

Draft Compatibility Determination

Title

Compatibility Determination for Cooperative Grazing, Haying, and Seed Collection on Quivira National Wildlife Refuge

Refuge Use Category

Agriculture, Aquaculture, and Silviculture

Refuge Use Type(s)

Grazing, Haying, and Seed Collection

Agricultural activities (grazing, haying, and seed collection) that require Cooperative Agricultural Agreements (CAAs) and Commercial Special Use Permits (SUPs).

Associated facilities: fence, water wells, parking lots, and roads.

Associated supporting uses: ATVs/UTVs, trucks, horses, trailers, tractors, combines, skid steers, and other mechanical equipment that facilitates implementation of activities in this refuge use category (e.g., fence installation and maintenance; partial or complete removal of vegetation within a given area).

Refuge

Quivira National Wildlife Refuge

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

Quivira National Wildlife Refuge purpose is “to provide migration, nesting, resting, and feeding habitat for migratory birds and to develop, advance, manage, conserve, and protect fish and wildlife resources” (U.S. Fish and Wildlife Service. 2013.

Comprehensive conservation plan—Quivira National Wildlife Refuge, Kansas. Lakewood, CO: U.S. Department of the Interior, Fish and Wildlife Service. 221 p.)

Quivira National Wildlife Refuge was established under the following authorities and for these purposes: Migratory Bird Conservation Act (16 United States Code [U.S.C.] § 715d), for use as an inviolate sanctuary, or any other management purpose, for migratory birds; Fish and Wildlife Act of 1956 (16 U.S.C. § 742f(a)4, or the development, advancement, management, conservation, and protection of fish and wildlife resources; Fish and Wildlife Act of 1956 (16 U.S.C. § 742f(b)1, for the benefit of the United States Fish and Wildlife Service, in performing its activities and services.

Management of National Wildlife Refuge System (NWRS) lands involves numerous federal statutes, regulations, policies, and guidance. The NWRS Administration Act of 1966, as amended (16 U.S.C. 668dd–668ee), and the NWRS Improvement Act of 1997

(Public Law 105-57) provide important guidance related to NWRS management. The latter mandated the development and use of a Comprehensive Conservation Plan (CCP) for each refuge.

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as Refuge System, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

Yes, this compatibility determination reviews and replaces the compatibility determination for agricultural activities on Quivira National Wildlife Refuge included as part of the CCP, approved October 23, 2013.

What is the use?

Cooperative agriculture is considered economic uses that are not wildlife-dependent and that require commercial special use permits. Grazing (Cooperative) – prescribed grazing for habitat restoration and management purposes on lands owned in fee title or managed through agreement by the National Wildlife Refuge System.

Haying – cutting and removal of vegetation as directed and authorized by the Refuge for habitat restoration and management purposes on lands owned in fee title or managed through agreement by the National Wildlife Refuge System.

Seed Collection (Cooperative) – native grass and forb seed collection/harvest for habitat restoration and management purposes on lands owned in fee title or managed through agreement by the National Wildlife Refuge System.

Is the use a priority public use?

No

Where would the use be conducted?

Grazing and haying are utilized in uplands and wetlands on the 22,135-acre refuge. We estimate less than 10,000 acres will remain eligible for grazing, but each year some of that area will be rested (not grazed or hayed). A grazing rotation schedule is planned each year using multiple fenced units to manage grazing intensity, depending on current environmental conditions, desired conditions (objectives), and other considerations (e.g., fence; water; other management).

Haying typically occurs on <1,000 acres/year.

Seed collection will be conducted occasionally on a small portion of the uplands (<1,000 acres) with the intended purpose of using the seed for restoration of previously farmed areas on the refuge.

When would the use be conducted?

Grazing and haying may occur throughout the year as management needs dictate to accomplish goals and objectives. Traditionally, the refuge has used seasonal grazing, mostly May through August. However, dates may be adjusted to target certain species, such as grazing exotic annual brome in April to favor growth of native vegetation later in the season.

Generally, haying will not occur during June through mid-July due to bird nesting activities. In recent years, haying has occurred during the non-growing season or in early spring.

Seed collection will occur after seed maturity of the target species, typically in late summer/early fall.

How would the use be conducted?

All agricultural activities, in combination with other management strategies or tools, are prescribed to support refuge habitat-based goals and objectives. These uses are only permitted on the refuge with a CAA with operational requirements and a SUP, issued each year to allow for potential changes.

For grazing, cooperators will enter into a CAA ranging from 1-4 years for a defined area of the refuge. Cooperators are allowed to use multiple types of equipment to gather livestock, repair fence, and perform maintenance on other parts of their given section. Targeted grazing is primarily focused on the effects of defoliation and trampling to accomplish objectives, unlike traditional grazing practices that maximize livestock production (Bailey et al. 2019). Effects of grazing are largely managed with adjustments to stocking rate, animal type and distribution, and timing (season and duration). Long-term continuous heavy grazing (many successive years with vegetation use >60%) will not be used.

While permanent fence construction is the responsibility of the refuge, fence repair and controlling livestock is the responsibility of the cooperator. The refuge provides instruction and guidance in the CAA for the placement of fences, water tanks, and livestock supplements to protect sensitive habitats and refuge assets. A temporary electric fence may be used where there is not an existing permanent fence. Considerations of current and desired vegetation conditions, habitat objectives, and available water will largely determine stocking rates in each grazing unit.

Since haying on the refuge is somewhat infrequent, cooperators are brought on a case-by-case basis. A management need for haying is determined, the opportunity is

advertised then cooperators are selected depending on a list of factors including proximity to the refuge, availability, and cooperators haying needs. Haying SUPs include location, cost, and any other specifics discussed between staff and cooperator.

Seed collection may require the use of combines, tractors, UTV/ATVs and implements. SUPs describe operational requirements, including target species, location, and dates of collection or seeding. Cooperators are responsible for all of the equipment and labor.

Why is this use being proposed or reevaluated?

This Compatibility Determination is being reevaluated according to Policy 603 FW 2.11 H. Agricultural uses are reviewed every 10 years or as a result of changing conditions that occur prior to the scheduled review.

The CCP describes native communities, focal species, and ecological objectives largely based on species life requirements and considerations of ecosystem management. Vegetation structure and composition influence wildlife use at local scales and management provides a range of vegetation conditions to support a diversity of species. Agricultural activities are used in combination with other management strategies to increase the potential of accomplishing refuge objectives. The use of alternative management tools is especially important with increasing limitations in prescribed burn capabilities and climate change. For example, prescribed burning on the refuge has decreased dramatically over the past decade due to outside constraints and it is challenging to manage consequential shifts in vegetation, such as increasing litter, coverage of woody plants, invasive species, and decreasing native forb abundance.

Availability of Resources

Existing resources is sufficient to administer and assess the agricultural activities at current levels. These programs will continue to be conducted through CAAs and special use permits. Cooperative management activities allow more efficient use of staff time and resources.

Habitat monitoring takes place periodically and no additional effort is proposed in relation to these uses. Existing refuge staff will monitor the CAAs to ensure compatibility and compliance. The cooperator is responsible for providing all equipment and labor associated with permitted activities. Facilities installed primarily for Refuge purposes are constructed or maintained at the Refuge's expense.

Anticipated Impacts of the Use

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

Historically, central Great Plains prairie was influenced by naturally occurring forces (ecological drivers), such as fire and grazing. Recent land use has impeded natural forces as they once occurred. Changes in natural disturbances, land use, and habitat conditions at various spatial and temporal scales have contributed to population declines of grassland birds (Askins et al. 2007, North American Bird Conservation Initiative 2022, Bernath-Plaisted et al. 2024). Land use and management actions, such as haying and domestic livestock grazing in combination with prescribed burning, have replaced natural forces. Multiple management tools may be used to support some level of restoration and sustainability of prairie ecosystem structure and function (Howe 1994, Davison and Kindscher 1999, Howe 1999). Potential effects of grazing (Milchunas et al. 1988, Schieltz and Rubenstein 2016) and mechanical disturbances are positive and negative, and largely dependent on local environmental factors and use (Shaffer and DeLong 2019). In this case, management practices will be used to support conservation purposes, goals, and objectives as described in the Quivira National Wildlife Refuge CCP (USFWS 2013). Multiple management strategies are utilized to provide a range of conditions that support a diverse population of migratory birds that is consistent with the U.S. Fish and Wildlife Service's Mission to "conserve, protect, and enhance fish, wildlife, and their habitats". Planning will consider strategies to avoid or minimize adverse impacts to species of conservation concern that are known to occur in managed areas.

Quivira National Wildlife Refuge is composed of sand prairie and wetland communities in the Central Great Plains (EPA Level III Ecoregions; [usecol3_Apr2016_US_gg\(epa.gov\)](https://www.epa.gov/usescol3-apr2016-us-gg)). Vegetation generally associated with agricultural activities on the refuge include warm-season dominated mixed-grass prairie and lesser amounts of salt grass/wetland communities. Bluestem species, switchgrass, and indiagrass are common dominant grasses. The timing, intensity, and duration of agricultural activities and local environmental conditions influence impacts.

Below, information on agricultural activities are described in context of use on the refuge and anticipated impacts.

Short-term impacts

Grazing

Direct short-term effects of grazing relate to livestock forage consumption, trampling and compacting of soils and vegetation, and excrement. Cumulative impacts of livestock grazing are complex and depend on various factors (e.g., historic and current management/use; grazing infrastructure [e.g., size, shape, number of paddocks; distribution of water and mineral sources]; animal type, stocking rate/intensity, timing, and duration of grazing; local environmental conditions [e.g., vegetation structure and composition, climate/moisture availability, soils, wildlife

use]). Livestock grazing may influence attributes of rangeland health as described by Pellant et al. (2020): soil stability (e.g., bare ground), hydrologic function (e.g., infiltration, erosion), and biotic integrity (e.g., plant conditions). Anticipated grazing impacts on the refuge will be controlled with implementation of a program that allows flexible management options that can adjust to changing conditions. For example, planning will implement an adaptable multiple-unit grazing operation that includes opportunities to remove livestock from areas where there are indications of undesirable conditions (USFWS 2013, Pellant et al. 2020) with continued grazing. The primary use of light to moderate stocking rates will avoid or minimize many potentially adverse short-term impacts (e.g., excessive soil compaction, surface water run-off, and bare ground).

Haying and Seed Collection (Mechanical Cutting)

Short-term impacts of mechanical cutting are anticipated to be marginal considering these activities would not occur annually on a given area and would directly impact less than 1,000-2,000 acres (0-9%) of the refuge. These activities generally will not occur during peak bird nesting season and consideration will be given to avoid or minimize impacts to species of conservation concern. Haying removes the vegetation and the litter layer of a given area to alter vegetation structure and create conditions that promote forb growth. Management flexibility allows haying to be prescribed at times and in places where burning and grazing cannot. Seed collection is only occasionally used as a way of acquiring local, native seed for use in restoring other areas of the refuge.

Long-term impacts

Agricultural activities will be used to increase the potential of accomplishing refuge landscape and native community goals and objectives described in the Quivira National Wildlife Refuge CCP (USFWS 2013). A wide range of community conditions supports native species diversity (Derner et al. 2009, Shaffer and Delong 2019). Grazing and haying in combination with other management activities will be used to support biodiversity at multiple spatiotemporal scales (Sieg et al. 1999, Derner et al. 2009, Toombs et al. 2010). A comparison study found multiple paddock grazing, as is used on the refuge, can be more beneficial to vegetation, soil, and water characteristics compared continuous grazing and in some cases rest in tall grass prairie (Teague et al. 2011).

Management considers special needs of species due to status and trends information and ongoing environmental changes occurring beyond the control of refuge management (e.g., land use; climate).

Grazing

Grazing will be used in combination with rest and other management activities to provide a shifting mosaic of vegetation conditions that support a diversity of wildlife

species (Fulendorf and Engle 2001, Derner et al. 2009, Powell and Busby 2013, Shaffer and DeLong 2019). Watson et al. (2024) indicated a reduction of vegetation biomass and increased structural heterogeneity resulting from short duration grazing on restored grasslands across a precipitation gradient in Kansas. Grazing prescriptions will consider potential and desired impacts to vegetation, such as increasing plant species diversity, forb abundance, and structural heterogeneity in a given area (Hickman et al. 2004, Towne et al. 2005). Grazing or changes to vegetation structure in Kansas has been reported to have mixed effects on grassland bird abundance and diversity, but support certain prairie-dependent species such as grasshopper sparrows, meadowlarks, and upland sandpipers (Klute et al. 1997, Rahmig et al. 2008, Grantrom-Arndt 2022, Wilson et al. 2022, Champney 2023). Management will also support pollinator conservation through actions that promote seasonal food resources (USDA and USDOJ 2015; [Rangeland Management and Pollinators: A Guide for Producers in the Great Plains \(xerces.org\)](https://www.xerces.org/)).

Haying and Seed Collection (Mechanical Cutting)

Limited use of haying and seed collection will supplement other management tools to collectively sustain native communities, as described above.

Public Review and Comment

The draft compatibility determination will be available for public review and comment for 30 days from **7/12/2024 to 8/12/2024**. A hard copy of this document will be posted at the Refuge Headquarters and Visitor Center 1434 NE 80th Street, Stafford, KS 67578. It will be made available electronically on the refuge website (www.fws.gov/refuge/quivira). Please let us know if you need the documents in an alternative format. Concerns expressed during the public comment period will be addressed in the final.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

Prescribed plans will be adaptable to changing environmental conditions and operational constraints to minimize or alleviate potential adverse impacts.

For consistency with management objectives, we will require general and specific conditions for haying or grazing permit.

Permitted activities will consider strategies to avoid or limit adverse effects on nesting birds, species of conservation concern, and other wildlife. The refuge manager decision-making will consider constraints on the area, timing, and methods

associated with grazing and/or haying to be incorporated into the cooperative farming agreement or special use permit. For example, haying will likely occur after July 15th to avoid destroying bird nests on the management unit, unless the refuge manager deems it necessary for control of invasive plants, community restoration, or if conditions discouraged use of the area (e.g., previous treatment, such as a prescribed burn).

Control and confinement of livestock are the responsibility of the permittee, but we will decide where fences, water tanks, and livestock supplements will be placed within the management unit. Fence will be used to keep livestock within grazing cells as well as to protect sensitive habitat areas and refuge assets (e.g., water monitoring equipment) or public use areas (e.g., Kid's Fishing Pond).

Grazing fees will be based on the current-year USDA Statistics Board publication for Grazing Fee Rates for Cattle by Selected States and Regions, as provided annually by the regional office, or will be established by bid. Standard deductions for labor associated with the grazing permit will be included on the special use permit.

Refuge staff will assess environmental conditions in context of landscape and native community goals and objectives.

Justification

Herbivory, a natural environmental stressor, does not occur as it did historically when human constraints on the landscape were much more limited. Disturbances, such as prescribed grazing and haying, replace natural stressors to restore and maintain native communities on the refuge. When effectively managed and assessed, prescriptive grazing and haying are options that can be used to improve and maintain native communities to desirable cover and structural conditions. Strategies may be used to favor native species and discourage undesirable invasive plant species. Each of these tools can be used appropriately with Special Use Permits and Agreements to support refuge biological objectives.

The stipulations outlined above would help ensure that the use is compatible at Quivira National Wildlife Refuge. Grazing and haying, as outlined in this compatibility determination, would not conflict with the national policy to maintain the biological diversity, integrity, and environmental health of the refuge. Based on available science and best professional judgement, the Service has determined that the grazing and haying at Quivira National Wildlife Refuge, in accordance with the stipulations provided here, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose of the Quivira National Wildlife Refuge. Rather, appropriate and compatible grazing and haying would be the use of the Quivira National Wildlife Refuge through which the public can develop an appreciation for wildlife and wild lands.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

Mandatory 10-year Reevaluation Date: 2034

Literature Cited/References

- Askins, R.A., F. Chávez-Ramírez, B.C. Dale, C.A. Haas, J.R. Herkert, F.L. Knopf, and P.D. Vickery. 2007. Conservation of grassland birds in North America: understanding ecological processes in different regions. *Ornithological Monographs* 64:1-46.
- Bailey, D.W., J.C. Mosley, R.E. Estell, A.F. Cibils, M. Horney, J.R. Hedrickson, J.W. Walker, K.L. Launchbaugh, and E.A. Burritt. 2019. Synthesis paper: targeted livestock grazing: prescription for healthy rangelands. *Rangeland Ecology & Management* 72:865-877.
- Bernath-Plaisted, J., M.D. Correll, S.G. Somershoe, A.M. Dwyer, A. Bankert, A. Beh, H. Berlanga, W.A. Boyle, J.L. Cruz-Romo, T.L. George, J. Herkert, N. Koper, A. Macías-Duarte, A.O. Panjabi, O.M. Ramírez-Flores, B. Robinson, I. Ruvalcaba-Ortega, J. Sibbing, E.H. Strasser, M. Titulaer, W.E. Van Pelt, and T. VerCauteren. 2023. Review of conservation challenges and possible solutions for grassland birds of the North American Great Plains. *Rangeland Ecology & Management* 90:165-185.
- Champney, C.J. 2023. Grassland nesting birds and visual obstruction measurements in western Kansas on Smoky Valley Ranch. Master's Theses. 3234. (<https://scholars.fhsu.edu/theses/3234>).
- Davison, C. and K. Kindscher. 1999. Tools for diversity; fire, grazing and mowing on tallgrass prairie. *Ecological Restoration* 17(3):136-143.

- Derner, J.D., W.K. Lauenroth, P. Stapp, and D.J. Augustine. 2009. Livestock as ecosystem engineers for grassland bird habitat in the western Great Plains of North America. *Rangeland Ecology and Management* 62(2):111-118.
- Fulendorf, S.D. and D.M. Engle. 2001. Restoring heterogeneity on rangelands: ecosystem management based on evolutionary grazing patterns. *BioScience* 51(8):625-632.
- Grantrom-Arndt, K. 2022. Influences of grazing on habitat characteristics, avian community composition and nesting bird abundance within Cheyenne Bottoms, KS. Master's thesis. 3196. (<https://scholars.fhsu.edu/theses/3196>)
- Hickman, K.R., D.C. Hartnett, R.C. Cochran, and C. Owensby. 2004. Grazing management effects on plant species diversity in tallgrass prairie. *Journal of Range Management* 57:58-65.
- Howe, H. 1994. Managing species diversity in tallgrass prairie: assumptions and implications. *Conservation Biology* 8(3):691-704.
- , 1999. Dominance, diversity and grazing in tallgrass restoration. *Ecological Restoration* 17(1&2):59-66.
- Klute, D.S., R.J. Robel and K.E. Kemp. 1997. Will conversion of Conservation Reserve Program (CRP) lands to pasture be detrimental for grassland birds in Kansas? *American Midland Naturalist* 137(2):206-212.
- Milchunas, D.G., O.E. Sala, and W.K. Lauenroth. 1988. A generalized model of the effects of grazing by large herbivores on grassland community structure. *American Naturalist* 132(1):87-106.
- North American Bird Conservation Initiative. 2022. The State of the Birds, United States of America, 2022. ([State of the Birds 2022](#))
- Pellant, M., P.L. Shaver, D.A. Pyke, J.E. Herrick, N. Lepak, G. Riegel, E. Kachergis, B.A. Newingham, D. Toledo, and F.E. Busby. 2020. Interpreting Indicators of Rangeland Health, Version 5. Tech Ref 1734-6. U.S. Department of the Interior, Bureau of Land Management, National Operations Center, Denver, CO.
- Powell, A.F.L.A and W.H. Busby. 2013. Effects of grassland management on breeding birds at the western edge of the tallgrass prairie ecosystem in Kansas. *Natural Areas Journal* 33(2):130-138.

- Rahmig, C.J., W.E. Jensen, and K.A. With. 2008. Grassland bird responses to land management in the largest remaining tallgrass prairie. *Conservation Biology* 23(2):420-432.
- Shaffer, Jill & Delong, John. (2019). *The Effects of Management Practices on Grassland Birds: An Introduction to North American Grasslands and the Practices Used to Manage Grasslands and Grassland Birds*.
- Schieltz, J.M. and D.I. Rubenstein. 2016. Evidence based review: positive versus negative effects of livestock grazing on wildlife. What do we really know? *Environmental Research Letters* 11:113003.
(<https://iopscience.iop.org/article/10.1088/1748-9326/11/11/113003>)
- Sieg, C. H., C.H. Flather, and S. McCanny. 1999. Recent biodiversity patterns in the Great Plains: implications for restoration and management. *Great Plains Research* 9(2):277-313.
- Teague, W.R., S.L. Dowhower, S.A. Baker, N. Haile, P.B. DeLaune, and D.M. Conover. 2011. Grazing management impacts on vegetation, soil biota and soil chemical, physical, and hydrological properties in tall grass prairies. *Agriculture, Ecosystems, & Environment* 141(3-4):310-322.
- Toombs, T.P., J.D. Derner, D.J. Augustine, B. Krueger, and S. Gallagher. 2010. Managing for biodiversity and livestock. *Rangelands* 32(3):10-15.
- Towne, E.G., D.C. Hartnett, and R.C. Cochran. 2005. Vegetation trends in tallgrass prairie from bison and cattle grazing. *Ecological Applications* 15(5):1550-1559.
- U.S. Fish and Wildlife Service. 2013. *Comprehensive conservation plan—Quivira National Wildlife Refuge, Kansas*. Lakewood, CO: U.S. Department of the Interior, Fish and Wildlife Service. 221 p.
- U.S. Department of Agriculture and U.S. Department of Interior. 2015. [Pollinator-Friendly Best Management Practices for Federal Lands \(usda.gov\)](#)
- Watson, D.F., G.R. Houseman, M.L. Jameson, W.E. Jensen, M. Reichenborn, A. Mophew, E.L. Kjaer. 2024. Short-term cattle grazing effects on restored Conservation Reserve Program grasslands across a steep precipitation gradient. *Rangeland Ecology & Management* 94:38-47.
- Wilson, B.S., W.E. Jensen, G.R. Houseman, M.L. Jameson, M.M. Reichenborn, D.F. Watson, A.R. Mophew, and E.L. Kjaer. 2022. Cattle grazing in CRP grasslands during the nesting season: effects on avian abundance and diversity. *Journal of*

Figure(s)

