Conservation Planning and Regenerative Agriculture

for Technical Assistance Providers

San Mateo Resource Conservation District

with partners at NRCS, TomKat Ranch, Point Blue Conservation Science, and Carbon Cycle Institute

January 24, 2024

TOMKAT RANCH

SAN MATEO RESOURCE CONSERVATION DISTRICT

USDA NRCS
U.S. Department of Agriculture
Natural Resources Conservation Service

Point Blue Conservation Science

Carbon Cycle Institute

SARE
Western Sustainable Agriculture Research and Education

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number G-104-23-W9214 through the Western Sustainable Agriculture Research and Education program under project number G-104-23-W9214. USDA is an equal opportunity employer and service provider. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

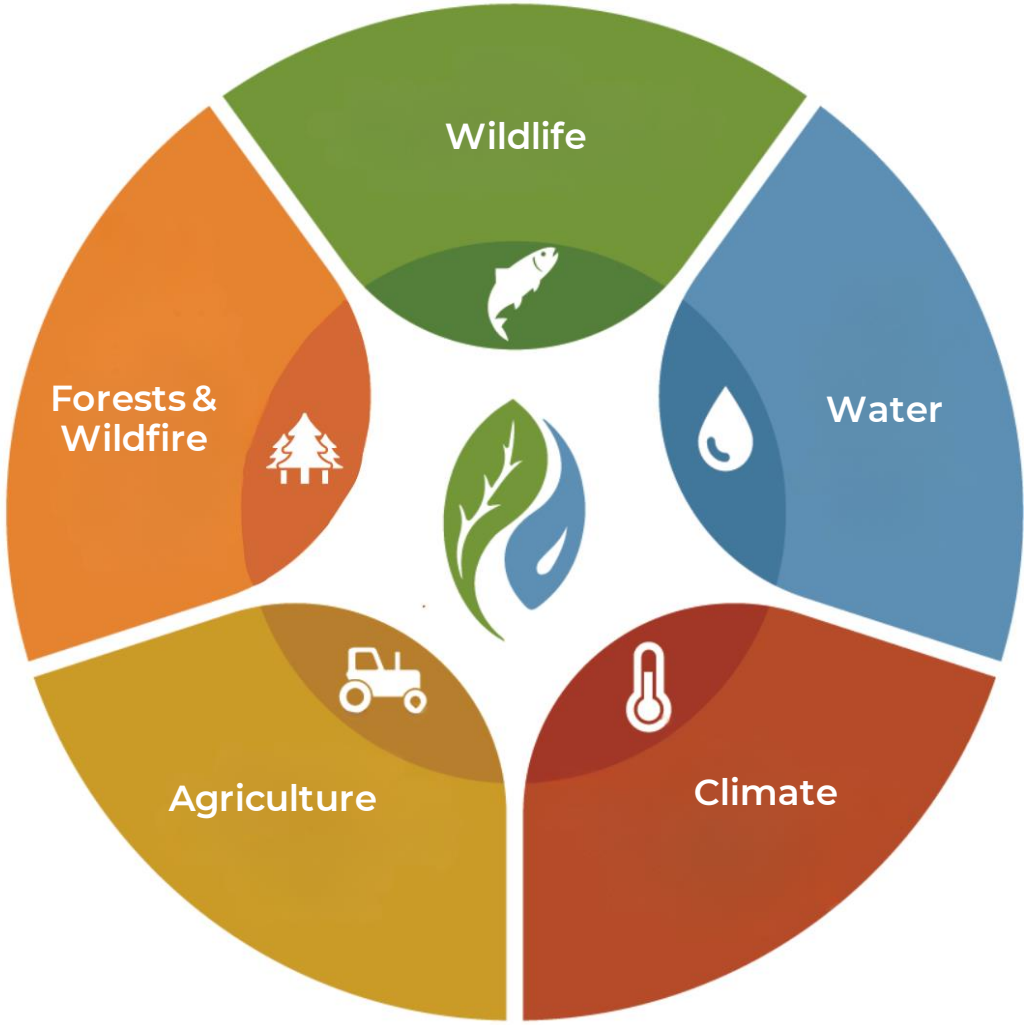
Agenda

January 24, 2024, 1:00-3:30pm

- **RCDs and Regenerative Agriculture -** Eliza Milio (SMRCD)
- **NRCS 9 Steps to Conservation Planning-** Drew Loganbill (NRCS)
  - **Steps 1-4: The Role of a Land Doctor** – Wendell Gilgert (Point Blue)
  - **Steps 5-8: Making & Implementing Decisions in Complex Environments** – Mark Biaggi & Kevin Watt (TomKat Ranch)
  - **Step 9+: Assessing the Status of Regenerative Outcomes**- Bonnie Eyestone (Point Blue)
- **Overview of Available Resources**
- **Questions**

What is an RCD?

- Special districts, statewide and national
- Local hubs for conservation
- Non-regulatory
- Work across jurisdictions and in partnership with many stakeholders


Wildlife
Water
Climate
Agriculture
Forests &
Wildfire

Regenerative Agriculture

farming practices that focus on **conserving and rehabilitating the land** while tailoring specific practices to local ecosystems and climates

Cover crops

Rotational grazing

Reduced tillage

Compost

Windbreaks

Mulch

Rangeland planting

Hedgerows


In October, we brought 40 technical assistance providers together for a 4-day training ..

NRCS 9-STEPS TO CONSERVATION PLANNING

Introduction to NRCS 9-Step Planning Process

Drew Loganbill, NRCS, Area Resource Conservationist

Objectives

- Conservation planning purpose and principles
- Define the 9-steps of planning
- Components of a Conservation Plan
- Tips for Planning

Planning Assistance

- A key feature of NRCS conservation technical assistance is helping clients develop conservation plans that protect, conserve, and enhance the resources and meet the client's needs.

- The conservation plan is the basis for determining the work needed to be done.

Principles of Conservation Planning

In 1947, Hugh Hammond Bennett identified the principles of conservation planning and an effective conservation planner must adhere to the following principles:

1. Consider the needs and capabilities of each acre within the plan

2.Consider the client's facilities, machinery, and economic situation

3. Incorporate the client's willingness to try new practices

4. Consider the land's relationship to the entire farm, ranch, or watershed

The conservation planning process helps the planner and client accomplish the following:

(1) Develop conservation plans that help protect, conserve, and enhance natural resources

(2) Design alternatives that address identified resource issues

(3) Include human considerations for achieving sustainable agricultural systems

(4) Consider the effects of planned actions on interrelated geographical areas (i.e., looking offsite, beyond the planning unit boundary)

(5) Consider and explain the interaction between ecological communities and society

(6) Focus on ecological principles

(7) Consider the effects, risks, and interactions of planned systems and practices on the natural resources, as well as economic and social considerations

(8) Identify where indigenous stewardship methods might be needed or explored

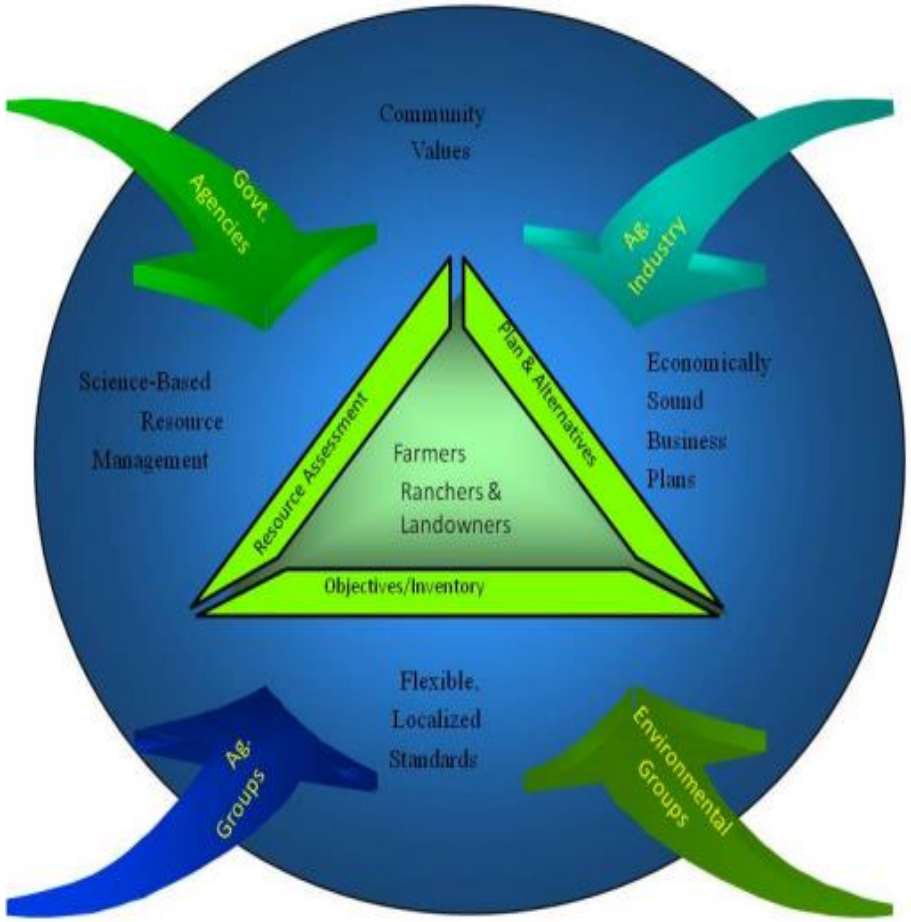
(9) Assist with development of plans, regardless of scale, which will help achieve the client's and society's objectives

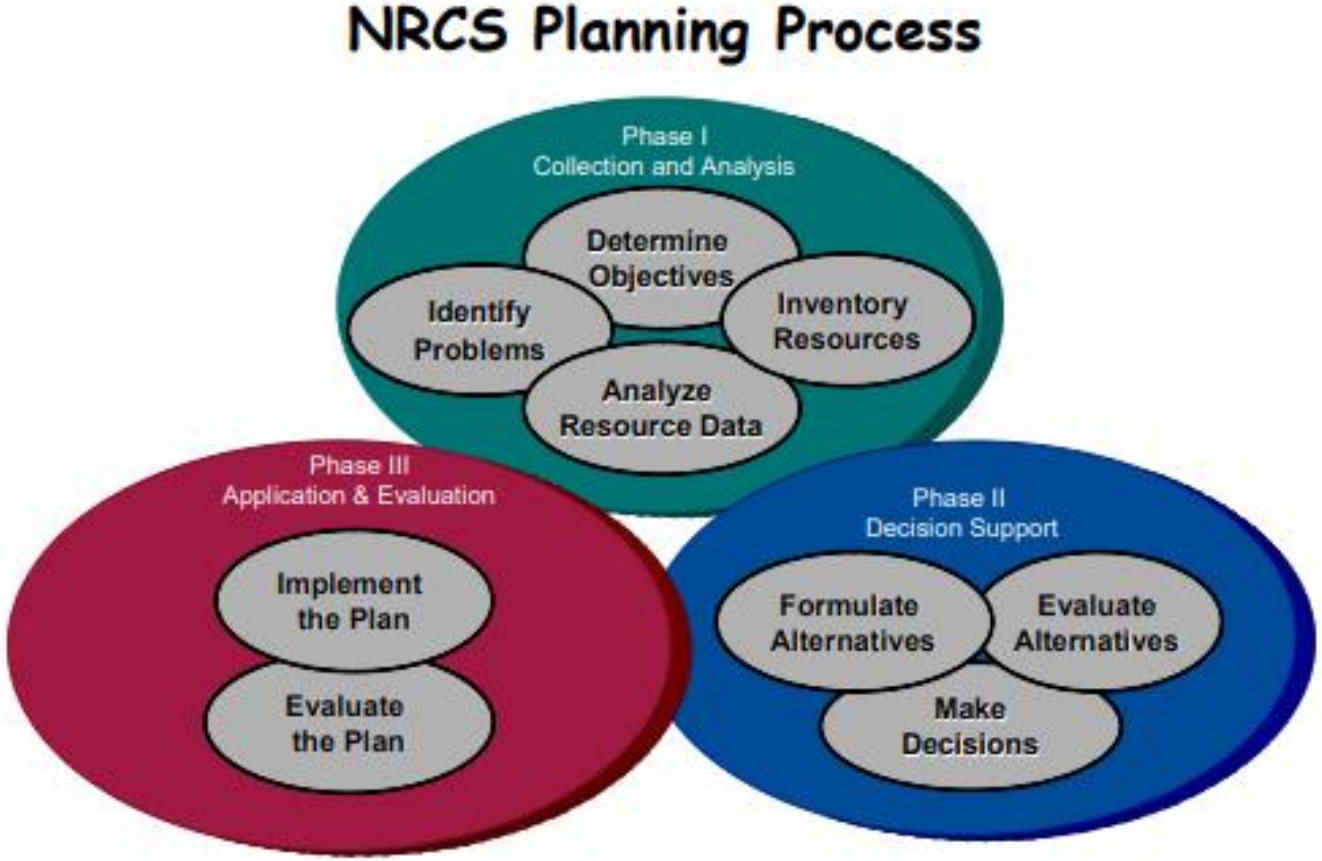
(10) Identify where knowledge, science, and technology need to be advanced

(11) Assist with meeting requirements for the National Environmental Policy Act (NEPA), which is incorporated into all steps and activities of the conservation planning process

HOW CONSERVATION PLANNING WORKS
A NINE-STEP PROCESS

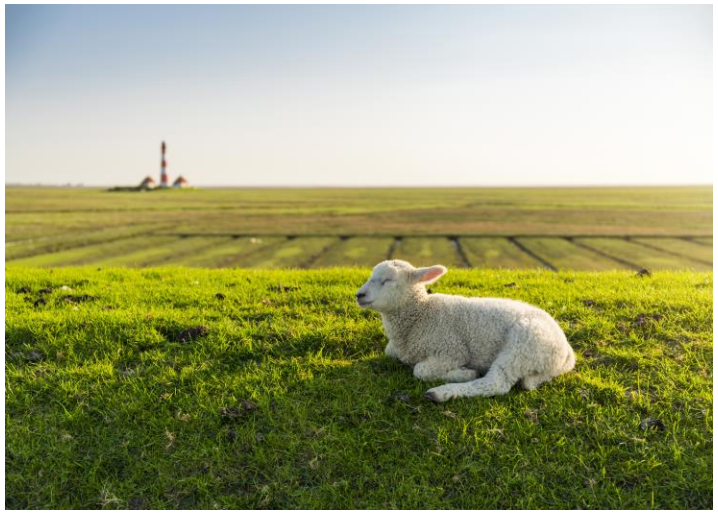
1	2	3	4	5	6	7	8	9
Identify Problems and Opportunities	**Determine Objectives**	**Inventory Resources**	**Analyze Resource Data**	**Formulate Alternatives**	**Evaluate Alternatives**	**Make Decisions**	**Implement the Plan**	**Evaluate the Plan**
Initial opportunities and problems are first identified while working with the customer.	The customer identifies their objectives, while the planner guides the process so that it includes the customer's needs	Natural resource, economic, and social information for the planning area is collected to further define problems and	The planner studies the resource data and defines existing conditions for all the identified natural resources,	Alternatives are formulated that achieve the customer's objectives, solve identified concerns, and take	Alternatives are evaluated to determine their effectiveness in addressing the customer's problems,	The customer selects their preferred alternatives and works with the planner on practice implementation.	The customer implements the selected alternatives. The planner provides the land manager with detailed	The planner evaluates the effectiveness of the plan in solving the resource concerns and works with the customer to


Community Values
Govt. Agencies
Ag. Industry
Science-Based Resource Management
Economically Sound Business Plans
Resource Assessment
Plan & Alternatives
Farmers Ranchers & Landowners
Objectives/Inventory
Flexible, Localized Standards
Ag. Groups
Environmental Groups


NRCS Planning Process
Phase I
Collection and Analysis
Determine Objectives
Identify Problems
Inventory Resources
Analyze Resource Data
Phase III
Application & Evaluation
Implement the Plan
Evaluate the Plan
Phase II
Decision Support
Formulate Alternatives
Evaluate Alternatives
Make Decisions

Step 1 – Identify Problems and Opportunities

- Identify existing resource problems and concerns and potential opportunities in the planning area.



Step 2 – Determine Objectives

- Identify and document the client's objectives.

Step 3 – Inventory Resources

- Inventory and document the natural resources and their current onsite and offsite conditions and effects, as well as the economic and social considerations related to the resources.

Step 4 – Analyze Resource Data

- Analyze the resource information gathered in Step 3, to clearly define the existing natural resource conditions, along with economic and social issues related to the resources.

Definition of Resource Concern

The resource condition that does not meet minimum acceptable condition levels as established by resource planning criteria shown in the FOTG.

This implies an expected degradation of the soil, water, air, plant, animal or energy resource base to the extent that the sustainability or intended use of the resource is impaired.

SWAPA+HE

Soil – Water –Air – Plants – Animals + Human - Energy

*NRCS Resource Concern List and Planning Criteria

Step 5 – Formulate Alternatives

- Formulate alternatives that will achieve the client's objectives, address identified natural resource concerns, and take advantage of opportunities to improve or protect resource conditions and demonstrate a variety of technical and economic implementation strategies.

Step 6 – Evaluate Alternatives

- Evaluate the alternatives to determine their effects in addressing the client's objectives and the identified natural resource concerns and opportunities. Evaluate the projected effects on social, economic, and ecological concerns

Step 7 – Make Decisions

- The client selects their preferred alternatives and works with the planner to schedule the conservation system and practice implementation.

Step 8 – Implement the Plan

- The client selects their preferred alternatives and works with the planner to schedule the conservation system and practice implementation.

Step 9 – Evaluate the Plan

-Evaluate the effectiveness of the plan in solving the resource concerns as it is implemented and work with the client to make adjustments as needed.

Components of a NRCS Conservation Plan

- Conservation Plan Map
- Soil Map with Soils Information
- Resource Concern Checklist
- Environmental Evaluation Checklist
- Conservation Effects Checklist
- Cultural Resource Inventory

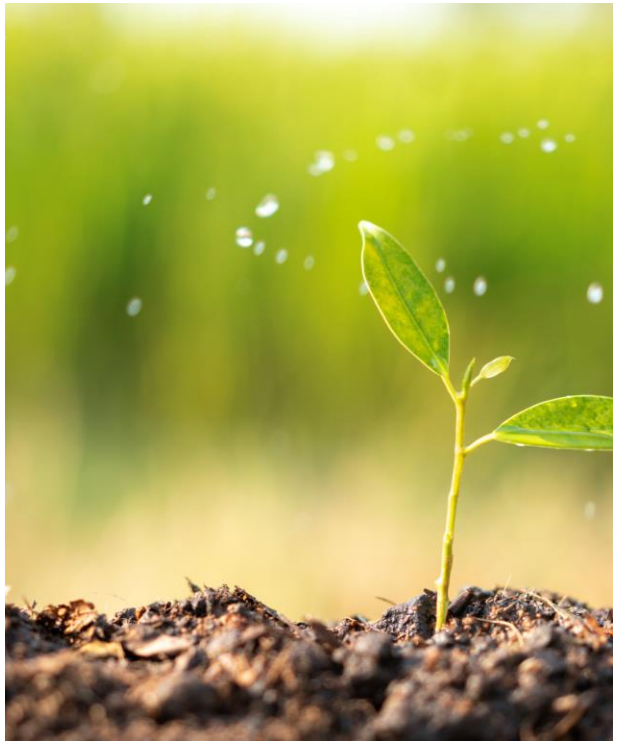
Components of a NRCS Conservation Plan

- Species of Concern Map
- Conservation Plan/Schedule of Operations with Planned Practices
- Technical Specifications & Guides
- Other Maps, Photographs, Tech Notes

Tips for Conservation Planning

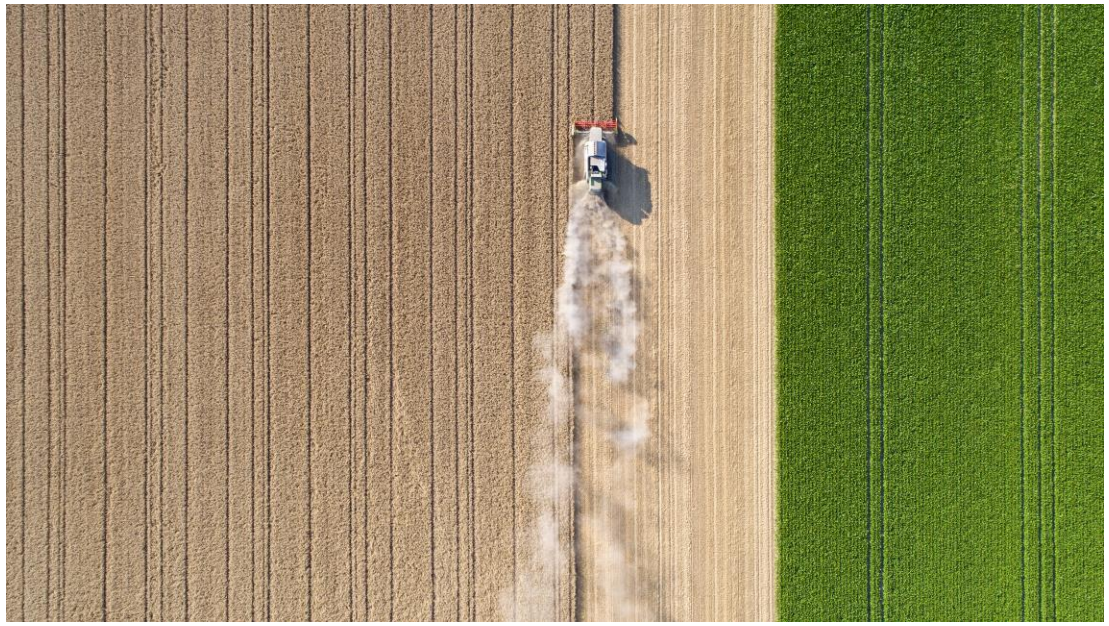
- Understand Natural Systems then Plan and Design with Nature
  - Consider the "Do Nothing" Option as a BMP
- Look Beyond the Fence Lines
- Use the Management Approach First

"The Purest Form of Conservation is Prevention"



Tips for Conservation Planning

- Develop Trust with the Land User
- Work with Land Users Ideas
- One Size Does Not Fit All
- Speak the Land User's Language
- Plan with Economics in Mind
- Keep Plans Flexible to Change



References

- California | Field Office Technical Guide | NRCS – USDA
- Natural Resources Conservation Service (NRCS) Resource Concern List and Planning Criteria (usda.gov)
- USDA NRCS SWAPAE+H Resource Concerns
- NRCS eDirectives - National Planning Procedures Handbook (NPPH), Amend. 9 (usda.gov)

Questions?

Drew Loganbill – Area Resource Conservationist

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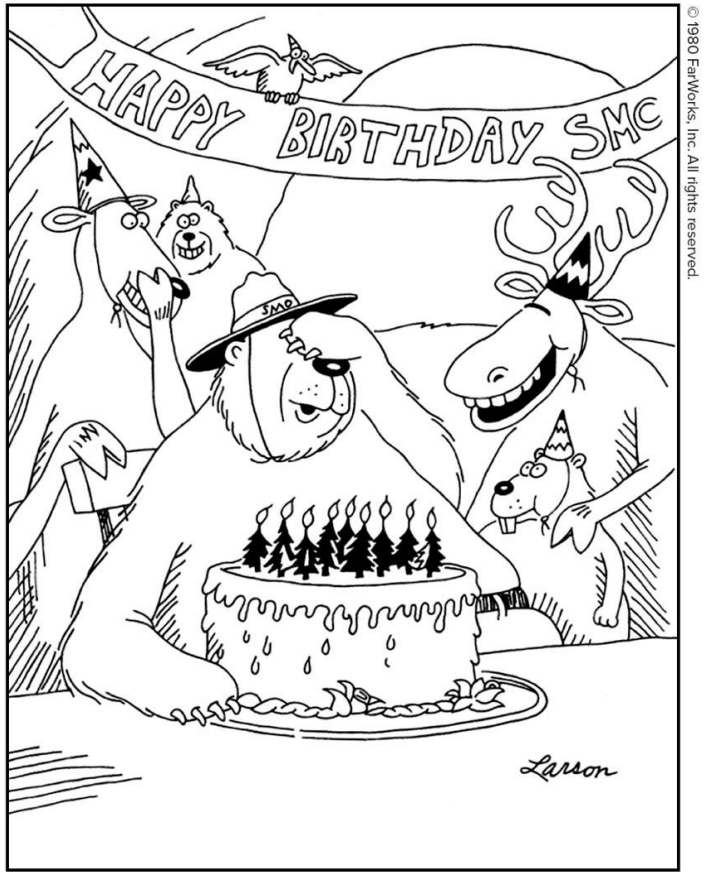
NRCS CA Website

https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/california

Thank you!



"Can I look now?"

Regenerative Agriculture:
The Role of a Land Doctor

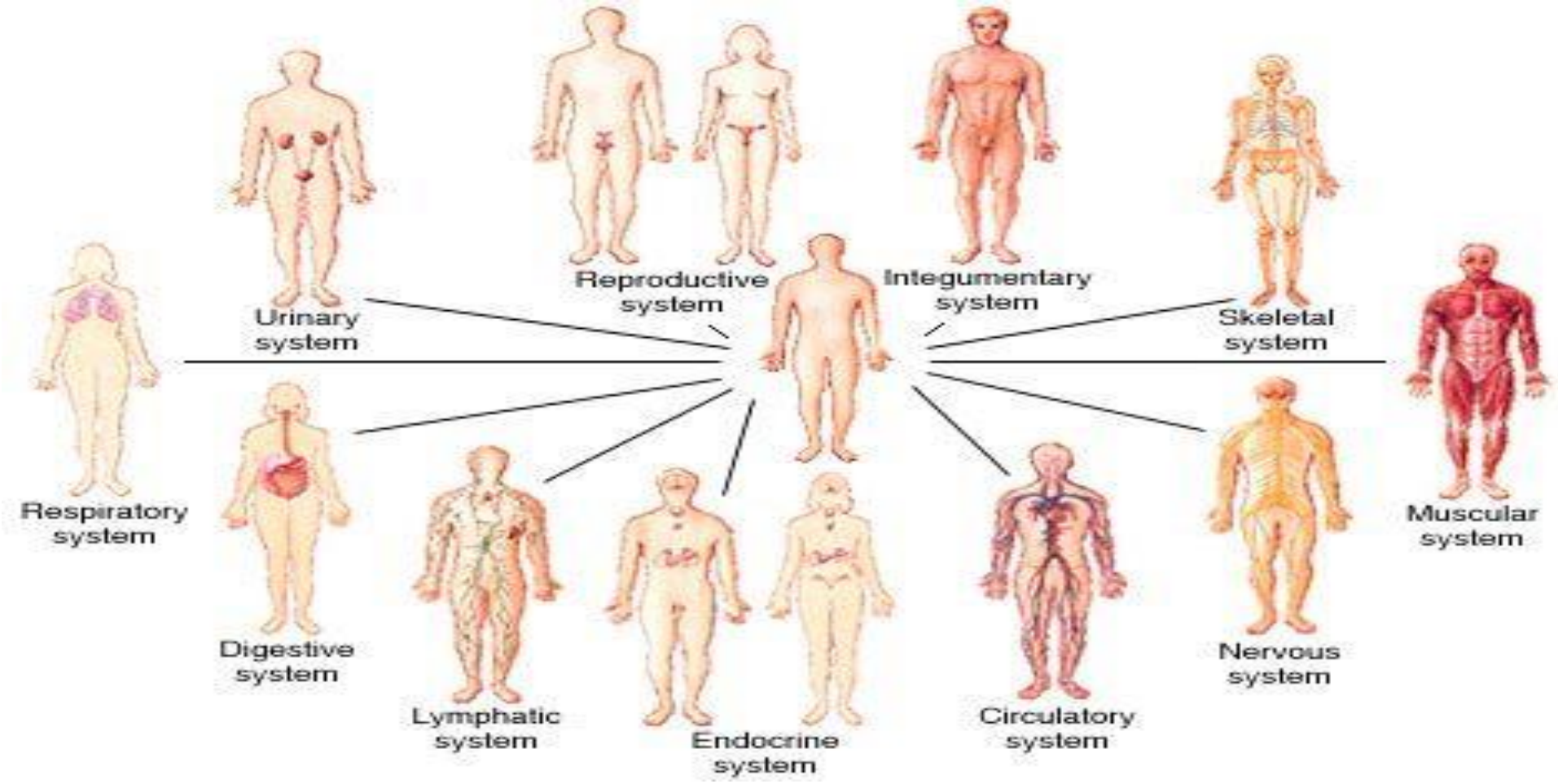
Wendell Gilgert
Emeritus Director, Point Blue Conservation Science
Working Lands Program
USDA-Natural Resources Conservation Service (Ret.)

Walking, Reading, Interpreting and Understanding the Land : Becoming a Land Doctor

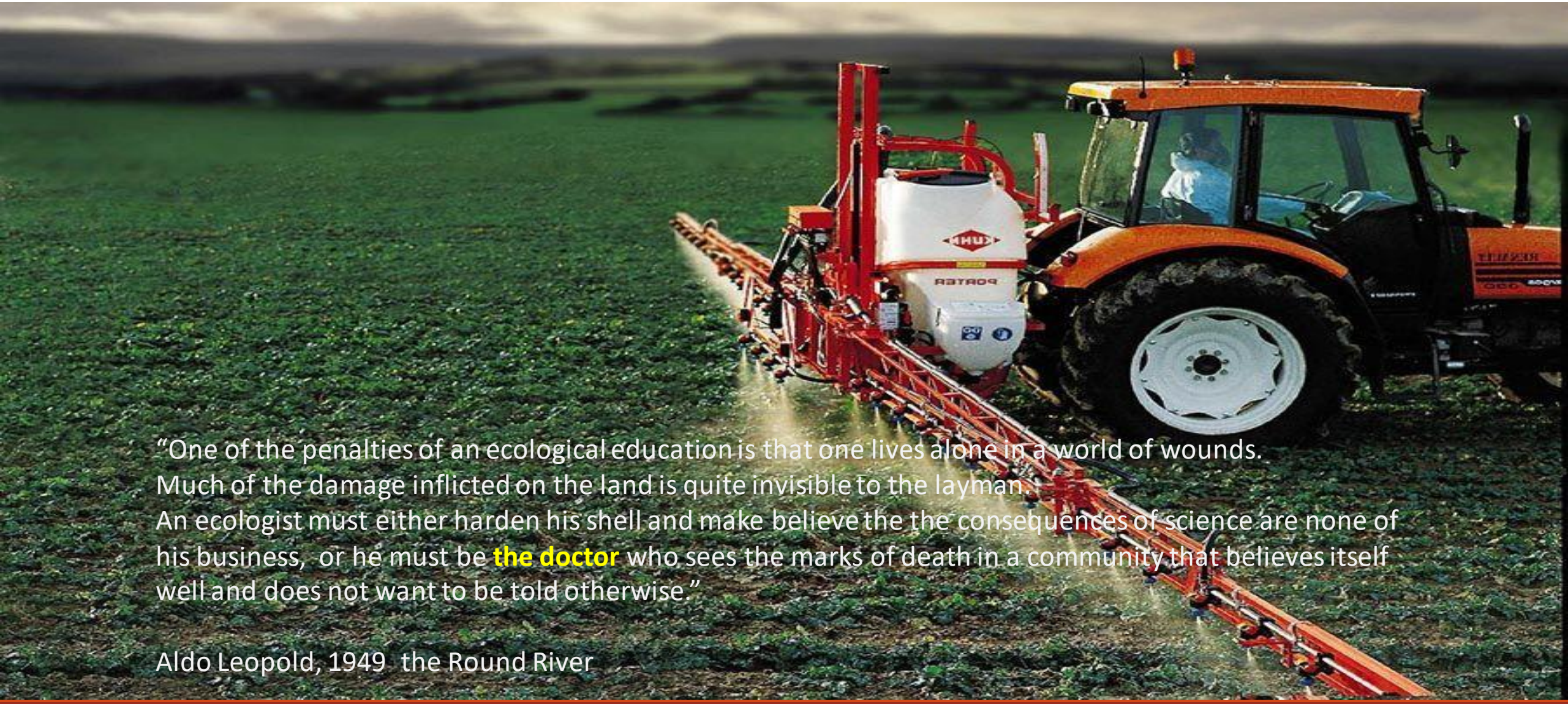
What is a Medical Doctor?

- EXAMINE
- TEST
- OBSERVE & DIAGNOSE
- PRESCRIBE
- TREAT
- FOLLOW UP

Human Systems and processes



Walking, Reading, Interpreting, and Understanding the Land: The Role of a Land Doctor



"One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on the land is quite invisible to the layman. An ecologist must either harden his shell and make believe the the consequences of science are none of his business, or he must be **the doctor** who sees the marks of death in a community that believes itself well and does not want to be told otherwise."

Aldo Leopold, 1949 the Round River

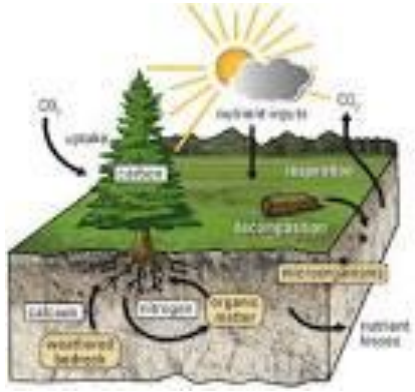
What is a Land Doctor ?

- EXAMINE
- TEST
- OBSERVE & DIAGNOSE
- PRESCRIBE
- TREAT
- FOLLOW UP

WALK, READ, INTREPRET, UNDERSTAND THE LAND using all five senses…

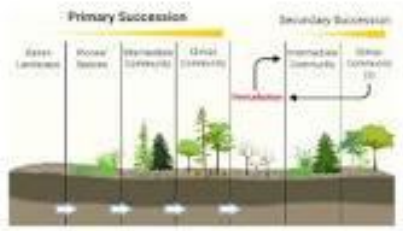
* Sight
* Sound
* Touch
* Taste
* Smell

Land Systems, Cycles, and Processes

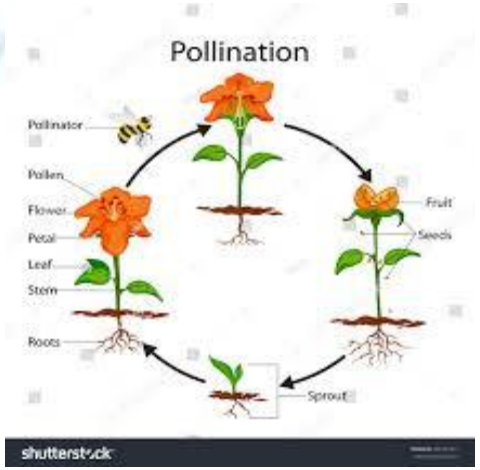


Nutrient cycles

Biotic Integrity



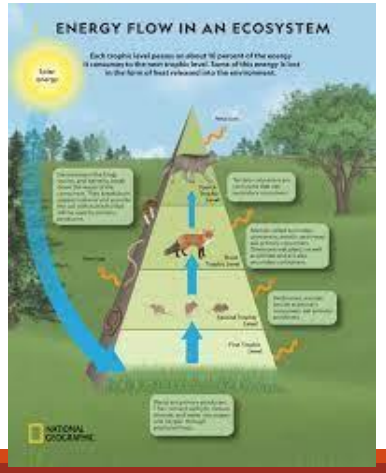
Plant Succession

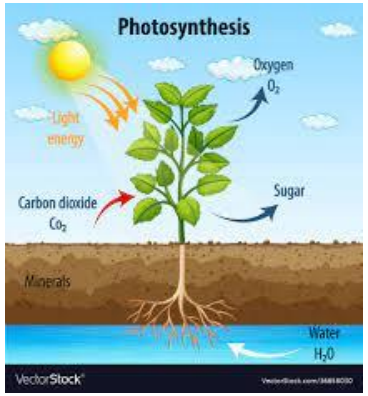


Pollination

Human Influences

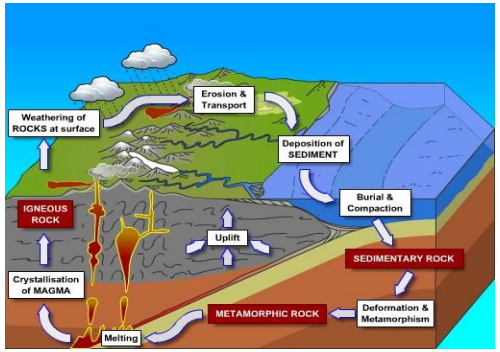
Energy Flow

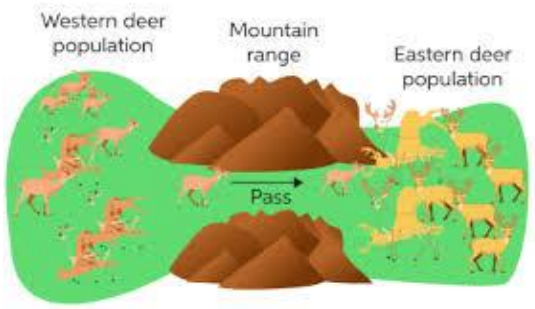




Photosynthesis

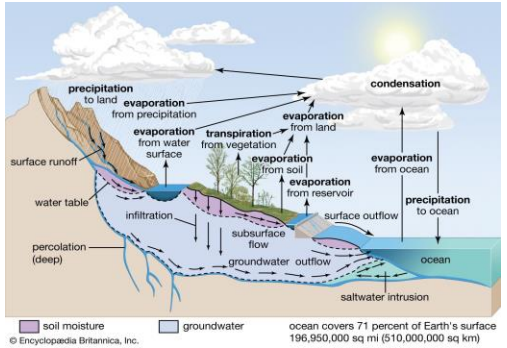
Geologic Erosion and Sedimentation





Migration and Transition

Water Cycle



Conservation Planners/Land Doctors

"Once you learn to read the land, I have no fear of what you will do to it, or with it. And I know many pleasant things it will do to you." Aldo Leopold

Interpreting /Reading/Understanding Landscape Features

Walking, Reading, Interpreting, and Understanding the Land: Some Indicators

Human Influences

- Native American Cultural Sites-Often near wetlands/riparian areas
- Native influenced plant communities Soap root /Camas fields
- Timber cutting
- Mining impacts
- Historic Livestock grazing
    - Hillside Terracettes
    - Old Fence constructions: Barbed Vs. Sheep netting
    - Stream erosion
    - Heavy soil compaction

Walking, Reading, Interpreting, and Understanding the Land: Some Indicators

Soils

- Formation of O1 and O2 Horizonation visible on soil surface
- *"Dreadlock"* roots (evidence of healthy soil microorganisms)
- Soil aggregate stability
- High percent (but not entire) vegetative cover
- Soil has structure: platy, subangular blocky, columnar, grandular, (not massive)
- Evidence soil is sequestering carbon (plant brix, "leaking roots")
- Presence/absence of surface course fragment pedestaling.
- Evidence for or absence of compaction
- What are water flow patterns?
- Soil color (darker=higher carbon content)

Air

- Minimize dust, smoke, exhaust creation, agricultural odors
- Maximize vegetative cover on access roads, farmsteads, and between rows of crops, vineyards and orchards, minimize agricultural dust
- Air Particulate matter from livestock operations is attenuated
- Enable optimum photosynthesis
- Lichens/mosses are indicators of air quality

Walking, Reading, Interpreting, and Understanding the Land: Some Indicators

Vegetation

- Monocultural cropping is minimized, crop rotation is utilized
- Conservation Cropping practices are utilized, (cover crop, manure crops, conservation tillage) Soil impacts/rotations are closely managed
- Plant Succession is evident on surrounding habitat, with appropriate ag classes represented.
- Invasive and noxious weeds are controlled
- Representative number of plant functional groups
- Riparian Forest and herbaceous buffers (as well as other appropriate buffers) Windbreaks, shelterbelts, and hedgerows are integrated into operations.
- Photosynthesis is active, maximized, and brix are appropriate for vegetative state observed or sampled
- Percent green (growing) cover
- Nodule health on legumes, (Pink-healthy producing N, white, some N fixing, black/dark no N building function)
- Crop Tillage practices: Soil impacts/rotations

Walking, Reading, Interpreting, and Understanding the Land: Some Indicators

Water

- Water infiltration occurs at expected rate for textural class (Sand, silt, clay, loam)
- Water runoff is mostly clear
- Waterways are vegetated
- Water in on-farm or ranch streams or ponds support mostly invertebrate (Isaac Walton League) Taxa 1and 2
- Water-born pollutants (pathogens, sediment, pesticides, fertilizers) are minimal or absent

Fish and Wildlife

- Abundant and diverse spiders
- Abundant and diverse Odonatans (Dragon and damsel flies)
- Presence, diversity and abundance of beneficial insects (lady bird beetles, predacious and parasitic wasps, lacewings, etc.)
- Abundant and diverse native pollinating bees
- Majority of bird focal species occupy fields, pastures and surrounding areas
- Fish passage on waterways is not impeded or blocked.
- Distinct instream cover, root wads, veg mats, rock, gravel, etc.
- Diverse cover: loafing, thermal, escape, roasting, breeding, etc.
- Abundant, diverse, available and clean water

Walking, Reading, Interpreting, and Understanding the Land: Some Indicators

Diagnosed Land Sickness:

Prescribe management, facilitating, and accelerating Conservation Practices (remedies/ Conservation Pharmacy)

CONSERVATION MANAGEMENT PRACTICES

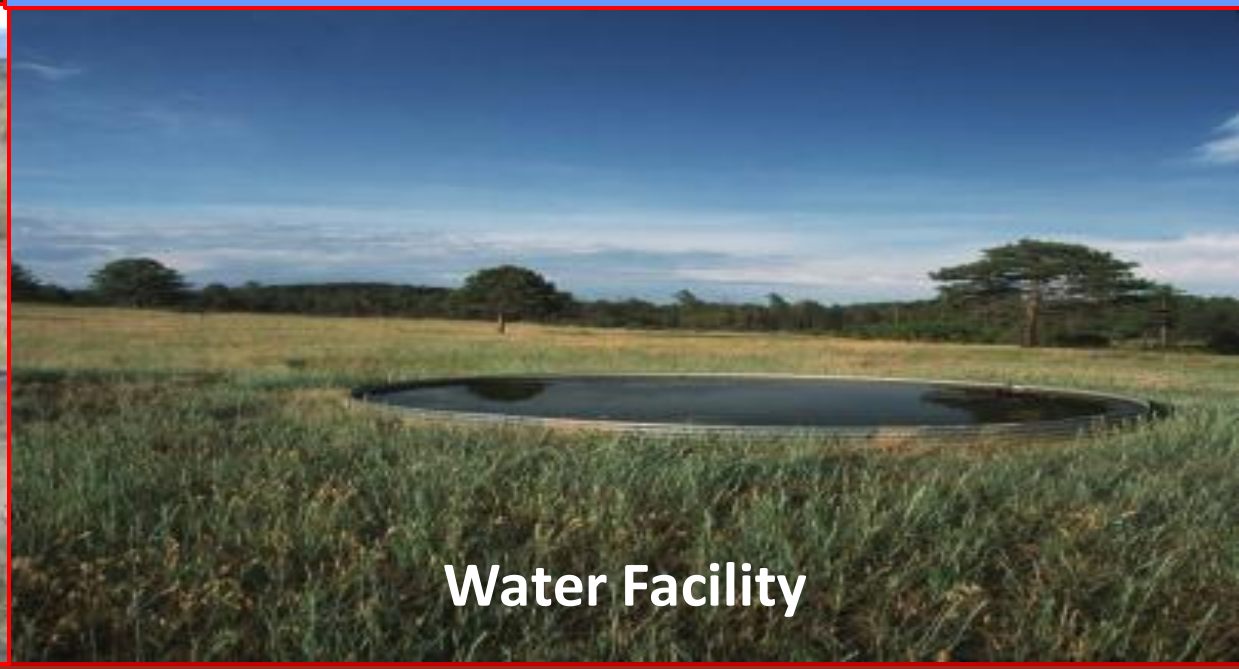
Fence

Grade Stabilization Structure

Before

After

Spring Development



Water Facility

FACILITATING CONSERVATION PRACTICES

ACCELERATING CONSERVATION PRACTICES

Making & Implementing Decisions in Complex Environments

Mark Biaggi and Kevin Watt, TomKat Ranch

TOMKAT RANCH

A learning laboratory and educational center...

with a mission to provide healthy food on working lands in a way that regenerates the planet and inspires others to action

WHY WE CARE: PROMISING SOLUTION TO MANY PROBLEMS

Climate Stability

Decrease GHG through carbon sequestration

Rural Economics

Increase profit for farmers and ranchers

Health & Wellness

Increase human well-being of body, mind, and spirit

Water

Improve water quality and increase holding capacity

Soil

Improve soil health and fertility and reduce topsoil loss

Animal Welfare

Improve well-being and performance of livestock

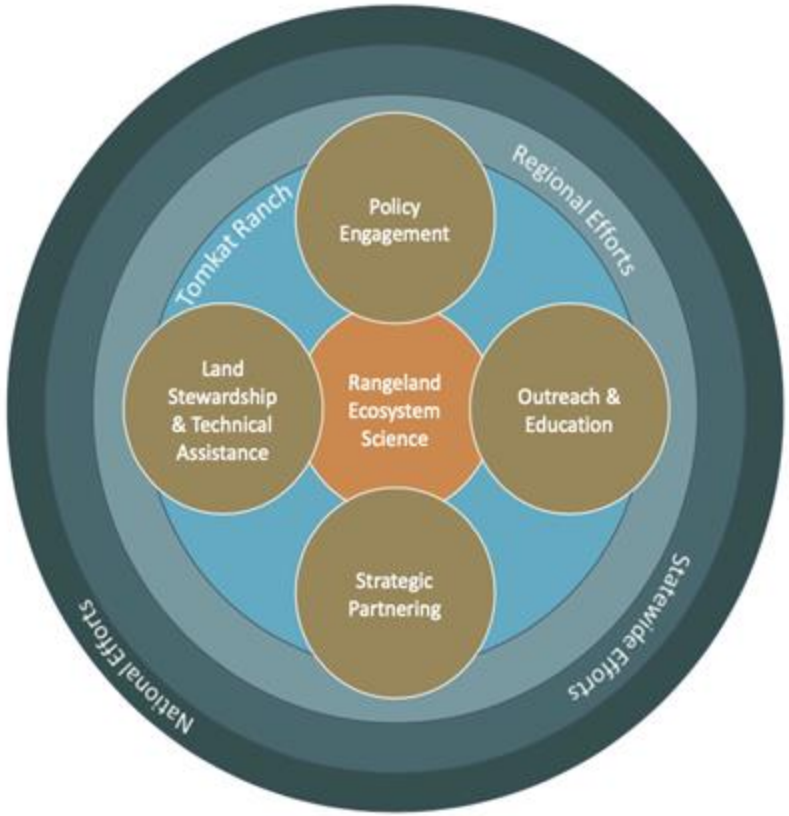
Biodiversity

Steward ecosystems to be productive and diverse

Food Security

Increase net productivity and resilience of our working lands

WORKING IN COLLABORATION: ACHIEVING SHARED GOALS



We will inspire the transition of 5 million acres of California's pastures and rangelands to regenerative management.

OUR GOAL: INSPIRE TRANSITION 5,000,000 ACRES OF RANGELAND TO REGENERATIVE MANAGEMENT

WHAT WE DO: PROGRAMS AT TOMKAT RANCH

REGENERATIVE RANCHING

Demonstrate the practices and benefits of regenerative rangeland management and support the tools that speed its adoption.

FORK TO FARM

Influence the way society eats in order to accelerate adoption of regenerative agriculture.

GATHERING FOR ACTION

Bring people together for meaningful conversations and collaborations that catalyze the transition to a regenerative agriculture system.

4 Pillars of Planning & Adaptive Management

1. **Context** - understand history, ecosystem, goals, etc.
2. **Observe** - inventory resource concerns, etc.
3. **Act** - develop plans, apply principles, practices, tools; monitor.
4. **Adapt** - update plans and refine actions based on the outcome of previous actions.

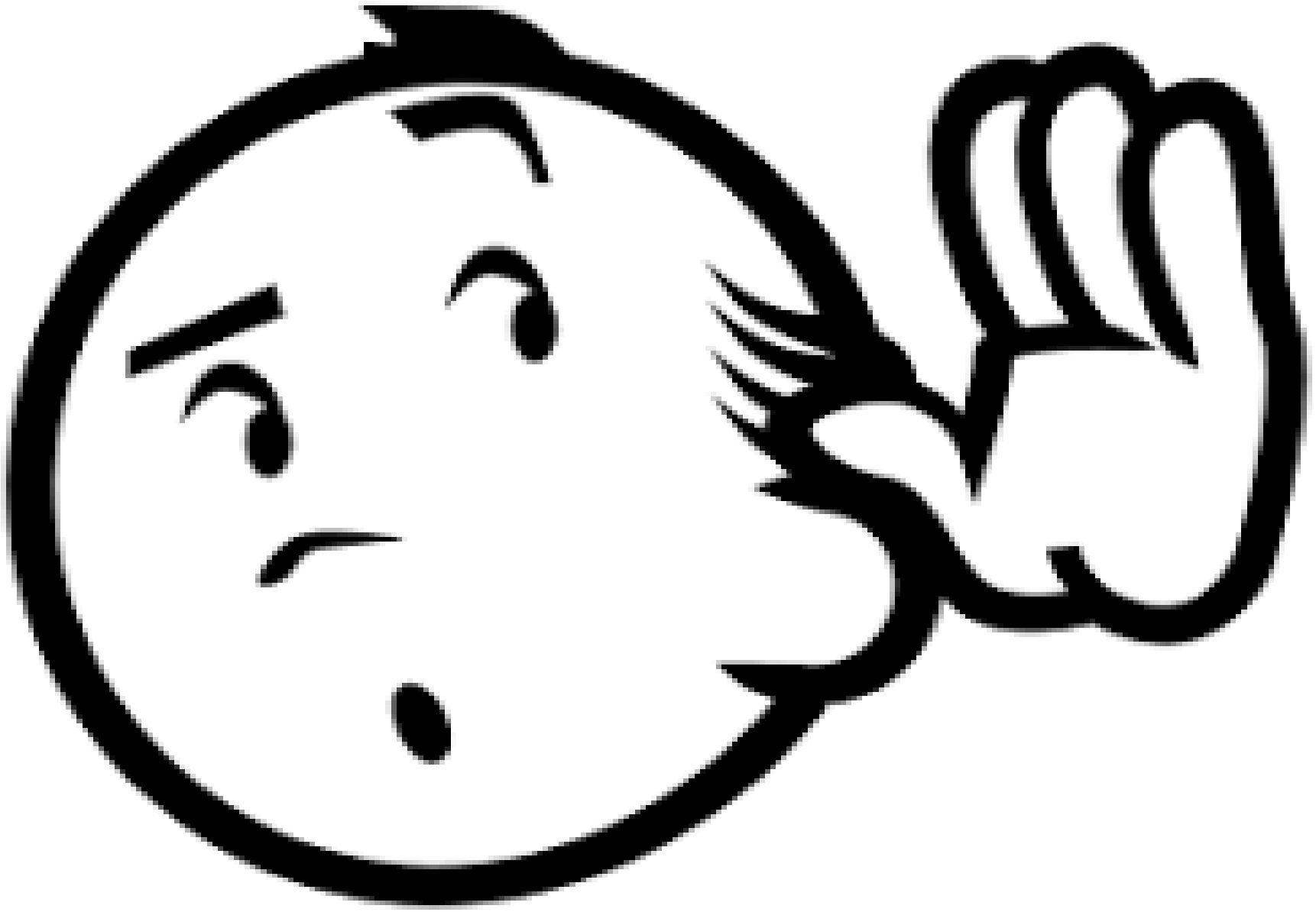
REGENERATIVE LAND MANAGEMENT.

6 PRINCIPLES and 4 CYCLES

Regenerative Principles

1. UNDERSTAND **CONTEXT**
2. MINIMIZE **DISTURBANCE**
3. ESTABLISH **LIVING ROOTS**
4. ENHANCE **BIODIVERSITY**
5. KEEP SOIL **COVERED**
6. INTEGRATE **ANIMALS**

Ecosystem Cycles

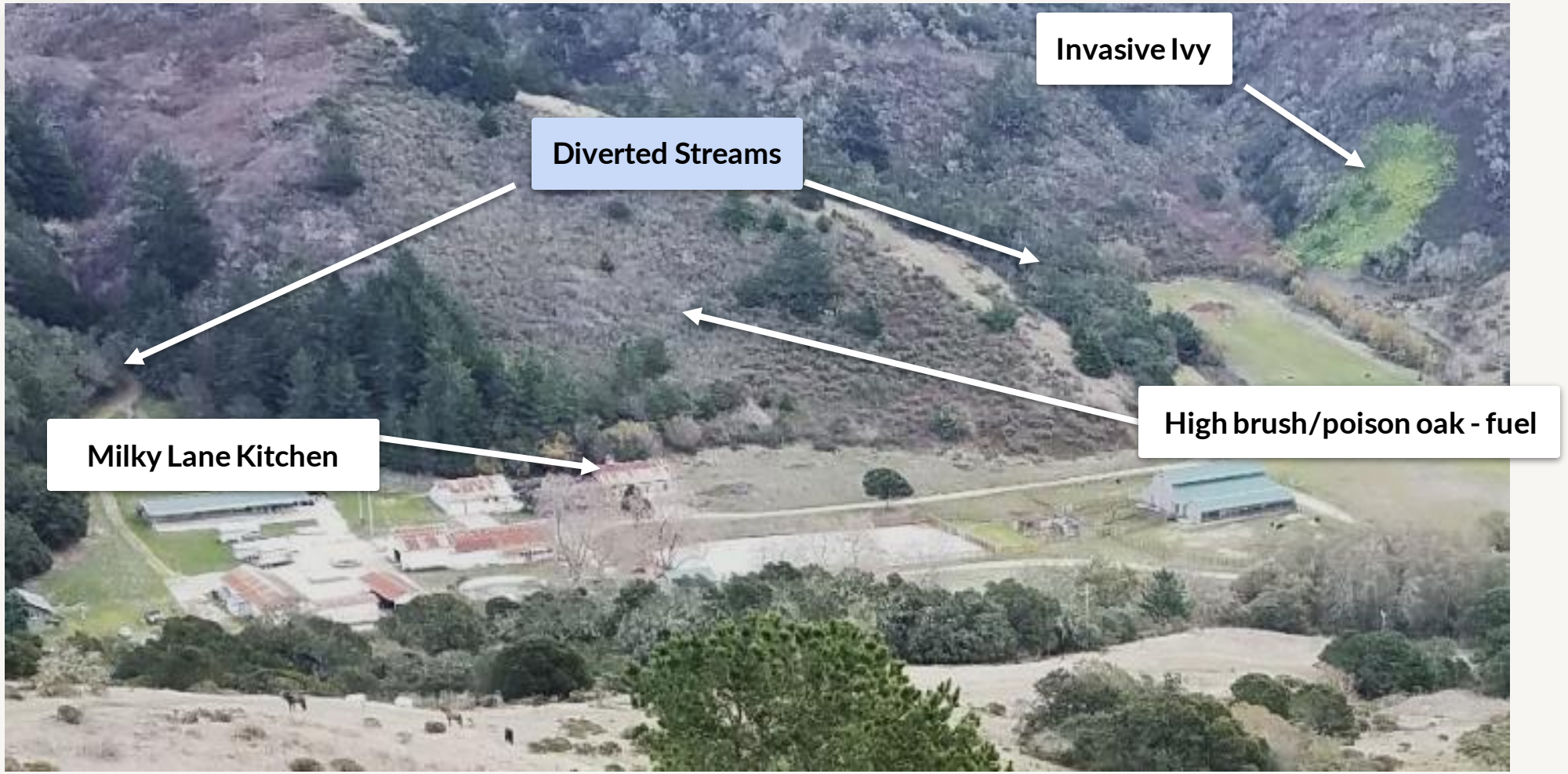


Classic Old Ranch Headquarters

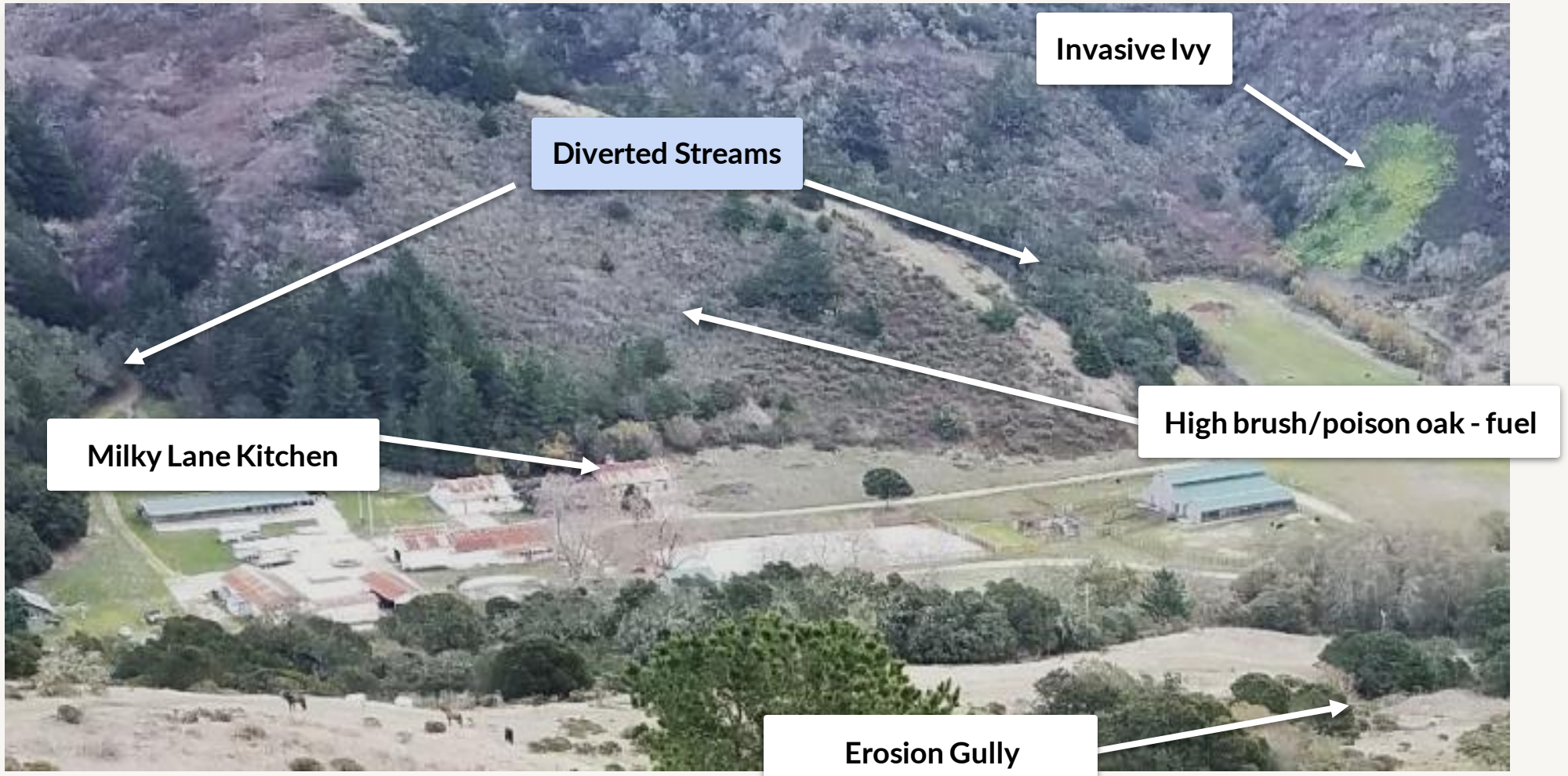
TomKat Ranch 2017

TomKat Ranch 2017

TomKat Ranch 2017



TomKat Ranch 2017



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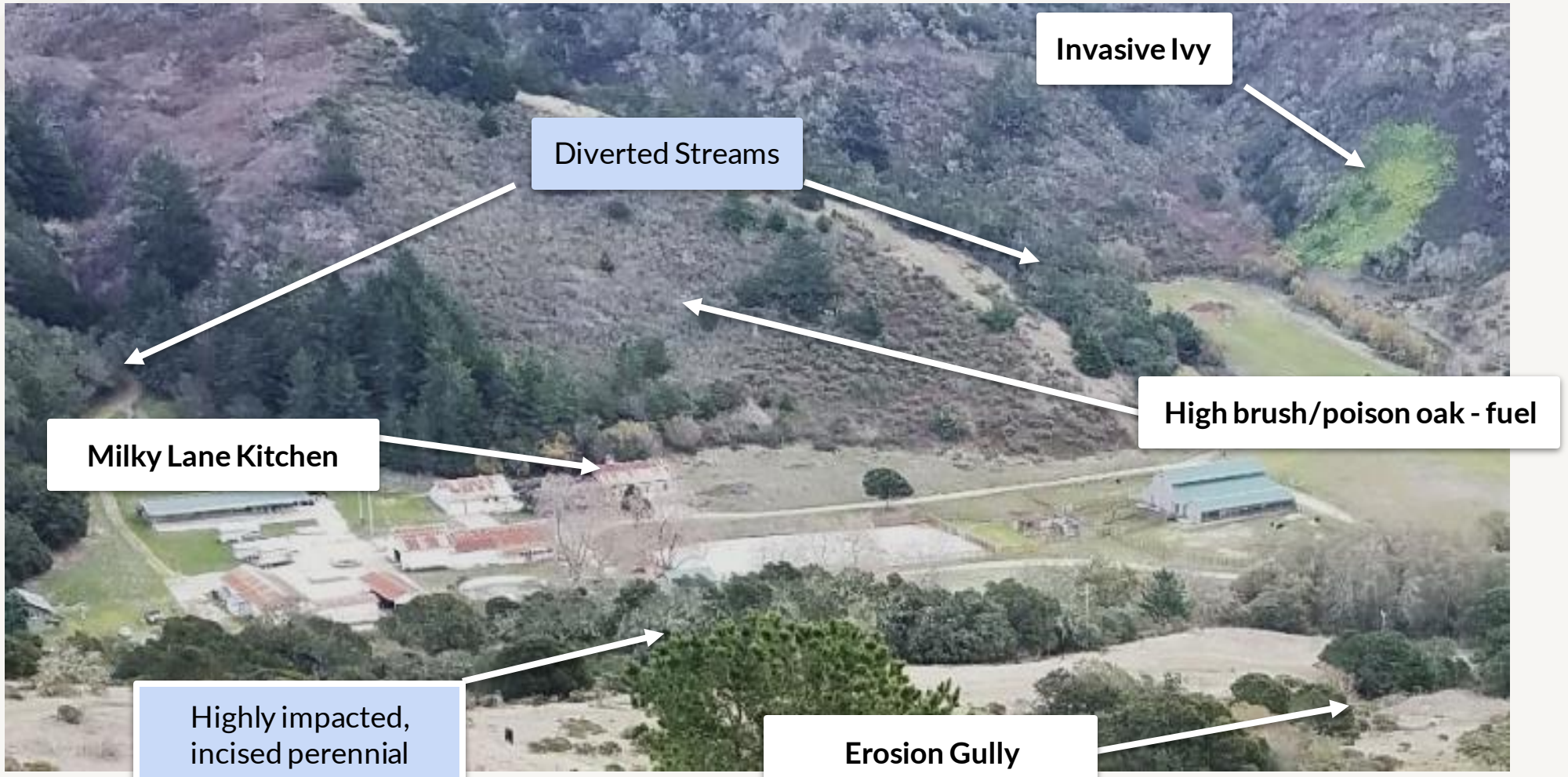
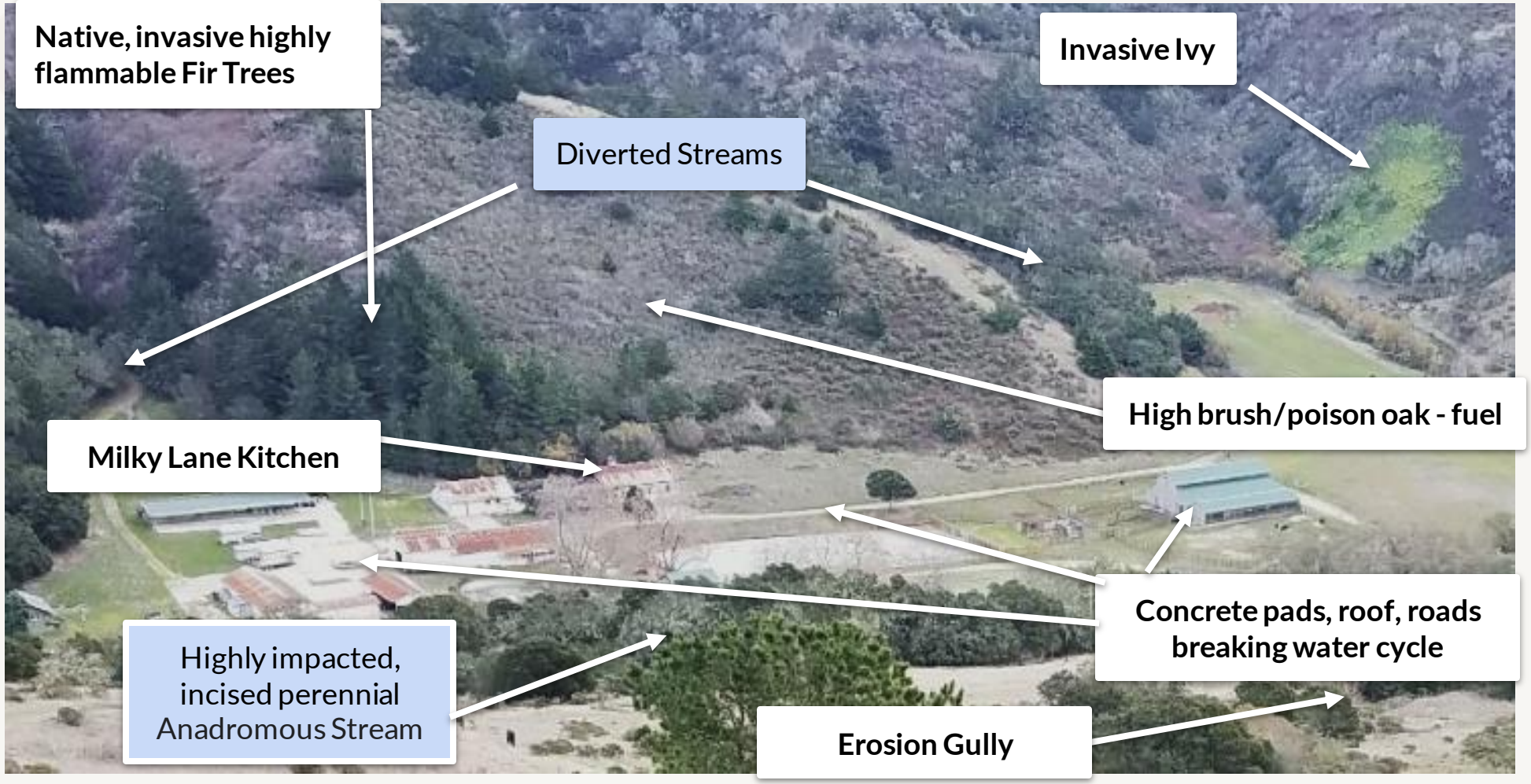
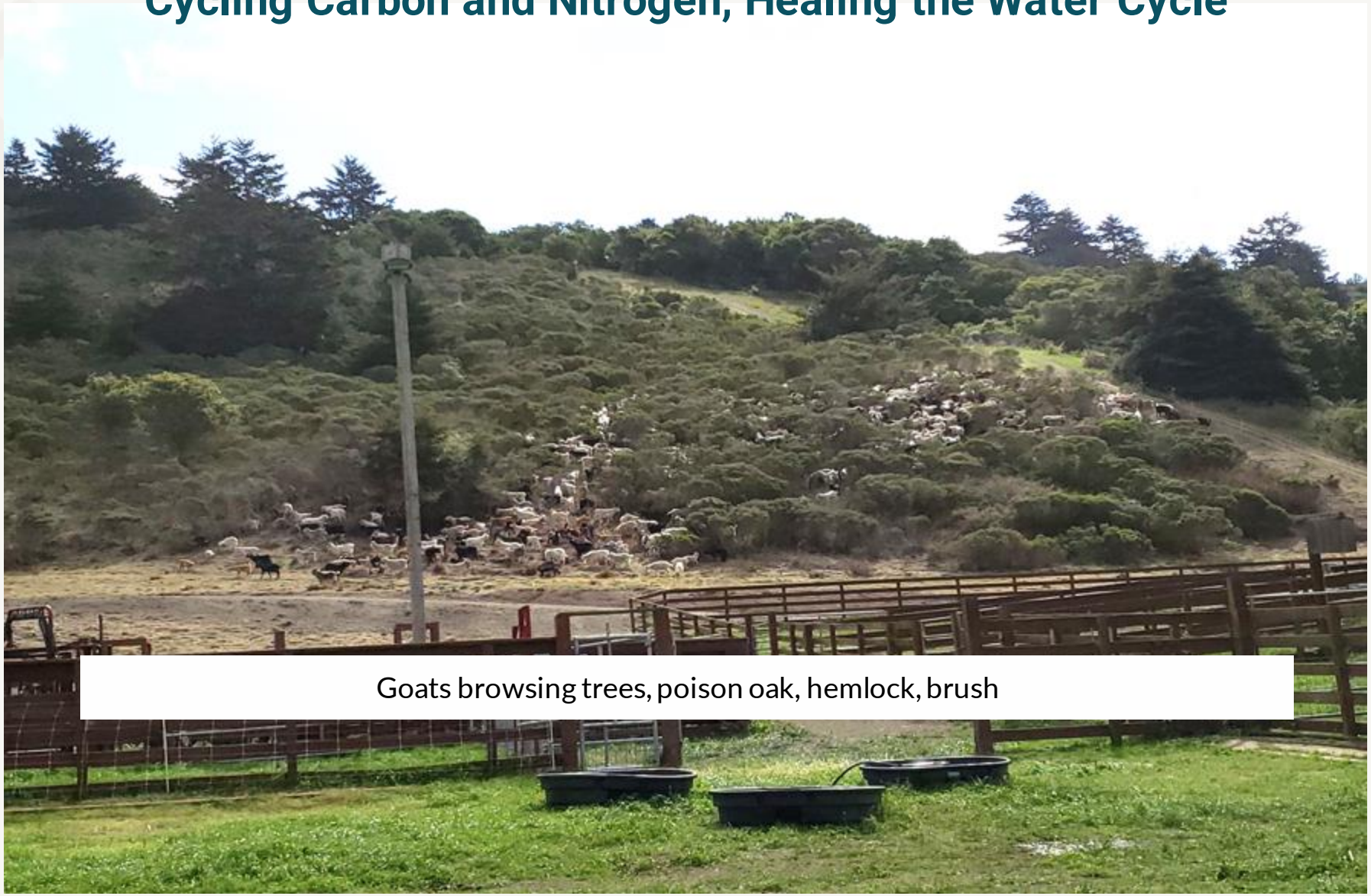


TomKat Ranch 2017

TomKat Ranch 2017



Day 1 - Fuel Reduction, Soil Building, and prepping for the Next Rain
Cycling Carbon and Nitrogen, Healing the Water Cycle



Goats browsing trees, poison oak, hemlock, brush

Day 4 - Fuel Reduction, Soil Building, and prepping for the Next Rain
Cycling Carbon and Nitrogen, Healing the Water Cycle

Day 4- poison oak, hemlock, briars gone, brush trimmed

Coyote Brush/Fuel Management while Restoring Cycles

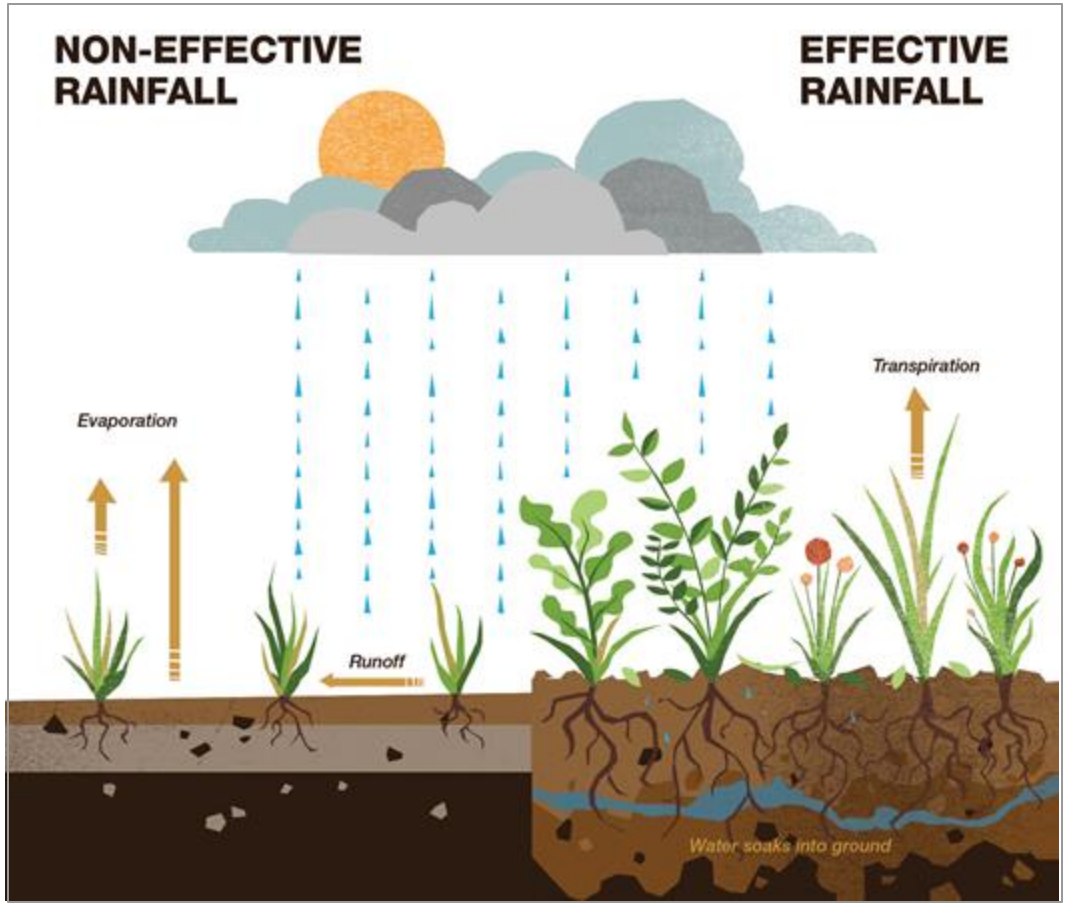
70 days recovery post goat graze on brush
85 days since last rain
40 cow/calf pairs 1 day graze
Carbon, Nitrogen and Water Cycles are starting to function

RESTORING FUNCTIONING WATER CYCLES

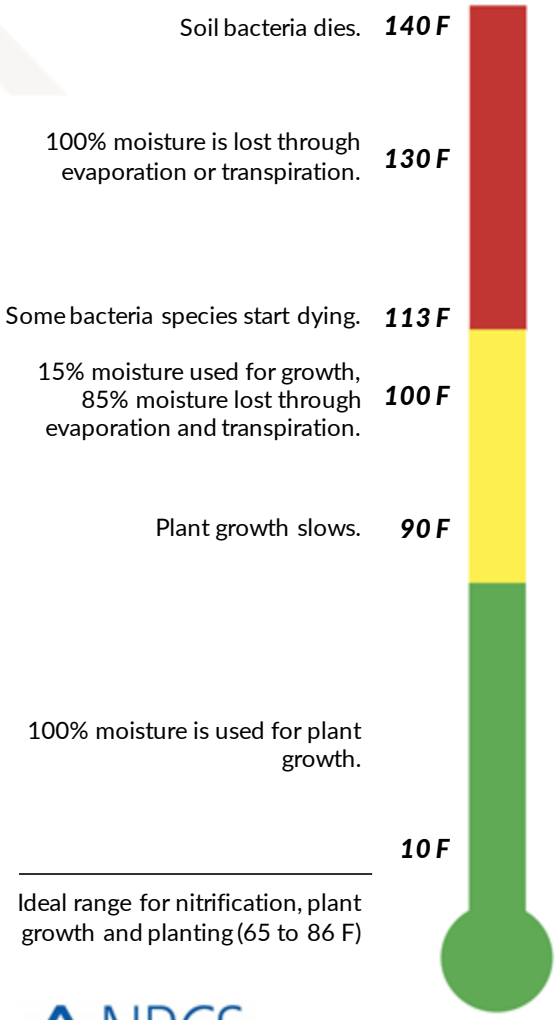
The same amount of rainfall can look like:

- **drought** in a *non-effective* area
- **average** rainfall in an *effective* rainfall area.

- Savory Global



RESTORING FUNCTIONING ENERGY CYCLES



Bare, exposes soil:

- **Heats up**
- **Loses water**
- **Can't support plant life**
- **Can NOT cool earth**
- **Decreases rainfall**

Covered soil:

- **Stays cool**
- **Retains water**
- **Supports plant life**
- **"Sweats" evaporation, cools earth**
- **Enhances rainfall**

SIGNS OF FUNCTIONING WATER & ENERGY CYCLES

Chihuahuan Desert (Mexico)

A neighboring ranch after 6“ of rain

Las Damas after the same 6” of rain

https://understandingag.com/regenerative-rainmaking/

Digging deep to advance regenerative agriculture and climate-smart conservation at TomKat Ranch and beyond

Vision: Because of our collaborative climate-smart conservation actions today, ecosystems will sustain thriving wildlife and human communities well into the future.

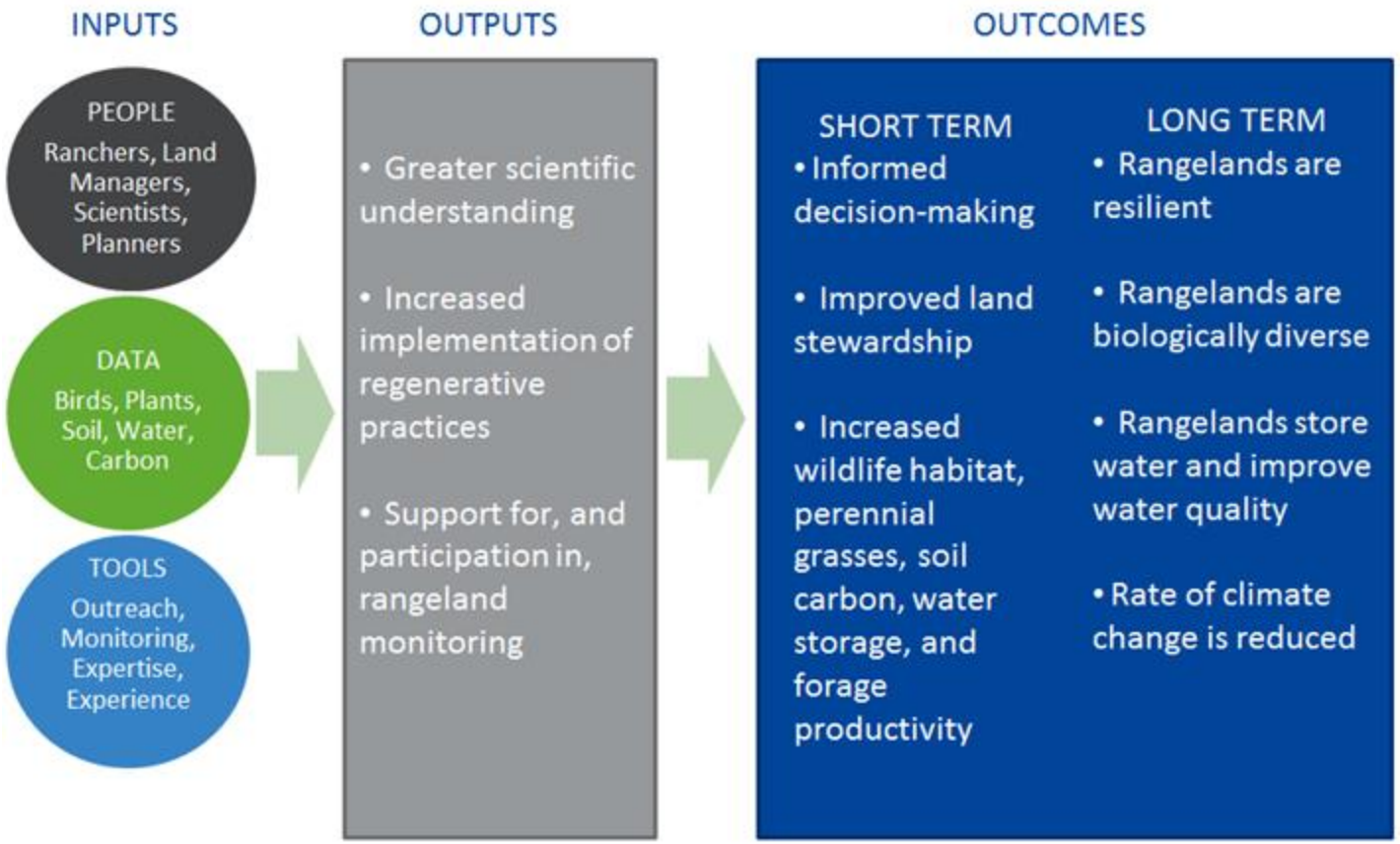
Mission + Focus: We conserve birds, other wildlife, and ecosystems through **science, partnerships,** and **outreach**. Point Blue's 160 scientists develop nature-based solutions to climate change, habitat loss, and other environmental threats to benefit wildlife and people.

Point Blue
Conservation science
for a healthy planet.

Point Blue

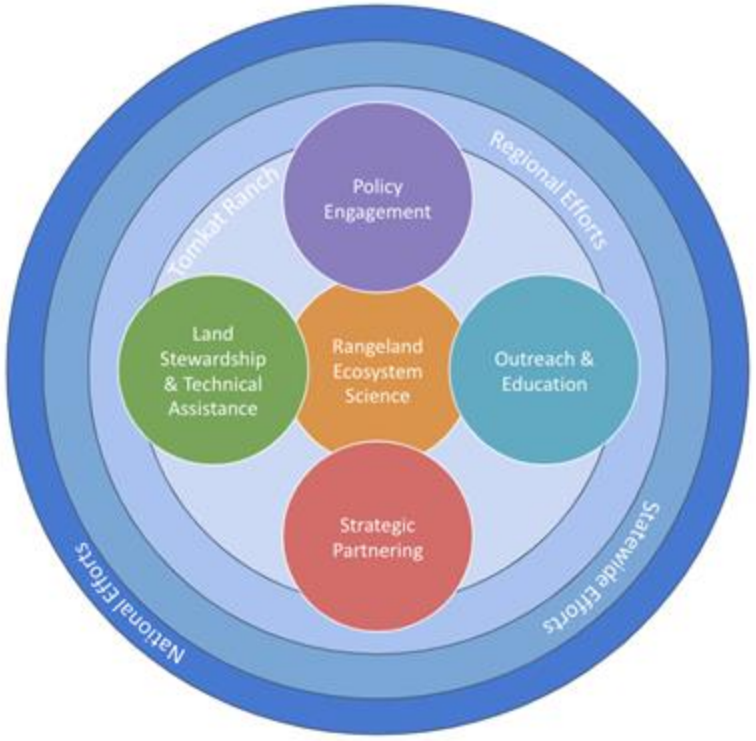
Farallon Islands National Wildlife Refuge
Photo Credit: Point Blue Photo

Achieving shared goals through partnership



Point Blue

Achieving shared goals through partnership



2010

Present

Point Blue

Achieving shared goals through partnership

Rangeland Ecosystem Science: Demonstrate what works, build the evidence base for our theory of change, develop tools to transform 5M acres

Land Stewardship: Assist the ranch in making management decisions that serves as a model for regenerative ranching more broadly; provide technical assistance to others in their pursuit to manage rangelands regeneratively

Communication: Help to tell the story of regenerative ranching to inspire others to action

Strategic Partnering: Strategically partner to increase the pace and scale of our work

Policy: Conduct science-based policy engagement to scale regenerative agriculture with local, state, and federal agencies, as well as international audiences

2010

Present

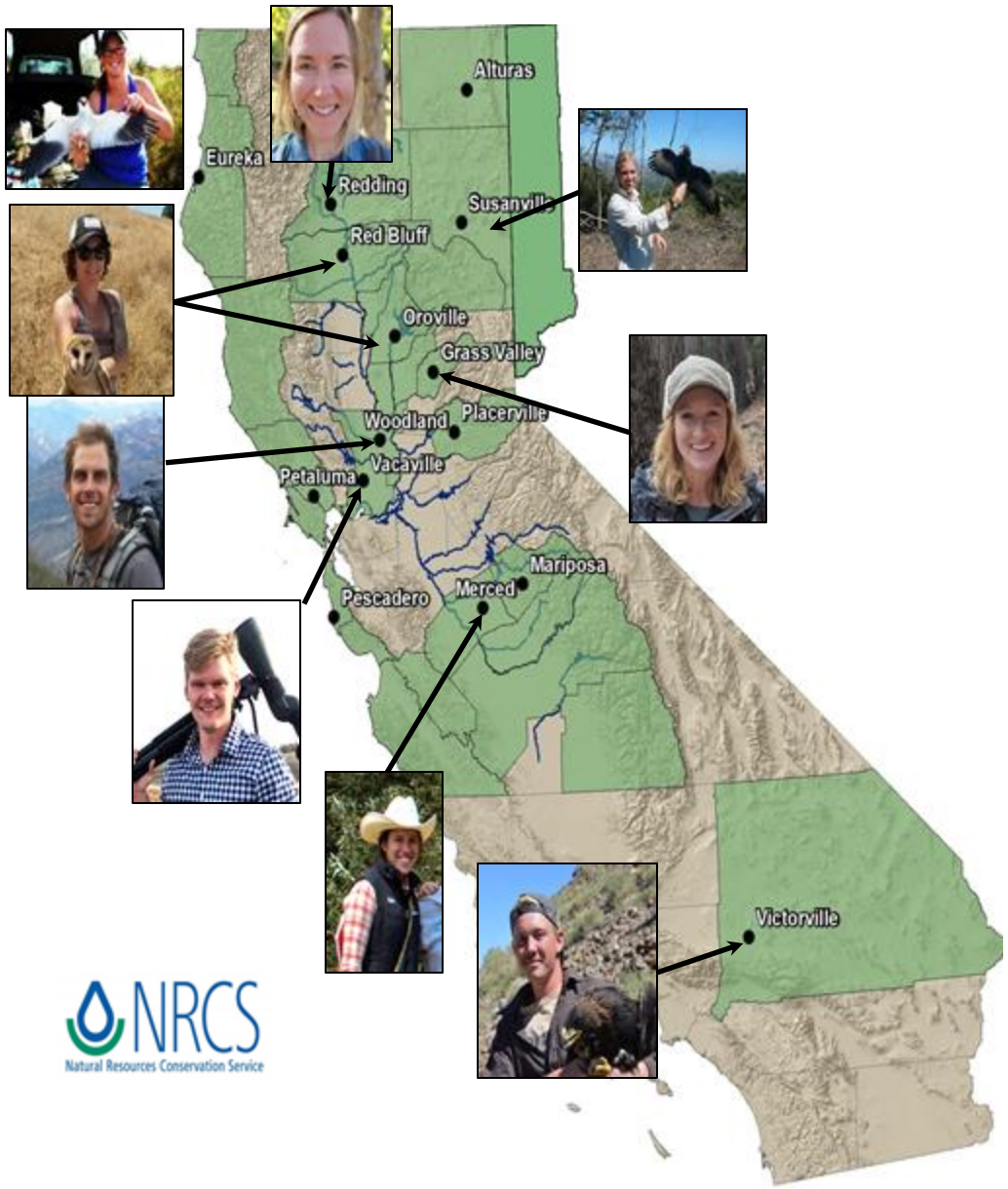
Point Blue

Point Blue and NRCS Partnership

Since 2011, NRCS-Point Blue Partner Biologists have supported planning and implementation of conservation practices on over **800,000 acres**, and helped leverage over **$34 million in Farm Bill funds**.

Collectively, our partner biologists have **over 40 years of cumulative experience**, with half of partner biologists serving in their offices for **over five years**.

Together we have a greater impact on the health, diversity, and productivity of California's natural resource protection and accelerate conservation on the ground.



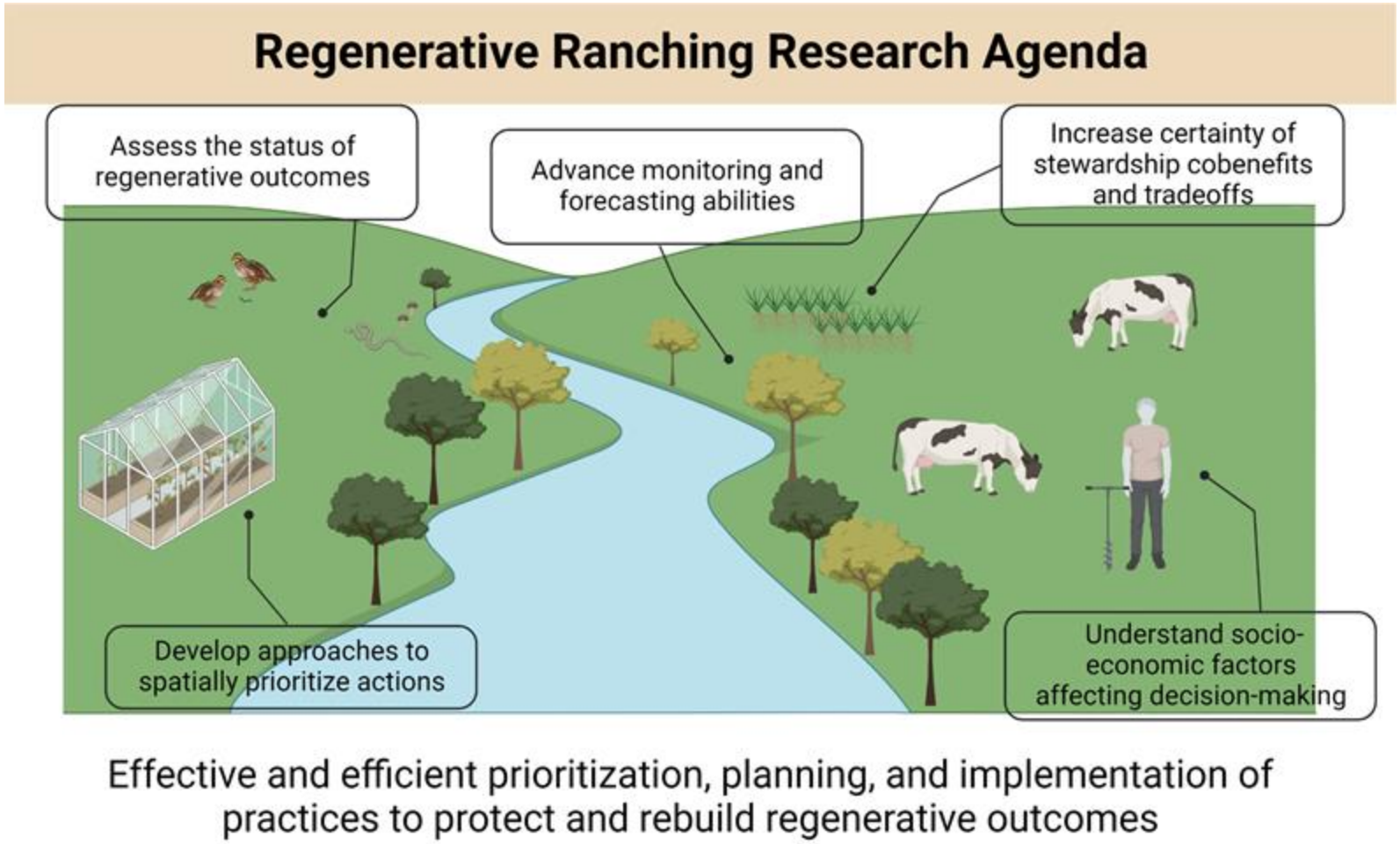
NRCS
Natural Resources Conservation Service

Point Blue

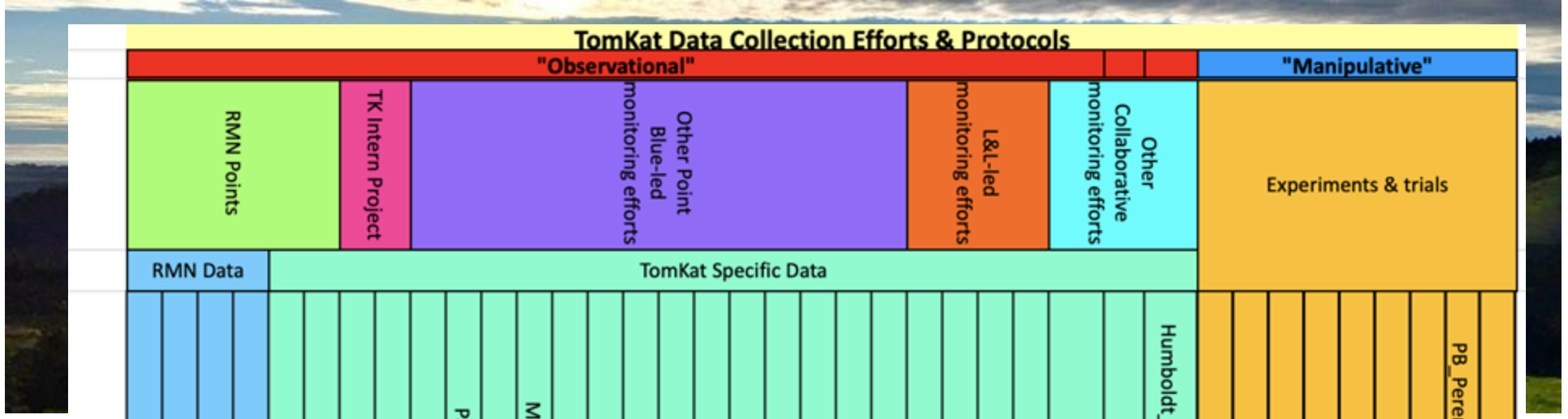
Partner Biologist Roles

Point Blue

Rangeland ecosystem science to inform land stewardship



Point Blue



TomKat Data Collection Efforts & Protocols

	"Observational"																															"Manipulative"									
	RMN Points				TK Intern Project			Other Point Blue-led monitoring efforts															L&L-led monitoring efforts				Other Collaborative monitoring efforts			Experiments & trials									
	RMN Data				TomKat Specific Data																																					
Year	RMN_SDP	RMN_LPI	RMN_PC	RMN_Graze	Soil_Nutrients	Microbe_sequencing	Ward_Haney Test	Ward_PLFA	Pasture Composition	Pasture Vegetation Surveys	Releves on points	MAPS Habitat Structure veg	Amphibians	RIP_PC (HOCR)	Area Searches	MAPS banding	Soil Carbon Variability	Fire and goat grazing	NPN Phenology	Deer Surveys	Photomonitoring	Weather Station	Well_Intel	Terravion	RCD First Flush	PastureMap	TU_Streamflow	Skidmore_SoilCarbon	Humboldt_GrasslandbirdsPerennials	UCD_stripseed	L&L_Balegrazing	NRCS_compost	L&L_compost	L&L_Earthfort	L&L_CoverCrops	L&L_coyotebrush_pilot	PB_Perennial-Compost Mesocosm	L&L_exclosures
2010													X	X	X																								
2011			X						X					X	X	X				X		X				X												
2012			X						X					X	X	X			X	X	X	X					X											
2013			X							X				X	X	X			X	X		X					X											
2014			X							X	X			X	X	X			X		X	X					X											
2015	X	X	X		X						X			X		X				X		X	X				X				X				X			
2016		X	X	X			X	X		X				X	X	X						X	X	X		X	X				X				X			
2017			X	X						X		X		X		X				X		X	X	X	X	X	X		X		X					X	X	
2018	X	X	X	X	X	X				X				X		X						X			X		X					X	X			X		
2019			X							X				X		X						X	X		X		X					X	X					
2020			X							X				X		X						X	X		X		X					X	X					
2021	X	X	X	X	X	X				X				X			X					X	X		X		X											
2022	X	X	X	X	X	X								X				X				X	X				X	X		X								
2023														X				X				X	X				X			X								

Point Blue

Rangeland ecosystem science to inform land stewardship

Publications

- Weverka, J., et al. 2023. Exploring plant and soil microbial communities as indicators of soil organic carbon in a California rangeland. Soil Biology and Biochemistry, 108952.
- Carey, C.J., et al. 2022. Applying biostimulants boosts forage productivity without affecting soil biotic and abiotic parameters on a Central Coast California rangeland. *Frontiers in Sustainable Food Systems 6:* 847096.
- Ahlering, M., et al. 2021. A synthesis of ranch-level sustainability indicators for land managers and to communicate across the beef supply chain. *Rangeland Ecology & Management* 79:17-230.
- Carey, C.J., et al. 2020a. Exploring variability in rangeland soil organic carbon stocks across California (USA) using a voluntary monitoring network. *Geoderma Regional* 22: ee00304.
- Carey, C.J., et al. 2020b. Supporting evidence varies for management practices that seek to improve soil properties and forage production in California. *California Agriculture* 74:101-111.
- Humple, D.L., et al. 2020. Migration tracking reveals geographic variation in the vulnerability of a Nearctic-Neotropical migrant bird. *Scientific Reports* 10:1-7.
- Bradford, M.A., et al. 2019. Soil carbon science for policy and practice. *Nature Sustainability* 2:1070-1072.
- Paustian, K., et al. 2019. Quantifying carbon for agricultural management: from the current status toward a global soil information system. *Carbon Management* 1758-3012.
- Porzig, E.L., et al. 2018. Field evaluation of a simple infiltration test and its relationship with bulk density and soil organic carbon in California rangelands. *Journal of Soil and Water Conservation* 73:200-206.
- Henneman, C., et al. 2014. Restoring native perennial grasses by changing grazing practices in Central Coastal California. Ecological Restoration 32:352-354.

Reports (not exhaustive)

- Wilson, S., et al.. 2023. Soil mineralogy and carbon sequestration in California: A report. Point Blue Conservation Science, Petaluma, CA.
- Veloz, S., et al. 2022. Mapping California Rangeland Soil Carbon: A Technical Report. Point Blue Conservation Science, Petaluma, CA.
- Union of Concerned Scientists. 2017. Turning Soils into Sponges: How Farmers Can Fight Floods and Droughts.

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Assess the status of regenerative outcomes

On TomKat:

- “Pasture veg” monitoring - plant composition across 75 pastures
- Rangeland monitoring network - 41 original points
- Riparian bird surveys along Honsinger (also historically bird banding)
- Streamflow with Trout Unlimited
- Water quality
- Weather station

Statewide:

- Rangeland monitoring network - 100+ ranches

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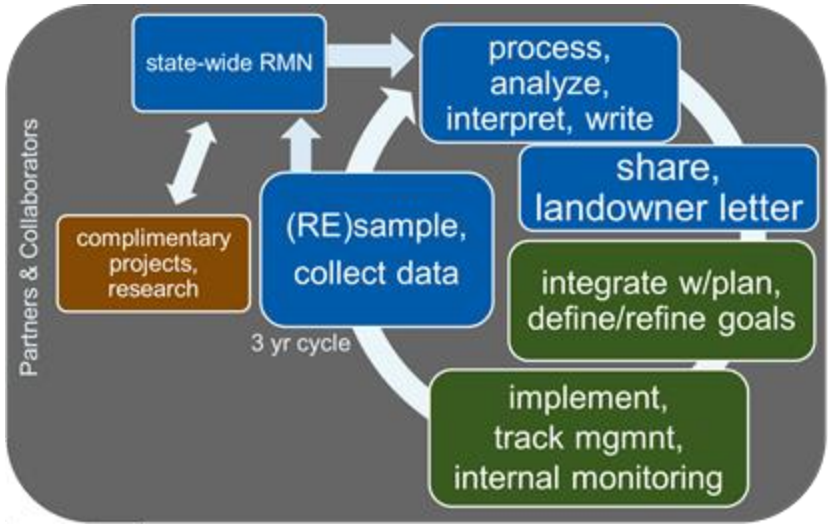
Rangeland Monitoring Network: measuring ecological function of California's rangelands over time using a standardized protocol

- Establish baselines, monitor change over time
- Evaluate the ecological effects of grazing and other management practices
- Understand the relationships between ecological metrics
- Provide information to landowners to help guide decision-making



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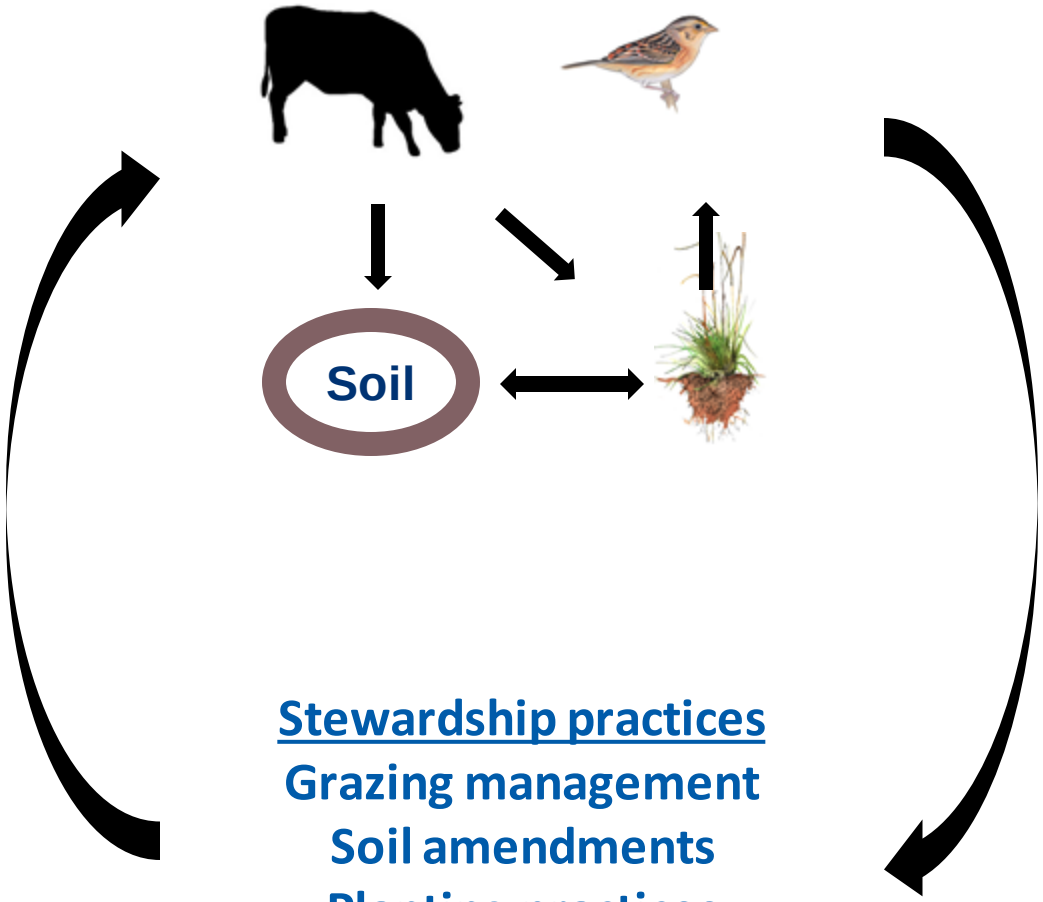
RMN Theory of Change



Stewardship practices

Grazing management

Soil amendments

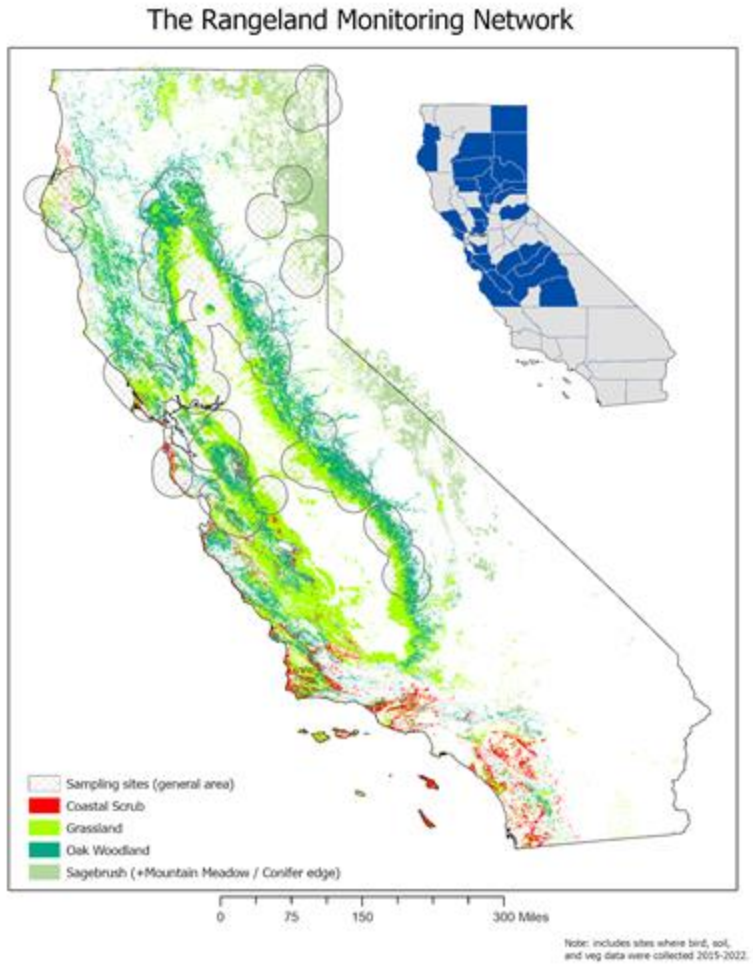
Planting practices

Wildlife habitat

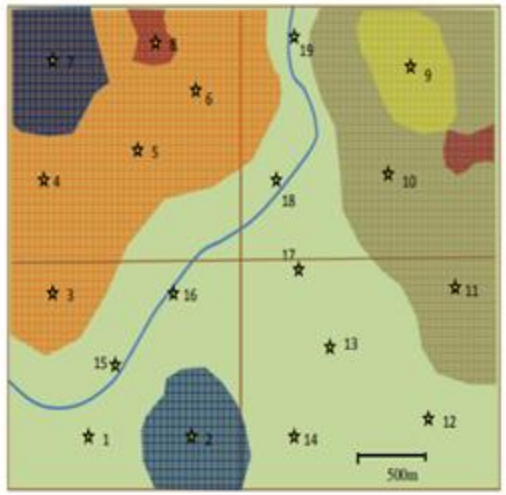
Point Blue

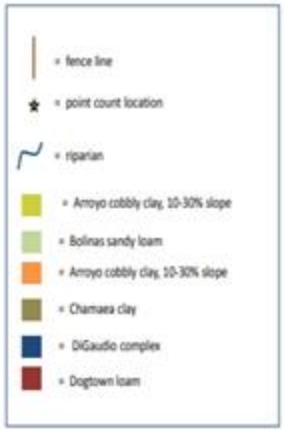
Where We Work

- 28 Counties with bird, veg, and soil ("full" RMN)
  - 31 counties with at least one type of monitoring data
  - 32 including where partners adopted RMN
- 105 properties with full RMN
- 133 properties with at least one type of data
- 4 dominant vegetation communities (elevation range 14 - 5,667')



RMN: Sampling scheme at each property and point location





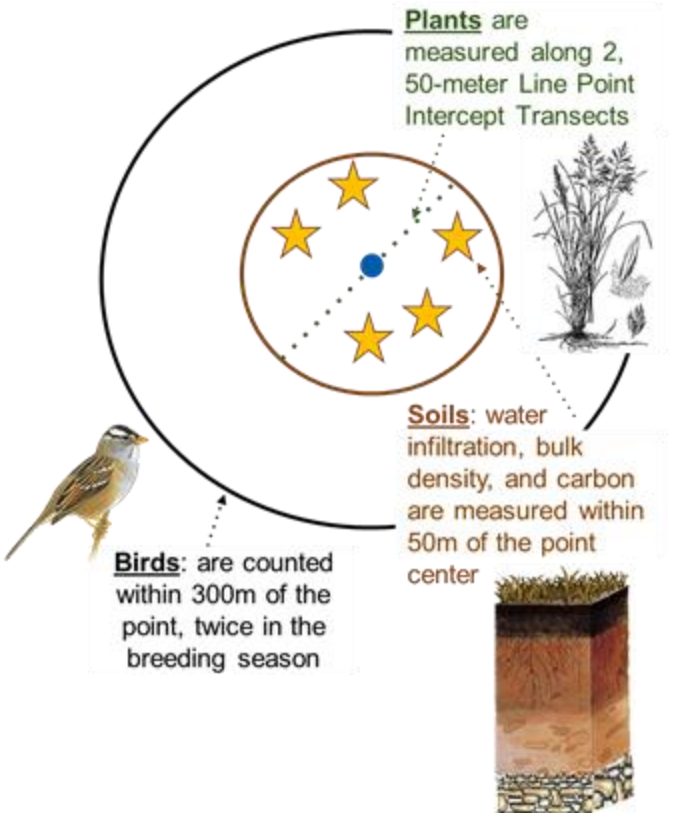
250 m^2 sampling grid based on the Military Grid Reference System

Select a spatially balanced random subset of candidate locations

Stratify the GRTS-output candidate locations across soil and vegetation types

Point Blue

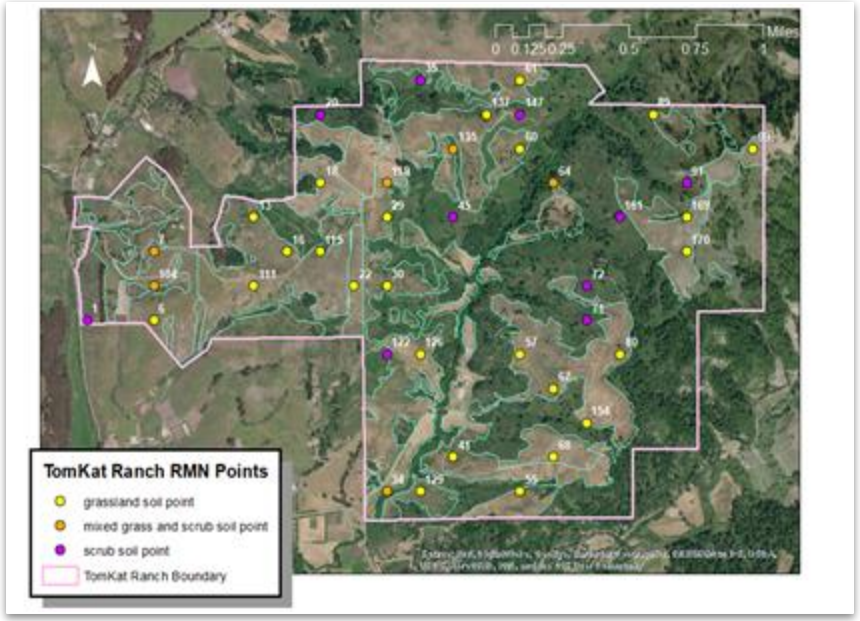
RMN: Sampling scheme at each property and point location

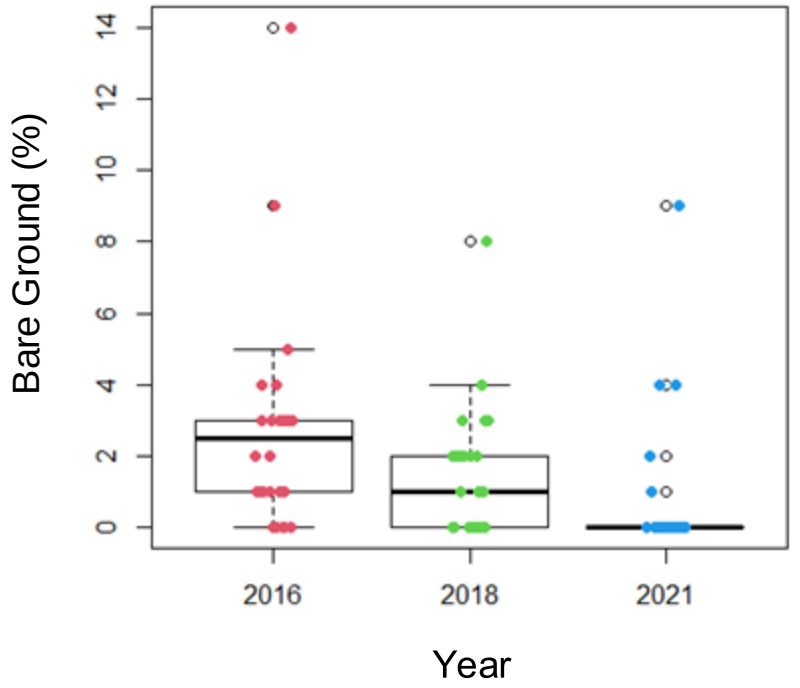


Point Blue

Assess the status of regenerative outcomes

How well are we keeping the ground covered? Bare ground averaged <1% in 2021.

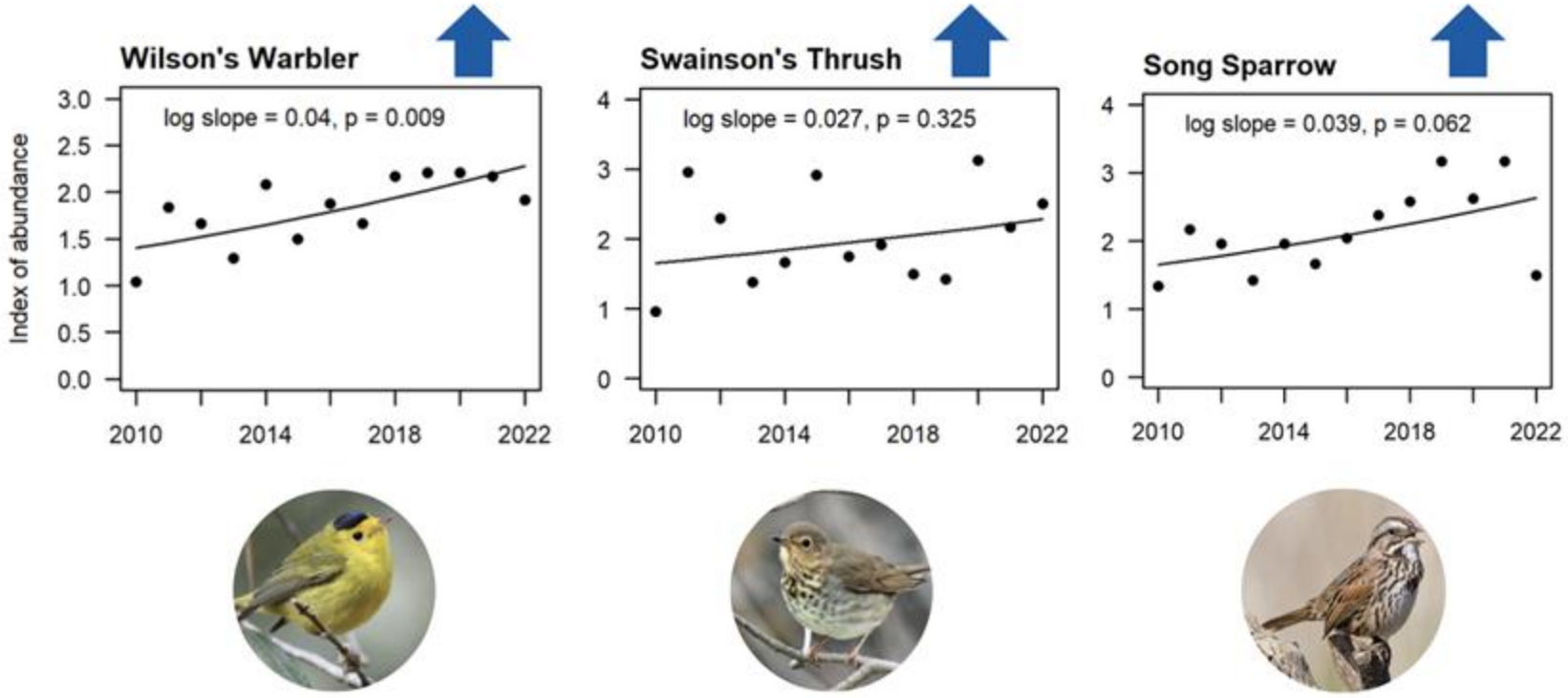




Point Blue

Assess the status of regenerative outcomes

What's the status of riparian birds along Honsinger Creek? Richness has held fairly steady with between ~30-50 birds per monitoring point

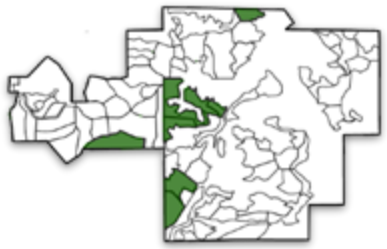


Point Blue

Assess the status of regenerative outcomes

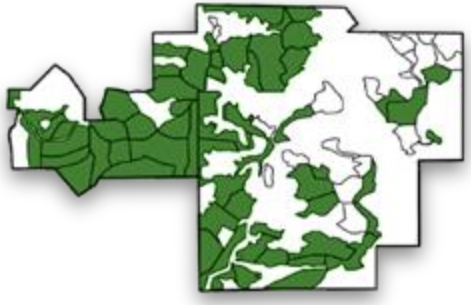
What's the status of native perennials? Occurrence has increased dramatically since 2011

2011



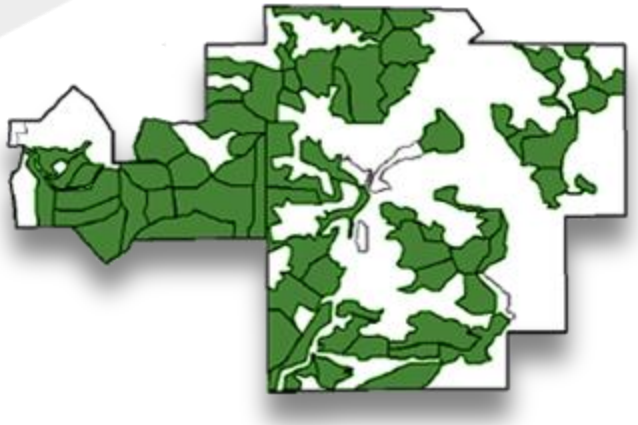
8 of 75
pastures with native perennial grasses present

2013



58 of 75
pastures with native perennial grasses present

2018



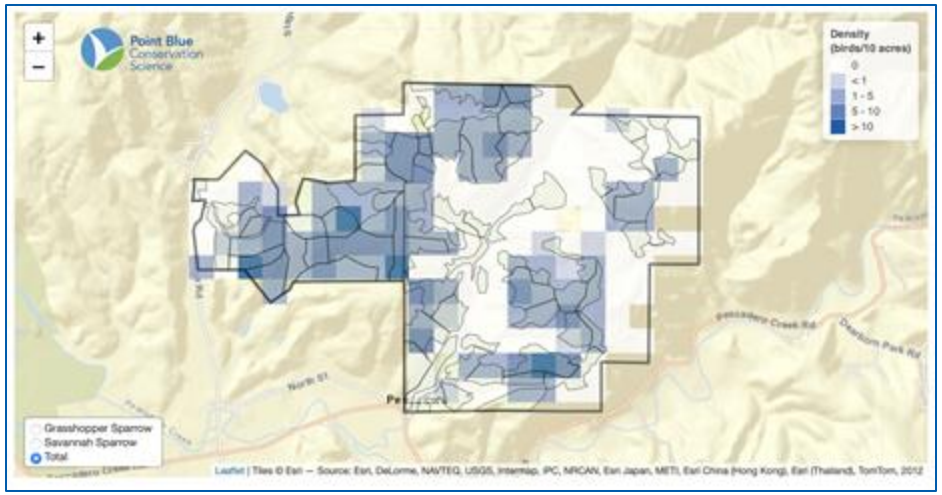
70 of 75
pastures with native perennial grasses present

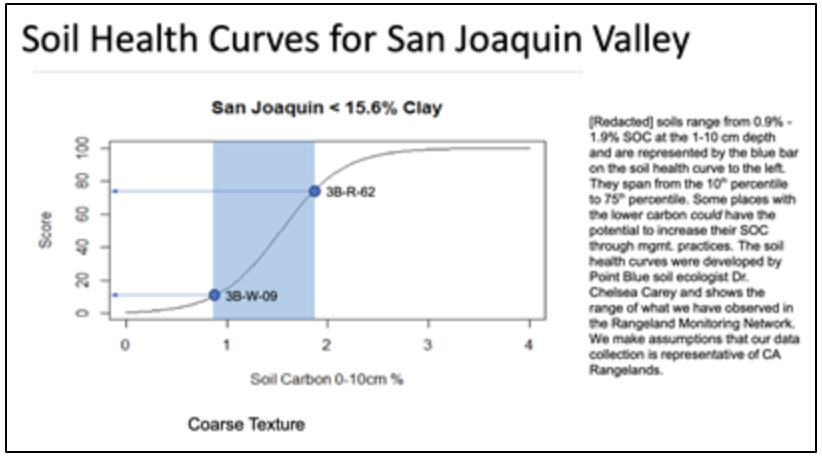
Presence of Native Perennial Grasses on TomKat Ranch after Implementing Planned Livestock Grazing*

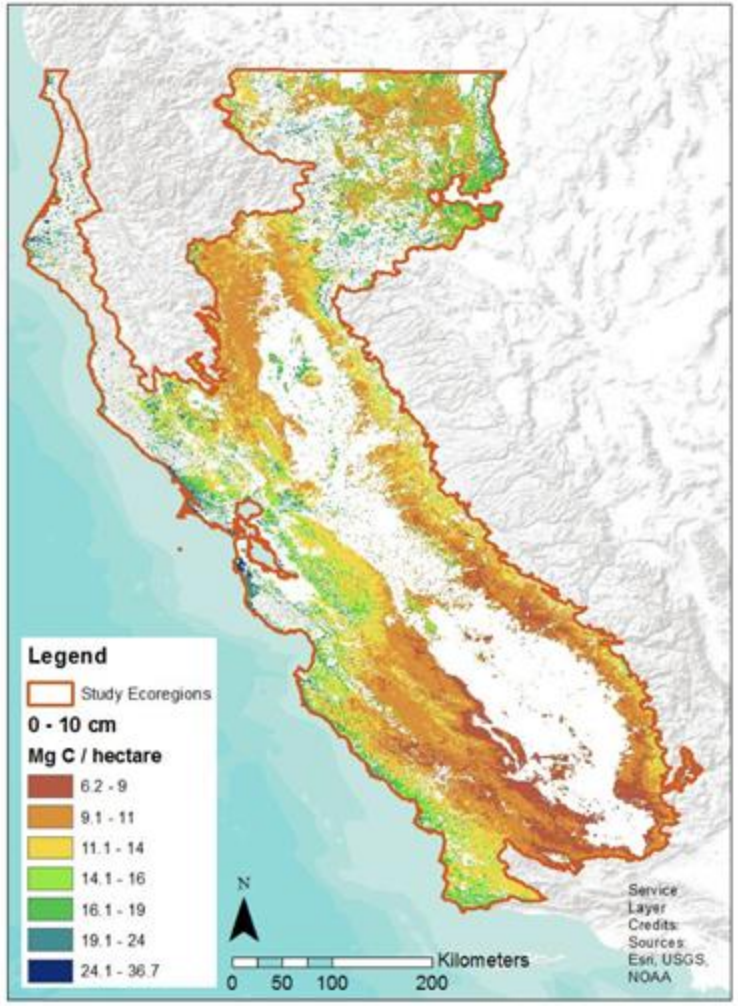
Point Blue

** Henneman, Carlene & Seavy, Nathaniel E. & Gardali, Thomas. "Restoring Native Perennial Grasses by Changing Grazing Practices in Central Coastal California." Ecological Restoration, vol. 32 no. 4, 2014, pp. 352-354.*

Develop approaches to spatially prioritize actions







Veloz et al. 2022

Point Blue

Increase certainty of stewardship co-benefits and trade-offs

On TomKat:

- Fire and goat grazing monitoring
- Bale grazing trial
- Soil health trials
- Compost trial (NRCS)
- Strip seeding trial (UCD)
- Many qualitative: swath grazing

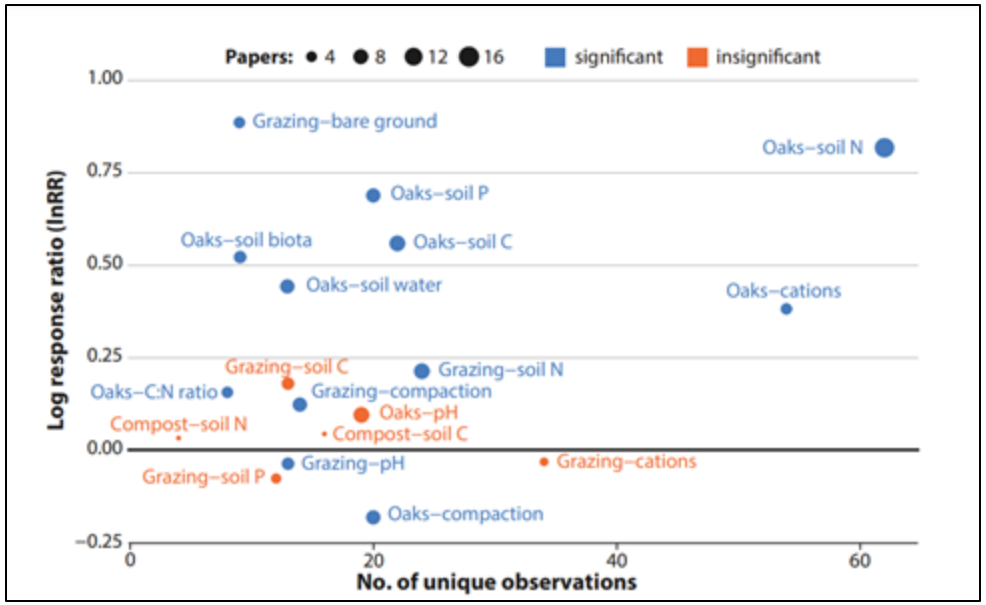
Statewide:

- Meta-analysis
- Rangeland carbon management study

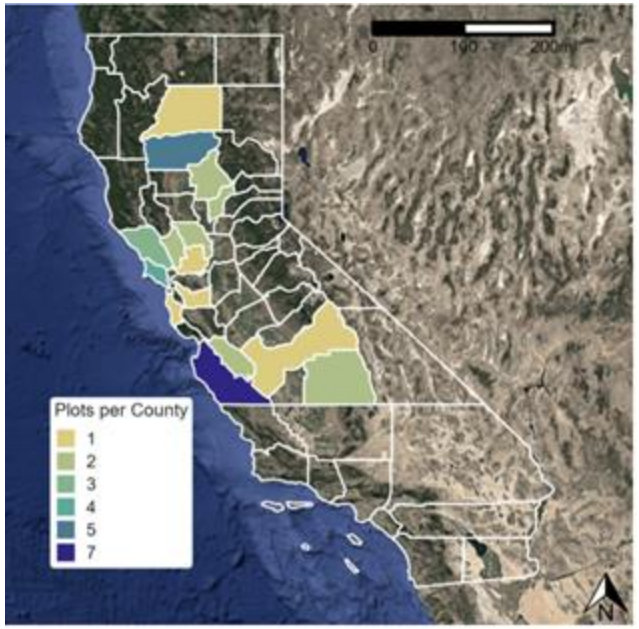
Point Blue

Increase certainty of stewardship co-benefits and trade-offs

(How) do rangeland practices influence soil health and carbon capture?



Carey et al. 2020



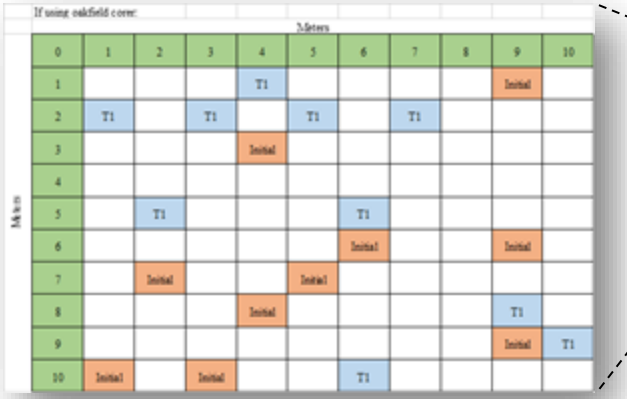
Carey et al. in prep

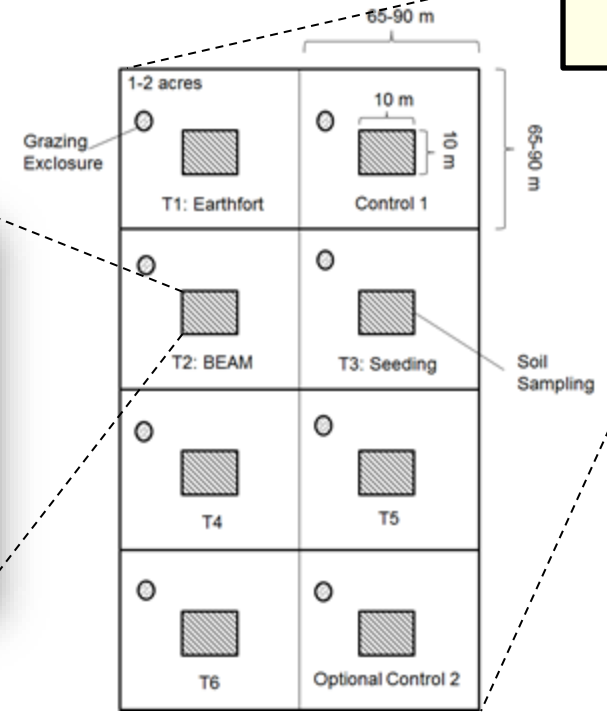
Point Blue

Increase certainty of stewardship co-benefits and trade-offs

What's the benefit, if any, of commercial inoculants + humic products?

Earthfort, N = 10
Cover Crops, N = 5
NM = 3



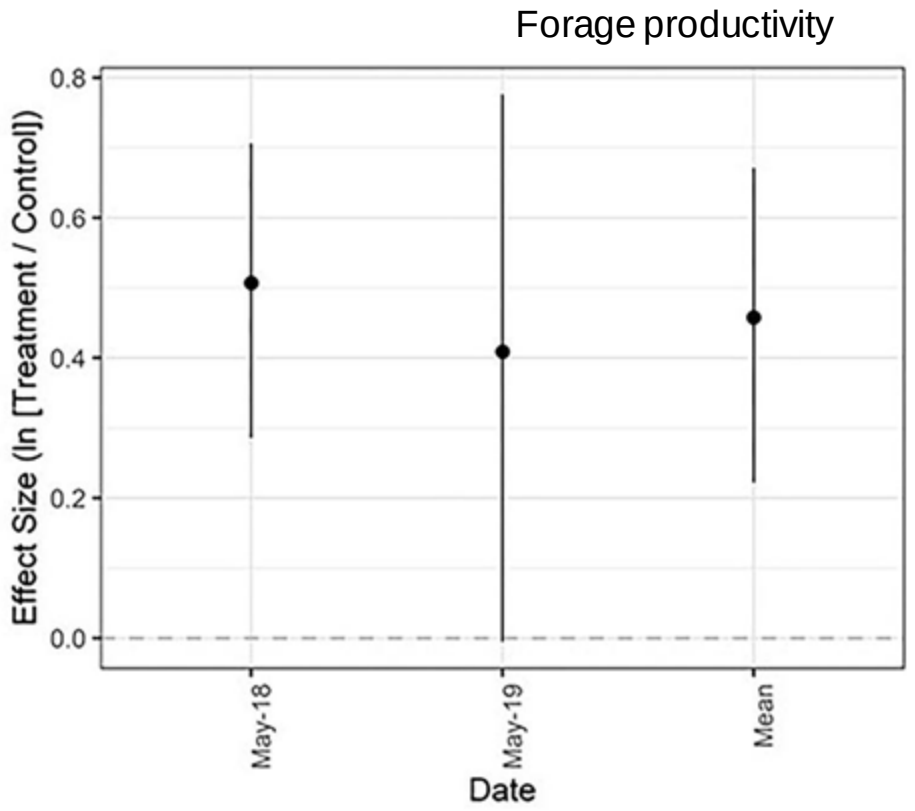


Field 1	Field 2	Field 3
Field 4	Field 5	Field 6
Field 7	Field 8	Field 9
	Field 10	

Point Blue

Increase certainty of stewardship co-benefits and trade-offs

What's the benefit, if any, of commercial inoculants + humic products?

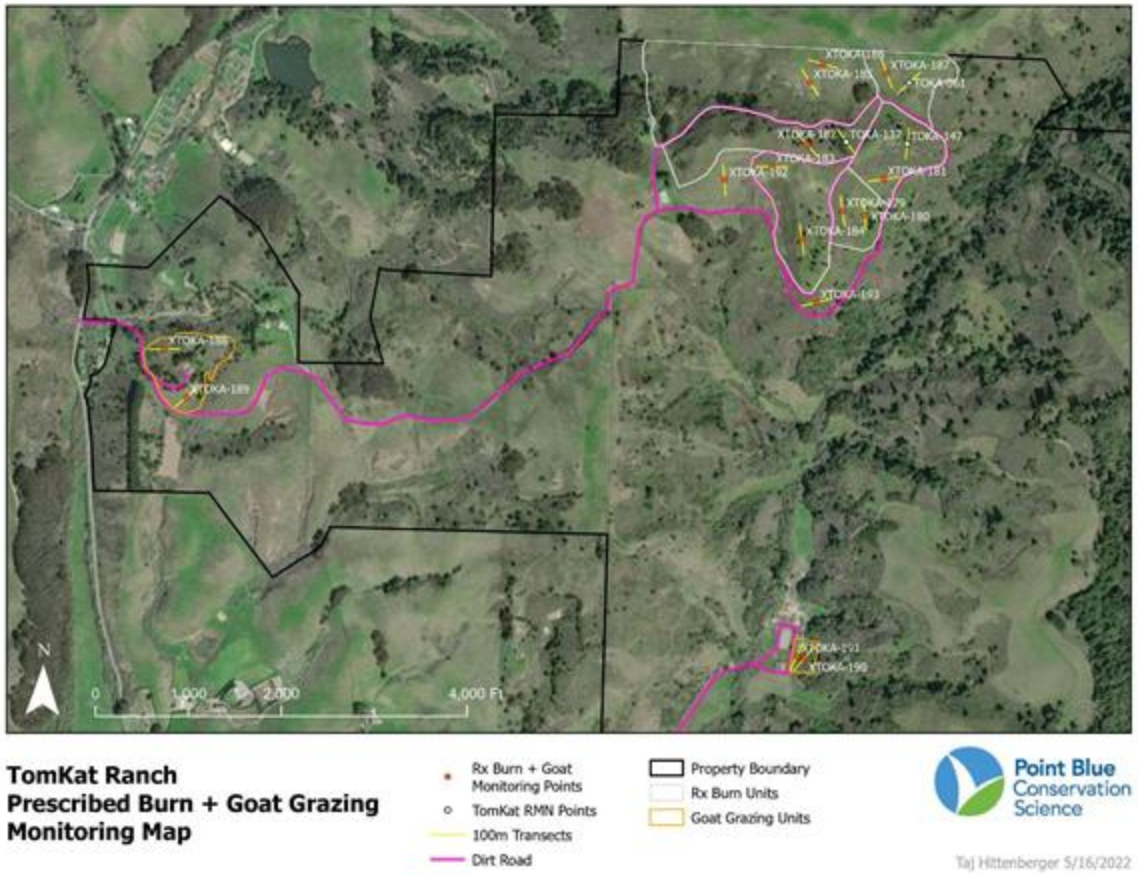


Point Blue

Carey et al. 2022

Increase certainty of stewardship co-benefits and trade-offs

(How) do prescribed fire and goat grazing (separately and in combination) affect shrub recovery, plant composition, and soil health?



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Advance monitoring and forecasting abilities

SAN MATEO RESOURCE CONSERVATION DISTRICT

TomKat Ranch Carbon Farm Plan

OCTOBER 2017

Prepared for TomKat Ranch by the San Mateo Resource Conservation District[1]

ABOUT THE PLAN

Rangeland ecosystems offer significant terrestrial carbon sequestration potential to help mitigate the rising levels of carbon dioxide and other greenhouse gases in the atmosphere that contribute to climate destabilization through global warming. Recognizing this opportunity, TomKat Ranch has embraced its potential role as a carbon sink, and made this a core management objective for its goal of achieving and promoting sustainable food systems. This plan lays out a path forward for enhancing carbon capture on TomKat Ranch consistent with the Ranch's objectives and practices described in its existing management plans: TomKat Ranch Educational Foundation Strategic Plan for 2014-2017; the 2017 Strategic Plan; the 2016 Grazing Plan; and the Landscape Conservation Plan (2012).

Development of this carbon farm plan was a collaborative effort by TomKat Ranch Educational Foundation, San Mateo Resource Conservation District (RCD), U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), and Point Blue Conservation Science (Point Blue), with guidance from Jeff Creque, Rangeland and Agroecosystem Management Director at the Carbon Cycle Institute (CCI). The planning process integrated the expertise and ranch-specific knowledge of staff from TomKat Ranch and Point Blue, with NRCS and RCD conservation planning technical assistance, and the expertise that CCI has developed through its carbon farm planning work in other counties. This process developed RCD staff capacity for doing carbon farm planning in general, and helped them tailor the planning approach and carbon farming practices to address the needs of TomKat Ranch and other San Mateo County ranchers and farmers. TomKat Ranch and Point Blue are using this carbon farm plan to help guide and prioritize the implementation of conservation practices across the Ranch. All of the project partners are applying the knowledge and experience gained through this effort to build broader understanding of and interest in carbon farming planning and practices in the county.

Preparation of the plan itself was done by the RCD. As noted in the plan sections, the RCD drew heavily from content developed by CCI (for its carbon farm plans), and by TomKat Ranch Educational Foundation and Point Blue (for the Ranch's existing management plans mentioned above). Additional background information as well as some of the map data and layers about the Ranch's historic and current conditions and management practices were provided by TomKat Ranch and Point Blue staff.

[1] Recommended Citation:
San Mateo RCD. October 2017. TomKat Ranch Carbon Farm Plan. San Mateo Resource Conservation District, Half Moon Bay, California.

Point Blue

The Range-C Monitoring Program: Handbook of Field Methods

The Rangeland Carbon Monitoring Program: Handbook of Field Methods V1.0

February 2023

Point Blue Conservation Science

Conservation science for a healthy planet
3820 Cypress Drive, #11 Petaluma, CA 94954
T 707.781.2555 | F 707.765.1685
pointblue.org

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Thank you! Questions?

beyestone@pointblue.org

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Overview of Available Resources

NRCS and other resources that assist in the conservation planning process

Drew Loganbill, NRCS Area 2 Resource Conservationist


Thank you!