

People & Places

Researcher studies how fish eat

Brian Small seeks to understand fish digestive tracks and what they eat

By **CAROL RYAN DUMAS**
Capital Press

HAGERMAN, Idaho — A lot of cutting-edge research takes place at the University of Idaho's Hagerman Fish Culture Experiment Station, and Brian Small is excited to be in the middle of it.

The fish endocrinologist and physiologist came to the center in 2015. With 16 years of fish research under his belt, Small was appointed director of the experiment station in November.

Small was working as the director of research for the college of agriculture at Southern Illinois University when Ron Hardy — the long-time director of the Hagerman Station and widely respected in aquaculture circles — invited him to apply for a research position.

"It was an honor," Small said.

State of the art

"The laboratory facilities have state-of-the-art molecular and genomic capabilities and the fish culture facilities are excellent for rainbow trout culture and also have warm-water facilities," he said.

"I saw that this facility is probably among the top research facilities in the country. And it has a collaborative environment, with the Columbia River Inter-Tribal Fish Commission and the USDA (selective breeding) program housed in this building," he said.

The other thing that impressed him was the university's commitment to its aquaculture program.



Brian Small, left, director of the University of Idaho Hagerman Fish Culture Experiment Station, talks with Ron Hardy, director of the university's Aquaculture Research Institute, on Dec. 19.

"I am very happy to be here," he said.

He's even more impressed after a year at the center that the aquaculture facility and the university's Aquaculture Research Institute — which Hardy continues to direct — can make a significant contribution to both aquaculture, specifically the U.S. trout industry, and fisheries management in the Northwest.

The effort is growing, with the university building a new aquaculture research facility focused on burbot culture and marine species at the Moscow campus.

Gut research

At Hagerman, the university research revolves around gut microbiome.

"We're interested in trying to understand how the environment, health status and diet affect microbes that live in the gut of the fish and how changes there affect the fish itself," he said. "It might include changes in how well they utilize the feed and just general gut health."

The researchers want to be able to design and develop feed that promotes gut health so fish are putting more energy into growth instead of into fighting a stressful situation.

After a few months on an all-plant diet, rainbow trout develop enteritis, a swelling in the intestine that causes decline because they're not able to absorb feed efficiently, he said.

"So we're trying to understand why that happens and develop ways to improve performance on an all-plant diet, (and) manipulate the feeds themselves so they're less of an irritant," he said.

USDA's research at the center focuses on genetic selection for fish that have higher tolerance for plant ingredients.

Small attributes his professional direction and his love of the outdoors and fish in particular to his father, who worked as a game warden for the state of Pennsylvania when Small was growing up. Also fascinated with Jacques Cousteau, he wanted to be a marine biologist.

Aquaculture calls

In his senior year of college, however, he read a "really interesting" article on aquaculture and raising fish on land to feed the world. Already finding a strong interest in genetics, physiology and biochemistry, he searched for graduate programs in aquaculture and found one at the University of Maryland in fish nutrition.

There he worked on amino acids and carbohydrates in striped bass. He stayed on at the university to do postdoctoral work in molecular endocrinology, working on striped bass reproduction.

From there, he took a position as a research physiologist with USDA at Stoneville, Miss., where he spent 10 years working on channel catfish to develop strains that grow faster with more disease resistance. He was also an adjunct professor at Mississippi State University, which made him realize that he liked the academic side, too.

When an associate professor position opened at Southern Il-



Western Innovator

Brian Small

Profession: Fish endocrinologist and physiologist

Position: Director of the University of Idaho Hagerman Fish Culture Experiment Station

Education: Postdoctoral work in molecular endocrinology, University of Maryland, 1999; Ph.D. in nutrition physiology/aquaculture, University of Maryland, 1998; bachelor's degree in marine science/chemistry, Kutztown University, 1992.

Citations: Numerous professional awards and research grants, 89 published research manuscripts with another four in preparation.

Family: Wife, Carrie, a research-and-development project manager at Chobani; and daughters Alexa, a freshman at the University of Idaho pursuing molecular biology and biotechnology, and Emmilie, a student at Twin Falls High School.

Hobbies: Camping, fishing, hiking and working on his 1977 Triumph Spitfire convertible.

linois University's fisheries and aquaculture center in 2009, he headed north. While there, he was involved in research on gut physiology, appetite regulation and nutrition in channel catfish, tilapia and shovel-nose sturgeon.

He also became interested in leadership responsibilities and served as acting associate dean for the university's college of agriculture and director of the college's research.

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Calendar



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To submit an event go to the Community Events calendar on the home page of our website at www.capitalpress.com and click on "Submit an Event." Calendar items can also be mailed to Capital Press, 1400 Broadway St. NE, Salem, OR 97301.

Friday, Jan. 6

Beef Herd Economics Workshop. 10 a.m.-3 p.m. Grant County Fairgrounds, Moses Lake, Wash. Sponsored by Washington State University Extension. Cost: Free. <http://bit.ly/2hIH4X3>

Friday-Saturday Jan. 6-7

Cascadia Grains Conference, South Puget Sound Community College, 2011 Mottman Road SW, Olympia, Wash. www.cascadiagrains.com

Friday-Wednesday Jan. 6-11

2017 American Farm Bureau Federation Annual Convention & IDEAg Trade Show. Phoenix Convention Center, 100 N Third St., Phoenix, Ariz. <http://annualconvention.fb.org>

Tuesday, Jan. 10

Idaho-Eastern Oregon Alfalfa and Clover Seed School. Caldwell Elks Lodge, Caldwell, Idaho. Contact: benjamin@amgidaho.org

Tuesday-Wednesday Jan. 10-11

Cropping Systems Conference. Three Rivers Convention Center, 7016 W. Grandridge Blvd., Kennewick, Wash. Sponsored by the Pacific Northwest Direct Seed Association. www.directseed.org/events/annual-conference/

Thursday, Jan. 12

Irrigation Equipment Show and Conference. 8 a.m.-4:30 p.m. Burley Inn and Convention Center, 800 Overland Ave., Burley, Idaho. Classes on irrigation-related topics will be offered along with a trade show. Sponsored by the Idaho Irrigation Equipment Association. <http://bit.ly/2hWuOTw>

Inside the Family, Outside the Business. 7:30 to 9 a.m., Bridge-Port BrewPub, 1313 NW Marshall St., Portland. This session will explore how family members involved in the business can best communicate and collaborate with non-active members.

We will share first-hand insights from a panel of non-active family members on how they have faced the challenges of being inside the family, but outside the business. Presented by the Austin Family Business Program, Oregon State University. \$40 per person. 800-859-7609 <http://bit.ly/2gQX6M4>

Thursday-Friday Jan. 12-13

Oregon Mint Growers Annual Meeting. Salishan Lodge & Golf Resort, 7760 Hwy 101 North, Gleneden Beach, Ore. oregonmint.org

Monday, Jan. 16

Oregon Blueberry Conference. 8 a.m.-6 p.m. Salem Convention Center, 200 Commercial St. SE, Salem. Presented by the Oregon Blueberry Commission and the North Willamette Research and Extension Center. 503-859-1700 or oregonblueberry.com.

Tuesday, Jan. 17

Succession Planning Workshop orientation. 9 a.m.-noon. This is the first of two workshops on succession planning. Cost includes planning workbook and food. Presenters from: OSU's Ties to the Land, Green Belt Land Trust, Farm Credit Services and attorneys specializing in conservation and farm and ranch estate planning. Western Oregon University Werner University Center, Pacific Room, Monmouth, Ore. Cost: \$50 per family. <http://www.polkswd.com/success.html>

Tuesday-Thursday Jan. 17-19

38th Annual Eastern Idaho Ag Expo. Idaho State University Hott Arena, 921 South 8th Ave., Pocatello, Idaho. www.spectraproductions.com

Wednesday-Thursday Jan. 18-19

49th Annual Idaho Potato Conference. Idaho State University's Pond Student Union Building, 921 S. Eighth Ave., Pocatello, Idaho. Speakers include Idaho Potato Commission President and CEO Frank Muir, Potatoes USA President and CEO Blair Richardson and National Potato Council Executive Vice President John Keeling. <http://bit.ly/2fyqjPE>

Idaho Noxious Weed Conference. Riverside Hotel, 2900

Chinden Blvd., Boise, Idaho. www.idahoweedcontrol.org

Wednesday-Friday Jan. 18-20

Idaho Horticulture Expo. Boise Centre on the Grove, 850 W. Front St., Boise, Idaho. Sponsored by the Idaho Nursery and Landscape Association, this annual event offers seminars and workshops on topics important to the nursery industry. inlagrow.org

Thursday, Jan. 19

Oregon Tall Fescue Commission meeting. 6-8 p.m. Cascade Grill restaurant, 110 Opal St. NE, Albany, Ore. www.oregontallfescue.org/

Friday, Jan. 20

Family Foresters Workshop. 8:30 a.m.-5 p.m. Coeur d'Alene Inn, 506 W. Appleway Ave., Coeur d'Alene, Idaho. The program will feature presentations on up and coming forest products, changes in Inland Northwest family forestry, managing forests in the face of droughts, effectiveness of prescribed burns in preventing fire; research updates on forest biofuels, managing family forest habitats for moose and the annual family forest economics/policy update. Register by Jan. 13. Cost: \$85-\$90. www.uidaho.edu/FamilyForesterWorkshop

Tuesday, Jan. 24

Western Idaho Ag Expo. 9 a.m.-4 p.m. Caldwell Events Center, 2207 Blaine St., Caldwell, Idaho. <http://www.spectraproductions.com>

Tuesday-Thursday Jan. 24-26

Northwest Agricultural Show. Portland Expo Center, 2060 N. Marine Drive, Portland, Ore. The hours are 9 a.m.-6 p.m. on Tuesday, 9 a.m.-8 p.m. on Wednesday and 9 a.m.-3 p.m. on Thursday. www.nwagshow.com

Wednesday-Friday Jan. 25-27

FSPCA Preventive Controls for Human Food Course. Idaho Department of Labor, 600 N. Thornton St., Post Falls, Idaho. The new Food Safety Modernization Act regulation requires every processing facility to have a trained responsible person or "Preventive Controls Qualified Individual" who has completed a specialized training course (such as this one) developed by the Food Safety Preventive Controls Alliance that is recognized by the FDA. This person will

oversee the implementation of the facility's food safety plan and other key tasks. <http://bit.ly/2f6cogT>

Wednesday-Saturday Jan. 25-28

American Sheep Industry Association Convention. Denver Marriott City Center, 1701 California St., Denver, Colo. www.sheepusa.org/About_Events_Convention

EcoFarm Conference. Asilomar Conference Grounds, 800 Asilomar Ave., Pacific Grove, Calif. The theme of this year's meeting is "Cultivating Diversity." <https://eco-farm.org/conference>

Wednesday, Feb. 1

California Prune Industry Summit. Orchard Creek Lodge, Lincoln, Calif. www.californiadriedplums.org

Tuesday, Feb. 7

Pesticide Short Course-IPM. 8 a.m.-4:10 p.m. Lane Community College, Center for Meeting and Learning, Bldg. 19, 4000 E. 30th Ave., Eugene, Ore. \$85 if registered by Jan. 23; \$95 after. <http://extension.oregonstate.edu/lane/farms>

Alfalfa U. Learn how alfalfa can contribute to a farm's profitability. Canyon Crest Dining and Event Center, 330 Canyon Crest Drive, Twin Falls, Idaho. alfalfaU.com

Tuesday-Thursday Feb. 7-9

Spokane Ag Expo and Pacific Northwest Farm Forum. Spokane Convention Center, 334 W. Spokane Falls Blvd., Spokane, Wash. Spokane Ag Expo is the largest farm machinery show in the Inland Northwest. <https://greater-spokane.org/ag-expo/>

Washington Association of Wine Grape Growers 2017 Convention. 8 a.m.-5 p.m. Three Rivers Convention Center, 7016 Grandridge Blvd., Kennewick, Wash. This annual event includes the second largest industry trade show in the nation and a welcome breakfast. wawgg.org

Wednesday-Feb. 8

Oregon Clover Growers Annual Meeting. Noon-1 p.m. Holiday Inn, Wilsonville. www.oregonclover.org

Wednesday-Thursday Feb. 8-9

The 8th Annual Organic Farming Conference. Canyon Crest