



**DEPARTMENT OF BIOLOGICAL SCIENCES NEWSLETTER**  
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Autumn is always the time of excitement – new faces, new challenges and new opportunities. With classes beginning, new faculty becoming settled in, and the summer research season winding down, the BioDepartment continues to move forward.

*The Editors (W.O. Smith & J.J. Orth)*

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**FACULTY TIME - WITH WALKER SMITH**

**Dr. Walker Smith joined VIMS and our Department in 1998 after spending 22 years at the University of Tennessee. It was during that period where he developed an interest in polar oceanography, and where his work in both the Arctic and Antarctic was initiated. Below are a series of random events that occurred to him during this time that seemed to have a disproportionate impact on his career.**

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In 1976 I joined the faculty at the University of Tennessee straight from getting my Ph.D. at Duke. In truth, that “name” helped me a great deal, as I had a joint appointment in the Botany Department and Graduate Program in Ecology, and Duke Botany was one of the top Botany departments in the US. I didn’t do a post-doc, so I was a naïve, 25-year old in the mountains. I struggled at first trying to establish a research program, and with hindsight would have benefited from some time at a research institute to make additional contacts in the field. In 1977 a National Academy meeting was held on the effects of marginal ice zones, and my Ph.D. mentor attended. He relayed to me the dismay of the group with the ongoing research, and presentations of active researchers highlighted pictures of penguins with few data. When the report was published, it called for a focused program on biological processes at ice-edges. A friend and colleague from

graduate school, Dave Nelson, had recently moved from WHOI to Oregon State, and was also interested in ice-edge processes. So we wrote a proposal to investigate the ice edge of the Ross Sea.

That sounds simple, but the truth is that it took 3 years to get the proposal funded, largely because of the conservative nature of the funding agency. But we eventually were successful and conducted our first field program in the Ross Sea in 1983 – just before my tenure and promotion decision! Within the next 6 months, I had received another NSF grant to work on the ice edge of the Greenland Sea, a Navy grant to do other work in the Arctic ice, and a third NSF grant to do productivity/ice edge work in the Scotia/Weddell Seas. And also a leave of absence to occupy a funded chair in Monterey, California for a year (I spent 6 months of that year at sea). As often is the case, when it rains it pours, but I had more money than I had ever imagined to do what I really wanted to do.

In 1988 a book sales representative from Academic Press walked into my office and asked if I would consider writing a book on Polar Oceanography. Still being naïve, I said yes. The book was published in 1990, and was quite successful in bringing me recognition on the international front. I never knew why the salesperson approached me, but it was a definite career boost.

In 1993 there were rumblings of a mega-project in the Southern Ocean – the US JGOFS project. For those outside of JGOFS, it was viewed as “the old boys network” and very difficult to become involved. Plus, JGOFS was perceived as dominating funding within chemical and biological oceanography. But with the interest in having a Southern Ocean program, the Office of Polar Programs (NSF) wanted someone who could act as a bridge to their “constituency” and interact with the OCE JGOFS group. As a result, I was asked to be on the JGOFS Steering Committee, and ultimately co-chaired the AESOPS program in the Ross Sea and Pacific Sector with Bob Anderson of Lamont Doherty Earth Observatory. It was a wonderful challenge and a great chance to meet the top carbon cycling scientists in the world. It was a fantastic way to continue my professional growth!

In 1998 I moved to VIMS and was really excited about interacting with marine scientists on a daily basis. I requested and received a professional leave in 2004, and spent it in New Zealand (when I wasn't at sea). I took some vacation in the summer, and joined a group of teachers who were going to work in China in a summer

### Student Moment: Bethany Eden

It seems like I've always been interested in science. Some of my favorite childhood memories are of hikes with my

English camp. That trip changed my life as well, as it fostered a deep interest in the Far East – its history, culture, development, and mostly its people. That fascination has led me to write various proposals to conduct research in China, and while I haven't yet been successful, I believe that it will usher in a new phase of my research career in the coming years.

The point behind all of this is simple: some times it isn't how hard you work, how smart you are, or how wonderful your CV is. Sometimes life presents opportunities that at the time seem insignificant, but can later turn out to be truly life-altering events. I think my greatest life-altering event was going to Duke and working with Dick Barber. He took this kid who didn't even eat seafood and turned him into a fledgling oceanographer, but also taught me that being a scientist means a life time of learning and change. So the next time an unusual opportunity crosses your path, remember that it might just take you down a path that you could never, ever predict.



**Two faces of Dr. Smith when not at VIMS.**

grandparents. My grandfather especially loved turning over rocks and logs and chasing after the toads, frogs, turtles, and

salamanders that lived underneath them, just so I could get a closer look at the abundance and variety of wildlife that flourished in the Pennsylvania woods. My grandmother, an avid birdwatcher, did her part by teaching me to recognize birds by their song. A family vacation to the New Jersey shore was all I needed to convince me I wanted a career in marine science. Years later, while in the final months of my undergraduate career at Rider University, a phone call from Dr. Debbie Steinberg convinced me I wanted to continue my education on the graduate level. Debbie explained the research she was doing on zooplankton in the Sargasso Sea. I didn't know all that much about zooplankton, but the thought of collecting thesis samples aboard a research vessel in the Sargasso Sea sounded like an awesome opportunity.

While at Rider, I worked on my senior thesis with researchers from the University of Maryland Biotechnology Institute's Center of Marine Biotechnology in Baltimore, Maryland. I was also fortunate enough to spend time at the Roatan Institute of Marine Science (RIMS) in Roatan, Honduras. While at RIMS, I was able to get experience in field-based research and data collection, as well as broaden my horizons exploring tropical ecosystems. My research project at RIMS focused on the algal feeding preferences of the green reef crab. Hammocks and Caribbean sunsets were certainly an added bonus.

I have certainly drawn on skills learned in both of these experiences while conducting my thesis research at VIMS. My research focuses on zooplankton community structure in mesoscale eddies in the Sargasso Sea. My main goal is to determine what, if any effects mesoscale eddies have on zooplankton taxonomic

composition and abundance within a normally oligotrophic open ocean area. Answers to these questions can provide important information when looking at biogeochemical cycling in the open ocean. While at VIMS I've also had the opportunity to assist with Census of Marine Life research aboard the RV Delaware II with Dr. Mike Vecchione. Mid-water trawling at Bear and Physalia Seamounts was very interesting and produced some of the largest amphipods and salps I've ever seen, as well as some unique fish and cephalopods that up until that point I had only ever seen in pictures and on video footage from submersibles.

My ultimate goal after life at VIMS is to enter the education field, teaching all ages about the marine world. I really feel that science is accessible to all age groups and education levels, and that through education and outreach more people will come to understand how precious a resource the world's oceans are. Science doesn't have to be scary, or full of big words that are impossible to pronounce, let alone understand.

I like to tell people I'm just as comfortable standing on the bow of a research ship as I am staring down a microscope counting and identifying zooplankton, but when I'm not doing either of those two things, I enjoy spending time with friends and family, cooking, traveling, going to the gym, and playing with my two cats Carter and Isabelle.



**Bethany working at night with her friends.**

## **“The Talking Head: Department Chair Comments”**

**Dear Fellow Biophiles,**

Once again the summer has flown by and we are entering a new academic year. The department welcomes our new graduate students and looks forward to getting to know you all in the coming months. During the past year we said goodbye to two departmental friends and colleagues. Larry Haas retired from our faculty at the end of June this year, and is looking forward to some good fishing. Larry has been a key contributor to water quality studies in the Chesapeake Bay region, and also an instructor in the core curriculum in various capacities for many years. For those contributions and also for his characteristically penetrating questions and comments after departmental seminars, Larry will be missed. We also bid bon voyage this year to Hugh Ducklow, who moved to the Marine Biological Lab in Woods Hole to accept the position of Director of the Ecosystem Center. Hugh will also be an adjunct Professor at Brown University. Hugh's world-class mind and contributions to the life of the VIMS community will be missed as well.

Around the Institute, there is much ferment. The new, colossal Seawater Research Laboratory is now online, and Jim Brister is in place as its Director. We welcome Jim to VIMS and look forward to

working with him. The new marine research building, Andrews Hall, is (we sincerely hope) not far behind. Latest reports are that the building is largely finished with the exception of resolving some tricky problems with the ductwork; we expect to move in sometime during the late fall semester. VIMS also welcomes the Virginia Sea Grant program, which has recently moved from Charlottesville to our campus. The search is underway for a new Sea Grant Director, with Bill DuPaul serving as Acting Director in the interim. Dr. Cynthia Suchman has joined us as Assistant Director of Virginia Sea Grant, and has an appointment in our department as a Research Assistant Professor.

Finally, VIMS is gearing up for the development of a new 2008-2012 Strategic Plan to replace the current VIMS 2004-2008 Strategic Plan. For interested parties (which should include all of us), the VIMS web site now provides access to the last three VIMS Strategic Plans (1995, 1999 and 2003) and some materials related to the new planning process at <http://www2.vims.edu/strategic/index.html>. Stay tuned for news on this front. Best wishes for an exciting and productive fall semester,



## **Staff Stuff: Wassup with Paul Richardson**

As manager of Emmett Duffy's Marine Biodiversity Laboratory, I've had a glorious past six years. I started this job immediately after completing my master's degree in biological oceanography at Old

Dominion University. At ODU, I worked on a project with Fred Dobbs and electrical engineers where I literally zapped microbes with plasma (yes, the fourth state of matter) to rid ballast water of

microscopic alien invaders. That project gave me a healthy respect for the vitality of bacteria; they don't die easily.

When I came to VIMS I was refreshed to learn that I'd be working in seagrass beds with "humungous" crustaceans known as amphipods. Even more refreshing was the fact that I'd go to the field and actually snorkel the grass beds, instead of visiting the decks of giant ships in port.

In our mesocosm experiments we explore concepts such as ecosystem stability, the effects of trophic structure, or grazer diversity on ecosystem functioning in seagrass beds. Our monthly field surveys have resulted in a 9-year dataset of community responses, such as epiphytic chlorophyll, grazer abundance, grazer biomass and small predator abundance and composition. We're now just scratching the surface with the initial analyses of our field dataset, but we hope to collaborate with VIMS fisheries folks who are working on the higher trophic levels, so that we can construct a total food web of the seagrass community. We also use our dataset to teach high school teachers about the seagrass food web and some basic data analysis that they can use in the classroom.

There's always something cool to see in and around the seagrass meadows, like the terrapins, osprey, blennies, pipefish, gobies, crabs, and such. Snorkeling the grass beds is also a great place to experience the therapeutic monami (Japanese: mo = aquatic plant, nami = wave) which simply refers to the undulations of underwater grass. If you haven't experienced it, I highly recommend it. With the decline of the grass beds I only hope that future generations will also be able to experience monami and the other natural treasures of the Bay.

The spring through fall is when the real action happens. This summer, for

example, we ran several mesocosm experiments and simultaneously conducted our monthly field surveys. As usual, everything went smoothly, thanks to our motivated assemblage of interns, grad students and techs.

Being a marine scientist is not always like being Jacques Cousteau. I do actually have to buckle down each winter and tackle the foreboding "wall of death" (our pile of samples), where I sometimes spend days counting just a few species of amphipods. In these situations, it's sometimes necessary to employ my secret weapon, books on tape. Otherwise, the winter months are filled with plenty of thought provoking conversation with colleagues, data analyses, scientific meetings, seminars, and administrative duties. With all this activity, time flies; I can't believe it's already been six years!

It's really cool in that what I do draws not only from my academic experiences, but also from other jobs, such as when I framed houses, operated a marine travel lift, or when I taught people how to fly hang gliders in Nags Head, NC. Certainly, we don't fly hang gliders in the Marine Biodiversity Lab, but I do sometimes council colleagues to calm their fears about graduate school or other such things. The experiences I gained in the construction and marine trades have also been invaluable, with the tank farm construction that we did in the summer of 2001, the re-build in the aftermath of Hurricane Isabel, and the daily upkeep and modifications of the system.

I love to drive the boats and after I log another 90 days on the VIMS vessels, I plan to take my test for the US Coast Guard captain's license. Then, as a side gig, I'd like to get a small boat and share the wonders of the bay with others as a guide on local waters. Speaking of future generations, the best thing that has



**Paul on the pier with the myriad of PVC pipes for the seagrass mesocosms.**

three. He amazes me daily. We are so lucky to have such a wonderful, healthy, exuberant, inquisitive, and loving little guy. He's already a regular on the water, with Mom and Dad taking him to the beach, canoeing, kayaking, sailing, swimming, fishing, etc. In addition to being the best entertainment that we have, Caleb is also bi-lingual, thanks to our dear caregiver, Ana Maria Ríos.

Life has been very kind and I feel very lucky to be at VIMS. I can't imagine how you could assemble a better marine science community, at a better location, with better resources than what we have here at Gloucester Point, VA.

happened to me, besides my wife, Adrienne, is our son, Caleb, who is now

### **New Students**

The Department welcomes the following Biological Science students to VIMS:

- Noelle Clarry (working with M. Patterson)**
- Althea Moore (working with E. Duffy)**
- Heather Wiseman (working with M. Brush)**
- Samuel Lake (working with M. Brush)**
- Glaucia Fragoso (working with W. Smith)**
- Ana Hernandez Cordero (working with R. Seltz)**

We know each of these students will enjoy their stays at VIMS, as well as bring fame and fortune to our Department. Welcome!

### **Selected Recent National and International Presentations by Biological Sciences' Personnel**

Blake, R.B. and J.E. Duffy. Impacts of multiple climate change stressors on an experimental seagrass community. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.

Condon, R. H., D. K. Steinberg "Development, biological regulation, and fate of Mnemiopsis leidyi blooms in the York River estuary, USA". Second International Jellyfish Blooms Symposium. Coolangata, Australia, June 2007.

Condon, R. H., D. K. Steinberg, T.C. Bouvier, P.A. del Giorgio "Links between dissolved organic matter excretion by gelatinous zooplankton and bacterial metabolism". Second International Jellyfish Blooms Symposium. Coolangata, Australia, June 2007.

Condon, R. H., M.D. Norman, K.M. Bayha "Nematocysts and morphometrics of lion's mane jellyfishes, genus Cyanea, supporting the validity of C. nozakii and C. annaskala in Australian waters" Second International Jellyfish Blooms Symposium. Coolangata, Australia, June 2007.

- Dinniman, M.S., J.M. Klinck, and W.O. Smith, Jr. Numerical Modeling of Ice Shelves and Oceans around Antarctica. Gordon Research Conference on Coastal Ocean Modeling, Colby-Sawyer College, New London, NH. June 17-22, 2007.
- Douglass, J.G., A. Spivak, J.E. Duffy, J.P. Richardson. Nutrient, Predator, and Grazer Impacts on Eelgrass Community Structure. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Druon, J.N., A. Mannino, M.A.M. Friedrichs and C. McClain. Modeling the role of the semi-labile DOC in the export of carbon from the eastern U.S. continental shelf to the open ocean. ASLO Aquatic Sciences Meeting, February, 2007.
- Duffy, J.E., Bethany Eden, Jie Huang, Amanda Lawless, Yawei Luo, Tara Scott, William Tarantino. Evolutionary impacts of fishing on life history of exploited fish stocks: a meta-analysis. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Eden, B.R., D.K. Steinberg, S.A. Goldthwait, and D. McGillicuddy. The effect of mesoscale eddies on zooplankton community structure in the Sargasso Sea. ASLO Aquatic Sciences Meeting. Santa Fe, NM. February, 2007.
- France, K.E. and J. E. Duffy. Diversity, dispersal and scale interactively affect predictability of ecosystem function. Society for Conservation Biology, San Jose, CA, 2006.
- France, K.E. and J.E. Duffy. Diversity and dispersal interactively affect predictability of ecosystem function in experimentally disturbed seagrass metacommunities. Ecological Society of America, Memphis, TN.
- Friedrichs, M.A.M. and the U.S. ECoS Team. U.S. ECoS: U.S. Eastern continental shelf carbon budget: modeling, data assimilation and analysis. ASLO Aquatic Sciences Meeting, February, 2007.
- Friedrichs, M.A.M. Assessing the costs and benefits of increasing ecosystem model complexity using data assimilation. Gordon Research Conference on Coastal Ocean Modeling, New London, NH, June, 2007.
- Friedrichs, M.A.M., M.-E. Carr, R. Barber, M. Scardi, and the PPARR Team. Assessing model-derived productivity estimates for the tropical Pacific Ocean. Second Workshop on Skill Assessment for Coupled Biological/Physical Models of Marine Systems, Chapel Hill, NC, March, 2007.
- Friedrichs, M.A.M., R. R. Hood and J. D. Wiggert. Ecosystem model complexity versus physical forcing: quantification of their relative impact with assimilated Arabian Sea data. Workshop on Sustained Indian Ocean Biogeochemical and Ecological Research, National Institute of Oceanography, Goa, India, October, 2006.
- Henderson, G.K., and D.K. Steinberg. The impacts of carnivorous feeding by *Acartia tonsa* copepods on dissolved organic matter (DOM). ASLO Aquatic Sciences Meeting, Santa Fe, NM. February, 2007.
- Knick, K.E., R.D. Seitz, M. Westphal, and A. Smith. Large-scale Variation in Benthic Communities in Shallow-water Nurseries and Associated Diet of the Juvenile Blue Crab, *Callinectes sapidus*. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- L.A. Harris, M.J. Brush, J.J. Vallino, and S.W. Nixon. A universal approach to modeling phytoplankton production. ASLO Aquatic Sciences Meeting, Santa Fe, NM. February, 2007.

- Long, W.C., B.J. Brylawski, and R.D. Seitz. Lethal and non-lethal effects of hypoxia on *Macoma balthica*: A laboratory experiment with a novel method for reducing dissolved oxygen concentrations. Atlantic Estuarine Research Society Meeting, Baltimore, Maryland, October, 2006.
- Long, W.C., E. Bromage, R.D. Seitz, S. Kaattari. Quantifying fecundity in *Macoma balthica* using an enzyme-linked immunosorbent assay (ELISA). 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Lynch, PD, ED Condon, MJ Brush, and RJ Latour. Filtration Rates of phytoplankton by Juvenile Atlantic Menhaden, *Brevoortia tyrannus*, in Chesapeake Bay. American Fisheries Society annual meeting, Lake Placid, NY. 2006.
- M.J. Brush, J.N. Kremer, and S.W. Nixon. An innovative modeling approach for simulating hypoxia/anoxia in estuarine ecosystems. Invited speaker, NOAA Ecological Impacts of Hypoxia on Living Resources Workshop, Bay St. Louis, MS. March 2007.
- Nejstgaard, J.C., L.F. Artigas, E. Antajan, A.F. Sazhin, K.W. Tang, M. Steinke, J. Dutz, M. Koski, J.D. Long, and N. Guiselin. 2007. Zooplankton grazing on *Phaeocystis*: a quantitative review and results from bottle incubation experiments and molecular gut analyses in the eastern English Channel. Workshop on *Phaeocystis* blooms: causes and consequences. France, January, 2007.
- Patterson, M.R., and David A. Demer. Near-shore side scan sonar surveys of krill (*Euphausia superba*) and water column variables acquired by a Fetch-class Autonomous Underwater Vehicle, Cape Shirreff, Livingston Island, South Shetland Islands, Antarctica. Autonomous Underwater Vehicles in Extreme Environments, Scott Polar Research Institute, University of Cambridge, 2007.
- Patterson, M.R., and L.W. Carpenter. Unexpected gradients of dissolved oxygen concentration in a "well-mixed" coral reef environment. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Patterson, M.R., and L.W. Carpenter. Water flow influences the spatiotemporal distribution of photosynthetic efficiency within colonies of the scleractinian *Montastrea annularis*: implications for coral bleaching. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Patterson, M.R.. Cooperative Missions between Large and Small AUVs in Extreme Environments. Autonomous Underwater Vehicles in Extreme Environments, Scott Polar Research Institute, University of Cambridge, 2007.
- Richardson, J.P., J.G. Douglass, R.E. Blake, K.E. France, and J.E. Duffy. (2007) Mass mortality of eelgrass in Chesapeake Bay, 2005: An assessment of community recovery. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Seitz, R.D., D.M. Dauer, and R.J. Llansó. Variation in macrobenthos of the Chesapeake Bay: depth, oxygen, and temporal effects. 36<sup>th</sup> Annual Benthic Ecology Meeting, Atlanta, GA. 21-24 March 2007.
- Seitz, R.D., R.N. Lipcius, K.E. Knick, M.S. Seebo, W.C. Long, B.J. Brylawski, and A. Smith. Stock enhancement and ecosystem carrying capacity for blue crabs in Chesapeake Bay. International Symposium on Stock Enhancement and Sea Ranching. Seattle, WA, September, 2006.
- Shields, A.R., W.O. Smith Jr., and J.A. Peloquin. The role of sea surface temperature in regulating nutrient removal by *Phaeocystis antarctica* dominated assemblages in the Ross Sea. Workshop on *Phaeocystis* blooms: causes and consequences. France, January, 2007.

- Smith, W.O., Jr. and J.C. Comiso. Southern Ocean Primary Productivity: Variability and a View to the Future. Smithsonian IPY Symposium, Washington, DC. May 3-4, 2007.
- Spivak, A.C., E.A. Canuel, J.E. Duffy, and J.P. Richardson. Linking community structure to carbon cycling: evidence of cascading effects in an experimental seagrass system. Ecological Society of America, Memphis, TN.
- Steinberg, D.K., B. A. S. Van Mooy, K. O. Buesseler, P. P. Boyd, T. Kobari, and D. M. Karl. Microbial vs. zooplankton control of sinking particle flux in the ocean's twilight zone. ASLO Aquatic Sciences Meeting. Santa Fe, NM, February, 2007.
- Steinberg, D.K., S.E. Wilson, T. Kobari, and K. O. Buesseler. "Zooplankton processing of sinking particle flux in the mesopelagic zone". Fourth International Zooplankton Production Symposium. Hiroshima, Japan, June, 2007.
- Tang, K.W., A.R. Shields, and W.O. Smith, Jr. Dark and cold survival of *Phaeocystis antarctica*. Workshop on *Phaeocystis* blooms: causes and consequences. France, January, 2007.
- Tóth, E. and J.E. Duffy. Dispersal, colony ontogeny, and the development of reproductive skew in eusocial shrimp. International Union for the Study of Social Insects, Washington, DC.

### **Selected Recent BioSci Peer-reviewed Publications**

- Bruno, J.F., S.C. Lee, J.S. Kertesz, R.C. Carpenter, Z.T. Long, and J.E. Duffy. 2006. Partitioning the effects of algal species identity and richness on benthic marine primary production. *Oikos* 115: 170-178.
- Buesseler, K., C. H. Lamborg, P. W. Boyd, P.J. Lam, F. Dehairs, P. Lam, T. W. Trull, R. R. Bidigare, J. K. Bishop, K.L. Casciotti, F. Dehairs, M. Elskens, M. Honda, D. M. Karl, D. A. Siegel, M. W. Silver, D. K. Steinberg, J. Valdes, B. Van Mooy, and S. E. Wilson. 2007. Revisiting carbon flux through the ocean's twilight zone. *Science* 316: 567-570.
- Buesseler, K.O., A.N. Antia, M. Chen, S.W. Fowler, W.D. Gardner, O. Gustafsson, K. Harada, A.F. Michaels, M. Rutgers van der Loeff, M. Sarin, M., D.K. Steinberg, and T. Trull. 2007. An assessment of the use of sediment traps for estimating upper ocean particle fluxes. *Journal of Marine Research* 65: 345-416.
- Canuel, E.A., A.C. Spivak, E.J. Waterson, and J.E. Duffy. 2007. Biodiversity and food web structure influence short-term accumulation of sediment organic matter in an experimental seagrass system. *Limnology and Oceanography* 52: 590-602.
- Cardinale, B.J., Srivastava, D.S., Duffy, J.E., Wright, J.P., Downing, A.L., Sankaran, M. and Jouseau, C. 2006. Effects of biodiversity on the functioning of trophic groups and ecosystems: A meta-analysis. *Nature* 443: 989-992.
- Delizo, L., W.O. Smith, Jr. and J. Hall. Taxonomic composition and growth rates of phytoplankton assemblages at the Subtropical Convergence east of New Zealand. *J. Plankton Res.* 29: 655-670.
- Duffy, J.E. 2006. Biodiversity and the functioning of seagrass ecosystems. *Marine Ecology Progress Series* 311: 233-250.
- Duffy, J.E. and J.J. Stachowicz. 2006. Why biodiversity is important to oceanography: potential roles of genetic, species, and trophic diversity in pelagic ecosystem processes. *Marine Ecology Progress Series* 311: 179-189.
- Duffy, J.E. and M. Thiel (Eds.). 2007. Evolutionary ecology of social and sexual systems: Crustaceans as model organisms. Oxford University Press.

- Duffy, J.E., B.J. Cardinale, K.E. France, P.B. McIntyre, E. Thébault, and M. Loreau. 2007. The functional role of biodiversity in food webs: Incorporating trophic complexity. *Ecology Letters* 10: 522-538.
- France, K.E. and J.E. Duffy. 2006. Consumer diversity mediates invasion dynamics at multiple trophic levels. *Oikos* 113: 515-529.
- France, K.E. and J.E. Duffy. 2006. Biodiversity, dispersal, and scale interactively affect stability of ecosystem function in seagrass metacommunities. *Nature* 441: 1139-1143.
- Friedrichs, M.A.M., J.A. Dusenberry, L.A. Anderson, R.A. Armstrong, F. Chai, J.R. Christian, S.C. Doney, J. Dunne, M. Fujii, R. Hood, D.J. McGillicuddy Jr., J.K. Moore, M. Schartau, Y.H. Spitz, and J.D. Wiggert. 2007. Assessment of skill and portability in regional marine biogeochemical models: Role of multiple planktonic groups, *Journal of Geophysical Research* 112, C08001, doi:10.1029/2006JC003852.
- Grossart, H.P., K.W. Tang, T. Kjørboe, and H. Ploug. 2007. Comparison of cell-specific activity between free-living and attached bacteria using isolates and natural assemblages. *FEMS Microbiology Letters* 266: 194-200.
- Hayes, D., T. Boyd, and M.R. Patterson. 2007. Sensors and instrument requirements for Autonomous Underwater Vehicles. Proceedings of the Master-class in AUV Technology for Polar Science at the National Oceanography Centre, Southampton, 28-30 March 2006, London, Society for Underwater Technology, pp. 39-48.
- Jiang, S., T.D. Dickey, D.K. Steinberg, and L.P. Madin. 2007. Temporal variability of zooplankton biomass from ADCP backscatter time series data at the Bermuda Testbed Mooring site. *Deep-Sea Research I* 54: 608-636.
- Lance, V.P., M.R. Hiscock, A.K. Hilting, D.A. Steube, R.R. Bidigare, W.O. Smith, Jr. and R.T. Barber. 2007. Primary productivity increases and differential phytoplankton composition responses in two Southern Ocean in situ iron enrichments. *Deep-Sea Res. I* 54: 747-773.
- Macdonald, K.S. III and J.E. Duffy. 2006. Two new species of sponge-dwelling snapping shrimp from the Belizean Barrier Reef, and a synopsis of the *Synalpheus brooksi* species complex. *American Museum Novitates*, 3543: 1-22.
- Macdonald, K.S. III, R. Ríos, and J.E. Duffy. 2006. Biodiversity, host specificity, and dominance by eusocial species among sponge-dwelling alpheid shrimp on the Belize Barrier Reef. *Diversity and Distributions* 12: 165-178.
- McGillicuddy, D.J., L.A. Anderson, N.R. Bates, T. Bibby, K.O. Buesseler, C. Carlson, C.S. Davis, C. Ewart, P.G. Falkowski, S.A. Goldthwait, D.A. Hansell, W.J. Jenkins, R. Johnson, V.K. Kosnyrev, J.R. Ledwell, Q. P. Li, D.A. Siegel, and D.K. Steinberg. 2007. Eddy-wind interactions stimulate extraordinary mid-ocean plankton blooms. *Science* 316: 1021-1026.
- Nejstgaard, J.C., K.W. Tang, M. Steinke, J. Dutz, M. Koski, E. Antajan, and J. Long. 2007. Zooplankton grazing on *Phaeocystis*: a quantitative review and future challenges. *Biogeochemistry* 83: 147-172.
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### **New Grant Activity within the Department**

- Anderson, I. and M. Brush: VIMS Chesapeake Bay Initiative - Deep/Open Water Component. VA DEQ. \$489,084.
- Anderson, I., M. Brush, and J. McNinch: Long term research in the New River Estuary; 2007 – 2011; Defense Coastal Estuarine Research Center; \$1.59 million (VIMS portion).
- Duffy, J.E. Collaborative research: Biocomplexity and environmental change in a vegetated estuarine ecosystem. NSF-OCE. \$455,000.
- Friedrichs, M.A.M. Modeling ocean particle export flux by combining particle aggregation and biogeochemical models. NSF-OCE. \$59,134.
- Lipcius, R., J. Hoenig, R. Orth, A. Schreiber, R. Seitz, J. van Montfrans. NOAA Sea Grant. Quantitative valuation of nursery habitats for the blue crab. \$147,271.
- Patterson, M., A. Trembanis, M.D. Stokes and J.J. Leichter. NOAA Office of Ocean Exploration. Protecting a Shifting Baseline: Shallow to Deep Reefs at Bonaire. \$530,000.
- Seitz R. Benthic Habitat Quality in Shallow-Water Nurseries of Chesapeake Bay. NOAA Chesapeake Bay Office. \$161,355.
- Seitz, R. VMRC-Virginia Recreational Fishery Advisory Board. Prey Availability and Enhanced Production of Artificial Reefs for Recreational Fish and Native Oysters. \$64,430.
- Smith, W.O., Jr. NSF-OPP. Small grants for exploratory research: Oceanographic research in the Amundsen and Ross Seas. NSF-OPP. \$85,300.
- Steinberg, D.K. (with K. Buesseler, WHOI and D. Siegel, UCSB). Collaborative Research: Carbon flux through the twilight zone- new tools to measure change. NSF-OCE. \$271,157.

### **Departmental Tidbits**

- Dr. Hugh Ducklow has left our Department to become the Director of the Ecosystem Center at the Marine Biology Laboratory in Woods Hole, MA. His departure will leave a huge hole at VIMS; not only will his expertise in microbial oceanography be missed, but also insights into biological oceanography. Hugh was extremely well known nationally and internationally, and he worked hard to elevate VIMS within the oceanographic research community. Replacing him, his students, and his research group (as well as the numerous opportunities to participate in cruises to the Antarctic Peninsula region) will be impossible, but the Department hopes to get permission to begin a search for a replacement in the very near future. Duck's departure was

relatively low key, with the exception of a few faculty who treated Bev and him to dinner and drinks, and caroused in Williamsburg until they were asked to leave. Best of luck, Duck, and we wish you all the best!

- Jen and Dave Stanhope are expecting their second child, in case you haven't seen Jen lately.
- Mark Brush gave seminars at ODU-CCPO and Maryland CES.
- Kristin France defended her PhD in April 2007 and accepted a job as a Senior Scientist at The Nature Conservancy in Rochester, NY.
- Emmett Duffy was an invited participant in a workshop in Switzerland in December 2006, which focused on new directions in research linking biodiversity and ecosystem functioning.
- Jenny Dryer and husband Arum welcomed a new addition Isabel last January.
- Emmett Duffy delivered the Cheryl Beth Silverman Memorial Lecture at Academy of Natural Sciences, Philadelphia, and was an invited speaker at the Gordon Research Conference on Plant-Herbivore Interactions.
- Mark Patterson was awarded a patent (US Patent 7,221,621; Method for identification and quantification of biological sonar targets in liquid medium) based on his VIMS research.
- Chris Long has accepted a post-doctoral fellowship with the Smithsonian Marine Science Network and will be stationed at the Smithsonian Environmental Research Center in Edgewater, Maryland. He is slated to begin in October 2007.
- Amanda Lawless was awarded the Hunter B. Andrews, Jr., Endowment Fellowship for each of two years. Congratulations!
- Walker Smith was an invited expert at the Conference of Antarctic Marine Living Resources in Brussels, Belgium from August 13 – 17, 2007.
- Zachary Holden Brush was born to Mark and Kim Brush on 10/16/06. Congratulations!
- Grace Saba (formerly Henderson) got married to Vince Saba in October, and Debbie Steinberg was their minister performing the ceremony.
- Kam Tang presented a talk at McMurdo Station, Antarctica in January, 2007. It was titled "Why it sucks to be single— a lesson from the enigmatic haptophyte *Phaeocystis*." He also presented a seminar in August, 2007 at IGB-Neuglobsow, Germany entitled "Life after Death: Microbial utilization of copepod carcasses."
- William Daniel Long was born July 5, 2007 to Chris and Jordana Long. Congratulations!
- James Douglass gave an invited seminar at Smithsonian Environmental Research Center, entitled "Structure and Temporal Dynamics in an Eelgrass Food Web".
- Debbie Steinberg chaired a session entitled "Zooplankton and biogeochemical cycling" in Hiroshima, Japan at the Fourth International Zooplankton Production Symposium.
- Walker Smith presented a talk at NIWA in Wellington, New Zealand entitled "Hot Science in a Cold Place: The Changing World of the Ross Sea, Antarctica" on October 20, 2006. He also gave a seminar at McMurdo Station, Antarctica in January, 2007 entitled "The Rusty Bucket: Oceanography of the Ross Sea.
- Dr. Larry Haas retired as of July 1, 2007. Larry in recent years has been working on a number of issues relevant to the Chesapeake Bay, including nutrient effects and the

generation of harmful algal blooms. He is well known to students as an avid participant in football games! He regularly served on numerous VIMS and University committees, and frequently provided the Department with a historical context to present events at VIMS. We all wish Larry the best in his retirement!

- **Vince Saba** has joined **Marje Friedrich's** research group as a post-doctoral associate.
- **Dr. Amy Shields (Ph.D., 2007)** accepted a post-doctoral appointment at the EPA lab in Aida, OK, where she will work on nutrient discharge patterns in the upper Chesapeake Bay.
- **Emily Yam** received her M.S. degree this past August as well.
- **Rob Condon** received the best student presentation award at the 'Second International Jellyfish Blooms Symposium' 24 June- 27 June 2007, in Coolangatta Australia.