

# THE CURRENT

NEWS FROM WATERBORNE ENVIRONMENTAL, INC.

FALL 2010

## GREGG HANCOCK HIRED TO BUILD ECOTOXICOLOGY AND ENDANGERED SPECIES GROUP

Waterborne is proud to announce the hiring of Gregg Hancock as the new head of our ecotoxicology group. Waterborne has long been known for specializing in crop protection and environmental quality with highly qualified and recognized expertise in exposure assessment (exposure characterization, mitigation), monitoring studies (runoff; ground, surface, drinking water; field/aquatic dissipation), exposure modeling (ecological, drinking water, software development), and geospatial information assessment (landscape composition, vulnerability analysis). As Waterborne has grown over the last 18 years, we have labored to develop our ecological risk assessment program that would provide for our customers' every needs. The hiring of Gregg is a critical piece of a comprehensive plan to provide the best possible ecological risk assessment capabilities.

Gregg comes to Waterborne with over 17 years of industry ecotoxicology experience and is an expert in risk assessment, aquatic and terrestrial testing, regulatory submissions, study design, testing strategies for difficult-to-test chemistries, endangered species assessments and more. He knows the nuances of several different regulatory initiatives both in the US and abroad. He has worked for the Dow Chemical Company and Bayer CropScience on projects ranging from EU REACH activities to validating in-vitro alternative test methods to predict potential for chemical bioaccu-



mulation in fish to supervising an aquatic toxicology laboratory.

At Waterborne, Gregg's primary role is to integrate his ecotoxicology knowledge into existing programs in order to develop our risk assessment abilities into a major strength. He is teaming with Waterborne exposure experts to provide innovative and groundbreaking risk assessment solutions. In addition, Gregg is taking a

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## WATERBORNE ENVIRONMENTAL, INC. AND CRAMER FISH SCIENCES ENTER INTO COLLABORATIVE AGREEMENT



WATERBORNE  
ENVIRONMENTAL, INC.




Waterborne and Cramer Fish Sciences of Gresham, Oregon, have entered into a formal collaborative agreement to perform environmental studies evaluating impacts associated with the use of agricultural chemicals (pesticides and nutrients) on fish habitat and populations. Waterborne is well known in the agricultural chemical world for its excellent work on exposure assessment through simulation modeling,

spatial technologies, and field studies.

Cramer Fish Sciences (CFS) has been a leading consultant on fisheries and endangered species issues in the western United States since their founding in 1987. CFS has a team of respected fish biologists, aquatic ecologists, and population modelers with offices in OR, CA, WA, and ID, dedicated to finding practical solutions that balance conflicting uses of our natural resources. In

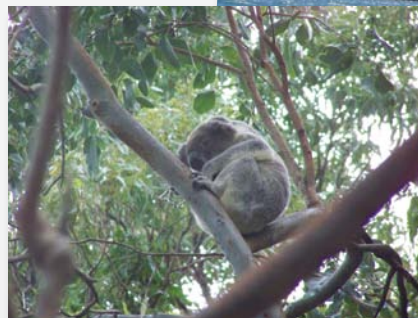
the past few years, CFS has done groundbreaking work to clarify the specific spatial and temporal circumstances in which salmon and trout are exposed to pesticides, especially in off-channel habitats.

Waterborne and Cramer Fish Sciences will be sharing a booth at the SETAC North America 31st Annual Meeting, November 7-11, 2010, in Portland, OR. Please stop by Booth #2 and say hello! 

## WATERBORNE ATTENDS IUPAC AUSTRALIA

In July, Paul Miller and Amy Ritter of Waterborne visited Australia to attend the 12th IUPAC International Congress of Pesticide Chemistry Conference in Melbourne. See the “Past Presentations” section of this newsletter for more information. In addition to making presentations and organizing a symposium, Amy and Paul learned more about farming and pesticides in Australia and about efforts to protect the Great Barrier Reef. The Queensland government is proactive in protecting the Great Barrier Reef from potential impairment from sediments, nutrients, and pesticide loads. The Queensland Natural Management Agency, as part of the Coastal Catchment Initiative, developed water quality improvement plans for many of the watersheds. The improvement plans define ABCD frameworks which will reduce pesticide loads through best management practices for grazing and sugarcane farming (<http://www.derm.qld.gov.au/>).

The Queensland government has also implemented a Reefwise Farming program (<http://www.reefwisefarming.qld.gov.au/>). This website includes fact sheets and publications on what is required under the new reef protection legislation. For example, the fact sheet, “Sugarcane environmental risk management plan and mandatory requirement for herbicide use,” helps growers with more than 70 hectares of cane production area in the Wet Tropics complete a sugarcane environmental risk management plan (ERMP) and goes on to explain the new mandates, such as not applying certain herbicides if there is a forecast of heavy rain for the 48 hours after application.



Koala seen while hiking Noosa National Park.



Paul Miller in Sydney, Australia.

Additionally, the Great Barrier Reef Park Authority has a marine monitoring program ([http://www.gbrmpa.gov.au/corp\\_site/info\\_services/science\\_management/marine\\_monitoring\\_program](http://www.gbrmpa.gov.au/corp_site/info_services/science_management/marine_monitoring_program)). The marine monitoring program assesses the health of the Great Barrier Reef by monitoring inshore areas within 20 km of the coast (specifically, the Cape York, Wet Tropics, Burdekin, Mackay Whitsunday, Fitzroy, and Burnett Mary regions). The monitoring program includes coral surveys and water column pesticide sampling.

But it wasn't all work. Paul and Amy also got to enjoy the sites of Australia. They saw the architectural sites of Sydney and the wild beauty of Noosa National Park in the off time. Waterborne hopes to return to the land down under again in the near future. 🌊

## DR. CHANG-XIANG MAO SHARES SOME OF THE WISDOM OF CHINA WITH WATERBORNE

Chang-Xiang Mao, Ph.D., researcher at the Guangxi Academy of Agricultural Sciences in Guangxi, China, and father of Waterborne's Dazhi Mao gave a presentation on rice agriculture in China during a noontime seminar in June. Dr. Mao gave a thorough and entertaining overview of rice production in China compared to the US, and then focused specifically on pollution in China's waterways and paddy fields and the need for regulation and testing. Dr. Mao's specialty is agronomy and plant breeding with more than 40 years of experience working with rice and experience working as a consultant for FAO, World Bank, IRRI, ADB, Cargill, Pioneer, RiceTec and other leaders in the industry of rice and agronomy. Rice is a vital crop for China and most of the world, and as China continues to grow, the total consumption increases, while the available cropland shrinks. This means that less than 7% of the total arable land in the world must somehow feed 20% of the world's total population. As if that weren't bad enough, fresh water is a scarce resource in China. They have only 2000 cubic meters per capita, less than 1/4 of the world average, and of that they use half to grow rice. These stresses mean farmers are pouring more fertilizer and pesticides on their crops to try

to increase yield, but the law of diminishing returns comes into effect and the amount of chemicals they are using is disproportionate to the return. Waterways, rice paddies, and drinking water are steadily becoming more polluted under the pressure to produce more and more crops to feed a growing China.

One way to relieve that pressure may be hybrid rice, Dr. Mao's area of specialty. Researchers in China and around the world hope that hybrid rice will produce bigger yields in the same amount of growing area, and with fewer chemicals and less water required. This may alleviate some of the pressure on cropland, but because of the nature of Chinese farms, which are mostly small farms owned privately, the farmers level of skill and education regarding agro-chemicals varies widely. China needs help identifying the biggest problem areas in order to focus regulation and education efforts. This presents a unique opportunity to companies trained in areas of pesticide risk assessment, environmental modeling, and geospatial information analysis management to establish themselves in the Chinese market.

Dr. Chang-Xiang Mao left Waterborne with a final message: a hopeful farewell, Zai Jian. 🌊

## RECENT PRESENTATIONS

- Comparison of European field dissipation studies to NAFTA and international use environments: Study design and dissipation rate data. Kalumbu Malekani, Nathan J. Snyder, Aldos C. Barefoot, and Megan White. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- Screening approaches for predicting pesticide concentrations in groundwater. Dazhi Mao, W. Martin Williams, and J. Mark Cheplick. Oral presentation. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- Urban pesticide use support system. Gerco Hoogeweg, W. Martin Williams, and Amy M. Ritter. Oral presentation. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- Advances in modeling urban/residential pesticide runoff. W. Martin Williams, Amy M. Ritter, and J. Mark Cheplick. Oral presentation. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- Comparison of European field soil dissipation studies to NAFTA and international use environments: Soil and climatic conditions. Nathan J. Snyder, Aldos C. Barefoot, Kalumbu Malekani, and Joshua J. Amos. Oral presentation. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- Modeling the effectiveness of mitigation measures on the diazinon labels. Nathan J. Snyder, W. Martin Williams, Debra L. Denton, and Jerry Troyan. Oral presentation. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- National stewardship program to mitigate carbamate pesticide risk in drinking water. W. Martin Williams, Bernard A. Engel, Richard Fawcett, Gerco Hoogeweg, and J. Mark Cheplick. ACS 239th National Meeting, March 21–25, 2010, San Francisco, CA, USA.
- Development of spatially explicit model inputs for an eco-epidemiological analysis of chemical risks to streams for fish and aquatic invertebrates. Christopher M. Holmes, S.D. Dyer, C. White-Hull, K. Kapo, L. Posthuma, D. De Zwart, and C. Mulder. Poster presentation. SETAC Europe 20th Annual Meeting, May 23–27, 2010, Seville, Spain.
- Higher tier modeling of groundwater concentrations from pesticides used on rice. Amy Ritter, Mark Cheplick, and W. Martin Williams. Poster presentation. SETAC Europe 20th Annual Meeting, May 23–27, 2010, Seville, Spain.
- Modeling best management practices for sugarcane in the Pioneer River watershed. Amy M. Ritter, Gerco Hoogeweg, Aldos C. Barefoot, N. Mackay, and M. Burns. Oral presentation. 12th IUPAC International Congress of Pesticide Chemistry, July 4–8, 2010, Melbourne, Australia.
- United States national scale modeling for probabilistic agrichemical risk assessment using a high performance computing infrastructure. Paul S. Miller, J. Mark Cheplick, Christopher M. Harbourt, Jessica J. Prenger, Dazhi Mao, and Luke F. Zwilling. Oral presentation. 12th IUPAC International Congress of Pesticide Chemistry, July 4–8, 2010, Melbourne, Australia.
- Spatial and temporal quantification of pesticide loadings to the Sacramento River, San Joaquin River, and Bay-Delta to guide risk assessment for sensitive species—Part I: Project status. W. Martin Williams, Gerco Hoogeweg, Rich Breuer, Debra L. Denton, Minghua Zhang, Scott Hecht. Poster presentation by W. Martin Williams. Bay-Delta Science Conference 2010, September 27–29, 2010, Sacramento, CA, USA.

- Spatial and temporal quantification of pesticide loadings to the Sacramento River, San Joaquin River, and Bay-Delta to guide risk assessment for sensitive species—Part II: Development of modeling scenarios to compute edge-of-field loadings. Gerco Hoogeweg, J. Mark Cheplick, Peggy Lee, Amy M. Ritter, W. Martin Williams, Rich Breuer, Debra L. Denton, and Minghua Zhang. Poster presentation by Gerco Hoogeweg. Bay-Delta Science Conference 2010, September 27–29, 2010, Sacramento, CA, USA.

## UPCOMING TECHNICAL PRESENTATIONS

### SETAC NORTH AMERICA 31ST ANNUAL MEETING, PORTLAND, OR • NOVEMBER 7–11, 2010.

Waterborne Booth at SETAC. Come visit us at Booth #2 near the entrance of the exhibit hall. We'll be sharing the booth with Cramer Fish Sciences and we hope to see you there.

- Development of spatial datasets representing potential terrestrial pesticide use sites for use in endangered species risk assessments. Joshua J. Amos, Christopher M. Holmes, Steve Kay, Mark Trostle, and Ephi Gur. Poster presentation by Joshua J. Amos. November 8, 2010.
- Development of spatial datasets representing potential aquatic pesticide use sites for use in endangered species risk assessments. Raghu Vamshi, Christopher M. Holmes, Joshua J. Amos, Steve Kay, Mark Trostle, and Ephi Gur. Poster presentation by Christopher M. Holmes. November 11, 2010.
- Spatial and temporal quantification of pesticide loadings to the Sacramento River, San Joaquin River, and Bay-Delta to guide risk assessment for sensitive species—Part II: Development of modeling scenarios to compute edge-of-field loadings. Gerco Hoogeweg, J. Mark Cheplick, Peggy Lee, Amy M. Ritter, W. Martin Williams, Rich Breuer, Debra L. Denton, and Minghua Zhang. Poster presentation by Gerco Hoogeweg. November 8, 2010.
- Spatial and temporal quantification of pesticide loadings in California to guide risk assessment for sensitive species—Part I. W. Martin Williams, Gerco Hoogeweg, Rich Breuer, Debra L. Denton, Minghua Zhang, Scott Hecht. Platform presentation by W. Martin Williams. November 10, 2010, 11:05 a.m.
- Development of model inputs for varied approaches to ecological diagnostic analyses of aquatic risks from multiple stressors in Ohio streams. Christopher M. Holmes, Peggy Lee, S. Dyer, K. Kapo, L. Posthuma, D. de Zwart, C. Mulder, and L. Faggiano. Poster presentation by Christopher M. Holmes. November 10, 2010.
- Quantifying the economic impact to agriculture from buffers intended to reduce spray drift of pesticides onto urban land use. Joshua J. Amos, Christopher M. Holmes, and Robert C. Everich. Poster presentation by Joshua J. Amos. November 11, 2010.

## NEWLY PUBLISHED JOURNAL ARTICLE

- Development of a coupled soil erosion and large-scale hydrology modeling system. Dazhi Mao, Keith A. Cherkauer, and Dennis C. Flanagan. 2010. *Water Resources Research*, Vol. 46, W08543, 15 pp.

## WEI GRADUATES FROM STATE PROGRAM TO PREPARE COMPANIES FOR EXPORT



Graduates Raghu Vamshi, Amy Ritter, and Chris Holmes.

Waterborne Environmental, Inc. was one of a combined 25 companies from across the Commonwealth of Virginia to graduate in July from two state export programs, touting impressive results from their newly acquired tools to successfully export products and services overseas. The graduating companies were recognized during a noon luncheon at the downtown Richmond Marriott Hotel.

The program provided participating companies assistance from a team of experienced international service providers to help them meet their international goals. Private sector service providers such as attorneys, Web designers, bankers, translators and freight forwarders contribute essential expertise for expansion into international markets.

The Virginia Economic Development Partnership, a marketing organization, was created by the Virginia General Assembly in 1995 to encourage, stimulate, and support the development and expansion of the economy of the Commonwealth. The Partnership is a state authority, which is governed by a 22-member Board of Directors appointed by the Governor and the Virginia General Assembly. To accomplish its objectives of promoting economic expansion within the Commonwealth, the Partnership focuses its efforts on business recruitment, expansion and international trade. VEDP has offices in Virginia, Belgium, Hong Kong, Mexico and Japan. ♪

## WATERBORNE SPONSORS RAVEN LOONATICS

The Raven Loonatics, which included Gerco Hoogeweg as a team member, conducted their 2010 Birdathon on May 9. A birdathon is a one-day event in which teams try to see as many birds as possible in a 24-hour period in a single area, in this case Loudoun County, VA. The purpose of a birdathon is to raise money for a conservation organization, in this case the Loudoun Wildlife Conservancy. Waterborne graciously was one of the corporate sponsors by donating a fixed amount for each bird species found. The team's first birdathon was not blessed by the weather gods and endured gusty winds, some rain and unseasonably cool temperatures throughout the day. It was no surprise that birds were quiet under these conditions making the mission very challenging. However, as the sun rose over the Potomac River they heard the distinctive call of one of their namesakes, the Common Loon (which was then seen by all), followed a short while later by the call and sighting of a Common Raven. The first park (Algonkian) gave their list a solid start with 52 species. The team enjoyed the lovely sight of Ruby-throated Hummingbirds feeding on honeysuckle as a rainbow appeared after a brief shower (promising sign!), and of a Barred Owl casually observing humans as they passed by completely unaware of her presence. Wilson's Warbler was a great spot and they had nice close up views of the typically hard to see Yellow-billed Cuckoo. Other Algonkian species included Wood Duck, Hooded Merganser, Bald Eagle, Ring-billed Gull, Hairy, Downy, Red-bellied, and Pileated Woodpeckers, Wood Thrush, nine warbler species, Baltimore and Orchard Orioles, Scarlet Tanager, and Rose-breasted Grosbeak. After running all around the county, their last stop included a few other notable birds: Ovenbird, Blue-wing Warbler, and Black-throated Blue Warbler. Overall, they tallied 109 species, one more than their competitors, this one species gave them the win. ♪



Greater yellowlegs.  
Photo by Gerco Hoogeweg.

## ECOTOXICOLOGY AND ENDANGERED SPECIES GROUP *continued from page 1*

leading role in collaborative efforts such as the recent agreement with Cramer Fish Sciences in order to provide focused expertise to address specific problems for clients. Clients needing endangered species assessments for US pesticide registrations can now benefit from our ability to provide spatial and temporal data for species biology and ecology, combined with pesticide exposure parameters (e.g., timing, rate, frequency, location) and ecotoxicological endpoints (e.g., LC50, chronic vs. acute). These cutting

edge assessments give clients valuable and precise information on any potential endangered species and pesticide interactions.

We are excited by the prospects provided by our expansion into the ecotoxicology discipline, and believe that we are now better equipped to serve our clients, and our clients are, in turn, in a better position to keep up with the latest trends and regulatory requirements now and into the future. ♪

## NEW HIRES



**Christian Bongard** joined our Leesburg office in March 2010 as a Staff Agricultural Engineer. He has a Bachelor's degree in Biological Systems Engineering, with a minor in Watershed Management, from Virginia Tech. He has worked on various environmental related projects including stream restoration designs, watershed impact studies, chemical water data analysis, and benthic collection and identification.



**Alex Gibbs** joined our Fayette, Missouri office in April 2010 as a Staff Agronomist. He has a Bachelor of Science degree in Agronomy, with a minor in Agricultural Economics, from the University of Missouri and is a certified crop advisor. Prior to joining Waterborne, he worked as a Crop Consultant.



**Kevin Wright**, a part-time employee with Waterborne since May, joined us full time in August 2010 as a Staff Engineer. He has a Bachelor's degree in Agricultural & Biological Engineering and a Master's degree in Soil and Water Resources Engineering from the University of Illinois.



**Malia Andrus** joined us as a part-time employee in the Champaign, Illinois, office in June 2010. She has a Bachelor's degree in Biochemistry and Art History from The Colorado College, a Master's in Art History from the University of St. Andrews in Scotland, and a Master's in Agricultural Engineering from the University of Illinois. She is currently working for Waterborne as a Staff Agricultural Engineer while completing her work towards a Ph.D. in Agricultural & Biological Engineering at the University of Illinois.



**Jude Holscher** joined Waterborne in May 2010 as an intern Staff Agricultural Engineer. He is currently completing coursework towards a Bachelor's degree in Agricultural & Biological Engineering, with a minor in Crop Science, at the University of Illinois. His experience includes developing and maintaining a farming business, working as a research assistant, and providing support to the US Army Corp of Engineers.

## PROMOTION

**Megan Cox** has been promoted to Project Engineer. Megan joined Waterborne in August 2008 and is responsible for aspects of our field studies programs and engineering efforts. She is a dedicated person whose positive attitude is a great team asset.

## EMPLOYEE RELOCATION

**Jacob Mitchell** relocated from our Champaign, Illinois, office to our Fayette, Missouri office in May 2010. He and his wife, Kelly, bought acreage outside of Columbia, MO. They have recently expanded their family with the addition of a beagle/jack russell terrier mix puppy named Duke.

## WATERBORNE BABY

**Katie Betz** and her husband, Kevin, are the proud parents of a new baby girl, Elsie Renae Betz. Elsie arrived just after midnight on September 22, 2010, weighing in at 6 lbs 10 oz, measuring 20 inches long.

## WATERBORNE MARRIAGE

**Luke Zwilling** and Amanda Alberg were married on July 10th in a ceremony at St. Matthew's church in Champaign, Illinois, followed by a reception at the Holiday Inn. Amanda was previously an intern for Waterborne and is currently working for CAT in Peoria, IL, as a Hydraulic System Design Engineer.

## WATERBORNE INTERNS RECOGNIZED AT ANNUAL RESEARCH PARK COOKOUT

On August 12, 2010, the Research Park at University of Illinois Champaign honored 5 outstanding interns for their work at companies in the research park. Both Jude Holscher and Kai Van Horn received trophies commemorating their hard work and valuable contributions. Winners were also featured on the Research Park website and announced by a press release. Our interns attended this function which featured a barbecue cookout, music, lawn games, volleyball/soccer, and the annual tradition of a water balloon launching event.

We offer congratulations to them both for exceeding company expectations and making valuable contributions to Waterborne this summer. 🌊



Kai Van Horn

## WATERBORNE ACCEPTS CREDIT CARD PAYMENTS

Waterborne Environmental, Inc. is now accepting credit card payments (VISA, MasterCard, and American Express). If you would like to pay your invoice(s) by credit card please contact Deb Johnson for a credit card payment form. Once complete, send it to Deb either by fax (703) 777-0767 or email johnsond@waterborne-env.com. 🌊

## INJUNCTION CONJUNCTION, WHAT'S YOUR FUNCTION?

On May 17 the USEPA agreed to a stipulated injunction to resolve the lawsuit that the Center for Biological Diversity had filed. The Stipulated Injunction sets forth a schedule by which USEPA will review the registrations of pesticides containing any of 75 pesticide active ingredients for their potential effects to one or more of 11 federally-listed threatened or endangered species in eight counties around the San Francisco Bay area of California. In conjunction with the already issued Biological Opinions by NOAAs National Marine and Fisheries Services, the issue of the potential effects of pesticides on aquatic organisms is increasingly being pushed to the forefront of risk assessments. As no clear path is available on how to best address this issue, we are all trying to find a solution.

For the past two years Waterborne has been working on a solution. We are currently working on a CALFED funded project to spatially and temporally quantify pesticide loadings to the Sacramento River, San Joaquin River, and Bay-Delta to guide risk assessment for sensitive species. In this project we are developing the probability distribution functions for pesticide edge-of-field loadings for 40 pesticides in agricultural (including rice) and urban settings. Using these edge-of-field loadings we spatially and temporally overlay the results with critical habitat data and advanced fish population models to

determine if there are any areas of concern (e.g. high loadings and fish in a critical life stage) in the study area. Results from this study will be used by CALFED and the Pelagic Organism Decline workgroup (POD) to further guide risk assessment for sensitive species in CA. As it happens, several of the species and chemicals listed in the recent injunction are assessed as part of this CALFED project.

The use of critical habitat data in this analysis is only part of the solution. Critical habitat data alone do not give us full insight as to whether pesticides and fish in their critical life-stages co-occur. To resolve this issue, we have teamed up with Cramer Fish Sciences. Cramer Fish Sciences is a well established expert in fisheries sciences, specifically salmonids and sturgeon, on the west coast. They will develop fish population models that will tell us where the fish could be during the critical life stage. In addition we are working with a team of ecotox experts including staff from Waterborne, EPA and NOAA to develop a series of benchmarks that can be used to determine if effects take place.

To learn more about this project, please visit us at the joint Waterborne/Cramer Fish Sciences booth or at one of our presentations at the upcoming SETAC meetings in Portland.

*Gerco Hoogeweg, Ph.D.*