Message from the Dean

The academic year of 2008-2009 was a very good year for the School of Agricultural and Natural Sciences (SANS). The successes of the faculty, staff and students have been outstanding with many accomplishments deserving and receiving national and international recognition.

SANS is home to sixty faculty members and nearly one thousand majors and is composed of three departments. The outstanding leaders in the three departments expend relentless energy and deserve special recognition.

- Dr. Lurline Marsh, chairperson of the Department of Agriculture, Food and Resource Sciences;
- Dr. Jurgen Schwarz, director for the Center for Food Science & Technology;
- Dr. Shirley Hymon-Parker, chairperson of the Department of Human Ecology;
- Dr. Joseph Okoh, chairperson of the Department of Natural Sciences.

Unfortunately, the page limitations of this newsletter will not allow for a comprehensive update on all of the great achievements in SANS. Please learn more about all of the programs in SANS by visiting our website at www.umes.edu/SANS. You will see that the educational environment and opportunities in SANS span the spectrum from early childhood education for toddlers in the Child and Family Development Center to earning a Doctorate of Philosophy.

The gains and successes of our school last year have been the result of hard work and incredible commitment by the faculty, staff and students. As you review the news from each department, you will see evidence of the land-grant mission at work “to produce graduates who are leaders in and contribute to their communities, the nation, and the world; and to provide teaching, research and public service through collaborative efforts, which improve the standards of living and quality of life of diverse populations, including limited-resourced persons.”

You will see concerted efforts in SANS for meeting the challenges of increasing the minority population in Science, Technology, Engineering and Mathematics, better known as the STEM disciplines. External funding has been received and creative approaches for attracting young bright scientists are underway.

We continue to strive toward achieving SANS’ goals - that our graduates can be competitive in finding professional positions; that they will be leaders in their professional and social environments and life-long learners; that they can demonstrate a sense of social and civic responsibility as well as ethical and humanistic codes of behavior; and that the faculty will excel professionally because of an environment that is conducive for scholarly achievements.

Gladys G. Shelton, Ph.D.
Interim Dean
## Degree Programs in the School of Agricultural and Natural Sciences

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<th>Degree</th>
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^1 ACS* Certification  
^2 Minor offered with emphasis in journalism or computer graphics  
^3 Degree offered with UMAB, UMBC & UMCP

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This newsletter is a publication of the School of Agricultural and Natural Sciences.  
For more about our academic programs, research, and outreach endeavors, go to  
www.umes.edu/sans

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University of Maryland Eastern Shore  
President  
Dr. Thelma B. Thompson

Vice-President for Academic Affairs  
Dr. Charles Williams

Vice-President for Administrative Affairs  
Dr. Ronnie E. Holden

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School of Agricultural and Natural Sciences
The department continues to forge ahead as programs, resources, faculty, staff and students change. Last summer, the department said farewell to Ahmad Jilani, USDA Liaison Officer, Iqbal Javaid, Research Associate, and Niki Whitley, Associate Professor, who moved on to new opportunities. We welcomed Mrs. Lisa Purnell, our new USDA Liaison Officer and UMES alumnus, and Dr. Maurice Clarke, Assistant Professor and veterinarian.

While the department has several priorities, two of the major ones continue to be the need to increase recruitment and to provide infrastructural support for the teaching, research and outreach activities. The department’s efforts to increase recruitment included adoption of the new name, Agriculture, Food & Resource Sciences, to convey a broader view of the career opportunities in agriculture, and the availability of a YouTube marketing sector on the department.

An AgriScience Education Summer Program to educate youth about the broad range of careers in agriculture was conducted for one hundred forty-five kindergarten through twelfth grade students from the community.

An urban forestry baccalaureate degree program was developed, approved by faculty, and submitted to the school for further internal review.

Funds were approved for major renovation and upgrading of a greenhouse at the plant science building. The new structure will be used for teaching, research and outreach plant activities. It is anticipated that the building will be ready for use in fall 2009. Computers in the computer lab in Trigg Hall were upgraded and three classrooms had installation of new LCD’s.

The baccalaureate programs graduated eighteen students and the master’s program graduated four students. Faculty were successful in grantsmanship where eleven of twenty-two grant proposals, were funded for $1,320,390. They published several refereed and non refereed articles, and made over forty presentations at scientific meetings. The department hosted the Regional FFA competition for twenty-five students from three local high schools on March 25. Five students and one faculty participated in the 2008-2009 MANRRS Conference with one student winning an award for her presentation. Faculty mentored students in at least twenty research projects, some of which were presented at scientific meetings. Faculty received a grant to strengthen the international capacity of students and faculty through international experiences in Belize.

Finally, the department is planning an Ag Field Day for September 12th. Join us as we showcase our research. Online pre-registration is available at www.umes.edu/sans.

Lurline Marsh, Ph.D.
Chair
Research to Enhance Life on Delmarva

The department is actively engaged in various projects related to environmental sustainability, food security and biofuels. These projects include:

- Diverse plant species as potential sources of biofuel and phosphorus hyper accumulation
- Pathogen testing metrics for GAPS in Delmarva fresh produce and poultry litter compost
- Development and implementation of a multimicrobial and multifunctional inoculant for enhancing soybean productivity and environmental quality
- Nutrient management and water quality issues affecting the Chesapeake Bay and surrounding coastal bays
- Characterization of biological control agents for lepidopterous pest in the Delmarva ecosystem
- Techniques to reduce ammonia emission and increase the efficiency of poultry houses and reduce bacteria in poultry carcasses
- Integrating specialty crops in organic culture on Delmarva
- Impact of possible natural anthelmintics on meat quality in sheep and goats.

These projects are essential for Delmarva agricultural sustainability and the well-being of its farmers. Attend Ag Field Day on September 12th to learn more.

A Snapshot of Research and Outreach Activities

Mid-Atlantic Drinking Water Project
This education and outreach project educates Delmarva residents on how to avoid, detect, and treat contaminants that may affect the quality of their drinking water. Rural residents are also provided with free water tests to analyze the safety of their private well systems.

Drinking Water Education Curriculum for K-12 in Rural and Urbanizing Schools
This outreach project seeks to provide rural and urban school teachers and students in Maryland, Virginia, and the District of Columbia with the basic knowledge and understanding about sources of drinking water, their protection from various pollutants, and the potential health risks associated with consumption of water from unprotected sources.

Collaboration with Secondary Education to Enhance Agricultural Science Curricula
This project collaborates with secondary education teachers to develop agricultural labs and applications to infuse into existing high school curricula. Two teachers from Wicomico County, David Vogel and Mike Campbell, participated in the 2009 session.

Floral Trial Garden
In summer 2008 a Floral Trial Garden was conducted for home gardeners, master gardeners, and nursery and greenhouse professionals.

Demonstration Community Garden
In collaboration with Maryland Cooperative Extension and the Maryland Eastern Shore Resource Conservation and Development Council, the department has created a community garden for demonstration. The primary purpose of the garden is to demonstrate how a vacant piece of land can be utilized to grow fruits and vegetables for multiple families.

UMES summer interns are responsible for the care, maintenance and harvesting. The students are learning how to start plants from seed as well as how to transplant vegetables that have been started in a greenhouse.

Students plant zinnias to attract beneficial insects to the garden
Center highlights 2008-2009

The teaching, research and outreach efforts of the Food Science and Technology Ph.D. Program (FDST) are focusing on food safety issues relevant to our state and region. Four new Ph.D. students were enrolled in the FDST program last fall and two M.S. students in the Food and Agricultural Sciences (FASC) program. While the focus is on graduate education, we support undergraduate research projects. Undergraduate student Kimberly Cephas achieved a first place student oral presentation at the 2nd UMES Annual Aquatic and Fisheries Science Symposium, April 10, 2009, in Ocean City, Maryland, and a second place student oral presentation at the 15th Biennial Symposium of the ARD, March 28-April 1, 2009, in Atlanta, Georgia. Cephas’ research project addressed growth and survival of Vibrio vulnificus in postharvest oysters and was supervised by Dr. S. Parveen.

The productivity of our small program is evident through grantsmanship and publications. Six grant proposals have been submitted with Food Science core faculty as PI or Co-PI, requesting a total of $1.1 million. Three papers were published in peer-reviewed journals and fourteen presentations at local, regional and international professional meetings have been made.

The A.W. Perdue Foundation awarded two scholarships totaling $10,000 to Meshack Mudoh and Geoffrey Rutto.

Dr. J. G. Schwarz traveled to Copenhagen, Denmark with student Francis Orech to discuss a research project carried out in Kenya, Africa. The student subsequently spent over ten weeks in Kenya doing field work.
Tom Rippen, Seafood Technology Specialist, coordinates and executes, with the help of our students, the Maryland Crabmeat Quality Assurance Program, a quality management project of the Chesapeake Bay Seafood Industries Association (CBSIA), the Maryland Department of Agriculture (MDA), and the University of Maryland Sea Grant Extension program. Last year this involved testing several hundred crabmeat and environmental samples, subjected to almost 7,000 test procedures. Reports detailing the microbiological status of their operations, implications and recommended correction results were reported back to the industry for improving wholesomeness and quality of their products.

The industry is further supported through information sharing and special projects in product and process development. Development of alternative packaging for pasteurized crabmeat utilizing pilot trials at our processing facilities resulted in new products which currently are undergoing shelf-life and marketing studies. Another project carried out in our laboratories and processing facilities has shown potential for restructuring fine pieces of “special” crabmeat into larger pieces. The technology is currently being adapted to meet commercial processing requirements.

A seafood workshop for the regional seafood restaurants and seafood handlers, supported by the Department of Hotel and Restaurant Management and the Rural Development Office, was successfully conducted in Ocean City. Twenty-four participants learned about trends in the seafood industry from sourcing local fish to sustainable products and seafood safety.

Tom Rippen addresses an audience on the importance of proper fish handling for offshore big game species. Many anglers do no know that bacteria build up fast in poorly handled fish and can lead to scombrotoksin or histamine food poisoning. The program educated anglers and captains in order to head off potential health problems from deck to plate. The workshop took place at a sport fishing event at the Ocean City Convention Center.

USDA/1890 National Scholars Program

The Department of Agriculture, Food, and Resource Sciences welcomes three newly selected USDA/1890 National Scholars. The USDA/1890 National Scholars Program is a partnership between the U.S. Department of Agriculture and the eighteen 1890 universities. The program was developed to increase the number of students studying agriculture, natural resources, and related sciences.

Over 700 students applied for the program, and approximately 105 finalists were considered for the National Scholars Program this year. Twenty-two scholars were selected to participate in the USDA/1890 National Scholars Program, and three of those students will be attending UMES.

Kimble Brown, Jr., a graduate of Largo High School in Largo, Maryland, is a long-time resident of Wicomico County. Kimble will pursue a degree in Agribusiness.

Sebastian Cartwright, a graduate of Pocomoke High School in Pocomoke City, Maryland, is a resident of Worcester County. Sebastian will pursue a degree in General Agriculture (Plant & Soil Science).

Kelly Hall, a graduate of Washington High School in Princess Anne, Maryland, is a resident of Somerset County. Kelly will pursue a degree in General Agriculture (Plant & Soil Science).

The Scholars received their official appointment and were sworn in during the USDA/1890 National Scholars Program Orientation in Nashville, Tennessee, July 27-31.

Ms. Lisa Purnell, USDA/1890 Agricultural Liaison Officer at the University of Maryland Eastern Shore, recruited each scholar. To obtain additional information regarding the program, please contact Ms. Purnell at 410.651.6313 or via e-mail at lcpurnell@umes.edu.
Continuing a Legacy of Educating People for all Times

As our profession celebrates 100 years, it is heartwarming to know that the faculty, staff, and students in the Department of Human Ecology have remained true to the original precepts of our profession. The programs continue to provide guidance and practical knowledge for everyday living, including human growth and development, food and nutrition, apparel and textiles, and resource management, such that individuals can make sound decisions and enjoy healthy and productive lives. During the past year the department:

- Participated in the reaccreditation of the Family and Consumer Sciences teacher education program by NCATE;
- Graduated its first Family Financial Planning Certificate student;
- Mentored undergraduate research students and prepared them to give national presentations;
  - One student, Latoiya Payton, received a 1st place award for her undergraduate research presentation;
- Engaged students in two international study experiences;
  - Thirteen students from UMES, Southern University, and North Carolina A&T State University completed a two week study tour of London and Paris;
  - Six students from UMES and North Carolina A&T State University completed a six week study abroad experience with courses taught by UMES and London faculty;
- Supported thirty students’ participation/attendance at professional conferences and field trips;
- Garnered $345,931 in externally funded grants; and
- Faculty gave eight professional presentations and published seven scholarly works.

During the summer, Ms. Bridgett Clinton, fashion merchandising faculty, taught the department’s first international course in Europe – International Retailing. Dr. Lombuso Khoza, Assistant Professor, will expand global education efforts to South Africa. She received a grant from UMES’ Center for International Education to globalize the fashion curriculum to include study opportunities in South Africa.

Dr. Nina Lyon Bennett, Associate Professor, had her book, *Instructor’s Resource Manual for Kail & Cavanaugh’s Human Development: A Life-Span View*, published and it is being used by universities across the country. Dr. Shirley Hymon-Parker, Professor and Chair, is featured in the book, *African American Women: Contributions to Human Sciences*, as a professional who has led with passion.

Hats off to Human Ecology faculty and staff for keeping the programs viable and relevant to the needs of individuals, families and businesses at the local, national and international levels.

Shirley Hymon-Parker, Ph.D.
Chair

Dr. Anugrah Shaw applies pesticide to a fabric specimen to determine percent penetration
Reducing the Incidence of Childhood Obesity in Child Care Centers Through the Promotion of Healthy Eating and Increased Physical Activity

Drs. Shirley Hymon-Parker, Donna Long and Malinda Cecil are leading a study designed to create best practices for promoting healthy eating and physical activity among young children enrolled in child care centers and at their homes. The participants for this project include preschool providers in Wicomico, Worcester, and Somerset counties and the children enrolled in participating centers along with their parents. The initial work focuses on providing training to preschool providers as needed in the areas of: 1) strategies for planning and preparing healthy meals and snacks; 2) strategies for including nutrition in the pre-school curriculum; 3) selection and implementation of age-appropriate structured physical activities; and 4) guidance for designing nutrition and physical activity action plans.

Overweight and obesity have reached epidemic proportions nationwide and have become two of the most critical health issues of our time.

Factors that contribute to obesity include individual genetic predispositions, activity levels, food intake, and behavioral and environmental issues. Over the years, environmental changes have resulted in trends toward inactivity and poor diet which have been major determinants of obesity. Physical activity, along with healthy eating habits, also plays an important role in prevention (Maryland Department of Health and Mental Hygiene, 2006). Statistics include:

- Nationwide, sixteen percent of children and adolescents, ages six to nineteen, are considered overweight.
- Seventy-four percent of all children ages three to six years are in some form of non-parental care, and fifty-six percent are in center-based child care programs. Children consume anywhere from fifty to one hundred percent of their Recommended Dietary Allowance while attending a child care facility (Ball, et al., 2007).
- In 2004, sixty percent of Maryland adults were overweight or obese. The assumption prevails that overweight children have a high risk of becoming obese adults.

Potential benefits that can be derived from this research include reduction in the incidence of overweight children and the possibility that they will become obese adults, thus reducing the financial burden placed on the health care system stemming from health conditions caused by obesity.

Protective Clothing Worn by Pesticide Applicators in Hot Climates

Dr. Anugrah Shaw continues to be actively involved in national and international activities related to protective clothing. She serves as the ASTM F23 task group chair for the development of performance specifications for protective clothing for pesticide applicators. At the June meeting, the proposed standard was approved and is scheduled to be published as an ASTM International standard. As project leader for a similar ISO performance specification draft, she has been working closely with colleagues from Europe to address issues that may enable the development of an ISO/EN standard. The ISO draft is being submitted for approval as an ISO Draft International Standard (DIS). Research conducted at UMES as part of NC-170 project as well as comparison of the lab data with field data provided by European Crop Protection Association to UMES though as Memorandum of Understanding served as the basis for development of the initial draft. The document was revised multiple times based on feedback from experts in member countries. The performance specifications would provide the basis for the development of certified protective clothing for pesticide applicators.

This past year UMES collaborated with faculty at University of Maryland College Park and Cornell University to evaluate the performance of used garments. Garments with repellent finish were distributed to farmers and agriculture workers through Maryland College Park and Cornell. At the end of the season the garments were sent back to UMES for testing. The data is in the process of being analyzed. Further testing is being conducted in cooperation with the textile manufacturing company that provided the garments for the project.

Dr. Shaw serves as an advisor with expertise in protective clothing for the Safe Use Initiative project that is being conducted in Greece, Portugal, and Poland. Wear studies are being conducted in these countries to assess the performance of used two-piece coveralls with repellent finish. The used garments will be sent to UMES for analysis. Data gathered for various wear studies will provide information that will be used for the development of training materials. In addition, an interlaboratory study was conducted in cooperation with laboratories in Greece and India to validate a standard to measure pesticide repellency as well as penetration through fabrics. The findings of the study were reported at the 4th European Conference on Protective Clothing held in the Netherlands in June.
Department of Natural Sciences

Department highlights 2008-2009

Course Redesign

The Department of Natural Sciences completed the first implementation phase of the redesigned Principles of Chemistry I, employing the Replacement Model proposed by The National Center for Academic Transformation. The model replaced the three, weekly 50-minute lectures by two 50-minute lectures and one hour in a chemistry computer lab. A modularized web-based program is employed to assign and grade homework, monitor student progress as well as time-on-task. The redesign of CHEM 111 improved students’ performance with cost savings to the university.

During the pilot phase, the number of students in the redesigned Principles of Chemistry I, Electronic course who were eligible to enroll in the second semester chemistry course, Principles of Chemistry II, approached sixty-six percent compared to the fifty-five percent in the traditional course. The number of successful students (those earning the grade of A-C) increased to seventy percent during the full implementation phase. The actual cost savings to the university was higher than the team anticipated. The average cost per student in the traditionally offered course is $268. The redesigned course decreased the cost per student to $80.

The Department of Natural Sciences was awarded $15,000 by the University System of Maryland to strengthen the laboratory component of CHEM 111E through virtual laboratory sessions which will precede wet laboratories.

Fish Stock Assessment Course

From June 1 – 30, 2009, scientists from NOAA’s National Marine Fisheries Service and DNS faculty jointly taught BIOL 488A, Fish Stock Assessment, to science and technology majors at UMES and other institutions across the country. The course has been identified by NOAA as a crucial component of a fisheries science curriculum. NOAA provided $75,000 to fund the course.

New Academic Programs

Two letters of intent to establish degree programs in chemistry and biochemistry were submitted to the University System of Maryland in May 2009. The applications to establish the M.S. degree program in chemistry was approved by departmental and school-wide curriculum committees and the graduate council. The B.S. degree program was approved by the departmental and school-wide curriculum committees. Both applications are currently under consideration by the senate. A draft of the proposal for the B.S. degree program in applied physics has been completed and is scheduled to be routed for approval in the next academic year.

Chemistry Re-accreditation

On June 10, 2009, DNS submitted documentation to the American Chemical Society for the Periodic Review of the UMES chemistry program in its bid for reaccreditation. The outcome of the application is awaited.

Grantsmanship and Publications

Members of faculty submitted thirty-one (competing and non-competing) grant applications in the 2008/2009 academic year. Of that number, nineteen were funded and twelve remain pending. The total funding for the same period was $4,311,587.

DNS faculty published thirty-one peer reviewed articles, twenty-nine non-refereed articles, and submitted four manuscripts for review. They also delivered fifty-one presentations with students at local, regional, state and national meetings.

Joseph M. Okoh, Ph.D.
Chair
STUDENTS PRESENT RESEARCH FINDINGS

Department of Natural Sciences students attended eleven conferences where they delivered fifty-three oral and poster presentations at local, regional and national scientific meetings.

The 11th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences was hosted by the Department of Chemistry and Biochemistry and the Department of Biological Sciences at the University of Maryland, Baltimore County. With over four hundred participants from universities across the country, Mr. Oneil Garner, a MARC Scholar, won 1st place in Biological Sciences Division 2 of Poster Session I. The event, held on October 11, 2008, was sponsored by the National Institutes of Health, National Institute of General Medical Sciences. Ms. Rashalai Currington won 2nd Place.

Scientific meetings students attended:
- 2nd Annual University of Maryland Eastern Shore Fisheries and Aquatic Sciences Symposium - American Fishery Society Student Subunit. UMES
- Atlantic Estuarine Research Symposium. Ocean City, MD.
- Annual Biomedical Research Conference for Minority Students. Orlando, Florida.
- 11th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences. University of Maryland, Baltimore, MD.
- 93rd Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- Annual Meeting for the American Society of Ichthyologists and Herpetologists. Montreal, Canada.
- MEES Annual Colloquium. Chesapeake Bay Laboratories, Solomons, MD.

**UMES Research Experience for Undergraduates (REU) in Marine and Estuarine Science**

Drs. Paulinus Chigbu and Joseph Love were funded $209,000 by the National Science Foundation in March 2009 to establish an REU site. The prestigious award is in recognition of the strength of the Environmental Science programs at UMES. The site will provide an intensive ten-week research program in marine and estuarine science to eight undergraduates selected nationwide during the summers of 2009-2011.

**Faculty Collaborate to Conduct Cancer Research**

The Department of Natural Sciences, in collaboration with the University of Maryland School of Medicine/Greenebaum Cancer Center (UMSOM/UMGCC), is executing a no cost extension of their $2.5 million program, initially funded by the National Cancer Institute of the National Institutes of Health to focus on reducing cancer disparities in Baltimore City and the Eastern Shore of Maryland. Research projects in the program focus on cancer and the global gene expression in African Americans. Through the partnership, DNS and UMSOM/UMGCC faculty collaborate on cancer research and outreach. Various collaborations and research foci are listed below:

- Dr. Ali Ishaque and Dr. Katherine Squibb of University of Maryland School of Medicine, Baltimore, MD
  - Role of hormonally active agents in the environment and increased cancer susceptibility
- Dr. Waguespack and Drs. Andrew Draxler and Chris Chambers of the NOAA J.J. Howard Marine Science Laboratory, Sandy Hook, NJ
  - Lethal and sublethal responses of early life-stages of winter flounder to habitat contamination in their natal estuaries
- Dr. Joseph Pitula and Dr. Rosemary Jagus of the Center of Marine Biotechnology (COMB), University of Maryland Biotechnology Institute, Baltimore, MD
  - Blue crab parasites
- Dr. Joseph Pitula, Dr. Juan Alfonzo of the Department of Microbiology at the Ohio State University, Columbus, OH, and Dr. Rosemary Jagus of the Center of Marine Biotechnology (COMB), University of Maryland Biotechnology Institute, Baltimore, MD
  - Trypanosomatids and transcriptional processes involving the synthesis of ribosomal genes
- Dr. Joseph Pitula and Dr. Eric Schott at COMB
  - Host-parasite interactions of the blue crab.
- Dr. Joseph Okoh and McMahon Gray, US Department of Energy, National Energy Technology Laboratory, Pittsburgh, PA
  - Carbon management through carbon capture and sequestration
- Dr. Mobolaji Okulate and Dr. Kumar, School Of Allied Health, the Johns Hopkins University, Baltimore, MD
  - A survey of the gut microflora of *Anopheles gambiae* mosquitoes
Events Calendar

Don’t miss the return of Ag Field Day at UMES!

Come see the agricultural endeavors and research being conducted at the Agricultural Experiment Station and Maryland Cooperative Extension.

Saturday, September 12, 2009
9:00 A.M. until 3:00 P.M.
University of Maryland Eastern Shore

www.umes.edu/SANS for event pre-registration