

OSU study shows sockeye succeed by cooling off

CORVALLIS — Sockeye salmon that evolved in the generally colder waters of the far north still know how to cool off if necessary, an important factor in the species' potential for dealing with global climate change.

Sockeyes, which spawn in fresh water and spend two to three years in the Pacific Ocean, range from southern Alaska south to the Columbia River.

Research by Oregon State University revealed that sockeyes at the northern edge of that range, despite lacking their southern counterparts' evolutionary history of dealing with heat stress, nevertheless have an innate ability to "thermoregulate."

Thermoregulation means that when their surroundings warm up too much, the fish will seek cooler water that precisely meets their physiological needs.

A study conducted by an OSU researcher at an Alaska lake during a heat wave shed light on sockeyes' ability to find the water temperatures they need.

Multiple earlier studies had demonstrated thermoregulation

behavior among sockeye salmon at lower latitudes, but northern populations' behavioral response to heat stress had largely gone unexamined.

While it may seem obvious that any fish would move around to find the water temperature it needed, prior research has shown thermoregulation is far from automatic — even among populations living where heat stress is a regular occurrence.

"Often what's happened has been counterintuitive, so we had no idea what to expect," said Jonathan B. Armstrong, assistant professor in the College of Agricultural Sciences' Department of Fish and Wildlife, the lead author on the study.

"About 40 million sockeye return to Bristol Bay every year. These huge salmon runs are a big part of the regional culture and economy, so how these fish respond to climate change will have very real effects on people's lives.

"It's encouraging that the sockeyes showed this innate capacity to respond," Armstrong said.

Results of the research were recently published in

Conservation Physiology.

Armstrong and his collaborators at the University of Washington worked in 2013 at Little Togiak Lake — one of five major lakes in the Wood River watershed that drain into Bristol Bay, a fishery that produces nearly 70 percent of all the sockeye salmon caught in the United States.

Bristol Bay is close to the 60-degree latitude that marks the northern boundary of the sockeyes' primary range.

Adult sockeye salmon return to the Wood River system from the Bering Sea in early summer, then mature and develop secondary sexual traits before spawning later in the summer or at the beginning of fall.

During the time between entering fresh water and spawning, the fish group together in their lake's epilimnion — the upper, warmer level of water in a thermally stratified lake. Usually the fish congregate, or stage, near tributary inlets and along shorelines.

During a staging period of unusually warm weather — maximum daily air temperatures hovered around 80 degrees for a week, the second-warmest heat wave on record —

researchers used a seine to capture fish and outfitted 95 of them with devices that logged water temperatures at 20-minute intervals.

What they learned from the 40 recovered temperature loggers was that when the epilimnion temperature rose above about 12 degrees Celsius, or about 53 degrees, the fish thermoregulated by moving to tributary plumes or to deeper water.

By swimming away from the rising temperatures, the fish expended 50 percent less energy during the warmest conditions — 64 to 68 degrees — than they would have had they stayed put.

"The hotter it is, the more energy they burn, but these fish don't just want the coldest water possible," Armstrong said. "If they were cars looking for maximum fuel efficiency, they'd just find the coldest water, but instead it's a Goldilocks sort of thing — they're looking for not too warm, not too cold.

"They want their system to go fast enough for them to go through maturation before they spawn, where they go from these silver torpedoes to these

crazy, exaggerated beasts of sexual selection with a red body and green jaws," he added.

Armstrong noted the broader message of the study is what it says about the ability of animals to exploit the kinds of diversity of temperature and diversity of habitat found in ecosystems that are intact and not heavily developed.

"There's all this diversity and connectivity up there," he said.

"Fish have lots of options for coping with warming or environmental change in general. When we develop watersheds, we often simplify habitats and take away these options. In our research we are constantly stumbling across new and interesting ways that fish and wildlife thrive by exploiting diversity in temperatures, often at small spatial scales that would be very easy to overlook," Armstrong said. "This study is one more example of how all the little details matter, and they could be what save animals from climate change, or at least reduce the impacts."

CAPE PERPETUA SERIES TO EXPLORE COASTAL GEOLOGY TODAY

YACHATS — The picturesque Oregon Coast attracts many with its breath-taking beauty. But it also elicits cautionary fear with its warnings of earthquakes and tsunamis.

Ironically, the very geologic forces that threaten lives also are responsible for the spectacular mountains, valleys and coastlines cherished by Oregonians.

Oregon State University

Emeritus Professor of Geosciences Bob Lillie, Ph.D., will share the connection between hazards and scenery in "Beauty from the Beast" at 2 p.m. today, during the Cape Perpetua Winter Discovery Series at the Visitor Center, three miles south of Yachats.

Lillie draws on his experience as a geology professor, park ranger and graphic illustrator to reveal plate tectonics

in action and explain the basics of Earth science in easy-to-understand ways.

"Beauty from the Beast" reminds Northwest residents and visitors that their hometowns and iconic parklands are subject to geologic processes that affect their lives and livelihoods," Lillie said. "By learning to live with the beast of earthquakes, tsunamis and volcanic eruptions, people can

more fully appreciate the beauty that surrounds them."

Lillie will also be available to sign his new book "Beauty from the Beast: Plate Tectonics and the Landscapes of the Pacific Northwest."

The book can be purchased at the Cape Perpetua Visitor Center.

The Cape Perpetua Winter Discovery Series is an opportunity to explore topics and

resources relevant to the Oregon Coast during the off-season months between November and March.

All presentations and guided walks are free, but a Northwest Forest Pass, Oregon Coast Passport or \$5 day-use fee is required within the Cape Perpetua Scenic Area.

For more information, contact the Cape Perpetua Visitor Center at 541-547-3289.

State park permits on sale through December

Give the gift of the great outdoors this holiday season with an annual Oregon State Parks day-use parking permit.

Through 31, visitors and holiday shoppers can buy park passes for \$25, which is \$5 off the regular price.

Passes can easily be purchased online at www.store.oregonstateparks.org, along with branded holiday gift gear, such as portable coolers, water bottles and baseball caps.

Parking costs \$5 a day at 26

Oregon State Parks unless you have a 12- or 24-month parking permit or a same-day camping receipt.

The 24-month pass is \$50 and permits are transferable from vehicle to vehicle.

The Oregon Coast Passport is also discounted \$5 in December. The passport is a multi-agency product, valid at Oregon State Parks, US Forest Service, Bureau of Land Management and National Park Service sites along the

Oregon coast.

The coastal passports are on sale for \$30 — regularly \$35 — in December.

The OPRD parking permits and Oregon Coast Passport can be purchased at major Oregon State Parks offices, some state park friends' group stores and local businesses throughout the state.

For a complete list of vendors, visit www.oregonstateparks.org.

Get Results...List With Tim.

Tim Sapp
Owner /
Principal Broker
541 999-8230

TR HUNTER REAL ESTATE
541-997-1200

Bonnett Way #28 – Build your dream home with ocean views! Elegant, gated Fawn Ridge West location with end of the road privacy and your own gate to the nearby path to the ocean. **\$159,000.** #2315-14604472

1749 Highway 101 • 541-997-1200

Serving our community for over 15 years.

WELLS

TREE & LANDSCAPE

541-999-5083

Tree Removal & Trimming
Brush Cutting & Maintenance

"Making Friends One Job at a Time."

licensed, bonded, insured CCB 183908

www.TheSiuslawNews.com

Siuslaw News **garagesale GUIDE**

Sat-Sun 12/10-12/11
9am-4pm
8557 Maple St.
Indoor pole barn sale, off Glenada Rd., near Best Western, tools, household, antiques, sports & more.

Fri-Sat 12/9-12/10
11am-4pm
In RV Building next to Bi-Mart.
HOLIDAY CLEARANCE SAVE 30%-50%. Indoor Marketplace come Barter!

Sat 12/10 Only!
8am-4pm
5565
Lakeview Dr.
Christmas Boutique.

Fri-Sat 12/9/12/10
8:30am-3pm
1235 Yew St
Tools, furniture, household, bicycles, & Misc.

ESTATE SALE
Saturday Only!
9am - 4pm
Must liquidate entire contents of immaculate Florentine Estates home.
Furniture, household goods, garage stuff, holiday décor. Lots of lovely things and its all gotta go!
Cash/Credit/Local Checks. Take Hwy 101 to Munsel Lake Rd. entrance - gate attendant will provide easy directions. Photos at CindyWobbeEstates.com

Siuslaw from 1B

— in the form of a double-double — with 20 points and 18 rebounds on the night before fouling out late in the game.

Though the Lady Viks got scoring from seniors Brittany Long (6), Abby Watkins (5) and Claire Waggoner (4), as well as sophomore Alyssa Richards (4), it wasn't enough to overtake the Cubs down the stretch.

Siuslaw narrowly fell, 47-39, with Newport keeping the game just out of reach from the freethrow line in the closing minutes.

While Tatum went 9-for-17 in shooting from the field (52.9 per-

cent), the combined shooting percentage for the rest of the team was just short of 18 percent (5-for-28).

Long hit the team's only 3-pointer to go with a team-high 3 assists on the night.

On the road at the boys' game, Siuslaw had little trouble scoring from the field and off the glass, but gave up 18 shots from the freethrow line in a 9-point loss to the top-ranked Cubs team, 62-53.

"I felt we competed very well against a strong Newport team," said Vikings coach Dylan Perry. "We had stretches where we looked very strong, and stretches where we didn't look so strong."

Among Siuslaw's strengths were performances by juniors Trent Reavis and Jake Hickson,

who combined for 37 of Siuslaw's 53 points — Reavis with 25 and Hickson with 12.

What hurt the Vikings was freethrow shooting and turnovers — the same two issues Siuslaw had in a narrow loss to Elmira last week.

"It's hard to win any game, let alone against a top team in the state when you have those two factors working against you," said Perry. "I told our guys we weren't beaten by Elmira and Newport — we beat ourselves.

"But that's what preseason is about. Learning lessons that will help us right the ship to become a force to be reckoned with in the weeks ahead."

The Vikings also got scoring from seniors Ricky Jones (5), Marcos Reyna-Ayaila (4), Brogan Cornish (3) and Kyle King (2), and junior Jared Brandt (3).

"I've seen lots of improvement for our team in its first road game," said Perry, whose team will join the girls team at this weekend's Junction City Invitational. "We'll continue to build off of these experiences."

Last night, the girls and boys teams tipped off against Junction City (after press deadlines) and will face Harrisburg today.

Tuesday, both teams will be on the road again, this time at Cottage Grove.

Friday, Dec. 16, Siuslaw will host Cascade.

Tipoff for both sets of games is at 6 and 7:30 p.m., respectively.

See Jim for your auto sales needs!

JOHNSTON MOTOR COMPANY

2150 Hwy. 101 • Florence
(541) 997-3475 • 1-800-348-3475

Ford Mercury

shoppe™
Keep it local.

Bud's Upholstery
20% off
Materials on any new job
When you present this coupon, expires December 31, 2016
541-997-4856
4981 Hwy. 101 N., Florence

DENTUREMASTERS & IMPLANT CENTER
45% OFF
IMPLANTS NOW
Dr. James Ridley, DDS
(541) 997-6226
206 Nopal Street - Florence

Welcome visitors!
Florence church of Christ
1833 Tamarack
Bible Study: 10 AM
Worship: 11 AM
www.churchofchristflorence.org
Bring this coupon for a free DVD when you visit us.

Ixtapa
Family Mexican Restaurant
Buy One get \$5 OFF
second dinner
Regular price only
"Best Mexican food for miles"
- Trip Advisor Review
1015 Hwy. 101
(541) 997-4499
Expires 12-31-16

KRAB KETTLE
Fresh Fish and Seafood in the case, Krab Kettle brand tuna.
Enjoy a complimentary cup of chowder with purchase of \$25 or more.
One per coupon/Expires December 31, 2016
541-997-8996
280 Hwy. 101 • Florence

Swanson's Pest Management
Get Ready for Spring
FREE Inspections
Inspect-Correct-Protect
Sustained Pest Management solutions for your home and businesses.
541-997-4027 • 800-622-8993
www.swansonpm.com
CCB#79884



Siuslaw News

shoppe™
Keep it local.



www.shoppelocal.biz