National Aeronautics and Space Administration

Astrobiologist/Biochemist/ Marine Microbial Ecologist

Dr. Brad Bebout

Astrobiologist/ Biogeochemist/ Marine Microbial Ecologist

NASA Ames Research Center

I am interested in all aspects of the ecology of microorganisms: how they survive in the sometimes harsh environments where they live, as well as how they affect our environment on Earth — and they do have a big effect. I maintain a research laboratory and do research both in the lab and in the field. One of the favorite parts of my work involves creating newer and better "gizmos" to measure biological and chemical processes in microbial communities. That means that I spend a fair amount of my time trying to make the gizmos work for our applications. I work in the exobiology branch at Ames. Scientists in the exobiology branch are interested in all sorts of questions about the origin and evolution of life on Earth, and possibly on other planets.

Areas of expertise:

- Microbial ecology
- Microbial mats
- Ecology of nitrogen fixation

How I first became interested in this profession:

I originally got interested in the Marine sciences as a direct result of diving. I started my undergraduate education at the University of Nevada, Reno, but got so involved with diving in the Monterey Bay that I transferred to the University of California at Santa Cruz so I could go diving more often. I took a lot of classes in marine biology, did a senior project in marine biology, and ended up going to graduate school to study marine sciences. My masters' thesis work was about the role marine fungi has in feeding salt marsh snails. My Ph.D. work was on microbial mats.

What helped prepare me for this job:

How did I end up as a NASA scientist? Sometimes I am not even sure myself. My real training is in the field of marine sciences, but I came to work at NASA because many of the areas that I had been studying were of great interest in NASA's efforts to understand the evolution of life on Earth.

My role models or inspirations:

When I was eight years old, my dad joined the United States Agency for International Development (USAID) and we traveled and lived all over the world. I think that my time abroad was very important to the way that I think about almost everything, and I really appreciate having had the opportunity to see so many things.

My education and training:

- B.S., Marine Biology, University of California, Santa Cruz
- M.S., Marine Sciences, University of North Carolina, Chapel Hill
- Ph.D., Marine Sciences (Microbiology), University of North Carolina, Chapel Hill

My career path:

- Two years at the Max Planck Institute for Marine Microbiology, Germany
- Two years at the University of Maryland's Horn Point Lab, on the Chesapeake Bay, MD
- Research Scientist, Astrobiology Institute, NASA Ames Research Center

What I like about my job:

I get to spend my time trying to find out things that no one has ever found out before! I also enjoy making and using newer and better "gizmos" to measure processes in microbial communities. That means that I spend a fair amount of my time trying to make the gizmos work for our applications.

What I don't like about my job:

The thing I like least about my job is the paperwork that is required, including the process of producing papers about our research. This writing takes a lot of time, and that is time I can't use to find out new things. Of course, communicating our results is one of the most important parts of the scientific process, so I am most interested in improving upon it.

My advice to anyone interested in this occupation:

My advice to anyone interested in pursuing a career in science (or in anything else as far as I can tell) is the same advice that my parents gave me: "Do what you love, and everything will work out for the best." You know what, they were right! I am extremely fortunate to have a job doing what I love to do: finding out things that no one has ever found out before. If I can do it, I think that anyone can.

Additional Resources:

- American Institute of Biological Sciences
  http://www.aibs.org
- American Physiological Society
  http://www.faseb.org/aps
- American Society for Biochemistry and Molecular Biology
  http://www.biophysics.org/biophys/society/biohome.htm
- American Society for Microbiology
  http://www.asmusa.org
- Astrobiology Summer Academy
  http://academy.arc.nasa.gov/
- Biotechnology Industry Organization
  http://www.bio.org/welcome.html
- Education Pays Calculator
  http://www.educationpays.org/calc.asp
- Graduate Student Researchers Program
  http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/Graduate.Student.Researchers.Program.Brochure/.index.html
- MATHCOUNTS Competition
  http://mathcounts.org/
- Minority University Research and Education Programs
  http://mured.nasaprs.com/
- NASA Cooperative Education Program for college students
  http://spacelink.nasa.gov/Educational.Services/NASA.Education.Programs/Student.Support/NASA.Cooperative.Education.Program/.index.html
- NASA Jobs
  http://nasajobs.nasa.gov/
- NASA Office of Life and Microgravity Sciences and Applications
  http://www.hq.nasa.gov/office/olmsa/
- NASA SHARP Internship Program for high-schoolers
  http://www.mtsibase.com/sharp/
- NASA Student Employment
  http://nasajobs.nasa.gov/stud_opps/employment/index.htm
- NASA Student Involvement Program student contests
  http://www.nsip.net/index.cfm
- Order NASA career videos such as "Engineers: Turning Ideas into Reality," "Careers: Aerospace Engineer" or "Reaching for the Stars" from NASA CORE.
  http://core.nasa.gov
- Student's Guide to Astrobiology
  http://www.astrobiology.com/student.html
- Tech-Interns.com
  http://www.tech-interns.com/

Please take a moment to evaluate this product at:
http://ehb2.gsfc.nasa.gov/edcats/educational_topic

Your evaluation and suggestions are vital to continually improving NASA educational materials.
Thank you.