



Vermont EPSCoR Center for Workforce Development and Diversity

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All Hands Meeting

June 4, 2019

VT EPSCoR



Research component organized
in groups by discipline



Outreach and science
engagement component

Center for Workforce Development and Diversity

- Cultivate and prepare students in science (including social science), technology, engineering and math fields
- Integrates students and teachers into active research
- Inspire students to pursue STEM careers



Our Programs

- Elementary school visits
- Middle School
 - Outreach Visits
 - *VT Works for Women – Rosie’s Girls*
 - *Trout Unlimited – Trout in the Classroom*
- Macroinvertebrate Workshops
- High School Research
- Undergraduate Internship
- Scholarships
- Symposium



Middle School

- Classroom visits
 - Focused on water quality
 - Adapted to curriculum
- *Rosie's Girls*
 - *Summer day camps in carpentry and welding*
 - *Subsidize the cost of the program for all girls*
 - *Offer scholarships when family can't afford the program*
 - *52 girls attended in 2018, 25 got full scholarships*
- *Trout in the Classroom*
 - *Students raise trout from egg to fingerlings*
 - *Release fish into local stream*
 - *Study stream habitat*
 - *Strengthen our Middle School Teacher network*
 - *Financed tank for Albert D. Lawton Intermediate School*
 - *Fieldwork and outreach with other schools in the program*



High School program

- Teacher-students team
- 1-week training in the summer
- Sampling June – November
- Data analysis
- Present at Research Symposium
- Stipend for teacher and equipment
- 2019-2020
 - 15 teams participating
 - 7 VT teams, 3 MA teams, 4 PR Teams, 1 MD Team



Undergraduate Internship

- 1-week orientation; 9 weeks of research
- Late May to early August
- Integrated into BREE research teams
- Attend workshops during the summer
- Present results at Symposium
- 2018 – 2019
 - 135 applicants; 18 accepted
 - Home institutions: University of Vermont, St. Michael's College, Universidad de Puerto Rico, Universidad Ana G. Mendez, Indiana University, University of Wisconsin, University of Delaware



Scholarships

- \$5,000 towards tuition costs
- VT Residents
- First Generation and Native American students
- Declared STEM Majors in VT Institutions
- Ceremony in August
- 2019
 - 31 applicants
 - 7 recipients
 - 3 Native American, 4 First Generation Scholarships
 - 3 from University of Vermont, 1 from Norwich University 1 from Vermont Technical College



Student Research Symposium

- Capstone event for High School and Undergraduate programs
- Oral and poster presentations
- Spring after research is done
- 2019 Symposium
 - 33 High School students presented
 - 16 Undergraduate students presented



Recruitment – Conferences and talks

- Society for Advancement of Chicanos and Native Americans in Science (SACNAS)
- Annual Biomedical Research Conference for Minority Students (ABRCMS)
- Puerto Rico
 - University of Puerto Rico: Rio Piedras, Mayagüez & Aguadilla
 - Universidad Ana G. Mendez: Cupey, Carolina & Gurabo



Ongoing mobile phone app development

Sites and 'new' macroinvertebrates added. Expanded to Android platform; Presented at Freshwater Science 2018

AT&T 9:36 AM AT&T 9:37 AM AT&T 9:37 AM AT&T 9:37 AM

Sync Back Streams Back Allen Brook VT Back

Search streams

Allen Brook VT

Baldwin Creek

Bartlett Brook

Beaver Brook

Branch Brook

Brewster River

Browns River tributary at Essex Elementary School

Start

About

Acerpenna


Antocha

Ceratopsyche

Cheumatopsyche

Chimarra

Chironomidae



Common Name:
Spotted Caddis

Family:
Hydropsychidae

Genus:

“The Outside Story” natural history essays

Syndicated by
Northern Woodlands
Magazine to 15
newspapers

Recently presented at
Freshwater Science in
Detroit 2018

Writing essays for broader audiences: experiences, adjustments, and compromise



Declan J. McCabe; Saint Michael's College Biology

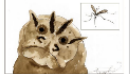




Figure 1. I sent my first natural history essay to VES news where it was read by the editor of The Outside Story.



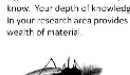
Figure 3. My blog includes published articles, student field trip posts, teaching ideas, and whatever I feel like penning. It is linked from the Saint Michael's College Biology web site and is occasionally read by prospective students. There were just 50 page views in April but that's not the point.



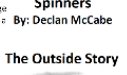
The Curious Case of the Cute “Face” Crane Fly
Figure 5. Write about what you know. Your depth of knowledge in your research area provides the wealth of material.



Caddisflies: Submerged Silk Spinners
By Declan McCabe



Cloudy with a Chance of Flies: Non-Biting Midge



The Outside Story Summer Skaters



Figure 6. Writing is an opportunity to explore a new area of interest. Nothing in my research includes ducks or waterfowl, but both are equally likely to be seen by readers.



The Great Duckweed Migration

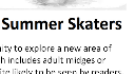


Figure 8. Sometimes you need to run a quick experiment to see what happens. You may learn that nothing new has happened and the experiment does not lead to research. But it can lead to a story... perhaps on duckweed migration.

Abstract: In 2014, I received a call to wrangle a desert centipede that had been mailed from Texas to a Vermont grade school. I wrote a tongue-in-cheek essay about the experience for the Vermont Entomological Newsletter. An editor for “The Outside Story” (a syndicated weekly natural history essay series, contacted me to rewrite the essay for their series. I have since become a regular contributor to the essay series, their annual conference, and had essays reprinted in other outlets. Through the editorial process I have learned to simplify my writing, reduce jargon, and compromise between the precise nature of scientific writing, and a more readable and audience friendly style suitable for readers of local newspapers. I have had significant help from editors that includes writing help, topic selection, and distribution of the end products. The experience has resulted in the production of accessible essays that reach a far broader audience than is typical for my scientific writing. The essays advance the mission of my institution and have broader impact that is appreciated by my funding agencies.

Getting started
Read broadly in the subject areas that interest you. A balanced diet between old and new, technical, theoretical, and popular; essays and poetry, and full-length non-fiction texts. Read the genre, format, and specific outlet you'd like to write for. What works and holds your attention? What approaches jump out at you? How has been recently written well that you should avoid repeating? But don't postpone writing because you haven't read enough, what's reading is an ongoing influence on your writing.

Write something; anything. No ideas? Take a walk, stary something, weed the garden, net some insects; stroll with binoculars. There's an excellent essay to be written on crab grass, dockweeds, or caribids. What work story have you told over lunch? The looks and demeanor that hold student attention, are stories ready to be written down.

Revise for brevity, clarity, and flow. Use the usual writing that apply: read out loud; let it rest; come back and read it again. Don't fall in love with a phrase that an editor may ditch anyway. When you are happy with the final flow then it may be finished, unless an editor gets hold of it for a different reason and asks for more, less, or a different format.

Repeat because writing can be habit forming. There will be lulls, and times when it's a more regular habit. Life will intervene; reasons waiting for the grades may displace and postpone your writing. Perhaps that's the mechanism to procrastinate? But return to the writing, perhaps a piece or getting papers, or not?

Share your writing. Your unique take on the world is worthy. We can't all have a book contract, but we can all have a blog.

Blogging, the gateway drug? Even a blog with 2 followers or zero followers can contribute structure and discipline to your writing. Grammar and spelling might be ignored in a hand-written journal, but a blog can tip your game. You can be an avid blogger with posts per week or an occasional blogger with a few per year.

Define your goal in blogging: To establish a writing habit? Or to make writing simple, available? To share the ideas and activities of your business or department, your blog is a home for writing that is not a match for a particular outlet, is too short, long, or insufficiently crafted, later it may get the crafting it needs to become something more.

Submit and move on! When you are happy with a piece of writing, submit it. Then start writing your next piece.

Excuses not to write: You are not David Guzman; you lack the resources to visit exotic field sites; you can't climb; you are not 40 feet up a pine tree like Bernd Heinrich; you lack a mid-air mission collection license; you don't; and you don't grow up allied in one spot in the south; he is a writer; your boss isn't boring.

Why these excuses are lame: Bernd, Steven Jay, and E.O. lack the personal connection you have to your work; your science; your classroom. Michigan is exotic and so is Vermont. Raccoons and ground squirrels are sufficiently interesting to merit enclosures in the Lubin Zoo and there is certainly something new to be written about each. And unless you can also show and have the time to do so... let someone else do it... it is probably not your problem to find them.

You are too busy to write. Grading deadlines; Dad's Taxi Service must run; departmental accounts to be balanced; a committee needs your input; a student's in tears. It's all true...but write a little each day. Flows are measured in 100s of words. You can probably write 1,000 good words in 2 hours, but breaking it down into 10-min increments may be the trick. Triage: archaic but vital; the stories in your head, unless they're a regular and needs help beyond your skills. Mom's Taxi Service will run no matter what; kids have an amazing way of sorting your priorities. Ideally, if you had time to read this far, perhaps you have time to write it!

Target your writing
Where will you submit? Newspapers? Magazines? Literary journals? Each has format, length, and style requirements. Word count is just a starting point.
Read your target. What do they publish? What topics were recently covered? What's your unique contribution? What new spins can you bring to an old topic?

Improve your writing
Listen to the editor. If you are receiving feedback it is because an editor wants your work in their paper or magazine. It is close to what they want because you targeted them; if you missed the target they would not be diverting time to feedback. But it requires tweaking and you should listen very carefully because:
• The editor knows their readership.
• They have done this many many times.
• They have read and improved many pieces of writing.
• They have probably read even more letters to the editor complaining about pieces of writing.
• Their goals to publish a readable piece; and that's also your goal.
• And finally, if you are a difficult and nonresponsive writer, why would they want to work with you?

Don't fall in love with a phrase or the order of your content. If your editor wants a reorder or drops a phrase it is probably for the best. If you really need to fight for something, be prepared to back it up. I recently fought to retrieve a deleted piece pointing out that emerald ash borers don't kill; mountain ash. Because Vermonters are killing trees.

Cut the jargon but not the details: details color your writing and add realism. Jargon can be confusing or insulting to the audience and is the enemy of good writing. You have not to prove that jargon will help to prove.

Trust the reader to appreciate the science. You really can't talk about life in the Hypopharynx, one without the word “Hypopharynx”, but if you discuss slides in streams for the love of God erudite phrase “allochthonous woody debris”, this will not be skimming on the science.

More matter less stuff; write fewer words, cram good content into tighter spaces.

Good writing is the good teaching. Analogies that keep 65 teenagers engaged in Biology 101 will serve your writing well. Crustal deposition in streams is in fact like a concrete truck discharging its load in your window.

Make it relatable; please your self in the context people like to read about people. “my 10-year-old daughter asked me about the swelling on a snake she found” is more likely to grab a parent's attention in the newspaper than “the goldenrod gall fly causes swellings on goldenrod stalks”.

Practice, write more, and if you still find your fourth sentence, come write out. You will write, or start to write more places than you will submit. None of this is wasted effort. Some of the ideas may find their way in the sun, but at least they will help you write better.

Where to submit
Did you write with a target in mind? Send it there! If it is not targeted then your writing may be easier to re-write to fit a format than to rescue a poorly designed experiment. Is it news paper ready? magazine ready? book length? If it is rejected from one format, perhaps it is ready for a different format? A friendly editor will often explain why it's not right for their format, and that may direct you to a different format. My Fairy Ballet was rejected from “The Outside Story” before being accepted in a literary review.

Closing thoughts
Your research has fully your attention for decades; share that passion. You are close to your subject but yours is a unique lens on the world. What is old but not so broad new to newspaper readers. A neighbor once read a piece I wrote and asked “Does the caddisfly occur in Lake Champlain?” A piece on caddisflies in Lake Champlain is needed!

Your field is unfamiliar to most people. What do you know about cost accounting? Paul? How transfer in insects? Intraspecific regulation? Anasethin Fluor? That's how much an accountant, butcher, mechanical engineer, nurse, or baker knows about seasonal changes in Heteropogon genetica grass, Hippis in Columbia, or tree canopy impacts on trout. Natural history writing differs from writing about accounting, cost of land, architecture, nursing, or baking. Handle that an affinity with

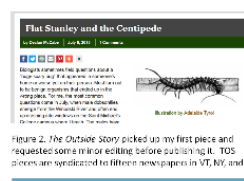


Figure 2. The Outside Story picked up my first piece and requested some minor editing before publishing it. TOS stories are syndicated to fifteen newspapers in VT, NY, and NJ.



Figure 4. Unlike local liberal peer-reviewed years, TOS content is often reprinted. Two of my stories appeared in two separate volumes of OS writing. Another two appeared in Northern Woodlands Magazine. All stories reach about 15 newspapers.



Goldenrod Golf Balls and **Time Travel in a Peat Bog**
By Declan McCabe

Figure 7. Write about your hands on teaching. Like a good lab it should be more “show” than “tell”. No one wants to read your lecture notes...or mine.



Figure 9. So often is the intersection of biology and every day life is your a story such as bumblebees on calling the flies or exotic beetles eating our trees. Write that story!

2018 High School training: macroinvertebrates

18 teams: 36 students; 18 teachers

Field collecting and ID work in lab; iPhone app in action



Middle school teachers: July 2018 Macroinvertebrate workshop

4 teachers



December high school workshop



Shelburne Farms Educators; April 2018

Six educators sampled the pond they use for school programs

We IDed; added macroinvertebrates to the mobile device app

Shared natural history essays specific to bugs at their site



Thanks for your attention

