

## **Draft Compatibility Determination for Sport Fishing on Alamosa National Wildlife Refuge**

**Use:** Recreational sport fishing

**Refuge Name:** Alamosa National Wildlife Refuge

### **Establishing and Acquisition Authority(ies):**

The National Wildlife Refuge System (Refuge System) was established by the Federal Property and Administrative Service Act of 1949 (40 United States [U.S.] Code 471-535), as amended, Fish and Wildlife Coordination Act of 1934 (16 U.S. Code 661-666c) as amended; Fish and Wildlife Act of 1956 (16 U.S. Code 742a-742j Stat. 1119) as amended; the Act of May 19, 1948, Public Law 80-537 (16 U.S. Code 667b-667d; 62 Stat. 240) as amended; and The National Wildlife Refuge System Administration Act of 1966 (NWRSA) (16 U.S. Code 668dd-668ee), as amended.

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

Alamosa National Wildlife Refuge (NWR) was established in 1963 and encompasses about 12,026 acres. The refuge was established under the authority of the 1929 Migratory Bird Conservation Act (45 Stat. 1222; 16 U.S. Code Section 715d) "...for use as inviolate sanctuaries, or for any other management purposes, for migratory birds."

The long-term management goals of the San Luis Valley NWR Complex as stated in the 2015 comprehensive conservation plan and Environmental Impact Statement are:

- Goal 1. Conserve, restore, and enhance the ecological diversity and function of the San Luis Valley ecosystem to support healthy populations of native fish and wildlife, with an emphasis on migratory birds.
- Goal 2. As climate patterns change, we will protect, acquire, and manage surface and ground water resources to maintain and support management objectives.
- Goal 3. Provide safe, accessible, and quality wildlife-dependent recreation and perform outreach to visitors and local communities to nurture an appreciation and understanding of the unique natural and cultural resources of the refuge complex and the San Luis Valley.
- Goal 4. Secure and effectively use funding, staffing, and partnerships for the benefit of all resources in support of the refuge complex purposes and the mission of the Refuge System. Actively pursue and continue to foster partnerships with other agencies, organizations, the water community, and private landowners to conserve, manage, and provide for the long-term sustainability of working landscapes within the San Luis Valley ecosystem.
- Goal 5. Protect significant cultural resources within the San Luis Valley National Wildlife Refuge Complex.
- Goal 6. Use sound science, applied research, monitoring, and evaluation to advance the

understanding of natural resource functions, changing climate conditions, and wilderness values in the management of the habitats within the San Luis Valley ecosystem.

The mission of the Refuge System, as outlined by the NWRSA, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) (16 United States [U.S.] Code 668dd et seq.), is to:

*“ . . . 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. ”*

The NWRSA mandates the Secretary of the Interior in administering the Refuge System to (16 U.S. Code 668dd[a][4]):

- provide for the conservation of fish, wildlife, and plants, and their habitats within the Refuge System;
- ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans;
- ensure that the mission of the Refuge System described at 16 U.S. Code 668dd(a)(2) and the purposes of each refuge are carried out;
- ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the Refuge System are located;
- assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the Refuge System and the purposes of each refuge;
- recognize compatible wildlife-dependent recreational uses as the priority public uses of the Refuge System through which the American public can develop an appreciation for fish and wildlife;
- ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses;
- monitor the status and trends of fish, wildlife, and plants in each refuge.

Therefore, it is a priority of the U.S. Fish and Wildlife Service (Service) to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the Refuge System.

#### **National Wildlife Refuge System Mission:**

The mission of the National Wildlife Refuge System (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 U.S. for the benefit of present and future generations of Americans.

## **Description of Use:**

### *What is the use?*

The use is recreational sport fishing. Fishing is a priority public use of the Refuge System under the NWRSA (16 U.S. Code 668dd-668ee), as amended by the Improvement Act (Public Law 105-57).

### *Where is the use conducted?*

Recreational sport fishing opportunities will be allowed along the banks of the Rio Grande, in areas just above and below the Chicago Dam as well as the Chicago Ditch from the Chicago Ditch Diversion to the crossing (culvert) of the entrance road to the current San Luis Valley NWR Complex headquarters office.

### *When is the use conducted?*

The use will be conducted during the season specified in the Colorado Parks and Wildlife (CPW) fishing regulations and will occur from 1 hour before sunrise to 1 hour after sunset. In addition, parts of the designated fishing area downstream of the Chicago Dam will be closed during the growing and breeding season (April 15 to September 1st) annually to reduce disturbance to the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*), other riparian dependent songbirds, and other wildlife.

All or parts of the refuge open for sport fishing may be closed at any time, if necessary, for public safety, to provide wildlife sanctuary, or for any other administrative reasons.

### *How is the use conducted?*

Bank fishing will be permitted with rod and reel or hook and line, bow, or any other method of take permitted per state regulations. Anglers will be required to possess a valid Colorado fishing license. The use will be conducted along the banks of bodies of water in designated areas. Anglers will use existing access points along the Chicago Ditch as well as a proposed access trail. Anglers will be allowed to park along the road parallel to the Chicago Ditch from the access road to the complex headquarters to the Chicago Dam. A parking area near the Chicago Dam will need to be developed. Signage and informational brochures will be developed to show designated sport fishing areas and refuge-specific regulations.

Parts of the designated sport fishing area will be closed seasonally (April 15 to September 1, annually) to reduce effects from angler disturbance on the federally endangered southwestern willow flycatcher. Areas to be closed will be signed and identified in informational brochures.

No fish of any species may be introduced onto the refuge without acceptable state and refuge permits, including baitfish and eggs. Unauthorized introductions of both non-native and native fish can disrupt aquatic ecosystems and destroy natural fisheries.

Hunters and anglers once widely used lead, but it is known to cause neurological impairment and in severe cases death in both humans and wildlife. While not prohibited from use on the refuge, a growing body of research shows that more and more anglers are looking for

alternatives to traditional lead sinkers because of their concern for health and the environment. The voluntary use of non-lead sinkers is encouraged.

*Why is the use being proposed?*

Opening the refuge to fishing will promote one of the priority public uses of the Refuge System. Providing opportunities for visitors to fish will promote stewardship of our natural resources and increase public appreciation and support for the refuge.

**Availability of Resources:**

Administering the fishing program will annually require staff time from the refuge managers, senior biologist, maintenance workers, administrative assistant, and law enforcement officers to coordinate with CPW staff; develop an informational publication with regulations; produce news releases; respond to angler inquiries; conduct angler and visitor outreach; reduce conflicts among users; conduct law enforcement; maintain boundary posting and parking areas; monitor effects to wildlife, habitat, and visitor use; and make sure of public safety. The annual cost of the refuge's proposed sport fishing program is estimated to be \$10,000 (0.77 percent) of the overall complex operating budget of approximately \$1,300,000. This cost covers staff and operating expenses for refuge law enforcement, refuge staff activities associated with evaluating potential adverse effects to other refuge resources, as well as preparing annual publications and special signage, managing habitat conditions and access, and monitoring recreational fishing activities.

The proposed sport fishing program will require more signage, potential new infrastructure, such as parking area development, and other start-up costs. Full implementation of this proposed sport fishing program will become possible only with an increased budget. Conducting the program during the first few years will be done with existing staffing, so it will redirect effort from other high-priority habitat and public use programs.

**Anticipated Impacts of the Use:**

***Vegetation and Soil***

Foot traffic from anglers accessing the fishing area can cause soil erosion and compaction that may affect the riparian vegetation and habitat and increase sediment loads into the waterways. Trampling of riparian vegetation can occur as anglers create new, short-term trails to the river and walk along the bank. Additionally, the increase in human presence in the area can cause short-term and long-term disturbances to nesting, feeding, and resting wildlife. However, since the proposed area to be opened is small and already had human disturbances from the Chicago Dam and access road, we expect only minimal effects to the vegetation and soil. Further mitigation of effects will include the seasonal closure of parts of the fishing area below the dam.

***Fish***

Recreational fishing can potentially cause negative effects to fish populations if it occurs at unsustainably high levels or is not managed properly. Potential effects from fishing include direct mortality from harvest and catch and release, injury to fish caught and released, changes in age and size class distribution, changes in reproduction capacity and success, loss of genetic diversity, altered behavior, and changes in ecosystems and food webs (Cline et al. 2007, Lewin et al. 2006).

In general, anglers tend to target older and larger fish which often have greater reproductive capacity. Selective removal may reduce the population's overall reproductive success. Catch and release fishing can also affect individual fish, including injury and immediate or delayed mortality. Handling fish also increases stress, which may lead to changes in physiology and behavior (Lewin et al. 2006).

Because fishing generally removes individuals from a population, at high levels it can lead to reduced population sizes and loss of genetic diversity. The loss of genetic diversity can ultimately reduce a population's fitness, resilience, and ability to adapt to environmental changes and stressors. The higher the fishing mortality, the greater these types of effects will be (Lewin et al. 2006).

While fishing does remove individuals from the population, we do not expect projected fishing pressure will affect the refuge's fish population. Additionally, it is predicted that the species most affected will be common carp and northern pike, both of which are nonnative. Furthermore, because of their behavior, carp are known to increase the ammonia content, the turbidity or level of sedimentation in the water, and the biomass of phytoplankton, that is, algae. (Badiou and Goldsborough 2015). Excess levels of algae can deplete oxygen, kill aquatic vegetation, and leach toxins into the waterway (Anderson et al. 2002). Additionally, northern pike, one of the species anglers are most likely to, are known to feed opportunistically on a variety of fish, their own species, leeches, frogs, crayfish, mice, muskrats, and ducks (Harvey 2009). It is possible that increased mortality of common carp and northern pike from fishing could help mitigate some of their effects and improve habitat for other fish species and aquatic vegetation. However, it is unknown whether fishing will decrease carp and northern pike populations enough to have an effect.

### ***Other Wildlife***

The diverse mix of wetland, riparian, and upland habitat on the refuge provide for the habitat needs of many assemblages of mammals, reptiles, amphibians, and birds, including the federally endangered southwestern willow flycatcher

Fishing has the potential to disturb wildlife, particularly birds, that use riparian habitats within or immediately near the designated sport fishing area. It is anticipated that "trailing" will occur from anglers walking along the river banks, concentrating human activities to these areas.

Disturbance from fishing activities, such as walking along the river banks or wading in the river, may have both immediate and long-term effects on birds. The immediate response of many birds to disturbance is a change in behavior, such as cessation of foraging, fleeing, or altering reproductive behavior (Knight and Cole 1991). Over time, energetic losses from flight, decreased foraging time, or increased stress levels come at the cost of energy resources needed for individuals' survival, growth, and reproduction (Geist 1978). In addition, the presence of humans in wildlife habitat may result in animals avoiding parts of their normal range (Gander and Ingold 1997, Hamr 1988). This loss of otherwise suitable habitat may be enough to reduce the carrying capacity of some habitats for wildlife. Disturbance from humans also has the potential to affect nest defense if birds are continually flushing away from nesting sites, resulting in increased nest predation.

The CPW restocks the Rio Grande chub, a native fish species to the river. Historically, they were once of the most abundant species in Rio Grande basin, but have disappeared because of the introduction of nonnatives and land management practices (Rees et al. 2005). Nonnatives such as brown trout and northern pike have been known to feed on them, while common carp and white sucker can increase competition for resources (Rees et al. 2005). Increased fishing of common carp and northern pike may relieve some of the pressure caused by interspecific competition and predation on their populations.

Mitigation measures to reduce the potential of human disturbance on riparian birds and other wildlife species include a seasonal closure (from April 15 to September 1, annually) of a part of the designated sport fishing area.

### ***Federally-Listed Species***

The southwestern willow flycatcher is a small neotropical migrant whose breeding habitat is restricted to relatively dense stands of trees and shrubs in riparian ecosystems in the arid southwestern U.S (USFWS 2002). The southwestern willow flycatcher was listed as federally endangered in 1995 (USFWS 1995).

As described above, the primary habitat type where sport fishing activities will occur is riparian habitat. Although riparian habitat occupies less than 1 percent of the land area in the western U.S., it is disproportionately important for wildlife in general and birds in particular (Krueper 1993; Ohmart 1994; Pase and Laysen 1977; Szaro 1980; and Thomas et al. 1979).

Because southwestern willow flycatchers rely almost exclusively on relatively dense stands of trees and shrubs for breeding, foraging, and migration, any potential negative effects of a recreational sport fishing program on either the physical destruction (breaking or destroying existing plants), reproduction and spread (seedling establishment and growth), or disturbance by humans is of high concern.

Many studies have documented changes to bird communities and reproductive success as a result of effects to human disturbance. Although there is a lack of information relating directly to southwestern willow flycatcher, it is reasonable to believe that this specialist species will show similar responses, such as lower abundance and breeding success, as other avian species.

The level of effects to southwestern willow flycatcher populations is expected to be dependent on the level of angler pressure. It is not anticipated that angler pressure will be high, therefore we anticipate minor negative effects on southwestern willow flycatchers. However, if the level of angler pressure is high, more mitigation, such as added seasonal closures, may be required. Refuge staff will continue to observe for any effects of recreational sport fishing on breeding southwestern willow flycatcher populations within the designated sport fishing area.

Mitigation measures to reduce the potential of human disturbance on riparian birds and other wildlife species include a seasonal closure (from April 15 to September 1, annually) of a part of the designated sport fishing area.

### ***Visitors***

There are opportunities for waterfowl, upland birds, and small game hunting in designated areas on the refuge. The four-mile Rio Grande Nature Trail, the Bluff Overlook Trail, and auto tour route all provide wildlife viewing and self-guided interpretation opportunities for visitors on the refuge. There are now no areas open to fishing or significant environmental education programs on the refuge.

Opening fishing in the proposed area on the refuge will create a new recreational opportunity for visitors that could contribute to appreciation and protection of fish and wildlife, as well as support for the refuge. Additionally, it could provide a new food source for the local community, especially for low income families.

Because the proposed area is small and geographically separated from the other recreational activities now offered on the refuge, chances for conflict of interest with participants in other current activities are low.

### ***Economics***

Because of the low socioeconomic status of the local community and surrounding counties, opening fishing on the refuge can provide a food source and low expense recreation opportunities that can positively affect the local economy. The proposed fishing area will be near the town, which could significantly cut the travel costs and time commitment required to reach some fishing spots in the surrounding mountains.

Additionally, because of the large Latino population in Alamosa and the San Luis Valley, this alternative could create opportunities for underrepresented populations to take part in fishing.

In the 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation, approximately 767,000 residents and non-residents fished in Colorado. The total expenditures for fishing-related activities in Colorado was equal to \$648,563,000 in 2011. Visitors participating in this use on the refuge could provide some economic aid to local economies by purchasing goods and services at businesses around the refuge. However, because of a variety of nearby choices for fishing that feature more desirable fish, such as trout, opening fishing on the refuge will likely have minimal positive effect on the amount of visitors brought into the region.

Overall, we expect minimal positive effects on the local economy and no negative effects.

### ***Other Impacts***

Lead is known to cause neurological impairment and in severe cases death in both humans and wildlife. The use of lead sinkers is legal in Colorado now and not prohibited from use on the refuge. However, the refuge encourages the voluntary use of non-lead sinkers such as tin, steel, or ceramic sinkers.

### **Public Review and Comment:**

This compatibility determination is part of the Alamosa NWR Sport Fishing Plan and the accompanying Environmental Assessment. Public notification and review of this compatibility determination will include a 30-day comment period. We will inform the public through the

refuge website and social media. Comments received from the public will be considered and modifications may be incorporated into the final plan and decision documents.

**Determination (check one below):**

Use is not compatible.

Use is compatible with the below stipulations.

**Stipulations Necessary to Ensure Compatibility:**

To ensure compatibility with the Refuge System and refuge goals and objectives, recreational sport fishing can only occur under the following conditions:

- Each person must secure and possess the required state license.
- Each person must comply with the applicable provisions of federal law and regulations.
- Each person must comply with the applicable provisions of the laws and regulations of the state wherein any area is located unless federal law or regulations further restricts it.
- Each person must comply with the terms and conditions authorizing access or use of the wildlife refuge area.
- Each person must comply with the provisions of any refuge-specific regulations governing fishing on the wildlife refuge area. Regulations, special conditions, and maps of the fishing areas for a national wildlife refuge are available at that area's headquarters. In addition, refuge-specific sport fishing regulations appear in Sections 32.20 through 32.72.

Additionally, the following refuge specific regulations apply:

- Fishing is only allowed within the designated fishing area.
- Fires are prohibited, except portable gas stoves in established parking areas.
- The refuge is open for day use access from 1 hour before sunrise until 1 hour after sunset.
- Camping and overnight parking is prohibited.
- All personal property, including fishing line, bait containers, and other trash must be removed at the end of each day.
- Use or possession of alcohol or controlled substances on the refuge is prohibited.
- The entire designated fishing area or any part thereof may be closed to fishing for the protection of habitat and wildlife resources, management activities, or safety issues as decided by the project leader.

**Justification:**

The purpose of this proposed action is to provide compatible wildlife-dependent recreational opportunities on Alamosa NWR. The need of the proposed action is to meet the Service's priorities and mandates as outlined by the NWRSA to "recognize compatible wildlife-

dependent recreational uses as the priority general uses of the Refuge System” and “ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses” (16 U.S. Code 668dd[a][4]).

The objectives of the Sport Fishing Plan directly support several of the refuge’s long-term management goals. In general, the objective of this Sport Fishing Plan is to provide anglers with a safe, high quality fishing experience while: (1) maintaining fish populations at optimum levels, (2) minimizing negative effects to other wildlife populations, and (3) minimizing conflicts with other wildlife-dependent public uses on the refuge. For a complete review of the refuge’s management goals and objectives, see the San Luis Valley NWR Complex 2015 Comprehensive Conservation Plan and Environmental Impact Statement. The fishing program will be conducted to meet these objectives, which covers providing quality recreational sport fishing opportunities for the public. The Service believes these objectives will support healthy fish and wildlife populations and support the maintenance of the biological integrity, diversity, and environmental health of the refuge.

Recreational sport fishing will provide the public with a wildlife-dependent recreational opportunity while promoting an appreciation and wise use of the refuge’s aquatic resources. There will be opportunities to observe natural relationships and the diversity necessary for a healthy ecosystem. The public will gain valuable knowledge through brochures, maps, and interpretive literature available and distributed at the refuge. Providing sport fishing opportunities will help instill a conservation ethic and stewardship of natural resources. Regulation and information signs will also be available at sites open for fishing. Through these resources the public will attain an understanding of natural resource management and of the Service’s role in preserving and protecting natural resources. Visitors will also develop an appreciation and an awareness of the roles they play within the ecosystem.

**Signature:**

_____	_____
Project Leader	Date

**Concurrence:**

_____	_____
Will Meeks, Refuge Chief Region 6	Date

**Mandatory 10- or 15-Year Re-Evaluation Date:** 2035

## References:

- Anderson, D.; Glibert, P.; Burkholder, J. 2002. Harmful algal blooms and eutrophication: Nutrient sources, composition, and consequences. *Estuaries* 25:704-726.
- Badiou, P.; Goldsborough, L. 2015. Ecological impacts of an exotic benthivorous fish, the common carp (*Cyprinus carpio* l.), on water quality, sedimentation, and submerged macrophyte biomass in wetland mesocosms. *Hydrobiologia: The International Journal of Aquatic Sciences*, 755(1), 107-121. (doi:10.1007/s10750-015-2220-6)
- Cline, R.; Sexton, N.; Steward, S.C. 2007. A human-dimensions review of human-wildlife disturbance: a literature review of impacts, frameworks, and management solutions. For Collins, CO: U.S. Geological Survey, Open-File Report 2007-1111.
- Gander, J.; Ingold, P. 1997. Reactions of male alpine chamois *Rupicapra r. rupicapra* to hikers, joggers, and mountain bikers. *Biological Conservation* 79:10-109.
- Geist, V. 1978. Behavior. Pages in Schmidt, J.L., Gilbert, D.L., eds. *Big game of North America: ecology and management*. Stackpole Books, Harrisburg, Pennsylvania.
- Hamr, J. 1988. Disturbance behavior of chamois in an alpine tourist area of Austria. *Mountain Research and Development* 8:65-73.
- Harvey, B. J. 2009. A biological synopsis of northern pike (*Esox lucius*). West Vancouver, BC: Fisheries and Oceans Canada, Science Branch, Pacific Region, Pacific Biological Station.
- Knight, R.L., Cole, D.N. 1991. Effects of recreational activity on wildlife in wildlands. *Transactions of the North American Wildlife and Natural Resource Conference* 56:238-247.
- Krueper, D.J. 1993. Effects of land use practices on western riparian ecosystems. In: Finch, D.M., Stangel, P.W. (eds.) *Status and management of neotropical migratory birds*. General Technical Report RM-229. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 422p.
- Lewin, W.C.; Arlinghaus, R.; Mehner, T. 2006. Documented and potential biological impacts of recreational fishing: insights for management and conservation. *Reviews in Fisheries Science*, 14, 305-367.
- Ohmart, R.D. 1994. The effects of human-induced changes on the avifauna of western riparian habitats. *Studies in Avian Biology* 15:273-285.
- Pase, C.P.; Layser, E.F. 1977. Classification of riparian habitat in the southwest. In: Johnson, R.R., Jones Jr., D.A. (tech. coords.) *Importance, preservation and management of riparian habitat: a symposium*. General Technical Report RM-43. U.S. Department of Agriculture, Forest Service. 5-9.

Rees, D.; Carr, R.; Miller, W. 2005. Rio Grande Chub (*Gila pandora*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. <[www.fs.fed.us/r2/projects/scp/assessments/riograndechub.pdf](http://www.fs.fed.us/r2/projects/scp/assessments/riograndechub.pdf)> accessed October 24th, 2019.

Szaro, R.C.; Jakle, M.D. 1985. Avian use of a desert riparian island and its adjacent scrub habitat. *Condor* 87:511-519.

Thomas, J.W.; Maser, C.; Rodiek, J.E. 1979. Wildlife habitats in managed rangelands: The Great Basin of southeastern Oregon-riparian zones. General Technical Report PNW-80. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 18p.