Environmental Assessment for Recreational Fishing at Umbagog National Wildlife Refuge

This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (516 DM 8) and U.S. Fish and Wildlife Service (Service) (550 FW 3) policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

Proposed Action

The U.S. Fish and Wildlife Service (Service) manages Umbagog National Wildlife Refuge (NWR, refuge) and is proposing to open the refuge to recreational fishing. The 37,000-acre refuge is located in Oxford County, Maine and Coos County, New Hampshire. We propose to officially open to recreational fishing, provide new access opportunities, and set fishing regulations that will ensure compatibility.

Background

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act (NWRSAA) of 1966, as amended by the Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Service Manual.

Umbagog NWR was established on November 12, 1992 under the authorities of the:

1. Federal Property and Administrative Service Act of 1949, as amended (40 U.S.C. 471-535);

2. Emergency Wetlands Resources Act of 1986, as amended (16 U.S.C. § 3901 (b));

3. Migratory Bird Conservation Act of 1929, as amended (16 U.S.C. § 715d); and

4. Fish and Wildlife Act of 1956, as amended (16 U.S.C. § 742f(a)(4) and 742f(b)(1)).

In order to meet specific refuge and other broader Service directives, the following purposes were established for Umbagog NWR:

1. …the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions... 16 U.S.C. § 3901(b) (Emergency Wetlands Resources Act);

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

3. …the development, advancement, management, conservation, and protection of fish and wildlife resources… 16 U.S.C. § 742f(a)(4) (Fish and Wildlife Act); and

4. …the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude… 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act).

The mission of the Refuge System, as outlined by NWRSAA, as amended by the Refuge System Improvement Act (16 U.S.C. 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 NWRSAA mandates the Secretary of the Interior in administering the System to (16 U.S.C. 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.C. 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 general 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; and

- Monitor the status and trends of fish, wildlife, and plants in each refuge.

The Refuge Recreation Act authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use. The Refuge Recreation Act requires: (1) that any recreational use permitted will not interfere with the primary purpose for which the area was established; and (2) that funds are available for the development, operation, and maintenance of the permitted forms of recreation.

Fundamental to the management of lands within the Refuge System is the Refuge Improvement Act, which provides a mission for the Refuge System and clear standards for its management, use, planning, and growth. The NWRSAA recognized six priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible with the mission of the Refuge System and purposes of the refuge. These six priority wildlife-dependent recreational uses, including fishing, "shall receive priority consideration in national wildlife refuge planning and management." The Secretary of Interior may permit fishing on a refuge if it is determined that the use is compatible, meaning the fishing program would not materially interfere with or detract from the fulfillment of the purposes of the refuge or the mission of the Refuge System. Recreational fishing authorized by the regulations should not interfere with the primary purpose for which Umbagog NWR was established, which is based upon the completion of a compatibility determination (Appendix A).

The Comprehensive Conservation Plan (CCP) for Umbagog NWR was finalized in 2009 with an Environmental Impact Statement, and included an expanded acquisition boundary. The CCP states that "land acquired will be open to long-term public access for compatible public uses such as: hunting, fishing, wildlife observation, photography, environmental education and interpretation" (USFWS 2009). Providing opportunities for visitors to fish will continue to promote stewardship of natural resources and will increase public appreciation and support for Umbagog NWR.

This EA evaluates the refuge's recreational fishing program as proposed. Additionally, the refuge has an active acquisition program. Future acquisitions would be considered a minor change to the fishing program and covered if fishing on newly acquired lands would be conducted in accordance with the existing fishing management plan, and current fishing regulations, policies and procedures (including compatibility). The refuge manager will document that all requirements per Service policy have been fully satisfied before newly acquired acreage is added to the existing fishing program.

Purpose and Need for the Proposed Action

Fishing is a traditional recreational use deeply rooted in America's heritage. The NWRSAA of 1966, the Refuge System Improvement Act of 1997, other laws, and the Service's policies permit fishing on a national wildlife refuge when it is compatible with the purposes for which the refuge was established and acquired. Umbagog NWR's CCP (2009) identified the goal to provide fishing on the refuge.

The Department of the Interior Secretarial Order 3356 directs the Service to enhance and expand

public access to lands and waters on national wildlife refuges for hunting, fishing, recreational shooting, and other forms of outdoor recreation. The proposed action will also promote one of the priority public uses of the Refuge System, and providing opportunities for visitors to fish will promote stewardship of our natural resources and increase public appreciation and support for the refuge.

The EA serves as the NEPA document which analyzes the impacts on environmental, cultural, and historical resources of fishing opportunities on the refuge.

Alternatives Considered

No Action Alternative – (Close refuge to recreational fishing opportunities)
While recreational fishing has occurred at the refuge and in the adjacent areas prior to and since the refuge's establishment, this use has never been officially opened and as such is closed. Fishing could still occur on Umbagog Lake, the Magalloway River, the Androscoggin River and other great ponds as defined by State laws by boat access only. The refuge would actively discourage fishing from shorelines, road shoulders, docks, boat launches, brooks, and any water bodies that do not meet the great pond definition. Boats left at remote ponds or other locations will be removed from shorelines and disposed.

Proposed Action Alternative – (Open to recreational fishing opportunities and facilitate access)
Refuge staff have worked with the New Hampshire Fish and Game Department (NHFG), and Maine Department of Inland Fisheries and Wildlife (MEDIFW) to develop the current proposed Recreational Fishing Plan, presented in this document as the Proposed Action Alternative.

Umbagog NWR refuge-specific regulations will be published in the *Federal Register* as part of the 2020-2021 Refuge-Specific Hunting and Sport Fishing Regulations. Proposed refuge-specific regulations will prohibit use of lead fishing tackle, prohibit fishing from wetlands, prohibit fishing from shorelines of islands, and prohibit fishing from shorelines near residential areas and remote campsites. Leaseholders and permitted campsite occupants will be able to fish from their permitted locations.

This alternative offers increased opportunities for recreational fishing, identifies locations to enhance fishing by proposing docks or fishing piers, addresses boats left at remote ponds and fulfills Service mandates. Refuge specific regulations provide a recreational experience to the general public while balancing the needs of wildlife and sensitive refuge habitats. The estimated cost to operate this fishing program is estimated to be $6,000 annually.

There are no unresolved conflicts about the proposed action with respect to the alternative uses of available resources, because the minor changes proposed by this action are not expected to have negative impacts to the ecological, aesthetic, historic, cultural, economic, social, or health aspects of the refuge and surrounding communities. The CCP also addressed the potential of developing and providing a recreational fishing program in a thorough public process. Therefore, the Service does not need to consider additional alternatives (43 CFR 46.310(b)).

Affected Environment

Umbagog NWR consists of approximately 57 square miles in Oxford County, Maine and Coos County, New Hampshire. Refuge lands include upland deciduous, coniferous, early successional habitat, and mixed forests, as well as open water, wetlands and peatlands. Table 1 provides additional, brief descriptions of affected resources. For more detailed information regarding the affected environment, please see Chapter 3 of the CCP (USFWS 2009), which is available online at: https://www.fws.gov/refuge/Umbagog/what_we_do/conservation.html

This section analyzes potential consequences of the action on each affected resource. This EA focuses primarily on analyses of the environmental consequences on a resource when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Resources that will not be more than negligibly impacted by the action have been dismissed from further analyses. The refuge's Compatibility Determination for recreational fishing also has a summary of potential impacts associated with fishing, and is available in Appendix A of the Recreational Fishing Management Plan.

Impact Types

Direct impacts are those which are caused by the action and occur at the same time and place.

Indirect impacts are those which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Impacts may also include those resulting from actions which may have both beneficial and detrimental impacts, even if on balance the agency believes that the impact will be beneficial.

See Table 1 for a brief description of the affected resources in the proposed action area and the direct and indirect impacts of the proposed action on those resources.

Table 1. Affected Resources and Impacts of the Proposed Action

NATURAL RESOURCES	
AFFECTED RESOURCE	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Freshwater Fish Freshwater fish species populations are managed by the respective State agencies. All species of fish occurring in refuge waters that are legal to pursue under State fishing regulations will be opened to fishing including, but not limited to: • Smallmouth Bass • Largemouth bass • Brook Trout • Landlocked Salmon	**No Action** Currently, fishing occurs in the area. Accidental or deliberate introductions of non-native fish would negatively affect native fish, wildlife, or vegetation. Illegal fish introductions have a long history in the Umbagog area; however, the refuge will continue to work with both States in providing educational outreach and signs on that subject and trying to contain introductions once they occur. Negligible, short-term impacts to freshwater fish populations are expected from this alternative.

• Chain Pickerel • Yellow Perch • Sunfish • Brown Bullhead • Fallfish • Smelt • White Sucker	**Proposed Action** Fishing pressure is considered moderate for northern New Hampshire and western Maine (USFWS 2009). Fish populations will be managed at a sustainable population level by the respective State agencies. Fishing currently occurs in the area and only a negligible increase in fishing is expected to occur. From the awareness generated by this plan, up to 50 additional fishing visits may occur each year at Umbagog NWR. Opening the entire refuge to fishing, therefore, is expected to have a negligible impact to fish populations, as fishing pressure will be relatively low and dispersed over a large area.

Other Wildlife and Aquatic Species Umbagog NWR includes lands that serve as important breeding and migration habitat for many wetland-dependent wildlife species, including bald eagle, American black duck, osprey, common loon, pied-billed grebe, and northern harrier. Both States have listed Umbagog Lake as a priority site in the North American Waterfowl Management Plan. The Umbagog wetland complex was also included on the U.S. Environmental Protection Agency's list of Priority Wetlands in New England.	**No Action** This action currently results in some short-term, but negligible, negative impacts to small mammals, birds, and other wildlife due to disturbance in areas where human access for fishing activities occur. **Proposed Action** Since some fishing and other public use activities already occur on Umbagog NWR, and the anticipated number of new visitors for this expanded opportunity is low, officially opening the refuge to fishing is not expected to measurably increase disturbance to other wildlife and aquatic species. Not opening islands and shorelines to fishing are intended to mitigate disturbance to sensitive wildlife and habitat. Temporary seasonal closures around sensitive nesting habitat is currently being utilized to minimize disturbance to other wildlife, and is a management action that would be continued under the proposed action. For bird species that breed on the refuge, those that are associated with wetlands or lakeshore habitat would have the greatest chance of being disturbed by this activity. Disturbance associated with fishing is not anticipated to increase beyond disturbances associated with access for current public use activities permitted on Umbagog NWR during the season like wildlife observation (e.g., trail hiking and bird watching), or boating. Loons, waterfowl, and other water birds may die of lead poisoning from swallowing lead fishing tackle.

	Many ducks and other water birds find food at the bottom of lakes. Most of these birds also swallow small stones and grit to aid in grinding their food. Some of the grit may contain lead from angling equipment. They may also ingest lead and other fishing tackle by consuming baitfish or escaped fish that still have fishing tackle attached. An investigation into causes of mortality in loons in New England found 52 percent of loon carcasses submitted to Tufts University Wildlife Clinic had died of lead poisoning from ingestion of lead sinkers (Pokras and Chafel, 1992). Although other studies have reported lower percentages, lead toxicity clearly poses a significant threat to wildlife. During the past few years, three loon carcasses have been recovered from Umbagog Lake that showed signs of poisoning from lead sinkers. Because of that threat, no lead fishing sinkers or jigs will be permitted on the refuge. Discarded tackle and line also pose a threat to fish-eating birds, including eagles, osprey, and loons.
Threatened and Endangered Species and Other Special Status Species Federal: The Canada lynx (*Lynx canadensis*) is listed as threatened under the Endangered Species Act of 1973, as amended. Canada lynx have been reported from areas near Umbagog NWR and some suitable habitat for this species occurs on the refuge; however, the refuge is not located in designated critical habitat for Canada lynx. There are four confirmed historical (1880s) records of Canada lynx from Upton, Maine, an area which includes the eastern shore of Umbagog Lake. Modern records for Canada lynx include two reliable reports from Wilson's Mills, Maine in 1995 and 1998. Wilson's Mills is located about 10 miles from the refuge boundary. State monitoring efforts within the past 5 years have detected Canada lynx,	**No Action** This action currently results in some short-term, but negligible, negative impacts to threatened and endangered species and other special status wildlife due to disturbance in areas where human access for fishing activities occur. **Proposed Action** Fishing on the refuge has the potential to disturb some of the resident bird species listed as State threatened or endangered. Common loon, osprey, pied-billed grebe, and black tern are associated with wetlands or lakeshore habitat. Pied-billed grebe and black tern are not known to breed at the refuge. Not opening islands and shorelines to fishing are intended to mitigate disturbance to sensitive wildlife and habitat. Temporary seasonal closures around sensitive nesting habitat is currently being utilized to minimize disturbance to other wildlife, and is a management action that would be continued under the proposed action. Fishing for bass on larger waterbodies has the greatest potential for disrupting common loon and

most notably in Success, Cambridge (10 miles south) and Pittsburg, New Hampshire (20 miles north). It is, therefore, possible that Canada lynx may be present on, or occasionally use refuge lands. <u>States</u>: The following species are confirmed to occur on the refuge and have been listed by the states of New Hampshire and Maine as threatened or endangered: American pipit (ME) American three-toed woodpecker (NH); black tern (ME); pied-billed grebe (NH); common loon (NH); northern harrier (NH); osprey (NH); little brown bat (ME, NH)	waterfowl nesting on shorelines. This is mitigated in part through the use of temporary closures around common loon nesting areas and the regulation to not allow fishing from island shorelines. Canada lynx utilize denning sites in dense conifer regeneration, a habitat type not typically associated with fishing. For federally listed species such as the Canada lynx, the Endangered Species Act Section 7 evaluation is included in Appendix C of the Recreational Fishing Plan. We have determined that the activities proposed will not adversely affect any listed species.
Vegetation There are many habitat types on Umbagog NWR, and the refuge is predominantly forested. While spruce fir associations occur in low lying and ridgetop areas and northern hardwood forest species occur on rich slopes, the refuge's forest is not dominated by any one type. The forest is a mosaic of types often referred to as a mixed spruce/fir-northern hardwood forest. Wetlands are also prevalent on Umbagog NWR, and the area forms one of the largest freshwater wetland systems in the northeast. General habitat types include: fen and flooded meadow, open water and submerged aquatic vegetation, wooded floodplain, lakeshore pine hemlock, spruce-fir, mixed woods and northern hardwoods. More specific information can be obtained in the Umbagog NWR CCP (USFWS 2009).	**No Action** Negligible negative impacts currently occur to vegetation as a result of fishing. There would be a minor amount of trampled vegetation at fishing areas. A small amount of foot trails have been created over time by anglers and it will take much longer for soil compaction impacts to heal. These trails do not have an overall impact to vegetation. Cutting vegetation is prohibited on the refuge. Some illegal vegetation clearing may occur along vegetated banks, but the impact is anticipated to be minor. **Proposed Action** The proposed action would prohibit shoreline fishing from islands and wetlands on Umbagog Lake and all great ponds and propose facilitated fishing access sites which would be designed to minimize impacts. Some vegetation at fishing areas is trampled, and foot trails have been created by anglers. Foot travel to and use of fishing locations can have indirect impacts to plants by compacting soils and diminishing soil porosity, aeration and nutrient availability that affect plant growth and survival (Kuss 1986). Walking to fishing areas during the growing season could cause increased damage to plants in the wetland communities. Plants in the process of growth and producing flowers and, are growing in wet or moist soils, are the most sensitive to disturbance from

	trampling effects (Kuss 1986). It is anticipated that increasing fishing access will cause minor vegetation loss. Foot travel may slightly increase root exposure and trampling, and some rare plant species could be impacted by anglers walking along banks or along riparian corridors. Pedestrian access for fishing is not anticipated to cause any significant impacts to plants or plant communities. Vegetation disturbance associated with installation of any new boat launch and fishing access sites in the future will be minimized through design. If funded, new accessible fishing structures could be located within the floodplain of the Magalloway River. Because fishing would occur from non-motorized watercraft or a dock, no additional erosion is expected from bank fishing or trampling of vegetation at these sites. A trail already runs to Mt. Pond from Mt. Pond Road, and improvements to that trail and its access site should not result in additional impacts on vegetation. Boat access sites and trails will be located away from sensitive wetlands, peatlands, and rare plants. Habitat features, important to trout such as over-hanging banks, will be protected from disturbance.
Water Resources The Upper Androscoggin River watershed drains into the Gulf of Maine. Precipitation gathers into small tributaries that feed into the larger ponds, lakes and rivers of the area. Umbagog Lake is the lowest of the Rangeley Lakes passing water from a larger area to the Northeast via the Rapid River. The Magalloway, Diamond, and Cambridge river systems also feed into Umbagog Lake which outlets through the Androscoggin River. Water quality is considered good, degraded only slightly by development, acid rain, and depositional mercury. The area's numerous rivers, lakes, streams and	**No Action** Impacts to water resources are generally by motorized boats used by anglers that may inadvertently leak polluting substances in ponds, lakes, and rivers in the area. Based on observations from the refuge, pollution from boats is uncommon. When pollution does occur, the impacts are minor and easily diluted. Impacts are considered minimal and short-term. **Proposed Action** Current levels of pollutants from boat fuel and impacts on local aquatic systems are minor. Hydrocarbon contamination can be harmful to fish. The increasing popularity of low emission boat motors has greatly reduced pollution. We will initiate public outreach and education on littering, pollutants, proper waste disposal, and the

ponds support wild brook trout and other species considered sensitive to pollution.	advantages of 4-stroke engines, to help mitigate water quality impacts. Water quality testing will be carried out as funding levels permit. We will permit boat launching only in designated areas to prevent erosion and degradation of wetlands or water quality and ensure public safety. We will prohibit lead sinkers and other lead tackle to prevent ingestion by wildlife and possible lead poisoning. Motorized boats may be launched from the Steamer Diamond Landing on the Androscoggin River and the refuge headquarters on the Magalloway River. All boats launching or landing on refuge lands must follow State boating regulations and be registered, if applicable, with the appropriate State. The public must inspect motor boats and trailers and clean them of aquatic invasive species before launching at refuge sites. That cleaning should take place on dry ground away from the water. These impacts are not likely to be significant at anticipated levels of fishing use.

VISITOR USE AND EXPERIENCE	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Umbagog NWR is a popular destination for hunting, fishing, wildlife observation, photography, paddling, motor-boating, camping, and snowmobiling among other uses. Visitation numbers are often difficult to obtain due to the complexity and number of access points, but annual visitation for all uses is estimated at approximately 80,000 from October 2018 to September 2019. The two most popular consumptive uses are hunting and fishing, which are estimated at 7,700 and 13,500 visits	**No Action** There is a traditional culture in the communities of northern New Hampshire and western Maine of keeping small boats (i.e., canoes, rowboats, etc.) at many of the areas remote ponds for fishing access. These ponds generally provide no opportunities for shoreline fishing due to the dense vegetation associated with shorelines, making boat access essentially the only viable option for fishing access. The refuge has allowed this traditional use to continue but will no longer allow this use in this alternative. Boats will be removed from all remote ponds.

respectively from October 2016 to September 2017. The majority of visitation occurs between Memorial Day and Columbus Day, with a secondary peak during the winter snowmobiling season. The refuge has unrestricted foot access, and, as such, is largely undeveloped for this purpose.	**Proposed Action** The same traditional culture of keeping boats in remote pond areas for fishing access will be addressed. The refuge maintains a detailed list of the number of boats found at remote ponds at the time the refuge purchased the property. Boats left at refuge ponds will be removed unless we are contacted by the owner and the owner applies for a special use permit. The number of special use permits issued will not exceed the number of boats found by the refuge at the pond when the property was acquired. Conflicts among motorized and non-motorized users have arisen on the refuge in the past. Local cabin owners have expressed concerns about trespass and inappropriate human waste disposal by boaters, primarily canoeists and kayakers. Should any major conflicts become evident, we may need to manage public use on the refuge to minimize conflicts. That may include providing additional education and outreach, providing additional sanitary facilities, or creating zones to separate groups of users. We will not permit fishing from near residential areas, to minimize conflicts with adjacent private landowners and lessees. In addition, we will not permit fishing from shore on the islands, with the exception of State-run campsites.

CULTURAL RESOURCES	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Five historic and pre-historic sites are known to occur on Umbagog NWR. A detailed, systematic survey of the refuge would likely reveal many more sites that are prehistoric. Many of these potentially may occur on flooded lands since Errol Dam raised the water level and submerged former shorelines.	**Environmental Consequences Common to All Alternatives** Umbagog NWR currently has no developed plans for any construction or ground disturbance in the fishing program; therefore, consultation with the pertinent State Historic Preservation Office and federally recognized Tribes is not required. If funding for future fishing access facilities identified in the plan becomes available, the design and permitting of these sites will require historic and cultural review at that

	time. Service policy is to preserve all cultural, historic, and archaeological resources in the public trust, and avoid any adverse effects wherever possible. There are no anticipated direct or indirect impacts to refuge cultural and historical resources anticipated following the guidance of these actions.

REFUGE MANAGEMENT AND OPERATIONS	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Administration As of 2019, refuge staff presently consists of six full-time employees and two part-time employees consisting of: Refuge Manager, Deputy Refuge Manager, Biologist, Maintenance Worker, an Administrative Assistant, a half-time Forester, a Term Forester, and a half time Facility Operations Specialist.	**No Action** Anticipated staff time and costs to address education about the changes to fishing at the refuge and removal of boats on remote ponds at Umbagog NWR is expected to be higher for initial and annual expenditure of staff time and funding than the proposed action. **Proposed Action** Umbagog NWR staff time and expense are expected to be integrated into the administration of the refuge's annual budget with minimal additional increases in staff time or costs. Fiscal resources to conduct the fishing program would continue to be minimal as fishing has occurred on the refuge and surrounding areas since 1992, and we are proposing relatively few refuge-specific regulations beyond State regulations. No administrative or recreation fees will be collected from participants, and permits would only be issued to 14 individuals to keep boats at remote ponds. Estimated annual costs for the fishing program is $6,000.

SOCIOECONOMICS	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Local and Regional Economies Umbagog NWR is located in the Towns of Errol, Wentworth Location, and Cambridge, New Hampshire, as well as Upton and Magalloway Plantation, Maine. These towns combined have a total population of 458. Several other small towns are within 30 to 90 miles from the refuge. The predominant land use in the vicinity of the refuge is forest. The Umbagog Area Chamber of Commerce lists the refuge as one of the area's main attractions. Umbagog NWR averages about 80,000 visitors per year. Many people come to the area for the outdoor recreation opportunities from hunting, fishing, snowmobiling, boating, hiking, camping, paddling, and more. Total visitor recreation expenditures for Umbagog NWR were $3,816,000 in 2017. Expenditures on fishing activities accounted for 16.7 percent of that figure or $637,000 (Carver and Caudill 2019).	**No Action** Fishing at the refuge is estimated to currently account for $637,000 contributed to the economies of Coos County, New Hampshire, and Oxford County, Maine. The majority of fishing activity occurs on Umbagog Lake, the Androscoggin River, the Rapid River and the Magalloway River. The reduction in opportunity from closing the refuge to fishing from shorelines, streams and small ponds would be small, approximately 300 visits. Fishing expenditures are estimated at $35.67 per visit resulting in a projected loss of $10,701 annually (Koontz et.al. 2008). **Proposed Action** Fishing visitation may increase slightly from awareness generated by this plan and the official opening of this recreational use. This may result in as many as 50 additional fishing visits to Umbagog NWR with each visit estimated at $35.67 in expenditures (Koontz et. al. 2008). Total expenditures associated with 50 visits from fishing would total approximately $1,783.50. These revenues represent a negligible to minor impact, in the context of the economies of Coos and Oxford Counties.

ENVIRONMENTAL JUSTICE	
AFFECTED ENVIRONMENT	**ANTICIPATED DIRECT AND INDIRECT IMPACTS**
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate	**Environmental Consequences Common to All Alternatives** No influence expected.

environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. There are no known minority or low-income communities within the affected environment.	

Cumulative Impact Analysis

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions."

Table 2. Cumulative Impacts of the Proposed Action

Past, Present, and Reasonably Foreseeable Activity in Area of Analysis	Descriptions of Anticipated Cumulative Impacts
Fishing The "great north woods" region that Umbagog NWR is located in has had a long standing fishing history. For over 150 years, this area has been dominated by the industrial forest product industry. Large tracts of land have been owned by private companies who have historically allowed various forms of traditional uses to occur, especially hunting and fishing. This ownership and use pattern is a long-standing part of the culture of the area and has provided economic benefit (both timber and recreation based) to the communities located in the region. When Umbagog NWR was established in 1992, the Service intended to allow "traditional uses" to continue as indicated in the initial EA. One traditional use mentioned is fishing. Currently, the States are responsible for managing these populations on a	Refuges, including Umbagog NWR, conduct fishing programs within the framework of state and Federal regulations. Harvest rates are established by the States of Maine and New Hampshire. The proposed fishing program rules will be the same as, or more restrictive than, regulations throughout the two States. By maintaining regulations that are the same as or more restrictive than the States, we can ensure we are maintaining seasons supportive of management on a more regional basis. This approach also provides consistency with large-scale population status and objectives. The refuge regularly coordinates with the States about fishing. Fish in freshwater refuge habitats are limited in their geographic range as those areas have limited flows in or out of the system. Cumulative impacts to freshwater fish are limited to rivers, streams, ponds, and lakes. As a result, fishing on Umbagog NWR will have negligible impacts on wildlife species in Maine and New Hampshire. Although the Proposed Action will increase fishing opportunities slightly compared to the No Action Alternative, the slight increase in angler activity will not rise to a significant

Statewide, regional and management unit level. The refuge works in close coordination with the States to provide and share technical information and planning assistance.	cumulative impact locally, regionally, or nationally. In 2011, approximately 228,000 individuals fished in New Hampshire (USFWS 2013). In the same year, approximately 341,000 individuals fished in Maine (USFWS 2013). These numbers reflect in-State fishing activities for both residents and non-residents. The proposed action is expected to attract up to 50 additional anglers each year. This level of use is fractional compared to the overall level of use in New Hampshire and Maine.
Other wildlife-dependent recreation (i.e. road and trail development and use) A large percentage of the public use at Umbagog NWR is in the form of hunting and fishing, and occurs in a dispersed manner throughout the refuge. The refuge does maintain a limited number of developed access sites for facilitated non-consumptive uses. Natural resource based tourism is an important component of the economies in Coos County, New Hampshire and Oxford County, Maine.	Developed access sites (2 trails, 3 boat launches, and 18 campsites) help facilitate non-consumptive public uses (wildlife observation, wildlife photography, camping, paddling and boating), but occupy a small percentage of the lands at Umbagog NWR. While the entire refuge is open to these non-consumptive, wildlife-dependent activities, these user groups generally do not partake in these activities at locations on the refuge other than at developed access sites.
Development and Population Increase The United States Census Bureau indicates a decline in population for both counties in which Umbagog NWR is located. Coos County, New Hampshire experienced a population loss of 1,016 from 2010 (census population of 33,055) to 2016 (population estimate of 32,039). Oxford County, Maine experienced a population loss of 616 from 2010 (census population of 57,833) to 2016 (population estimate of 57, 217) (https://www.census.gov/).	A decreasing local human population can be expected to have negligible contributions to the cumulative impacts of wildlife populations, both game and non-game species. Arguably, a decreasing local human population could have benefits for wildlife populations. Public use and visitation numbers are slowly increasing however, and likely negate the potential positive impacts.
Use of lead tackle In Maine, the sale and use of lead sinkers not meeting the length (2.5 inches) and/or weight (1 ounce)	Umbagog NWR proposes a restriction on the use of all lead fishing tackle since it poses the risk of lead poisoning for waterfowl and other bird species (e.g., eagles). While refuge regulations may have

requirements is now prohibited. In New Hampshire, lead sinkers and jigs that weigh less than 1 ounce are now prohibited.	negligible impact on lead deposition at the landscape level, these regulations are important at the refuge scale due to the refuge containing one of the largest freshwater wetland systems in the northeast.
Climate Change Warming, whether it results from anthropogenic or natural sources, is expected to affect a variety of natural processes and associated resources. However, the complexity of ecological systems means that there is a great amount of uncertainty about the full impact climate change will have at the local level. Species at Umbagog NWR associated with boreal habitats to the north are likely to suffer consequences as their range retracts north as a result of a warming climate, whereas species associated with temperate habitats to the south are likely to benefit from a warming climate and expand their ranges north.	Species in Umbagog NWR's current fishing program, such as brook trout, are likely to be adversely impacted by a warming climate. Habitat management that focuses on water quality and shading of streams will help to minimize these impacts to this species on the refuge.

Summary of Analysis

No Action: Effectively ending fishing at the refuge in its current form would cost a substantial amount of money in time and effort to remove boats from remote ponds, purchase and install signage to discourage the use, and enforce the decision. Not allowing fishing could adversely impact the credibility with local communities and State partners, and can be expected to be viewed by these groups as an inability of the Service to fulfill the commitments for the continuation of public access and traditional uses (including fishing) that the agency made upon refuge establishment and during the development of Umbagog NWR's CCP. In addition, not allowing fishing does not fulfill our mandates under the NWRSAA.

Proposed Action: This alternative is the preferred action because it offers the best opportunity for recreational fishing that would result in a minimal impact on physical and biological resources, while meeting Service mandates under the NWRSAA. The Service believes that officially opening a fishing program on Umbagog NWR is not expected to have a significant impact to wildlife, other uses, or refuge administration. The proposed action (i.e., open to recreational fishing throughout the refuge, and revise refuge-specific regulations to more closely align with New Hampshire and Maine regulations) will meet the purpose and need, refuge objectives, and Service mandates.

List of Preparers

Umbagog NWR Staff
Paul Casey, Refuge Manager
Ian Drew, Deputy Refuge Manager
Sean Flint, Biologist

U.S. Fish and Wildlife Service, North Atlantic-Appalachian Regional Office Staff
Thomas Bonetti, Senior Planner
Laura Howard, Intern
Caleb Robitaille, Intern

State Coordination

Umbagog NWR's fishing program as reflected in this EA and the associated draft Recreational Fishing Plan are identified as approved objectives and strategies in the 2009 Umbagog NWR CCP. State representatives were engaged in the development of these CCP strategies, and provided their review and recommendations of this fishing plan. Refuge staff contacted NHFG and MEDIFW staff representatives during the fall of 2019 to acquire information that was used in preparation of this EA and the associated draft Recreational Fishing Plan.

List of Sources, Agencies and Persons Consulted:

Maine Inland Fisheries and Wildlife: David Howatt
New Hampshire Fish and Game: Dianne Timmins

Tribal Consultation

Refuge staff will coordinate with federally recognized Tribal governments in areas of mutual interest, including fishing opportunities.

Public Outreach

The Environmental Assessment, Recreational Fishing Plan, and Compatibility Determination will be made available to the public for comment through local venues, the refuge website, and notification in the Federal Register (as part of other expansions and openings on national wildlife refuges).

Determination

This section will be filled out upon completion of any public comment period and at the time of finalization of the Environmental Assessment.

- ☐ The Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact."**

☐ The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Preparer Signature: _____Date:_____

Name/Title/Organization: _____

_____

Reviewer Signature: _____Date:_____

Name/Title: _____

References

Bonney, F. 2002. Personal communication. Maine Inland Fisheries and Wildlife.

Boucher, D.P. 1995. Rapid River salmonid management. Fishery Interim Summary Report Ser. No. 95-6. Maine Dept. of Inland Fisheries and Wildlife, Augusta, ME.

Carver, E., and Caudill, J. 2006. Banking on Nature: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation. U.S. Fish and Wildlife Service. Washington, DC.

Cline, R., Sexton, N., and 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.

Ensor, K.L., Helwig, D.D., and Wemmer, L.C. 1992. The common loon in Minnesota: potential contaminant implications in L. Morse, S. Stockwell and M. Pokras, eds. Proc. from the 1992 conference on the loon and its ecosystem: status, management, and environmental concerns, Bar Harbor, ME.

Howatt, David. 2019. Personal communication, Maine Department of Inland Fisheries and Wildlife.

Koontz, L., Donovan, R., Sexton, N., and Hoag, D. 2008. Economic Impacts of Current and Proposed Management Alternatives for Lake Umbagog National Wildlife Refuge.

Kuss, F.R. Environmental Management. 1986. 10: 637. https://doi.org/10.1007/BF01866768

Lewin, W.C., Arlinghaus, R., and Mehner, T. 2006. Documented and potential biological impacts of recreational fishing: insights for management and conservation. *Reviews in Fisheries Science, 14*, 305-367.

Pokras, M.A. and Chafel, R. 1992. Lead toxicosis from ingested fishing sinkers in adult common loons (Gavia immer) in New England. J. of Zoo and Wildl. Med. 23(1):92-97.

Sperduto, D.D., Nichols, W.F., and Cleavitt, N. 2000. Bogs and Fens of New Hampshire. New Hampshire Natural Heritage Program (NHNHB) Concord, NH.

Sperduto, D.D. and Nichols, W.F. 2004. Natural communities of New Hampshire. The New Hampshire Natural Heritage Bureau (NHNHB) and The Nature Conservancy (TNC), Concord, NH.

U.S. Fish and Wildlife Service. 2008. Lake Umbagog National Wildlife Refuge Final Comprehensive Conservation Plan and Environmental Impact Statement. U.S. Fish and Wildlife Service, Umbagog National Wildlife Refuge, Errol, NH. Available online at: https://www.fws.gov/refuge/Umbagog/what_we_do/conservation.html

U.S. Fish and Wildlife Service. 2013. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation: Maine. U.S. Fish and Wildlife Service. https://www.census.gov/prod/2013pubs/fhw11-me.pdf

U.S. Fish and Wildlife Service. 2013. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation: New Hampshire. U.S. Fish and Wildlife Service. https://www.census.gov/prod/2013pubs/fhw11-nh.pdf

U.S. Fish and Wildlife Service. 2009. Umbagog National Wildlife Refuge Comprehensive Conservation Plan. January 2009. USFWS, Division of Planning, Hadley, MA. Available online at: https://www.fws.gov/refuge/Umbagog/what_we_do/conservation.html