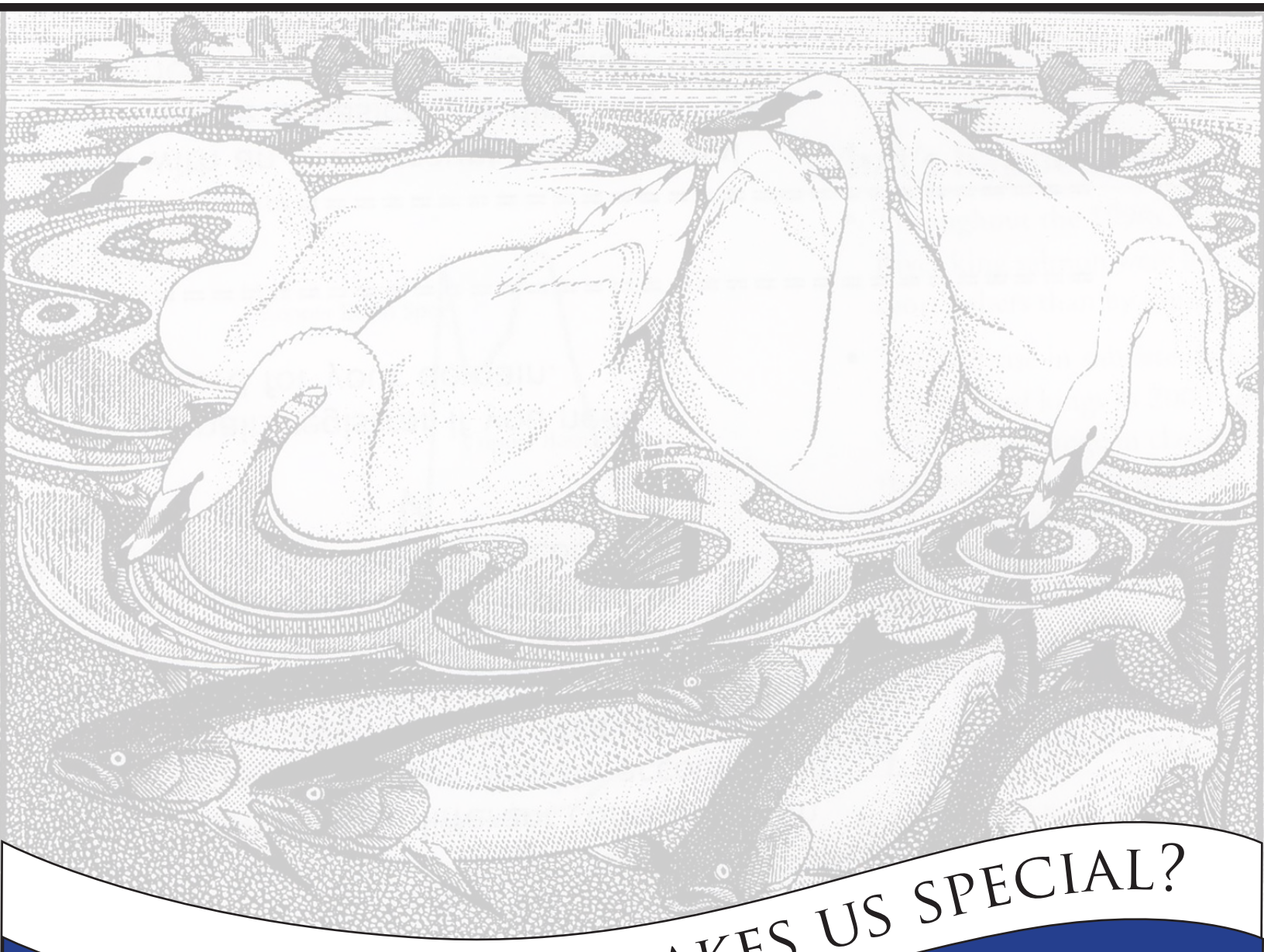
COPPER RIVER WATERSHED PROJECT

INDICATORS OF THE COPPER RIVER WATERSHED



WHAT MAKES US SPECIAL?

Our mission

The Copper River Watershed Project provides residents with a forum to consider and implement innovative approaches for achieving balance between a diverse economy and healthy ecosystems while maintaining our quality of life and our cultural heritage.

Copper River
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UPRIVER AND DOWN, SALMON ARE COMMON GROUND

Begun as a series of workshops on sustainable development in 1996, the Copper River Watershed Project was founded on the premise that, as residents of this region, we have more in common with each other than we have differences among ourselves.

Yes, our 26,500 square mile drainage hosts a range of ecosystems from a dry, interior basin to a coastal rainforest. Yes, the commercial fishing economy of Cordova has different concerns and infrastructure needs from the upriver communities that rely on state and federal agency, school district employment, subsistence, and, increasingly, tourism.

One river, though, connects and sustains residents of the region from Mentasta Lake near the Copper River's headwaters to Cordova, near the river's mouth. The salmon migrating up this corridor to spawn are our true currency, supporting a subsistence salmon economy, a growing sportfish salmon economy, and a commercial salmon economy. Maintaining the spawning habitat that supports these salmon -- a renewable, public resource -- is a critical endeavor if we are all to continue enjoying our quality of life.

The challenges that face this river are common to all too. Tourism is growing rapidly in Alaska, and rural communities are struggling to find ways to ensure that tourism benefits their residents without exploiting them. Solid waste disposal is a growing concern. The Trans-Alaska Pipeline crosses 76 fish streams in the watershed and five major tributaries to the Copper River -- a breach at any one of these river crossings could be devastating for our fisheries. Different management directives among the three federal and three state agencies, and large private landowners, mean that resource mangement is uncoordinated with regard to habitat conditions.

We believe that awareness is growing, though, about the value of this mighty watershed: "the Copper River is not simply one river -- it dozens of rivers, hundreds of streams, and countless mountain drainages, all tied together to form one coursing channel to the ocean," wrote Mark Henspeter after a Wrangell Institute for Science and the Environment float trip for high school students in 2007. Please join us, then, in this survey of our watershed that attempts to look at how we measure up to sustainability.

In their own words, residents from McCarthy, Chitina, Kenny Lake, Chistochina, Copper Center, Gakona, Glennallen and Cordova state what they value about living in the Copper River watershed.

Backyard wilderness for. . .
- open, wild spaces
- scenic beauty
- recreation, wildlife watching, and subsistence gathering
- mountain cathedrals

Thriving fish and game populations for commercial, subsistence and sport harvest/use.

Self-governance

Minimal regulation, no taxes

Freedom of opportunity

Safety: safe schools and streets

Cultural and spiritual ties to birthplace

Small town feeling. . .
- in a wilderness setting
- with diverse, talented residents
- knowing your neighbors and local business owners
- with support from family and friends

Isolation/limited access

Lack of extreme development

Responses are summarized from meetings in Cordova, Dec. 19, 1997; McCarthy, Auugst 1998; Chistochina, August 5, 1998; Chitina, September 12, 1998; Copper Basin community meeting, February 2000.

Key Definitions:

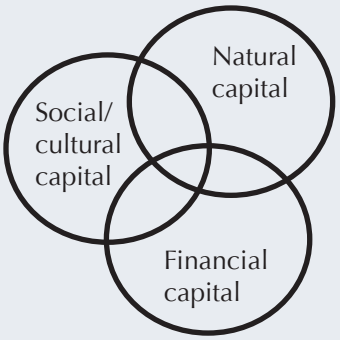
What does "sustainable development" mean for the watershed?

Sustainable means continuing without lessening.

A ***community*** is a group of people who live and interact in a certain area.

A ***sustainable community*** seeks to maintain and improve the economic, environmental and social characteristics of an area so its members can continue to lead healthy, productive, enjoyable lives there.[3]

A ***watershed*** is the region or area drained by a river or stream; all the land that carries rain to the same river system.



Decision-makers can gain the most benefit by making investments that increase or conserve at least two forms of capital while not diminishing the third.

The Copper River Watershed Project works to foster "sustainable development" in the Copper River region. By definition, "sustainable development" goes beyond straight cash economies by taking into account the links between economy, environment and society.[1] We subscribe to the belief that "Wealth is not just monetary worth but the different types of capital that, taken together, make up the real riches of a region."[2]

An integrated picture allows us to look at many of our region's assets, both economic and those that traditionally do not have economic value associated with them, in the context of what makes our community an exceptional place to live. This indicator report attempts to assess our wealth by looking at natural resource, economic, and social/cultural indicators for the Copper River watershed.

Linking Capital Investment

Each form of capital supports the economy; the diminishment of any one will tend to devalue each of the others. Neglect of social capital, such as the failure to provide first-rate education or to reduce poverty, means many fewer opportunities for businesses and residents to use financial assets. Deteriorating natural assets, such as polluted streams, degraded forests, or lost farm lands, reduce property values, drive away new businesses, and undermine the quality of life for current residents. Low financial capital, such as insufficient diversification or high unemployment, leads to social instability and a vulnerability to economic cycles.

Indicators: How do we measure what we value?

People use indicators every day: children's school grades, gas or fish prices, cholesterol levels, all are indicators of things we care about. As Copper River communities prepare for the growth of tourism and other potential economic shifts, we need to know – both now and in the future – how strong our community is and to take stock regularly of our assets. Business owners and community leaders can use this information to make decisions about future investments and make policy decisions.

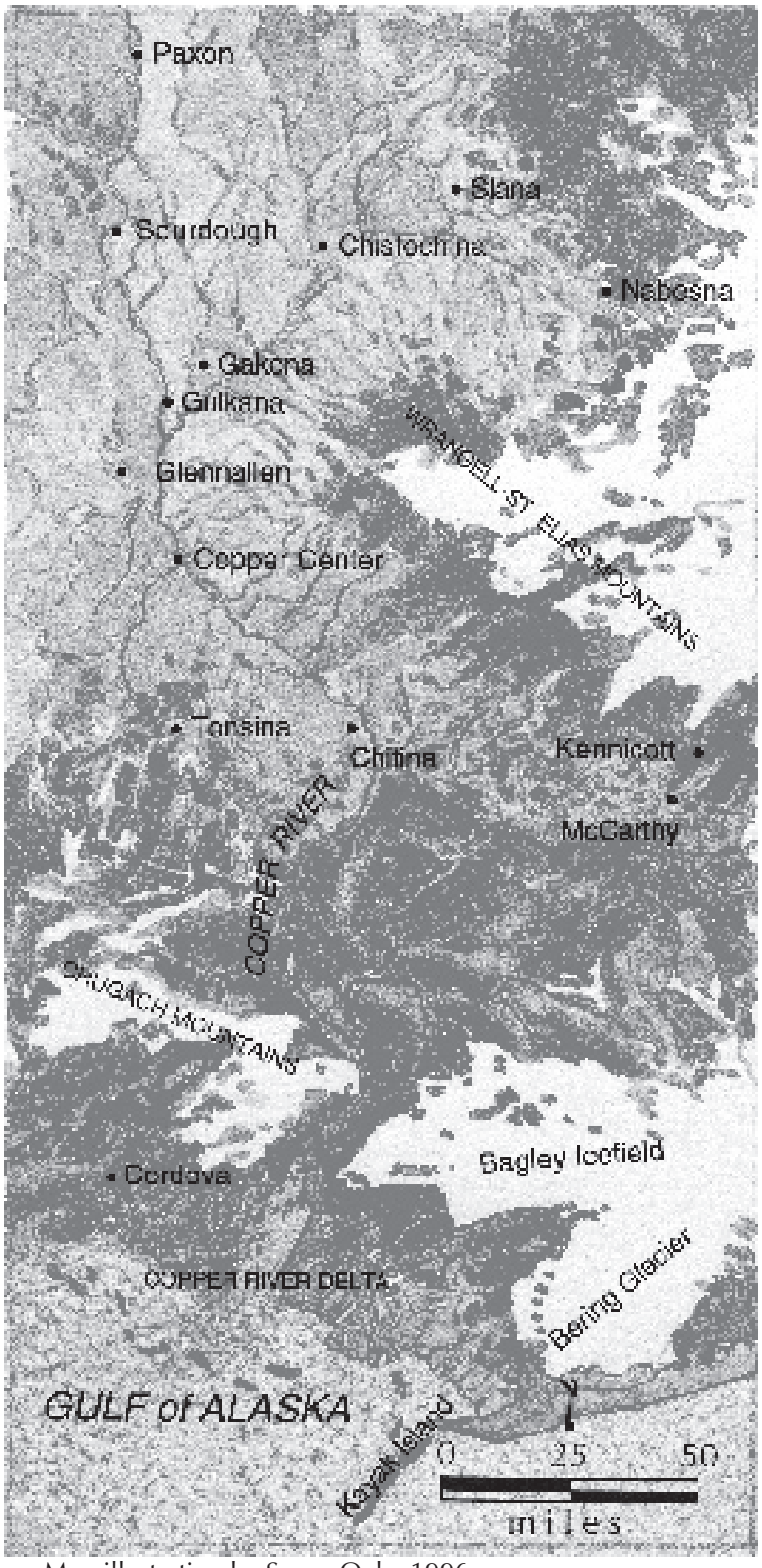
(Footnotes)

[1] Hart, Maureen, "Guide to Sustainable Community Indicators," QLF/ Atlantic Center for the Environment, May 1995, p. 3.

[2] Sierra Nevada Wealth Index, 1996, p. 3

[3] Hart, Maureen, "Guide to Sustainable Community Indicators," p. 3.

What is the Copper River Watershed?



Map illustration by Susan Ogle, 1996

The Copper River watershed spans from its headwaters high in the Alaska Range, with tributaries draining through the Copper Basin, and bisects the Chugach Mountains on its way to the Gulf of Alaska. The Wrangell Mountains flank the basin on the east side.

At 26,500 square miles, the Copper River watershed is Alaska's third largest watershed and home to roughly 5,600 residents scattered among 22 communities. Many freshwater and glacial tributaries contribute to this river system, with critical spawning habitat fanning out from the Copper River's main stem in all directions.

Features on the watershed's landscape include 20 percent of the Trans-Alaska Pipeline System, which crosses five major tributaries to the Copper, the Richardson, Edgerton and Tok Cut-off Highways providing access to its resources, and the PWS Aquaculture Corporation's Gulkana Hatchery.

Communities located within this drainage include:

Chisana
Chistochina
Chitina
Copper Center
Copperville
Cordova
Gakona
Glennallen
Gulkana
Kennicott
Kenny Lake
McCarthy
Mendeltna
Mentasta Lake
Nabesna
Nelchina
Paxson
Slana
Tazlina
Tonsina Upper
Tonsina Lower
Tiekel
Tolsona

Report Production

Research Methodology and Sources

The source for each indicator is identified clearly in the text. Most of the data compiled in this report came from federal and state sources. For Alaska, most data is collected only at the state or borough level, even though there are dozens of communities not located in boroughs. Data collection for decision making in these communities is not nearly sufficient to make informed decisions, and state agencies need to be allocated more resources to assist planners and community leaders in these rural areas. Improving the quality and consistency of data collection in the Copper River region must be a priority for policy-makers if existing data collection is to produce more tangible public benefit.

Art Credits

Art work featured in this report was created for Alaska's Copper River Delta, a joint undertaking between the Artists for Nature Foundation, Riki Ott and Cordova's business community.

Trumpeters and Kings, Colin See-Paynton, Wales.
Moose, Andrea Rich, California
Unloading Tender, Piet Klaase, Netherlands
Nilatoa, Piet Klaase

Authors

Dr. MaryAnne Bishop, Prince William Sound Science Center, researched indicators on natural resources in the Copper River watershed. She was assisted by Jeff Mason (what else here?).

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Emily Keuthen, summer 2006 intern from Bowdoin College, assisted with updating indicator data for natural resource and social/culture indicators.

Charlie Wilson, summer 2006 intern from Colby College, assisted with updating indicator data for economic and social/cultural indicators.

Kristin Smith, Copper River Watershed Project, researched data for social and cultural indicators.

Rochelle VandenBroek , Cordova, designed the layout.

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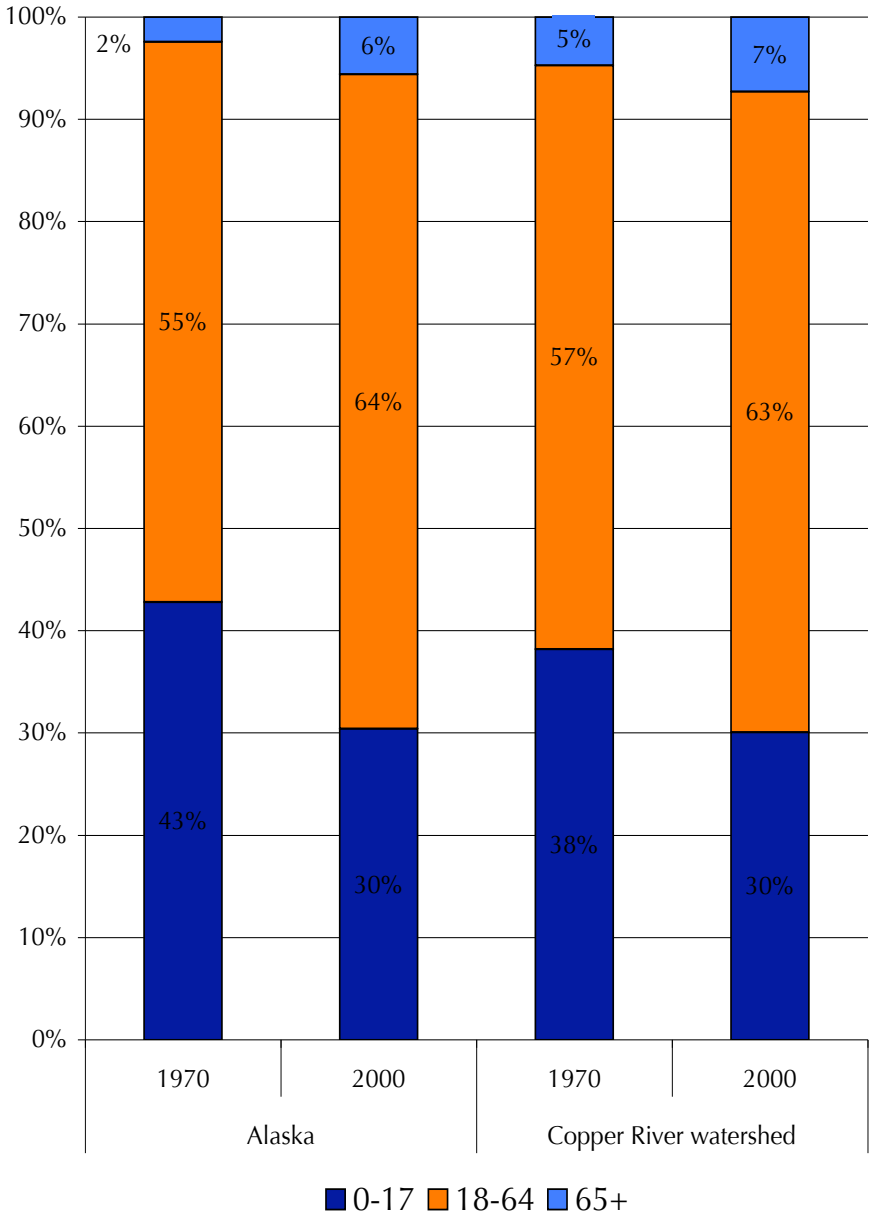
Social/Cultural Indicators

Copper River Watershed



Age Distribution in Alaska and the Watershed

Source: U.S. Census, 1970 and 2000

What's happening?

- In many Copper River communities, the working age population doubled as the region's population increased.
- Senior populations continue to grow as well, indicating that senior residents are tying in their hometowns as they age, although they make up a smaller percentage of the overall U.S. population.
- People who moved to Alaska when they were in the labor force are staying as senior citizens.
- Youth under 18 years of age made up a smaller percentage of the overall population in 2000 than they did in 1970, reflecting a statewide trend.

Why is it important?

The age distribution of the population affects the size of the labor force, the number of youth in school, health care requirements, goods and service in demand, and many other aspects of the economy. For example, a community with many retired citizens wants to keep them -- and the money they spend -- and needs to be able to offer good health care and goods and services for their enjoyment.

A growing labor force suggests there are economic opportuniteis attracting new residents.

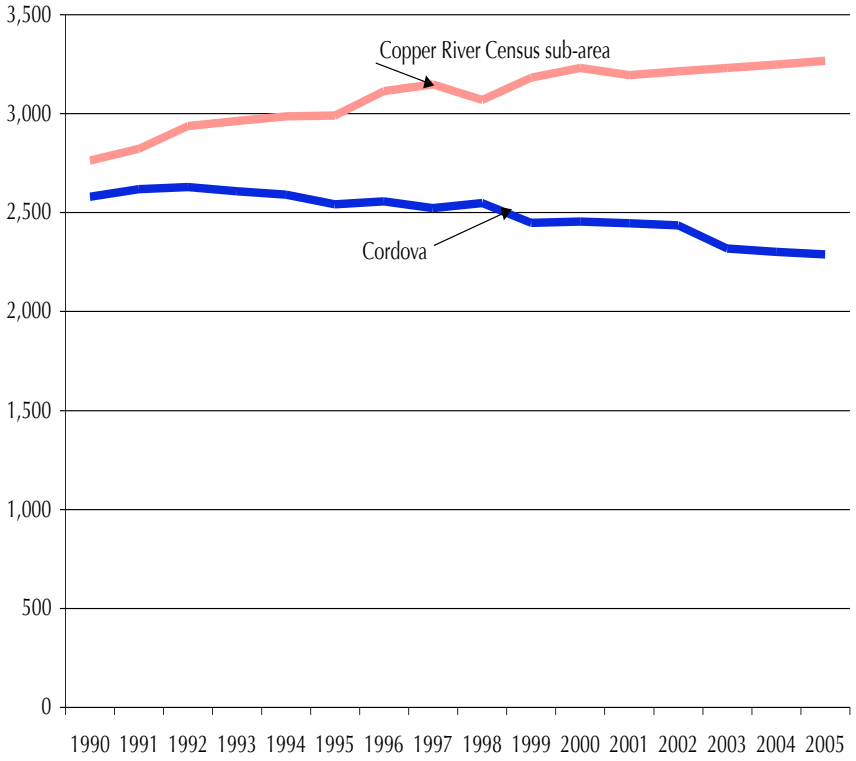
Population of Copper Basin Grows While Cordova's Drops Slightly

What's happening?

- Residency in the Copper Basin grew by 18% over a 15 year period. As tourism in the Copper Basin grows and more people seek open space, population in the Copper Basin, mostly in the central Glennallen-Copper Center-Kenny Lake area, is growing.
- Cordova's population fell by 11% over the same period. Cordova has suffered economic setbacks from teh Exxon Valdez oil spill and increasing competition from farmed salmon in fish markets, causing fishing-realted revenues and jobs to drop considerably in the last 16 years.

Why is it important?

Population growth and loss show trends in job availability, quality of life, and demand for services (education, health care, utilities) and resources (land, dirnking water, subsistence harvest foods).



Copper Basin and Cordova Population

Source: Alaska Department of Labor, Research and Analysis

Few Bike Paths Available to Kids, Pedestrians in Copper River Communities

	Town Road Miles	Existing Multi-user Paths	Multi-user Paths as Percent of Town Road Miles
			%
Cordova	12.9	0	0%
Chitina	5	0	0%
Chistochina	5	0	0%
Glennallen	11.5	2.7	23%
Kenny Lake	18	3	17%
Mentasta	7	0	0%
McCarthy	5	0	0%
Tazlina	5	1	20%
Copper Center	12	1	8%

Ratio of Bike Paths to Roads in Selected Copper River Watershed Communities

Source: Alaska Department of Transportation

What's happening?

Residents in the Copper Basin have highways for a "Main Street." Children and adults living along the Glenn, Richardson, Tok, Edgerton and Copper River Highways must use the same roads for biking and walking as R.V.s and, particularly in the Copper Basin, freight trucks moving at very high speed.

Why is it important?

For allocating road transportation dollars, the State Department of Transportation and Public Facilities must integrate community needs into road planning and design. Local transportation and recreation safety should be priorities ahead of big dollar new construction projects. With the basin's growing visitor population, it's especially important to have adequate R.V. facilities (road pull-outs) and amenities for other users (garbage collection, road maintenance, bike/pedestrian walkways, paths).

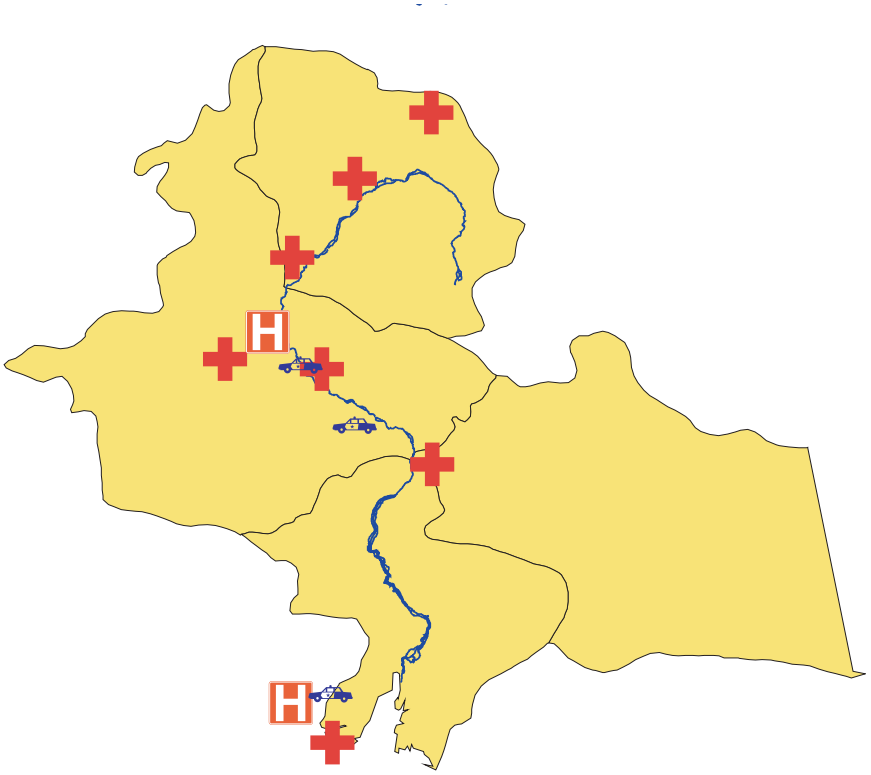
Health Care Services Available Throughout the Watershed

What's happening?

Copper River watershed communities -- including rural communities -- have built up a health care network ranging from physicians' clinics to emergency medical squads.

Why is it important?

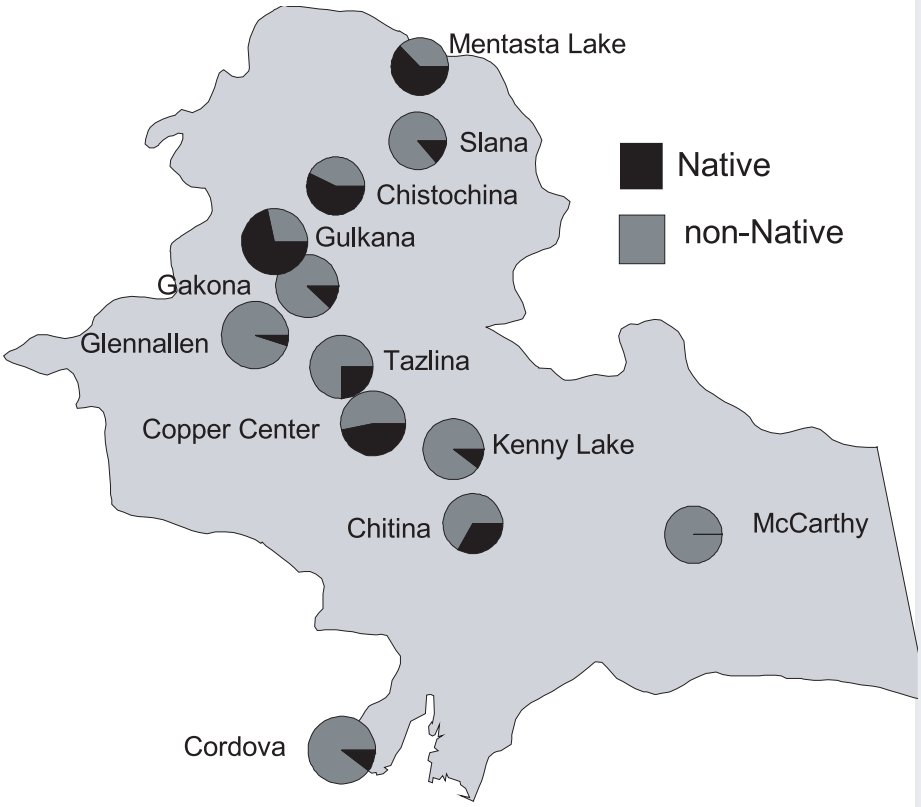
As communities grow, good health care is critical to all population groups -- children, working adults, and senior citizens. Health care availability is a factor in choosing where to live, particularly for retirees. Tourists also depend on access to health care services.



Copper River Watershed Health Care Network

Note: black lines represent map segments, not roads.

Copper River Watershed Villages Have Strong Native Populations



Native Population in the Copper River Watershed

Source: Alaska Department of Labor, Research and Analysis Division

What's happening?

Eyak and Ahtna peoples are heavily represented along the Copper River, and they still rely on the Copper River for subsistence resources as they have for thousands of years. Some of today's upper Copper River native villages are decendants of traditional fish camps.

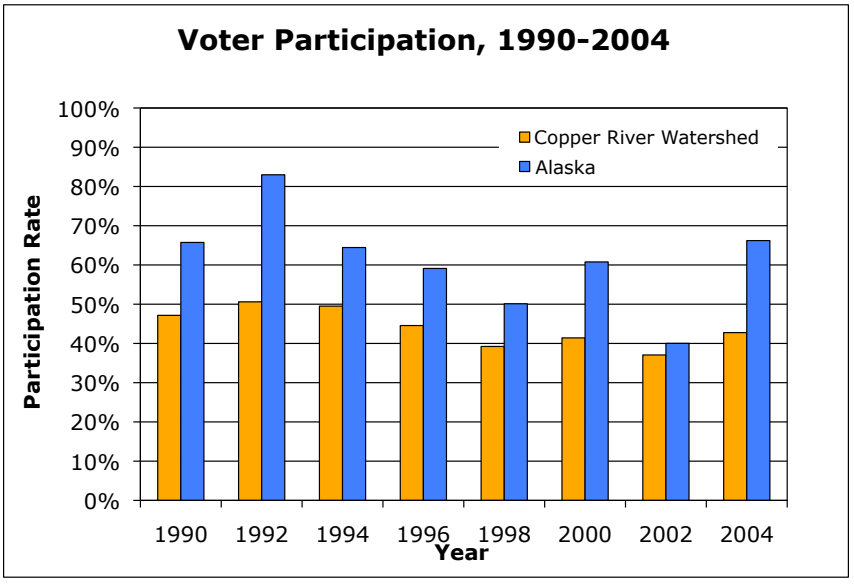
Why is it important?

Planning for development in this region must include the representative native tribal councils.

Watershed Voter Participation Rates Are Lower Than Statewide Average

What's happening?

- Watershed voter participation rates are lower than the statewide average.
- Less than 50% of all the watershed's registered voters have chosen to participate in recent elections.



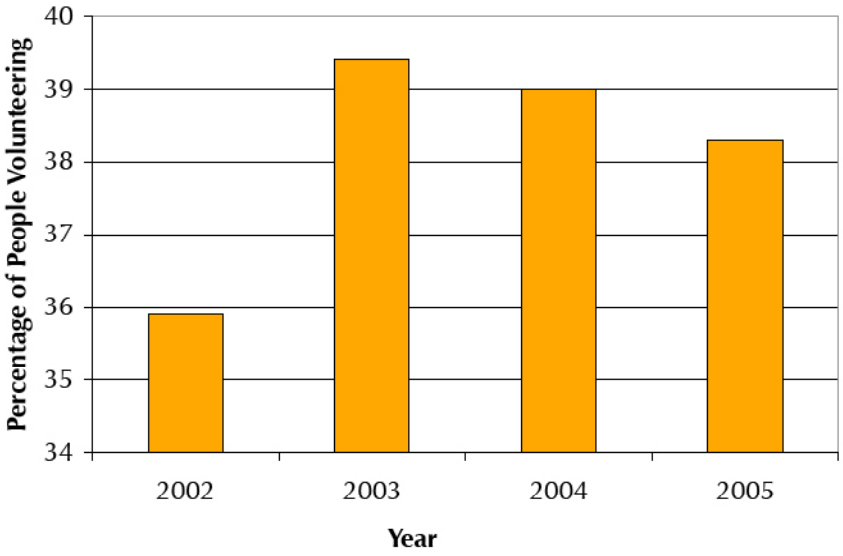
Source: State of Alaska Division of Elections

Voter Participation
1990-2004

Why is it important?

Voter participation levels signal citizens' involvement and investment in the making and implementation of public policies. The vote helps to ensure that representatives and other public servants respond to the needs and concerns of their constituencies. Who can we blame if we do not vote?

Volunteers Support the Copper River Watershed



Volunteer Rate in Alaska

Source: Corporation for National and Community Service

What's happening?

Alaska has one of the five highest volunteer rates in the country. In the watershed, there are a wide range of nonprofit organizations and volunteer opportunities. A network of volunteer labor provides valuable social services from teaching children to preserving culture and history to medical attention.

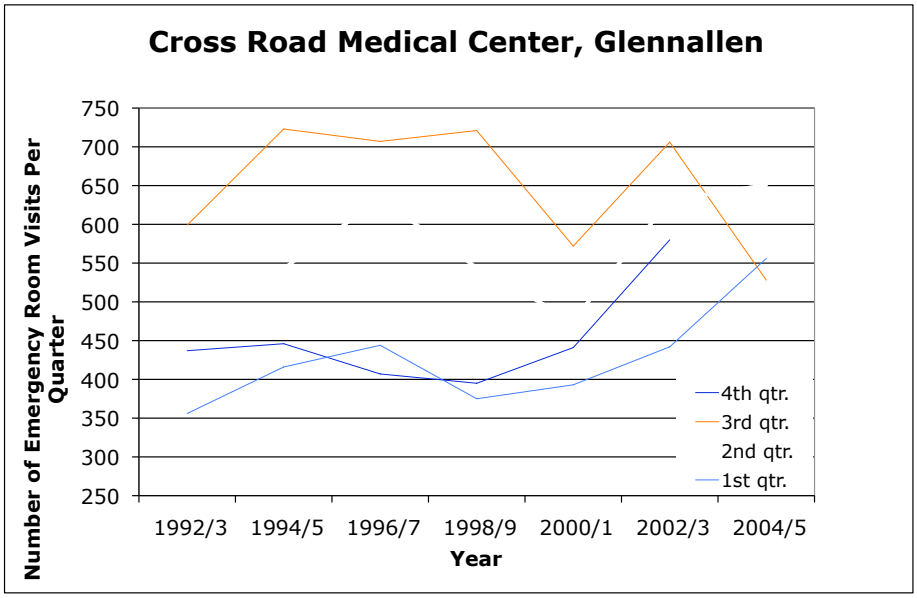
Why is it important?

Volunteer activity is a good indicator of civic pride and community strength. Volunteers in the watershed are vitally important as they help provide many of the services the local government does not provide in this area. Additionally, volunteers and organizations provide what businesses and government cannot: social infrastructure.

Demand For Healthcare Services is Seasonal
1992-2005

What's happening?

- Figures from the region's medical facilities show that emergency room visits increase noticeably in the second and third quarters of the calendar year, April- September.
- Summer increases are expected since people are much more active earning their livelihood fishing, guiding, building, and other highly physical activities. There are also many more residents and tourists engaging in sport fishing, hunting, and backcountry traveling, so accident rates increase.



Emergency Room Visits by Quarter, Cross Road Medical Center, Glennallen

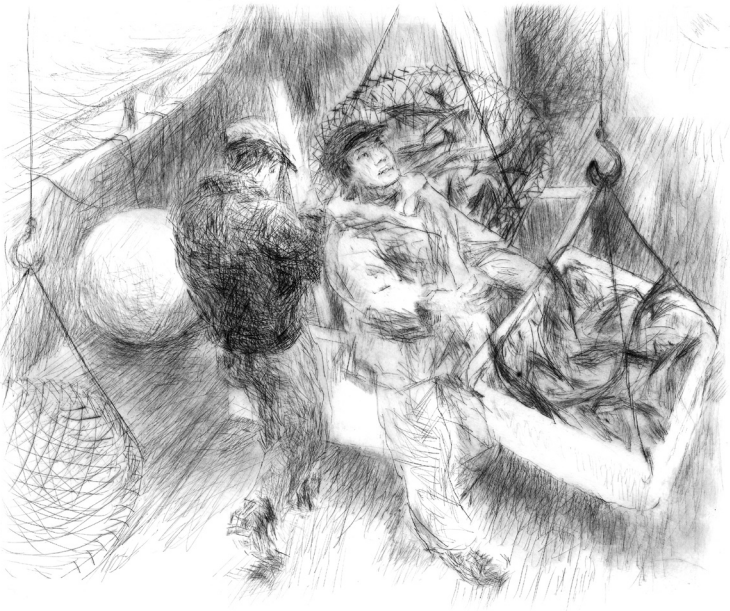
Source: Cross Road Community Medical Center

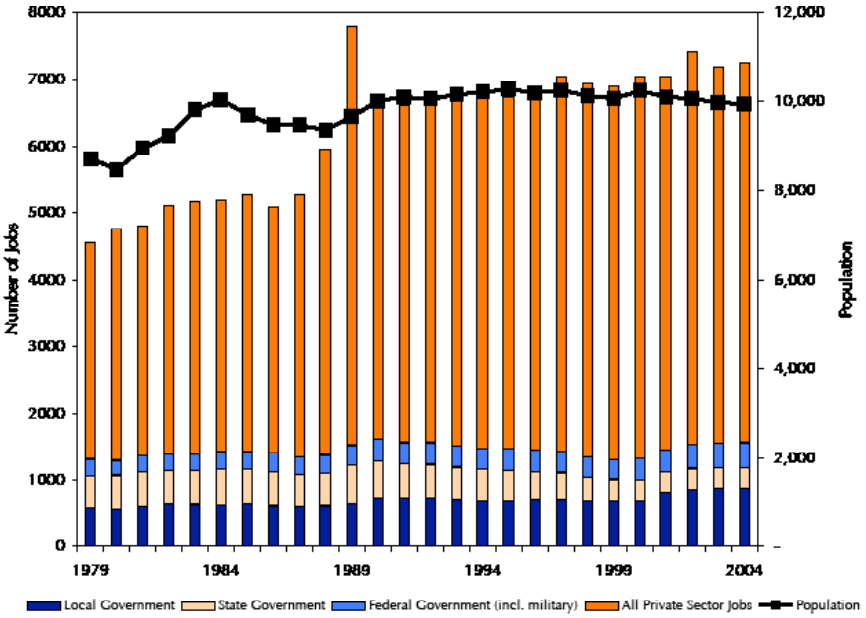
Why is it important?

- As the number of visitors to and residents of these communities increases, so will the need for medical services. In the Copper Basin and Cordova, a large part of this burden falls on volunteers who provide emergency medical services.
- Copper River communities have to provide health care infrastructure that meets the summer demand, but supports those fixed costs the entire year.

Note:
Cordova Community Medical Center was unable to provide emergency room visit data.

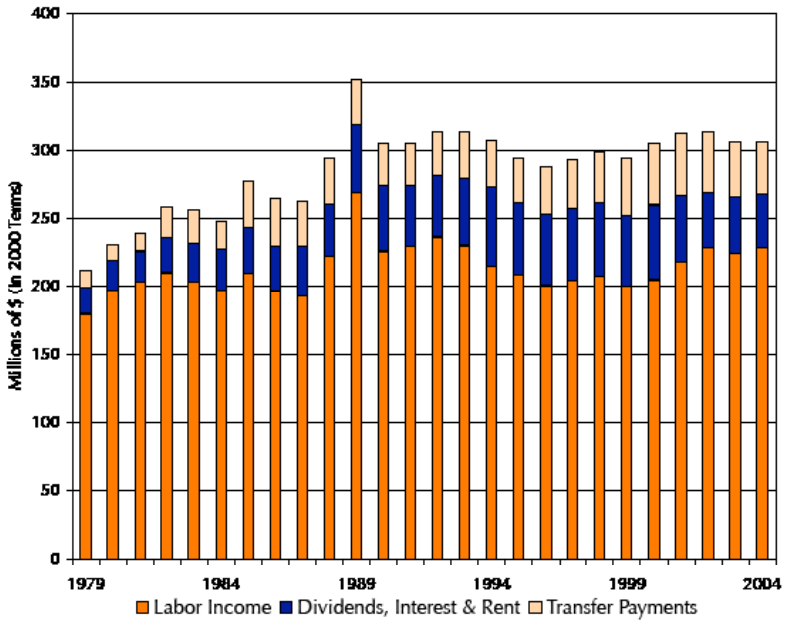
Economic Indicators





Population and Employment, Valdez-Cordova Census Area, 1989-2005

Source: U.S. Census; Bureau of Economic Analysis



Total Personal Income by Source for Valdez-Cordova Census Area, 1980-2005

Source: U.S. Bureau of Economic Analysis; REIS

What's happening?

- The large spike in private sector jobs in 1989 was due to the Exxon Valdez oil spill.
- There has been a steady increase in private sector jobs in the 1989-2005 period.
- Though falling throughout the 1990s, total government jobs have risen slightly in the last few years due to an increase in local employment.
- State budget cuts have contributed to the loss of government jobs at the state level.

Why is it important?

Growth in private sector jobs is desirable for a sustainable community. Growth signifies that the community is appealing, has good schools, and has a good quality of life.

What's happening?

- Total personal income has grown with the area's labor force population.
- Transfer payments, which includes the Alaska Permanent Fund Dividend, have grown the most -- 116.2% -- as a share of total personal income.
- Labor income has stagnated, falling by 1.25%.

Why is it important?

Total personal income represents an area's overall economic health. As personal income grows over time, a region is better able to sustain itself.

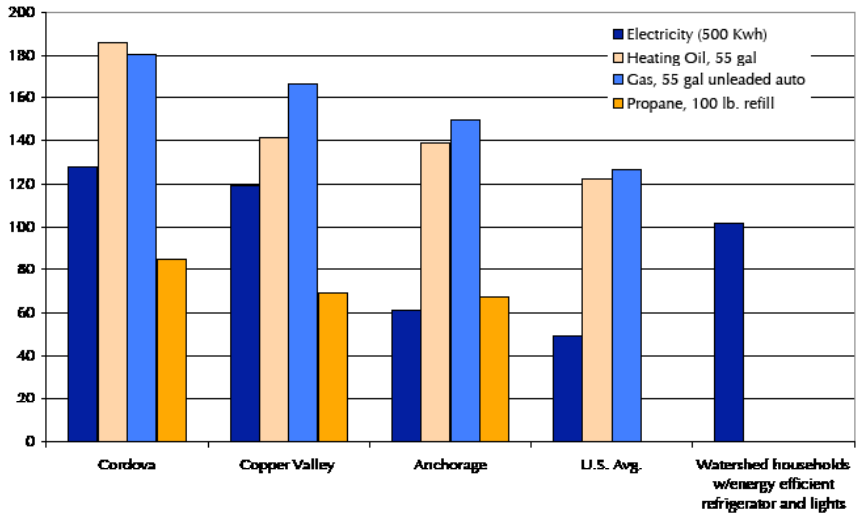
Energy Efficient Appliances Could Reduce 2005 Monthly electrical Charges by 13%

What's happening?

- Cordova's electric and heating oil costs are 110% and 24% higher than Anchorage costs, respectively.
- Copper Basin electric rates are roughly twice as high as Anchorage rates, while its heating oil costs are only slightly higher than in Anchorage.
- Copper River watershed residents could save 13% each month on their energy costs with ten compact fluorescent light bulbs and an energy efficient refrigerator.

Why is it important?

Energy costs are a significant portion of living costs, and contribute to making a community affordable for families and businesses.



2005 Alaska Energy Costs

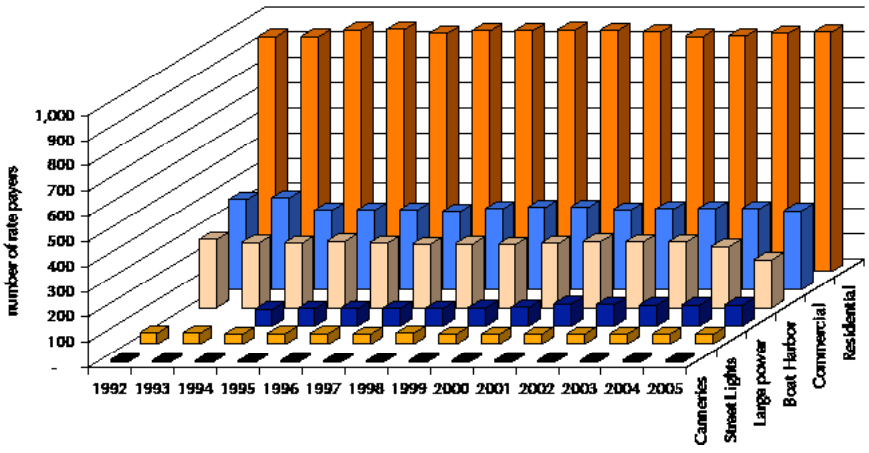
Source: University of Alaska, Fairbanks' Cooperative Extension Service Cost of Living Survey; Cordova Electric Cooperative; Northwest Alliance

What's happening?

Numbers of Cordova electricity users by category have remained steady over the last 15 years.

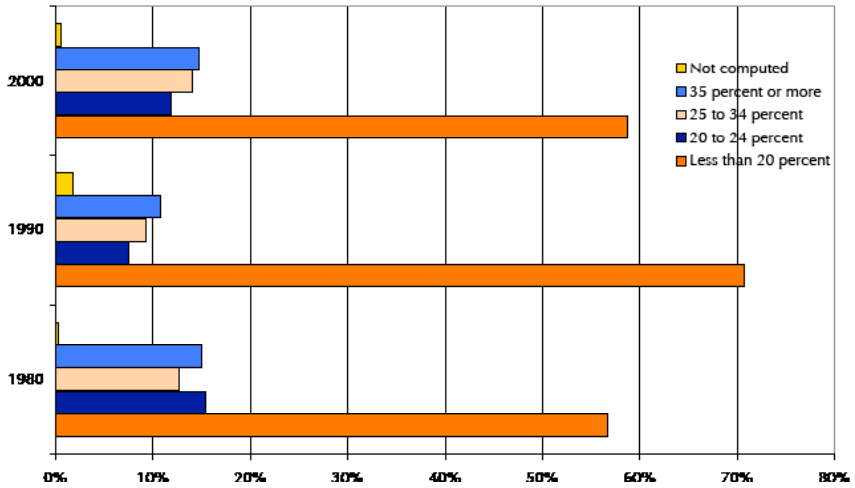
Why is it important?

Providing electricity to a community is essential, and requires investment in a minimum capacity infrastructure. Costs could be spread across more users if the town were to grow slightly.



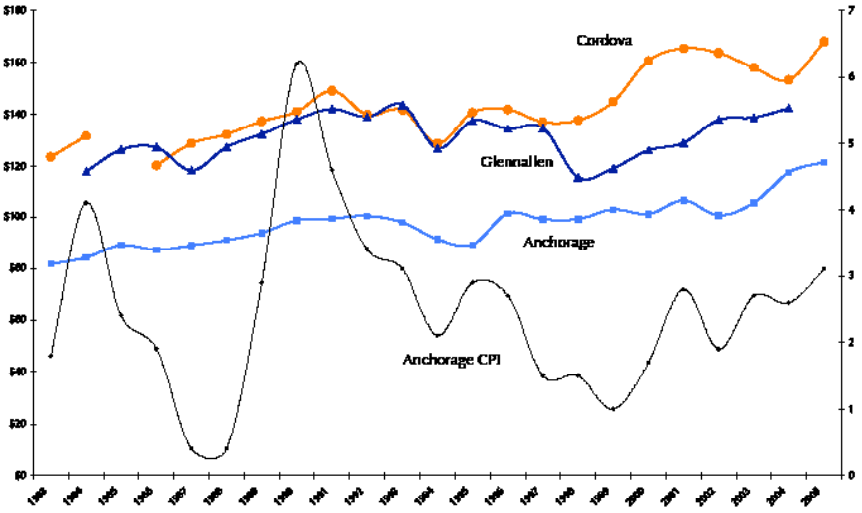
Cordova Electricity Users by Type, 1992-2005

Source: Cordova Electric Cooperative



Housing Costs as a Percentage of Income, Valdez-Cordova Census Area

Source: U.S. Census, 1980,1990, 2000



Cordova and Glennallen Food Prices

Source: University of Alaska, Fairbanks' Cooperative Extension Service, Cost of Food at Home for a Week in Alaska

What's happening?

- Housing in the Cordova-Valdez census area has become less affordable since 1980.
- Housing is generally considered "affordable" if costs are under 25% of household income. Over time, that percentage has crept up to 33%.
- Affordable housing became more available in 1990 as households shifted from the lowest two expense groups to the lowest expense group.

Why is it important?

Housing is the largest constant cost for most families, and affordable housing is a primary concern to Copper River watershed residents. Housing costs are relatively high in this area because of lack of economies of scale -- homeowners typically ship materials, purchase land, and install utilities one lot at a time.

What's happening?

- Cordova and Glennallen food prices tend to follow Anchorage inflation rates.
- Glennallen food prices are approximately 34 percent higher than Anchorage.
- Cordova food prices are approximately 47 percent higher than Anchorage.
- Both high amounts are factors of additional shipping costs beyond the Anchorage hub.

Why is it important?

For a community to be sustainable, families must be able to afford to live there.

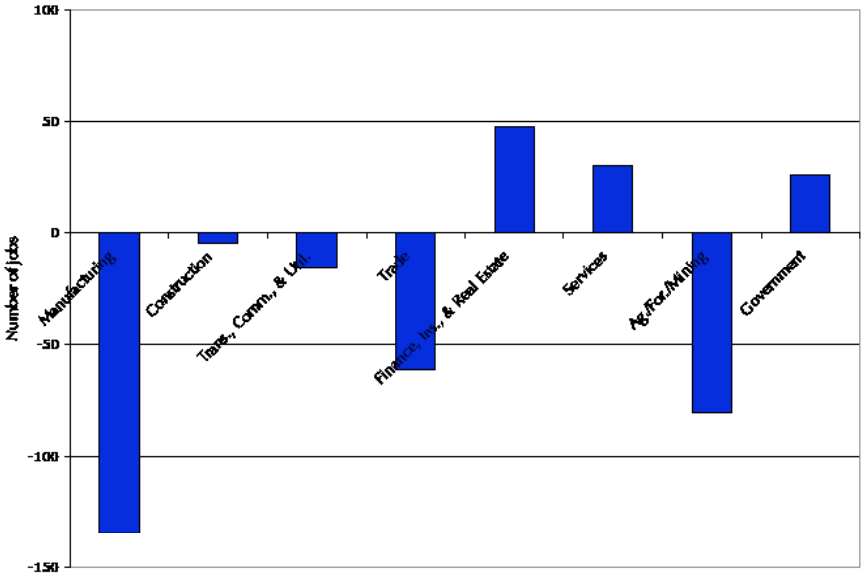
Cordova and Copper Basin Industries

What's happening?

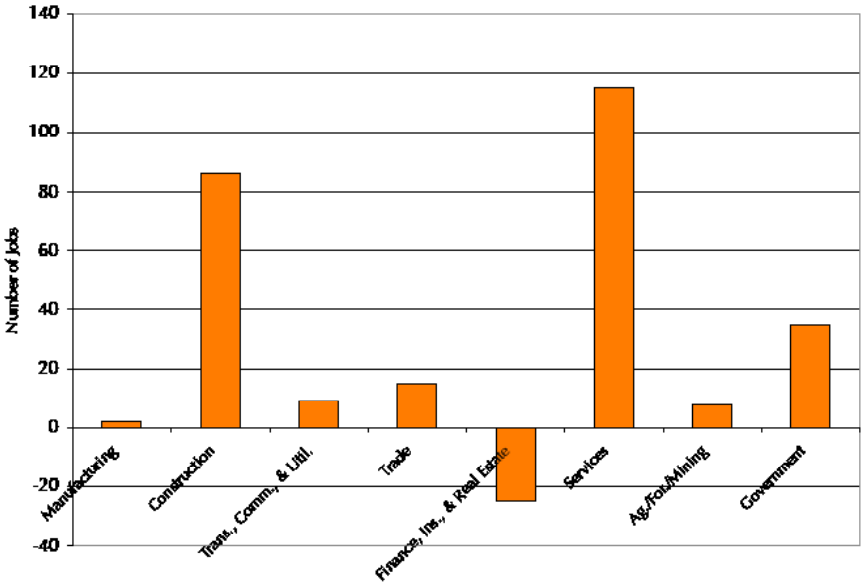
- Cordova jobs in fish processing have declined since the early 1990s, partially driven by decreasing market prices for wild salmon as a result of a greater farmed salmon presence.
- Service jobs are growing in the Copper Basin, partially driven by increased tourism and the fishing/guiding industry.

Why is it important?

Economic diversity in a community is important for sustainability. Sudden downturns in a one-industry economy can have widespread effects, but with a diversity of businesses, community revenues will not decline so severely as to cause all-around economic hardship.

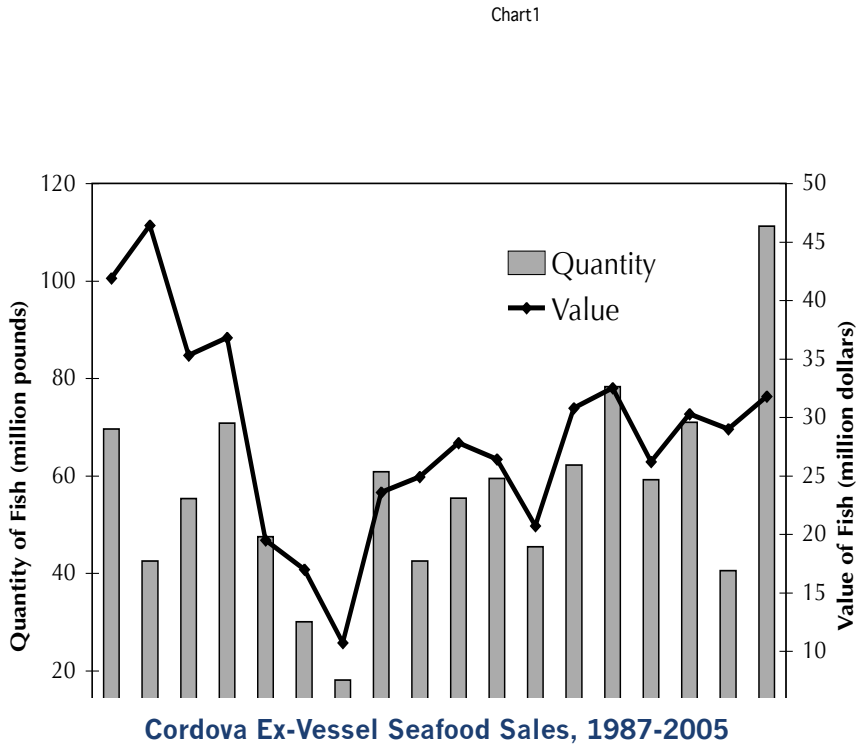


Change in Cordova Jobs by Economic Sector, 1990-2005



Change in Copper Basin Jobs by Economic Sector, 1990-2005

Source: Alaska Department of Labor, Division of Research and Information



Cordova Ex-Vessel Seafood Sales, 1987-2005

Source: NOAA, United States Fisheries

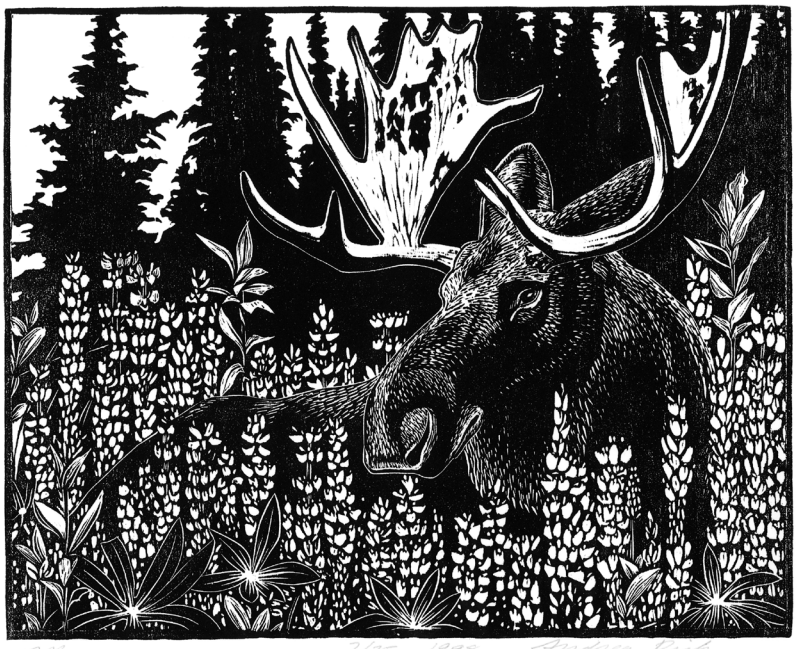
What's happening?

- Since the mid-1990s, Cordova fishermen have been catching more seafood, but earning less money per pound than they did in the late 1980s.
- Since 1999, the world supply of farmed fish has exceeded the world's wild salmon harvest level. Salmon market prices are dominated by the glut of farmed salmon.
- Eighteen years after the Exxon Valdez oil spill, salmon prices began to recover in the 2004 and 2005 fishing seasons.
- Herring stocks, a major commercial fishing species before the spill, are listed as "not recovered" by the Exxon Valdez Oil Spill Trustee Council.

Why is it important?

- An economic disaster like the Exxon Valdez oil spill can have long term cumulative loss effects. Eighteen years of lower annual incomes from injured species translates to business re-investments not made, in addition to college and retirement savings foregone.
- Alaska coastal economies are largely salmon economies. Sustaining the productivity -- and therefore habitat -- of this renewable resource is critical to coastal communities.

Natural Resource Indicators



Copper River Watershed

Watershed Residents Rely Heavily on Subsistence resources

Wild Resource	Total lbs. Harvested	Dollar value of harvest @$4/lb.	Avg. lbs. per household	Dollar Value per household	lbs. per person	$ per person
Fish	256,960	$1,027,840	282	$1,130	106	$425
Land Mammals	132,252	$529,008	145	$581	55	$219
Marine mammals	9,320	$37,280	10	$41	4	$16
Vegetation	15,023	$60,092	17	$66	6	$25
Marine invertebrates	6,833	$27,332	8	$30	3	$11
Birds & Eggs	6,278	$25,112	7	$28	3	$10
Total	426,665	$1,706,660	469	$1,875	176	$706

Subsistence Harvest
Cordova, 2003

Wild Resource	Total lbs. Harvested	Dollar value of harvest @$4/lb	Avg. lbs. per house- hold	Dollar Value per household	lbs. per person	$ per person
Fish	$78,326	$313,304	308	$1,232	124	$497
Land Mammals	$48,128	$192,512	154	$617	57	$227
Vegetation	$4,937	$19,748	27	$107	10	$41
Marine invertebrates	$60	$240	0.26	$1	0.10	$0.39
Birds & Eggs	$1,105	$4,420	4	$18	2	$6
Total	$132,556	$530,224	494	1,975	193	$772

Subsistence Harvest
Chistochina, Chitina, Glennallen, Kenny Lake, Mentasta, 1987

Source: Alaska Department of Fish and Game, Subsistence Division.

Notes:
Subsistence data has not been collected for Chistochina, Chitina, Glennallen, Kenny Lake, or Mentasta since 1987. Subsistence data was collected for Cordova in 2003.

The dollar value of the harvest was set arbitrarily, as an average, and does not represent the market value of the various resources.

What's happening?

- Nearly one hundred percent of Cordova and Copper Valley households harvest some form of wild resources for food, according to a survey by the Alaska Department of Fish and Game 91985 - 1997 for Cordova, 1987 for Copper Valley).
- 75% of Cordovans share their harvest with their neighbors.
- This table shows that wild resources' monetary value is significant.
- Harvesting subsistence resources is central to Alaskan life, as these resources supplement household pantries and reinforce community ties and cultural attachments to the land.

Why is it important?

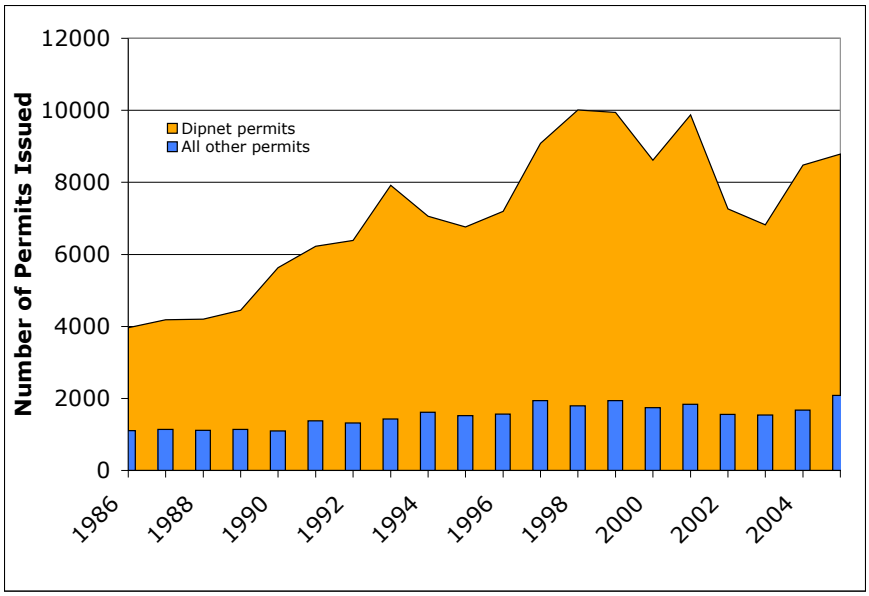
In an area where food costs are up to 47% higher than Anchorage, the harvest of the area's plentiful fish, game, and other natural resources is an essential source of supplemental income for many families. The Copper River watershed also hosts 20 percent of the Trans-Alaska Pipeline system, crossing 76 fish streams and five tributaries to the Copper River. A spill event at any of these locations could have drastic consequences for subsistence resources.

Harvesting natural resources is central to Alaskan life, as these resources reinforce community ties and cultural attachments to the environment. Consequently, we should monitor subsistence harvest trends of fish and game in the watershed to measure changes, and seek the causes of declines in the harvests.

Copper River Dipnet Permits Grow by 121%
1986-2005

What's happening?

- Permits issued for dipnet fishers on the Copper River have increased 121% from 1986-2005.
- Permits issued for all other fishers -- fish wheel, Copper River flats subsistence, and commercial gillnetters -- have increased by 89% during the same time period.



Fishing Permits Issued

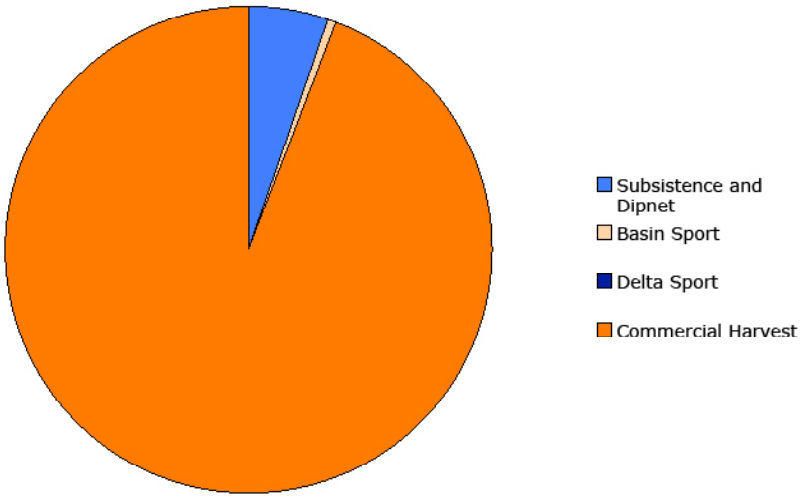
Source: Alaska Department of Fish and Game

Why is it important?

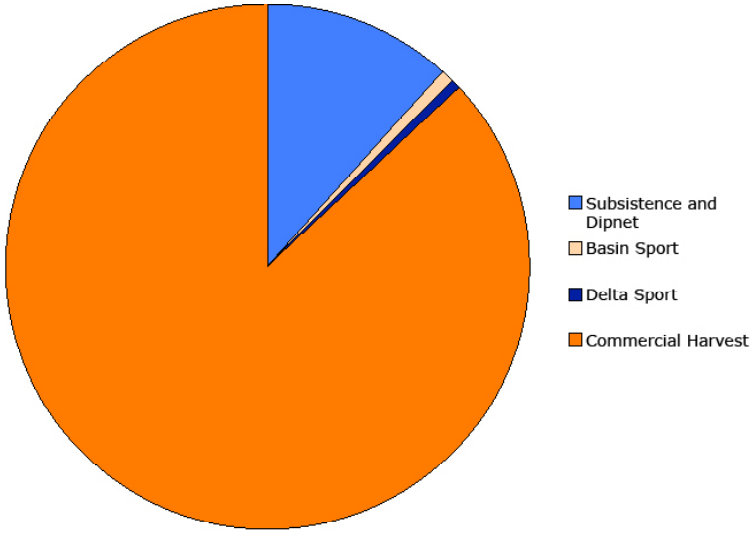
While fish are a renewable resource, issuing too many permits and harvesting too many fish will cause fish poplulations to decline. We must balance the needs of all fishers to be able to sustain thriving fish populations.

Note:
State personal use in the Chitina Subdistrict was temporarily classified as subistence from 2000-2003, but this change in classification is not taken into consideration in the graph.

Copper River Sport and Dipnet Harvests See Dramatic Growth



Copper River Salmon Harvest, 1977



Copper River Salmon Harvest, 2005

		Subsistence and Dipnet	Basin Sport	Delta Sport	Commercial Harvest
Chinook	1977	2,565	532	0	21,722
	2005	4,856	3,435	224	34,624
Sockeye	1977	42,049	3,662	209	617,182
	2005	213,042	8,135	452	1,331,664
Coho	1977	924	1,229	269	178,574
	2005	2,164	72	10,168	263,465

Source: Alaska Department of Fish and Game

What's happening?

- Sport fishing for coho salmon on the Copper River delta and chinook in the Copper Basin are rapidly gaining in popularity.
- Numbers of fish harvested by the dipnet fishery for chinook and sock-eye have tripled over 28 years.
- The Copper River commercial fishery harvest has doubled over the same period (no increase in the number of permits issued, but the addition of hatcheries in PWS and the Gulkana River has affected harvest levels).

Why are these important?

Federal and state resource managers agree that our Copper River salmon resources are fully allocated -- there is no margin for additional users without affecting current users.

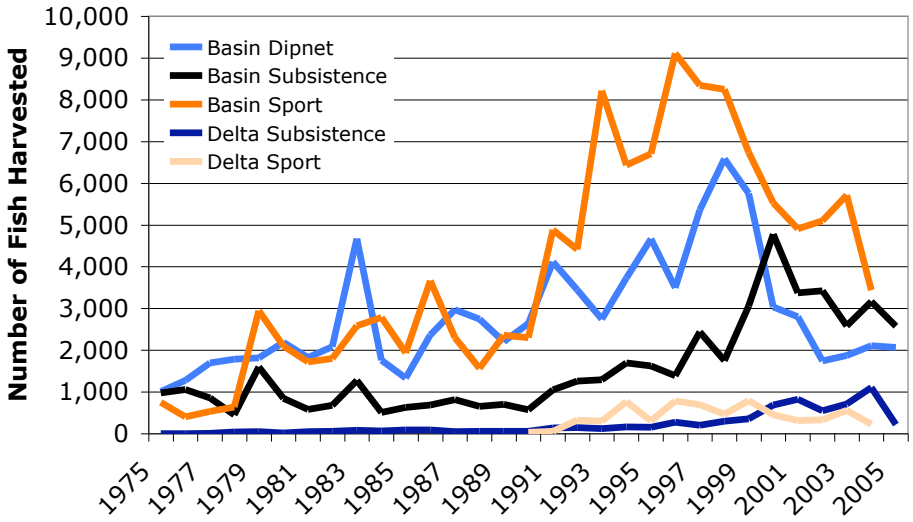
The Copper River watershed serves as a breadbasket for residents of Anchorage and Fairbanks. For the area's resource to be managed on a truly sustainable level, increases in users must be taken into account.

More people participating in the sports and dipnet fisheries means more vehicle traffic, more garbage, and more human waste to dispose of in the Copper Basin. On the delta and in the Copper Basin, increased use also means greater pressure for access and heavier foot traffic, which can degrade riparian zone fish habitat.

Copper River Chinook Salmon Harvest
1975 - 2005

What's happening?

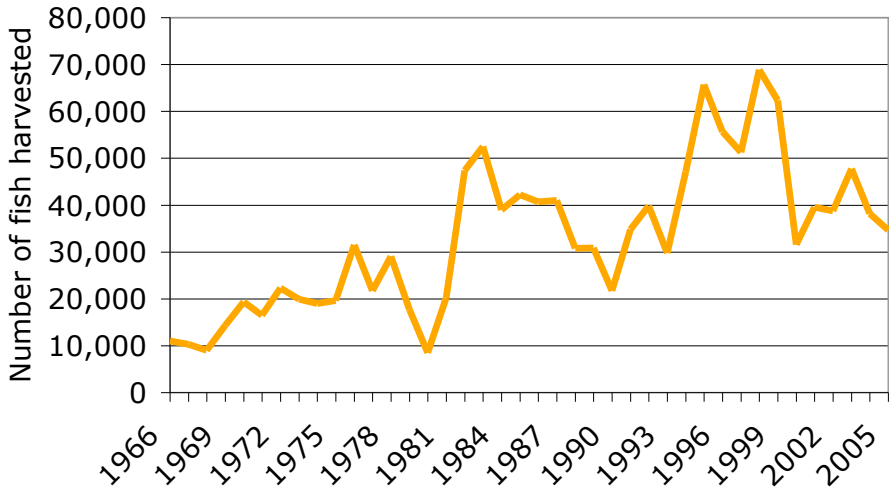
- Throughout the 1990s, more Copper River chinook salmon were harvested by sport fishers than by dipnetters.
- The increase in subsistence harvest of sockeye and kings in 2000 and 2001 is due to a change in classification of the fishery adopted in 2000 (and reversed in 2001) that classified dipnet fishers as subsistence fishers.



Non-Commercial King Salmon Harvests
1975 - 2005

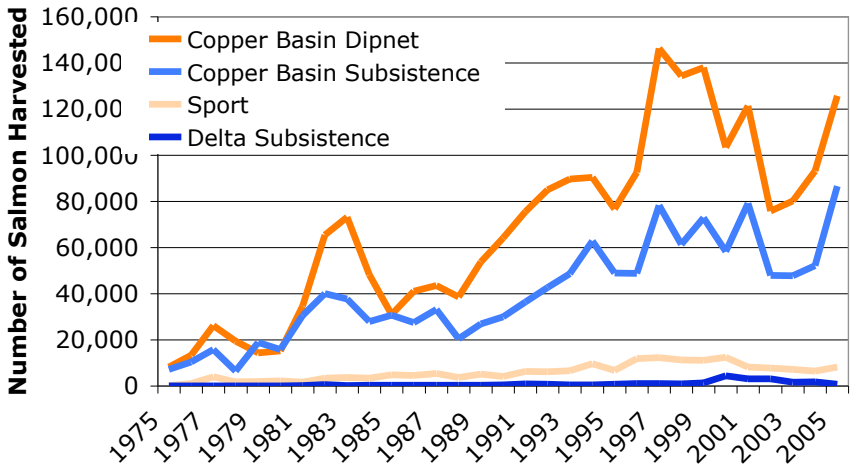
Why is it important?

- ADF&G collects information on fish entering the mouth of the Copper River, but lacks adequate management tools for determining how many fish actually reach their spawning grounds. With increasing numbers of fish being caught by sport fishermen, ensuring adequate escapement of specific stocks to specific streams is a growning concern.
- Mortality from hooked fish is also a concern, as even fish that are released can be re-hooked several times.
- In addition, reporting for sport fish is voluntary only. Residents and ADF&G need to be sure that accurate numbers of harvested fish are being recorded to allow informed management decisions.

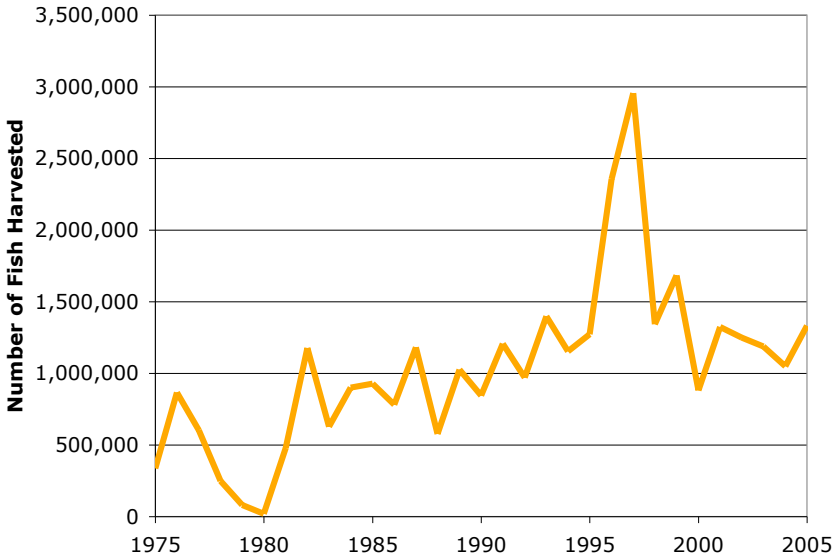


Commercial King Salmon Harvest
1966 - 2005

Copper River Sockeye Salmon Harvest
1975-2005



Non-Commercial Sockeye Harvest



Commercial Sockeye Harvest

What's happening?

- Growth in the harvest by the two largest user groups, dipnetters and commercial fishermen,has increased roughly equally.

  Using ten-year averages (1975 - 1984 and 1996 - 2005), commercial fishermen harvested 2.8 times more fish at the end of this period than the first ten years. Dipnetters harvested 3.4 times more fish in the latter part of this period than the first ten years.

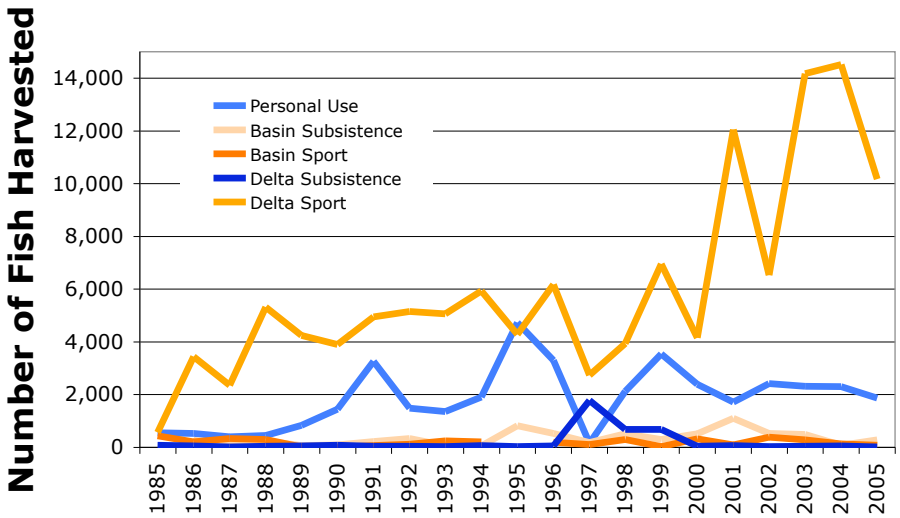
Why is it important?

- Changes in the abundance figures used by fishery managers and user group numbers effectively result in allocation changes. The dipnet fishery has been allowed to expand without limit, while the number of commercial fishery permits has not changed since 1977.
- Without sufficient upriver management tools, the cumulative effects of higher and higher harvest levels may being to affect escapement stocks.

Copper River Coho Salmon Harvest 1975 - 2005

What's happening?

- The Copper River delta sport harvest doubled from 1987 to 1988, and has climbed steadily ever since.
- The Copper River delta subsistence fishery has increased in use since 1988, although the peak overall harvest of several thousand fish is still fairly low.
- Other fishery harvest figures remain steady and vary with run strength.

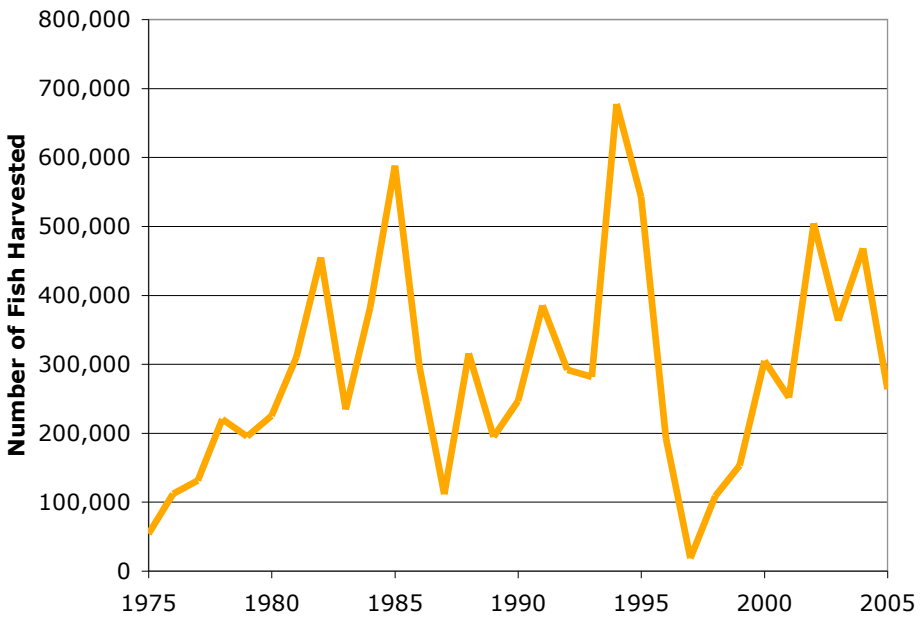


Non-Commercial Coho Salmon Harvests 1985 - 2005

Why is it important?

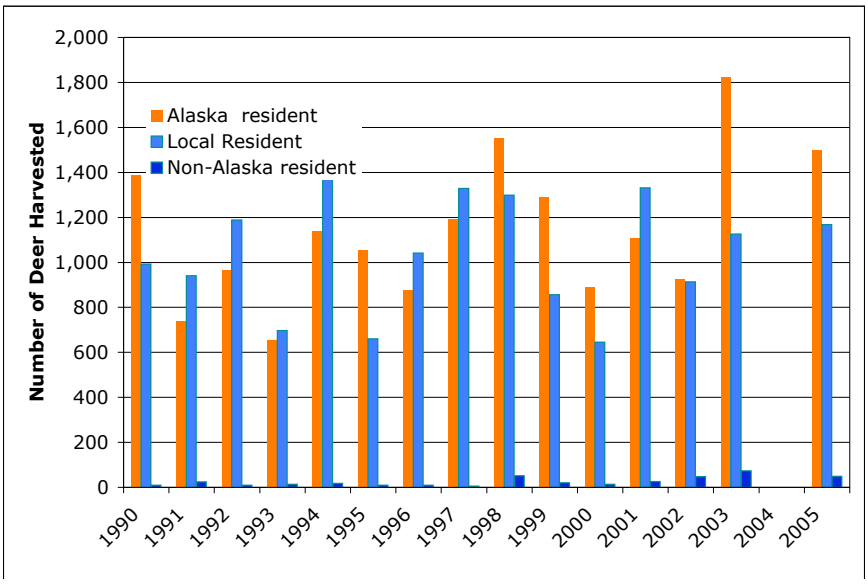
Ease of access to the delta stocks via the Copper River Highway road system has dramatically increased pressure on the resource. (look for USFS data).

Even after catching their limit, many fishermen continue to fish "catch and release." Released fish do not count toward the daily bag limit, but hooked fish suffer higher mortality rates.

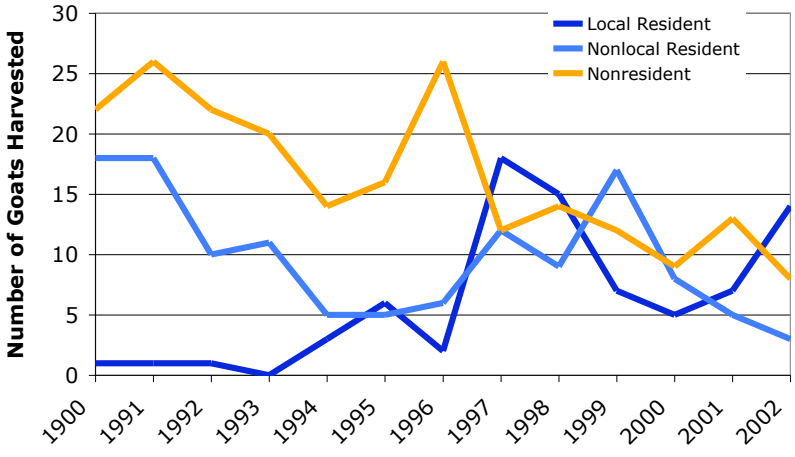


Commercial Coho Salmon Harvest 1975 - 2005

Game Habitat Makes Watershed a Breadbasket and a Recreation Ground



GMU 6 Deer Harvest
1990 - 2005



Goat Harvest
1990 - 2002

Source: Alaska Department of Fish and Game

What's happening?

Deer Harvest: Since 1995, hunters residing outside of game management unit (GMU) 6 have taken 55% of the deer harvest. Before 1995, hunters residing outside of GMU 6 had taken 48% of the harvest.

Goat Harvest: On average, local residents harvested one goat for every four harvested by other Alaska residents or non-Alaska residents.

Why is it important?

Deer Harvest: Cordovans benefit from this hunt through revenues to charter guides, lodging expenses, and other tourism spending in Cordova by visiting hunters. Deer population levels are mainly dependent on snow fall levels and other weather related conditions, so hunting deer is less of a conservation concern.

Goat Harvest: Hunters visiting the Copper River region contribute to local economies when shopping for groceries or paying for lodging. Their impact on goat habitat is considered minimal so there is likely a net benefit to watershed residents.

Notes:

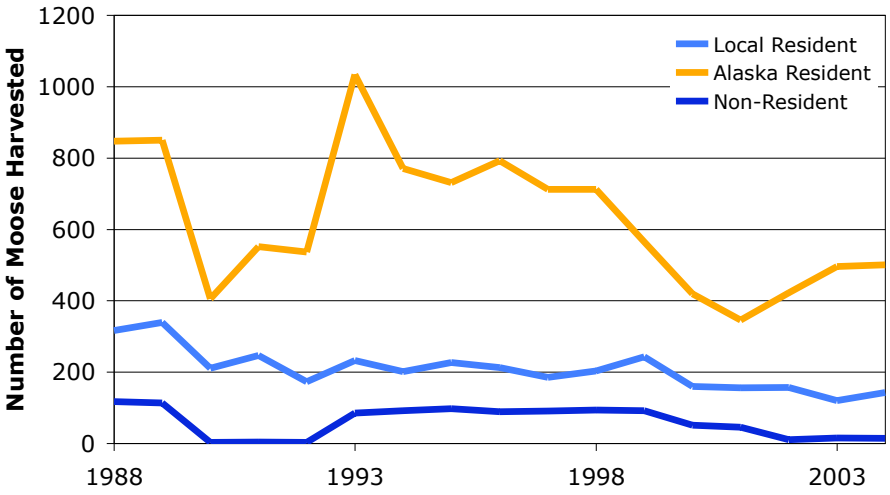
- No deer data were collected in 2004.
- The goat harvest includes GMU 6B, 6C, 11, and 13D.
- A local resident is a person hunting in the GMU in which they reside, non-residents are hunters residing outside of Alaska.

Game Habitat Makes Watershed a Breadbasket and a Recreation Ground

What's happening?

Moose Harvest: Local residents take 23% of the total moose harvest.

Caribou Harvest: Since 1986, local residents have taken 18% of all caribou harvested. However, in recent years, the number of caribou harvested by non-local residents has drastically decreased.



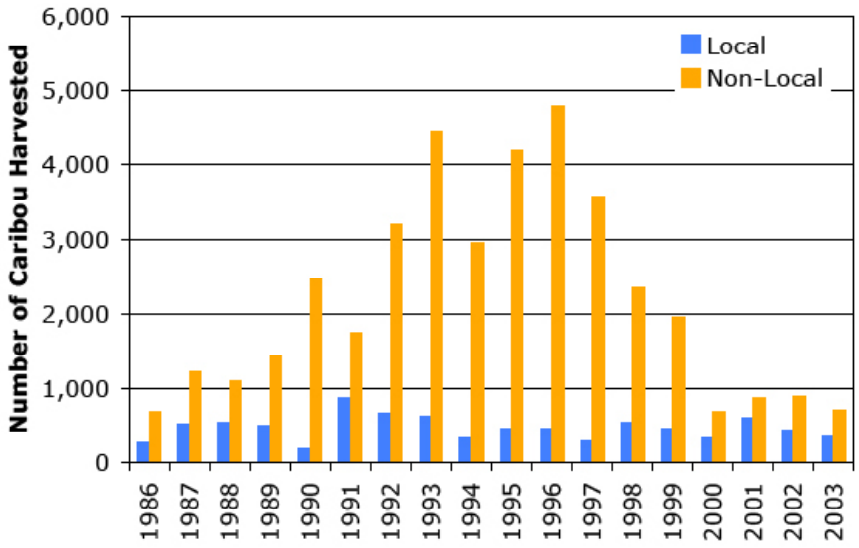
Moose Harvest
1988 - 2004

Why is it important?

Moose Harvest: Competition for this resource, which is in great demand for subsistence use, results in a net loss for watershed residents. Side effects of hunting pressure in the region incude damage to habitat from ATV use, trash left behingd, and demand on volunteers for medical and rescuse services.

Caribou Harvest: Hunters harvest resources and and use regional services such as roads and public land, but contribute little to the local economy. For a resource and its habitat to be managed sustainable, all side effects must be taken into consideration.

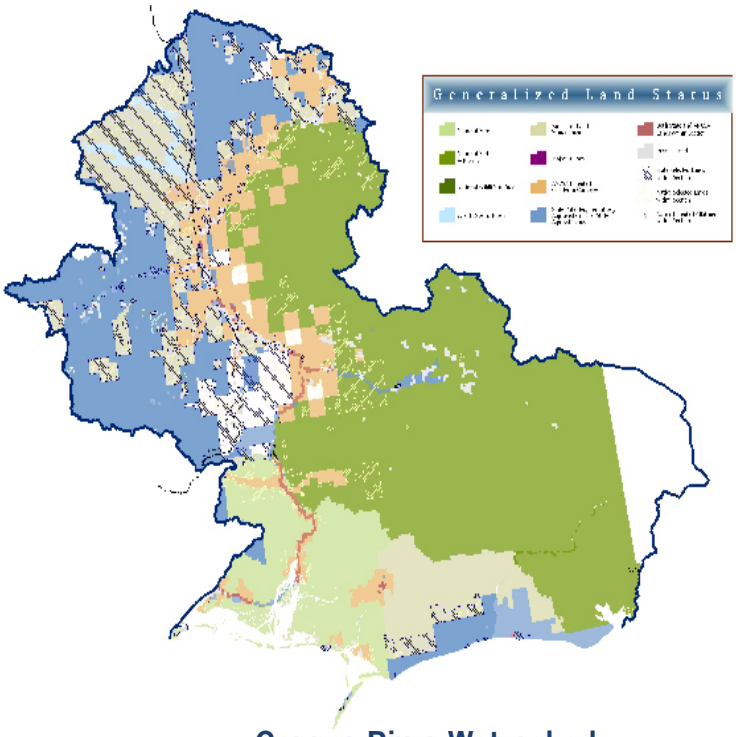
Notes:
- The moose harvest includes GMUs 6B, 6C, 11, and 13.
- Caribou harvest data is for the Nelchina herd.



Caribou Harvest
1986 - 2003

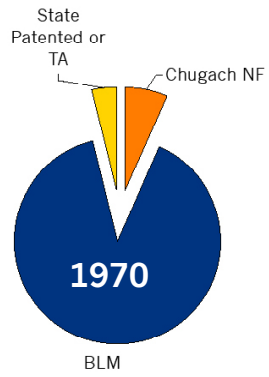
Source: Alaska Department of Fish and Game

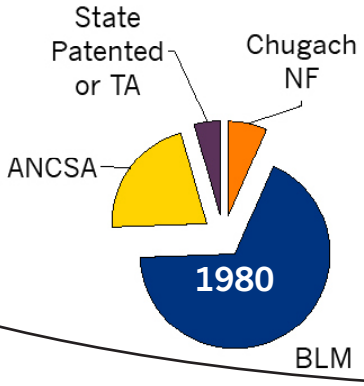
River Corridor Lands Under Fragmented Management and Ownership

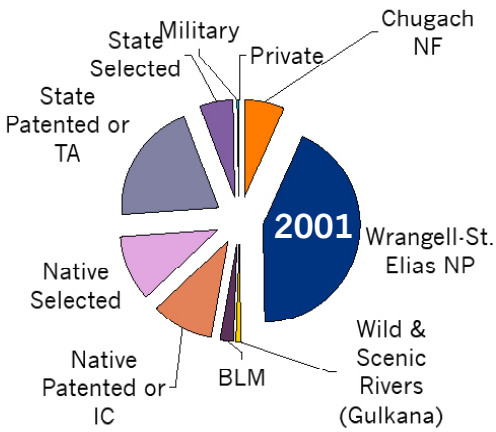


Copper River Watershed Land Ownership Status, 2005

Source: Ecotrust Cartography Department, 2005







Source: National Park Service

What's happening?

- Much of this sensitve fish and wildlife habitat in the immediate river corridor is now under private ownership as a result of land selections authorized under the Alaska National Claims Settlement Act (1971).
- Management of public lands and resourcces is shared among three federal agencies, four state agencies, and eight tribal councils.
- The Trans-Alaska Pipeline System crosses 76 fish bearing streams in the Copper River drainage, including five tributaries to the Copper. A breach in the TAPS at one of the tributary river crossings could result in spilled oil entering the main stem of the Copper River in as few as six hours.

Why is it important?

Large tracts of land in the Copper River watershed are now privately owned and developable, particularly along the habitat-sensitive river corridor and large spawning lakes.

Land use on paper does not match what is happening on the ground. Users of a single trail might cross parcels belonging to three different owners/managers -- wo is responsible for trail improvements and damage to resources?

Wrangell-St. Elias National Park was also carved out of the BLM's holdings so that essentially the area is governed by decisions made by large private and public land owners, rather than by local residents.

With more private land owners and agencies now responsible for managing land parcels in the watershed, there is no coordinated management and use assessment to consider the health of the overall river system.