RAPTORS AND A BIG LOVABLE GRIZZLY AT 2014 OPEN HOUSE

Join us at our annual Open House on Tuesday, August 5, from 1:00 to 5:00 pm. This event is informative and fun for people of all ages. We are located on Hwy 35 about 17.5 miles north of Polson or 14 miles south of Bigfork.

In addition to demonstration boat trips, and displays about our science, come meet some very special guests. UM Mascot “Monte” will be providing entertaining antics from 1:30 to 2:30 pm, and Doug MacCarter of Montana Wild Wings Recovery is coming with education program birds. These birds, primarily raptors, cannot be returned to the wild due to their injuries and some are trained for educational purposes.

Doug (Butch) MacCarter, a Montana Native, retired biologist and teacher, will be showing the birds and talking about them. Butch, and his twin brother Buzz MacCarter, spent many years at FLBS conducting osprey research. They have fond memories of their time spent at the Bio Station in the 1970s.

Questions? Call (406) 982-3301 or see http://flbs.umt.edu/ or https://www.facebook.com/UMFLBS.

FLATHEAD LAKE RESEARCH CRUISE ON JULY 14

Flathead Lake Biological Station is hosting a cruise on the Far West Monday, July 14, from 2:00 to 5:00 pm. Join FLBS researchers to enjoy an afternoon on the lake with music, appetizers, beverages and an overview of Flathead Lake ecology and FLBS research. Cost is $75 per person and proceeds benefit the FLBS Research and Monitoring Program. The cruise departs from the marina in Lakeside, MT.

Reservations are required due to limited space. Please email or call Tom Bansak at tom.bansak@umontana.edu or 406-982-3301 x229 to confirm your participation. RSVP by July 10 is appreciated.

FLBS EXCEEDS $1 MILLION FUNDRAISING GOAL

The 2014 summer season started with a celebration for Flathead Lake. The Biological Station has exceeded its $1 million goal to match a lake monitoring challenge grant.

In late 2011, FLBS began a three-year campaign to raise a $1 million endowment to match a pledge for its Flathead Lake Research and Monitoring Program. Hundreds of families, foundations and businesses came through with gifts large and small.

“This incredible generosity will help protect the quality of Flathead Lake’s water for years to come,” said FLBS Director Jack Stanford. “Our team of faculty, staff and students gives a heartfelt thanks to the community and everyone who donated and made this possible.”

(Continued on page 2)
FLBS scientists specialize in ecological research and education with an emphasis on freshwater, particularly Flathead Lake and its watershed. FLBS research and monitoring provide a continuous record of lake conditions needed to understand and protect the lake and reveal threats before they become problems.

Actor John Lithgow owns a Flathead Lake home and actively supports the work of FLBS. “At a time of deep concern for the Earth’s fragile environment, the Flathead Lake Biological Station continues to do a magnificent job monitoring the Flathead’s complex water system,” Lithgow said. “All of us who treasure this beautiful lake owe the station a great and ongoing debt of gratitude.”

The research program depends almost entirely upon grants and gifts. Thus, faculty and staff at FLBS are forging ahead on the next set of priorities for community support. Current projects for which they seek funding include:

- LakeNET, the environmental sensor network around Flathead Lake, which provides real-time weather and water data to Flathead Lake residents and recreationists.
- The development and application of an environmental DNA test for aquatic invasive species. The test will allow researchers to rapidly determine from a water sample whether invasive species have reached Flathead Lake or other water bodies in Montana.
- Continued ecological discovery at FLBS’s long-term floodplain research site, the Nyack floodplain on the Middle Fork Flathead River.

For more information or to make a donation, call Tom Bansak at 406-982-3301 ext. 229 or email tom.bansak@umontana.edu; or Jack Stanford at 406-982-3301 ext. 236 or jack.stanford@umontana.edu. Donate online at http://flbs.umt.edu/.

DETERMINING THE ECONOMIC VALUE OF FLATHEAD LAKE

We love our big, beautiful lake for its stunning clarity. We enjoy swimming, boating, fishing, sunsets, storms, and creating family memories and friendships. The lake supports businesses and provides clean water for the wants and needs of all living creatures within its watershed. It is a special, limited resource and living around it is highly desirable. These elements, subjective and objective, factor into the value of this remarkable jewel, Flathead Lake. But how do economists put a number value on all of this?

Although deemed by many to be very important, a comprehensive economic analysis of the value of the Flathead Lake-River system has not been done. Past Biological Station proposals to do this work have not been funded, but FLBS researchers recently compiled the economic information that does exist for our Flathead Lake Facts handout (also on our website – http://flbs.umt.edu/):

"Economists estimate that Flathead Lake boosts shoreline property values by $6–$8 billion. Nature-based tourism accounts for roughly 20% of the $7.8 billion annual economy of Flathead and Lake Counties, and ecological services (e.g., water supply and purification, flood and drought mitigation) contribute another $20+ billion in benefits to human society.” Not included in this compilation are the difficult to quantify nonuse values, i.e., placing a value on existence, species preservation, biodiversity, or cultural heritage. However, it is clear from numerous examples that ecological degradation corresponds to economic declines—lower personal incomes, depressed economic conditions and impaired human health. On top of that there are the costs to society associated with “fixing” ecological degradation. An example is Lake Tahoe in CA/NV where $1.4 billion ($415M since 2010) has been spent on water quality restoration and protection since the 1960s.

The shoreline property valuation of $6–$8 billion was calculated by UM economists John Duffield and Chris Neher for a conference workshop. Their hedonic property value approach used the value per foot of shoreline around the lake (from MT Department of Revenue) and the amount of private, developable shoreline for Flathead Lake. They then compared their calculated land values with similar land in Western Montana that is not lakefront. The $6–8 billion resultant value is what they call "residential property services" associated directly with the lake and its high water quality.

A widely used economic data source, IMPLAN, provided information about the magnitude of the Flathead’s tourism economy, and a 2007 book Sustaining Rocky Mountain Landscapes: Science, Policy and Management for the Crown of the Continent Ecosystem edited by Tony Prato and Dan Fagre provided the basis for ecological services.

Regarding the $20 billion of additional benefits to society, Prato and Fagre (2007) cite a leading ecological economist, Robert Costanza, that ecological services are often estimated at 3X gross GDP for a country or region. Given that IMPLAN reported the Flathead’s economy at $7.8 billion in 2007, 3X that is nearly $24 billion.

For numerous reasons, including the economic ones articulated above, ecological degradation is the least desired outcome for Flathead Lake. It brings to mind Benjamin Franklin’s famous quote, “An ounce of prevention is worth a pound of cure.” Since we all benefit directly from Flathead Lake, it is in all of our best interests to understand and sustain the lake for future generations. The most important thing that we can do is to continue to invest in the FLBS Flathead Lake Monitoring Program which serves as society’s early warning system for the ecological health and water quality of the lake.
NEW AWARD — ENHANCING MODELS FOR SALMON RIVER CONSERVATION

NASA awarded $200K to Dr. Gordon Luikart (PI) et al.* for a project entitled “Projecting Effects of Climate Change on Pacific Rivers and Salmon: Integrating Remote Sensing, Landscape Genomics, and Demography to Inform Conservation”. Only 11 of 66 submitted proposals were selected for funding by NASA’s Ecological Forecasting for Conservation program.

Work has already begun on this project that will improve an existing RAP Database and Decision Support System developed by FLBS on the Riverscape Analysis Project. Dr. Alisa Wade is involved and explains, “For this project, Luikart, myself and colleagues from agencies including NOAA and USGS are collaborating to improve understanding of climate change risks to salmonids. We are forwarding the science of climate change vulnerability assessments by integrating salmonid genetic and demographic data with remotely sensed habitat data. Ultimately, we are developing a decision support tool to assist fisheries managers in salmonid conservation planning.”

The angling public (volunteers also called crowd-sourced sampling) will assist scientists with the collection of salmon tissue samples (e.g., fin clips) to help with field verification of the models. This work will help management and conservation organizations (e.g., Federal, State, Tribes, NGOs) monitor, identify, predict, and respond to climate change impacts on key habitats, species, populations, and ecosystems.

Luikart said, “By building upon FLBS’s past work and legacy of the investigator team, we can develop a variety of powerful statistical, modeling, and visualization tools to examine the vulnerability of aquatic resources at multiple levels from genes to species to riverscapes across the Pacific Rim— areas where the impacts of climate change on temperature-sensitive keystone species will be substantial.”

*Co-investigators include: John Kimball and Jack Stanford (FLBS); Clint Muhlfeld (USGS); Robin Waples (NOAA); and John Wenburg and Jeff Olson (USFWS).

BRIAN HAND WORKS ON CRITICAL QUESTIONS FOR SALMON CONSERVATION

Dr. Brian Hand is a Missoula native that grew up on the streams and lakes of Montana fishing with his grandfather. It was these early experiences that likely led to Brian's eventual career path in conservation science.

Brian's academic journey was anything but linear as he completed a Bachelors in Astrophysics, a Masters in Computer Science and a Ph.D. in Computational Biology. The only constant was to complete the whole of his study at the University of Montana.

In 2010, Brian joined the Montana Ecology of Infectious Disease (MEID) program where he studied the genetic structure of elk in the Greater Yellowstone Ecosystem, and designed new computational methods to help advance the field using his computer science and programming training. Through this work, Brian was drawn to the new and challenging field of landscape genetics, which combines population genetics, ecology and spatial statistics.

Brian met Dr. Gordon Luikart, FLBS faculty, while working on his PhD dissertation. Drs. Hand and Luikart developed an enthusiasm for conservation genetics that led to an extensive collaboration in the field with Brian joining FLBS in January 2014 as a postdoctoral research associate.

Brian explains the current direction of his research, “I'm interested in creating software tools to answer questions in science that aren't always easy to get at because of time, money, and feasibility constraints. Conservation is also an important part of my work, and creating tools to not only answer theoretical questions, but practical ones with the ability to predict future outcomes for the problems of today.”

At FLBS, Brian works to help solve some of the most critical questions for future conservation work by studying and attempting to predict the future effects of climate change on several salmonid species across the Pacific Northwest.

Brian works to help conserve the wildlife of Montana and the Pacific Northwest that he grew up to love as a boy fishing on Montana's lakes and streams. His greatest hope is he and his family will have the same opportunities he had as a boy to enjoy the wealth of wildlife that Montana has to offer well into the future.

New Video — “What Do You Do Here?”

Visitors often ask “What do you do here at the Bio Station?” This is often followed by, “We had no idea how extensive and diverse your work is at FLBS,” once they learn about what we do. We knew it was time to step up our game in getting the word out about our mission and research. With help from a thoughtful contributor, a local videographer with excellent credentials, and willing participants, the video took shape. The first of our video series is here and can be viewed http://flbs.umt.edu/AboutFLBS/News.aspx#Link69. Let us know what you think!

Flathead Lakers Annual Meeting at FLBS on July 15

Alberta AIS Coordinator Kate Wilson will be giving a talk about “Good News Travels Fast: Aquatic Invasive Species Prevention Crosses Border,” and FLBS Director Dr. Jack Stanford will provide an update on the “State of Flathead Lake.” The Flathead Lakers will present their 2014 Stewardship Award to Dr. Bonnie Ellis for her years of work on the Lake. For more information, see www.flatheadlakers.org.i
The Biological Station is located 17.5 miles north of Polson or 14 miles south of Bigfork. Visitors are welcome year-round Monday–Friday to take a self-guided walking tour. For more information, send an email to flbs@flbs.umt.edu, call 406-982-3301 or see the FLBS website at www.umt.edu/flbs.

DON’T MISS REMAINING BIOLOGICAL STATION SUMMER SEMINARS ON July 3 and July 11

The seminars are a part of the summer academic session and are open to the public. Join us in Elrod Lecture Hall at the Station for these free seminars.

✔ Thursday, July 3, 6–7 pm, Dr. Mark Lorang
The Not So Flat, Flathead Lake

✔ Friday, July 11, 12–1 pm, Tom Bansak
Aquatic Invasive Species in Flathead Lake – The Next Great Threat

The seminars each last about one hour, followed by interactive discussion between audience and presenter.

For more information, send an email to flbs@flbs.umt.edu, call 406-982-3301 or see the FLBS website at http://flbs.umt.edu/.

Recent FLBS Publications—


The Flathead Lake Journal is a publication of the Flathead Lake Biological Station (FLBS). This issue was coedited by Marie Kohler, Sue Gillespie, Tom Bansak and Jack Stanford. Unless otherwise noted, all photos courtesy of FLBS employees or students. Views expressed in the Flathead Lake Journal do not necessarily represent the official position of the Flathead Lake Biological Station, The University of Montana. Editors and publishers disclaim any responsibility or liability for such material. © 2014 Flathead Lake Biological Station. All rights reserved.