



Museums for America

Sample Application MA-260502-OMS-26
Project Category: Lifelong Learning

Sciencenter

Amount awarded by IMLS:	\$259,151
Amount of cost share:	\$259,493

The Sciencenter will launch an exhibition planning project to design a traveling exhibit that offers children and families engaging, hands-on STEM learning experiences centered on birds. The museum will partner with scientific experts, prospective host institutions, and key stakeholders in the birding community to conduct front-end research, develop the exhibition, and create prototype hands-on activities. Exhibit design and graphic design consultants will produce a schematic plan outlining exhibit themes, as well as a plan and strategy for future fabrication and touring. The project team of museum staff members will work with an external evaluator throughout the project to ensure that the exhibition design supports learning goals and visitor engagement. The museum will share the final evaluation report online and through conference presentations, summarizing lessons learned and identifying best practices that can benefit both the Sciencenter and the museum field.

Attached are the following components excerpted from the original application.

- Narrative
- Schedule of Completion

When preparing an application for the next deadline, be sure to follow the instructions in the most recent Notice of Funding Opportunity for the grant program to which you are applying.

NARRATIVE

Sciencenter

Winged Wonders: A Traveling Exhibit on Birds

The Sciencenter aspires to create a hands-on, play-based traveling exhibition focused on birds that will reach children and families across the nation, building key science process skills and fostering a curiosity and appreciation for the natural world. Motivated by the gravity of preparing American youth for the workforce of the future and ensuring every child has access to high-quality learning opportunities, the Sciencenter proposes this two-year participatory design project to plan and develop an immersive, play-focused, 1,200-square-foot birds exhibition, intentionally designed to tour at smaller, remote institutions. This project leverages the Sciencenter's strengths in inquiry-based, hands-on learning, its extensive experience developing and touring traveling exhibitions, and its partnerships with subject-matter experts to address a critical gap in existing natural history exhibitions.

I. PROJECT JUSTIFICATION

Birds are among the most visible and familiar forms of wildlife. Unlike many animals that remain hidden or require travel to observe, birds are present in everyday life, found in backyards, city streets, parks, farms, and schoolyards across the United States. Children often encounter birds long before they realize they are “observing wildlife,” and their constant presence makes them a natural starting point for curiosity and scientific exploration (Bhagwanji, 2016). Birds have long captured our attention through their remarkable abilities and behavior—crows trained to find and retrieve loose change; parrots that can learn and mimic our words; ravens who remember faces; or the iconic “V” of Canadian Geese heading south to signal the coming of winter.

Beyond their scientific relevance, birds hold a meaningful place in American culture and shared experience. The Bald Eagle serves as the national symbol of the United States, and birds appear widely in sports mascots, storytelling traditions, art, and everyday life. Many families share common experiences with birds, whether watching birds at a feeder, noticing seasonal migrations, or listening to birdsong in their neighborhood (Kellert, 1985). Using birds as the central theme, the “Winged Wonders” exhibition will connect children to STEM concepts through familiar phenomena that they and their caregivers already encounter in their daily lives, potentially transforming everyday observations into opportunities for inquiry, experimentation, and deeper scientific understanding.

Project Need: Museums, libraries, and informal learning institutions across the United States face a growing need to provide engaging STEM (science, technology, engineering, and math) experiences that complement classroom learning. As technologies like AI reshape the economy, STEM jobs are growing 3.5 times faster than other fields, and the U.S. may face a shortfall of 1.4 million STEM-qualified workers by 2030 (SIA & Oxford Economics, 2023). Science education for learners of all ages is therefore more important than ever—equipping the American public to navigate an increasingly complex society and preparing youth for the jobs of today and tomorrow (National Academies, 2021). Experts emphasize that sustained investment in STEM workforce development must begin with childhood learning opportunities that build foundational knowledge, skills, and curiosity (Exec. Order. No. 14277, 2025; Lamb, 2025). Informal learning institutions such as museums and libraries will play a critical role in this national response (AAM, 2026; Alexandre et al., 2022). Research shows that early exposure to STEM through engaging, hands-on experiences strongly influences long-term interest and confidence in these fields (VanMeter-Adams et al., 2014). Youth who participate in “free-choice,” out-of-school STEM experiences—such as museum exhibits—are significantly more likely to pursue related activities or careers as adults (Falk et al., 2015). A national survey of museum-going families conducted by the American Alliance of Museums found that 39% of parents and caregivers actively seek STEM experiences at museums to supplement their children's education, citing limited classroom time and resources for hands-on exploration (Wilkening, 2025). Together, these findings highlight both an opportunity and expectation for museums to address educational and workforce needs through experiential STEM learning for youth.

The ability to meet this demand varies widely across institutions. Many smaller museums lack the resources, staff capacity, or infrastructure to develop interactive science exhibitions in-house. Rural informal learning institutions, in particular, often rely on traveling exhibitions and external partnerships as proven strategies to provide high-quality STEM experiences for their audiences (Badger & Harker, 2016; Harker & Badger, 2015). The demand on rural institutions is also significant. Rural areas frequently lack other informal learning infrastructure and rely on regional museums or libraries as the closest available cultural assets (MAAA, 2009). Twenty-seven percent of all U.S. museums are located in small, rural towns (IMLS, 2018).

Taken together, these trends reveal a clear challenge: while families increasingly seek hands-on STEM experiences for their children, many institutions lack the resources to develop such experiences themselves. Traveling exhibitions provide a powerful solution by allowing smaller institutions to offer high-quality, research-based science learning opportunities without needing to invest in costly exhibition development. Despite this important role, many museums lack the capacity to accommodate large, complex installations and the expensive rental fees associated with large traveling exhibitions. Intentionally designing traveling exhibitions that thrive at smaller institutions is therefore essential.

Winged Wonders and the need it addresses were identified through the Sciencenter’s three decades of experience developing and touring traveling exhibitions and ongoing conversations with the informal learning institutions that host these exhibitions. In the past three years alone, more than 53 institutions have hosted Sciencenter traveling exhibitions. This *national touring network* of past exhibit renters includes science museums, libraries, children’s museums, nature centers, colleges & universities, community centers, and other informal learning institutions—from all 50 states, Washington D.C., and Canada. Many of these host institutions, particularly libraries and smaller regional museums, indicate that they depend on our exhibitions to provide new STEM content for their communities. Natural history exhibitions consistently rank among the most-requested topics, especially “anything about animals” and those that promote play-based learning. In fact, the content focus on birds originated directly from renter feedback, which is correlated, if not precipitated, by the recent surge in public interest.

Why Birds: Birding—the act of watching, listening to, and sometimes tracking birds in the wild—has grown rapidly in popularity nationwide, and especially among young people, as detailed in a 2024 report from the U.S. Fish & Wildlife (Carver, 2024). The number of Americans who purposefully observe birds, at home or out in nature, has doubled since 2016. There are now over 96 million birders in the United States, over a third (37%) of the population. Despite birding’s reputation as a pastime for older men, the majority of recent growth is driven by youth and adult women ages 25-59. This increased interest is largely attributed to the COVID-19 pandemic, when lockdowns spurred a boom in nature-based hobbies like “backyard birding” (Leffer, 2025; Randler et al., 2020). However, recent spikes in birding app downloads and proliferation of birding content on social media speak to the role that technology plays in engaging Millennials and Gen Z (Galicza, 2025; Mendenhall, 2024). According to young birders, the hobby provides a source of community, makes them unique, and offers an escape from screens that relieves stress (Sheridan, 2025).

For informal science educators, public interest in birds can be seen as an increasingly relevant and impactful entry point for engaging elementary and middle school-aged children in real-world, hands-on STEM learning (Britton et al., 2025; Herodotou, 2023; Blagden, 2023). Early studies on the benefits of birding in K-12 education have found evidence of its developmental value in enhancing observation and cognitive skills, building scientific knowledge and awareness, and improving language and communication skills (Britton et al., 2024; White et al., 2018). From a developmental standpoint, children’s innate curiosity is easily aroused by the natural world, and young people’s knowledge and interest in animals increases most significantly during ages 6-13, and one study specifically recommends ages 9-12 years as an ideal time frame to capture birding interest (Gurholt & Sanderud, 2016; Pulman, 2023). Birding is also a source of intergenerational bonding, with “parent-children programs” recommended as an ideal format for promoting the transmission of knowledge and interest about birds across generations (Randler & Marx, 2022). However, few traveling exhibitions focus on birds through a hands-on, play-based lens, and those that do prioritize the curation and interpretation of collections, like specimens, art, and photography, over hands-on, experiential learning. This project intends to address this gap by bringing together key stakeholders to design an interactive, play-based exhibit, the kind of environment where children are proven to learn best (Hirsh-Pasek, 2009).

Addressing the Goals of IMLS Museums for America: Perceptions of STEM form early in life (as early as kindergarten), and childhood exposure to STEM is generally the most effective path to lifelong engagement. (Trundle, 2009; SA, 2010). In fact, professed interest in STEM careers by eighth grade is a more accurate predictor of getting a science-related college degree than math or science test scores (Tai et al., 2006). This project will develop the plans for a new traveling exhibition that introduces children and families to STEM topics through intergenerational, experiential learning and discovery focused on birds, a topic of demonstrated and growing public interest (IMLS MFA Objective 1.2). In doing so, this project aims to advance the Sciencenter’s capacity, and ultimately, the capacity of museums nationwide, to spark a lifelong interest in STEM learning.

Advancing the Sciencenter’s Mission & Strategic Plan: The Sciencenter’s Strategic Framework focuses on advancing our mission to “cultivate an engaged community of curious, collaborative, critical thinkers”—responding to a community-identified need for greater access to hands-on science education. This framework defines Science as “a process for

learning sparked by curiosity and powered by exploration.” Designing the “Winged Wonders” exhibition supports several key priorities of this plan: to 1) “provide exhibits and programs that emphasize science process skills and help our community think critically about issues impacting our world;” 2) “create and support a connected learning ecosystem;” and 3) “build strong relationships within our community - local, regional, and national.” Traveling exhibitions such as this are a crucial component of the Sciencenter’s approach to serving all three of these “communities.”

For over 30 years, the Sciencenter has regularly developed, fabricated, and toured traveling exhibitions of all sizes, while creating and maintaining 32,000 sq. ft. of hands-on exhibits in our own galleries. This includes multiple grants from the NSF, NASA, NIH, and IMLS to build innovative, large-scale exhibitions (see attached *Organizational Profile*). The Sciencenter currently maintains a portfolio of eleven traveling exhibitions that advance our mission by engaging millions of children and families across the nation each year. These exhibitions also enable and support our mission through rental fees, which consistently account for 20% of annual Sciencenter revenues. The average lifespan of a traveling exhibition is 10-15 years, so the Sciencenter seeks to replace one aging exhibition every 2-3 years to maintain the quality, newness, and marketability of our exhibition offerings. The planning and designs resulting from this project will lay the groundwork for a future “Winged Wonders” exhibition—furthering the mission and reach of the Sciencenter’s traveling exhibitions program, supporting informal learning institutions nationwide, and connecting the millions of families they serve to engaging, research-based STEM learning through birds.

Who will Benefit: The primary audience for this exhibition planning project is museums, libraries, and informal science education centers that will host the “Winged Wonders” traveling exhibition. These institutions serve as critical hubs for STEM learning, particularly when located in or near rural communities, where access to out-of-school STEM learning is generally limited. Based on the Sciencenter’s 30+ years of touring experience, we anticipate that the future exhibition will visit 30 institutions over its 10-year lifespan, with 3 host sites annually. Design considerations will be made to ensure the exhibition is especially suitable for touring at small- to mid-sized institutions, which often operate with limited exhibit development capacity but play an outsized role in providing local STEM learning opportunities. As there is no universal, field-wide definition for museum “size,” this exhibition will generally target informal learning institutions with fewer than 155,000 annual visitors, fewer than 25 staff, smaller than 37,000 sq-ft, and less than \$1.7M in annual operating expenses (ACM, 2023). The Sciencenter has significant experience in designing flexible traveling exhibits for this use case (NIH #R2EB035479, NASA #NNX16AM22G). These target host institutions have already provided key feedback on possible exhibition concepts, suggested themes, and organizational needs that have informed the project planning (see above, *Project Need*). Potential renters will continue to provide input during front-end evaluation to inform design development.

The ultimate beneficiaries of this planned exhibition are children ages 6-13 and their families, locally, regionally, and nationally. This is the core audience for most science and children’s museums. At the Sciencenter alone, children ages 6-13 represent the largest visitor segment (38% of annual attendance). During its projected 10-year tour, “Winged Wonders” is expected to attract 100,000 visitors annually, totaling 1 million children and families across the nation. However, benefits for local children and families will also occur during the proposed project period as Sciencenter visitors engage in intergenerational, hands-on learning while testing prototypes for the “Winged Wonders” exhibition.

II. PROJECT WORK PLAN

This participatory design project reflects the Sciencenter’s commitment to inquiry-based exploration and our expertise in using evidence-based techniques to develop exhibit learning experiences that improve STEM process skills and long-term interest in STEM. Focused on birds, this project lays the groundwork for a new traveling exhibition for children and families. Over two years (9/1/2026-8/31/2028), the Sciencenter’s interdisciplinary exhibits staff will work closely with a) external evaluators, b) previous renters, c) design contractors, and d) an advisory council of key stakeholders from the birding community to shape the exhibition. Advisors include ornithologists, citizen scientists, educators, youth advocates, conservation associations, and accessibility advocates. This Project Team will carry out this planning grant through four overarching areas of work: 1) Audience & Concept Development, 2) Design Development, 3) Evaluation & Dissemination, and 4) Feasibility Planning. See the attached *Schedule of Completion* for a detailed overview.

Audience & Concept Development: This work will occur primarily during Year 1 of the project and will lay the intellectual foundation for the exhibition. The Sciencenter will convene virtually with the advisory council to conduct front-end audience research focused on children ages 6-13 and their families—what are their perspectives on birds, what resonates with them, and what works/doesn’t work with current exhibitions? Front-end research will include a review of primary research on birding, focus groups with birders and birding advocates, and site visits to advisor locations, such as the Cornell Lab of Ornithology, which recently opened a permanent *Bird Discovery Lab* exhibit in Ithaca, NY, that can

provide valuable visitor insights relevant to this project. During this process, the Project Team will highlight key scientific themes, stories, and interpretive approaches that resonate with children and families while ensuring that the exhibition reflects current ornithological research and inquiry- and play-based engagement practices. The advisory council will be instrumental in incorporating a breadth of audience perspectives early in the project. Additionally, a survey of previous Sciencenter tour locations will collect feedback on visitors' general knowledge and interest in birds, and gather data to inform the exhibition's specifications and dimensions, ensuring it meets the needs of smaller hosting institutions.

Using these insights, the Project Team will establish clear learning goals to guide all subsequent exhibit development. Specific learning goals may include changes such as “visitors are excited about noticing birds in their communities and when they travel,” “visitors use science process thinking to identify birds and observe their behaviors,” “visitors have a greater appreciation for birds,” or “visitors are more informed about efforts to conserve birds and their habitats.” Sciencenter staff and the exhibit design consultant will then develop preliminary exhibit concepts and interactive ideas aligned with these goals. Potential exhibit elements may explore topics such as flight mechanics, habitats, nesting behavior, beak adaptations, bird song, social interactions, or the evolution of birds from dinosaurs. Concepts will also seek to highlight human connections to birds, including cultural traditions, citizen science efforts, and biomimicry-inspired innovations. A promising idea to incorporate U.S. State birds would enable tour locations to personalize the exhibition to their local audience. Early conceptual renderings for *Winged Wonders* have been provided (see attached *Narrative Appendix*, Supporting 1.3). Concept development will culminate in a key milestone: creation of a Schematic Plan. This framework will include: 1) a narrative outline of the exhibit's big idea and themes; 2) a definition of exhibit learning goals; 3) identification of key symbols, imagery, and stories; 4) ideas for major exhibit interactives; 5) conceptual renderings and sketches of exhibit components. It may also include draft floor plans and preliminary cost estimates. This plan will be reviewed and revised with the advisory council before proceeding to design development.

Design Development: In the second major phase, the Project Team will translate initial concepts into detailed exhibit designs while refining the exhibition's interactive components, physical structure, layout, and visual identity. Starting in Year 2, Sciencenter exhibit fabricators will create prototypes of promising exhibit concepts from the Schematic Plan. Prototypes will be tested with children and families at the Sciencenter's museum in Ithaca, NY, and through museum outreach programs facilitated in rural communities (e.g., family science nights at rural elementary schools). This formative evaluation will test for desired outcomes in visitor engagement and achievement of intended learning goals—alongside basic criteria like usability, durability, and safety. The Sciencenter routinely uses iterative prototyping to formatively evaluate and improve exhibit interactives. Museum staff will observe family interactions, conduct interviews, and use other asynchronous tools, such as “targeted prompting,” to gather feedback and improve exhibit interactives.

Sciencenter staff will also collaborate with the advisory council, exhibit design consultant, and graphic designer to establish the exhibition's overall look and feel, including graphic styles, material selection, and spatial layouts. The exhibition is intended to travel to a variety of institutions, including smaller facilities, so the design process will prioritize durability, ease of installation, and adaptability to a range of floor plans. With support from subject matter experts on the advisory council, the Sciencenter will draft exhibition labels and interpretation. In parallel with exhibit component development, Sciencenter educators will identify complementary educational activities and/or potential portable “pop-up” outreach components that could accompany the exhibit, with testing conducted at the Sciencenter and through regional outreach programs. These resources would allow host institutions to extend the exhibition's reach through facilitated programs, community events, and off-site activities. The Sciencenter will also explore sustainable fabrication approaches with this exhibit, including the use of renewable materials and construction methods. This emphasis is intended to 1) reinforce the exhibition's natural history focus, resulting in a more immersive learning environment, while 2) identifying opportunities for cost savings, both in fabrication and in maintaining the future exhibition throughout its tour.

Regular meetings with the advisory council throughout design development will ensure continued feedback on each of these components. During Year 2, the project team will also have an exhibit booth at the Association of Children's Museums (ACM) InterActivity Conference and the Association of Science and Technology Centers (ASTC) Annual Conference to collect feedback on exhibit designs from potential host locations and to promote the future tour.

Design development will result in a clear Exhibit Fabrication Plan, produced through a participatory process with the target audience, intended beneficiaries, and key stakeholders. These final design documents will feature: 1) technical, production-ready drawings with elevations; 2) a final floor plan; 3) a selection of graphic treatments and exhibit labels; 4) a narrative overview of intended visitor experience; 5) technical specifications on materials, colors, finishes, and construction methods; 6) a final cost estimate.

Evaluation & Dissemination: Evaluation will be integrated throughout the project to ensure that the exhibition design effectively supports learning goals and visitor engagement. Sarah Cohn of Aurora Consulting will serve as the external evaluator and will work closely with the Project Team to design and implement the draft evaluation plan (see attached *Narrative Appendix*, Supporting 1.2). As previously discussed, formative evaluation techniques such as interviews and observation will be used by Sciencenter staff during prototyping to assess how well exhibit elements communicate key concepts and engage audiences. Sciencenter exhibits staff are trained and experienced in using these formative methods.

The External Evaluation will focus on two primary areas: 1) an accountability-focused evaluation of the Project Team's effectiveness in a) working towards their intended goals, b) applying a sustainability lens to the exhibition development process, and c) responding to contextual and environmental changes; and 2) a summative evaluation of the project. Both evaluation questions will be supported by observations and interviews with members of the Project Team, including the advisory council. As the design process progresses, evaluation activities will document how the Project Team incorporates feedback, adopts new design approaches, and develops new expertise in designing immersive exhibit environments and using sustainable construction techniques. The evaluator will facilitate reflection sessions with staff and analyze qualitative and quantitative data to assess changes in the team's knowledge, skills, and design processes. The evaluation findings will inform iterative improvements to the exhibition design and provide recommendations for the project's future fabrication and touring phases. A final evaluation report will summarize lessons learned and identify best practices that can benefit both the Sciencenter and the broader fields of museums and informal science education. This summative report and other project findings will be published online through field-wide resources such as MuseumTools.org and the REVISE Center. At the very least, these dissemination efforts will highlight lessons learned about participatory exhibit design, sustainable fabrication practices, and collaborative development with scientific partners.

Feasibility Planning: The final area of work will focus on ensuring that the planned exhibition is financially and operationally feasible. Final design documents will be used to create a Fundraising and Feasibility Plan with detailed cost estimates; funding strategies and prospects; and a business plan for the exhibition, including determining a rental fee structure, tour booking strategy, and fabrication timeline.

Project Risks: Several potential risks could affect the project, and the Sciencenter has developed strategies to mitigate them. One potential risk is that the exhibit concepts may not resonate with broad audiences. The Sciencenter is uniquely positioned to address this challenge because it both designs and tests exhibitions in-house. Staff will conduct extensive audience testing during the design process and incorporate external perspectives through renter surveys, advisory council input, and formative evaluation activities. Another potential risk involves securing funding for the fabrication of the final exhibition after the planning phase is complete. To mitigate this risk, the Sciencenter will develop detailed cost estimates, conduct feasibility and fundraising planning, and begin cultivating funding sources early in the planning process. The Sciencenter has a strong track record of securing federal and foundation support for major exhibition projects, and fundraising for fabrication will be prioritized by the Sciencenter's development staff and Board of Trustees. The proposed project will equip the Sciencenter with foundational resources to create a major traveling exhibition in support of lifelong learning. A third risk is that host institutions may not be interested in renting the exhibition. However, this risk is considered low. Natural history exhibitions have consistently been among the most requested topics in the Sciencenter's traveling exhibitions portfolio, and birding has experienced significant growth in popularity in recent years. Additionally, several institutions have already expressed interest in hosting the exhibition (see attached *Letters of Support*, Supporting 2). By incorporating renter feedback into the design process and ensuring the exhibition's footprint is suitable for libraries and small museums, the project will further increase its appeal to potential hosts.

Project Planning, Implementation, and Management: The project will be carried out by Sciencenter staff, led by *Adrienne Testa, Director of Exhibits & Facilities*. Additional expertise and accountability will be provided by the external evaluator, exhibit design consultant, and advisory council of key stakeholders.

As Project Director, Adrienne will provide overall leadership and guidance to the Project Team and ensure that the planning project stays on schedule and on budget. She will also oversee concept refinement, exhibit prototyping, and evaluation through regular check-ins with the Project Team. Adrienne currently manages all aspects of the Sciencenter's exhibits, including developing both permanent and traveling exhibitions. Under her guidance, the Sciencenter recently completed the development of *Life on the Edge* (NASA #NNX16AM22), a 2,000 sq-ft traveling exhibition about the search for life beyond our solar system and *Engineer. Design. Build.* (IMLS #MA-10-18-0132-18), a 1,500 sq-ft permanent engineering exhibition at the Sciencenter. In advance of this proposal, Adrienne has coordinated communications with existing renters to understand their interests and demands for a new traveling exhibition.

Key members of the Project Team include *Michelle Kortenaar*, *Executive Director*, who will provide insight on strategy and support the Project Director in tracking progress and assuring that all performance measures are met. Michelle has more than three decades of experience managing and directing STEM education programs in informal and formal settings, including 15 years serving in leadership roles at the Sciencenter. *Lucas Fredericks* and *Andy Mansfield*, *Exhibit Fabricators*, will work together to plan, design, and prototype all exhibition components. Together with the exhibit design consultant, they will generate production-ready documents of the final designs. Lucas and Andy have over 35 years of combined experience in developing interactive museum exhibitions, including 6 years working closely with Adrienne to develop new exhibitions at the Sciencenter. *Angela Damery*, *Director of Education*, will support audience and concept development as a professional, informal educator with 12 years of experience. She will also facilitate prototype testing during design development and help Adrienne identify complementary activities to accompany “Winged Wonders.”

This core project team will also be supported by other full-time Sciencenter staff. The *Traveling Exhibitions Manager* and *Traveling Exhibitions Support Coordinator* will assist with exhibit design, offering valuable insight from their experience maintaining and managing the Sciencenter’s traveling exhibits portfolio. They will also support Adrienne in incorporating previous renters’ perspectives in the planning process. The *Education Program Manager* will support Adrienne and the exhibit fabricators in designing exhibit interactives and labels. Together with the *Volunteer Program Manager*, they will also help test prototypes and complementary exhibit activities at the museum and through outreach programs.

Sarah Cohn, *Aurora Consulting*, will be the external evaluator. Cohn has over 18 years of experience in informal education research and exhibit evaluation. The *Advisory Council* will provide expertise on exhibit concepts, programs, and audience engagement. It includes representatives from (7) key stakeholders: the Cornell Lab of Ornithology, American Birding Association (Young Birders), the New York State Ornithological Association, Mass Audubon, Binghamton University Audubon Society, Birdability, and renowned author, artist, and biologist Wenfei Tong (see attached *Letters of Support*, Supporting 2). As the world’s preeminent bird research and conservation institution, the Cornell Lab of Ornithology will be a key advisor on this project, with a larger role than the rest. This includes 1) providing scientific review through concept and design development; 2) sharing ideas and content from its permanent bird exhibits at their Ithaca, NY Visitor Center; 3) supporting label writing, artwork, and other interpretive materials during design development; and 4) helping identify complementary activities and participatory science opportunities to accompany exhibits. Discussions are ongoing regarding the potential to co-brand the exhibit and leverage the Lab’s extensive K-12 educator list, which reaches 30,000 teachers across the U.S. The *Exhibit Design Consultant* will partner with Sciencenter staff to design and develop the exhibit and provide valuable outside perspectives to augment the museum staff’s extensive expertise. They will also be responsible for creating conceptual renderings and sketches of exhibit components and will assist Sciencenter staff in creating the final exhibition designs, elevations, and renderings necessary for production.

Allocation of Time, Finances, Personnel, and Other Resources: The project budget is \$518,644, with \$259,151 requested from IMLS and \$259,493 contributed as cost-share through matching cash funds, volunteers, and in-kind staff time and indirect costs. IMLS funds will be used for materials, supplies, staff time, project-related travel, advisor stipends, contractor costs, and evaluation services.

The Sciencenter’s onsite workshop facilities—including a fully equipped woodshop, metal shop, electronics shop, graphics studio, and paint shop—will provide the infrastructure needed to develop and test exhibit components. This project represents the planning and design phase of a larger exhibition initiative. Because traveling exhibitions of this scale require significant investment, the Sciencenter has intentionally separated the planning phase from fabrication and touring. Once design work is complete, we will pursue additional funding to support fabrication and national touring. The organization’s long history of successfully developing and touring exhibitions demonstrates its capacity to carry the project through its next phase.

Tracking Progress: The Sciencenter will use a structured Performance Measurement Plan to track progress toward project goals. Milestones and deliverables will be monitored through regular internal meetings and progress reports, with monthly check-ins between the Project Director and external evaluator providing additional accountability. Advisory council feedback and staff reflection sessions will be documented and used to guide improvements throughout the design process. Formative evaluation of the exhibition designs, conducted through prototyping, will assess exhibit quality, engagement, and effectiveness in meeting learning goals, with adjustments made iteratively as needed. Project updates will be shared with the community through newsletters and social media, and with the museum field through exhibit booths at national ACM and ASTC conferences for informal learning institutions. By combining internal project

management with robust prototyping and independent evaluation, the Sciencenter will ensure that the project remains on schedule, meets its intended goals, and produces a strong foundation for the future traveling exhibition.

III. PROJECT RESULTS

The overarching goal of this project is to prepare the Sciencenter to fabricate “Winged Wonders,” a new traveling exhibition that will equip the Sciencenter and informal learning institutions nationwide with the capacity and resources necessary to meet the significant demand for hands-on STEM learning in our communities. Project results will benefit three primary audiences: 1) the Sciencenter, 2) informal learning institutions that host traveling exhibitions, and 3) children and families who will ultimately experience the exhibition.

- The *Sciencenter* will expand organizational capacity to design immersive, research-informed traveling exhibitions that advance our mission—locally, regionally, and nationally. Exhibit designs will directly enable the fabrication of a new exhibit. Participatory planning and design will strengthen institutional relationships with key stakeholders in the birding and informal education communities. Museum staff will expand their knowledge and skills.
- *Informal Learning Institutions*—particularly small and mid-sized organizations that serve rural communities—will benefit by contributing to the exhibition’s design, helping shape an engaging learning resource that, once fabricated, will be suitable for their operational needs and ready to meet the demand for STEM learning in their communities.
- *Children and families* will build science process skills and develop curiosity and appreciation for birds—in the short term, with regional families participating in prototyping activities for this project, and in the long term, through the national tour of the “Winged Wonders” exhibition. This project provides the foundation for increasing opportunities for American children and families to participate in intergenerational, play-based STEM learning experiences about topics of genuine interest.

These results directly address the challenge that many museums—particularly small and rural institutions—face in accessing new, high-quality STEM exhibitions due to limited exhibit development resources. We estimate that at least 50 museums and 500 local children and families will participate in exhibit planning and prototyping activities. By investing in a rigorous, participatory design process, the project will ensure that the future exhibition is both educationally effective and feasible for national touring. Ultimately, the learning goals developed through this project will also shape the intended results for the future exhibition and inform desired changes in knowledge, skills, behaviors, and/or attitudes.

Tangible Products: Key project products include: 1) A Schematic Plan, developed during Year 1, outlining interpretive goals, visitor experiences, and core exhibit components; 2) a final Exhibit Fabrication Plan, including production-ready design drawings, technical specifications, and cost estimates necessary for building the exhibition; 3) a Fundraising & Feasibility Plan to ensure the future success of fabricating and touring the exhibition; 4) Evaluation reports documenting prototype testing and lessons learned, which will be shared publicly through field-wide websites; and 5) advanced exhibit prototypes, leftover from testing, some of which may be refined and incorporated into the final exhibition design.

Sustaining Project Benefits: The long-term benefits of this project will ultimately be sustained through the fabrication and national tour of “Winged Wonders.” Building on the design and feasibility planning completed during this project, the exhibition will open at the Sciencenter in Ithaca, NY, in late 2029 for final testing before beginning its national tour in early 2030. Over an estimated ten-year tour, “Winged Wonders” will engage 1 million children and families at 30 institutions nationwide in hands-on, inquiry-based learning that increases knowledge, skills, behaviors, and appreciation for birds and STEM. The Sciencenter’s established traveling exhibition program maintains consistent demand among renters across all 50 states and provides a strong infrastructure for sustaining this impact. Rental fees for the future exhibition will be set at an affordable rate for small to mid-sized institutions.

The project partnership with the Cornell Lab of Ornithology will extend the exhibition’s reach beyond museum walls by connecting visitors with tools like Merlin Bird ID and participatory science projects like eBird, which captures data from over one million dedicated birders to inform conservation and management decisions. These connections will allow young visitors and their caregivers to continue exploring birds in their daily lives, long after leaving the museum, linking exhibit learning experiences with real-world STEM engagement while fostering habits that support lifelong curiosity.

Winged Wonders will offer children and families across the country engaging and memorable experiences with birds that build core science process skills and spark a shared, lasting interest in the natural world.

Winged Wonders: A Traveling Exhibit on Birds

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