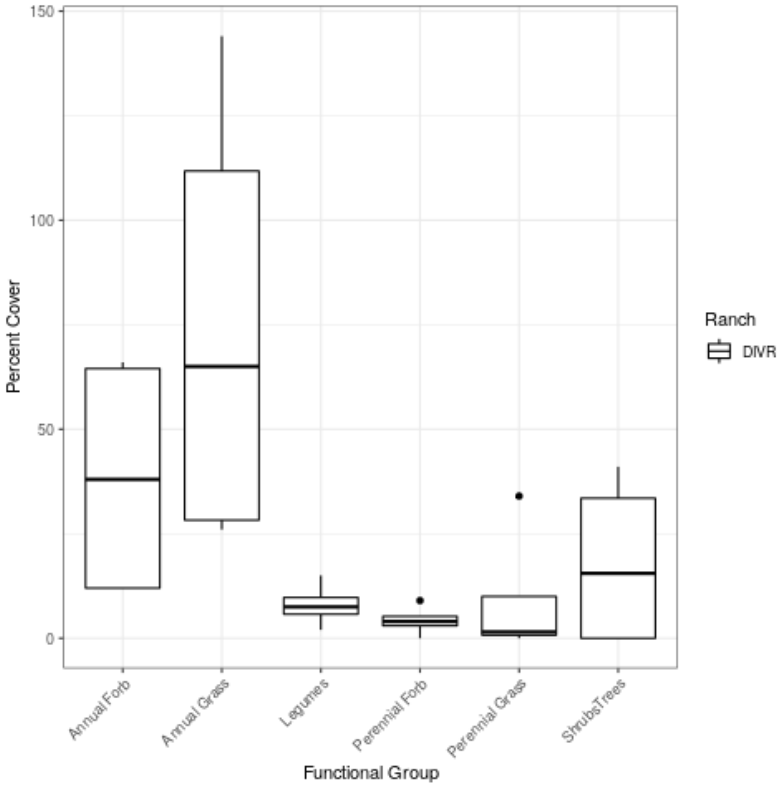


Figure 7. Box and whisker plot of percent cover of functional groups represented by 2022 data. The boxes show the interquartile range (where 50% of the values occur), the horizontal line inside the box is the median value, and the whiskers show the minimum and maximum values.

Figures Part 3: Birds

Bird species code key

AMKE	American Kestrel	SOSP	Song Sparrow	CALT	California Towhee
KILL	Killdeer	WAVI	Warbling Vireo	CASJ	California-Scrub Jay
LASP	Lark Sparrow	WIWA	Wilson's Warbler	HUVI	Hutton's Vireo
WEBL	Western Bluebird	ACWO	Acorn Woodpecker	NUWO	Nuttall's Woodpecker
WEKI	Western Kingbird	ATFL	Ash-throated Flycatcher	OATI	Oak Titmouse
WEME	Western Meadowlark	BEWR	Bewick's Wren	WBNU	White-breasted Nuthatch
BHGR	Black-headed Grosbeak	BGGN	Blue-gray Gnatcatcher		

Table 1. Species codes list for interpretation of bird figures below. Yellow=grassland focal species, blue= riparian focal species, green=oak woodland focal species.

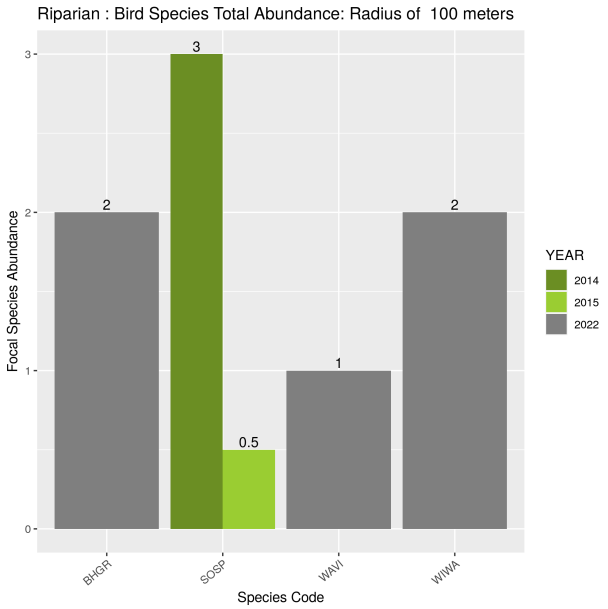


Figure 8. Riparian focal species change over time for detections within 100 m. Note an increase in Black-headed Grosbeak, Swainson's Thrush, Warbling Vireo, and Wilson's Warbler. See bird list for bird code name translation.

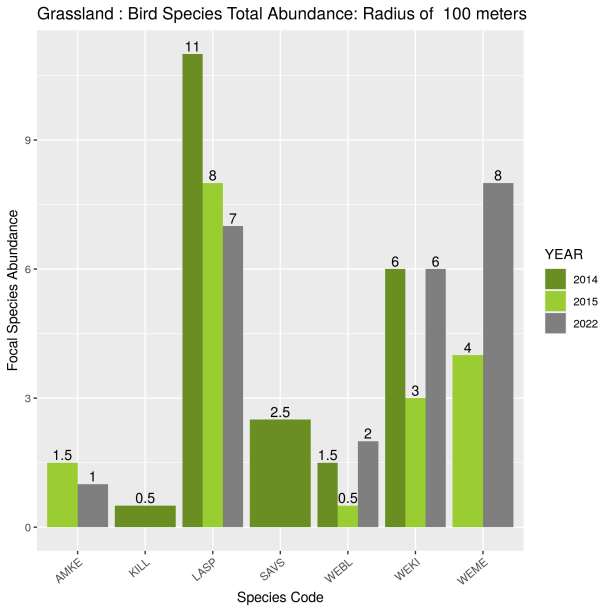


Figure 9. Grassland focal species abundance change over time for detections within 100 m. Note the increase in Western Kingbirds and Western Bluebirds, but a decrease in Lark Sparrows, Savannah Sparrows, and Western Meadowlarks.

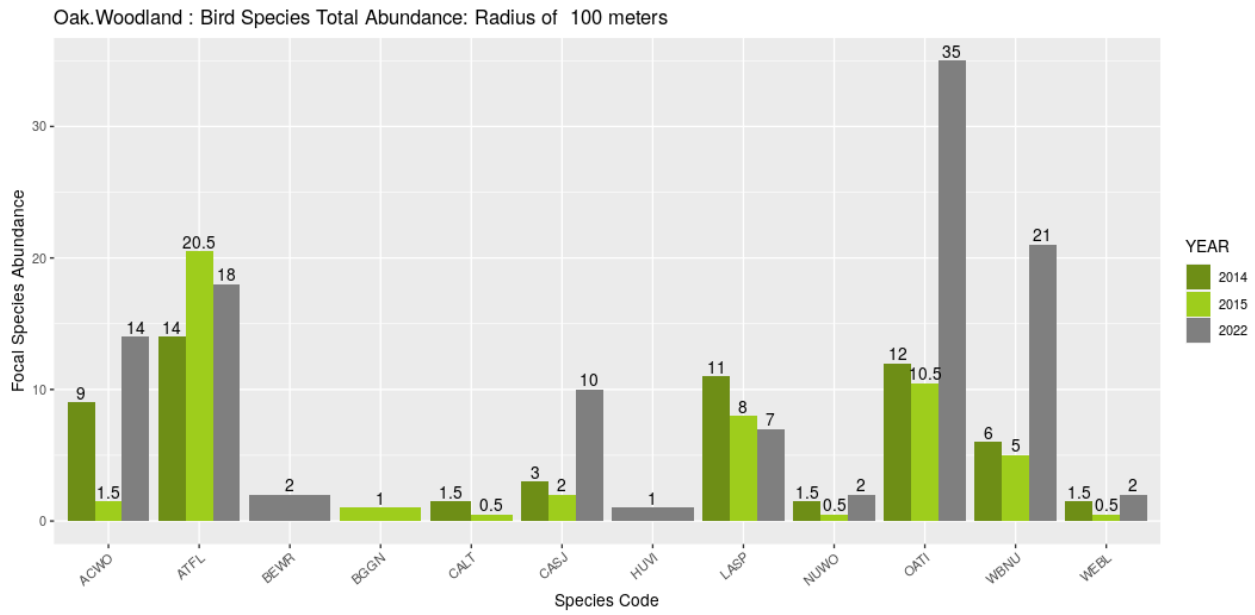


Figure 10. Oak woodland focal species abundance changes over time for detections within 100 m. Note increases in Acorn Woodpecker, Bewick's Wren, Nuttall's Woodpecker, Oak Titmouse, White-breasted Nuthatch, California Scrub Jay, and Western Bluebird in 2022.

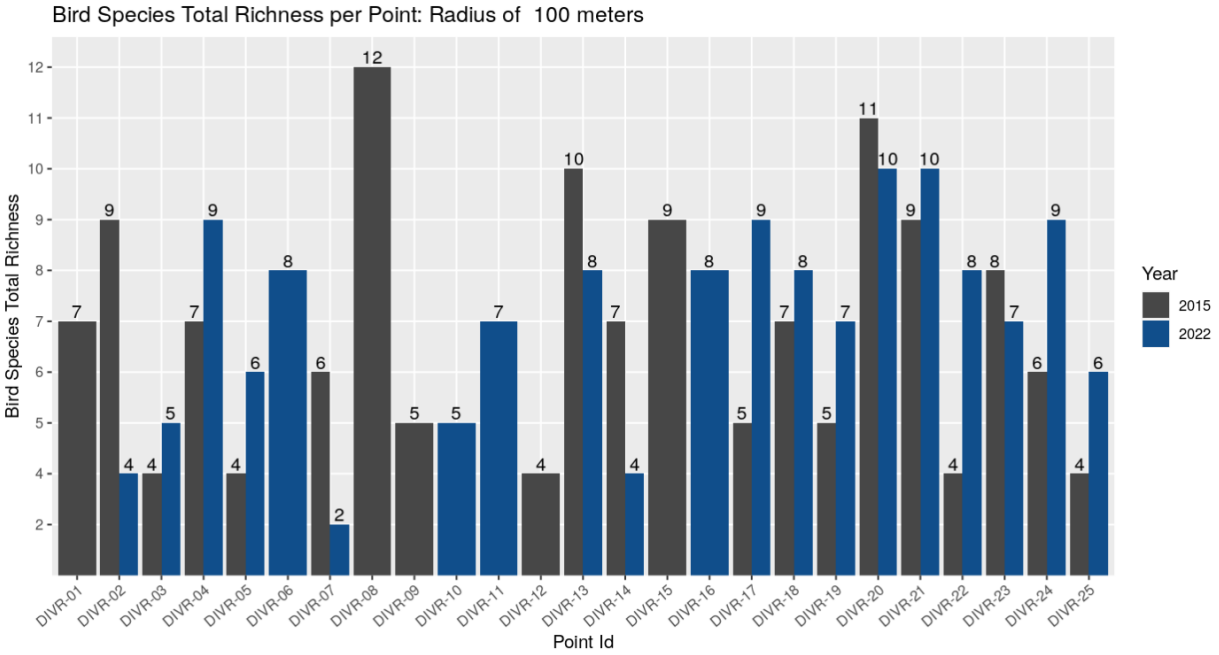


Figure 11. Species richness per point 2015 to 2022 for detections within 100 meters. We observed an increase in species richness at many points across the ranch. Note that in 2022 we visited points once for bird counts, whereas in 2015 Point Blue visited points twice, and this increase is despite that change in effort.

Frequently Asked Questions (FAQs)

Adapted for Divide Ranch by Sophie Noda, from a FAQ originally written by Mel Preston, former Point Blue ecologist, for the central coast region that includes Blue Oak woodland and grassland systems.

Within California's rangelands, which regions have the most soil carbon?

Our baseline data show that, throughout our state-wide network, soil carbon increases with precipitation and decreases with temperature. Overall, the coastal region has more rainfall and cooler temperatures than the inland regions, and soil carbon values in coastal regions are generally higher than inland regions.

What points are being resampled and which points are being sampled for the first time?

Soils: In 2022, we revisited the 4 soil points that were last sampled in 2018 and were first sampled in 2015. This years' sampling event was the 2nd resample of these 4 points. These 4 points are a subset of the 25 points that are selected for bird surveys.

Vegetation: In 2022, we visited the same 4 points that were soil sampled. Of these 4 points, 2 were originally surveyed in 2015 (DIVR-19 and -21) and were not resampled in 2018. This was the 1st resampling event for those two points and the 1st sampling event for the other 2 points (DIVR-04 and -05).

Birds: In 2022, we visited 22 points at Divide Ranch. We did 1 round of bird surveys at all points during the peak of nesting season in mid-May. The last time Point Blue staff did bird surveys was in 2015, when 2 rounds were completed at 21 points.

How is soil carbon changing over time?

We now have 3 sets of state-wide re-sample data (2015-2018, 2016-2019, 2019-2022) with which to address this question. Unfortunately, what the data are telling us is not necessarily what we want to hear; both re-sample cohorts have lost soil carbon. On average throughout the state, the 2016-19 cohort lost 1.43 metric tons of carbon per hectare per year. We are still working on analyzing the data from 2019-22. At Divide Ranch specifically, the carbon trend data can be found in the Fact Sheet.

What factors influence soil carbon sequestration (or respiration)?

We collected our first soil samples during California's mega-drought, and although the state has experienced significant periods of moisture since 2015, overall conditions have continued to be drier and hotter than historical averages. With this kind of extended drought, the expectation is that carbon inputs through photosynthesis will be less than carbon outputs via respiration, effectively decreasing soil carbon stocks over time. In California's semi-arid to arid climate it may be hard to overcome these climatic effects even through regeneratively-focused management.

Although we've observed carbon losses at all 4 points at Divide Ranch, it is difficult for us to determine at this point which factors are driving carbon losses. As mentioned in the **Fact Sheet**, we hypothesize that a significant contributor to carbon loss is the drought California has been experiencing and we are observing a decrease in SOC throughout the Rangeland Monitoring Network. We are interested in, and actively working towards, understanding more about how we might enable the conditions for carbon sequestration to occur at your ranch and the rest in our network. What are the factors that determine whether, and to what degree, soil carbon sequestration is occurring at a given site? Here are a few

primary ones:

- Quality and quantity of organic matter entering the system, which is a function of plant community composition and productivity. Other inputs include animal manure and thatch that is incorporated into the soil by the hoof action of cattle.
- Microbial physiology, especially carbon use efficiency (i.e., the fraction of carbon that is incorporated into microbial biomass versus respired as CO_2)
- Soil texture and mineralogy, which affects how strongly organic matter is held onto mineral surfaces
- Soil aggregation, which physically protects carbon from being lost as CO_2
- Topography and micro-climate
- Precipitation and temperature

Some of these factors (like plant community composition) can be influenced by management, while others (like soil mineralogy) can't. As we continue to dig into the data, we hope to disentangle many of these factors and determine what role management can play in promoting carbon sequestration across California's rangelands. At the big-picture level, it's important to remember that California's rangelands are rapidly being converted to residential and intensified agricultural land uses, which in most cases results in huge, irreversible losses of soil carbon and biodiversity. Continued, thoughtful stewardship of our remaining working lands allows these ecosystems to persist, supports rural economies and communities, and gives us the opportunity to learn from our data and adapt to a changing climate.

What plants are growing on my ranch?

The **top 5 most abundant plant species** found on your ranch are listed on your ranch fact sheet, and **Appendix I** has a complete list of plants we documented on your property. It is organized by plant families and also has other information, such as whether each species is an annual or perennial. If you want to know more about a particular species, there are many resources available. Two places we recommend starting are calflora (www.calflora.org) and USDA plants (https://plants.sc.egov.usda.gov).

Why is perennial cover important?

Our surveys document several kinds of perennial cover- perennial grasses, perennial flowers, trees, and shrubs. While perennial cover in Glenn County's rangelands can be very low, it is incredibly important. Perennial grasses and flowers are an important component of the mostly annual grasslands. Their complex roots support a well aggregated, aerated soil structure, while their dense aboveground form creates important habitat for all kinds of grassland organisms, including ground-nesting birds such as Grasshopper Sparrows and Western Meadowlarks. However, Western Meadowlarks have also been known to fare well in annual grass dominated grasslands.

A wealth of knowledge and research documents the incredible importance of oaks (and other woody perennials) for soil health and biodiversity. A recent review of the effect of rangeland management practices on soil health found that "soils beneath oak canopies were more fertile, had greater amounts of SOC and microbial biomass, were less compacted and contained more soil moisture than nearby open grassland soils" (Carey et al, in press). On California's rangelands, oaks are islands of biodiversity in the

sea of annual grass. Over 330 species of vertebrates depend on oaks for some part of their life cycle, including most of the breeding birds on Glenn County's rangelands. One can use the leaves and nodes of the branches to distinguish between old and new growth. Oak regeneration is an ongoing challenge in California, protecting and stewarding young oaks will be an important and rewarding stewardship practice.

What is the importance and distinction between bare ground, litter and thatch?
Figure 5 and the **Ranch Fact Sheet** tells you your amount of bare ground, litter and thatch. High amounts of bare ground can have negative effects, such as erosion or lack of plant productivity. Thatch and litter are both dead plant material, but they have different effects on the ecosystem. Litter is pieces of plants on the soil surface, and thatch is rooted, dead plant material. Litter keeps the soil surface covered and is food for soil microbes; decomposed litter contributes to soil carbon. Standing thatch is not broken down by soil microbes and can inhibit new plant growth; thatch can be turned to litter through activities such as the trampling of grazing animals.

What do functional groups tell me about my vegetation community?
Fig. 5 and **6** shows functional group cover in 2022. As in the rest of our state-wide network, annual grasses make up the majority of cover in Glenn County's rangelands. While we don't expect that to change any time soon, knowing about changes in overall cover or functional groups (for example, if legumes increased or decreased) can be helpful information for land stewards.

What birds are on my ranch?
The **top 5 most abundant bird species** found on your ranch are listed on your ranch fact sheet, and **Appendix II** has a complete list of birds we documented on your property. It is organized by abundance at the ranch and also has the bird codes and full common name, which will help with interpreting the figures.

What changes did we see in the ranch's bird community from 2019-22?
There was an increase in abundance of many species from 2015 to 2022 (see **Figures 7-9** and Fact Sheet). This is encouraging news! On the Ranch Fact Sheet, **Changes in community composition** tells you which species increased, decreased, or stayed the same. Many species increased in abundance, with a few notable exceptions (discussed below).

Did all species increase from 2019 to 2022?
No. See **Figures 7-9** for changes in species abundance in each focal group. Some decreases that stood out were Lark Sparrow, Song Sparrow, and Ash-throated Flycatcher.

What are some factors that affect breeding birds on Glenn County's rangelands?
We count breeding birds in spring and early summer. Among other things, breeding birds need water, insects and seeds or fruit (food), and appropriate nesting sites. It is challenging to assess how the various factors of climate and management have affected the breeding bird populations.

Oaks are the foundation of Glenn County's rangeland ecosystem, and the bird community is no exception. Most of Glenn County's rangeland breeding birds nest in oak trees (some nest in shrubs, and

a couple species nest on the ground). Many of your oak-nesting birds, such as Oak Titmouse, Ash-throated Flycatcher, Western Bluebird, Acorn Woodpecker, and the pervasive-and-invasive European Starling, are also "cavity-nesters," meaning they nest in natural or woodpecker-created cavities inside oak trees. In fact, many cavity-nesting species, such as American Kestrels and Western Bluebirds, nest in cavities inside dead oak trees, or "snags," and many birds use snags as foraging perches. The upland blue oaks that died during the mega-drought continue to provide valuable nesting and foraging habitat for birds. Lastly, those few bird species brave enough to nest on the ground are particularly vulnerable to predation, trampling, and heat stress. Western Meadowlarks are your most common ground-nesting species, followed by Lark Sparrow. Western Meadowlarks increased in abundance from 2015 to 2022, while Lark Sparrows decreased in abundance from 2015 to 2022. We haven't observed any European Starlings on our counts within 100 meters, which is a positive thing since they can outcompete less aggressive focal species for cavities, such as Western Bluebirds and Ash-throated Flycatchers.

As a land steward, how do I use all of this information?

The connection between ecological data and human management is complicated- just consider the strong influence of climate on rangeland ecosystems and the multiple goals of most livestock operations, and it's already an elaborate picture. And yet, understanding how your ranch's ecosystem is changing over time, compared to other ranches state-wide, can be incredibly helpful. While we work together to understand the subtle connections between our ecological data and your management activities, the action doesn't pause! There are plenty of well-established practices that have multiple conservation benefits- such as keeping a covered soil surface, tending the next (and current) generation of oaks, addressing erosion, and keeping riparian areas vegetated.

In particular, RMN data help you identify areas that stand out from the rest of the ranch. One activity is for you to visit the points that lost the most and least soil carbon on your ranch (see **Map 2**). Ask some questions. Have there been large changes here in the past 5 years? Past decade? One hundred years? Is this place unique from the rest of the ranch, and if so how? This activity will not yield black-and-white answers, but it might pull out some patterns or ideas to keep track of going forward. When shared with your "community of practice" (like your Point Blue biologist, other folks working on the land, or neighboring ranchers), these on-the-ground observations can be as useful as the hard data, because they can put it in context and inform future research questions or management actions.

What are some important resource concerns for Glenn County's rangelands, and what management activities can address them?

In Glenn County's arid landscapes, drought is always just around the corner- and as more than one rancher has said, "it's not the amount of rain but the timing." Ranchers, maybe more than anyone, know that water is limiting in this system and that the more water you can hold on the landscape, the more productive and resilient it will be. An important grazing practice that helps hold water is to leave a covered soil surface. A soil surface covered in litter has cooler temperatures than bare soil and can better slow down and infiltrate rain water, which reduces evaporation, erosion and runoff. Keeping soil covered also benefits below-ground microbial and fungal communities, who have significant contributions to soil health and carbon sequestration.

Address erosion and keep riparian areas vegetated. Some seasonal streams have been degraded by

livestock over the generations, likely resulting in water lost from the system. Streambank erosion can be addressed with simple "one rock" dams, or any other number of low-tech constructions. Also, planting woody perennials in eroded ravines and degraded riparian areas will not only filter sediment and reduce erosion, but also provide highly valuable wildlife habitat, water holding capacity, and carbon storage. We might be losing carbon from upland soils, but rangelands have riparian areas too! And, Point Blue research shows that "mature streamside forests store as much carbon as any other forest type in the world, helping to address climate change" (Dybala et al 2018).

Lastly, as has been mentioned repeatedly, oaks are foundational to Glenn County's rangeland ecosystem. They benefit soil health, water holding capacity, and biodiversity. Yet, they are imperiled. Blue oaks across the state had a huge die-off during the last mega-drought, and the problem of oak recruitment (young oaks do not reach adulthood often enough to replace the older ones) has been well-documented and studied for decades. While it is a big commitment with no guarantee of success, tending the next generation of oaks is probably the most beneficial action a land steward could make on the uplands whether through planned grazing for young oak survival, planting acorns, caging out trees, promoting shrubs as "nurseries" for young oaks, or any number of oak-regenerating practices.

Additional management recommendations for wildlife, biodiversity, and soil health
Adapted from Ryan DiGaudio, Senior Ecologist at Point Blue

• Install wildlife escape ramps on all of your cattle watering facilities. This will reduce the risk of accidental wildlife drownings in water troughs, and reduce the associated risk of water contamination.

• Continue maintaining a mosaic of habitat structure across the grassland landscape, including short grass, tall grass, and dispersed tree and shrub stands.

• Promote native plant species diversity by continuing to graze rotationally, which allows rest for desired species to recover and thrive.

• Eradicate or control invasive plants (e.g., the medusahead) through targeted grazing, mowing, or burning, if that is an option, early enough in the season before the plants have had a chance to mature and seed out.

• Manage for adequate ground cover (i.e. minimize bare-ground), which is important for wildlife forage and shelter because it reduces soil compaction, provides soil stability, increases water infiltration, and accumulates soil organic matter which results in greater water storage in the soil profile.

• Retain snags and downed wood, as these are important habitat features used by wildlife for foraging, cover, and provide nest-sites for cavity-nesting birds (e.g. woodpeckers, Oak Titmice, and Western Bluebirds), roosting habitat for bats, and habitat for a variety of invertebrates and herps (salamanders, snakes, lizards, etc.)

Appendix: Species Lists

Appendix I: Plant List

Scientific Name	Common Name	Family	Provenance	Functional Group
Toxicodendron diversilobum	Pacific poison oak	Anacardiaceae	Native	ShrubsTrees
Anthriscus caucalis	bur chervil	Apiaceae	Non-native	Annual Forb
Daucus pusillus	American wild carrot	Apiaceae	Native	Annual Forb
Lomatium caruifolium	alkali desertparsley	Apiaceae	Native	Perennial Forb
Lomatium utriculatum	common lomatium	Apiaceae	Native	Perennial Forb
Sanicula bipinnatifida	purple sanicle	Apiaceae	Native	Perennial Forb
Torilis arvensis	spreading hedgeparsley	Apiaceae	Non-native	Annual Forb
Asclepias fascicularis	Mexican whorled milkweed	Asclepiadaceae	Native	Perennial Forb
Achillea millefolium	common yarrow	Asteraceae	Native	Perennial Forb
Achyrachaena mollis	blow wives	Asteraceae	Native	Annual Forb
Carduus pycnocephalus	Italian plumeless thistle	Asteraceae	Non-native	Annual Forb
Centaurea solstitialis	yellow star-thistle	Asteraceae	Non-native	Annual Forb
Eriophyllum lanatum	common woolly sunflower	Asteraceae	Native	ShrubsTrees
Eriophyllum lanatum var. grandiflorum	common woolly sunflower	Asteraceae	Native	ShrubsTrees
Hesperevax caulescens	dwarf dwarf-cudweed	Asteraceae	Native	Annual Forb
Hemizonia congesta	hayfield tarweed	Asteraceae	Native	Annual Forb
Hemizonella minima	opposite-leaved tarweed	Asteraceae	Native	Annual Forb
Hypochaeris glabra	smooth cat's ear	Asteraceae	Non-native	Annual Forb
Hypochaeris sp.	cat's ear	Asteraceae	Non-native	
Madia sp.	tarweed	Asteraceae	Native	Annual Forb
Micropus californicus	q-tips	Asteraceae	Native	Annual Forb
Microseris douglasii	Douglas' silverpuffs	Asteraceae	Native	Annual Forb
Microseris lindleyi	Lindley's silverpuffs	Asteraceae	Native	Annual Forb

Scientific Name	Common Name	Family	Provenance	Functional Group
Senecio vulgaris	old-man-in-the-Spring	Asteraceae	Non-native	Annual Forb
Sonchus asper	spiny sowthistle	Asteraceae	Non-native	Annual Forb
Amsinckia sp.	fiddleneck	Boraginaceae	Native	Annual Forb
Athysanus pusillus	common sandweed	Brassicaceae	Native	Annual Forb
Capsella bursa-pastoris	shepherd's purse	Brassicaceae	Non-native	Annual Forb
Lepidium nitidum	shining pepperweed	Brassicaceae	Native	Annual Forb
Thysanocarpus radians	ribbed fringepod	Brassicaceae	Native	Annual Forb
Arctostaphylos	manzanita	Ericaceae	Native	ShrubsTrees
Euphorbia spathulata	warty spurge	Euphorbiaceae	Native	Annual Forb
Lotus wrangelianus	Chilean bird's-foot trefoil	Fabaceae	Native	Legumes
Lupinus bicolor	miniature lupine	Fabaceae	Native	Legumes
Lupinus subvexus var. subvexus	valley lupine	Fabaceae	Native	Legumes
Medicago polymorpha	burclover	Fabaceae	Non-native	Legumes
Trifolium albopurpureum	rancheria clover	Fabaceae	Native	Legumes
Trifolium ciliolatum	foothill clover	Fabaceae	Native	Legumes
Trifolium hirtum	rose clover	Fabaceae	Non-native	Legumes
Trifolium sp.	clover	Fabaceae		Legumes
Vicia villosa	winter vetch	Fabaceae	Non-native	Legumes
Quercus douglasii	blue oak	Fagaceae	Native	ShrubsTrees
Erodium botrys	longbeak stork's bill	Geraniaceae	Non-native	Annual Forb
Erodium brachycarpum	shortfruit stork's bill	Geraniaceae	Non-native	Annual Forb
Erodium cicutarium	redstem stork's bill	Geraniaceae	Non-native	Annual Forb
Geranium dissectum	cutleaf geranium	Geraniaceae	Non-native	Annual Forb
Geranium molle	dovefoot geranium	Geraniaceae	Non-native	Annual Forb
Lamium amplexicaule	henbit deadnettle	Lamiaceae	Non-native	Annual Forb
Allium amplectens	narrowleaf onion	Liliaceae	Native	Perennial Forb
Brodiaea	brodiaea	Liliaceae	Native	Perennial Forb
Chlorogalum pomeridianum	wavyleaf soap plant	Liliaceae	Native	Perennial Forb

Scientific Name	Common Name	Family	Provenance	Functional Group
Dichelostemma capitatum	bluedicks	Liliaceae	Native	Perennial Forb
Dichelostemma volubile	twining snakelily	Liliaceae	Native	Perennial Forb
Fritillaria pluriflora	adobe lily	Liliaceae	Native	Perennial Forb
Toxicoscordion fremontii	Fremont's deathcamas	Liliaceae	Native	Perennial Forb
Triteleia laxa	Ithuriel's spear	Liliaceae	Native	Perennial Forb
Clarkia purpurea	winecup clarkia	Onagraceae	Native	Annual Forb
Pinus sabiniana	California foothill pine	Pinaceae	Native	ShrubsTrees
Plantago erecta	dotseed plantain	Plantaginaceae	Native	Annual Forb
Plantago major	common plantain	Plantaginaceae	Non-native	Perennial Forb
Avena barbata	slender oat	Poaceae	Non-native	Annual Grass
Avena fatua	wild oat	Poaceae	Non-native	Annual Grass
Bromus arenarius	Australian brome	Poaceae	Non-native	Annual Grass
Bromus diandrus	ripgut brome	Poaceae	Non-native	Annual Grass
Bromus hordeaceus	soft brome	Poaceae	Non-native	Annual Grass
Bromus racemosus	bald brome	Poaceae	Non-native	Annual Grass
Bromus rubens	red brome	Poaceae	Non-native	Annual Grass
Hordeum murinum	mouse barley	Poaceae	Non-native	Annual Grass
Lolium perenne	perennial ryegrass	Poaceae	Non-native	Perennial Grass
Melica sp.	melicgrass	Poaceae	Native	Perennial Grass
Phalaris aquatica	bulbous canarygrass	Poaceae	Non-native	Perennial Grass
Poa bulbosa	bulbous bluegrass	Poaceae	Non-native	Perennial Grass
Poa secunda	Sandberg bluegrass	Poaceae	Native	Perennial Grass
Taeniatherum caput-medusae	medusahead	Poaceae	Non-native	Annual Grass
Vulpia bromoides	brome fescue	Poaceae	Non-native	Annual Grass
Vulpia microstachys	small fescue	Poaceae	Native	Annual Grass
Gilia tricolor	bird's-eye gilia	Polemoniaceae	Native	Annual Forb
Leptosiphon bicolor	true babystars	Polemoniaceae	Native	Annual Forb
Leptosiphon	leptosiphon	Polemoniaceae	Native	
Microsteris gracilis	slender phlox	Polemoniaceae	Native	Annual Forb

Scientific Name	Common Name	Family	Provenance	Functional Group
Navarretia nigelliformis	adobe navarretia	Polemoniaceae	Native	Annual Forb
Navarretia pubescens	downy pincushionplant	Polemoniaceae	Native	Annual Forb
Navarretia sp.	pincushionplant	Polemoniaceae	Native	
Claytonia perfoliata	miner's lettuce	Portulacaceae	Native	Annual Forb
Dodecatheon sp.	shootingstar	Primulaceae	Native	
Pentagramma triangularis	goldback fern	Pteridaceae	Native	Perennial Forb
Delphinium sp.	larkspur	Ranunculaceae	Native	Perennial Forb
Ranunculus occidentalis	western buttercup	Ranunculaceae	Native	Perennial Forb
Galium sp.	bedstraw	Rubiaceae	Native	
Castilleja attenuata	attenuate Indian paintbrush	Scrophulariaceae	Native	Annual Forb
Collinsia parviflora	maiden blue eyed Mary	Scrophulariaceae	Native	Annual Forb
Diplacus calycinus	Kaweah River bush monkeyflower	Scrophulariaceae	Native	ShrubsTrees
Phoradendron	mistletoe	Viscaceae	Native	ShrubsTrees

Appendix II: Bird List

Common Name	**Species Code**	**Count**
Oak Titmouse	OATI	35
Acorn Woodpecker	ACWO	29
White-breasted Nuthatch	WBNU	24
Ash-throated Flycatcher	ATFL	22
Lark Sparrow*	LASP	8
Nuttall's Woodpecker	NUWO	4
Western Bluebird*	WEBL	2
European Starling	EUST	2
Bewick's Wren	BEWR	2
California Scrub-Jay	CASJ	12

Focal Species:
Oak Woodland
Grassland
Riparian
Non-focal species
* Oak Woodland and Grassland focal species
**Oak Woodland and Riparian focal species

Common Name	Species Code	Count
California Towhee	CALT	1
Hutton's Vireo**	HUVI	1
Western Kingbird	WEKI	11
Western Meadowlark	WEME	8
American Kestrel	AMKE	2
Wilson's Warbler	WIWA	3
Black-headed Grosbeak	BHGR	3
Warbling Vireo	WAVI	2
House Finch	HOFI	11
Brown-headed Cowbird	BHCO	9
Mourning Dove	MODO	20
Lesser Goldfinch	LEGO	7
Eurasian Collared-Dove	EUCD	7
Western Tanager	WETA	5
Red-winged Blackbird	RWBL	3
Turkey Vulture	TUVU	3
Common Raven	CORA	3
Unid. Woodpecker	XXWO	2
Swainson's Thrush	SWTH	1
Orange-crowned Warbler	OCWA	1
Northern Mockingbird	NOMO	1
Unid. Warbler	XXWA	1
Phainopepla	PHAI	1