Introductions and research assistants:

College undergraduate intern Owen Zaengle, from SUNY ESF measured water quality at 23 sites on tributaries throughout the Otsego Lake watershed. He also helped with plant management strategies on Moraine Lake and removal of the exotic marsh thistle from Greenwoods Conservancy and additional terrestrial sites. He was supported in part by the Catskill Regional Invasive Species Partnership (CRISP), the Lake Moraine Association and the Peterson Family Charitable Trust (PFCT). Benjamin German, from SUNY Cobleskill, held the Robert C. MacWatters Internship in the Aquatic Sciences sponsored by SUNY Cobleskill and the BFS. He conducted the annual warm water fisheries surveys at Brookwood Point and Rat Cove in Otsego Lake and investigated the meiofaunal community on selected lichens. The latter work was supported in part by the PFTC. In addition, several SUNY Cobleskill students, under Dr. John Foster's supervision, conducted fisheries studies on Otsego Lake and its watershed. Gilbert Badger, from SUNY Oneonta, sponsored by the OCCA, held a Rufus J. Thayer Otsego Lake Research internship and monitored both organic and inorganic carbon at 23 sites throughout the Otsego Lake watershed using a carbon analyzer recently acquired via an NSF grant. Katherine Whitcomb, from SUNY Oneonta, was awarded a SUNY Oneonta Biology Department internship supported by the OCCA. She conducted macroinvertebrate surveys in streams across Otsego County to indicate pre-gas extraction surface water conditions. Tyson Rob, from SUNY Oneonta, was given a BFS Internship. Sponsored by the Village of Cooperstown, he developed a bathymetric map of the Village treatment wetland and evaluated nutrient and brightener movement through that system. Edward Gazzetti, from SUNY Oneonta, received a BFS internship sponsored in part by CRISP. He evaluated phosphorus content in cattail and reed canary grass in the Cooperstown wastewater treatment wetland and a nearby control wetland. Bradley Bowers, from SUNY Cobleskill, used hydro-acoustic data to evaluate overlap of habitat utilization of alewife and walleye. He was supported by the OCCA. Alex Levenstein from Oneonta High School monitored chlorophyll concentrations in Otsego Lake. He received a FHV Mecklenburg Conservation Internship sponsored by the OCCA. Brandt Scott, funded by the Village of Cooperstown, monitored water quality in the Upper Susquehanna River. The following students worked with Dr. Florian Reyda on fish parasites as described below: Michael O’Rourke, Umrhan Habal, Danielle Willsey, Jason Sheehan, Cary Lange and Andrew Diagler.

Intensive offerings:

About 200 students enrolled in several SUNY Oneonta and SUNY Cobleskill on-campus courses and attended field exercises on site. More than 1,000 K-12 students visited the BFS and received hands-on experiences on Otsego Lake and BFS woodlands over the year enrolled in the pre-college “Learning Adventures” and “Agricultural Environmental Quality” programs. Brad Bowers and Ben German served as interpreters under the direction of Holly Waterfield.
Faculty and staff activities:

Holly Waterfield has been collaborating with Mark Cornwell, SUNY Cobleskill, as they have continued to utilize acoustic monitoring to document alewife population dynamics in Otsego Lake. She and Matt Albright finalized work on a project, supported by a DEC grant, on phosphorus control strategies related to onsite wastewater systems. For the 12th year, we stocked Otsego Lake with walleye fingerlings. Monitoring was continued by Holly, with advice and help from Lars Rudstam, Tom Brooking (Cornell BFS) and Dave Warner (USGS Great Lakes Research Center, Ann Arbor) evaluating the impacts on both the fishery, and with Matt Albright, impacts on water quality and trophic cascades. Holly has also been collaborating with Lars Rudstam on a software comparison to further refine analysis procedures for hydroacoustic data. Mark Cornwell and John Foster, SUNY Cobleskill, were involved in fisheries research related to the walleye/alewife work including tracking of several mature walleye in Otsego Lake over the year. Matt Albright, in fulfilling his responsibilities as laboratory supervisor and coordinator of staff and intern activities was deeply involved in all BFS activities. Dr. Jeff Heilveil taught an intensive field entomology course during the summer, the first summer course housed entirely at the BFS. As part of the course, students produced a curated insect collection for some of the BFS properties. Advising the SUNY Oneonta Biology Club, he conducted a “taxonomic excursion” and camping event in the fall.

Matt Albright and Holly Waterfield became Certified Lake Managers (CLM) by the North American Lake Management Sociality. The certification was associated with the Biology Department’s development of the first so named Master of Science Degree in Lake Management in the country. Holly Waterfield, Matt Albright and Bill Harman attended NALMS Annual Meetings in Spokane, Washington. All coauthored papers on BFS research. Holly attended the NALMS Board of Directors meeting as Regional Director. She also attended biannual Board meetings in Denver. We attended and presented at the New York State Federation of Lake Associations (NYS FOLA) meetings in Hamilton, NY. Matt and Bill are NYSFOLA Directors. Holly attended and presented at the Northeast Natural History Conference in Albany, NY. Florian and Matt were involved with the Earth Day events at SU CO, and Florian presented at the Faculty Research Show.

The State of Canadarago Lake report was recently finalized. Under the authorship of Matt and Holly, it relied on contributions by a number of interns involved at the BFS between 2008 and 2010. It, a multi-sponsored effort contracted through the Otsego County Soil and Water Conservation District, is available on the publication page of our web site.

Paul Lord and Timothy Pokorny completed their DEC sponsored surveys of pearly mussels in Catatonk Creek, Butternut Creek and the Unadilla River. Four species of greatest conservation need were documented.

Drs. Nigel Mann, Donna Vogler and RP Withington conducted field trips in Biol 282, 282, General Ecology, on Otsego Lake in September. Nigel made four visits to the Thayer Farm and Rum Hill properties in spring 2011, to look for suitable sites for mist-netting as part of the Monitoring Avian Populations (MAPS) program. He visited the construction site for the new ornithology facility at Upper Site to discuss the progress and design of the building work. He
intends to start contributing to this program in 2013 and, given the development of the new facility at the Upper site, probably will use that area instead.

Florian Reyda and four of his students, Michael O’Rourke, Umrhan Habal and Danielle Willsey, did a study last spring of the histopathology (tissue damage) caused by a commonly occurring fish parasite in Otsego Lake. Their study focused on the damage caused to yellow perch by the thorny-headed worm *Leptorhynchiodes thecatus*. There were many technical challenges in the project involving obtaining cross-sections of parasites attached to host intestinal wall. This effort was continued in the fall by Reyda and two other students, Jason Sheehan and Cary Lange, who examined the damage caused by that parasite to smallmouth bass form the lake. These works provided documentation of the damage that *L. thecatus* causes to these locally important game fish species. In addition, Dr. Reyda has continued his collaborative work on stingray tapeworms, in which two different students, Danielle Willsey and Andrew Daigler each described a new species of tapeworm. The latter two studies were done with the aid of new research grade compound scope in the Main Laboratory that enables digital imaging as well as scientific illustration.

We conducted the fifth year of work involving water chestnut control in a wetland near Oneonta, supported by a DEC Exotic Species Eradication grant of $29,000. We are also assisting the OCCA and their citizen volunteers in the control of water chestnut in Goodyear Lake, also supported by the DEC. Several small externally funded contracts have been renewed. The Village of Cooperstown has sponsored BFS efforts to evaluate nutrient removal efficiency of a treatment wetland which began receiving treated effluent in June 2010. A $10,000 contract with the Catskill Regional Invasive Species Partnership supported a survey of the aquatic invasives in the region. We continue to administer two National Science foundation proposals, one for over $400,000, to renovate the Upper Site Field Research laboratory (see front cover) and another for over $100,000 for a diversity of equipment and construction of weirs in headwater streams at the Thayer Farm to refine nutrient loading draining into Otsego Lake.

Jeane Bennett-O’Dea continues to work part-time in the office assisting with administrative tasks. Because of recent changes processing finances in the Oneonta Foundation, the SUNY Research Foundation and funding associated with Thayer Farm renovations, her workload has greatly increased. Several talented citizen volunteers again helped at the BFS during the year. Kathy Ernst continues to assist us with computer graphics.

The Biological Field Station Volunteer divers support the BFS and Otsego Lake in twelve months of every year. From April through June the team deploys no-wake zone buoys (NWZBs) around Otsego Lake and retrieves spar buoys. From May through October the team regularly opens the water intake gate for the Village of Cooperstown’s water supply to allow scrubbing of the interior of that line. From September through December the team retrieves NWZBs around Otsego Lake deploying spar buoys. The team maintains buoy systems all year and performs underwater sampling as required. Additionally, the team retrieves BFS equipment lost in the lake as required and trains continuously for diving in all local conditions.
Active Members of SUNY-Oneonta Biological Field Station's Volunteer Dive Team:

**Jim Vogler:** Open Water SCUBA Instructor. Jim has been diving with us for the last four years & assists Paul Lord with all aspects of BFS diving. He is the first of the BFS volunteer divers to earn a dive leadership certification. Jim works for the biology department at SUNY-Oneonta and is married to Donna Vogler, biology professor at SUNY Oneonta.

**Dale Webster:** Master SCUBA Diver; 14th year as volunteer diver; Dale's request to become involved with BFS research through diving prompted establishment of the team in 1998. Dale is works on campus as a carpenter and sells real estate.

**Lee Ferrara:** Master SCUBA Diver; 12th year as volunteer diver. Lee is a high school science teacher in Oneonta.

**Ed Lentz:** Rescue & Ice Diver. Ed has been diving with us for the last six years and still does ice dives in a wetsuit. Ed is a patent attorney and a past recipient of the OCCA conservationist of the year award.

**Bjorn (BJ) Ellertsen:** Rescue, Multilevel, & Ice Diver. BJ has been diving with the BFS for the last four years. He owns and manages a construction company.

**Joseph W. Zarzynski:** underwater archaeologist, scientific diver, author, and educator. “Zarr” has been diving with us for the past two years and is currently involving the team in a side-scan sonar investigation of Otsego Lake.

**Krista Ransier:** currently working on requirements for divemaster certification. Krista is a student at Milford High School and started diving with us in 2011.

**Robert Eklund, Jr:** Advanced Open Water Diver and nitrox divers. Bob has been diving with us for the past two years.

**Simon Thorpe:** is an Advanced Open Water Diver. Simon has been diving with us for the past two years.

**Antonio Carrasquillo:** Open Water Diver: Tends for team and operates a personal services business.

**Wayne Bunn:** recently retired civil engineer and NYS certified boat operator. Wayne tends for the team.

**Jeremiah Wood:** Recently completed academic and pool training for SCUBA certification. Jeremiah tends for then team.

Master SCUBA divers all have Advanced & Rescue training and training in at least five specialty diving areas. Our Master SCUBA divers are all ice, deep, & night trained. Their other training includes a mix of search and recovery, drift diving, multilevel diving, altitude
diving, dry suit diving, wreck diving, boat diving, buoyancy diving, & equipment specialist.

Public support makes our work possible. Funding for BFS research and educational programs was procured in 2011 from many citizens and organizations. Special thanks go to the Clark Foundation who generously supports our annual needs. The OCCA, the Peterson Family Charitable Trust, Otsego 2000, the Village of Cooperstown, the Otsego Lake Association, SUNY Oneonta, and the SUNY Graduate Research Initiative have also supported our endeavors. Consulting services on a diversity of small lakes contributes to our annual income.

Willard N. Harman