

# Letter to a Young Scientist

By Michael Hoggarth, PhD

In E.O. Wilson's book, *Letters to a Young Scientists*, from which this letter, and the ones to follow, gain their inspiration, Dr. Wilson starts where anyone would start a book of this kind; he introduces himself to his readers. If an introduction is good enough for Dr. Wilson, then it is good enough for me.

I decided to become a marine biologist when I was 14 years old. My mom and dad fueled my passion for marine science by taking me beach combing whenever possible (mom) and fishing from as early as I can remember (dad). I was my dad's salmon fishing buddy while my older brother preferred fishing for steelhead and trout. In addition, both my mom and dad would drive me to the beach whenever there was a low tide that I just had to see. I grew up in a small town north of Seattle not too far from Camano Island State Park.

Looking back now, I realize I didn't know exactly what it meant to be a marine biologist, but I did know there was such a job and that if it meant I could muddle around in tide pools for the rest of my life, or try and figure out why my dad had such success as a fisherman, then it was for me. Anyway, by the time I was 14, I had learned the names (common name and scientific name) of every animal (and most plants) I encountered in the rocky intertidal of Puget Sound and all of the fish and marine mammals encountered at the end of my fishing line or surrounding my dad's small boats. My copies of *Between Pacific Tides*, by Joel W. Hedgpeth and Edward F. Ricketts and *Seashore life of Puget Sound, the Strait of Georgia, and the San Juan Archipelago* by Eugene N. Kozloff were well worn and constant companions on these outings by the time I made my decision regarding future employment. Today, however, I am a freshwater biologist who studies the ecology of insects, mollusks, and fish and their presence or absence in a stream as indicators of water quality and the health of aquatic

environments. One might ask, when did I go adrift? (pun intended)

For the last 20 years, I have taught a class called Field Zoology at F.T. Stone Laboratory, the Lake Erie campus of The Ohio State University. Like its name suggests, we spend a lot of time on fieldtrips looking for animals and doing more-or-less what I did as a kid at the beach: figuring out their names and making observations about the ways they interact with their environment and other animals and plants in their surroundings. I encourage students in this class to make observations (the starting point for science), ask questions about the animals they encounter, and build a vocabulary and framework for these observations. They might start with just learning the names of the animals but ultimately they begin to asking the same questions I asked as a kid.

One of the activities at Stone Lab that we all enjoy is the Thursday evening lecture series. There are usually two speakers who might talk about subjects as varied as micro-plastic contamination in phytoplankton to the distribution and abundance of the crayfish of Ohio. Each of these speakers is introduced by the Director of the lab, Dr. Jeff Reutter, who will, without fail, ask each speaker to take a few minutes to describe their path from their first interest in science to where they are now. What I have discovered from these introductions, other than some very interesting stories, is that I am not alone traveling a crooked path from where I started to where I am now.

And, I suppose, that is the take-home message from my career as a scientist and educator: set a path, make goals for your life, but be aware of other opportunities and do not be afraid to alter your plans if a better or more exciting path opens up to you. So let me continue then with my story.

After high school I enrolled in college and majored in Biology. Seattle Pacific University, my alma mater, had many classes in marine biology and I took them all, from marine plants, to invertebrate zoology, to tropical marine biology, which was taught during the winter break on Maui, Hawaii. In addition, there were other courses too, like mathematics and chemistry and writing that helped me directly with my pursuit of science or helped me to understand the context for the science I was studying. It seemed natural to me to connect everything I was learning to my interest in marine science and what I knew was the next step for me - graduate school. When I took that next step, I'm sure I surprised everyone who knew me by enrolling in a small university in Alabama on the banks of the Tennessee River in the northern part of the state miles away from Mobile Bay. I decided I wanted to experience something a bit different than the Pacific Northwest, and northern Alabama seemed as different as I could imagine. This was my first swerve in an otherwise straight path.

It was in Alabama where I was first introduced to the biology of freshwater mussels in the family Unionidae (translates into pearl animals). These animals have become the focus of my life's work. I went to the school not knowing who I would work with on a master's degree and so I met with two of the graduate faculty at the school who I knew worked with invertebrates and ended up working with Dr. Paul Yokley, Jr. He had completed his PhD at OSU working on mussels and he had a project for me collecting mussels from a river in Mississippi where two species, who generally live apart, coexisted. He wanted to know if the two species were really separate species or if their identities converged under identical environmental conditions. One of the things I learned from my masters research, which included collecting and measuring and observing, was the skills I had learned as a child in the intertidal and refined as a college student studying marine biology, were transferable to what I was doing then. I became so fascinated with the biology of these mussels that I wrote a letter to Dr. David Stansbery at OSU and asked if he would be interested in taking on a new PhD student. I told him I was interested in studying the parasitic larvae of this mollusk and he wrote back and said he was interested in them too. We met, talked, and I eventually began to work with him on this larval stage called a glochidium. My path had straightened out again, until it was nearing the

time for me to graduate and find a job.

While a graduate student at Ohio State I attended a lot of scientific meetings to present my studies and I recall one meeting in particular when a panel of some of the top scientists of the day was convened on the topic of how to land that first academic job (part of my original plan once I figured out that this was an option for a marine biologist). There was standing room only in the large lecture hall filled with graduate students like myself getting ready to take that next step. The panel had many helpful suggestions, I'm sure, but the only thing I remember about their advice was near the end after a large number of questions, in a bit of frustration, the moderator of the panel stated, "If you are good you will get a job." I still don't know if I was good, but I did get a job, just not an academic job. My first job was with the Department of Transportation in Ohio (ODOT) as part of a two-person environmental assessment team. This was another curve in my path, and in retrospect, a significant departure from my plan.

It was at ODOT that I began to examine the use of aquatic animals as indicators of environmental health and that has become a big part of what I do, and what I teach, today. It is true that 5 years after taking my first real job with ODOT, I was selected to be a faculty member in the Biology and Earth Science Department at Otterbein University, but some of that too was because I had swerved a bit from my path to consider a different type of opportunity. Young scientists, I would ask that you enlist others to feed your passion for science, as my mom and dad did for me. I would ask that you mature that passion through study and experience, and I would ask that you keep your eyes open for opportunities that might lead a different direction from the one you had originally envisioned. There is power and satisfaction in a crooked path.

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*<http://www.otterbein.edu/public/About/Faculty/MichaelHoggarth.aspx>*