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Marius Brouwer 1942-2016

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## OBITUARY



MARIUS BROUWER

**Dr. Marius Brouwer**, retired Professor of Coastal Sciences at the University of Southern Mississippi (USM), passed away on 24 December 2016 at the age of 74 following a 9 month battle with cancer. Marius was a classic example of a trim and very fit individual who used to bike to work almost daily!

Marius was born on 3 January 1942 and was a native of The Netherlands where he earned his undergraduate and graduate degrees from the University of Groningen in Biochemistry. He spent 3 years as a post-doc and Research Associate at the Duke Marine Laboratory Biomedical Center. He subsequently spent 2 years on staff at the University of Groningen in Physical Chemistry before returning to Duke University Marine Laboratory in 1981 where he served as a Research Professor in the Integrated Toxicology Program. His research focus was on metal toxicology and metabolism and oxidative stress; he also had 2 patents in these research areas.

Marius started at the Gulf Coast Research Laboratory (GCRL) in 1996 as a Senior Research Scientist and the head of the Toxicology group. He retired from USM on 31 August 2008, although he remained active in research at the Laboratory through 2010. Among other research activities, he was 1) PI on a National Science Foundation funded project (1996–1998) examining copper metallothionein and a novel superoxide dismutase in organisms that use copper for oxygen transport, 2) the coordinator of the EPA funded Consortium for Estuarine Ecoinicator Research for the Gulf of Mexico (CEER–GOM) from 2002 – 2007 and 3) coordinator of the NOAA funded Aquatic Research Consortium (ARC) from 2006–2010. The latter two large programs involved multidisciplinary studies with multiple universities and PIs. The focus of the CEER–GOM project was to study, develop, and validate indicators of estuarine condition at four levels of increasing biological complexity: (1) individual; (2) population; (3) community; and (4) ecosystem/watershed, and to integrate the suite of indicator responses into models to assess estuarine ecosystem condition, with specific emphasis on hypoxia. The focus of the ARC project was to develop and apply state of the art molecular tools to identify and solve problems caused by chemical contaminants and natural stressors (hypoxia) in the aquatic environment. During this time, the Toxicology group had a large staff of research assistants, technicians, post-docs and students who divided their time between field sampling, laboratory exposures and molecular and biochemical analyses. Hurricane Katrina destroyed much of the Toxicology Building in August 2005, and Marius oversaw the recovery and rebuilding of the exposure and culture systems in the building within 5 months to allow continuation of the Consortium projects.

Marius was one of 4 scientists appointed in 1996 to a new editorial board of the *Gulf Research Reports* (now *Gulf and Caribbean Research*), a first step in the ultimate transition of the journal into a respected on–line outlet for publication of research from the Gulf of Mexico and Caribbean Sea. Marius

was also instrumental in the development of the new Department of Coastal Sciences at USM, and was named a Full Professor in the Department in 1998 upon its official formation.

During his tenure in Coastal Sciences, Marius graduated 4 PhD students (Adam Kuhl, 2005; Tiando Li, 2008; Natasha Sharp, 2009; Shuzhao Li, 2009) and 5 Masters students (Suzanne Carroll nee Gronen, 2000; Rachel Syring, 2000; Arthur Karels, 2000; Laura Hendon, 2006; Arati Dangre, 2009). Marius had high expectations of his students, and all had a great research product and were top in the young Coastal Sciences program. Marius had three post-doctoral fellows during his time at the Laboratory; Eric Carlson, John Roling, and Alex Pozhtikov, and also supported a number of Research Associates and Technicians including Nancy J. Brown-Peterson, Thea Hoexum-Brouwer, Steve Manning, Rachel Ryan, Christy King, Walter Grater, Kevin Ryan, Idrissa Boube, Arthur Karels, Laura Hendon, Jennifer Lopez nee Dufreche, and Hannah Lang. Marius and his team of students, technicians, post-docs and colleagues published over 130 scientific articles and book chapters during his career.

Some of Marius' most productive years in environmental toxicology were as a researcher and faculty member at GCRL. Scientific articles published while he was at GCRL have been cited 655 times according to *Google Scholar* (GS) and *Web of Science* (WOS). Fifteen of these publications have been cited more than 20 times. Eleven of those citations have been in 2017, indicating that his work continues to have significant impact today.

Marius and his wife, Thea Hoexum-Brouwer, moved to western North Carolina upon retirement, where they enjoyed spending time with their children, grandchildren and border collie and working on their large (~40 acres!) wooded lot; later, they moved to the coastal city of Emerald Isle, NC. He is survived by his wife Thea; two sisters, Coba and Thea, of The Netherlands; a son, Jeroen, of Emerald Isle; a daughter, Marieke, of Summerfield, NC; two grandchildren, Crystal and Brandon; and one great-granddaughter, Alianna.

His official obituary can be found at: [http://www.brooksfuneralhomeandcrematory.com/?pagetype=obitlink&obit\\_id=1894899](http://www.brooksfuneralhomeandcrematory.com/?pagetype=obitlink&obit_id=1894899)

– Mark S. Peterson, Nancy J. Brown-Peterson,  
and Joyce M. Shaw

### **A list of Dr. Marius Brouwer's works published while at USM that have been cited more than 50 times:**

- Gronen, S., N. Denslow, S. Manning, S. Barnes, D. Barnes, and M. Brouwer. 1999. Serum vitellogenin levels and reproductive impairment of male Japanese Medaka (*Oryzias latipes*) exposed to 4-tert-octylphenol. *Environmental Health Perspectives* 107: 385–390 (cited 223—GS; 132—WOS)
- Niemi, G., D. Wardrop, R. Brooks, S. Anderson, V. Brady, H. Paerl, C. Rakocinski, M. Brouwer, B. Levinson, and M. McDonald. 2004. Rationale for a new generation of indicators for coastal waters. *Environmental Health Perspectives* 112:979–986 (cited 126—GS; cited 89—WOS).
- Griffitt, R.J., N.J. Brown-Peterson, D.A. Savin, C.S. Manning, I. Boube, R.A. Ryan, and M. Brouwer. 2012. Effects of chronic nanoparticulate silver exposure to adult and juvenile sheepshead minnows (*Cyprinodon variegatus*). *Environmental Toxicology and Chemistry* 31:160–167 (cited 62—GC; 39—WOS).
- Oberdörster, E., M. Brouwer, T. Hoexum-Brouwer, S. Manning, and J.A. McLachlan. 2000. Long-term pyrene exposure of grass shrimp, *Palaemonetes pugio*, affects molting and reproduction of exposed males and offspring of exposed females. *Environmental Health Perspectives* 108:641–646 (cited 59—GC; cited 43—WOS).
- Li, T. and M. Brouwer. 2007. Hypoxia-inducible factor, gsHIF, of the grass shrimp *Palaemonetes pugio*: molecular characterization and response to hypoxia. *Comparative Biochemistry and Physiology Part B: Biochemistry and Molecular Biology* 147:11–19 (cited 57—GS; cited 44—WOS).
- Brouwer, M., N.J. Brown-Peterson, P. Larkin, V. Patel, N. Denslow, S. Manning, and T.H. Brouwer. 2007. Molecular and whole animal responses of grass shrimp, *Palaemonetes pugio*, exposed to chronic hypoxia. *Journal of Experimental Marine Biology and Ecology* 341:16–31 (cited 53—GC; 41—WOS).