

THE HUMAN ELEMENT

We start this issue with an exercise in thinking that is sure to challenge every reader. In our cover article Roy Irwin examines the question of accuracy in spreadsheet software calculations. He raises a concern that resource managers and researchers should be aware of: calculations by statistical spreadsheets, including Microsoft Excel—the standard spreadsheet for the National Park Service—can be inaccurate under certain conditions. As the article points out, scientists need to be prepared to evaluate the degree of accuracy required from calculations for particular park applications and the potentially problematic effects of very large numbers and sample sizes and other combinations of data and analyses that can cause problems. The article is a reminder that vigilance and judgment—human attributes—are needed to use software correctly and to draw valid conclusions from what the numbers tell us.

The powers of observation, collaboration, critical thinking, and persistence are other important human capabilities highlighted in this issue. Chris Lea and Rob Naczi describe their experience in making a new plant species discovery at Thomas Stone National Historic Site that helped to reconcile a confusing, nearly 160-year-old error in plant taxonomy. Keen observation, help from colleagues, and knowing where to turn next to unravel the mystery aided their efforts, resulting in important information becoming available for park management and clarifying the botanical record, a benefit extending well beyond park boundaries.

A good illustration of the marriage between the technical aspects of science and their expert and creative application is the article on salt marsh restoration at Cape Cod. Decades of research has documented the loss of tidal marsh wetlands and other environmental changes caused by diking, drainage, and filling of the estuary. Involving many individuals and organizations, science has been marshaled to understand the dysfunction of the system and to monitor its restoration through the reestablishment of natural tidal fluctuations. The long-term project at Hatches Harbor, rooted in science, requires political coordination, technical engineering, flexibility to apply new study results as they become available, and time to build confidence among the stakeholders that the restoration is meeting ecological and flood-protection goals.

These are just three examples in this issue that demonstrate the importance of people to the effective use of science in preserving park natural resources. Despite the numerous technical tools available to help us make the most accurate measurements and conduct the most extensive analyses, science is impossible without the scientist. Scientists see connections between things not thought to be connected, they understand the limits of the tools of their trade and apply them correctly, they combine disparate parts into a cohesive whole, and they rally resources and the help of colleagues. Ingenuity, creativity, persistence, judgment, critical thinking, and vigilance, while not quantifiable attributes, are essential to good science. Clearly science needs the human element as much as we need science.


Jeff Selleck
Editor