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Jay '99 and Jim Hodgson (Biology/Environmental Science)

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## Cumulative research helps build family of scholarship

*Two summers ago, one family of academics scored a hat trick with a paper about water mites in the diets of Paul Lake largemouth bass. Husband, wife and son were all listed as coauthors.*

*It was one of many high points not only in their own family history, but in the history of the lake. Years of cumulative research findings on Paul and its neighbor, Peter Lake, have contributed to new thinking about ecosystems in general.*

***Carol Hodgson** (Biology) recounts a story in which her own role has played out as research manager, wife and mother.*

Peter and Paul are old family friends of the **Hodgsons**: **Jim** (Biology/Environmental Science), myself – **Carol** (Biology) – and **Jay '99**. And each summer since 1980, Jim has visited them on the property of the University of Notre Dame Environmental Research Center (UNDERC).

UNDERC, a remote reserve located mainly in the Upper Penninsula of Michigan, encompasses 7,500 acres that include 30 lakes, nine bogs, and several marshes and streams. With its diversity of habitats, it is an excellent location for aquatic studies that are not subject to public disturbance.

It is also where one finds Lakes Peter and Paul.

Following a sabbatical at the University of Wisconsin-Madison, Jim began studying the foraging behavior of Peter and Paul's largemouth bass in May 1980, by examining their stomach contents.

### A family affair

Our son Jay joined the sampling team in 1981 at age five, when, with fishing pole in hand, he added to the tally of individually tagged bass. Daughter Kelly, 10, snagged Jay's forehead with a jig and quit fishing. Forever.

In 1984, Jim and colleagues from Madison began conducting whole-lake manipulation experiments on Peter and Paul (the Trophic Cascade Project) with grants from the National Science Foundation (NSF) that have

continued to the present.

“The name, Cascade Project, originated with the whole-lake experiments where the group showed how manipulating the top level of the food chain (largemouth bass) affects minnows, which affect the zooplankton, which affect the algae, and can ultimately change the basic chemistry of a lake,” Jim explained. “The idea that a manipulation ‘cascades’ down the food web has become a central theme in all of ecology, and the experiments done by the Cascade group in northern Wisconsin lakes have become the most famous demonstration of this concept.

“It’s one of the longest continuously funded projects in the history of the NSF. Moreover, our Cascade research has reshaped worldviews on the way ecosystems function.”

Jim and Jay continued visiting Peter and Paul every summer. “UNDERCland,” Jay fondly remembers. “Dad shared this special place with me. It’s a home away from home. A place where memories live. I think I finally came to appreciate science and research there.”

By 1999, when Jay applied for graduate school to begin work on a master’s degree, he had 17 years of fieldwork, which led a professor during the phone interview to ask his age because of his extensive experience.

**Back in the lab**

While Jim and Jay enjoyed weekends at UNDERC, I sat in Jim’s small lab in JMS, inputting fish data into the computer, data I analyzed and archived. Since I began as Jim’s research manager in 1988, we have amassed more than 4,000 individually tagged bass gut samples. NSF has declared the data set “a national treasure.”

The research from our studies has generated an impressive bibliography of publication in leading journals. Within our family alone, Jim has 37 articles to his credit, three of them coauthored with Jay and one with me. And, in June 2008, we pulled a hat trick when the three of us published a paper together about water mites in the diets of Paul Lake largemouth bass.

Jim continues working at UNDERC, although his research has expanded to include ecosystem changes.  Jay received his Ph.D. in August 2009 and is teaching biology at Armstrong Atlantic University in Savannah, Ga. His research reconstructs climate change predictions using diatoms. Kelly is a physician. And I’m still hard at work in Jim’s lab—with a new set of fish stomachs.

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