

HERPETOLOGY MUSINGS

Dear fellow biologists, please share your observations, we need them

After 35 years of working in the field, I still clearly remember when I started believing I could be a biologist. I dreamt of working with Wolverines and American Badgers in California. Sadly, at the time, Wolverines numbered <5 and badgers were in steep decline. It also became clear to me that these species, and species like them, were typically studied indirectly—through habitat associations, ecological interactions, and large-scale landscape management. I assumed that if I continued with this pathway, I might have been able to interact with my focal animal if I were able to use radio telemetry to study movements, home range, or similar information, but the interaction would be brief, and typically from a distance. My undergraduate professor and early-career mentor, Samuel McGinnis, had other plans for me. His study of herpetofauna was introduced to me by way of a summer job, which eventually metamorphosed into a life-long passion and career. I quickly realized, while working on a summertime snake-species diversity study, that herpetofauna were all around me, and something I could see and handle. Working with these micro-fauna was fulfilling in that they seemed to still have many enigmatic aspects of their natural history about which I could ponder, learn, or even discover.

With a Bachelor's degree in hand, I worked as a biological consultant starting in the mid-1980s. I was fortunate enough to connect with others' that allowed me to have great experiences with lots of wildlife. Among them were several mentors that encouraged me to publish what I was finding and recording, despite having no graduate degree. That level of support was the permission I needed to feel and see that my work might have meaning and value, and I published my first manuscript in 2004.

Those of us who are on the back end of our career start to realize that the more we learn, the more we need to learn. Within my own career path, I had been doing work on California Red-legged Frogs for nearly two decades; I was fortunate to be publishing natural history notes on that species, and a few others, along with some larger studies on this frog. While gathering data and reading previously published works on ranid frogs, I was surprised when I was unable to find supporting citations for statements or contentions that I believed were putative. I elected to put together my own bibliography of California Red-legged Frog literature and categorized each published work (i.e., habitat, reproduction, predator, etc.). I found that there were many large gaps in our knowledge and understanding of the species within the published literature. Yet this conflicted with my feeling that many people knew much about this animal, but much of that information was only found in an "oral natural history". At this realization I decided that I needed to commit to publishing my experiences and observations, whether it be a Natural History Note, as those found in *Herpetological Review*, or larger more detailed manuscripts that discuss various aspects

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of the species natural history or management. However, this is where you should imagine screeching tire sounds. Many, many biologists are currently hired as consulting biologists and work with consulting firms that assist their respective clients through the various regulatory frameworks found within the federal, state, and local environmental compliance world. Others work with resource agencies, utility companies, land trusts and other non-profits, and myriad other entities that manage species or lands or both. These entities are neither set up for, nor have the ultimate goal of having their staff spend time publishing.

We all recognize that life is busy, but more than that, employers don't always see the value in biologists spending several to many hours, days, weeks, or more "writing up" their findings for publication when a client or agency or other looming deadline might be a priority for a report that isn't designed to be submitted for publication. Many tens of thousands of pages of these types of regulatory compliance, monitoring, or biological summary reports are written every year. Within those reports the various authors often try, in good faith, to use the available literature to support their conclusions or management recommendations. Unfortunately, and this is a big problem, this practice is paradoxical. We create management plans for species or habitats while knowing far too little about these species or habitats. Some individuals have personal experience and knowledge that allows them to create plans that are generally suitable for the conditions of a particular site, but this is not likely very common. Given that most biologists cannot be at an expert level on many species simultaneously, we rightly rely on the published works of those that came before us to prevent us from having to repeat the studies ourselves. This enables us to move forward by an incremental accumulation of knowledge which has been vetted by the biological community and accepted as our current understanding. These articles may be brief accounts of unanticipated and or unique observations

or they can be detailed monographs for a species that includes a summation of widely disparate and out of print publications. In each of these cases, an author or authors compiled information about a species' natural history which helps us connect the dots between ecological roles and management (see Bury 2006. *Herpetol. Conserv. Biol.* 1:56–61). Without these authors working to get their manuscripts published, we gaze upon an image made of dots that we have to connect in order to see the picture that we are expected to manage or understand. The reality, however, is that many of those dots are missing. This puts us in a position of needing to understand a complex picture with many, most, or all of the dots missing. Each natural history note or publication on a species is a dot that allows us to make a connection. Connections that are vital to the big picture that we are tasked with managing, recovering, or in some cases, saving. Without these dots, without our efforts to produce and publish natural history notes, our task may be incredibly difficult and possibly perilous for our focal subjects.

As I review the species that has been the focus of my career, the California Red-legged Frog, the list of things we don't know is far longer than the list of the things we do know. Despite the fact that biological processes can change between sites and years, and that these processes can be mercilessly confounded by our own interactivity, we rely heavily on the few published works we can find to manage species and their habitats.

I offer a preface before I make my plea. I work in your field along-side and for some of you. I do know the pressure felt to get projects done in a short time frame and to focus on completing obligatory reporting—our job. I have heard, and more recently heard myself say, no one pays us for our fieldwork, they pay us for the report. So yes, I live and breathe in that world with you and know what you might be up against. Nevertheless, here is my plea to my fellow biologists. Please, I literally (yes, I do know what literally *literally* means) beg you to consider publishing your work and observations. Whether it be a dusty old Master's or Senior thesis, a basic range extension, or an "odd" natural history observation, please consider investigating the context of your information and writing a manuscript.

In the case of *Herpetological Review*, there is an excellent editorial team and guest reviewers that can and will review notes and range extensions, and full articles, who can assist you in getting your manuscript in shape for publication. I don't only speak for *Herpetological Review*, there are numerous other journals that support notes and range extensions (your stepping-stone to bigger articles), some focus on herpetofauna while others accept manuscripts for vertebrates, techniques, management experiences, etc. We (big picture "we") need your

observations, your data, your knowledge. This is critical to the successful management and recovery of species and the habitats in which they live.

A secondary benefit of publishing can be valuable to the employers. Publications, large and small, are valued in the biological community. They are valued not only within the circles of academia, but by land managers, consultants, and resource agencies. In addition to aiding in our ability to manage species and their habitats, publications can bring credibility to the authors or the firm associated with them and they can improve your ability to market yourself to other employers. There is value to you as a biologist, to the focal species, and to the scientific community.

I do have a professional awareness of how time feels compressed and responsibilities only increase. But I do practice what I preach; I try to publish as frequently as possible. This practice doesn't come from pressure to obtain tenure at a university, I don't work at one; I didn't learn to publish by completing a great Master's thesis, I never went to grad school; I have established a successful career with a Bachelor's degree and am dedicated to improving the knowledge base, even if it's one tiny natural history note at a time. We need every bit of data that we can get to successfully manage species. You likely saw something, know something, or worked on something that if shared would benefit the community of science, the species, or ecological community on which you worked. So, again, I beg you, think about trying to put just a couple of your personal hours into a manuscript. There are others out there that are willing to assist you, maybe for the mentorship, or co-authorship, but do ask for help if you need it. We work in a biological community of people that started out as individuals with a dream. I have a new dream and it doesn't include wolverines or badgers. My new dream is for most of us to see the value of getting the word out. We, as biologists, use the work of others' and we all should be one of those "others". This dream does include a corollary: I send out an additional plea that those that supervise the biologists on the front line and in the field; those that are doing construction monitoring week after week; those that are doing nesting bird surveys in summer along highways; and all of those that collect the very data that goes into the reports that get prepared, that those supervisors support this approach as an obligation to biology and a responsibility to the species about we once dreamt.

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