



An Example of a Floodplain Species Assessment and Plan

Communities that participate in the Community Rating System of the National Flood Insurance Program are encouraged to develop and implement a floodplain species assessment and a floodplain species plan to support the protection and restoration of threatened and endangered species within their jurisdictions. Credit for an assessment and a plan is provided according to the criteria described in element FSA (floodplain species assessment) and element FSP (floodplain species plan) in Section 512.c under Activity 510 (Floodplain Management Planning) of the *CRS Coordinator's Manual* and the *Addendum to the CRS Coordinator's Manual, 2017 Edition*.

The attached document is an example of a floodplain species assessment and floodplain species plan prepared for the City of Monroe, Washington. The original floodplain species assessment appears on pages 1–8. This was circulated for comments from the agencies and organizations listed on page 7. The City drafted the subsequent Floodplain Species Plan based on those comments and reviews of the recovery plans. This starts on page 9.

This is not an official City document but was generated as a pilot species assessment and plan. The City staff are continuing to work to ensure that the recommendations are viable, especially those that involve other offices, before it can be submitted for adoption. The final document may well look different than this draft. Meanwhile, CRS communities can copy sections of the attached for formatting purposes and know that a document similar to this one would be approved for FSA and FSP credit under 512.c.

More information on FSA and FSP credits can be found in *Preparing a Floodplain Species Assessment and a Floodplain Species Plan for Credit under the Community Rating System*, available on the [CRS Resources website](#).

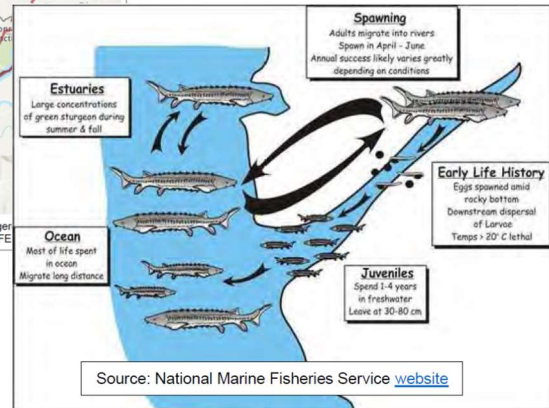
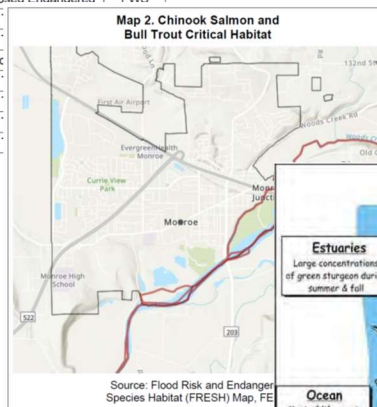
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Floodplain Species Plan

Monroe, Washington

Table 1. Threatened and Endangered Species in Monroe

Species	Scientific Name	Status	Agency
Bull Trout	Salvelinus confluentus	Threatened	FWS
Canada Lynx	Lynx canadensis	Threatened	FWS
Chinook Salmon	Oncorhynchus (=Salmo) tshawytscha	Threatened	NMFS
Gray Wolf	Canis Lupus	Proposed Endangered	FWS
Green Sturgeon	Acipenser medirostris	-	-
Marbled Murrelet	Brachyramphus marmoratus	-	-
North American Wolverine	Gulo Gulo Luscus	Prop	-
Oregon Spotted Frog	Rana pretiosa	-	-
Steelhead	Oncorhynchus (=Salmo) mykiss	-	-
Streaked Horned Lark	Eremophila alpestris strigata	-	-
Yellow-billed Cuckoo	Coccyzus americanus	-	-



Department of Public Works

July 10, 2020

CRS Note: This is not an official document of the City of Monroe. It was prepared to show what a Floodplain Species Assessment (pages 1 – 8) and a Floodplain Species Plan (the entire document) could look like. City staff need more time to ensure that the recommendations are viable, especially those that involve other offices, before it can be submitted for adoption. Readers can copy sections for formatting purposes and know that a document like this would be approved for CRS credit as currently envisioned.

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Floodplain Species Plan

Monroe, Washington

Introduction

The City of Monroe is on the Skykomish River, three miles upstream of where it joins the Snoqualmie River to form the Snohomish River. The City is 22 miles upstream of Puget Sound and the City of Everett. Monroe covers six square miles and has a population of 18,000.

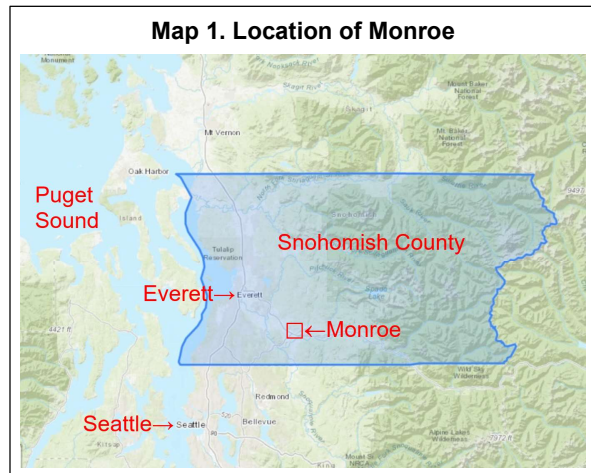
Approximately 11% of the City is in the Special Flood Hazard Area (SFHA) of the Skykomish River along the southern City limits, Woods Creek, which flows from the east to the Skykomish, and Snohomish River on the west. More than 90% of the SFHA is undeveloped and is open space. Twenty percent of the SFHA is considered open space preserved in its natural state.

Monroe's rivers and riparian areas are home to a variety of terrestrial and aquatic animals and plants. The City wants to preserve and protect this habitat for its recreation, education, and other public benefits.

As noted in the box to the right, one set of animals and plants deserving special protection are threatened and endangered species. Because of their declining numbers, these species have been listed by the [US Fish & Wildlife Service](#) (FWS) or the [National Marine Fisheries Service](#) (NMFS) as needing protection under the provisions of the Endangered Species Act. They “are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people.” (Endangered Species Act of 1973)

The FWS describes the status of these species in simple terms:

- Endangered species are at the brink of extinction now.
- Threatened species are likely to be at the brink in the near future.



Why Save Endangered Species?

“None of these creatures exists in a vacuum. All living things are part of a complex, often delicately balanced network called the biosphere. The earth's biosphere, in turn, is composed of countless ecosystems, which include plants and animals and their physical environments. No one knows how the extinction of organisms will affect the other members of its ecosystem, but the removal of a single species can set off a chain reaction affecting many others. This is especially true for “keystone” species, whose loss can transform or undermine the ecological processes or fundamentally change the species composition of the wildlife community.” – US FWS at www.fws.gov/angered

Threatened and Endangered Species

A review of FEMA’s Flood Risk and Endangered Species Habitat (FRESH) website found nine federally-listed threatened species and two species proposed for listing with range in the Monroe area. These are shown in Table 1. While the salmon, sturgeon, steelhead, and bull trout are anadromous and spend most of their lives in salt water, this assessment focuses on their fresh water habitat because that is in Monroe’s jurisdiction.

Species	Scientific Name	Status	Agency
Bull Trout	Salvelinus confluentus	Threatened	FWS
Canada Lynx	Lynx canadensis	Threatened	FWS
Chinook Salmon	Oncorhynchus (=Salmo) tshawytscha	Threatened	NMFS
Gray Wolf	Canis Lupus	Proposed Endangered	FWS
Green Sturgeon	Acipenser medirostris	Threatened	NMFS
Marbled Murrelet	Brachyramphus marmoratus	Threatened	FWS
North American Wolverine	Gulo Gulo Luscus	Proposed Threatened	FWS
Oregon Spotted Frog	Rana pretiosa	Threatened	FWS
Steelhead	Oncorhynchus (=Salmo) mykiss	Threatened	NMFS
Streaked Horned Lark	Eremophila alpestris strigata	Threatened	FWS
Yellow-billed Cuckoo	Coccyzus americanus	Threatened	FWS

Range and Critical Habitat

All eleven species have range throughout all or most of the City and adjacent unincorporated areas.

Two of the species have critical habitat in specific areas of the City. FWS identified the channel of the Skykomish River as critical habitat for the [Bull Trout](#) and NMFS designated the Skykomish and Woods Creek as critical habitat for the [Puget Sound Chinook Salmon](#) (Map 2, next page).

This designation warrants a higher level of protection. The best action is to preserve areas of critical habitat as open space in its natural state. However, Monroe’s designated critical habitat is its rivers, which are public waters. The City has three programs that can help preserve the stream channels as habitat:

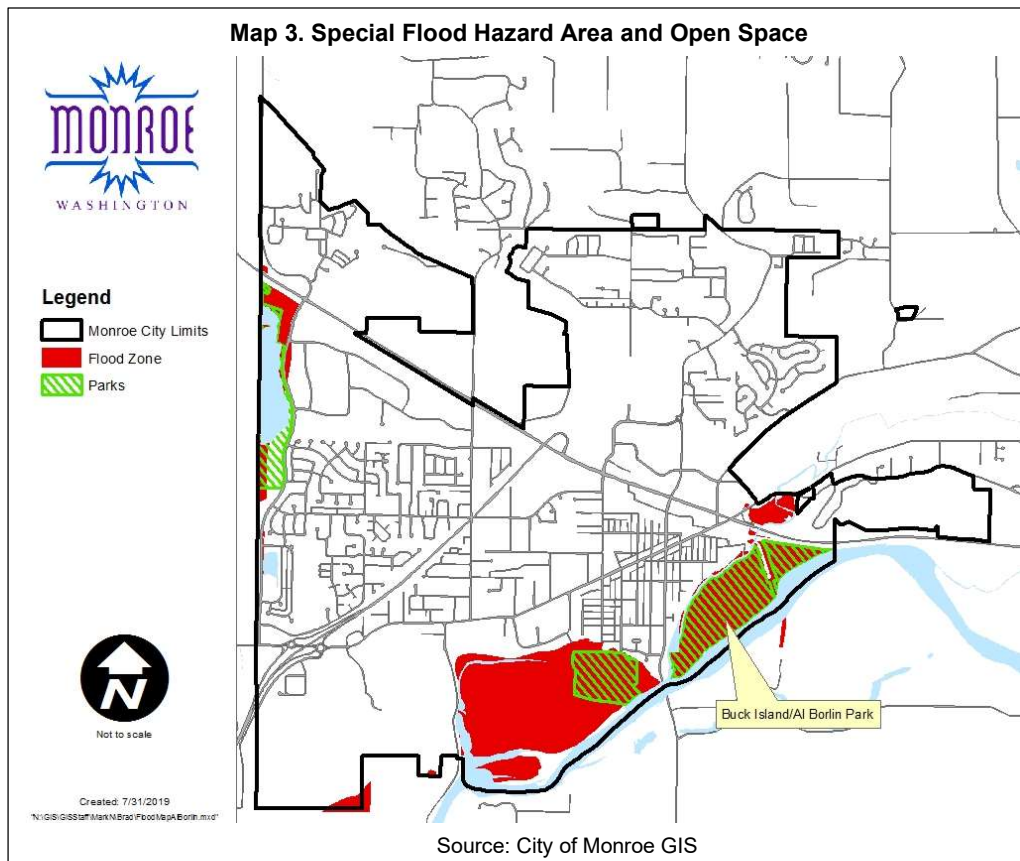
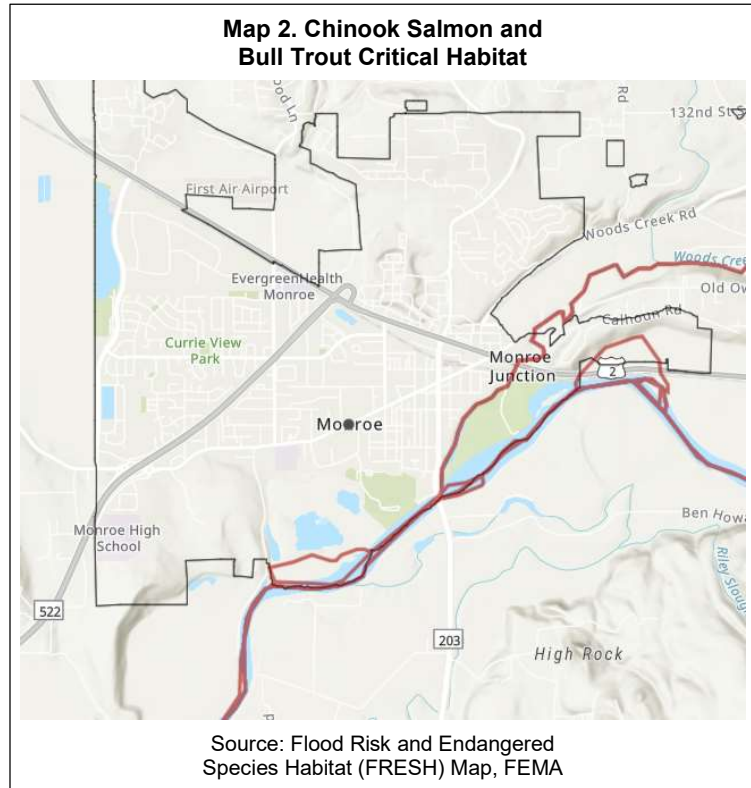
1. The City’s Critical Areas Ordinance in the Unified Development Regulations, Sections 22.80.100 Stream Development Standards and 22.80.110 Fish and Wildlife Habitat Conservation Areas Standards, effectively prevent development that would damage the habitat in the streams. In essence, 100% of the in-stream habitat is preserved.
2. The City manages stormwater runoff to minimize pollution of our streams.

Definitions: Range and Critical Habitat

The “range” of a species is defined as the general geographical area within which that species can be found at the time either FWS or NMFS makes a status determination. This range includes those areas used throughout all or part of the species’ life cycle.

“Critical habitat” are specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery. – [FWS Environmental Conservation Online System \(ECOS\)](#)

3. Much of the adjacent floodplain is preserved as open space. As seen in Map 3, the City has received credit under the Community Rating System for having 92% of our Special Flood Hazard Area preserved as open space via City ownership or restrictive critical areas regulations. Twenty percent of the Flood Hazard Area is Buck Island/Al Borlin Park, which qualifies as natural floodplain functions open space. The City is expanding its ownership of these open space parcels by working with Forterra to acquire approximately 41 acres of floodplain, including an oxbow of the Skykomish River, for habitat preservation.



Community Rating System Credit for Conservation and Recovery

A good number of the conservation and recovery actions that local governments can implement can be credited under the [Community Rating System](#) (CRS). The CRS provides reduced flood insurance premiums in communities that undertake activities to prevent or reduce flood losses and protect natural floodplain functions. Monroe is currently a CRS Class 5, saving floodplain residents and businesses an average of \$300 each year. Implementing more activities, such as threatened and endangered species recovery actions, could help the City move to a better class.

Table 2 reviews general CRS-credited recovery actions that are applicable to most threatened and endangered species. The “Doing” columns identifies whether the City is implementing what is or could be a CRS credited activity.

If the City is getting credit, the “Credited” column shows the current CRS credit points and the maximum credit available. The “Feasible” column identifies if it would be feasible to start an activity or increase the credit points.

Table 2. CRS Credited Conservation and Recovery Actions			
Activity/Element	Doing?	Credited?	Feasible?
300 Public Information Activities			
Providing information on areas that serve natural floodplain functions, such as wetlands (MI7)	No		Yes, have maps. Need new publicity
Outreach projects (OP) on protecting natural functions	Yes	(a)	Yes, w/appropriate messages
Designing and disseminating messages on protecting natural floodplain functions in a Program for Public Information (PPI)	Yes	(a)	Yes, add appropriate messages
Having materials in the local public library (LPD) on protecting local natural floodplain functions	Yes	(a)	Yes, add appropriate references
Having materials on protecting local natural floodplain functions in the community’s website (WEB)	Yes	(a)	Yes, add appropriate links
420 (Open Space Preservation)			
Preserving open space in the floodplain (OSP)	Yes	1,320/1,450	Not much more could be done – See discussion on critical habitat, page 3
Preserving open space in the floodplain in its natural state (NFOS)	Yes	38/350	Need documentation on more parcels – See discussion on critical habitat, page 3
Preserving open space on eroding shorelines (CEOS ³)	N/A		N/A
Offering incentives to developers to keep the floodplain open (OS)	No		Yes, w/ordinance amendment
Zoning floodprone areas for large lot sizes to preserve low density uses (LZ)	No		Would be contrary to the State’s Growth Management Act
Preserving stream banks and shorelines in their natural state (NSP)	No		Yes, w/ordinance amendment

Table 2. CRS Credited Conservation and Recovery Actions			
Activity/Element	Doing?	Credited?	Feasible?
430 (Higher Regulatory Standards)			
Prohibiting filling in the floodplain (DL1a)	No		Maybe
Regulating development in areas subject to coastal erosion (CER ²)	N/A		N/A
Other regulations to protect natural floodplain functions not specifically listed in the <i>Coordinator's Manual</i>	N/A		Maybe
450 (Stormwater Management)			
Requiring new developments in the watershed to account for the total volume of runoff released (SMR-DS)	Yes	175/225	Yes, w/ordinance amendment
Requiring new developments to use low impact development techniques (SMR-LID)	Yes	15/25	Yes, w/ordinance amendment
Setting stormwater management standards based on an overall plan for the watershed (WMP)	Yes	235/315	Need cost estimate of a watershed master plan revision
510 (Floodplain Mgmt Planning)			
Adopting one or more plans that address protecting natural floodplain functions (NFP)	No		Will receive some credit with this Floodplain Species Plan
540 (Drainage System Maintenance)			
Having a habitat-friendly program to clear debris in drainageways (CDR)	Yes	120/470	Yes, with revisions to current procedures
(a) These elements are being implemented by the City of Monroe, but the messages and materials do not address threatened and endangered species.			

Summary of CRS Actions

300 (Public Information Activities): The City is implementing all of the public information activities and elements listed in Table 2. It would not take much work to adjust them to better address threatened and endangered species. We could use the FRESH maps for credit under Activity 320 (Map Information Service), MI7.

The outreach projects, library references, and website could also be revised or expanded to provide more information on protecting threatened and endangered species. However, we should first confer with the appropriate experts and agencies to identify the most appropriate messages, references, and websites to link to.

Activity 420 (Open Space Preservation) – Open space preservation (OSP): Currently 91% of the City’s Special Flood Hazard Area is open space. It will remain that way because the City owns much of it and our critical areas regulations prevent most development projects. The few remaining, developed, parcels are not likely to qualify as open space. We could receive more NFOS credit for documenting the natural floodplain functions served by much of the City’s preserved open areas.

Floodplain lands in the City are either publicly owned or built out. However, there remain open floodprone areas just outside the corporate limits, in the Urban Growth Area. It would be beneficial to adopt incentives for developments in the UGA, such as are credited by CRS element 420 – open space incentives (OSI). An example is to require that “each lot in a new subdivision provide a building site that is on natural high ground, out of the regulatory floodplain.”

420 – Low density zoning (LZ): The State’s Growth Management Act requires higher density zoning in incorporated cities to reduce suburban sprawl. Objective 4 of the City’s *2015 – 2035 Comprehensive Plan* reads “...limited opportunities to expand outward mean Monroe needs to make the most efficient and effective use of the land within the city’s boundary.” The Plan also notes “The Low Density Single-Family Residential designation will develop at an approximate gross density of three to five units per acre.” Therefore, the CRS low density zoning credit for minimum five acre parcels is not feasible.

420 – Natural shoreline protection (NSP): City-owned properties account for over 90% of the shoreline in the floodplain. It would be possible to revise our current procedures for management of the shorelines along City-owned properties to qualify for NSP natural shoreline protection credit. Public Works staff would need training.

Activity 430 (Higher Regulatory Standards): The City could enact regulations to prohibit filling in the floodplain or set other higher standard(s) for development in the floodplain. Since most of the Special Flood Hazard Area is preserved open space, the maximum credit for a regulation to prohibit fill after the impact adjustment would result in 22 points.

Activity 450 (Stormwater Management) – design storm (DS): The City is receiving 175 out of 225 points for its requirement that new storage basins be designed to store smaller storms. For more credit, the regulatory language would need to require detention basins to store the 100-year storm. This could be done, but, due to the impact adjustment, some of the credit is dependent on the County having a similar standard.

450 – Low impact development (LID): Currently, the City is receiving 60% of the maximum credit because the Low Impact Development requirements only apply to developments larger than one acre. The City would get 100% of the credit if all new developments, including single-family homes, were required to use low-impact development techniques.

450 – Watershed master plan (WMP): The City is receiving 75% of the maximum credit for its watershed plan. The remaining 25% depend on the plan including measures that protect natural floodplain functions, like preserving wetlands for storage and prohibiting alterations to existing natural channels. Such rules would help riparian and aquatic threatened and endangered species more than many of the other CRS elements. It should be noted that the watershed plan is only reviewed and revised every five years or so.

Activity 540 (Drainage System Maintenance): The City is only receiving 540 credit for maintaining man-made storage basins. The current channel maintenance procedures would need to be revised to qualify for the rest of this credit. That may entail an increased workload on City staff that would need to be analyzed before it is adopted.

Relevant Agencies and Organizations

There are a number of state and federal agencies and private organizations that have goals and programs to protect threatened and endangered species and help them recover. The following could assist the City define appropriate activities and, possibly, help with implementation.

US Fish & Wildlife Service
Washington Fish and Wildlife Office
510 Desmond Drive SE, Suite 102
Lacey, Washington 98503
360/753-9440
<http://www.fws.gov/wafwo/>

National Marine Fisheries Service
West Coast Region Office
510 Desmond Drive Southeast, Suite 103
Lacey, WA 98503
360/753-9530

Federal Emergency Management Agency
Federal Regional Center
130 - 228th Street, Southwest
Bothell, WA 98021-8627
425/487-4600

Washington Dept. of Fish and Wildlife
16018 Mill Creek Boulevard
Mill Creek, WA 98012-1541
425/775-1311

Seattle District Corps of Engineers
Regulatory Branch
4735 E. Marginal Way South
Seattle, WA 98134
206/764-3495

Long Live the Kings
1326 5th Ave, #450
Seattle, WA, 98101
206/382-9555
info@lltk.org

Sarvey Wildlife Care Center
PO Box 3590
Arlington, WA. 98223
360/435-4817 (Clinic phone)
www.sarveywildlife.org/

Pilchuck Audubon Society
1429 Avenue D
PMB 198
Snohomish, WA 98290
www.pilchuckaudubon.org

Sound Salmon Solutions
712 3rd Street, Suite B
Mukilteo, WA 98275
425/252-6686
www.soundsalmonsolutions.org/

Snohomish Conservation District
528 91st Ave NE
Lake Stevens, WA 98258
425/335-5634
www.snohomishcd.org

Feedback

Pages 1 – 7 of this document were sent to the relevant agencies and organizations on March 31, 2020. They were asked four questions:

- Is the list of threatened and endangered species in Table 1 on page 2 appropriate? For example, are there any species that we should not spend time on?
- Would you have more accurate information on their habitats and threats in our area?
- Are there any species or recovery actions that should be priorities to pursue?
- Would you be able to assist us in implementing any priority projects?

Changes were made based on the feedback and pages 8 – 24 were added. On June 15, 2020, the new Floodplain Species Plan was sent to the same people. Through e-mails and telephone calls, a variety of valuable comments were collected. They were used throughout this Plan. Their main thoughts and suggestions are provided here.

US Fish & Wildlife Service, State Office, Shirley Burgdorf: Except for the bull trout, all of the FWS listed species in Table 1 are not likely to have habitat or be in the City. For example, there are no local wetlands of the type needed by the Oregon spotted frog. Conservation and recovery measures that help bull trout would also help salmon. FWS would like to help with projects, but “Due to current staffing constraints, assistance would be on a case by case basis.”

Pilchuck Audubon Society, Brian Zinke, Executive Director: Consider adding state-listed and state-candidate species. None of the listed bird species are likely found in or close to the City. The City can help one species not listed: Vaux’s swift, a candidate for state listing. He also provided contact information for the local expert on the Vaux’s swift.

FEMA, Region X, Erin Cooper: Riparian and floodplain habitat should be a priority. Another priority would be species and recovery measures called for in the 2008 Biological Opinion related to salmon and orcas in the Puget Sound.

Sound Salmon Solutions, Rodney Pond: His organization has been working in the area on channel habitat improvement projects. He offered to help on future projects.

Washington Department of Fish & Wildlife, Ruth Milner, wildlife biologist: Focus on just the four fish species. She provided suggestions on implementation

Washington Department of Fish & Wildlife, Jamie Bails, fish biologist: Focus on just the four fish species. Let the river roam freely, but fix a gravel bar upstream of State Route 203 bridge. Open up drainage ditches and take other actions to attenuate flows of runoff.

Snohomish County Public Works, Mike Rustay, Habitat Specialist: Recommended the 2005 master salmon recovery plan and the plans for each watershed. “In the Skykomish, rearing habitat is more limiting to salmon than spawning habitat. Therefore off-channel, floodplain and river edge restoration is needed most. He identified where projects are needed.

CRS Note: The previous pages comprise the Floodplain Species Assessment and can be credited by the CRS as a separate document. The additional materials needed for a creditable Floodplain Species Plan start here.

Selected Species

Because Monroe is a built up community, there are no natural areas to provide habitat for non-aquatic species. It is also unlikely that predators, like the lynx, wolf, and wolverine, would stay long in an urban area. Here’s what the advisors said:

Species	Select for Conservation and Recovery Actions?
Bull Trout	Yes
Canada Lynx	No - forest creature that relies on snowshoe hares, also not found in the City
Chinook Salmon	Yes
Gray Wolf	No – any sightings would be transient, wolves often travel in packs, which avoid populated areas
Green Sturgeon	Yes
Marbled Murrelet	No – they nest in old growth forest and live the rest of the year on salt water
North American Wolverine	No – prefer higher elevations
Oregon Spotted Frog	No – they need a kind of wetland not found in Monroe, no current occupied sites in the county
Steelhead	Yes
Streaked Horned Lark	No – FWS IPAC does not show them having range north of Tacoma
Yellow-billed Cuckoo	No – range is entire state, habitat is woodlands with dense cover, which are not found in Monroe

As one advisor noted, many of the range maps were prepared in the 1980s and 1990s. Today, we have better maps and GIS and, therefore, more accurate delineations of where appropriate habitat is likely. However, the official range maps have not been updated for each species.

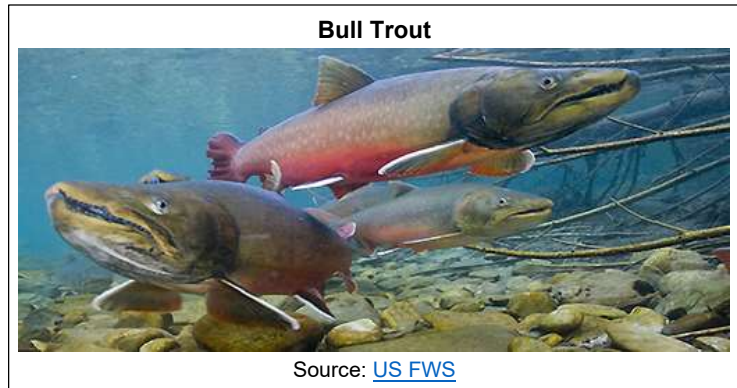
Accordingly, the list of species selected for conservation and recovery actions by the City is trimmed down to the bull trout, chinook salmon, green sturgeon, and steelhead. These include the only two species where critical habitat has been designated in the City.

While the Vaux’s swift has not been designated threatened or endangered by either the Federal or State listing agencies, it is a candidate for state listing. It also is the focus of a popular annual event in Monroe, Swifts Night Out. This event can be an effective venue for publicizing other threatened species and ways they can be protected.

The following pages provide more information about the four selected species and the Vaux’s swift. Except where otherwise noted, this information came from FWS’ Environmental Conservation Online System (<https://ecos.fws.gov/ecp/>) or through the National Marine Fisheries Service’s Find a Species site (<https://www.fisheries.noaa.gov/find-species>).

Bull Trout

Bull trout are salmonids, the same subfamily as salmon (salmoninae). Its name is reportedly from that fact that its head and mouth are unusually large for salmonids. They are migratory and may stay in the same river or may live in Puget Sound for part of their life. They travel through Monroe, downstream to the Sound or upstream to the upper and cooler waters. Generally, they don't stay in our area.



Life cycle: Bull trout spawn in the fall after temperatures drop below 48° Fahrenheit, in streams with abundant cold, unpolluted water, clean gravel and cobble substrate, and gentle stream slopes. Bull trout eggs require a long incubation period, hatching in late winter or early spring. Fry may remain in the stream gravels for up to three weeks before emerging. They feed on plankton and insects. As they grow larger, they begin to feed heavily upon other fish. Bull trout reach sexual maturity at between four and seven years of age and are known to live as long as 12 years.

Habitat: Compared to other salmonids, bull trout have more specific habitat requirements that appear to influence their distribution and abundance. They need cold water to survive, so they are seldom found in waters where temperatures exceed 59 to 64 degrees Fahrenheit. They also require stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and unblocked migratory corridors. The Skykomish is considered a migratory channel.

Threats: The [Coastal Recovery Unit Implementation Plan for Bull Trout](#), FWS, 2015, identifies three major threats to bull trout riverine habitat:

1. Flood and erosion control measures, including bank armoring and channel straightening disrupt the channel systems and disconnect the main channels from the tributaries in the floodplain, which are important for rearing young trout.
2. Recreational gold mining impacts spawning and rearing tributary habitats.
3. Runoff from developed areas increase seasonal high water temperature in lower mainstem rivers, a key migration corridor to the Sound.

The *Implementation Plan* also identifies climate change as a threat that warms up the lower rivers and moves spawning to fewer cooler streams that are at higher elevations. Sea level rise and more frequent flooding will cause people to do more shoreline armoring.

Other threats identified by the [FWS](#) include hybridization and competition with non-native species, overfishing, and poaching. Mating with other species produces sterile offspring.

Recovery measures: Recovery measures in the Monroe area include removing or modifying flood and erosion control structures, restoring channel complexity (usually with large woody debris), preserving riparian lands, and providing shade along banks.

Chinook Salmon

Due to the Biological Opinion issued in 2008 by the National Marine Fisheries Service, FEMA issued some new requirements for participating in the National Flood Insurance Program. Because of this, Monroe has spent a good deal of effort addressing salmon. Therefore, this section is longer than the others.



The information for this species comes from the [Puget Sound Salmon Recovery Plan](#), 2007, [Volume 1](#) and [Volume 2 for the Snohomish River](#), 2005, and the Executive Summary to [Shared Strategy for Puget Sound](#), 2005. The quotes in this section come from Volume 2, also known as the *Snohomish River Basin Salmon Conservation Plan*.

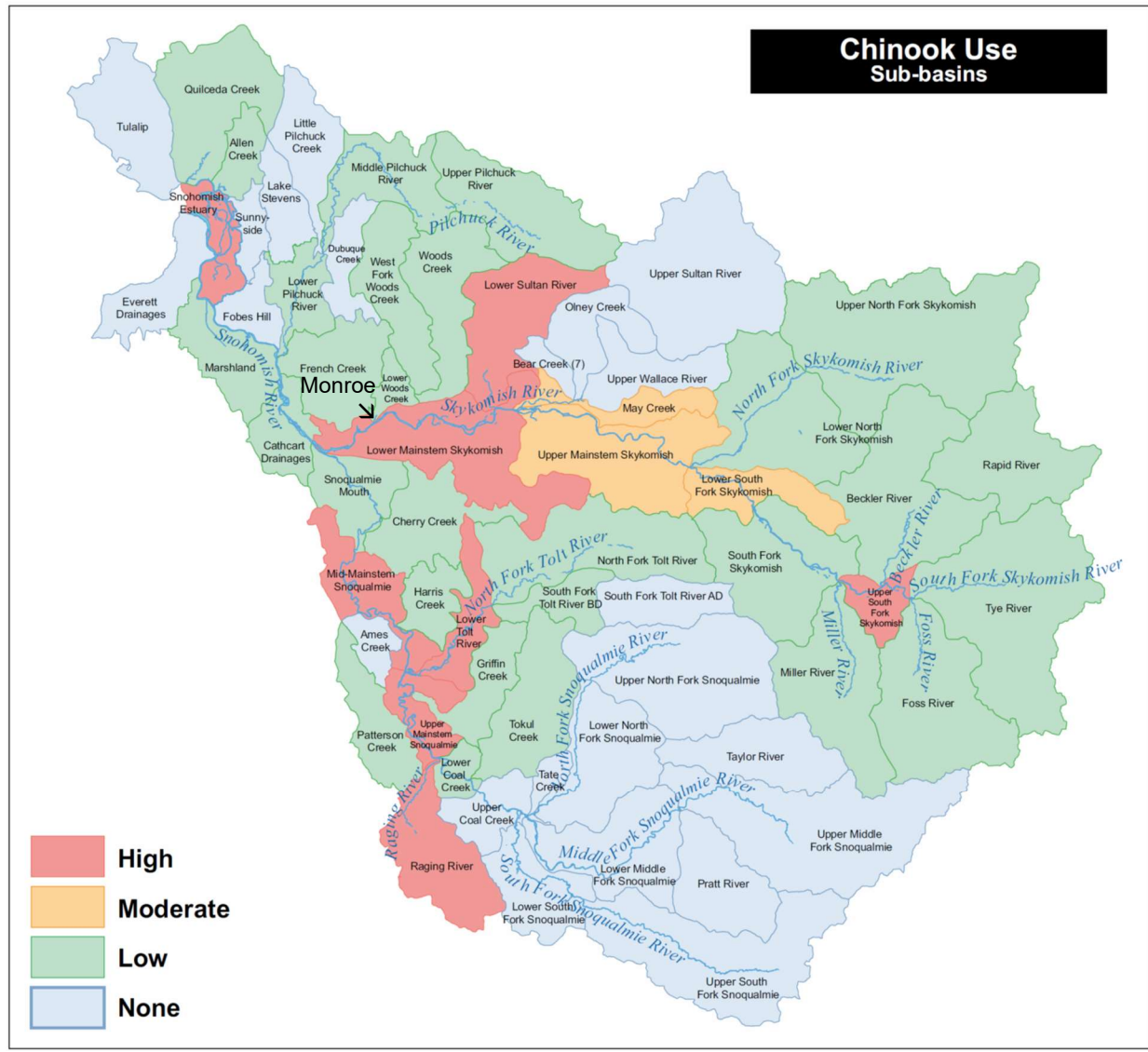
Life cycle: As anadromous fish, salmon live in streams that drain to the ocean, or in Monroe’s case, to Puget Sound. Chinook salmon lay their eggs and spend their first few months in fresh water. In less than a year, they migrate to saltwater where they spend most of their lives. They come back to the streams they were born in to lay their eggs and die.

Habitat: The Chinook needs colder water with stable stream channels, clean spawning and rearing gravel, diverse cover, and unblocked migratory corridors. “Because of their large body size, Chinook generally prefer to spawn in mainstems with higher water flows and deep holding pools and are able to spawn in larger gravel than most other salmon.” (pages 4-2 – 4-3)

Monroe’s section of the Skykomish River is mapped as one of the few high use watersheds for Chinook Salmon (see map, next page). In addition to cool, deep, and faster mainstems, salmon need access to the smaller streams in the floodplain to escape the high velocities that accompany a flood.

Threats: The *Salmon Conservation Plan* identifies three major threats to chinook:

1. Lumbering removes the shade over the streams and reduces the amount of woody debris in the channels. “In the ... Lower Mainstem, Skykomish River...intact forest cover is predicted to decrease by about 10% in the next 25 years, based on current trends. The continued conversion of forest lands to homes and other uses contributes to this decrease.” (page 11-36)
2. “Since the early 1990s, the cities of Monroe, Sultan, and Gold Bar have been some of the fastest growing urban areas in the Snohomish County portion of the basin. With the expansion of these urban areas comes the need for new and improved infrastructure such as roads and utilities.” (page 11-36) These projects often channelize natural streams, harden stream banks, and block or restrict channels with small bridge openings or culverts. Dams in particular have limited salmons’ ability to travel and return to their original breeding areas.
3. “Increased peak-flow runoff and isolation of the river from the floodplain increases erosion and flooding downstream. This creates pressures for further bank armoring.” (page 11-36)



[Snohomish River Basin Salmon Conservation Plan](#), page 4-3

Recovery measures: The 2005 *Snohomish River Basin Salmon Conservation Plan* lists recovery strategies by five land use categories. The Urban and Roads and Utilities land uses are pertinent to the City. These are general statements, such as “Adopt comprehensive plan goals that integrate plans for multiple benefits,” “Protect wetlands, riparian areas, and forest cover, and improve water quality in urban areas,” and “Focus road mitigation projects on recovery plan priorities in the watershed.” (Section 9)

Section 8 of the Plan describes the vision for recovery. It includes examples of good projects that have already been implemented.

Since 2003, the City of Monroe and the Stilly-Snohomish Fisheries Enhancement Task Force have worked to enhance the floodplain forest and riparian habitat conditions of Buck Island on the Skykomish River and Woods Creek. Restoration includes removal of noxious weeds, enhancing forest canopy, and enhancing species diversity. Since 2003, the Task Force and volunteers have planted 6,500 plants over a total area of 10 acres. (page 8-16)

Section 11 of the Conservation Plan has more specific recommended actions, organized by sub-basin strategy groups. The Skykomish at Monroe is designated as a “Mainstem Primary Restoration” area (page 11-3). The area is described in the Plan:

From Sultan to Monroe, sediment supply and deposition balance out, and the channel becomes naturally more stable. It continues to support substantial Chinook salmon spawning and rearing, but is squeezed by a high amount of bank armoring that isolates the mainstem from off-channel habitats and prevents channel migration. As in much of the basin, current large woody debris loading and riparian conditions are a small fraction of their historic levels. Downstream of Monroe, sediment deposition increases and channel stability decreases, but conditions, land uses, and restoration opportunities are similar. (page 11-35)

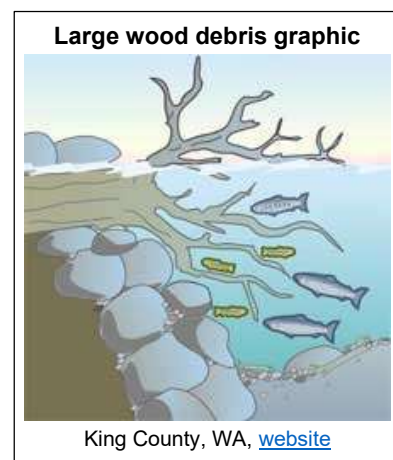
The general approach for this group is to “focus on fixing the underlying watershed processes within and upstream of critical mainstem reaches. In other words, mainstem rivers need to have more room to move, overflow their banks, recruit large woody debris from healthy riparian forests, and form pools.” (page 11-33) As seen in the table below , most of the actions in Section 11 are construction projects at specific locations, such as reconnecting off-channel habitat and construction of log jams. And most of them are in the Lower Mainstem, where Monroe is.

Table 11.6.2 Skykomish Project Opportunity Totals

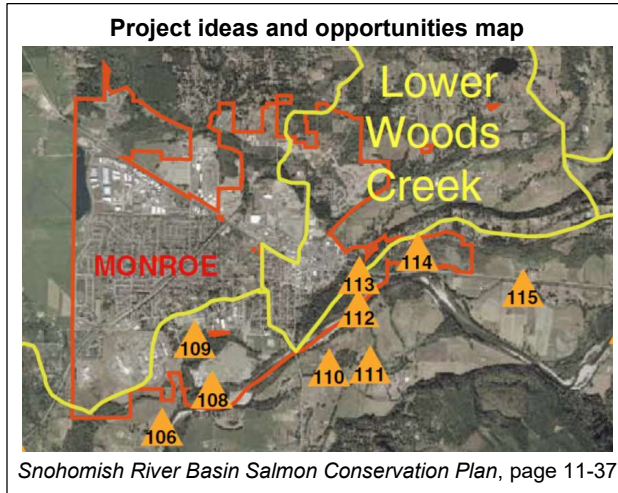
Sub-Basin	Riparian (acres)	Edge/Dike Removal (miles)	Off-Channel Reconnection (acres)	Large Woody Debris Jams (#)	Culverts
Skykomish – Lower Mainstem	128	2.5	177	15	5
Skykomish – Upper Mainstem	0	0	0	10	0
Skykomish – South Fork	0	0	0	6	2
Skykomish – Upper South Fork	0	0	0	0	1
Sultan – Lower	0	0	0	0	7
Project Totals	128	2.5	177	31	15

Source: Snohomish River Basin Salmon Conservation Plan, page 11-38

The Lower Woods Creek watershed is in the “Mainstem Secondary Restoration” strategy group. (page 11-3). “Recovery in this sub-basin strategy group will require actions to contain growth and reverse the trend of decreasing forest cover to protect watershed processes that maintain and support habitat. A multi-pronged approach that strengthens enforcement of existing regulations, increases education and incentive programs, implements regulatory changes where needed...will be the most effective.” (page 11-55).



As with the Lower Mainstem of the Skykomish, the Lower Woods Creek section has few specific actions other than construction projects. The construction projects are identified in the map below. Five projects were proposed in the City limits and four more just outside. Projects 112 and 113 include both streams, the rest are along the Skykomish:



- 106 – Remove Hanson dike and restore connectivity to offchannel habitat.
- 108 – Secondary channel at Cadman
- 109 – Wall-based channel at Cadman Quarry
- 110 – Direct more flow through Haskell Slough
- 111 – Tree planting along Haskell Slough
- 112 – BNSF railroad bridge and grade removal
- 113 – Buck Island side-channel enhancement
- 114 – Reconnect oxbow cut off by Route 2
- 115 – Fern Bluff side channel improvements

The five projects in the City limits have City sponsorship or co-sponsorship. Here is their status.

- 108 – Secondary channel at Cadman – The Cadman, Inc., property has been a quarry that has been closed. It is being donated to the City, but proceedings have been delayed. The plans are for the City to restore the property to a more natural condition. This area is shown in Map 3, page 3, as a large part of the flood zone (in red) not currently in public park ownership.
- 109 – Wall-based channel at Cadman Quarry – This is part of the project for site 108.
- 112 – BNSF railroad bridge and grade removal – The BNSF bridge over the Skykomish has been removed, but negotiations are still in process for the Woods Creek bridge, which is an historic structure. An acquisition study has been completed, and the City is applying for grant funds to do the removal work.
- 113 – Buck Island side-channel enhancement – This is a multi-jurisdictional project that is in the early planning stages.
- 114 – Reconnect oxbow cut off by Route 2 – The City has been trying to purchase this property from the owner, but they have not agreed on a price. Meanwhile, development regulations have prohibited most types of development because of the site’s natural floodplain functions.

Since 2005, there have been a number of other salmon recovery projects. However, they are reported as too soon and too small to see much results yet. We need lots of projects over 50 years before we would have a major impact on recovery.

“the Snohomish Salmon Plan is an adaptively managed plan (we are going through an update process as we speak) so it will be important for Monroe to track plan changes over time and maybe adjust some priorities in response.” – *Reviewer Michael Rustay, Snohomish County*

Green Sturgeon

The green sturgeon has a skeleton composed of cartilage and a series of external bony plates along their backs and sides. They do not have teeth. Instead, they use their long, flexible “lips” to suck up food from the bottom.

Life cycle: Green sturgeon are an anadromous fish. Like salmon and some bull trout, they start life in fresh water and spend much of their lives in salt water to feed, grow, and mature before returning to freshwater to spawn. Unlike salmon, they may spawn several times, returning to the rivers they were born every 3–5 years. They reach maturity around age 15 years and can live as long as 70 years.

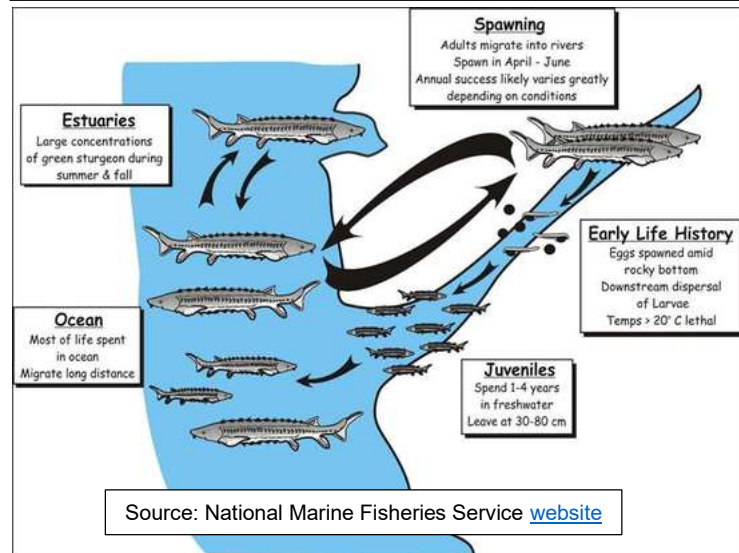
Habitat: For most of their lives, green sturgeon live in the ocean. The river must be flowing sufficiently to attract them upriver. For spawning, they need cooler waters. Egg laying needs a cobble or gravel stream bottom for protection against predators and turbulence. Egg incubation requires water temperatures between 50 and 65 degrees Fahrenheit. (Most of this information was found in “Biology and life history of Green Sturgeon,” Journal of Applied Ichthyology, 2016)

Threats: “Green sturgeon populations successfully persisted throughout North America for 200 million years. They are thought to have experienced a precipitous decline during the past century.” (NMFS website). Historically, the major threat has been overfishing, but that has declined due to regulations. Now, the greatest threat is loss of or inaccessible spawning habitat. Other threats include unfavorable water conditions, barriers, bycatch, and poaching.

Recovery measures: The most important recovery measure is removal of barriers to migration from spawning areas to the ocean and back. Other measures to improve water quality and channel conditions would also help.



Source: [Center for Biological Diversity](#)



Source: National Marine Fisheries Service [website](#)

Steelhead

Like the bull trout and chinook, the steelhead trout is a salmonid. Winter run steelhead return to spawn in fall or winter and spawn in the spring. Summer run steelhead return in late spring and summer when there is more water flowing. As a result, the summer run get farther upstream than the winter run steelhead. (*ESA Recovery Plan for the Puget Sound Steelhead Distinct Population Segment*, NMFS, 2019)



Life cycle: All steelhead trout hatch in gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Some stay in fresh water all their lives and are called rainbow trout. Steelhead trout that migrate to the ocean typically grow larger than the ones that stay in freshwater. They then return to freshwater to spawn.

Habitat: Steelhead habitat varies with age. The emergent fry need shallow stream margins, side channels, and other slow-moving channel features. As they grow, they move toward the center of the channel. Unlike salmon, juvenile steelhead develop territorial behaviors in diverse habitats that include pools, riffles, and cascades. Cover is important at this age, including boulders, cobbles, and large amounts of wood on the channel bottom.

Threats: The greatest threat is the series of obstructions and barriers on the steelhead's migratory routes. These can be dams or bridges and culverts that are too small and loss of access to floodplains due to urban and agricultural levees. Migration is also hampered by flow alterations from urban runoff, channel straightening and water withdrawals, and loss of cover from large woody debris due to lumbering and channel clearance practices. Other threats beyond the jurisdiction of a local government include interactions between hatchery and natural origin fish, climate change, and increased predation during the short run through Puget Sound to the ocean.

Recovery measures: "The overarching approach for recovery of Puget Sound steelhead focuses on protecting and restoring ecosystem functions and freshwater habitats, and improving juvenile survival in Puget Sound waters." *ESA Recovery Plan*, page 38. The Recovery Plan identifies five types of recovery projects to be pursued in the watersheds:

- (1) Protecting and conserving natural ecological processes and existing high quality habitat,
- (2) Improving fish passage and stream flows to increase access to high quality habitat,
- (3) Restoring floodplain connectivity and riparian vegetation,
- (4) Improving water quality, and
- (5) Restoring instream habitat complexity (*ESA Recovery Plan*, pages 57 – 58)

Vaux's Swift

Vaux's swifts spend most of their day in the air foraging for flying insects, which they pursue and capture in their beak. Foraging occurs over forests, grasslands, and aquatic habitats. They have short legs and tiny weak feet, and rarely perch on tree limbs. Instead, they usually cling to rough vertical surfaces when roosting.

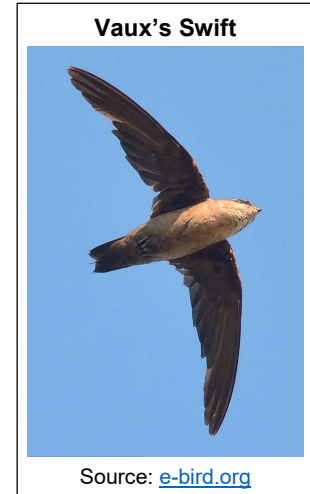
Because Vaux's swift is not a Federally-listed threatened or endangered species, the primary source material for this page was the Washington Department of Fish and Wildlife [webpage](#) on this candidate species.

Life cycle: Vaux's swifts are present in Washington as spring and autumn migrants and as summer residents. Migration occurs from late April to late May and again from mid-August to late September.

Habitat: Vaux's swifts are strongly associated with old-growth coniferous forests, where the insides of large hollow trees and snags are frequently used for nesting and roosting. There are no such forests in Monroe, but there is a large population of Vaux's swifts in the City for a short time:

“Vaux's swifts commonly gather at large communal roosts during spring and fall migration along the West Coast. These roosts are typically located in large old brick chimneys, but large hollow trees and snags are also used.... The most active of these during fall 2012 were in chimneys at Joint Base Lewis-McChord, ... Sedro-Wooley, and Monroe.” (WDFW webpage)

The poster to the right conveys the breadth and attraction of the annual free event, “Swifts Night Out.” The publicity for the event notes “This special fund-raising event will help support all the great work of Pilchuck Audubon Society, which includes our efforts to conserve local bird habitat, forest protections, supporting our Smart Growth Program, education, and field trips.” It is both a fund raiser for the Pilchuck Audubon Society and an opportunity to educate people about the Vaux's swift as well as all threatened and endangered species.



Monroe, Washington **FREE EVENT**

SWIFTS NIGHT OUT

September 7, 2019
4pm till dusk

WAGNER CENTER
639 West Main Street, Monroe Washington

Celebrate the Vaux's Swift migration and watch thousands of birds come to roost in the chimney at Wagner Center.

FREE PARKING: Parking is available at Monroe City Hall, Frank Wagner Elementary, ADA parking will be available.

DINNER and SNACK OPTIONS: Feed the family at our Fund-raising Wrap Sandwich Counter. Also available - Hotdogs, desserts, beverages and other snacks.

ACTIVITIES: Children's Games and Crafts, Wildlife Education Booths, Vaux's Swift Theatre, Swift Headbands.

...and of course the Swifts!

Thank You to Our Supporters!

MONROE WASHINGTON Wild Birds Unlimited Monroe MONROE ARTS Council make art happen

Summary of the Recovery Measures

This Plan addresses the Federally-listed species with habitat within the City’s jurisdiction, i.e., within the City limits. Based on input from the technical advisors, four species have been selected for attention. All four are fish. It is important to note that recovery measures for one species of fish will help the recovery of other fish. In fact the *Puget Sound Salmon Recovery Plan* includes sections on bull trout.

The *Coastal Recovery Unit Implementation Plan for Bull Trout* notes:

Generally, salmon recovery actions also function to improve habitat for bull trout; often spawning and rearing habitat for salmon and steelhead is concurrently used as FMO [foraging, migration, and overwintering] habitat by bull trout. Moreover, the restoration of Chinook and steelhead, as well as other salmon runs in the Coastal Recovery Unit, also benefits bull trout by providing eggs and juvenile salmonids as forage items.... Bull trout consistently migrate to the furthest accessible upstream habitats in their natal watersheds and require some of the coldest and cleanest water conditions for parts of their life cycle, so protection and restoration of these areas is a critical component for this specie’s recovery. Recovery efforts in these headwater habitats will ultimately complement the recovery of salmon and steelhead by helping sustain adequate habitat conditions further downstream. – *Coastal Recovery Unit Implementation Plan for Bull Trout*, page A-33.

Therefore this summary list of recovery measures applies to all four of the selected fish species.

1. They need open channels, including access to the smaller tributaries and floodplain waters. These are needed by the smaller fry and to escape higher velocity flows in the main channels. Barriers, such as undersized bridges and culverts, should be removed or the openings should be enlarged.
2. They all need clear cool water. That means there should be minimal pollutants and sediment entering the streams from Monroe. “There’s been an increasing focus on identifying, conserving, and enhancing cold water refuges and groundwater recharge in floodplains as a strategy to lower summer low flow water temperatures.... When the Salmon Recovery Plan was written back in 2005, cold water refuges and inputs were not as much on the radar.” – *Comment by reviewer Rodney Pond, Sound Salmon Solutions*
3. Extreme fluctuations in flows caused by increased runoff in urban areas should be prevented (via appropriate regulations on new development) and corrected, by enlarging openings and daylighting piped drainage ways.
4. Streams need cover, both in the form of large woody debris and shade trees. These provide shelter from predators and keep the water temperature down. “Include the use of biologically engineered stabilization techniques (large woody debris incorporated in the riverbank) when damaged riverbanks need repair.” – *Comment by Shirley Burgdorf, FWS*
5. Shorelines need to be managed to keep tall shade trees, prevent erosion, and filter runoff.
6. Educational programs for shoreline owners and the general public should convey the value of protecting threatened and endangered species and should identify things people can do.

Recommendations

There already is a master plan for salmon recovery and much of its recommendations apply to the other fish. Therefore, instead of preparing another master plan, this Plan identifies specific actions that are credited under the Community Rating System that will help implement the *Puget Sound Salmon Recovery Plan* and the above six recovery measures.

By being part of the City’s CRS program, there is an added incentive for the City to start the actions and continue them over the years. The actions are organized in order of CRS credit. The spreadsheet on page 25 provides a crosswalk linking the actions with the six measures and itemizing key information, such as the responsible office, deadlines, and funding.

Activity 320 (Map Information Service), natural floodplain functions information (MI7):

This would be a good credit except that there are no land areas designated as critical habitat or range for one of the listed species. There would be no maps that qualify for credit. Further, the City is already receiving the maximum credit for 320.

Activity 330 (Outreach Projects), Program for Public Information (PPI): The City participates with the City of Sultan and Snohomish County in a multi-jurisdictional Program for Public Information. The objective of the PPI is to develop locally pertinent messages and outreach projects, evaluate their effectiveness, and improve them. However, at the March 2018 verification visit, the City did not receive any PPI bonuses for its outreach projects.

The PPI has a generic credited topic of “Protect natural floodplain functions.” This is usually stated in messages about dumping in streams. To the right is the first page from the County’s Flood Safety brochure. “Clear debris and trash” is a good message, but not necessarily directed toward the recovery measures for threatened and endangered species. For example, it might encourage readers to remove large woody debris.

The PPI process allows the City to select up to ten topics for messages. Currently eight have been identified, leaving open the ability to add two more.

Learn about floodplains



Floodplains provide natural benefits

Floodplains are the low-lying areas adjacent to rivers, lakes and coastlines prone to being inundated during times of heavy rains, snow-melt or high tides. They provide open space, scenic beauty and recreational opportunities. In their natural state, floodplains benefit our community in ways that include:

- **Natural flood and erosion control**—reducing flood velocities, peak flows and sedimentation; providing flood storage and conveyance
- **Water quality benefits**—filtering polluted runoff and moderating temperature fluctuations
- **Groundwater recharge**—promoting infiltration and aquifer recharge; reducing frequency and duration of low surface flows
- **Biological productivity**—providing fertile soils that promote vegetative growth, biodiversity and ecosystem stability
- **Fish and wildlife habitats**—providing habitat for many species, including water-fowl and rare and endangered species

Protect natural floodplain functions

Clear debris and trash. Help prevent flooding and maintain water quality by keeping the storm drains, culverts, ditches and swales near your property clear of debris and trash. Debris could reduce flood storage capacity and increase flooding on your property.



Report illegal dumping when you see it.
It is illegal to dump trash, hazardous chemicals or other materials into a river, stream or drainage system. If the situation is a severe threat to human health or the environment, please call 911; otherwise, please call the Snohomish County Public Works Surface Water Management (SWM) Water Quality Hotline at 425-388-6481 or use the county's online form (www.snoco.org, search “water quality complaint”).

Source: *Flood Safety in Snohomish County*, October 2018

The recommended action is to add two new, more specific, messages in the PPI at the next annual evaluation meeting. The messages will need to be worked out with the other PPI communities, but examples could be “don’t cut shade trees along the stream banks – they keep the water cooler, which helps threatened species like the chinook salmon and bull trout” or “if you strip away ground cover, install “green” erosion control measures to keep sediment out of our streams, but don’t use riprap or bulkheads.”

Activity 330 (Outreach Projects), outreach projects (OP): Outreach projects convey the PPI messages. In 2018, the City received 90 out of 200 possible points. Most of that credit came from two projects, the County’s Flood Safety brochure (previous page) which is a colorful 14 page booklet. It is sent to floodplain properties and the annual letter to repetitive loss areas. The City could create its own smaller brochure with more messages that are more attuned to local conditions. It would be less expensive to reproduce and could be distributed to more locations.

The PPI provides bonus points for projects that are targeted to priority audiences. Shoreline property owners are currently not listed. They could be identified and sent a letter each year with more information about what they can do to keep tall shade trees, prevent erosion, and filter runoff.

Another OP project would be to set up a booth or table at Swifts Night Out. Visitors would be given the local brochure and other information about threatened and endangered species in the area and what they can do. If there are other community events where booths are invited, like a farmers market or the 4th of July, the same materials could be used, but each event would be scored as an additional project.

Activity 350 (Flood Protection Information), locally pertinent documents (LPD) in the public library. The City is receiving five out of a possible 10 points for this element. The maximum credit could be obtained by adding five more documents such as the *Coastal Recovery Unit Implementation Plan for Bull Trout*, the *Snohomish River Basin Salmon Conservation Plan*, and this Plan.

Activity 350 (Flood Protection Information), flood protection website (WEB): WEB1 credit is for providing information and links to more information on the topics in the PPI. The City is receiving 12 out of a possible 75 points for WEB1. There is no mention of threatened and endangered species. After the PPI is revised, the website should be, too, with links to the appropriate pages on the FWS and NMFS websites as well as the others noted as references in this Plan.

Activity 420 (Open Space Preservation), open space preservation (OSP): As noted on page 5, the City is getting 91% of the maximum possible credit for having 91% of its Special Flood Hazard Area preserved as open space. This puts the City in the top 1% of communities for this element. It’s hard to do much more and the remaining vacant parcels are not likely to qualify.

Activity 420 (Open Space Preservation), natural functions open space (NFOS): This is another element that the City is currently doing. However, the score is for only 20% of the SFHA being in preserved open space that is also in its natural state or is designated as worthy of preservation because it performs a recognized natural function. The credit is for Buck Island/Al

Borlin Park. While City parks with ball fields would not qualify, more points would be available if the other undeveloped open space areas could be documented as supporting fish with natural shorelines, side channels, and other features noted in the earlier sections on habitat. Securing the extra credit will be one more incentive to keep the lands in their natural state.

Activity 420 (Open Space Preservation), open space incentives (OSI): This credit is for encouraging new developments to avoid the floodplain and build on high ground. This is done with regulations that allow cluster development, provide higher densities outside the hazard area, or offer similar benefits to a developer. As noted on page 6, it would be beneficial to adopt incentives for developments in the Urban Growth Area. This action is to review the City's regulations and alternative OSI language to see what would be appropriate.

Activity 420 (Open Space Preservation), natural shoreline protection (NSP): The species' recovery measures show that keeping shorelines in their natural state is one of the most important actions the City can take. Because most of the shoreline is already City-owned open space, it should not be difficult to draft and adopt procedures for City crews.

The procedures would need to prohibit rip rap or armoring, channel alterations, dredging, filling, grubbing, and removal of vegetation. They could allow human alterations that benefit natural floodplain functions, such as removing a levee or restoring habitat, provided that the projects do not prevent channel or shoreline movement or reduce other natural floodplain functions. Such procedures should be drafted and submitted for a courtesy review for CRS credit.

In addition to preserving natural shorelines, the City could partner with county, state, federal, or tribal interests to support or facilitate shoreline and floodplain restoration projects on City land. This approach would reduce the cost to the City. Converting artificial shorelines to restored shorelines would also increase the credit for NSP.

Activity 430 (Higher Regulatory Standards): There are several higher standards that would benefit the City and reduce potential damage to buildings. While most of the standards in 430 are good things to do, they would not be directly related to the recovery measures listed earlier.

Activity 450 (Stormwater Management): Stormwater management includes the most important CRS activities that impact clean water and fluctuations of stream flows. Monroe's program is based on the *Stormwater Management Manual for Western Washington* prepared by the Washington Department of Ecology. This manual includes criteria that was developed specifically for conditions in the Puget Sound area.

There are seven credits in Activity 450. Monroe receives credit for all seven and receives the maximum credit for two of the standards. This Plan recommends that Section 15.01.025 of the Municipal Code be amended to specify standards different from the *Western Washington Manual* that will maximize the credit for all seven credits. This would be a nationally recognized measure of the City's efforts to improve water quality and flows in the river habitat of the threatened species.

Activity 450 (Stormwater Management), size of development (SZ): The credit for SZ increases for programs that address smaller developments. Instead of requiring only

subdivisions, shopping centers, and other large projects, SZ encourages communities to include small projects and even new single family homes to account for their runoff.

Monroe is receiving 60 points for regulating all development down to one acre. This is half the maximum credit, 120 points for having the ordinance include all development projects. It is recommended that this section be revised to receive the full 120 points.

Activity 450 (Stormwater Management), design storm (DS): Not that long ago, the national standard was for retention basins to control the peak flows from the 10-year storm. This credit recognizes stormwater management regulations that require the builder to manage larger storms. The maximum credit is 225 points for requiring detention to be designed to manage the peak flow and the volume for the 10- and 100-year storms and storms in between. The City is currently getting 175 points for doing all of this except for managing the volume of the 100-year storm.

This is a very good score, but managing volume of the larger storms is key to preventing extreme fluctuations in flows. This action calls for reviewing the regulations and amending them to receive the maximum credit for DS.

Activity 450 (Stormwater Management), low impact development (LID): “The term low impact development (LID) refers to systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat.” (*CRS Coordinator’s Manual, 2017, page 450-9*) LID techniques can be a low-cost way to mimic natural flows and, therefore, reduce fluctuations of river flows.

Monroe is receiving 15 out of the maximum credit of 25 points. As with SZ, the credit for LID is tied to the size of development regulated. LID would be 25 points when SZ = 90 (i.e., when the City regulates all development or all development except for single family homes and parcels of ½ acre or less). This recommendation is already made above for SZ.

Activity 450 (Stormwater Management), public maintenance (PUB): PUB credits having a City office responsible for ensuring that new stormwater management facilities will be properly maintained over time. The office does not have to conduct the maintenance, but it does have to inspect or otherwise assure that the facilities work properly. The City is getting the maximum 20 points for this, so no changes are recommended.

Activity 450 (Stormwater Management), watershed master plan (WMP): The City receives this credit because it has adopted the *Western Washington Manual*. That document reflects master planning for the Puget Sound region. However, it is not credited for incorporating stormwater management practices that protect natural floodplain functions.

An additional 80 points are possible for WMP:

- 30 points, if the plan identifies existing wetlands or other natural open space areas to be preserved from development so that natural attenuation, retention, or detention of runoff is provided
- 25 points, if the plan recommends prohibiting development, alteration, or modification of existing natural channels and the community has adopted a qualifying ordinance

- 25 points, if the plan recommends that channel improvement projects use natural or “soft” approaches rather than gabions, rip rap, concrete, or other “hard” techniques, and the community has adopted appropriate design standards or ordinances, like preserving wetlands for storage and prohibiting alterations to existing natural channels.

Such rules would help riparian and aquatic threatened and endangered species more than many of the other CRS elements, so it is recommended that the City amend its adoption of the Western Washington Manual to include these three elements. Perhaps such work could be done in cooperation with the Department of Ecology.

Activity 450 (Stormwater Management), erosion and sedimentation control (ESC): ESC credit is provided if the community requires that erosion and sedimentation control measures be taken on land that is disturbed during development. Like SZ and LID, ESC credit is based upon the size of the areas subject to the regulation. The City is receiving 30 of the maximum 40 points. It is not getting the maximum because it does not require land disturbance projects smaller than 1,000 square feet to manage erosion or the sediment that leaves the site.

Given the adverse impact sediment has on water quality and that it fills egg laying areas in the rocky channel bottoms, ESC is pretty important to species conservation and recovery. The City should amend its ordinance to require all development projects to install erosion and sedimentation control measures.

Activity 450 (Stormwater Management), water quality (WQ): Stormwater runoff picks up dirt, road oil, salt, farm chemicals, and other substances. Unlike sewage, stormwater is not treated before it enters our streams. WQ credit is provided for requiring developers to use best management practices to protect water quality. Monroe receives the maximum credit for WQ.

Activity 510 (Floodplain Management Planning), natural floodplain functions plan (NFP): Monroe does not receive any credit under this activity at this time. NFP credits adoption of a plan that protects one or more natural functions in the community’s floodplain. It is possible that one of the recovery plans would qualify if it was adopted by the County or the City. This document should qualify as a Floodplain Species Plan, which would earn the maximum credit (100 points), provided it is adopted by the City Council. This action item is to circulate this document for review by the various City offices and submit it for adoption.

Activity 540 (Drainage System Maintenance): Currently the City is receiving credit for inspection and maintenance of storage basins. More points are available in four other elements for annual inspections of streams and drainageways and removal of debris that blocks flows. The maintenance program does not have to be disruptive. In fact, the CRS recommends different procedures for natural and manmade drainageways.

It is recommended that the City review the credit criteria for channel debris removal and develop debris removal standards that protects woody debris and other in-channel obstacles that preserve habitat. The program could even emplace or reconstruct features that would normally be removed from a manmade ditch. These standards would likely be limited to the Skykomish and Woods Creek and their side channels, but that would be determined by the recommended review.

Recommended Conservation and Recovery Actions

CRS Credit	Action	Recovery Measure¹	Responsible Office	Deadline²	Funding	Support³
320 - M17	No change recommended	N/A	N/A	N/A	N/A	N/A
330 - PPI	Add threatened species messages	6	CRS Coordinator	Next PPI review	Staff time	Tech Advisors
330 - OP	Start some new projects	6	CRS Coordinator	After PPI review	\$1,000	Pilchuck Audubon
350 - LPD	Provide references to the Library	6	CRS Coordinator	2 months	Staff time	Library
350 - WEB1	Expand website coverage	6	CRS Coordinator	After PPI review	Staff time	Webmaster
420 - OSP	Keep all the current open space	1, 4, 5	N/A	N/A	N/A	N/A
420 - NFOS	Document natural functions	1, 4, 5	CRS Coordinator	6 months	Staff time	Tech Advisors
420 - OSI	Review and revise the regulations	1, 4, 5	Community Devel.	6 months	Staff time	Community Devel.
420 - NSP	Prepare procedures for City land	4, 5	Parks & Rec	8 months	Staff time	Parks & Rec
430	No change recommended	N/A	N/A	N/A	N/A	N/A
450 - SZ	Review and revise the regulations	2, 3	Community Devel.	6 months	Staff time	Community Devel.
450 - DS	Review and revise the regulations	2, 3	Community Devel.	6 months	Staff time	Community Devel.
450 - LID	Review and revise the regulations	2, 3	Community Devel.	6 months	Staff time	Community Devel.
450 - PUB	No change recommended	2, 3	N/A	N/A	N/A	N/A
450 - WMP	Expand plan to cover natural functions	2, 3	Community Devel.	6 months	Staff time	Community Devel.
450 - ESC	Review and revise the regulations	2	Community Devel.	6 months	Staff time	Community Devel.
450 - WQ	No change recommended	2	N/A	N/A	N/A	N/A
510 - NFP	Adopt this Assessment	All	City Council	See Note 3	Staff time	CRS Coordinator
540	Prepare new procedures	4, 5	Public Works	8 months	Staff time	Tech Advisors

Notes:

1. Recovery measures are listed on page 17
2. "Months" are the number of months after Council adoption of this Assessment
3. Tech advisors are representatives of the agencies and organizations that reviewed and commented on this Assessment, pages 7 – 8.