



NDSR Project:

## Piloting Workflows and Systems for Long-term Preservation of Born-digital Content from the Wildlife Conservation Society's Education, Exhibit, and Geospatial Analysis Departments

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### *Goal Summary*

The purpose of the project is to assemble a pilot digital archives system for the Wildlife Conservation Society [WCS] Archives, in the process revising the Archives' policies and workflows to better manage digital content and providing recommendations for next steps going forward. To accomplish this, the resident will survey key staff in three WCS departments to ascertain the amount and variety of digital assets they manage, as well as their workflows for creating and using digital content. The resident will compile the results of these surveys, information on typical researcher use cases and reference requests collected by the Archives, and the Archives' draft specifications for a digital content repository. Based on these three data streams, the resident will collaborate with the primary project mentor to select components that can satisfy user needs, the Archives' limitations, and the requirements of the materials identified in the departmental surveys.

The primary project mentor and resident will then assemble those components into a working system, and the primary mentor will use sample accessions from the pilot departments to test its capabilities while the resident revises the Archives' digital policies and procedures based on the findings of these test cases. The resident and primary mentor will work closely throughout the residency to document their work; at the conclusion of the project the resident will report on the results to key stakeholders, mapping out different ways the implemented pilot system might be expanded and upgraded to serve as the basis for an institution-wide long-term digital preservation repository.

### *Specific Objectives*

Phase 1: To Survey staff & Identify assets

- To interview 15-25 key staff members from the WCS Zoo and Aquarium Education Department (Education), Exhibition and Graphic Arts Department (EGAD), and the Mannahatta Project geospatial analysis group to identify the digital assets they manage, as well as their current workflows for creating and using digital content.
- To create a detailed survey based on those interviews that captures the types, formats, extent, software and hardware environments (including storage locations), projected rate of growth, vulnerability to obsolescence, metadata, and estimated archival value of the interviewed departments' digital content, and that also rates that content on whatever additional criteria the resident believes to be useful.

#### Phase 2: To Research tools & Assemble a system

- To work with the primary mentor to identify and select the components of a digital archives management and preservation system based on the requirements suggested by the results of the surveys, preliminary research done by the primary mentor to identify software and hardware tools that could comprise a system, and typical WCS staff and outside researcher use cases provided by the NDSR steering committee (which is composed of WCS's two archivists, including the primary project mentor, and liaisons from each of the surveyed departments, including the second project mentor).
- To work with the primary mentor to assemble a low-cost, sustainable system for accessioning, arranging, describing, storing, preserving, and providing access to digital content, balancing the current capabilities and resources of the WCS Archives against the needs of both the departments' unusual digital formats (e.g. online course materials, AutoCAD files, and geospatial data) and the patrons who use the Archives' materials.

#### Phase 3: To Identify documentation needs & Revise policies and practices

- To identify gaps in existing draft digital policies and workflows based on findings from the primary mentor's concurrent work accessioning and processing sample collections from each of the departments in order to test the capabilities of the pilot system.
- To revise and refine WCS Archives' policies and procedures for the acquisition, processing, management, preservation, and provision of access to digital content in order align them to the new system and bring them closer to generally approved best practices.

#### Phase 4: To Document work & Guide future efforts

- To document the work conducted during the course of the residency project and report on the results to key stakeholders, including the Library & Archives, the rest of the Public Affairs Division, and Education, EGAD, and the Mannahatta Project (as well as the rest of the Global Conservation Division).
- To provide recommendations for different ways the implemented pilot system might be expanded and upgraded to serve as the basis for an institution-wide long-term digital preservation repository, and to project the various resource needs of each of the paths to growth (e.g. increased Archives staff time and/or expertise vs. increased IT support vs. initial and/or ongoing funding for more robust storage architecture and/or a more comprehensive vendor system).

*Timeframe &  
Deliverables*

Preliminary work (Summer 2015):

The resident will enter the project, in a sense, after it is already under way. Over the summer, the project steering committee will meet to select 5-10 staff members from each department to interview, and will schedule the resident's meetings with those employees in advance. Additionally, the primary mentor, Leilani Dawson, will gather all of the policies, procedures, specifications, tool research notes, and other documents pertaining to the Archives' digital materials, compiling them for the resident and annotating them with her preliminary thoughts on where and how they likely fall short of both the Archives' needs and accepted best practices. She will also draft a series of questions for the survey instrument, presenting it to the rest of the steering committee for their review. Meanwhile WCS Institutional Archivist Madeleine Thompson, a fellow steering committee member, will codify typical use-case scenarios based on her knowledge of the needs of internal and external users of WCS's archival materials.

Phase 1 - Months 1-2 (September-October 2015): Orientation and interviews/survey process:

The resident will begin by meeting the project mentors and the rest of the steering committee and becoming familiar with WCS and its organizational structure. The resident and primary mentor Dawson will work together in the first month of the project to refine the draft survey instrument and the interview process. The resident will then interview the pre-selected staff from Education, EGAD, and the Mannahatta Project to determine the type, extent, and status of their digital content, as well as the staff members' digital management, storage, and backup practices. Throughout the period Dawson will review her annotated compilation of the current status of the Archives' digitized and born-digital materials with the resident, paying particular attention to the Archives' current extent and projected growth, its storage and backup procedures, the draft policies and workflows, and the Archives' technical capabilities and resource constraints. (As this phase progresses Dawson will also begin working with the rest of the steering committee to identify surveyed digital content that would be appropriate to transfer to the Archives; see Phase 3 for more detail.)

Phase 1 Deliverables:

A program-by-program spreadsheet detailing the genres and formats of the departments' electronic records and other digital content, the relationship of this material to the departments' paper records, the extent, importance, and vulnerabilities of the various types of material, and the computers, networks, and media on which they reside.

A proposal for a presentation for the 2016 Society of American Archivists annual conference. Throughout the year, the resident and the steering committee will determine what other conference presentation opportunities would be appropriate to pursue, paying particular attention to the 2016 conferences of the Association of Zoos and Aquariums, Mid-Atlantic Regional Archives Conference, Metropolitan New York Library Council, and New York Archivists Round Table.

Phase 2 - Months 3-5 (November 2015-January 2016): Research and assemble a pilot system:

Dawson and the resident will correlate his or her survey findings, Thompson's use-case scenarios, and the Archives' previous research into off-the-shelf tools and/or tool suites to identify a set of components that will work together to meet the Archives' capabilities, researcher needs, and the long-term preservation needs of the digital content identified in the departmental surveys. They will then assemble those components into a pilot system to serve as a low-cost proof-of-concept digital repository prototype.

Phase 2 Deliverable:

A preliminary system for accessioning, appraising, processing, and preserving archival digital content that is scaled to the WCS Archives' current resources and capabilities. (The WCS Library and Archives, with 3.5 FTE staff and several years of flat budgets in a constantly-increasing cost environment, needs a system that can demonstrate its effectiveness and utility with minimal initial investments of time, money, and support.)

Phase 3 - Months 6-8.5 (February-Mid April 2016): Test the pilot system against sample content and revise policies and workflows:

By this phase Dawson and the steering committee will have finished identifying and selecting sample digital content from each of the surveyed departments to accession into the Archives. Using these accessions, Dawson will ensure that the pilot system meets the content's needs and the Archives' capabilities by ingesting and processing the materials according to the principles of the OAIS reference model and other accepted archival standards. Meanwhile the resident will document Dawson's progress, using it and previous findings to revise and refine the Archives' policies and workflows for transferring, appraising, ingesting, arranging, describing, storing, preserving and providing access to digital materials.

Phase 3 Deliverables:

A tested and documented system for accessioning, processing, preserving, and providing access to archival digital content.

One or more fully processed sample collections each from Education, EGAD, and the Mannahatta Project.

Revised workflows and policies for archival digital content (scaled to the Archives' current resources and capabilities).

Phase 4 - Months 8.5-9 (Mid April-May 2016): Prepare and present final report:

In the final phase of the project the resident will prepare a final report on the project and present it to key stakeholders across WCS. The report will both summarize the work that the residency entailed and map out the steps WCS in general and the Archives in particular could take to scale up the pilot implementation based on various resource scenarios.

Phase 4 Deliverables:

Final report on project with roadmap for future expansion and upgrade possibilities.

Presentations at—at a minimum—Public Affairs, Education, EGAD, and Global Conservation staff meetings.

*Resources  
Required*

Primary mentor (Leilani Dawson, Processing Archivist), Secondary mentor (Kim Fisher, Spatial Analyst and Developer), 1 resident

Access to and support of the NDSR project steering committee—composed of Dawson and Fisher, Institutional Archivist Madeleine Thompson, and liaisons from Education, EGAD, and the Mannahatta Project—for ongoing collaboration and guidance. Access to approximately 15-25 WCS staff members (5- 10 per department, depending on staff size and availability) for in-depth interviews.

The resident will participate in weekly Library/Archives meetings, monthly Public Affairs meetings, and WCS Archives Committee meetings (approximately three times per year). The resident will also attend select meetings of the Education Department and the Global Conservation Division, and will be encouraged to attend regular lunchtime talks given by WCS scientists and environmental education specialists from around the world.

A laptop computer and workspace in the Library and/or Archives will be provided for the resident. The resident will also have access to the Archives' existing digital infrastructure, including server space, cloud-hosted content, various backup systems, and machines with peripherals that can read legacy storage media.

*Context*

The Archives of the Wildlife Conservation Society (WCS) documents the history of WCS, a nonprofit established in 1895 as the New York Zoological Society (NYZS). WCS has proven itself as one of the world's preeminent science-based wildlife conservation organizations, managing more than 500 science-based conservation projects worldwide. Furthermore, its substantial record of activities includes opening the Bronx Zoo in 1899, running the New York Aquarium since 1902, and assuming management of the Central Park, Prospect Park, and Queens Zoos in the 1980s. WCS has a long history of groundbreaking projects in the fields of wildlife conservation and zoo and aquarium husbandry, from the reintroduction of the nearly extinct bison across the American West in the early twentieth century to the Society's current "96 Elephants" campaign to protect the African elephant, and from the introduction of cage-less display in the 1941 African Plains exhibit to the flagship immersive environments of the contemporary Congo Gorilla Forest.

The evolution of WCS's current programs can be traced to the earliest goals of NYZS, which was formed in part to preserve wild animals and to encourage the "growing sentiment against their wanton destruction." Today, WCS's mission is to "save wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature." In turn, the Archives preserves and makes accessible the evidence of this vital work.

The staff of the WCS Library and Archives facilitates the research and educational activities of WCS staff and preserves WCS's rich legacy of conservation work. Located at the Bronx Zoo, the WCS Archives' physical collections include approximately 1,200 linear feet of administrative records, field notes, publications, and printed ephemera; 48 paintings, and nearly 3,000 scientific illustrations, architectural records, maps, and other art on paper. Also included in the collections are WCS's extensive historical photograph and film collections, oral histories, scrapbooks, exhibit labels and graphics, souvenirs, and other artefacts.

Over the past ten years the Archives has also found itself acquiring, organizing, and preserving the voluminous digital content produced at WCS. Starting from several small collections of digitized materials and growing to include both legacy media and contemporary email correspondence, websites, datasets, and other forms of electronic records, the digital formats now managed by the Archives present new and complex challenges that require innovative approaches as staff carry forward their responsibility to preserve and share WCS's rich legacy. The Archives has taken concrete steps to meet these challenges, having laid the groundwork for a new era of digital archives through internal advocacy and staff training in the theories and practices of long-term, sustainable digital preservation. In particular, the Archives has begun drafting new policies covering the acquisition, arrangement, and description of born-digital materials, and is revising existing policies—including its mission statement, collection policy, and disaster plan—to account for digitized and born digital materials as well as physical collections. Additionally, staff members have identified the Archives' needs, capabilities, and limitations in order to draft preliminary specifications for a digital repository system.

However, so far this work has been based in the Library and Archives, and while the staff has a good handle on issues such as projected collection growth rates and typical researcher needs, their work has not yet benefitted from direct participation from other WCS departments. In hopes of expanding its perspective, the Archives is collaborating with three departments from across WCS who have shown enthusiasm towards and interest in the Archives' digital program planning.

Zoo and Aquarium Education (Education) provides a variety of services at WCS's New York institutions and beyond, including in-zoo and in-school educational programs, volunteer and docent opportunities for teens and adults, and online teacher training and curriculum materials. Additionally it conducts visitor studies and other research on informal learning and manages the Advanced Inquiry Program, a partially-online MS degree program in biology.

The Exhibition and Graphic Arts Department (EGAD) oversees the complete process of creating the look and feel of WCS's exhibits and other facilities, including planning, graphic and interpretive design, architecture, and construction. The Mannahatta Project is a program under the direction of WCS Senior Conservationist Eric Sanderson, known for his remarkable visions of the New York City of 1609 geo-referenced to today's dense urban environment. The group specializes in combining rich landscape ecology with geospatial data and analysis, especially as seen in their successive Mannahatta, Welikia, and VisionmakerNYC projects.

The wide variety of digital content produced by these departments—including online course materials and research data; AutoCAD and graphic design files; geospatial databases and the web interfaces to visualize the underlying data—largely covers the range of materials the WCS Archives expects to find across the institution. It is thus expected that any system that can handle content from these selected departments will be able to handle whatever is later found in more comprehensive follow-up phases of Digital Archives Program implementation. Indeed, these three departments are working with the WCS Archives to tackle the challenges posed by their diverse electronic records, and hope that in doing so they will make the case for expanding the pilot across the organization.

A National Digital Stewardship Residency will be a key part of this plan, providing the collaboration with a dedicated, full-time staff member who can take the time to survey the three departments, compile detailed knowledge of their staff members' digital content creation and use, and give recommendations on how to mesh the Archives' preliminary work with what is discovered in the departments' digital materials. After making such recommendations, the resident will then work with the Archives-based primary mentor, Processing Archivist Leilani Dawson, to implement his or her findings and assemble a pilot digital repository based on low- or no-cost, primarily open-source tools identified in earlier stages of work. Dawson will work with the resident as an active collaborator throughout the duration of the residency, spending approximately 25-35 percent of her time on the project. Additional technical expertise—especially in the domain of the Mannahatta Project's geospatial materials—will come from the secondary mentor, Spatial Analyst and Developer Kim Fisher. The rest of the project steering committee, liaisons from each of the departments and Institutional Archivist Madeleine Thompson, will also support the resident. Notably Thompson, as the manager of WCS's extensive historical photo collection and as the primary point of contact for reference requests from both internal staff and external scholars, will offer her insight into what types of access the pilot repository will need to support.

While Dawson tests the pilot system against its identified requirements by using it to accession, appraise, arrange, describe, and preserve selected transfers of the departments' materials, the resident will update the Archives' policies and workflows for digital content. The residency portion of the project would end with the resident providing additional recommendations for ways to upgrade and expand the pilot to serve as the basis for an OAIS-compliant repository for all of WCS's digital archives. The Archives would then move on to the next stage of the plan, working to implement those recommendations and create a sustainable Digital Archives Program that will facilitate the acquisition, appraisal, processing, storage, preservation, and discovery of both digitized and born-digital collections. The NDSR project is a critical component in this overall goal of allowing the Archives to continue its mission of preserving and promoting WCS's legacy of saving wildlife and wild places.

With primary missions involving animal husbandry and saving wildlife and wild places from the many threats they face, many zoos and aquariums have been distinctly forward-facing, and have not been as proactive as other museums in documenting their histories, especially of those aspects of their operations that are less directly animal-focused. However, these non-animal records provide important documentation of several topics in the arts, sciences, and humanities, including evolutions in society's attitudes towards animals and nature, the theory and practice of informal learning, the cultural life of cities and suburban areas, and zoo architecture and display. In addition to seeking out opportunities for the NDSR resident to present their work at various conferences for archives and libraries, the WCS Archives hopes to have the resident present at the 2016 annual meeting of the Association of Zoos and Aquariums, thereby sharing his or her efforts with colleagues at other zoos and aquariums who may face the same challenges.

*Required Knowledge and Skills for the Resident*

The successful resident must have a graduate degree in Archival Studies, Library and Information Science, Information Science, or a related field. Additional qualifications include:

- Experience working in an archives
- Interest in and familiarity with digital preservation theory, standards, and best practices, including the OAIS reference model
- Awareness of or ability to research current tools and systems used to appraise, accession, arrange, describe, preserve, and provide access to digital materials
- Creative problem solving skills, sensitivity to capability limitations, and the ability to scale solutions up or down to most effectively manage varied and variable resources
- Demonstrable ability to communicate clearly and effectively in writing, oral presentations, and interviews
- Strong organizational skills and the ability to pay careful attention to detail without losing sight of overall goals
- Ability to work independently and collaboratively as part of a team



*Preferred Knowledge or Skills*

- Experience with digital preservation, particularly born-digital materials and formats
- Familiarity with interview, survey, oral history, or workflow analysis methods and techniques
- Familiarity with metadata standards (PREMIS, METS, MARC, Dublin Core, etc) related to the description and preservation of digital content
- Familiarity with the full lifecycle of archival records management: donor relations, appraisal, accessioning, arrangement and description, preservation, and provision of access
- Familiarity with architecture and design, including experience with CAD software
- Familiarity with or interest in geospatial data and analysis
- Experience using both Mac and Windows computers