Matanuska-Susitna Basin Salmon Habitat Partnership

Healthy Salmon Healthy Communities

The Matanuska-Susitna Basin Salmon Habitat Partnership believes that thriving fish, healthy habitats, and vital communities can co-exist in the Mat-Su Basin. Because wild salmon are central to life in Alaska, the partnership works to ensure quality salmon habitat is safeguarded and restored. This approach relies on collaboration and cooperation to get results.






"People come up to the Mat-Su and go fishing but that's not the end of the vacation. They're going to stay in the area and do other things, too, so there are spin-off effects on the local economy."

– Mat-Su Salmon Partnership member Andy Couch, owner of Fishtale River Guides, who leads clients on the Little Susitna River and the tributaries of the Susitna River from May to September.

We live with salmon

In the Matanuska-Susitna Basin, the magnitude of the landscape is matched only by the riches of its salmon streams. Each summer, millions of salmon return to the mighty Matanuska and Susitna rivers and the vast web of lakes and tributaries of the landscape we call home: The Mat-Su Basin.

Those of us who live here know it is a spectacular place. It is an incredibly diverse landscape – beyond our shopping centers and neighborhoods lie the forests of birch and spruce and expanses of tundra that ultimately rise up to the snowy elevations of Denali, the Great One.

Five species of salmon – Chinook, coho, sockeye, pink and chum – surge up the waters of the Mat-Su each year. In the Susitna River drainage, 100,000-200,000 king salmon return each year, making it Alaska's fourth-largest king salmon fishery – among the largest in the world. As a whole, the annual run of wild salmon in the Mat-Su number in the low millions.

It's difficult to imagine life here without salmon. Nature runs on salmon – and our economy does, too. Salmon feed families in more ways than one. Subsistence fishing is a vital tradition, while commercial fishing and sportfishing help anchor the local economy.

Alaska and the North Pacific:

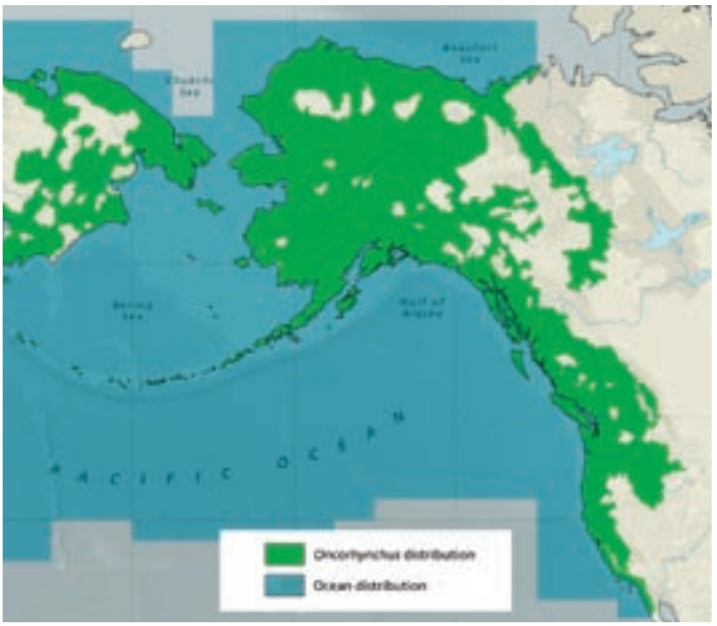
Where there's a place for wild salmon

The Matanuska-Susitna Basin stretches across more than 24,000 square miles, an area the size of West Virginia. In much of the Mat-Su Basin, a human footprint would be an unlikely sight.

In the lower reaches of the basin, however, the landscape is changing. In just a few decades, parts of the region have transformed from remote wilderness to fast growing communities. New roads and schools, soccer fields and shopping centers signal a new chapter in the Mat-Su.

Salmon numbers remain strong in much, but not all, of their habitat in the Mat-Su Basin. Documented declines in salmon populations are a sign that Alaska is not immune to the pressures wild salmon face elsewhere.

Today we know the distribution of wild salmon in parts of North America is shrinking. In the Pacific Northwest, some runs of salmon have declined precipitously – others are extinct.



Original distribution of fish belonging to genus *Oncorhynchus*, or anadromous salmon, in the North Pacific. Map courtesy of Ecotrust and Wild Salmon Center.

What Wild Salmon Need

Spawning salmon

- abundant quantity of clean, cool, well-oxygenated water
- clean sediment-free gravel of relatively small size – 1/2" to 3" depending on species

Rearing salmon

- clean, cool water
- an abundance of food such as aquatic and terrestrial insects
- a diversity of habitats including shallow riffles and pools, undercut stream banks and deep pools with lots of cover from logs, trees and boulders
- a constant source of relatively uniform streamflow
- healthy riparian vegetation
- stream flows or water levels sufficient to support and provide connectivity to other habitats such as beaver ponds, side channels and estuaries
- refuge habitat in winter that protects salmon from ice scours and predators
- migratory habitat within the stream system to access needed habitats
- an open connection to saltwater for rearing, smolt transformation, and adults returning to spawn

Impaired Waters in the Mat-Su

Lake Lucille Urban runoff has contributed to lower-than-normal levels of the dissolved oxygen necessary for aquatic life.

Big Lake Motorized watercraft are responsible for high levels of oil and gasoline in an area encompassing two square miles.

Cottonwood Creek Unsightly debris from a neighborhood and unnatural levels of foam appear along its entire 13 miles.

Matanuska River Debris from a dump pollutes a half-mile section near Palmer.

Source: Alaska Department of Environmental Conservation Final 2008 Integrated Water Quality Monitoring and Assessment Report

Watershed: A watershed is the area of land where all of the water drains to the same place – river, lake, estuary, or ocean. This includes water that flows on the surface and water located underground. Watersheds come in all shapes and sizes. Large watersheds may be composed of several smaller "subwatersheds," each of which contributes runoff to different locations that ultimately combine at a common delivery point.

It all begins with water

Water, people and salmon

In the Mat-Su Basin, water is never far away. Tumbling over streambeds, pooled in clearwater lakes, or captured in soils and gravels underground: all water is connected. So whether it's a rivulet of glacial meltwater in the Alaska Range or a shallow forest wetland in your own neighborhood, this water has a role in the life of a Mat-Su salmon.

A lot of people work to ensure wild salmon remain a part of life here. Just as we rely on abundant runs of wild salmon, the salmon rely on us to ensure that their habitat remains intact and healthy even as development spreads.

The growth of towns and cities affects salmon-bearing streams and lakes. While no one road project or neighborhood development spells disaster for salmon or their habitat, even subtle changes in the landscape may, cumulatively, contribute to significant declines in the quality of salmon habitat.

Even in the Mat-Su Basin, a place valued for its clean water, open space and rural lifestyle, traditionally vibrant salmon waters do face challenges.

In an ecosystem, no part stands alone.

Rivers carry water to the ocean. Evaporation from land and ocean puts water back in the atmosphere, and this exchange goes on continually: water goes from earth to atmosphere to earth. The exchange of water between earth and atmosphere is the hydrologic cycle—hydro means having to do with water, logos is a Greek word meaning knowledge of. Hydrology is the study or knowledge of water.

– Hydrologist Luna Leopold on the science of hydrology.

TEAMWORK: "Restoring salmon habitat is one of the indicators of a maturing community," says Chuck Kaucic, a project manager for the Mat-Su Borough Public Works Department. "I'm hoping that we keep maturing because there's a lot of habitat that needs to be restored."

Introducing the Partnership

The Matanuska-Susitna Basin Salmon Habitat Partnership believes that thriving fish, healthy habitats, and vital communities can co-exist in the Mat-Su Basin. It's an approach that emphasizes collaboration, cooperation, and getting things done.

Since the partnership formed in 2005, it has brought together a diverse group of more than 40 members. They represent businesses, governments, landowners, Native Alaskans and the non-profit community. Together, they have formed the strategic action plan that is summarized in these pages.

Partners are at work to help ensure wild salmon habitat is safeguarded in the Mat-Su Basin. The Chickaloon Village Traditional Council has restored the native course of Moose Creek, restoring miles of once lost habitat. A new annual science and restoration symposium brings together researchers from an array of disciplines to share their latest work.

By working toward a shared vision, salmon habitat can be restored and conserved in the Mat-Su Basin: This is why the Mat-Su Salmon Partnership began.

The Alaska Department of Fish and Game, Matanuska-Susitna Borough, National Marine Fisheries Service, The Nature Conservancy, and the U.S. Fish and Wildlife Service initially formed the Mat-Su Basin Salmon Habitat Partnership in 2005. Its work on behalf of Mat-Su Basin salmon earned it the Cooperative Conservation Award from U.S. Interior Secretary Dirk Kempthorne in 2008. The award recognizes the partnership's work to champion salmon habitat as the effects of development in the Mat-Su Basin continue to rise.

How streets and parking lots affect salmon

Kathy Wells lives in a quiet neighborhood between Palmer and Wasilla. A few farmer neighbors grow vegetables and hay and some keep livestock on small pastures. A popular recreation area for skiers and snowmachiners lies just up the road, and families like to fish at lakes and streams nearby.

It's a neighborhood that's quintessential Mat-Su.

"It's an awesome place. It's beautiful. That's why people move here. People like the rural atmosphere," says Kathy, who directs the land use planning nonprofit Friends of Mat-Su, a Mat-Su Salmon Partnership member.

As more people move to the towns and rural neighborhoods of the Mat-Su, the effects on salmon habitat are growing. But there are ways to safeguard habitat as development continues.

The effects of rooftops and driveways and parking lots – sometimes known collectively as impervious surfaces – on salmon habitat are increasing in the Mat-Su. Water flowing across these surfaces carries chemicals, fertilizers, sediment and other pollutants into the lakes and streams.

"We forget about the cumulative effect of each shed, deck and house. It all adds up, and it affects salmon," Kathy says.

When the percentage of impervious surfaces crosses a threshold of ten percent, scientists report that watershed health begins to decline. In the Mat-Su Basin, development has raised the amount of impervious surfaces in the Wasilla Creek and Meadow Creek watersheds to 11 percent and 12 percent, respectively.

How do impervious surfaces harm salmon habitat?

Allowing the natural flow of rainwater to infiltrate into the ground allows soils and natural microorganisms to filter and store water before it flows to salmon-bearing waters. When pavement and rooftops intercept the normal percolation of rainwater into the ground, unnaturally large volumes of runoff carry pollutants, cause erosion and alter river systems.

What You Can Do:

- Design property developments so that impervious surfaces such as concrete and outbuildings appear as sparingly as possible within 75 feet of shorelines.
- Consider gravel surfaces as an alternative to concrete and asphalt.
- Look up Low Impact Development (LID) for stormwater control techniques at www.epa.gov/nps/lid

The **Mat-Su Salmon Partnership** in Action

- Minimize the effects of roads and parking lots and other impervious surfaces by 2012.
- Limit impervious surface percentages to less than five percent in developing watersheds by 2012.
- By 2010, understand the effects of impervious surfaces and resulting stormwater runoff in the most developed watersheds.

Providing safe passage for Mat-Su Basin salmon

The Mat-Su Salmon Partnership goes where the wild salmon are – or where they should be. In smaller tributaries of the Little Susitna River, the partnership is helping salmon return to lost habitats.

A range of partners, including the Matanuska-Susitna Borough, National Marine Fisheries Service, The Nature Conservancy, Wasilla Soil and Water Conservation District, and the U.S. Fish and Wildlife Service, has replaced more than three dozen problem culverts and bridges that block the safe passage of young salmon.

"We've seen young salmon return to the streams we've restored," says Corinne Smith of The Nature Conservancy.

A single culvert, if poorly placed, may block salmon access to miles of otherwise healthy upstream habitat. Tenacious spawning coho are known for swimming into the farthest reaches of even the smallest streams.

"When a new culvert is installed improperly, miles of salmon habitat can become inaccessible. If nobody's paying attention, it can go unnoticed," Corinne says. "But we can fix it. By improving a road crossing, or replacing even a single driveway culvert, we can restore miles of lost salmon habitat."

What You Can Do:

■ Get a permit before installing a culvert. Consult Ken Bouwens, habitat biologist for the Alaska Department of Fish and Game in Palmer, at kenneth.bouwens@alaska.gov or 907-761-3860.

■ Replace a culvert on your property that blocks access to habitat and participate in a cost-share program. You may wish to consult with U.S. Fish and Wildlife Service hydrologist Bill Rice, P.E. at william_rice@fws.gov, 907-271-1798 or Gillian O'Doherty at gillian_odoherty@alaska.gov or 907-267-2146.

The **Mat-Su Salmon Partnership** in Action

■ Ensure safe fish passage at new road crossings by helping agencies coordinate efforts on behalf of wild salmon, encourage enforcement of state statutes regarding road crossings of salmon-bearing waters, and support better designs and construction practices.

■ Restore safe passage in 20 priority fish-blocking culverts by 2012.

What You Can Do

■ Report illegal stocking immediately to the Palmer ADF&G office at 907-746-6323, or to Fish and Wildlife Safeguard at 1-800-478-3377.
■ Do not transport live fish, especially northern pike, from one water body to another.
■ Keep all the pike you catch in the Mat-Su Basin (be sure to check the fishing regulations).

Protecting salmon waters from invasive pike

Since their illegal introduction to the Yentna River basin in the 1950s, invasive Northern pike have spread to 140 lakes and rivers in the Mat-Su Basin. Pike threaten wild salmon populations because the invasive predators prey on young salmon. Though Northern pike are native to much of Alaska, they are not native to the Mat-Su Basin. The predator fish already has replaced wild salmon in certain lakes and lush, slow-current rivers.

The **Mat-Su Salmon Partnership** in Action

■ Predict which waters are at risk of pike invasion by 2010.
■ Reduce the number of pike introductions in Mat-Su waters by 2012 through public education.

Controlling Northern pike in Mat-Su waters.

"Alexander Creek used to be one of the most productive king salmon systems in all of the northern Cook Inlet. That's almost completely dried up now," says Dave Rutz, right, area management biologist for Alaska Department of Fish and Game.

"A dozen lodges once catered to the king salmon anglers who fished Alexander Creek. Now they're all closed. It's vital we prevent further introductions."

Wetlands are salmon habitat

The **Mat-Su Salmon Partnership** in Action

■ Avoid the loss of important salmon habitat wetlands by 2015 by protecting, managing and enhancing these waters.

Not all Mat-Su Basin wetlands are alike, but all have a vital role as water flows through the landscape. Wetlands include the small ponds, marshes and bogs that provide wildlife habitat while helping to filter water as it flows to lakes and rivers. Wetlands offer habitat for young rearing salmon.

Mat-Su salmon partners are mapping wetlands with the most accurate high-tech methods to ensure important salmon spawning and rearing habitat is identified. The Mat-Su Salmon Partnership notes that some wetlands are at risk from development. Filling and losing small wetlands can, over time, contribute to a decline in salmon populations.

Making septic systems work the right way

With an estimated 21,000 septic systems and outhouses in the Mat-Su Basin, it's evident that safeguarding groundwater and surface water is a serious concern. Septic systems operate properly when they are well-designed, installed in locations that meet the guidelines of the Alaska Department of Environmental Conservation, and properly maintained.

The population of the Mat-Su Borough is expected to triple by 2030. This growth will pressure existing wastewater treatment facilities and increase the number of septic systems in our communities. Even septic system waste is eventually discharged into the waters of Cook Inlet, an important estuary habitat for migrating salmon.

What You Can Do

- Follow Alaska's rules: Keep septic systems at least 100 feet from water bodies.
- Pump septic systems every two years.
- Encourage developers and the Mat-Su Borough to promote the installation of community septic systems.

The **Mat-Su Salmon Partnership** in Action

- By 2010, work for sound septic system standards that protect water quality.
- Support expansion of wastewater infrastructure by 2015.

Nurturing trees and shrubs at the water's edge

Native riparian forest protect salmon waters by filtering water, reducing the risk of floods and protecting the habitat for a range of wildlife. Streamside trees and shrubs shade salmon habitat and offer a source for the large woody debris that provides a natural variety of pools and riffles. Native vegetation also holds soil in place and helps to slow the flow of runoff into streams and lakes.

What You Can Do

- Preserve a minimum 75 foot wide buffer of continuous native vegetation along at least half of a property's shoreline or streambank, as specified in the best management practices of the Mat-Su Borough.
- Along the remaining shoreline, limit the amount of native vegetation that is removed and restore native vegetation.

The **Mat-Su Salmon Partnership** in Action

- Map and prioritize 50 percent of salmon riparian areas for long term protection or restoration by 2015.
- Protect at least 5 percent of priority riparian habitats by 2015.

Estuaries are nurseries of the sea

Where freshwater salmon streams meet the saltwater of the sea, estuaries offer an ecological bridge. These shallow, less saline waters shelter aquatic life, including young salmon from oceanic extremes.

In Cook Inlet, scientists are still learning details of how salmon use this habitat for rearing or over-wintering. Meanwhile, the pressures of a growing population in southcentral Alaska mean more coastline development such as marinas, ports and docks. Coastline development can remove vital estuarine and nearshore habitat and impede the movement of migrating salmon.

The **Mat-Su Salmon Partnership** in Action

- Identify habitats critical to Mat-Su Basin salmon by 2012.
- Avoid or mitigate the loss of estuaries and nearshore habitats for salmon by 2015.

Protecting water flow for salmon

Salmon need abundant water in cool, free-flowing rivers. Seasonal changes in river flow help create the natural diversity that allow salmon to flourish. Minimum flows are necessary throughout the year, however, for connectivity and habitat maintenance.

"A river is a constantly moving living thing. It's a dynamic system. Because river flows create and maintain the habitat features that salmon need such as pools, riffles, log jams and undercut banks, it is essential to maintain the flow regime that the fish have adapted to if we want long-term healthy populations. If you change the flow, you are going to risk the long-term health of salmon."

– Frank Rue, former Alaska Department of Fish and Game commissioner

The **Mat-Su Salmon Partnership** in Action

- Apply for water reservation priority in salmon-bearing waters by 2020.
- Understand the current and future needs of ground and surface water by Mat-Su communities by 2012.

Kids dig nature's classroom

Retired Mat-Su schoolteacher George Taylor leads young students into nature. Sometimes, they'll creep up to a tangled bank to watch for salmon fry in a creek. "The kids are amazed to learn what lives in our creeks. "It's a lesson that sticks. It's not a textbook lesson. It's real world. The kids will remember these salmon," says George, who teaches environmental education and leads streamside habitat restoration projects for the Wasilla Soil and Water Conservation District.

"One of the things that I really believe is this: when kids are involved with real on-the-ground solutions, the concepts that we are trying to teach them – the value of healthy salmon habitat, for one – become a lot more real."

Bringing back the kings—and the stories

Athabascan elders of the Chickaloon Tribe tell stories of Moose Creek abundant with five species of wild salmon. Those stories changed in the early 1900s when coal mining and the railroad gave the river a new, engineered course – over an unnatural waterfall.

In 2006, crews maneuvered their big equipment into place and dug as delicately as possible – until they discovered the buried cobbles of the long-lost original creekbed.

Chinook salmon returned to Upper Moose Creek within days of the creek's return to its native course.

"People have always awaited the return of the spawning salmon. It's a yearly miracle that everyone witnesses. It's the talk of the neighborhood. But now, it's different. The thing that's changed is that now, we get reports of salmon in new upstream habitat. That's good for us to hear. If you build habitat, the fish will find it."

– Angie Wade, who directs the environmental program for her tribe, the Chickaloon Village Traditional Council

National Fish Habitat Action Plan

The Mat-Su Salmon Partnership's focus on a grassroots, locally driven, voluntary and non-regulatory effort was inspired by the approach outlined in the National Fish Habitat Action Plan. Its mission is to protect, restore, and enhance the nation's fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people.

Learn more about the National Fish Habitat Action Plan at www.fishhabitat.org.

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Mat-Su salmon PARTNERSHIP

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Mat-Su Basin Salmon Habitat Partners as of March, 2009

AK Dept of Commerce, Community & Economic Development
AK Dept of Environmental Conservation
AK Dept of Fish & Game
AK Dept of Natural Resources
AK Dept of Transportation & Public Facilities
Alaska Center for the Environment
AlaskChem Engineering
Alaska Outdoor Council
Alaska Railroad Corporation
Alaskans for Palmer Hay Flats
Aquatic Restoration & Research Institute
Bureau of Land Management
Butte Area Residents Civic Organization
Chickaloon Village Traditional Council
City of Palmer
ConocoPhillips Alaska, Inc.
The Conservation Fund
Cook Inlet Aquaculture Association
Cook Inletkeeper
Environmental Protection Agency
Fishtale River Guides
Friends of Mat-Su
Glacier Ridge Properties
Great Land Trust
HDR Alaska, Inc.
Knik River Watershed Group
Matanuska River Watershed Coalition
Matanuska-Susitna Borough
National Marine Fisheries Service
National Park Service
Native Village of Eklutna
Natural Resources Conservation Service
The Nature Conservancy
Palmer Soil & Water Conservation District
Sierra Club
Three Parameters Plus, Inc.
Upper Susitna Soil & Water Conservation District
US Army Corps of Engineers
US Fish & Wildlife Service
US Geological Survey
USDA Forest Service
Wasilla Soil & Water Conservation District
The Wildlifers