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JAMES R. GAMMON: THE WABASH RIVER MAN

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James R. Gammon has been in Indiana since 1961 as a faculty member in Biological Sciences at DePauw University. It is my pleasure to concoct a brief, but accurate, biography of Dr. Gammon. I interviewed Dr. Gammon in August 2006 to obtain the majority of information that follows. From 1967 to 1998, he surveyed the fish assemblages of the Wabash River, building an incredible volume of data that comprises one of few long term fish assemblage compilations. My involvement with Jim was initiated when Tom Lauer and I were fortunate enough to inherit the monitoring program on the Wabash River that Gammon signed with funding from Cinergy Corporation (previously PSI, now Duke Energy) and Eli Lilly, Inc.

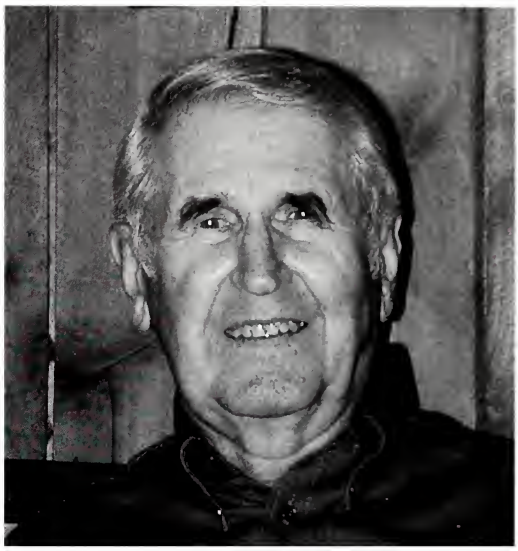

Figure 1.—James R. Gammon.

THE EARLY YEARS

James R. Gammon was born in Sparta, Wisconsin on 24 April 1930 to Abner James and Laverne Marie Robertson Gammon, and Jim had the honor of being the first member of his family to be born in a hospital. Dr. Gammon grew up in the nearby small village of Kendall, with his three siblings and his grandparents all sharing the same house. His father owned a family business, a combination dry goods and grocery store passed down from Jim's grandfather. Dr. Gammon's mother was a homemaker with organ and piano abilities. Jim's siblings have remained in the Midwest. His brother Dave has four daughters and lives in Wisconsin; his sister Barb has two children and lives in Illinois. Their youngest sister, Carol, has three sons and also lives in Wisconsin.

As a child, Jim always had an avid interest in science and nature, and he still retains those interests. He attributes this interest to his father and to his outdoorsman grandfather who lived with his family. They spent a great deal of time together in the woods where the grandfather and grandson fished and hunted. When he was six years old, Jim learned to shoot a .22 rifle and to catch brook trout in local streams. Together, he and his grandfather hunted squirrel, pheasant, and ruffed grouse (deer did not yet inhabit the southwestern Wisconsin driftless region). The Gammon family members were all interested in nature and always had many pets—mostly dogs and a few cats—and whatever stray or injured animal (including an owl and mink) they came across in the forest. Other summer activities included biking local rural roads and damming the local creek, a headwaters stream of the Baraboo River, for swimming. Winter activities included skiing and skating. Gammon's earliest jobs were working in his father's store, baling hay, working on a pea viner, and at the Standard "filling stations" where Gammon fixed hundreds of tires during World War II.

Jim developed a deeper, more scholarly interest in wildlife from books and *National Geographic* magazines he found in his grandmother's attic. Several of these books were

texts discarded by his Uncle Wayne, who had attended college for a short period. Jim scanned his uncle's college chemistry text and realized he had in interest in chemistry. His parents then presented him with a chemistry set that Jim established in his basement, and he learned basic chemistry while burning holes in a few rugs.

Jim attended local schools in Kendall, Wisconsin. His high school had about 100 students, and Jim played basketball and baseball. His mother would not sign the paperwork to allow him to play six-man football until he weighed more than 130 pounds (he never got to play football!).

MILITARY SERVICE AND HIGHER EDUCATION

After graduating from high school Jim went to Waukesha, Wisconsin with a close friend, and they worked in a foundry. The boring, manual labor soon convinced them both to join the Navy, and they went through boot camp at the Great Lakes Naval Training Center. Jim remained stationed at the Great Lakes Center, went through Corps school, and spent the remainder of his active duty working in a pre- and post-surgery ward of the Mainside Hospital.

After serving in the Navy, Jim began college at the La Crosse State College, a school with perhaps 1000 students. The decision to attend La Crosse was easy since many friends from his hometown were also enrolled there. Jim describes these years as an enjoyable and memorable experience. He has fond memories of all of the basic courses, including biology and math. During the summer he again found work at a foundry in Milwaukee. The following fall the Korean conflict erupted, and Jim was drafted for service in the Navy for an additional two-year stint. The majority of this time was spent at the Great Lakes Naval Center.

Following his second military service, Jim transferred to the University of Wisconsin. He began a relationship with Carolyn Patricia O'Bierne who attended the UW–Whitewater campus, and they were soon married. They lived in Whitewater, and Jim took classes and graduated from UW–Whitewater in January 1956 with a BS degree. Jim has memories of many great people from this period, some of whom he still maintains close contact.

Following graduation from UW–Whitewater, Jim enrolled in graduate school at the UW–Madison with the goal of getting a teaching certificate to teach high school. He commuted from Whitewater because his wife Carolyn was still in school there. His professors convinced Jim to apply for further graduate training, and he was awarded a prestigious scholarship from the Danforth Foundation. Jim and his family subsequently moved to Madison, and Jim began five and a half years of graduate school. Dr. Arthur Hasler was Jim's major professor, and his major was in ecology. Hasler was famous for identifying the factors that salmon use in natal stream homing and for identifying cultural eutrophication of lakes as a potential crisis. Another well-known person at the UW with whom Jim worked closely was the eminent botanist Dr. John T. Curtis. Jim's graduate work was on muskellunge as predators to control panfish populations. The field work for this project was performed at the University of Wisconsin Trout Lake Station facility near Boulder Junction, Wisconsin (the site for the seminal limnological research of E.A. Birge and C. Juday). Jim earned a MS in 1957 and the Ph.D. in 1961 from the University of Wisconsin.

Jim interviewed for several faculty positions around the country but selected DePauw University in Greencastle, Indiana because he wanted a position where he could teach and yet maintain an active research program. At that time, most small teaching colleges strongly discouraged research by faculty. Jim also did not like the atmosphere of a research university, so Depauw University was a good fit. Jim and Pat produced an additional two children after settling in Greencastle (the previous two children were born during Jim's graduate career). Jim's second marriage was to Sherry Garner, who brought two children, Bradley and Shannon, into the family. Sherry was employed at DePauw University until she retired in 2004.

TEACHING AND RESEARCH AT DEPAUW UNIVERSITY

The courses that Jim taught at DePauw University included Comparative Vertebrate Anatomy, Vertebrate Biology, Ecology, Human Ecology for non-majors, Biostatistics, Introductory Zoology for non-majors, and Limnology. DePauw University had a graduate

Figure 2.—Dr. Jim Gammon driving the boat electrofisher, and two student assistants netting fishes.

program when Jim was hired, and he graduated at least 24 master's degree students. The majority of Jim's students were involved in research on the Wabash River and the Ohio River, studying the effects of generation of electricity on fishes, macroinvertebrates, algae, and aquatic plants. Thus, an obvious and strong research interest was the Wabash River ecosystem, which was nearby to Greencastle. Other funded projects that Gammon managed included the effects of agriculture and inorganic sediments on fishes. The fish community ecology work resulted in the most obvious effects of electricity generating plants and thus had the most interest for Gammon and students. Additional research projects that Gammon pursued included topics as diverse as population ecology of fishes, toxicology, fish assemblages, thermal ecology, aquatic plants, macroinvertebrate ecology, and phytoplankton. His research interests were wide and included natural history studies of terrestrial and aquatic organisms. Associated activities with students included field trips to the Smoky Mountains during spring breaks, many winter term trips (including studies of coral reefs) to Andros Island, Bahamas and Baja California, Mexico, and canoe excursions to the Everglades National Park, Florida, and the Boundary Waters Canoe areas in Canada.

While Gammon was at DePauw he undertook many projects, resulting in dozens of reports and at least 64 publications including 28 peer-reviewed articles, reports, edited chapters in texts, and one textbook that summarized 30 years of sampling in the Wabash River (Gammon 1998). Gammon's earliest Indiana publication was written in conjunction with Shelby Gerking in *Natural Features of Indiana*. (A brief list of some publications is appended.) Jim currently has numerous manuscripts in progress or submitted for publication. His career is far from over!

A quote from Gammon's (1998) text on the Wabash River ecosystem provides a view of the humanistic interest of Gammon in studying the river:

> "Rivers, together with mountains, lakes, and oceans, are among the few natural features which bestow a permanence to an otherwise transitory world. There is something satisfying in the thought that a familiar nearby river once floated a birch-bark canoe and will continue to be a source of enjoyment to our children and grandchildren."

One of the most impressive results of Gammon's research activities was the creation of the first multimetric index to score fish assemblage quality. Gammon's index of well-being (Iwb) was the precursor to the Index of Biotic Integrity (IBI) multimetric index that currently is used throughout the world in ecosystem assessment. Gammon's Iwb is a score that combines two indices of diversity (Shannon-Weiner diversity scores for abundance and weight) and two suitable weighted indices of abundance into a single number. The index was created as a method for simplifying data to a single number that would reflect the biotic integrity of the community (Gammon 1998). The immediate need at the time was for an index that the electric power industry might use to compare fish assemblages upstream and downstream from generation facilities to test for similar abundance and diversity.

Gammon was involved in many local organizations including Friends of Sugar Creek and Friends of the White River; and he was on the board for The Nature Conservancy for years. Gammon was active in numerous professional organizations including the Indiana Academy of Science (President in 1996), the Natural Areas Association, American Fisheries Society, the Society for Environmental Toxicology and Contamination, and the American Society for Limnology and Oceanography. Local and national newspaper reporters have interviewed him frequently for his environmental knowledge related to the Wabash River and agricultural pollution in Indiana

Figure 3.—Dr. Gammon in the field with students.

streams. Gammon was named the 2000 Environmentalist of the Year by IPALCO, the parent company of Indianapolis Power & Light Company. He became a Fellow of the Indiana Academy of Science in 1968.

STUDENT GUIDANCE

Gammon was a mentor to a huge number of undergraduate and graduate students during his career at DePauw University. Gammon's advice to students is to "try to aim for a career that you would do without being paid." A personal philosophy would include to "work hard and enjoy life." Past students include many who are currently in the public eye: Lee Bridges, Chris Yoder, John Riggs, Jerry Rud and Neil Parke. The following is a list of former students of Gammon, and the list includes the Master's thesis titles, year, and current locations where known:

Ujjal Tej Singh Deol. 1967. The effect of inorganic pollution on macroinvertebrate populations.

Robert S. Benda. 1967. The fish populations of Big Walnut Creek. (currently Professor of Biology, Department of Biology, Prince William Sound Community College, Valdez, Alaska)

Susan C. Bell. 1969. The effects of thermal pollution on the macroinvertebrate population of the Wabash River.

Randal A. Gaseor. 1971. The effect of temperature on the feeding rate and behavior of the caddisfly *Hydropsyche frisoni*.

Russell Scott Norris. 1972. The effect of heated water effluent on aquatic biota of Little Three Mile Creek. (currently a dentist in Mount Vernon, Indiana)

Jay T. Hatch. 1973. The responses of fish fauna of Little Three-Mile Creek and the Ohio River to a thermal effluent. (currently Associate Professor of Biological

Sciences, Dept. of Biological Sciences, University of Minnesota)

Steven T. Pierce. 1973. The effects of thermal enrichment on the macroinvertebrate populations of the Wabash River.

Lee Bridges. 1974. A study of the effects of the Newport Army Ammunition Plant upon the benthic fauna of Little Raccoon Creek and Little Vermillion Creek (Vermillion County, Indiana). (currently at Indiana Dept. of Environmental Management, Indianapolis, Indiana)

James R. King. 1974. A study of power plant entrainment effects on the drifting macroinvertebrates of the Wabash River.

A.P. Lesniak. 1974. The effects of the J.M. Stuart Station on fish of Little Three-Mile Creek and the Ohio River.

Eugene R. Mancini. 1974. Macroinvertebrate drift of the Wabash River and its relation to Wabash Generating Station (Terre Haute, Indiana). (retired from Atlantic Richfield Co., formed own consulting company doing Superfund and ecotoxicology studies)

Terry C. Teppen. 1975. Distribution and abundance of fish populations in the Middle Wabash River.

Brandon Kulik. 1977. The abundance and distribution of fish in the Ohio River in the vicinity of the J.M. Stuart Station: 1970 through 1976. (currently Senior Fisheries Biologist with Kleinschmidt Associates, Pittsfield, Maine)

Richard H. Wright. 1978. The distribution of fishes in southwestern Indiana.

William L. Fisher. 1979. An assessment of the fish populations of Eagle, Stotts, and Rattlesnake creeks in central Indiana. (currently at Cooperative Fisheries Unit, Oklahoma State University, Stillwater, Oklahoma)

Joseph M. Reidy. 1979. The role of tributaries in the recovery of a river from stress. (currently a lawyer in Columbus, Ohio)

E.M. Rogellin. 1979. The role of seining in the analysis of the Middle Wabash River.

Jerome L. Rud. 1982. The diets and interspecific relationships of twelve species of game fish from the Middle Wabash River, west-central Indiana. (currently at Indiana Dept. of Environmental Management)

David S. White. 1983. Effects of sediments on aquatic organisms. (currently Professor of Biology and Director of the Hancock Biological Station, Murray State University, Murray, Kentucky)

Edward S. Snizek. 1984. An evaluation of riparian forest and fish communities in an agricultural watershed.

Neil Parke. 1985. An investigation on phytoplankton sedimentation in the Middle Wabash River. (currently at Eli Lilly & Co., Indianapolis, Indiana)

Chris O. Yoder. 1976. Ohio River fish communities. (currently Director of Midwest Biodiversity Institute and Center for Applied Bioassessment and Biocriteria, Columbus, Ohio)

Lee Bridges mentioned that Gammon's editorial advice to students was to avoid Gammon's mistake: a draft of Gammon's dissertation included a sentence that was intended to explain the source of muskellunge gonads that were collected by native American guides. However, the first draft implied that the guides removed their own gonads. Bridges has many memories of river collecting trips where equipment failures prompted alternative operating techniques that were not safe or smart. But the net result was completed field work.

Gammon had an early "mini-computer" called a Wang. Because Gammon was the only person with the ability to write the code, he was the primary user of the computer. When DePauw University acquired mainframe computers, Gammon brought his computer to the university technicians with the hope of transferring data. The only help the technical staff could offer was "Wow, that's neat." Bridges mentioned that Gammon had an ongoing love affair with Saab automobiles, purchased from a dealership in tiny Perrysville. One of the more memorable vehicles was a two-stroke Saab station wagon that was replaced by other Saab sedans.

Gammon's son Bob assisted with Gammon's research projects for at least 10 years. Bob is currently working for a Cincinnati consulting firm funded by the U.S. EPA for training with hazardous waste. Bob worked on the Wabash River, the Ohio River, and local

Figure 4.—Jim Gammon is also an angler.

streams collecting fishes and water quality and habitat data. Bob has many memories of experiences in the field and of his father. He sums up his impressions of his father with the statement "I can't tell you how proud I am of him." Notable memories of his father include working on a nonpoint source EPA funded project on Stotts, Rattlesnake, and Eagle creeks near Zionsville in the 1970's. When the team visited one of the small tributaries of Eagle Creek to be sampled, they immediately noticed a chemical precipitate on the stream banks. Everybody scrambled for waders, and they sampled fishes with an electric seine and quantified the benthos and the habitat. It turned out that there was a hazardous waste site (Northside Landfill) immediately upstream. Gammon wrote the director of the Stream Pollution Control Board to complain about the stream condition. Subsequently, a landfill employee died while cleaning a toxic waste container. Jim Gammon was asked to testify about the condition of that stream at a local hearing; and, at the request of Gammon's wife, Bob went along to keep his father "safe." Gammon testified that the fish abundance was less than half of expectations and that the habitat was severely altered. Eventually the landfill was closed. Bob has proud memories of his father at that hearing and in other contexts as "fighting the good fight."

Bob Gammon described many of the sampling trips on the Wabash River as memorable. One notable memory was of sampling fishes near Darwin's Ferry at a time when local anglers were not catching catfish to their expectations. This was at the same time that another electrofishing crew had been sampling intensively in the same reaches. One fisherman pulled a rifle when Gammon's crew pulled up in view. Bob stated that "we took the hint and kept moving downstream." Other memories include boating down the river at full throttle between sites, and hitting an un-

derwater log at such force that the motor flew off of the boat transom. Bob said that "everything was real quiet for a few moments" as the crew realized what had happened. They marked a tree on shore and returned with a sheriff rescue team to practice "dragging the bottom" to locate the missing motor. The motor was never found.

Chris Yoder recalls Gammon as "an extremely easy person to work for, and he was considered a colleague by all of his students." Gammon was very diligent in field work and attending conferences. Yoder says that Gammon ". . . set a good example for our conduct. Who knows what would have happened to a bunch of otherwise rowdy grad students on these forays." Gammon's nickname was "Chief," and Gammon was affectionately known among his students as the leader of "Gammon's Guerillas." Yoder considers Gammon's innovative designs of large river electrofishing gear and sampling to be the precursor and significant influence on all current large river fish sampling efforts.

IN "RETIREMENT"

Gammon retired from DePauw University in 1993 and currently has emeritus faculty status. Although Jim says that he is retired, he appears as busy as ever. For example, he serves on the White River Citizen Advisory Council and attends local conferences regularly.

ACKNOWLEDGMENTS

Jim Gammon was extremely helpful in generating this biography and locating other friends who provided information. I am grateful to Bob Gammon, Neil Parke, Chris Yoder, Lee Bridges, Brandon Kulik and many others for the interesting and lively stories about their colleague and mentor.

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