

**SYNTHESIS OF RANCHER PRIORITY CONCERNS, INDICATORS, AND RECOMMENDATIONS
FOR CALIFORNIA'S CENTRAL COAST¹**

Table 1. Priority Concerns About Rangeland Health

(Categories correspond with CCRC indicators compiled by G. Hayes)

	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
I. Degree of Soil Stability and Watershed Function			
<i>Poor Condition of Upper Watersheds</i> —negative effects of historical over-grazing, cultivation, and recent development and poor road design and maintenance in upper watersheds—soil and stream erosion, sedimentation, increased stream velocity and volume, decreased groundwater storage	x	x	x
<i>Reduced Ground Water and Soil Retention of Upper Watersheds</i> —repairs and improved practices are needed			
<i>Riparian Gully Incision and Bare Areas</i> —repairs and improved practices are needed in damaged areas		x	x
<i>Reduced Water Quality</i> —poor or declining water quality		x	x
II. Integrity of Nutrient Cycles and Energy Flows			
<i>Reduced Soil Productivity</i> —soil is less productive than it used to be several hundred years ago due to severe soil loss in the region		x	
<i>Excessive Rest/Under-Grazing</i> —many sites have been excluded recently from grazing with consequent excessive buildup of thatch, fire hazards, and pest plants, and reduced diversity and wildlife habitat quality	x	x	x
III. Presence of Functioning Recovery Mechanisms			
<i>Resilience to Drought and Storms</i> —maintaining the resilience of grassland composition and the land to drought and storm effects	x	x	x
<i>Resilience After Livestock Use</i> —maintaining the resilience of ground cover and litter associated with livestock use and rest			
IV. Maintenance of Rare/Endangered Species, Species Richness, and Habitat Quality			
<i>Pest Plants Increasing</i> —reduced plant diversity, habitat quality, and forage quality and quantity, and increased fire hazards due to pest plant increases and formation of monocultures	x	x	x
<i>Animal Diversity Incomplete</i> —populations of some of the upper trophic level predators and scavengers, below ground soil organisms, and special species, such as snakes and lizards are declining		x	x
<i>Oak Regeneration</i> —oaks are not regenerating at desired rates		x	x

¹ Based on summary minutes of the three CCRC rancher meetings: northern region, Sunol, January 25, 2006; central region, San Juan Bautista, February 3, 2006; and southern region, Cayucos, April 5, 2006 (www.rangelandconservation.com/indicators --requires login and password distributed to participants); more than one concern or indicator concept are shown in one cell when similar.

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	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
V. Other (Socio-Economics and Planning)			
<i>Negative Image</i> —public’s mistaken negative image of grazing management while under-appreciating negative effects of under-grazing or removal of grazing	x		x
<i>Short-Term Planning</i> —reduced rangeland health (such as increasing pest plans) often results from management based on short-term planning associated with uncertain land tenure	x		
<i>Declining Opportunity for Private Rangeland Ownership</i> —interest in ranching and traditional ranching knowledge is declining due to declining opportunities for private rangeland ownership <i>Reduced Incentives and Opportunity for Ranching</i> —declining economic sustainability has lead to conversion to non-ranching land uses and reduced wildland ecosystem services	x	x	
<i>Insufficient or Ineffective Ranch Management Planning</i> —ranch planning can be improved by being written down, made specific about goals, tools, monitoring, and learning; include the social and economic goals for ranch sustainability and economically important species; ranch managers and livestock operators need training in planning and other skills		x	x
<i>Ranches and Ranchers are Unique</i> —“one size fits all” regulations, indicators, and management practices don’t work; indicators must be linked to goals.			x

Table 2. Priority Indicator Concepts of Rangeland Health

(Categories correspond with CCRC indicators compiled by G. Hayes)

	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
I. Degree of Soil Stability and Watershed Function			
<i>Water and Sediment Retention: Ground Water (+)</i> —springs and seeps in the upper watershed continue to flow well past the end of the rainy seasons into the dry seasons		x	x
<i>Water and Sediment Retention: Riparian Soil (+)</i> —trends of recovery of herbaceous and shrub cover, and building up of sediments instead of increasing incision in riparian areas and any gullies and slips		x	
<i>Water and Sediment Retention: Upper Watershed Soil (+)</i> —trend of reduced sheet erosion, such as pedestalling or sediment build-up on uphill sides of plants in the upper watersheds; reduced erosion associated with road drainages or livestock trailing		x	x
<i>Healthy Rangelands to Support a Healthy Livestock Operation: Fall RDM (min/max)</i> —level appropriate to region and grassland type as a predictor of winter conditions for germination and growth of herbaceous vegetation and forage (related to soil stability and watershed function)	x		
<i>Soil Integrity: Compaction (-)</i> —degree of soil compaction			x
II. Integrity of Nutrient Cycles and Energy Flows			
<i>Nutrient Distribution and Recycling: Manure and Hoof Traffic (+)</i> —broad distribution of livestock manure and hoof prints		x	
<i>Nutrient Distribution and Recycling: Decomposition (+)</i> —rapid decomposition of litter and manure		x	x

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	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
(appropriate for region, vegetation type, season, and site); proportion of live green herbage compared to old oxidized grey herbage			
<i>Native Perennial Plants (+)</i> —trend of maintenance or increase of populations sizes and vigor of perennial herbaceous and woody natives at sites with ecological potential to support them		X	X
<i>Plant Productivity: Lushness (+)</i> —degree of apparent plant vigor; appropriate to site conditions of slope, aspect, and soil moisture affecting succession to woody plants			X
<i>Plant Productivity: Reproduction (+)</i> —degree of apparent reproduction (flowers, seeds, young plants, spreading)			X
<i>Plant Productivity: Suppression by Thatch (-)</i> —degree of thatch accumulation			X
<i>Herbivory: Diversity of Herbivores (+)</i> —number of herbivores functioning in the ecosystem (livestock, rodents, rabbits)			X
<i>Herbivory: Excess Herbivory (-)</i> —degree of herbivore removal of herbaceous and woody forage			X
<i>Carbon Sequestration (+)</i> —trend of maintaining or increasing the amount of carbon in the carbon budget residing in the soil and vegetation			X
III. Presence of Functioning Recovery Mechanisms			
<i>Resilience to Drought and Storms (+)</i> —trends to maintain composition of desirable species, and to avoid bare soil or erosion	X	X	X
<i>Ground Cover Resilience and Fall Residue: Herbaceous Cover (+)</i> —trend to recover herbaceous ground cover to an ecologically potential level of cover after grazing; the potential will be affected by site management history, non-grazing effects, such as ground squirrel activities and climate; include riparian bare areas; exclude corrals and other “service areas”			
<i>Ground Cover Resilience and Fall Residue: Litter Cover (+)</i> —neither excess accumulation or bare areas		X	X
<i>Disturbance: Forage Quality and Composition (+)</i> —degree of improvement in composition of desirable forage species and diversity of vegetation structure associated with degree of herbivore disturbance			X
IV. Maintenance of Rare/Endangered Species, Species Richness, and Habitat Quality			
<i>Native Organism Diversity: Plants (+)</i> —trend in species richness of native plants, not just native perennial grasses; reduction of annual grass mass and thatch; measure plant composition (species and classes) on similar sites	X		X
<i>Native Organism Diversity: Animals (+)</i> —trend in species richness of native animals	X		X
Structural/Habitat Diversity (+)—degree of heterogeneity and presence of potential structural elements at pasture and landscape scales	X	X	X
<i>Monoculture Sites (-)</i> —presence and size of monoculture sites of native or non-native plants, at pasture or landscape scales (related to fire hazards and forage quality)	X	X	
<i>Pest Plants (-)</i> —trend in size of existing infestations and new infestations of pest plants; level of use of herbicides	X		X
<i>Species that Support Ecosystem Processes: Pest Plants (-)</i> —trend reduced abundance of pest plants			

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	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
<i>Riparian Pest Plants (-)</i> —trend of control and reduction of riparian pest plans, especially in enclosures			
<i>Riparian Zone Structure and Function (+/-)</i> —level and timing of livestock use; native riparian plant species richness and diversity of potential structure; water pollutant buffering	x		x
<i>Riparian Self-Sufficiency (+)</i> —trend of maintenance or increasing richness, reproduction, and establishment of key riparian species without plantings			
<i>Special Conservation: Special Biological Resources (+)</i> —presence and diversity of potential or known regional special biological resources (wildflowers, oaks, listed species, listed special habitats); compliance with county ordinances and federal and state law; diversity of wildflower colors could be a simple measure of wildflowers	x	x	x
<i>Rare Plants and Animals (+)</i> —trend of maintenance or increase of populations sizes and vigor of rare organisms			
<i>Economically Important Species Diversity (+)</i> —trend in richness, abundance, and mix of sexes and age classes of economically important plants and animals			x
<i>Species that Support Ecosystem Processes: Wildlife Forage and Shelter (+)</i> —trend in abundance of species that support common wildlife			x
<i>Common Locally Extirpated Organism Diversity (+)</i> —trend of maintenance or increase in diversity of common but locally extirpated plants and animals		x	
<i>Upper Trophic Level Animals (+)</i> —trend of maintenance or increase of diversity, population sizes, and population viability of upper trophic level, species including predators, scavengers, and below ground soil-dwelling organisms		x	x
<i>Herbivory: Building Biodiversity (+)</i> —degree of improvement in general species richness associated with degree of herbivory			x
<i>Disturbance: Building Biodiversity (+)</i> —degree of improvement in general species richness associated with degree of herbivore disturbance			x
V. Other (Socio-Economics and Planning)			
<i>Healthy Livestock Operation: Stability of Ownership and Management (+)</i> —the proportion of stable versus unstable ownership and management of private ranches and leased public lands	x		
<i>Healthy Livestock Operation: Functional Infrastructure (+)</i> —the degree of functionality of the infrastructure for the grazing operation as a reflection of long-term investment by the operator; also the degree of removal of trash and abandoned infrastructure	x	x	
<i>Healthy Rangelands to Support a Healthy Livestock Operation: Fire Hazards (max)</i> —amount of herbaceous and woody fuels, management practices in place to reduce fire hazard (appropriate to vegetation type and site to reduce risks of wildfire to human values, including fire fighters)	x		x
<i>Species that Support Ecosystem Processes: Fire Hazards (-)</i> —trend in abundance of species that build fire fuels			
<i>Enthusiasm and Sustainability: Incentives (+)</i> —overall level of inter-generational and economic		x	

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sustainability of the regional livestock industry; rate of associated rangelands recently or in process of being converted to other land uses; rate of wildlands (ecosystem services) values recently or in process of being lost			
<i>Enthusiasm and Sustainability: Ranch Self-Sufficiency (+)</i> —degree of independence from supplemental feed from off-ranch sources; proportion of financial profit from on- versus off-ranch sources		x	
<i>Enthusiasm and Sustainability: Ranch Operation and Life Quality (+)</i> —breadth of age classes working at the ranch; financial profit from rangeland-based sources; reasonable number of hours per week worked by the principals; net proportion of trash cleaned up on the ranch; expectation of current owners to retain ownership and use of the ranch as rangeland; proportion of business focus by ranch owners on the rangeland business		x	
<i>Ranch/Rangeland Management Planning (+)</i> —a ranch or rangeland management plan is completed and used, including specific monitoring guidelines <i>Decision-Making Support: Specific Goals (+)</i> —a written plan is in place with specific goals, tools, monitoring, and adaptation that are appropriate to the site, ranch operations, and people involved (not standardized); it should have flexibility to respond to changes, such as drought or adapted goals; it should include economic and social goals and non-grazing goals		x	x
<i>Decision-Making Support: Monitoring (+)</i> —the monitoring plan is simple and leads to re-consideration of the effectiveness of the “palette” of tools to use to better achieve goals and solve problems			x
<i>Decision-Making Support: Records (+)</i> —accurate records are kept consistently and simply			x
<i>Professional Education (+)</i> —ranchers and rangeland managers regularly participate in professional education to advance their skills; and to demonstrate their sensitivity to public opinions about rangeland health		x	x
<i>Aesthetics and Public Opinion (+)</i> —undesirable views are not visible from popular roads or vistas			x

Table 3. Recommendations about Selecting and Using Indicators

	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
<i>Manageability and Measurability</i> —indicators should be those measurable factors representing rangeland health that can be affected by grazing management; not factors that occur and vary independently of grazing effects or that are outside the control of management.	x	x	x
<i>Performance</i> —indicators should relate to achievement of the desired condition, less about the practices used by the operator to achieve it; ranchers need flexibility to achieve the performance indicators	x		
<i>Improvement Trend</i> —indicators may be better expressed in terms of negative conditions that are <i>not</i> desired; an improving or maintaining trend of an indicator may be more important than occurrence of the negative or positive condition; problem areas should be identified and the trends monitored there <i>General Improvement</i> —indicators should reflect more than just specialized “conservation” purposes, but also general improvements of the environment, particularly to maintain the land’s regenerative capacity to	x	x	

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	North (East Bay)	Central (Mont. Bay)	South (Morro Bay)
broadly support our community; such results start with a vision of what’s possible			
<i>Baseline Assessments</i> —To determine trends, baseline assessments are needed; the baseline and trend should incorporate any effects of agency rules, site and management history, responsibility for remedies, and whether maintaining, adding, or removing grazing would affect the indicator	x		
<i>Common “Stewardship” Goals</i> —indicators should reflect common management goals of the three regions, including any merging or compromising between divergent goals	x		
<i>Reflect Extra “Stewardship” Costs</i> —achieving the stewardship goals on private and public rangelands may require ownership, management, and monitoring costs that exceed the livestock operation costs alone; these extra costs should be clearly identified for the agencies involved and the public	x		
<i>Define Grazing, Over-Grazing, and Rest</i> —define these terms		x	
<i>Don’t Standardize</i> —different ranches and their managers can operate with different skills, goals, and practices to achieve the same results of ecosystem health or sustainability			x
<i>Thatch</i> —this indicator is repeated in many categories and for different purposes	x	x	x