

A typical BioTrails event begins with adult participants going outside...



Learning from a scientist who wants to track change how to collect specimens...



Observing and measuring...



Collecting...



Looking closer in the lab...



BioTrails

DNA-assisted Species Identification for Citizen Science

Needs

- **More species data** (presence/absence and abundance) to track the impacts of environmental change on species
- **More opportunity** for meaningful public participation in science

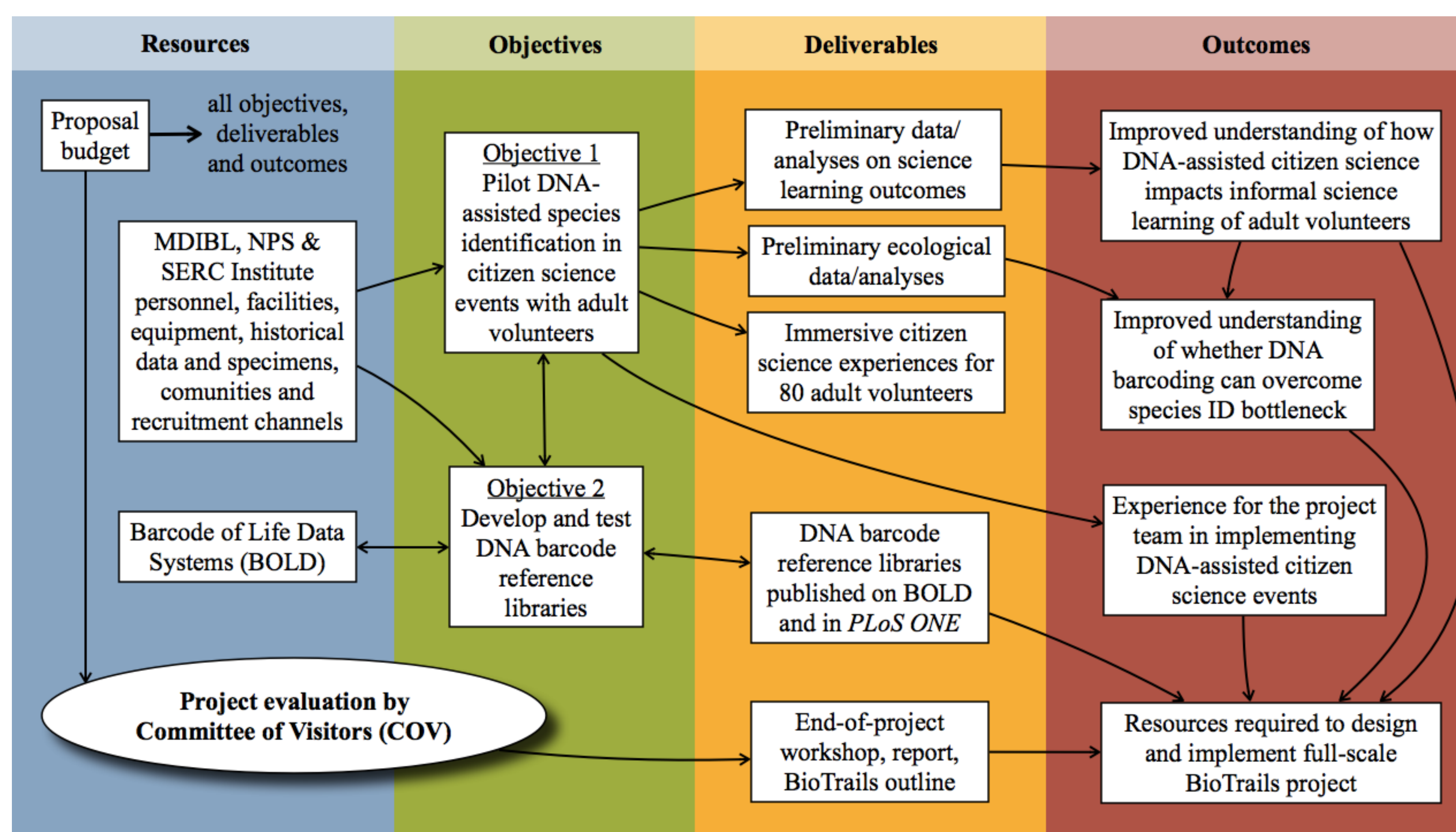
Challenges

- To collect more data we need **more people**. Enter citizen science?
- But... **identification is hard** and scientists don't trust citizen scientists' IDs.

DNA to the rescue?

DNA-assisted species identification ("DNA barcoding" and related techniques) can identify citizen-scientist-collected specimens, enabling expansion of the scientific workforce more data, and more opportunities for public participation in research.

Project flow chart



Discovering that taxonomy is hard!



Help ID me!



An AISL 'Pathways' Project (DRL-1223210)



Karen James

Principal Investigator, Mount Desert Island Biological Laboratory

The MDI Biological Laboratory is a 114-year-old independent, non-profit research institution located adjacent to Acadia National Park on the shore of Frenchman Bay. The Laboratory's scientists and students use comparative model systems to explore how organisms adapt to their environment and how environment and genetics are related. Ten residential research groups and more than 60 visiting scientists from all parts of the US and abroad work at the Laboratory during the summer.



Bill Zoellick

Co-Principal Investigator, The Schoodic Institute

The Schoodic Education and Research Center (SERC) is located in the Schoodic Peninsula portion of Acadia National Park and is one of 17 Research Learning Centers throughout the NPS. These Research Learning Centers are designed to enhance the capacity of national parks to support science and education. SERC is the largest of these centers and is co-managed as a partnership between NPS and the non-profit Schoodic Institute. ANP and the SERC Institute are working with other parks and organizations to improve citizen science techniques used to understand ecosystem responses to anthropogenic changes.



Abe Miller-Rushing

Co-Principal Investigator, Acadia National Park

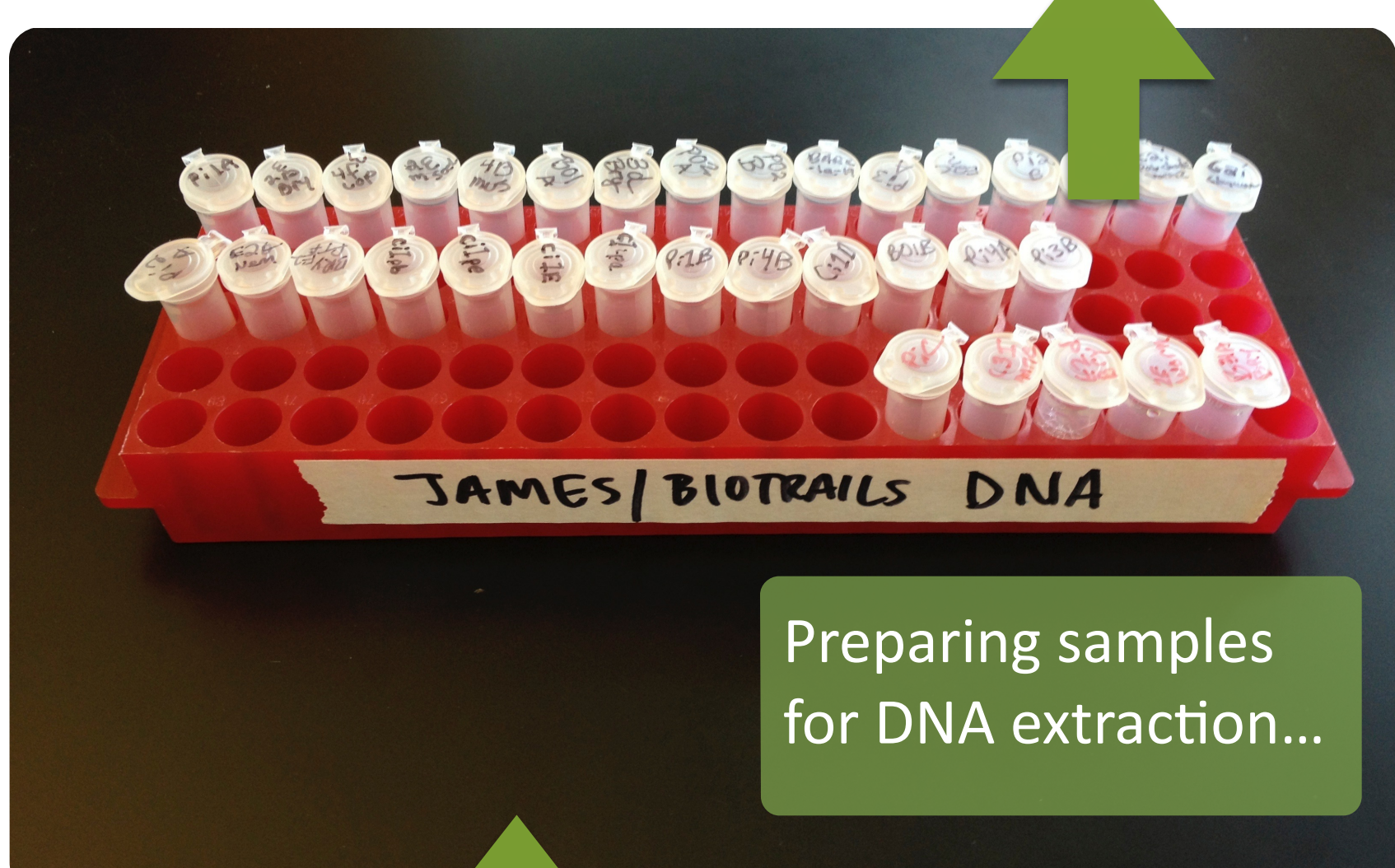
Acadia National Park, the first national park east of the Mississippi, comprises much of Mount Desert Island as well as smaller associated islands and part of the Schoodic Peninsula on the mainland. The dual mission of the park is to manage natural resources and educate the public about those resources, their value, and responsible stewardship practices. Acadia National Park hosts a range of efforts, including citizen science, to understand long-term changes in biodiversity that may have been caused by human-related factors, such as habitat degradation and climate change.



...and last but not least, discovering the results and creating a species list for the scientist.



Preparing samples for DNA extraction...



Collecting samples for DNA-based ID

