

Emma Cole Project: A 100-year Reassessment of *Grand Rapids Flora* (1901)

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In 1901, beloved teacher and botanist Emma Cole published the book *Grand Rapids Flora: A Catalogue of the Flowering Plants and Ferns Growing Without Cultivation in the Vicinity of Grand Rapids, Michigan*. One-hundred and sixteen years later, Emma Cole's book is still the most comprehensive floristic study of the Grand Rapids area, despite immense changes in land use for the area. The aim of our project is to revisit the sites that she visited, or similar sites, and see how the plant life of Grand Rapids has changed over the past 116 years.

Our role, as researchers, was to inventory the plants growing at seven selected sites over the course of the summer, collecting those in flower or fruit, identify the samples, and then assessing each location for floristic quality. Plants that were not in fruit or flower were still recorded as sight records; specimens collected are preserved as documentation in the herbarium for future use. In order to determine the floristic quality of each site, we needed to establish a complete plant list of each site. A program designed to make Floristic Quality Assessments for the State of Michigan (see Michigan's Universal FQA Calculator, <http://universalfqa.org>) was then used. Each plant native to Michigan has a number assigned to it called the coefficient of conservatism (*C*). This number reflects a given plant's fidelity to undisturbed habitat, and using the average *C* of each location, we could calculate a Floristic Quality Index (FQI). This index is a quantitative measurement, obtained by multiplying the average *C* for each site by the square root of the total number of plant species. Because FQIs are a reliable indication of the native vegetative quality for an area, they are helpful in comparing the overall ecological integrity of various locations.

One of the best parts of our project is that it involved visiting many places that most people will never visit. One such place that we were able to go to was a very beautiful bog, where almost every plant is native and some are rare for southern Michigan. The water is so acidic that many of the plants found there are carnivorous—which is really quite special. Walking out on the bog—which is a floating mat of vegetation and sphagnum moss over water—is a surreal experience in itself, and eating the wild blueberries and cranberries just sweetens it. Because the bog is of such high quality, we are considering expanding our research study of the bog into the fall.

Other sites that we visited include forests (including ravines), riversides, swampy areas, and old fields. We have found that, as a general rule, the sites such as bogs and deep ravines, have experienced little impact by development for agriculture or residential/commercial purposes, and are of greater floristic quality than areas that are more easily developed, such as more level terrain. While each of these sites is interesting in different ways, visiting each of them bi-weekly allows us to gain a greater perspective on the area, seeing how the sites change as the summer progresses.

Before this summer, our interest in botany was only just developing. As the summer winds down, we find that we see the world differently. Every plant is exciting; each plant has something that makes it special, or some niche that it fills. We have gained skills in plant identification and have also learned what goes into a floristic survey; there are many skills and conventions that we never knew existed. Reexamining habitats in the Grand Rapids area that Emma Cole studied more than 100 years ago allows us to connect to the history of the place where we live and go to school, and to celebrate the important work of women in science.