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Awards and Citations

Presentation of the 2017 Schuchert Award of the Paleontological Society to Caroline A.E. Strömberg

Scott L. Wing

Department of Paleobiology, Smithsonian National Museum of Natural History, Washington, DC 20013, USA ⟨wings@si.edu⟩

We scientists and the topics of our obsessive research are a little like pet owners with their pets. You might remember photos of a jowly Churchill with an English bulldog, or William Faulkner standing trim and taut next to his feisty terriers. For many of us there is also an inner rhyme between what we study and who we are. Maybe we choose our study subject because it suits the strengths of our personality, or maybe what we work on makes us who we are.

These mysterious connections came to mind as I thought about Caroline Strömberg, this year's Schuchert awardee. As you know, Caroline is a paleobotanist, and her primary study organisms are grasses. Grasses are a fantastically successful group, but they are mostly herbaceous plants, and from a paleobotanical point of view the most notable feature of herbs is that they tend to have a poor fossil record. So the first thing you can tell about Caroline from her study group is that she doesn't pick easy problems.

Hard problems require innovative solutions, and the poor macrofossil record of grasses and monotony of their pollen required a different approach. Caroline transplanted a largely archeological method, the study of siliceous phytoliths, to paleontology. When she decided to do this it was widely assumed that the opaline silica of which phytoliths are composed didn't preserve for long enough to be a significant component of the deep time record. Caroline did not see that as a barrier, and off to the field she went, sampling paleosols across the American West for microscopic phytoliths that most thought wouldn't be there. The abundant record she uncovered revealed that the grassland biome spread in North America in the late Oligocene and early Miocene, seven million years before the evolution of mammals with high-crowned molars. Caroline also saw that grasses were a classic example of ecological/evolutionary latency—their earliest fossils are Late Cretaceous, the open-country clades diversified in the Paleogene, but they didn't rise to ecological dominance until the Neogene. This pattern fascinates anyone interested in the diversification of major groups.

Post-thesis Caroline decided that she wanted to chase the idea of dominance lagging diversity in the Cretaceous rise of angiosperms, so she came to the Smithsonian on a fellowship to work on a Late Cretaceous in situ flora. I assumed that, being a Neogene worker, Caroline would focus only on injecting fresh insight into analyzing extensive field data I had accumulated. If I had known her better, I would have known better. At our first conversation she announced that she couldn't analyze existing data unless she understood the alpha taxonomy of the fossil assemblage. So, she spent months examining EVERY ONE of the thousands of specimens belonging to nearly 200 provisional taxa. Soon we were arguing about delimitation of morphotypes based on vein features that she had learned to name only a few weeks before. Not long after that she was winning the arguments. At the time I was surprised that Caroline wanted to wade into these minutiae. In retrospect I realized what she did was admirably if annoyingly rigorous, and also quite brave. Postdoc pressure to get things done was not going to keep her from doing them right.

In more recent years Caroline's research has taken on another characteristic of her study group as she has intertwined diverse lines of evidence. She has collaborated with others to work on the teeth of the mammals that ate the grasses, the geochemistry of the soils grasses created, the phylogeny of grasses themselves, and the broader effects of grasses on nutrient and carbon cycling and climate. She has become a model of how modern paleontologists integrate methods and observations from many different fields, and how their work can be cited across wide swaths of science.

As she herself (Strömberg, 2011, p. 518) has written: "The Cenozoic rise to dominance of grasses undoubtedly influenced climate systems and was central to the evolution of grass-eating animals. Understanding this ecological transformation provides the evolutionary context for today's grass-dominated ecosystems and may help us disentangle their complex controls—as well as predict how they will respond to ongoing anthropogenic climate change."

There is one final way in which Caroline is like the grasses she studies. She feeds her professional community. She has worked directly with 6th and 8th grade girls in a program to encourage female participation in science and she has greatly improved the collections at the Burke Museum where she has also led several important temporary exhibitions. She even organizes

the 'Friends of Plants' dinners at GSA. As one of Caroline's recommenders for this award wrote: she is "…an utterly humble and unselfish scientist…an ecosystem builder rather than a top predator." It is truly an honor to introduce Caroline Strömberg—with thanks for shaping our field's ecosystem and hope that she will continue to do so for epochs to come.

Reference

Strömberg, C.A.E., 2011, Evolution of grasses and grassland ecosystems: Annual Review of Earth and Planetary Sciences, v. 39, p. 517–544.

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