

DNA samples show salmon losing their genetic diversity

By COURTNEY FLATT
Oregon Public Broadcasting

Researchers had long suspected salmon have lost huge amounts of genetic diversity over the years. But they'd never tested the hypothesis.

Now, technology has finally caught up with scientists' questions.

Researchers were able to compare ancient salmon DNA to modern salmon. They collected a wide range of ancient bones to study the fish's DNA. One sample is about 7,000 years old — that's 3,000 years older than the first pyramid. The most recent was about 150 years old.

And thanks to the DNA from those samples, scientists are able to conclude that Columbia River Chinook salmon have lost two-thirds of their genetic diversity since ancient times.

It's important for species to be more diverse, especially as the environment changes, said lead researcher Bobbi Johnson.

"Having things that are different is sort of a protection," said Johnson, who wrote the study as part of her doctoral dissertation at Washington State University.

Genetic diversity or variation is critical for species' abil-



Chris Pietsch/The Register-Guard

Research indicates salmon are losing genetic diversity.

ity to survive. For salmon, it means that if a disease strikes, water levels drop, or temperatures rise, some fish will have the genetic traits to survive, reproduce, and ensure that the species persists.

Johnson said they weren't able to pinpoint an exact cause of the decline, but it started happening right around the time European settlers reached the area.

"It could be any number of things: different pressure from Native Americans, different exploitation when Europeans arrived and started fishing, the dams, all of those things combined," Johnson said.

The researchers wanted to learn more about the loss of genetic diversity during dif-

ferent points in time. They tried hard to get fish DNA from the late 18th century when the first Europeans arrived in the region, and the early 20th century, when the first dams were built, Johnson said. But the samples didn't work out.

Researchers ended up testing the mitochondrial DNA from 84 ancient fish, and compared that with 379 modern fish DNA samples from the same areas.

Handling the ancient bone samples was incredibly challenging, Johnson said.

The university worked with the Spokane Tribe of Indians and the Confederated Tribes of the Colville Reservation.

Offices close Monday for MLK Day

The Daily Astorian

In observance of Martin Luther King Day on Monday, all federal, state, county and city offices and services, including Astoria, Warrenton, Gearhart, Seaside and Cannon Beach city halls, are closed. All U.S. post offices are closed, and there is no mail delivery.

Astoria, Jewell, Knappa, Warrenton/Hammond, Seaside (including Cannon Beach and Gearhart schools) and Ocean Beach School District schools and Clatsop Community College are closed.

The Astoria Library, Seaside Library, Warrenton Library and all Timberland

libraries in Washington state, including Ilwaco, Ocean Park and Naselle, are closed.

The Port of Astoria offices and services are closed.

Garbage collection through Recology Western Oregon (covering Astoria, Seaside, Gearhart and Cannon Beach), city of Warrenton garbage collection, and Peninsula Sanitation (covering the Long Beach, Washington, Peninsula) are not affected by the holiday. Recology Western Oregon's transfer station and Peninsula Sanitation's transfer station are open.

The Sunset Pool in Seaside is open. The Astoria Aquatic Center is open.

The Clatsop County Her-

itage Museum is closed. The Oregon Film Museum and Flavel House are open from 11 a.m. to 4 p.m., and the Carriage House is open from 10 a.m. to 4 p.m. The Uppertown Firefighters' Museum is closed. Capt. Gray's Port of Play and Lil' Sprouts are open from 10 a.m. to 4 p.m. Fort Clatsop is open from 9 a.m. to 5 p.m. The Columbia River Maritime Museum is open from 9:30 a.m. to 5 p.m. The Seaside Museum is open from 10 a.m. to 3 p.m.

Sunset Empire Transportation ("The Bus") is running.

The Daily Astorian offices are open, and the newspaper printed and delivered as usual.

Daily fee could increase at Fort Clatsop

The Daily Astorian

Park entrance fees could be going up this year at Lewis and Clark National Historical Park.

The National Park Service is proposing an increase to the daily entrance fee from \$5 to \$7 per person, the fourth increase in 30 years. An increase from \$20 to \$30 for the annual Lewis and Clark Pass is also being considered. The new fees would take effect in May.

The park is looking for input from community members, stakeholders, visitors and neighbors about the proposed increase and will accept pub-

lic comments several different ways between Monday and Feb. 18. Feedback will determine how, or if, a fee increase would be implemented.

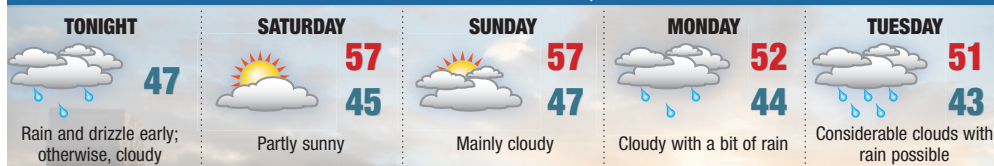
The revenue collected from entrance fees stays in the park, going toward projects and work that preserves natural and cultural resources, improves visitor facilities and provides for educational and recreational opportunities. The extra money collected through an increase would help fund new exhibits, increase accessibility of park facilities and go toward the upkeep of the park's expanded trail system.

Past projects funded with

entrance fees include the construction of the Kwis Kwis and South Slough Trails, summer camps, fort maintenance, local youth employment and community outreach.

Comments may be e-mailed to lewi superintendent@nps.gov, filled out in person during normal visitor center hours (9 a.m. to 5 p.m.) daily, sent via mail to Lewis and Clark National Historical Park, Attn: Superintendent, 92343 Fort Clatsop Rd., Astoria, OR 97103 or submitted through the National Park Service's Planning, Environment and Public Comment website, https://parkplanning.nps.gov/FeesAtLEW1

FIVE-DAY FORECAST FOR ASTORIA



ALMANAC

Astoria through Thursday.

Temperatures

High/low	54°/47°
Normal high/low	49°/38°
Record high	63° in 2010
Record low	15° in 1963

Precipitation

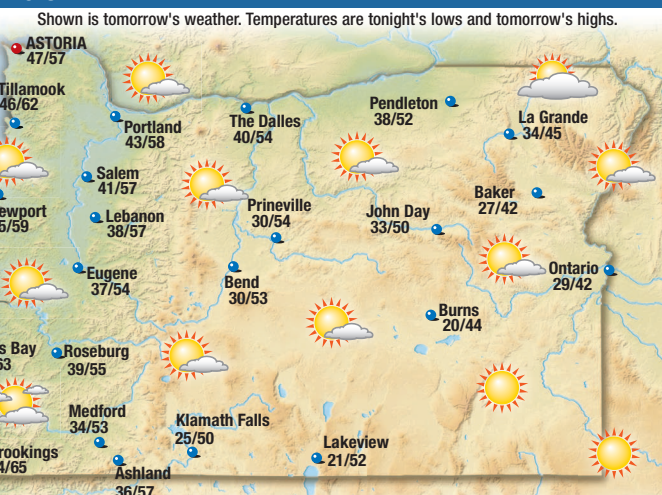
Thursday	1.44"
Month to date	4.24"
Normal month to date	3.83"
Year to date	4.24"
Normal year to date	3.83"

SUN AND MOON

Sunset tonight	4:52 p.m.
Sunrise Saturday	7:55 a.m.
Moonrise today	4:02 a.m.
Moonset today	1:58 p.m.

New First Full Last
 Jan 16 Jan 24 Jan 31 Feb 7

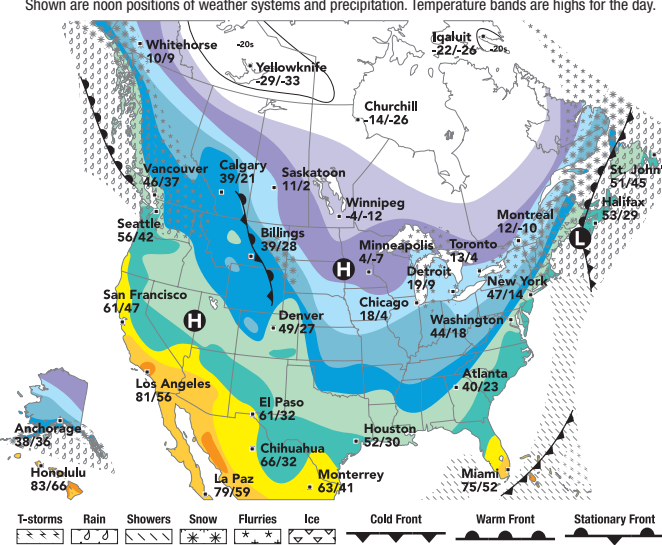
REGIONAL WEATHER



REGIONAL CITIES

City	Hi	Lo	W	City	Hi	Lo	W
Baker City	46	27	c	Olympia	50	44	c
Bend	47	30	c	Pendleton	52	38	c
Brookings	55	44	c	Portland	53	43	c
Eugene	51	37	c	Roseburg	56	39	c
Ilwaco	51	48	c	Salem	55	41	c
Klamath Falls	46	25	pc	Seaside	52	48	c
Medford	51	34	pc	Spokane	37	35	c
Newport	54	42	c	Springfield	54	36	pc
Newport	52	45	c	Vancouver	53	43	c
North Bend	55	42	c	Yakima	48	36	c

TOMORROW'S NATIONAL WEATHER



UNDER THE SKY

Tonight's Sky: Camelopardalis, supposed to be a giraffe but it looks more like a pyramid, stands high overhead early this evening.

TOMORROW'S TIDES

Time	High	Time	Low
10:30 a.m.	9.1 ft.	4:26 a.m.	3.4 ft.
11:59 p.m.	7.5 ft.	5:39 p.m.	0.3 ft.

NATIONAL CITIES

City	Hi	Lo	W	City	Hi	Lo	W
Atlanta	63	30	r	Chicago	25	8	sf
Boston	58	50	r	Denver	46	21	pc
Chicago	25	8	sf	Des Moines	15	0	pc
Denver	46	21	pc	Detroit	35	13	i
Des Moines	15	0	pc	El Paso	64	34	s
Detroit	35	13	i	Fairbanks	-2	-8	s
El Paso	64	34	s	Honolulu	84	67	s
Fairbanks	-2	-8	s	Indianapolis	28	13	i
Honolulu	84	67	s	Kansas City	22	7	pc
Indianapolis	28	13	i	Las Vegas	63	46	s
Kansas City	22	7	pc	Los Angeles	72	52	s
Las Vegas	63	46	s	Memphis	29	20	sn
Los Angeles	72	52	s	Miami	82	64	sh
Memphis	29	20	sn	Nashville	35	20	i
Miami	82	64	sh	New Orleans	46	31	pc
Nashville	35	20	i	New York	63	46	r
New Orleans	46	31	pc	Oklahoma City	36	17	s
New York	63	46	r	Philadelphia	64	47	r
Oklahoma City	36	17	s	St. Louis	24	14	pc
Philadelphia	64	47	r	Salt Lake City	48	30	c
St. Louis	24	14	pc	San Francisco	58	47	pc
Salt Lake City	48	30	c	Seattle	51	47	c
San Francisco	58	47	pc	Washington, DC	65	43	r
Seattle	51	47	c				
Washington, DC	65	43	r				

Weather (W): s-sunny, pc-partly cloudy, c-cloudy, sh-showers, t-thunderstorms, r-rain, sf-snow flurries, sn-snow, i-ice.

Astoria selects new city engineer to fill vacancy

The Daily Astorian

Astoria's assistant city engineer has been promoted to city engineer, filling a position left vacant after Jeff Harrington was named public works director in November.

Nathan Crater has been the assistant city engineer for the past six years and has led infrastructure and capital improvement projects. He has also assisted with several bridge replacements and combined sewer overflow projects. Prior to working for Astoria, Crater was a proj-

ect engineer at HLB Otak in Gearhart.

"Nathan has been doing an excellent job as the assistant city engineer for many years and I have confidence that he will make a great city engineer," Harrington said. "He possesses both the technical skill set and the common sense that make him invaluable to the department and the citizens of Astoria."

Crater said he is looking forward to working on resiliency projects that will serve the city into the future.

Cindy Moore has been

promoted to fill the assistant city engineer position vacated by Crater. With over 17 years of civil engineering experience, Moore has been with Astoria for the past 10 years working part time as a support engineer. She has led several major combined sewer overflow projects and helped the city obtain millions of dollars in grants for public works projects. In her new position, she will continue to manage capital improvement projects such as the upcoming waterfront bridge replacement project.

ODFW seeks nominations for fishery council

The Daily Astorian

The Oregon Department of Fish and Wildlife is looking to fill a seat on the Pacific Fishery Management Council.

The department is accepting nominations through Feb. 8 and the three-year term begins Aug. 11. The council manages hundreds of species of fish including groundfish, sardines, tuna, sharks and swordfish off the Oregon,

Washington state and California coasts.

It includes 14 voting members representing tribal and state fish and wildlife agencies, and private citizens knowledgeable about sport fishing, commercial fishing and marine conservation. Several advisory councils and council staff members also participate in the meetings.

The Department of Fish and Wildlife will send all nomina-

tions to the governor's office, which will then forward the names of at least three candidates to the National Marine Fisheries Service and U.S. Department of Commerce for consideration.

Anyone interested in being considered, or wishing to nominate someone, must contact Cyreis Schmitt at 541-867-4741 or cyreis.c.schmitt@state.or.us no later than Feb. 8.

ON THE RECORD

- Assault**
• At 8:08 a.m. Thursday, Jose Luis Villanueva Borja, 42, of Astoria, was arrested by the Astoria Police Department on Marine Drive and

charged with fourth-degree assault.

DUII

- At 8:38 p.m. Thursday, Casey L. Schimel, 32, of Kennewick, Washing-

ton, was arrested by the Astoria Police Department on the 100 block of Marine Drive and charged with driving under the influence of intoxicants.

PUBLIC MEETINGS

MONDAY
Ecola Creek Watershed Council, 4:30 p.m., City Hall, 163 E. Gower St.

LOTTERIES

OREGON	WASHINGTON
Thursday's Pick 4: 1 p.m.: 4-4-3-4 4 p.m.: 6-3-8-7 7 p.m.: 1-1-5-8 10 p.m.: 8-4-3-7	Thursday's Lucky Lines: 01-06-09-16-FREE-20-22-28-32 Estimated jackpot: \$18,000 Thursday's Daily Game:
	5-6-4 Thursday's Keno: 10-15-18-20-24-28-29-32-36-38-44-47-50-51-58-62-65-69-73-80 Thursday's Match 4: 03-05-10-22

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