Ownership of Natural Resource Specimens as a Pitfall in Effective Research

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The issue discussed here is straightforward: Who can own scientific specimens collected from U.S. national parks under research permits? Must all specimens and samples remain the sole property of the U.S. government or can they become the property of another museum or institution? This question has been addressed by various National Park Service (NPS) guidance documents[1] that clearly answer "yes," they must remain federal property. But this answer is not simple to implement and has never been definitively asserted in law or court rulings. This paper explores the effects of requiring ownership on the management of scientific specimens. The opinions expressed herein are strictly those of the author, and do not necessarily reflect official NPS policy or opinions.

What is the current NPS approach to specimen ownership? During the last 20 years, NPS has developed increasingly strict policy interpretations that ownership of specimens collected under scientific permit and permanently retained in collections or displays must remain the property of the NPS.[2] This policy is based upon one sentence in the regulations[3] that control the issuance of research permits and has caused extensive disagreement among NPS staff, scientists, and museum professionals. The uncertain meaning and intent of the regulation appears inadequate to base a far-reaching and precedent-setting policy upon: that scientific collections must remain inalienable federal property!

NPS has not always had this policy interpretation on ownership. In the first half of the 20th century, NPS was pleased to be the recipient of scientific research in remote parks where little funding existed to purchase the efforts of scientists.[4] Permission to collect specimens was granted in a letter, and many repositories throughout the United States have numerous specimens from these early years of discovery. In 1942, a solicitor's opinion on a new directive dealing with permits ruled that only employees of NPS could collect wildlife in parks.[5] This ruling caused disruption of many research projects. It would take some 34 years to finally correct this problem with the publication of new regulations in 1976.[6] Throughout this period specimens were transferred to outside repositories.[7] In 1982, the permit regulations were opened for revision, and staff of the natural science division of the Washington Office (including the author) recommended revised language based on efforts to upgrade NPS scientific curation.[8] This draft language was greatly reduced from a paragraph that described the desire to track specimens and their data to a single sentence—one that is open to a wide range of interpretation.

Is there a problem? The lack of resolution on this issue has caused controversy between parks and other scientific partners, professional societies, and repositories, and its variable implementation across NPS interferes with the effective use of science to increase our knowledge of park ecology. Numerous complaints have been received[9] about how the policy of specimen ownership is burdensome and counter-productive. The policy clearly creates difficulties in fulfilling goals in NPS's self-proclaimed "new era of 'parks for science' and 'science for parks'" in which the agency says "it welcomes researchers to explore the national parks as unparalleled living laboratories."[10] NPS stands alone in its approach (within the United States, at least) that all natural resource specimens must, in effect, remain inalienable federal property, and this stance runs headlong into standard practices of other state and federal agencies.

Why is there a need for a new policy analy-

sis? The continued uncertainty and increasingly highly visible conflicts created by this issue suggests that sooner or later it will become embroiled in a court case or legislative action. Even without a legal challenge, we are open to being charged for the cost of storage and preservation of NPS collections in outside repositories. Once money is needed up front, fewer collections will be preserved to save on limited funds. We need to define what outcomes are in the best interests of the parks, science, and the public. By understanding how we want research specimens managed, we improve the chances that the outcome will better meet our needs and be consistent with the NPS mission. If we analyze the costs and benefits of various approaches, we can maximize best management practices through effective policies and procedures.

NPS Collections

NPS maintains natural resource collections as part of its national catalogue of museum property.[11] These museum specimens are preserved in perpetuity, whether housed within a national park or loaned to an outside repository for storage and use. When NPS insists that all collections remain government property, it runs the risk that it is discouraging specimens from being permanently retained. If specimens are loaned as NPS property, outside repositories may require that we pay storage and processing fees, currently in the neighborhood of $50 to $500 per cubic foot. These costs, once invoked, will result in some collections being transferred to cheaper alternatives (frequently, substandard storage).

NPS currently has very limited in-house capacity to store and curate natural resource collections, very few scientifically trained curators, and little infrastructure to support specialized collection needs. While our capabilities have greatly improved over the years, and additional improvements can be expected, it will be many decades (at best) before NPS has substantial capacity to care for large numbers of natural resource collections. Large and complex specimens, such as the blue whale from Golden Gate National Recreation Area seen in Figure 1, have been lost to science due to limited staff expertise. There is virtually no capability to store specialized collections such as frozen collections, specialized wet fluid, and living collections. Without the cooperation and partnership of universities, museums, and repositories, NPS will be obligated to pay for the storage and curation of these important materials, or they will increasingly not be collected and preserved at all. Recently, major natural history repositories such as the University of Nebraska Museum, the Museum of Northern Arizona, and the San Diego Natural History Museum have closed or curtailed operations due to budget cuts and staff storages.[12] The ability of NPS to find high-quality storage at little or no cost to the agency may be rapidly disappearing.

Quid Pro Quo[13]

A long-standing practice has been for scientists to obtain permits from federal and state authorities to research and collect specimens, along with any necessary landowner permission. Upon completion of the project, materials collected may be consumed during research, discarded, or preserved. If specimens or samples are preserved, they are deposited in a museum or university where they become the property of that institution. The services of the repository in documenting and storing the specimens far outweigh, in real dollars, the average value of the specimen itself. This "quid pro quo" reflects an exchange of value between the two parties without any direct payments being required. In some instances, scientists transfer specimens to other specialists to enlist their aid in describing or further studying the specimens, and in exchange allow the consulting scientist to retain specimens for his or her institution as a form of compensation for his or her time, but even more as a way to diversify and strengthen the holdings of other repositories. The scientific data and analysis associated with collections are as important, and often more important, than the specimens themselves. Access to the information gained is the primary benefit most land management agencies seek. As long as the specimens are well preserved and available for public access, the agencies gain a sub-

Figure 1. Author in underground World War II bunker with vertebrae from blue whale *(Balaenoptera musculus)* washed ashore in 1988 and buried for five years on the beach. The lack of monitoring of its buried condition and its subsequent cleaning led to a loss of bone stability and a crumbling specimen.

stantial benefit through repository ownership. These practices are the standard practices that other federal and state agencies, including those in the Department of the Interior, use to encourage and regulate scientific collecting.[14]

Ownership Explored

The resources within NPS lands, where owned by the federal government, are federal property of the United States, held in trust for the people. The living communities and non-living elements—rocks, soil, air, water, and so on—that make up parks are in a state of dynamic flux. Nevertheless, ownership of this property resides with the landowner, the National Park Service.

What is ownership? To own something is to have legal title or right to something. Mere possession is not ownership, and ownership is said to be a "legal title coupled with exclusive legal right to possession."[15] This discussion centers on the ownership of property, which is a concept that is inseparable from laws and the legal system:

> Property is commonly thought of as a thing which belongs to someone and over which a person has total control.

> But, legally, it is more properly defined as a collection of legal rights over a thing. These rights are usually total and fully enforceable by the state or the owner against others. It has been said that 'property and law were born and die together.' Before laws were made there was no property. Take away laws and property ceases. Before laws were written and enforced, property had no relevance. Possession was all that mattered.[16]

For moveable property, such as scientific specimens, the collection of legal rights include possession; the ability to decide on the location and storage conditions; the right to determine uses, both private and commercial (assuming, of course, that these uses are within the law); the ability to alter, disassemble, add to, and even destroy all or part of the property; and finally, the right to convey title through gift or sale. There are many other rights and abilities that come with ownership, and many forms of use that do not convey ownership, such as rentals, leases, and loan agreements. The process of conducting scientific research under permit in national parks involves granting scientists some, although not all, of the rights of ownership. A set of rights are granted that makes the ownership question not an "all or nothing" proposition. This implies that a functional co-ownership relationship exists that current policy does not address.

Specimen Collecting in Parks

Specimens and samples are collections made from the living and non-living materials that make up the natural resources of our national parks. Plants, mammals, rocks, water, insects—all these and more are the basic materials that parks are established (in part) to protect and preserve. Permission to collect scientific specimens is granted to qualified institutions and individuals after they apply using a standard application.[17] A thorough review and evaluation of the proposed work must find the proposal to be consistent with the park's mission, a benefit to science and society, and within acceptable limits of any negative impacts or effects before a permit is issued.

During the process of conducting scientific research, a series of activities occur that affects the possession, treatment, and disposition of specimens. When a scientific permit is issued that involves collecting, the permit grants researchers permission to conduct activities not authorized for the general public. The permit review process assesses the effect of the collecting on the environment and the species, and evaluates any potential effects against the benefit to NPS and science. The same is also true for non-living materials, although geological systems require a different set of considerations than do living biota. Once removed from the park, the specimens are no longer part of the natural resource base of the park. NPS defines the natural resource specimens as museum property managed under its cultural resource program.

Collecting activities may generate specimens far in excess of needs for the research (e.g., the use of insect traps or fish nets). These excess specimens may be discarded on site or in the laboratory. Specimens may be brought to laboratories and subjected to methods of analysis, such as dissection or chemical analysis, that may destroy the specimen. Specimens may also not fit the protocols established for permanently retained specimens and may be discarded after analysis. If the specimen is intended for permanent preservation, it will be processed, labeled, and documented. It is at this point that NPS policies currently state that the specimen must remain federal property.

The process of collecting and research has a direct link with the rights of ownership of the specimens. The ability to collect and/or kill the specimen is one that is granted by the scientific permit. The right is given to possess the specimen and transport it to a location outside the park. The researcher is allowed to alter, divide, and chemically treat the specimen during the research, and even allowed to destroy the specimen (even if we request that we be contacted first). After this long series of activities and decisions involved with property rights occur, then, and only then, and only

in cases where the specimen is preserved, does current policy require ownership of this property. The scientific research and collecting process involves a shared set of rights of ownership and property, and their complexity suggests that legal analysis is required beyond the abilities of the natural and cultural staff that have developed these policy interpretations so far. Without legal clarification, the current policy interpretation—that we have no right to convey ownership—creates restrictions on our ability to pursue the best management practices that encourage the development and preservation of the largest number of high-quality scientific specimens from our national parks.

Inalienable Property

There are certainly some benefits that accrue to the people of the United States by following the policy of making all scientific specimens into inalienable federal property. The full rights of ownership are retained, allowing for their use to benefit science and the management of national parks in such ways and at such times as determined by the people's representative government. At the same time, there are a number of reasons for not pursuing such a policy interpretation as being in our best interest.

Specimens taken for scientific research are not the only way that natural resources are moved, altered, or collected in national parks, and are not even the way the majority of park resources are altered or moved. Parks are visited by millions of people who have legal fair use of the parks when they hike, swim, move surface rocks and soils, and, where permitted, fish, hunt, collect firewood, berries, seashells, and conduct many activities that affect natural resources. Parks also maintain and develop roads, power line clearances, drainage ditches, rock wall riprap, bridges, and numerous other ground-affecting activities.

Of course, not all natural resources are permanently located within a park: there also is the effect of their dynamic ecosystem properties. Water and sediments flow into and out of parks, animals migrate, birds travel long distances, and even some plants and especially their seeds can be mobile. And of course living individuals die and are replaced on regular cycles. Natural resources are a form of dynamic property, quite unlike real or personal property (such as land, buildings, equipment) that are carefully tracked and accounted for as government property. The conclusion is that a policy of inalienable property would be in effect only for those natural resources turned into museum property—a category of property resulting from actions that are a tiny minority of the activities that affect natural resource property, creating a split in our view of natural resources. Such a dichotomy would stand in strong contrast to other inalienable property, namely archeological artifacts, which represent a consistent approach of preservation and ownership in perpetuity.[18] If natural resource specimens are to remain inalienable property, much work remains to clarify why natural resource specimens must remain federal property while similar organisms and geological resources are managed separately and with much greater flexibility.

A Vision for the Future

Within a legal framework, we need to define goals that maximize the contribution of scientific specimens to the protection of resources, the gaining of knowledge that benefits society, and the mission of the National Park Service. Any policy direction should be analyzed against a vision that would include maximizing the geographical, spatial, and taxonomic representation of specimens from national parks that are collected with scientific rigor, have the highest-quality data, and are well curated and preserved. There will be great costs associated with achieving such a vision, and there are almost limitless biological and geological resources under our care. Any policy that creates obstacles to these goals needs to ensure that the benefits outweigh the costs.

I've seen many instances where scientific partners and institutions refuse to accept specimens on loan in lieu of ownership. After more than 20 years, I'm still waiting to see a case where ownership allowed us to recover, study, or otherwise benefit in ways that non-

ownership would not allow. This paper concludes with a call for action that would bring together scientists, partners, curators, and legal and policy experts to address the issues raised here and in numerous other documents and forums.

Endnotes

1. The NPS Museum Handbook, Part II, states: "The NPS must accession specimens collected under 36 CFR [Code of Federal Regulations] 2.5g." "Accessioning is the process of officially accepting items into National Park Service (NPS) museum collections. Accessioning establishes legal custody and ownership." In the NPS Research Permit and Reporting System, the general conditions for all permits state: "Collected specimens that are not consumed in analysis or discarded after scientific analysis remain federal property. The NPS reserves the right to designate the repositories of all specimens removed from the park and to approve or restrict reassignment of specimens from one repository to another. Because specimens are Federal property, they shall not be destroyed or discarded without prior NPS authorization."
2. The Museum Handbook, Part II, states that "the NPS must accession specimens collected under 36 CFR 2.5g. The collector must give you information for accessioning the specimens. You must assign an accession number to the collection, and give the number to the collector. Assign one accession number to each project, and accession the specimens as a field collection."
3. 36 CFR 2.5 Section (g)(1) reads: "Specimens placed in displays or permanent collections will bear official National Park Service museum labels and their catalog numbers will be registered in the National Park Service catalog."
4. R. Sellars, *Preserving Nature in the National Parks: A History* (New Haven, Conn.: Yale University Press, 1997).
5. J. Bayless, "Regulating National Park Service research and collecting: a fifty-year search for a legal, flexible, and standardized approach," pp. 418–422 in *On the Frontiers of Conservation: Proceedings of the 10th Conference on Research and Resource Management in Parks and on Public Lands*, ed. by D. Harmon (Hancock, Mich.: The George Wright Society).
6. 36 CFR 2.25.
7. "Take, for example, a park's study series of insects ... the park needs to know about them, and this knowledge can only come from thorough, well documented collections. However, the staff may need to keep at hand ... only those insects which are conspicuous enough to excite visitors questions.... All the rest might be more useful in the entomological collections of a nearby university museum. Obviously, this arrangement would save curatorial time and money for the park. All concerned would benefit whether the specimens were on loan from the park or were collected under permit and belonged to an outside museum." R.H. Lewis, *Manual for Museums* (Washington, D.C. : National Park Service, 1976). Quote from p. 8.
8. R. Lewis, "Museum Curatorship in the National Park Service: 1904–1982." See page 205.
9. Examples include "An open letter to Superintendent Martin" signed by 14 geologists, April 1999; numerous verbal complaints made to the author at the Society for the Preservation of Natural History Collections meeting in San Francisco, June 2001; e-mail letter from The Ornithological Council, May 2002.
10. "Parks for science: The National Park Service welcomes researchers"; on-line at www.nature.nps.gov/challenge/brochures/ParksforScience.pdf.
11. Under the authority of the Museum Act of 1955, as revised.
12. L. Krishtalka, "Forum: At natural history museums, the ox is gored." *Museum News*, July–August 2003.

13. Latin for "Something for something," or giving one thing and receiving something in return, often without any formal contract or agreement to do so; that is, with an implicit understanding or tradition.
14. See the U.S. Fish and Wildlife Service's permitting system, on-line at www.fws.gov/. Note that neither permits nor their instructions and regulations discuss ownership of collections, and make no provisions for USFWS ownership.
15. Quote from the legal dictionary on-line at http://dictionary.law.com/.
16. Quote from the legal dictionary on-line at www.duhaime.org/dictionary/dict-p.htm.
17. In 2001, NPS implemented a new on-line permit system called the "Research Permit and Reporting System." Approved by the Office of Management and Budget, this research application process has provisions for the disposition and tracking of any permanent specimens collected under permit. See J. Bayless and N. Henderson, "Research and permit reporting system: the on-line launch is up." *Park Science* 21:1, 39–40 (2001).
18. The Archeological Resources Protection Act states: "[T]he archaeological resources which are excavated or removed from public lands will remain the property of the United States" (Title 16, Chapter 1B, Section 407cc(b)(3)).