Feral to Permitted to Preserved: Managing Scientific Collections Taken from National Parks

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Key National Park Service (NPS) scientific research and collecting permit conditions and procedures for permanently retained collections are often overlooked, later causing confusion in park, research, and repository communities. These procedures include obtaining signed agreements from proposed non-NPS repositories to accept specimens under NPS permit and loan conditions before permits are issued, identifying responsibility and funding for labeling and cataloguing specimens in permit applications, and using loan agreements whenever specimens leave parks. Some protocols, such as using material transfer agreements (MTAs) for certain circumstances involving microbiological research, are relatively unknown to parks. Permit coordinators, researcher applicants and permittees, park curators, and repository managers when collaborating effectively, experience high benefits and satisfaction. Four examples from parks with active research programs illustrate park-specific approaches to meet the needs of science and collections management within parameters of policy and standard procedures.

How parks manage scientific collections is occasionally is a point of contention. Some prospective museum repositories for NPS scientific collections claim museum policies prohibit acceptance of long-term loans, and say NPS should convey specimen ownership to the repositories. Others fear parks may arbitrarily recall collections on loan precluding benefits that might otherwise accrue to the repository through collections research and education programs. In addition, researchers often fail to meet the permit condition requiring that permittees complete labels and catalogue records for permanently retained specimens, leaving parks with unlabeled and uncatalogued backlogs. Some parks report researchers saying they will not work in parks because of permit conditions related to scientific collections.

NPS ownership of research specimens is based in law and has been acknowledged in court. NPS management policies and permit conditions state that collected specimens that are not consumed in or discarded after scientific analysis remain federal property. Vigilance in maintaining a chain of custody is important. Parks may negotiate and customize repository agreements to provide longer-term loans than standard loans and assurances against arbi-

trary or frivolous recall. Park curators provide researchers with templates and other tools that aid labeling and cataloguing. Consistent with policy and basic procedures, the four example parks have developed operating procedures that mitigate these concerns.

Yellowstone National Park

Yellowstone annually administers approximately 200 permits and approves approximately 40 new studies. Research topics vary, but focus on animals, plants/forestry, geology, and microbiology. Microbiology represents 25% of scientific research. Most studies retaining specimens (fewer than 50 permits annually) are in geology, botany, archeology or paleontology; however, some are in wildlife and other areas.

Fortunately, Yellowstone has sufficient staff and facilities to support its research and collections. The park has a full-time research coordinator and the new state-of-the-art Yellowstone Heritage and Research Center, completed in 2004, is staffed by a full-time curator, a full-time museum registrar and several museum technicians. It houses over 390,000 artifacts, several million archival items (and is an affiliated repository of the National Archives and Records Administration), over 21,000 specimens each for biology and paleontology, and over 1,500 geological specimens. It includes an herbarium with approximately 10,000 botanical specimens, as well as archeology and geology labs.

To ensure that permitted research does not create a collections management backlog, the permit coordinator and curatorial staff explain collections requirements to new applicants before the permit is issued. They advise researchers to do the following:

- Get an accession number from the park curator before starting work.
- Request catalogue numbers from the park curator when they know how many samples are suitable for the park's collection, typically within the first year.
- Meet all curation milestones to facilitate annual permit renewal, when the staff checks for compliance.
- Complete ANCS+ catalogue worksheets as data are analyzed and available. Sometimes, data analysis and completion of worksheets lags two to three years depending on the study design, study duration, and the year funds were budgeted for analyses.

The staff maintains a spreadsheet that tracks the status of each permit.

Planning specimen storage starts with the permit application. The curator consults the applicant and determines the best storage venue–either the park storage facility or, as needed, a specialized repository, such as the American Type Culture Collection for microorganisms. When proposing a repository, the applicant obtains the repository official's signature on the permit application, demonstrating willingness to house the specimens. When specimens are catalogued, the curator negotiates a loan agreement with the designated repository.

Park staff communicates the curation message to researchers early and often with one-on-one consultations, handouts, an annual orientation, and web access to information on scientific research permits (www.nps.gov/yell/naturescience/researchpermit.htm) and researchers' collections responsibilities before and after collecting (www.nps.gov/yell/parkmgmt/curatorial.htm).

Yellowstone is a pioneer among NPS units in permitting collection of microbiological materials and managing the resulting collections. Research on microorganisms results in unmodified and modified research results that are typically shared with other researchers. The scientific community uses material transfer agreements (MTAs) to document this sharing. Yellowstone completes MTAs when a permitted researcher wants to share research material with a third party for an unrelated investigation. The MTA defines the rights of the provider (NPS) and the recipient's organization regarding the material and future research results. Yellowstone uses MTAs to provide microorganisms and other materials, such as reagents, cell lines, plasmids, vectors, and chemical compounds. Consistent with permit conditions, the material remains federal property.

Acadia National Park

Acadia's scientific collections include specimens and associated records, such as reports, field notes, spatial and tabular data, photographs, proposals, and copies of permits. The total collection is 1.3 million items. Approximately 20% are scientific collections. Acadia also manages scientific collections from 12 other parks in the NPS Northeast Temperate Inventory and Monitoring Network.

Park scientific collections goals are the following:

- Ensure permanent care and organization of park scientific information.
- Facilitate collection of representative voucher specimens for park living resources.
- Provide excellent service to researchers, park employees, and the public seeking to access and use collections.

Annually, approximately 50 permitted studies, the BioBlitz, and the NPS Inventory and Monitoring Program generate specimens. For BioBlitzes, the lead taxonomist, whose permit covers all participants, is responsible for identifying and labeling specimens, and returning representative vouchers to the park. Most specimens are not retained, but are considered consumed during the event. Information on Acadia BioBlitzes is on-line at www.nps.gov/acad/naturescience/bioblitz.htm.

The park provides web-based information on park research opportunities, research guidelines, park-specific permit conditions, instructions on submitting associated documentation, BioBlitz activities, fellowships, and the NPS Research Permit and Reporting System (RPRS). The park-specific permit conditions require that researchers collecting specimens for permanent retention in the park collections contact the park museum technician to discuss collecting responsibilities, such as specimen preparation, disposition, and cataloguing before initiating field work (www.nps.gov/acad/naturescience/researchguidelines.htm).

A museum technician manages the collections, including acquisitions, cataloguing, and daily operations, and coordinates volunteers who are critical to cataloguing, collection organization, and housekeeping. The cultural resource program manager supervises program employees, oversees strategic planning, coordinates budgets and fund-raising activities, and provides back-up support. The chief of resource management administers the permits, coordinating curatorial responsibilities with the museum technician.

Managing collections generated by scientific permits proceeds as follows:

1. Researcher submits research proposal.
2. Resource management staff and permit coordinator review the proposal.
3. Researcher discusses collection outcomes with museum technician or the permit coordinator, or both.
4. Collection outcomes become park-specific conditions in the permit.
5. Museum technician or permit coordinator checks with researcher during and after fieldwork to ensure curatorial responsibilities are met.

Acadia's curation and permitting strategies vary according to circumstances. The researcher's curatorial responsibilities depend on the number of specimens acquired for the park's collection. If fewer than 300 specimens, the park volunteers complete the cataloguing, based on information from the researcher. For larger projects, park staff works with investigators at the proposal stage to ensure that the project budget covers cataloguing costs.

Acadia manages most specimens in the park's William Otis Sawtelle Collections and Research Center, but, under an agreement, the College of the Atlantic manages approximately 6,000 herbarium specimens. Student interns and "Friends of the Herbarium" provide care according to NPS standards.

NPS-funded studies submit two paper copies and one electronic copy of the final report and copies of associated records. Other studies submit two paper and electronic copies of the final report and are requested to submit copies of associated records. Acadia resource managers initiated a system to track project status and deliverables, including voucher specimens and associated records.

Future improvements will focus on coordinating with investigators, streamlining permitting processes, tracking deliverables, mitigating specimen ownership sensitivity, and funding.

South Florida Collections Management Center, Everglades National Park

The South Florida Collections Management Center (SFCMC) manages collections for five parks: Big Cypress National Preserve, Biscayne National Park, De Soto National Memorial, Dry Tortugas National Park, and Everglades National Park. Working with four permit coordinators, the SFCMC staff (one curator and a varying number of museum technicians) coordinates the management of specimens and data collected under research permits in these parks, which, in 2008, issued 153 new and managed 311 active permits. Specimens not consumed in analysis or destroyed remain federal property and become part of each park's museum collection.

SFCMC's scientific collections management strategy depends on integrating its staff into the permitting process, and communicating with the researcher from the time of application through submission of deliverables.

Collectors' responsibilities for specimens and data are stated in a web-accessible document (www.nps.gov/ever/historyculture/sfcmc.htm). These tasks are grouped according to whether they occur during the application process, or before, during, or after fieldwork.

During the application process, this step must be undertaken:

- Contact SFCMC staff by telephone to answer standard questions about the study proposal.

Before collecting, these tasks must be completed:

- Contact SFCMC staff to discuss the project.
- Obtain an accession number from SFCMC staff.
- Obtain cataloguing and labeling instructions from SFCMC staff.

During collecting, the following must be done:

- Collect data important for documenting specimens permitted for permanent retention.

Immediately after collecting, the most important tasks to complete follow:

- Contact SFCMC staff for a block of catalogue numbers.
- Catalogue permanently retained specimens using either an Excel data import/export template, or ANCS+, both provided by SFCMC staff. Follow cataloguing standards in the NPS Museum Handbook and the ANCS+ User Manual (see www.nps.gov/museum/publications/index.htm).
- Complete NPS labels that SFCMC provides or generate them from ANCS+.
- Sign an NPS loan agreement to retain the specimens for study and cataloguing.

One year after final data of collecting, complete the following tasks:

- Submit labeled specimens and original project documentation to the permit-designated repository.
- Submit electronic catalogue records to SFCMC.
- Submit copies of field records on acid-free paper to the permit coordinator's office. SFCMC catalogues field records, not researchers.

The permit coordinator and SFCMC staff must remain flexible to accommodate special circumstances, such as multi-park research permits, and changes in principal investigators.

Clearly stating deliverables in permits and park-specific conditions is critical. Using Excel spreadsheets, SFCMC staff tracks the researcher's progress in meeting the curatorial responsibilities and submitting deliverables. The south Florida parks' basic deliverables are the following:

- A comprehensive annual report (hard and electronic copy).
- Copies of field notes, images, videos, and other documentation.
- An electronic copy of data collected and metadata (see research data reporting require-

ments at www.nps.gov/ever/naturescience/researchdatareporting.htm).
- A list of all specimens/material consumed in analysis, with coordinates of collection sites and results.
- Voucher specimens and associated labels and catalogue records submitted according to SFCMC instructions.

Before importing data from researchers, SFCMC staff verifies data for conformance to ANCS+ standards, and makes corrections while the data remain in Excel.

In addition to specimens housed at SFCMC, specimens are on loan to nonfederal repositories. For example, SFCMC has a cooperative agreement with the University of Florida to manage wet specimens.

SFCMC's strategy for managing scientific collections and data shares the burden of responsibility among the researcher, permit coordinators, and SFCMC. Timely communications and actions on curatorial matters ensure cooperation and efficiency. Future goals involve improvements in issuing permits to park staff, funding cataloguing and labeling for park-initiated research, funding cataloguing for archival documents that non-NPS researchers generate, and tracking loans and deliverables.

Yosemite National Park

At Yosemite, a recently formed interdisciplinary permit team, including the permit coordinator, resource managers, and the museum registrar, is refining its standard operating procedures, affording an opportunity to better integrate curatorial responsibilities. In 2008, the team reviewed 118 applications, approving 108.

Museum guidance under development will achieve the following:

- Create a uniform approach to park permits.
- Describe curatorial requirements, including the requirement for researchers to label and provide catalogue data for permanently retained specimens.
- Attempt to address researchers' needs.
- State preferred techniques.
- Establish deadlines.
- Provide contact information.

Communicating park museum requirements to researchers before they go into the field is essential to ensuring that they capture required data and information in the correct format. When renewing a permit, they need to give a progress report on their curation responsibilities. If the researcher is not meeting requirements, the renewal is jeopardized. When a permit is approved, the museum registrar provides the museum requirements to the researcher via e-mail, copying the co-investigator, permit coordinator, and the park resource manager point of contact.

To comply with museum requirements researchers must deliver the following:

- Catalogue records produced using an Excel import spreadsheet capturing mandatory

data in required ANCS+ formats.
- Hard and electronic copies of data, metadata, field records, two copies of a final report, and other associated records.
- Specimens with NPS labels and museum catalogue and accession numbers.

If the specimens are not to be housed in the park, the permit designates another repository. Although researchers are not directly responsible for loan agreements to repositories, researchers have related responsibilities to facilitate loans. The researcher must accomplish the following:

- Obtain agreement of a repository official, on Appendix A of the permit application, for any repository that the researcher recommends.
- Cooperate with the park to facilitate repository loan negotiations during the life of the project.
- Deliver specimens to the repository, or otherwise assist the park in completing the repository loan within one-year of the project's termination.

Yosemite is finalizing this museum guidance, gaining concurrence from the permit team and resource management staff, and planning a field test in 2009. Guidance will be posted with permit information on the park web site (www.nps.gov/yose/parkmgmt/businesswithpark.htm) and on the RPRS web site (https://science.nature.nps.gov/research/ac/parks/ParkInfo).

Future challenges include refining procedures based on feedback; improving final product completeness, customer service, and communication; and developing ongoing repository relationships. Learning new procedures burdens both researchers and park staff, but if the museum registrar is successful in establishing good communications, researchers become informed participants early in the process, and all parties are vigilant in tracking deliverables, the challenges will have been met.

Summary

Parks managing scientific specimens and associated records resulting from research and collecting activities have common requirements reflecting NPS policies, procedures, and permit conditions. How parks organize to meet these requirements varies depending on circumstances. Staffing, workload, expertise, availability of partners and volunteers, geography, park mission and research goals, outside research interests, funding, and other factors shape park strategies for managing scientific collections. Whatever the process, clear, early, and ongoing communication among the permit coordinator, the museum staff, the researcher, and designated repositories is critical to initial and long-term preservation of scientific collections and associated data for public benefit.