

Fens, sloughs, marshes and more

Cascadia Subduction Zone shapes landscape

By KATHERINE LACAZE

For The Daily Astorian

SEASIDE — What is the difference between a fen and a bog?

Field ecologist Kathleen Sayce answered this and other questions during her presentation “Into the Fens: Exploring Clatsop Plains Wetlands” in April at the Seaside Public Library. Sayce’s program was the fourth installation of Listening to the Land speaker series, presented by the North Coast Land Conservancy and Necanicum Watershed Council and focused on water as a theme.

Sayce illustrated for the audience how to identify different aspects of the Clatsop Plains’ water system, from rain and rivers to dune swale lakes, fens, sloughs, marshes and more.

The Clatsop Plains wetlands are actually a collection of fens, which means they are

mostly level, cover a broad area and all are connected below the surface by a unified groundwater supply, according to Sayce. Fens are not very acidic and are high in nutrients so they have diverse flora. In contrast, bogs are isolated from a groundwater supply, so they tend to be very acidic, low in nutrients and have specialized flora that can tolerate such conditions, Sayce said.

Referring to the Clatsop Plains wetlands, Sayce advised the audience to “amaze everybody — call them fens.”

Shaped by earthquakes

The Clatsop Plains’ topography is shaped by its proximity to the Cascadia Subduction Zone and earthquake events, which are accompanied with shaking, major erosion, subsidence and, sometimes, tsunamis. The subsequent formation of dunes after an event is rapid in geological time, from one to five years, Sayce said.

Dunes are formed through two processes that define their nature. The young ephemeral outer dunes on the Clatsop Plains will not be there after the next Cascadia Subduction Zone event. Further inland, the durable dunes are not as affected by earthquakes,



Katherine Lacaze/For The Daily Astorian

Field ecologist Kathleen Sayce talks about the water systems on the Clatsop Plains wetlands during her presentation “Into the Fens,” part of the Listening to the Land speaker series, at the Seaside Public Library.

and they have been around for more than 4,000 years.

A geological mystery in the area, according to Sayce, is that when the ground drops after a Cascadia event, it rises in the following years but never returns to its former level.

“Over time, this area, from around Tillamook Head up through Willapa Bay and into Grays Harbor, is going down and it doesn’t geologically

make a lot of sense,” Sayce said, adding, as a result, the wetlands are getting wetter with each event. “It’s an amazing additional complexity in why our wetlands look the way they do.”

What’s in a wetland?

Wetlands form where the water table is “near, at or above the surface” in the low areas between the dunes, or the recharge areas, where water collects in the porous sandy ground after precipitation to perch until gravity pulls it down into the ground, Sayce said.

“The dune fields, because they’re predominantly sand, have a great structure to hold a lot of water, so they comprise this big aquifer system,” she said.

The comprehensive water system in the wetlands also includes lakes or ponds and drainage systems, which often

are referred to as streams but actually are sloughs, an old English term meaning “a tidally dominated, slow-flowing freshwater drainage,” Sayce said. As new dunes form in the area after natural events, the sloughs can alter direction to find new channels out.

Over time, the fens fill in with organic debris that can vary from fine mosses to coarse fibrous peat, making them a great area for storing carbon. Eventually, so much peat forms that the fens become forested wetlands. This process can take hundreds of years.

“Topography is very important in determining how diverse the wetland is going to be,” Sayce said.

For instance, areas with steep slopes have small fringing areas of wetland plant communities while low gradient slopes often have larger areas of wetland plant commu-

nities filled with more species.

Wetland plant communities can be divided into different categories, such as aquatic bed plants, floating mats, marsh emergent plants and others. During her presentation, Sayce shared photos and descriptions of various wetland plant species found in the area, such as slough sedge, bog laurel, sphagnum moss, arctic starflowers, cranberries, russet cotton-grass, fragrant bog candles, skunk cabbage, buckbean and many others.

The Gearhart Fen, which is at least 4,200 years old, is a good example of a wetland with numerous features that define fens.

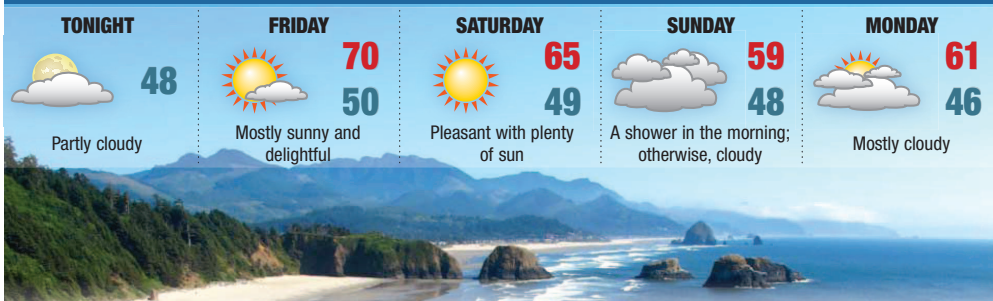
“It is, from a species diversity point of view, fantastic,” Sayce said. “It’s got more species in it than any other wetland in the area.”

Wetland cycle

Wetlands experience different phases throughout the year. Water levels are highest during the winter and lowest during the summer, which is mostly common knowledge, Sayce said. During stretches of low precipitation, the ground can get so dry that when it first rains after a period of time, the water builds up rapidly on the surface. Tides also play a role by pressing on groundwater and causing hourly level changes.

Sayce saw the hydrological cycle in action when she spent a year checking three wells at her house in Willapa Bay. The wells sit in different areas of varying elevation and distances from the wetlands. She sampled the wells during high tide and recorded her findings. She learned the groundwater levels were “very responsive to other conditions,” she said.

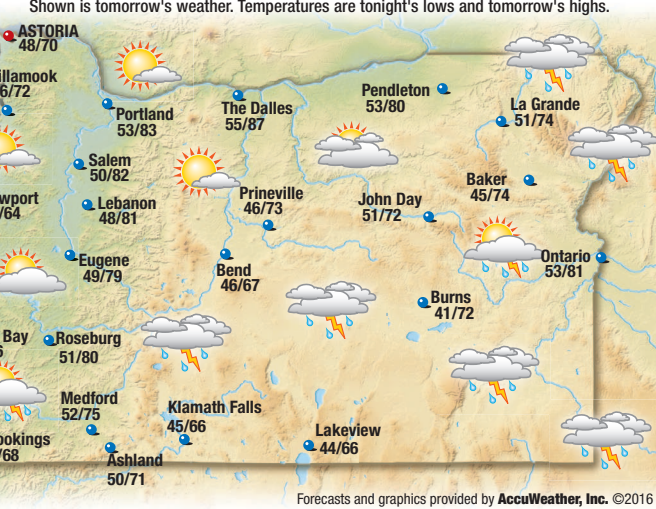
FIVE-DAY FORECAST FOR ASTORIA



ALMANAC

Table with 2 columns: Category (Temperatures, Precipitation, Sun and Moon) and Value. Includes high/low temperatures, precipitation amounts, and moon phases.

REGIONAL WEATHER



UNDER THE SKY

Tonight's Sky: Cor Caroli, the brightest star of Canes Venatici, the hunting dogs.

TOMORROW'S TIDES

Table for Astoria / Port Docks tides showing high and low tide times and levels.

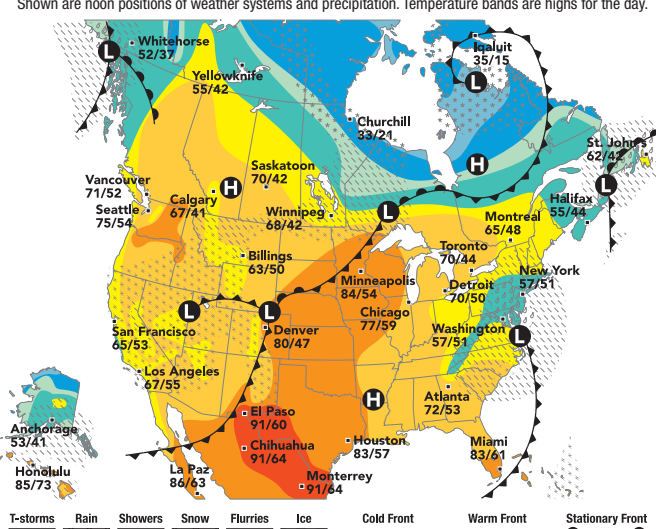
NATIONAL CITIES

Table showing weather forecasts for various national cities including Atlanta, Boston, Chicago, and Los Angeles.

REGIONAL CITIES

Table showing weather forecasts for regional cities like Baker City, Bend, and Brookings.

TOMORROW'S NATIONAL WEATHER



County budget meetings scheduled

The Daily Astorian

Clatsop County's budget committee will meet at 9 a.m. Monday in the Judge Guy Boyington Building in Astoria to review the proposed budget for next fiscal year. Public comment is welcome.

The county's proposed budget totals \$57.1 million, about 9 percent higher than the current budget. The increase is mostly due to budgeting money in the general roads fund rather than leaving it unappropriated, according to the county.

A total of 3.39 full-time equivalent jobs are added in the proposed budget, creating one new position each in assessment and taxation, surveyor and building and grounds offices.

The new positions increase the county's workforce to about 207.5 full-time workers. Timber revenue from state forest lands is expected to total \$3.5 million in the proposed budget, less than the \$4.3 million projected for the current fiscal year but slightly higher than the previous 10-year average, according to the county.

In addition, the proposed budget sets aside \$905,510 for a contingency fund reserved for future possible unfunded liability costs from the Public Employees Retirement System.

The entire fiscal year 2016-17 budget can be viewed online at www.co.clatsop.or.us.

OBITUARY

Donna Faye Taylor

Astoria

April 1, 1933 — April 30, 2016

Donna Faye Taylor was born April 1, 1933, in Liberal, Kansas. She passed away at home on April 30, 2016.

Her husband of 54 years, Hugh “Buddy” Taylor, preceded her in death in September 2009. They married Sept. 8, 1955. Donna's two sisters, two brothers, a sister-in-law and a son-in-law, Jerry Oldberg, also preceded her in death.

She is survived by three sisters, Elaine, Nancy and Juanita; five children, Dickie Harris (Glenn), Linda Oldberg, Mark Taylor, Cindy Harris (Greg) and Ladonna Weisbach; 12 grandchildren; and 15 great-grandchildren, all of Missouri.

She moved to Knappa, Oregon, in 2010, where the people grew to love her and called her “mom” or “grandma.”

LOTTERIES

OREGON
Wednesday's Pick 4:
1 p.m.: 9-3-7-4
4 p.m.: 9-3-5-0
7 p.m.: 4-6-8-1
10 p.m.: 0-1-8-7
Wednesday's Megabucks: 11-18-29-39-42-43
Estimated jackpot: \$3.4 million
Wednesday's Powerball: 30-47-57-66-69, Powerball: 3
Estimated jackpot: \$415 million

PUBLIC MEETINGS

THURSDAY
Astoria Design Review Committee, 5:30 p.m., City Hall, 1095 Duane St.
Seaside Parks Advisory Committee, 7 p.m., City Hall, 989 Broadway.

MONDAY
Cannon Beach Rural Fire Protection District, 6 p.m., Fire-Rescue Main Station, 188 Sunset Blvd.
Seaside City Council, 7 p.m., City Hall, 989 Broadway.

ON THE RECORD

Theft
• At 5:10 p.m. Tuesday, Astoria Police arrested Carlo B. Soler, 27, of Ocean Park, Washington, for theft at Video Horizons.

OBITUARY POLICY

The Daily Astorian publishes paid obituaries. The obituary can include a small photo and, for veterans, a flag symbol at no charge. The deadline for all obituaries is 9 a.m. the business day prior. Obituaries may be edited for spelling, proper punctuation and style. Death notices and upcoming services will be published at no charge.

CLATSOP POWER EQUIPMENT, INC.

SALES • SERVICE • RENTALS

34912 HWY 101 BUS • ASTORIA
503-325-0792 • 1-800-220-0792

The Daily Astorian

Established July 1, 1873 (USPS 035-000)

Published daily, except Saturday and Sunday, by EO Media Group, 949 Exchange St., PO Box 210, Astoria, OR 97103 Telephone 503-325-3211, 800-781-3211 or Fax 503-325-6573. POSTMASTER: Send address changes to The Daily Astorian, PO Box 210, Astoria, OR 97103-0210

www.dailyastorian.com

MEMBER OF THE ASSOCIATED PRESS

The Associated Press is entitled exclusively to the use for republication of all the local news printed in this newspaper.

SUBSCRIBER TO THE NEW YORK TIMES NEWS SERVICE

MEMBER CERTIFIED AUDIT OF CIRCULATIONS, INC.

SUBSCRIPTION RATES

Effective July 1, 2015

HOME DELIVERY	MAIL
EZpay (per month).....\$11.25	EZpay (per month).....\$16.60
13 weeks in advance.....\$36.79	13 weeks in advance.....\$51.98
26 weeks in advance.....\$70.82	26 weeks in advance.....\$102.63
52 weeks in advance.....\$135.05	52 weeks in advance.....\$199.90

Circulation phone number: 503-325-3211
Periodicals postage paid at Astoria, OR

ADVERTISING OWNERSHIP

All advertising copy and illustrations prepared by The Daily Astorian become the property of The Daily Astorian and may not be reproduced for any use without explicit prior approval.

COPYRIGHT ©
Entire contents © Copyright, 2016 by The Daily Astorian.
Printed on recycled paper