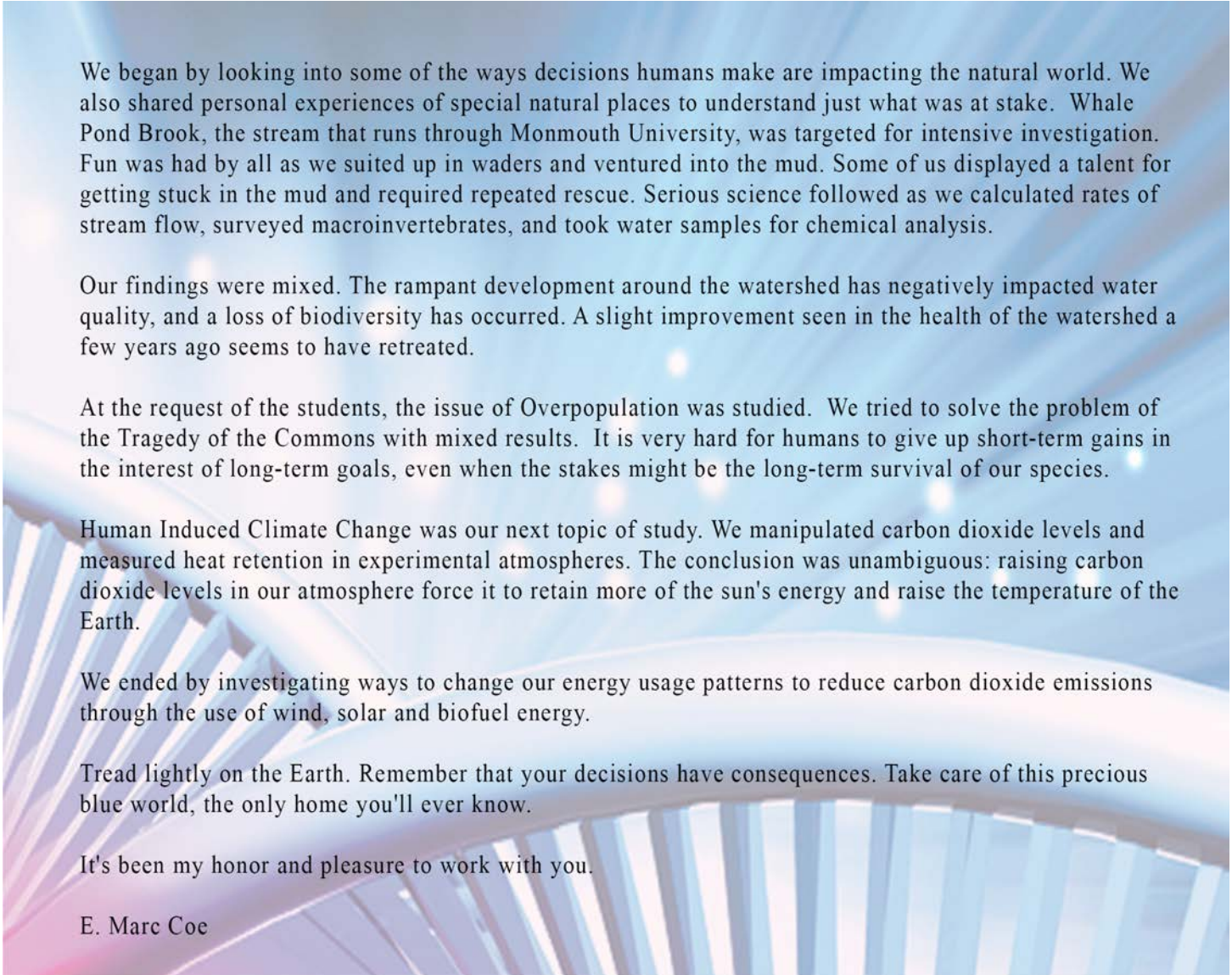




the stars
challenge

The Environment
and You
Fall 2014





We began by looking into some of the ways decisions humans make are impacting the natural world. We also shared personal experiences of special natural places to understand just what was at stake. Whale Pond Brook, the stream that runs through Monmouth University, was targeted for intensive investigation. Fun was had by all as we suited up in waders and ventured into the mud. Some of us displayed a talent for getting stuck in the mud and required repeated rescue. Serious science followed as we calculated rates of stream flow, surveyed macroinvertebrates, and took water samples for chemical analysis.

Our findings were mixed. The rampant development around the watershed has negatively impacted water quality, and a loss of biodiversity has occurred. A slight improvement seen in the health of the watershed a few years ago seems to have retreated.

At the request of the students, the issue of Overpopulation was studied. We tried to solve the problem of the Tragedy of the Commons with mixed results. It is very hard for humans to give up short-term gains in the interest of long-term goals, even when the stakes might be the long-term survival of our species.

Human Induced Climate Change was our next topic of study. We manipulated carbon dioxide levels and measured heat retention in experimental atmospheres. The conclusion was unambiguous: raising carbon dioxide levels in our atmosphere force it to retain more of the sun's energy and raise the temperature of the Earth.

We ended by investigating ways to change our energy usage patterns to reduce carbon dioxide emissions through the use of wind, solar and biofuel energy.

Tread lightly on the Earth. Remember that your decisions have consequences. Take care of this precious blue world, the only home you'll ever know.

It's been my honor and pleasure to work with you.

E. Marc Coe



Exploring Whale Pond Brook - the water, the flora, the fauna, the mud.



We were the height of fashion in our waders.



A surprising number of living things were thriving in the brook. We were able to determine the health of the ecosystem by categorizing the fauna we found.



Teamwork was required to complete the macroinvertebrate survey.



Ms. Laura Lutton, an ecosystem expert and science educator, shared her extraordinary talent in finding critters in any sample with us.







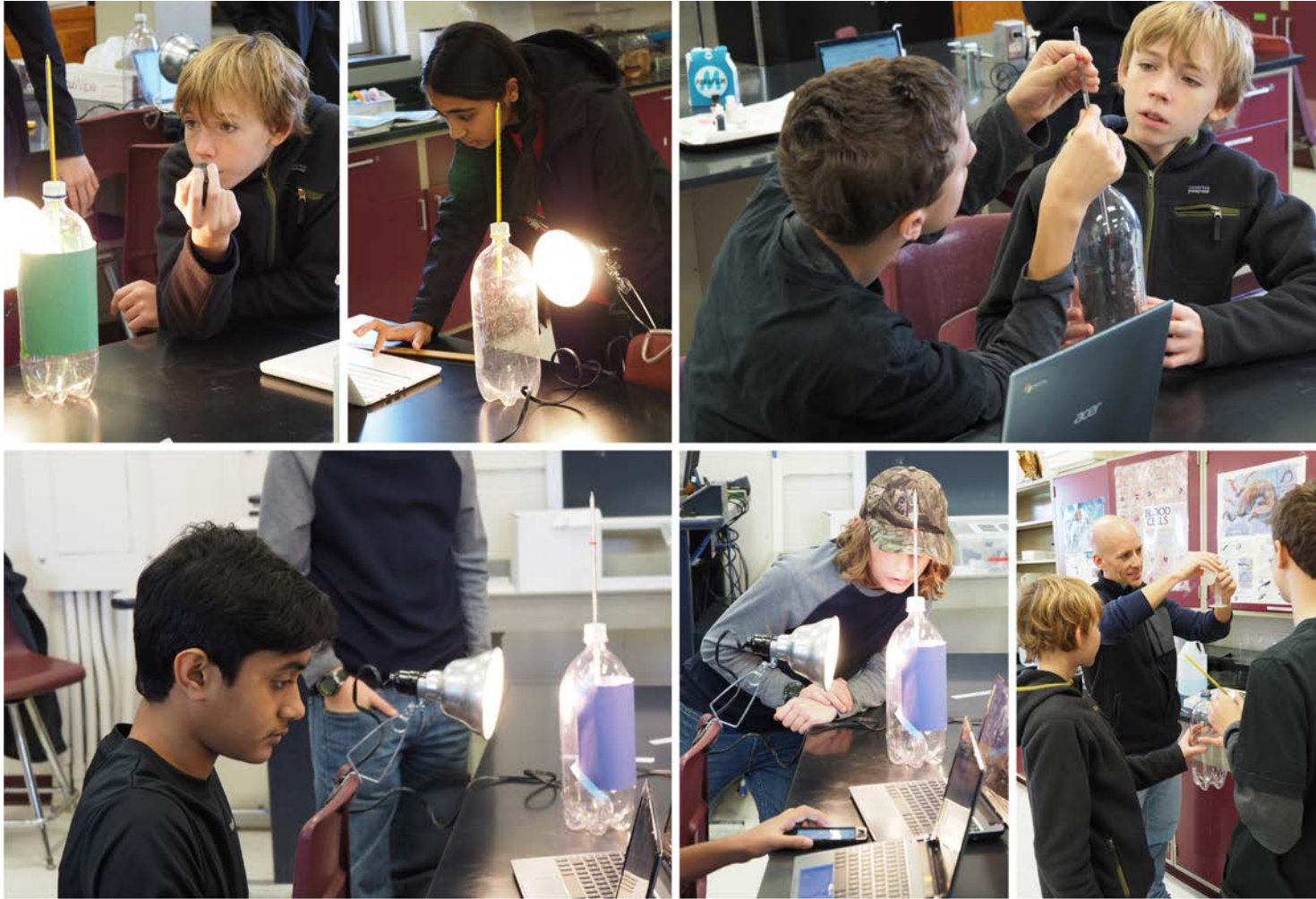
Patience and a delicate touch was required to categorize all the life we found.



Moving inside, a chemical analysis of water samples from the brook was completed. We also investigated the tragedy of the commons and cooperated much better than current world leaders.



The results of our testing was not encouraging. The water in Whale Pond Brook is contaminated with a number of pollutants. Ms. Ruby Corman, a NJ Watershed Ambassador, helped us understand causes of the contamination.



Global Warming was modeled using soda bottles and heat lamps. Our discoveries were not reassuring!



Performing experiments allowed us to determine the validity of the claims regarding Human Induced Climate Change.



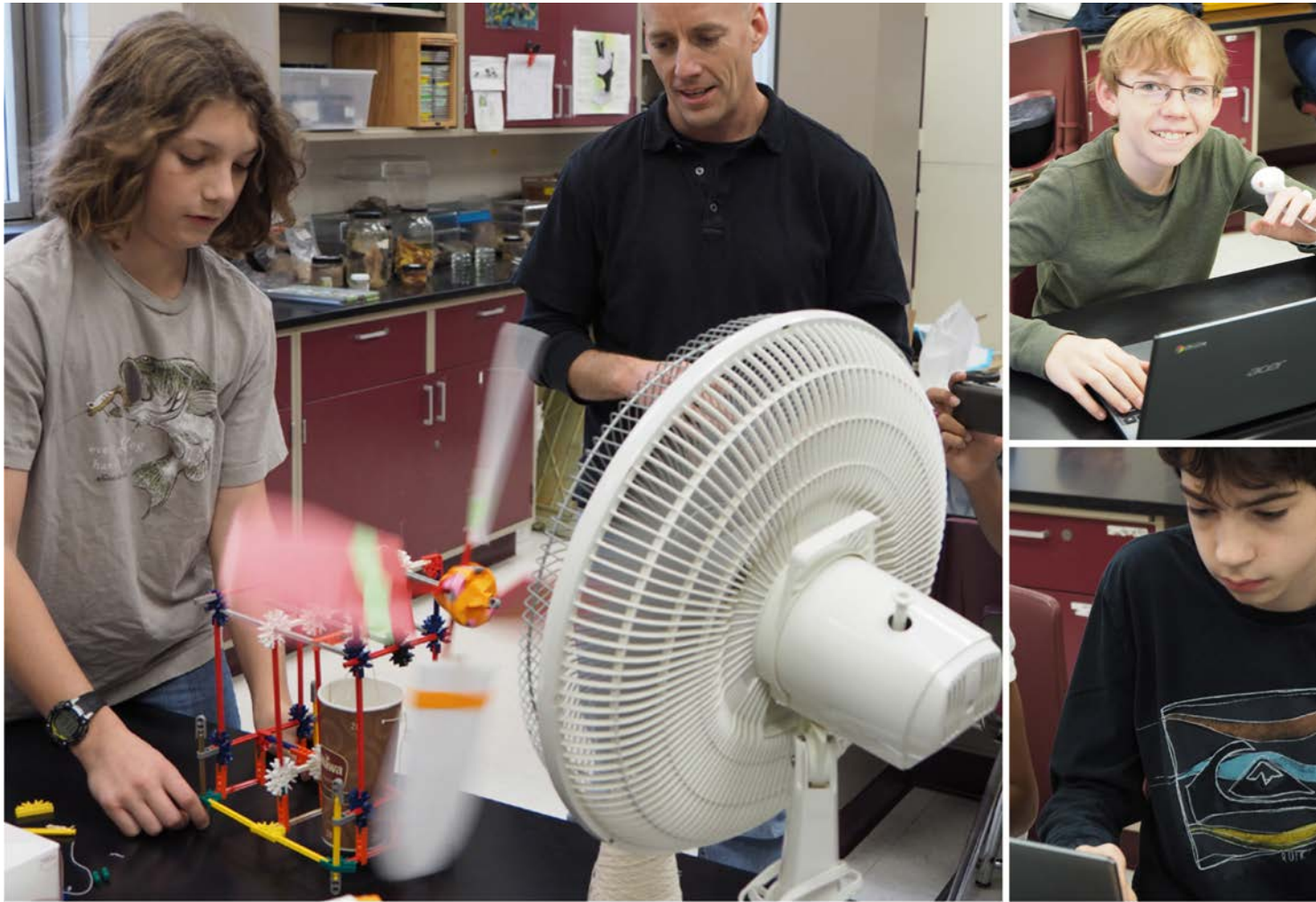
Solutions to climate change were explored via engineering challenges such as windmills and solar hot water heaters.



We discussed the impact of human population growth on the environment.



Our engineering skills were put to the test in constructing windmills and solar water heaters.



In order to mitigate the worst possibilities of climate change, our species must embrace green energy solutions.





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