

## COMPATIBILITY DETERMINATION

**Use:** Horseback Riding, Recreational Biking, Hiking, and Jogging

**Refuge Name:** Mingo National Wildlife Refuge

**Establishing and Acquisition Authority(ies):** Mingo National Wildlife Refuge (NWR) was established in 1944 under the authority of the Migratory Bird Conservation Act and the Refuge Recreation Act.

### **Refuge Purpose(s):**

“...for use as an inviolate sanctuary, or for any other management purpose for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act)

“...suitable for – (1) incidental fish and wildlife-oriented recreation development, (2) protection of natural resources, (3) the conservation of endangered species or threatened species...” 16 U.S.C. 460K-1 (Refuge Recreation Act)

An additional purpose for the refuge was identified when Congress designated the 7,730 acre Mingo Wilderness in 1976.

“...prioritizes public uses that are recreational, scientific, educational, scenic, or of conservation or historical value as primary refuge objectives permit.” Public Law 88-577 (Wilderness Act)

**National Wildlife Refuge System Mission:** “The Mission of the National Wildlife 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.”

**Description of Use:** This Compatibility Determination updates and supersedes the Compatibility Determination developed concurrently with the Refuge’s Comprehensive Conservation Plan (CCP) authorized in 2006. This Compatibility Determination will provide for legitimate horseback riding, recreational biking, hiking, and jogging use on lands of the Mingo National Wildlife Refuge.

Horseback riding, hiking, jogging and recreational biking facilitates travel and access for the priority public uses. Priority public uses as defined in the National Wildlife Refuge Improvement Act of 1997 include hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

The primary areas of these uses occur along refuge roads and trails which are maintained for priority public uses. At times, individuals will hike across country throughout the refuge scouting for hunting areas, hiking the Mingo Wilderness Area, or just exploring the refuge for

photography and wildlife observation purposes. Access to the refuge is open every day; however certain portions of the refuge may be closed to access by the public for purposes of sanctuary to migratory birds or for management activities. In addition, entry on all or portions of individual areas may be temporarily suspended by posting upon occasions of unusual or critical conditions affecting land, water, vegetation, wildlife populations, or public safety.

Horseback riding, recreational biking, hiking, and jogging are permitted on selected Refuge roadways throughout the year, from ½ hour before sunrise until ½ hour after sunset. The Ozark Highlands Auto Tour Route, Flatbanks Road, Bluff Road, Red Mill Drive, and Sandblow Ridge Loop are available throughout the year. A three mile service road segment between Ditch 3 and Ditch 4 adjacent to Gum Stump Pool and Ditch 6 Service Road are available from March 1 through September 30. Horseback riders and recreational bikers range from single individuals to groups of 10 or more for special events. Horseback riding, recreational biking and jogging are restricted to maintained refuge roadways listed above. All recreational bikes must be human-powered.

Hiking and jogging is permitted year-round on maintained refuge hiking trails which include Swampwalk Nature Trail, Bluff Trail, Hartz Pond Trail, Rockhouse Marsh Overlook Trail and Sweet Cabin Trail. Hiking is permitted off refuge roadways throughout the refuge for the entire year, with the exception of the area between and including Ditch 4 and Ditch 6 Service Road and north of Ditch 11. This area between and including Ditch 4 and Ditch 6 Roadway, north of Ditch 11 is closed to hiking, except for refuge hunting purposes, from October 1 to end of February.

Hiking, jogging, biking, or horseback riding can facilitate non-consumptive priority public uses by allowing observation of the natural landscape and wildlife viewing. Individuals stop to observe associated animals and plant communities. The use mainly occurs in very small groups or by individuals.

Access to the refuge is necessary for desirable use and management of the refuge. Foot traffic on the refuge provides increased access and opportunities to participate in priority public uses such as hunting, fishing, wildlife observation and photography.

**Availability of Resources:** Resources involved in the administration and management of the use includes personnel time associated with administration and law enforcement. Existing staffing and funding are adequate to support these activities.

No special equipment, facilities, or improvements are necessary to support the uses. Maintenance costs are not directly attributable to these incidental uses on the refuge.

Minimal costs are associated with these uses to monitor consequences of public having access to the refuge, such as degree of littering and vandalism. Plants and wildlife will be monitored to determine any impacts as a result of public use.

Groups greater than 10 individuals are required to obtain a special use permit, which requires administrative time to complete. However, a fee is charged to off-set this cost. The refuge has

an entrance fee, which is collected at all refuge entrances and at the Visitor Center. Funds from entry fee money could be used to offset some of the costs associated with this activity.

**Anticipated Impacts of the Use:** Hiking, jogging, recreational biking and horseback riding access is typically by single individuals or small groups on improved refuge roads. Damage to habitat is negligible. Foot traffic off of designated roads and trails is sporadic and dispersed for minimal disturbance. Short-term impacts to facilities, such as roads and trails, are not expected.

Some temporary disturbance does occur to wildlife due to human activity on the land, as with any level of public use. Wildlife disturbance is associated with all of the activities. There is little disturbance to migrating waterfowl because these activities are prohibited in areas where waterfowl concentrate during annual migrations. Wildlife disturbance at other times and throughout the Refuge is more difficult to assess. Studies by Blumstein and Blumstein et al. show that ‘flight-initiation-distance’ varies by species and intruder starting distance as well as by things such as flock size, angle of approach, time of year, time of day, reproductive state, distance to refuge, and type of disturbance. Given these complexities, it is not possible to determine the level of disturbance generated by each activity. It is likely there is a zone of influence on either side of existing travel ways where some level of wildlife disturbance occurs from all sources. Use is sporadic though and limited. Any unreasonable harassment would be grounds for the manager to close the area to these uses or restrict the uses to minimize harm.

Pro-longed periods of activity may result in longer-term disturbance to wildlife. There are no specific studies regarding wildlife disturbance at Mingo, but in a study conducted in and around Boulder, Colorado, Miller et al. found that composition and abundance of birds were altered adjacent to trails in both grassland and forest ecosystems. The authors noted the cause could be the physical presence of the trail, associated human disturbance, or both factors acting in concert. These effects, for most bird species, were largely confined to a zone of influence extending approximately 250 feet on either side of trails and may be less pronounced in areas with less human development and recreational use than the study area.

We applied this concept as one measure of potential wildlife disturbance from horseback riding, recreational biking, hiking, and jogging at Mingo. The table below shows amount of travel ways open to these activities as well as the associated zone of influence (250 feet on either side of travel ways) in both acres and percentage of the Refuge. In any month, less than 10 percent of the Refuge is affected by these activities. These activities are done in small groups along roadways already open to vehicle traffic so no further impact is anticipated.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Miles Open	32	32	35	35	35	35	35	35	35	32	32	32
Acres Affected	1,940	1,940	2,120	2,120	2,120	2,120	2,120	2,120	2,120	1,940	1,940	1,940
Percent of	9.0	9.0	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.0	9.0	9.0

Refuge Affected												
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Additionally, soil impacts and spread of invasive species are associated with horseback riding. Confining horse use to surfaced roadways, as is the case at Mingo, limits soil impacts such as erosion and compaction. Although horses routinely travel Refuge roads, there is no evidence of soil impacts on these designated roadways.

Horses as well as hikers, pets, and seasonal flooding are among the invasive plant species vectors identified by the Invasive Species Pathway Team. Although horses likely do transport viable seeds along travel routes it is probable that seeds arrive by other vectors as well, including annual flood events. A 2001 study conducted in southern Illinois showed that seeds transported via horse dung did germinate along trails. But the authors concluded that invasive species along horse trails posed a limited threat to the adjacent forested ecosystem because none moved beyond the trail. This matches well with what is seen at Mingo.

No cumulative impacts are anticipated; however, the program can be modified in the future to mitigate unforeseen impacts.

Blumstein, D.T. 2003. Flight initiation distance in birds is dependent on intruder starting distance. *J. Wildl. Manage.* 67:852-857.

Blumstein, D.T., L.L. Anthony, R.G. Harcourt, and G. Ross. 2003. Testing a key assumption of wildlife buffer zones: is flight initiation distance a species-specific trait? *Biological Conservation* 110:97-100.

Campbell, J.E., Gibson, D.J., 2001. The effect of seeds of exotic species transported via horse dung on vegetation along trail corridors. *Plant Ecology* 157, 23–35.

Miller, S. G., R. L. Knight, and C. K. Miller. 1998. Influence of recreational trails on breeding bird communities. 8(1):162-169

**Public Review and Comment:** The period of public review and comment will be 14 days and will be announced in the local newspaper, social media, website, and other relevant media outlets. Comments will be summarized in this section after being received.

**Determination:**

Use is Not Compatible

Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:** The following stipulations are required to ensure compatibility:

1. All horseback riders, bikers, and joggers must remain on the existing maintained roadways and not establish side trails through portions of the Refuge. Off-road riding is prohibited.

2. Hiking is permitted off refuge roadways throughout the refuge for the entire year, with the exception of the area between and including Ditch 4 and Ditch 6 Service Road and north of Ditch 11. This area between and including Ditch 4 and Ditch 6 Roadway, north of Ditch 11 is closed to hiking, except for refuge hunting purposes, from October 1 to end of February.
3. Offer year round access for horseback riding, recreational biking, hiking, and jogging along the entire 17-mile length of the Ozark Highlands Auto Tour Route, the entire 5-mile length of Red Mill Drive., the entire 3-mile length of Sand Blow Ridge Road, the entire 6-mile length of Bluff Road, and the entire 1-mile length of Flatbanks Road.
4. Offer seasonal access from March 1 through September 30 for horseback riding, recreational biking, hiking, and jogging along a 3-mile segment between Ditch 3 and Ditch 4 and along a 3-mile segment of the Ditch 6 service road.
5. Evaluate and authorize horseback riding, recreational biking, and jogging involving group events through a permitting process.
6. Horseback riding, recreational biking, hiking, and jogging are not allowed in the Managed Deer Hunt Area during the special hunt, for public safety.
7. Horseback riding, recreational biking, hiking, and jogging is restricted to ½ hour before sunrise until ½ after sunset to minimize disturbance to wildlife and to ensure participants' safety.
8. All trailers and vehicles to assist in these activities must be parked in designated parking areas.
9. Horseback riding, recreational biking, hiking, and jogging for competition is not compatible for it does not support wildlife observation opportunities, but serves an alternative purpose that is not wildlife dependant.
10. All recreational bikes must be human-powered.
11. All individual horseback riders, recreational bikers, hikers, and joggers, who enter onto the Refuge by foot, bike, or horse, must possess an individual recreational user permit. Those entering by vehicle and/or trailer must possess a user permit per vehicle. Groups with greater than 10 individuals are required to have a group events recreational user permit or special use permit.

**Justification:** While not listed as primary, wildlife-dependent recreational uses under the National Wildlife Refuge Improvement Act, as amended, horseback riding, recreational biking, hiking, and jogging are believed to be compatible public uses under the stipulations outlined in this compatibility determination. Primary reasons for this determination include the following: wildlife observation can be an element of these activities; horseback riders, bikers, hikers, and joggers are potential partners and a potential source of support for the Refuge; and impacts associated with these activities are not believed to exceed impacts already caused by other public use activities. In view of the above and with the stipulations previously described, horseback riding, recreational biking, hiking, and jogging will not materially interfere with or detract from the purposes of the Refuge or the mission of the Refuge System.

**Refuge Manager:** \_\_\_\_\_  
(Signature and Date)

**Regional Chief Concurrence:** \_\_\_\_\_  
(Signature and Date)

**Mandatory 10- or 15-year Re-evaluation Date:** 2026

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