Environment and Natural Resources Trust Fund

M.L. 2025 Approved Work Plan

General Information

ID Number: 2025-130

Staff Lead: Lisa Bigaouette

Date this document submitted to LCCMR: June 5, 2025

Project Title: Visualizing Minnesota's Natural Resources with CT-Scanning

Project Budget: $955,000

Project Manager Information

Name: Kassandra Ford

Organization: U of MN - Bell Museum of Natural History

Office Telephone: (920) 366-2243

Email: ford0411@umn.edu

Web Address: https://www.bellmuseum.umn.edu/

Project Reporting

Date Work Plan Approved by LCCMR: June 24, 2025

Reporting Schedule: March 1 / September 1 of each year.

Project Completion: June 30, 2028

Final Report Due Date: August 14, 2028

Legal Information

Legal Citation: M.L. 2025, First Special Session, Chp. 1, Art. 2, Sec. 2, Subd. 03n

Appropriation Language: $955,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota, Bell Museum of Natural History, to acquire a CT scanner, scan Bell Museum organismal specimens, create 3D prints from the scans, and share the data and prints through environmental education and research programs. The CT scanner purchased with this appropriation must prioritize use by and be made available cost-free to other Minnesota-focused researchers for the duration of this appropriation. This appropriation may also be used for equipment, tools, and supplies needed to acquire, install, and use the scanner and print 3D models of scanned organisms. Net income

generated as part of this appropriation may be reinvested in the project if a plan for reinvestment is approved in the work plan as provided under Minnesota Statutes, section 116P.10.

Appropriation End Date: June 30, 2028

Narrative

Project Summary: This project will provide a new and innovative way to obtain and disseminate internal morphology data from the Bell Museum's organismal collections.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

The Bell Museum is the state's natural history museum and stores an invaluable collection of Minnesota biodiversity specimens. Scientists obtain extensive data from these specimens (e.g. genetics, ecology, geography, external morphology) and Minnesota researchers are at the forefront of this research. Information about the internal morphology of organisms has historically been hard to obtain, but modern technology, such micro-CT scanners, allows us to preserve intact specimens and obtain valuable information about internal structures to inform diet, sensory systems, pathologies, and anatomy. We propose purchasing this equipment and housing it at the Bell Museum to increase the scope of Minnesota's scientific efforts, and the state's global research impact. The Bell Museum has existing infrastructure to support a scanner and the frameworks for disseminating the data (Arctos, Minnesota Biodiversity Atlas). Micro-CT scanning generates 3D objects for visualization and printing for hands-on outreach and education experiences. While other university departments have similar types of equipment, they're not accessible to many Minnesota researchers because of the equipments' specifications, availability, and cost. This new equipment will be a scanner dedicated to biodiversity research and will function as a complementary and affordable way to foster collaborative studies on Minnesota organisms, both native and invasive.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

We will take an innovative approach to obtain internal morphology information from Bell Museum specimens using a micro-CT scanner: Nikon XTH 225. A smaller and more powerful version of a medical CAT scanner, a micro-CT scanner performs non-destructive sampling of bones and soft tissue of organisms. These scanners have broad scientific applications and are in high demand, with hundreds of institutions applying for scanners through NSF grants and thousands of relevant publications each year (e.g., #ScanAllFishes, oVert). LCCMR has funded 2D digitization of the Bell Museum's herbarium, but this funding would allow for the 3D digitization of all vertebrate collections for research, education, and outreach. Adding this data to museum databases will improve the accessibility of the Bell Museum collections and each scanner user would expand the impact of LCCMR through citations. There are immediate applications for this data, with confirmed collaborators working on native and invasive species across the state (see list below and supplemental letters of support). The scans would provide additional opportunities for outreach and education through these collaborators. The Bell Museum has the capacity for housing the equipment and relevant data, both through physical space, technical experience, and online repositories for information storage and dissemination.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

This project would effectively double the information capacity of the natural history collection for academic and agency research. Our long-term goals are to scan the entire Bell Vertebrate Collection and ensure the equipment is always available for scanning Minnesota organisms. We aim to scan a minimum of 200 specimens from each Bell collection (Fish, Birds, Mammals, Reptiles & Amphibians, and Plants) for dissemination through museum databases. We anticipate 20 visiting researchers from Minnesota during the award period, connecting the Bell to important statewide projects. Scans and 3D printers will provide teaching material for K-12 educators, Bell exhibits, and statewide engagement events.

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Purchase and Implementation of a new Minnesota Resource

Activity Budget: $695,000

Activity Description:
We will obtain bids from various micro-CT scanning companies, including Nikon and Bruker, to assess which model best fits the state's research needs. The first specimens scanned will be Minnesota organisms from the Bell Museum collections and the LCCMR-funded Salvage Wildlife project. We will create a website to disseminate technical specifications, example scans, and our proposed sustainability model for covering the annual costs. The priority for this scanner will remain focused on Minnesota, with additional scanning projects will provide the necessary funds to cover the annual maintenance fees for repair, troubleshooting, and software updates. During the first year of the grant, the scanner will be free to use and restricted to Minnesota researchers. After the first year of scanning, we will transition to a projected sustainable budget model to obtain $20,000 per year for annual maintenance costs. We will assess tiered fees ranging from $25/hour to $50/hour, depending on the services provided, the researcher's institution, and if the project involves Minnesota organisms. We will continue to keep the machine free for Minnesota-focused researchers for the first two years and longer if we can maintain a sustainable budget.

Activity Milestones:

Description	Approximate Completion Date
Obtain bids for CT Scanner purchase	July 31, 2025
Purchase of CT Scanner	August 31, 2025
Preparation of the physical space for scanner installation	October 31, 2025
Creation of website for dissemination of information and Sustainability Model for CT Scanner use	October 31, 2025
Installation of CT Scanner	January 31, 2026
Maintenance Costs for calendar year (2026)	January 31, 2026
Implement Sustainability Model (begin advertisement of scanner and protocol to request access)	January 31, 2027
Maintenance Costs for calendar year (2027)	January 31, 2027

Activity 2: CT Scanning Minnesota organisms and connection to Museum Databases #ScanMNOrganisms

Activity Budget: $195,500

Activity Description:
The Bell Museum will scan at least 200 specimens from each vertebrate collection and the herbarium during the first two years of the grant and will distribute that data to Arctos and the Minnesota Biodiversity Atlas. We will notify Minnesota researchers about this equipment and its uses in their research, aiming for at least 10 visitors each year of the grant. We already have 27 individuals from 13 universities and institutions who have a strong interest in using this scanner for their research, teaching, and education efforts (see supplementary letters of support). In the first year of our grant we will begin advertising the cost-effective scanning options that will cover the maintenance costs. All data collected from these scans will be shared two ways: online through the museum databases and through physical copies provided to the individual who performed or paid for the scans. We anticipate this data will be used in published academic research, agency work on native and invasive species in Minnesota, and in outreach and education efforts across the state. This will broaden the reach of the Bell Museum and LCCMR, launching the state of Minnesota to the forefront of innovative research.

Activity Milestones:

Description	Approximate Completion Date
Connect Scanning data to museum databases for easy data acquisition (ARCTOS and Minnesota Biodiversity Atlas)	December 31, 2026
Minnesota Researchers Visit and Use Equipment (2026)	December 31, 2026
Upload Bell Museum Year 1 scans to Arctos (2026)	December 31, 2026
Train students through obtaining 100 specimen scans of each Bell Museum Collection (2026)	December 31, 2026
Minnesota Researchers Visit and Use Equipment (2027)	July 31, 2027
Train students through obtaining 100 specimen scans of each Bell Museum Collection (2027)	July 31, 2027
Upload Bell Museum Year 2 scans to Arctos (2027)	July 31, 2027

Activity 3: Expanding the reach of Minnesota's Natural History Collections

Activity Budget: $64,500

Activity Description:

The scans obtained using the micro-CT scanner will be further disseminated through 3D prints of anatomical structures and publicly available files. Several new 3D printers will be part of the Bell Museum's research facilities and will assist with education and outreach tools needed by various partner institutions across the state (e.g., Science Museum of Minnesota, Minnesota Ecological Centers, and the Bell Museum's Statewide Engagement team). The Bell Museum has received several requests from public outreach centers in Northern Minnesota for bone samples from the vertebrate collection for educational purposes. Because of the legal protections associated with some species and the fragile nature of bones, sending 3D prints is a better solution than loaning museum specimens. The scans from Activity 2 can be used to 3D print replicas of these bones for use by these institutions, without any of the issues listed above. These prints can also be used in the organismal courses offered by Minnesota universities and K-12 classrooms across the state. Additionally, the files associated with these prints can be uploaded to open-source platforms for 3D printing, further expanding the reach of the Bell Museum's collections across the world.

Activity Milestones:

Description	Approximate Completion Date
Purchase of 3D printer	January 31, 2026
Installation of 3D printer	February 28, 2026
Establish connection between Minnesota organismal scans and open-source platforms for 3D printing	June 30, 2026
Outreach programs at the Bell Museum and partner institutions (2026)	December 31, 2026
Educational programs at the University of Minnesota - Twin Cities and statewide K-12 classrooms (2026)	December 31, 2026
Outreach programs at the Bell Museum and partner institutions (2027)	July 31, 2027
Educational programs at the University of Minnesota - Twin Cities and statewide K-12 classrooms (2027)	July 31, 2027

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Sushma Reddy	University of Minnesota - Bell Museum of Natural History	Co-PI	Yes
Sharon Jansa	University of Minnesota - Bell Museum of Natural History	Co-PI	Yes
Keith Barker	University of Minnesota - Bell Museum of Natural History	Co-PI	Yes
Nicholas Phelps	Minnesota Aquatic Invasive Species Research Center, Fisheries, Wildlife, and Conservation Biology Department, University of Minnesota - Twin Cities	User/Collaborator	No
Solomon David	Fisheries, Wildlife, and Conservation Biology Department, University of Minnesota - Twin Cities	User/Collaborator	No
Peter Makovicky	Earth and Environmental Science Department, University of Minnesota - Twin Cities	User/Collaborator	No
Samantha Thi Porter	Liberal Arts Technologies and Innovation Services, University of Minnesota - Twin Cities	User/Collaborator	No

Victoria Hall	The Raptor Center, University of Minnesota - Twin Cities	User/Collaborator	No
Alan Mensinger	Biology Department, University of Minnesota - Duluth	User/Collaborator	No
Thomas Hrabik	Biology Department, University of Minnesota - Duluth	User/Collaborator	No
Kurt Illig	Neuroscience Department, University of St. Thomas	User/Collaborator	No
Sarah Boyer	Biology Department, Macalester College	User/Collaborator	No
Kristi Curry Rogers	Biology Department, Macalester College	User/Collaborator	No
Raymond Rogers	Biology Department, Macalester College	User/Collaborator	No
Catherine Early	Science Museum of Minnesota	User/Collaborator	No
Alex Hastings	Science Museum of Minnesota	User/Collaborator	No
Jennifer Lamb	Biology Department, St. Cloud State University	User/Collaborator	No
Matthew Davis	Biology Department, St. Cloud State University	User/Collaborator	No
Andrew Hafs	Biology Department, Bemidji State University	User/Collaborator	No
Takashi Maie	Biology Department, St. Olaf College	User/Collaborator	No
Tony Gamble	Biology Department, Marquette University	User/Collaborator	No

Dean Adams	Ecology, Evolution, and Organismal Biology Department, Iowa State University	User/Collaborator	No
John Stuler	UW Zoological Museum, University of Wisconsin - Madison	User/Collaborator	No
Anna Pidgeon	UW Zoological Museum, University of Wisconsin - Madison	User/Collaborator	No
Laura A Monahan	UW Zoological Museum, University of Wisconsin - Madison	User/Collaborator	No
Brandon Waltz	Biology Department, University of Iowa	User/Collaborator	No
L. Patricia Hernandez	Biological Sciences Department, George Washington University	User/Collaborator	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
Data from this project will be disseminated through multiple strategies. Per the ENRTF guidelines, all products, educational activities, and outreach programs will acknowledge the funding sources and the Environmental and Natural Resources Trust Fund. The trust fund logo or attribution language will be included on print and electronic media, signage, and publications. We have additional plans for the sharing of data and products:
1- create a website with connections to the data, information about technical specifications of the scanner, and the Sustainability Model for usage. This will also include the application for use and annual reports.
2- establish connection between the scanner data and museum databases (Arctos and MN Biodiversity Atlas) to store specimen data and share with other museums.
3- visitors will have access to their scans for scientific research and outreach activities, with the written agreement that this data will be added to the museum databases and funding sources will be properly cited and acknowledged.
4- provide public engagement programs through various partners (Bell Museum's Statewide Engagement team, The Minnesota Science Museum, and statewide ecological centers) to showcase the usefulness of the scanner and the scientific information gained from this project. This will also provide the opportunity for 3D prints to be used for educational purposes.
5- produce an annual report that lists scanning statistics, number of visitors to the facilities, publications associated with the data, and outreach/education events completed. This will be shared with the collaborators and on the website.

6- produce scientific publications based on the data obtained from these scans and the relevant information on the Bell Museum databases.
We hope to use the data obtained from this micro-CT scanner to increase the scope of the Bell Museum collections and broaden the impact of natural history specimens across the state.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?
Our goal is to create a self-sustaining micro-CT scanning facility for long-term research on Minnesota organisms. We can obtain the necessary funds for the maintenance costs of the micro-CT scanner while still providing ample time for scanning Minnesota organisms. We believe this equipment will bring natural history collection data directly into the hands of Minnesota youth through innovative teaching methods and hands-on learning experiences. Researchers can use information from our efforts for their scientific research, broadening the impact of our state. The Bell Museum, with the assistance of LCCMR, can bring science to the public in brand new ways.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Salvaged Wildlife to Inform Environmental Health, Ecology, Education	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 03i	$486,000
Minnesota Biodiversity Atlas - Phase 3	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 03s	$797,000
Northward Expansion of Ecologically-Damaging Amphibians and Reptiles	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 06a	$163,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Research Support 2 employee		Management and Performance of duties associated with CT scanner, including scanning specimens sent to the facility for scanning. Will also train students and users on equipment. 1.5 years of funding at $75k (salary + benefits).			33.5%	1.5		$112,500
Faculty Summer Salary for Project Manager		Research on scanned Minnesota museum specimens during the summer terms during one year of the award			37.1%	0.25		$47,000
Faculty Salary-Summer & AY (Sharon Jansa)		Management of both Research Support 2 position and Graduate Students funded by grant.			37.1%	0.02		$5,100
Faculty Salary-Summer & AY (Keith Barker)		Management of both Research Support 2 position and Graduate Students funded by grant.			37.1%	0.02		$4,100
Faculty Salary-Summer & AY (Sushma Reddy)		Management of both Research Support 2 position and Graduate Students funded by grant.			37.1%	0.02		$4,300
Graduate Student Assistantship		Graduate student assistantships for running the scanner, coordinating specimen loans and scans, outreach efforts, and maintaining the 3D printers. 9 months of 75% funding. Benefits include Tuition ($22.41/hour)			25.1%	0.75		$58,000
Zoological Collections Manager Salary - 10% Annual Salary		Collections Manager position to manage and coordinate scanning of Bell Museum specimens			36.6%	0.2		$22,500

(Angela Hornsby)								
							Sub Total	**$253,500**
Contracts and Services								
							Sub Total	**-**
Equipment, Tools, and Supplies								
	Equipment	Desktop computer, Computer monitor	Necessary equipment to properly run the CT scanner and its relevant software.	X				$5,000
	Equipment	3D printers (Form3Labs printer)	Equipment to print resin models of scanned specimens for outreach, education, and research purposes					$2,500
	Tools and Supplies	3D printing supplies (resin, tanks, etc.)	Equipment to print resin models of scanned specimens for outreach, education, and research purposes					$4,000
							Sub Total	**$11,500**
Capital Expenditures								
		Nikon XTH-225 CT Scanner	Micro CT-scanner for visualizing internal shape of organisms in 3D using x-rays. Annual maintenance contract through Nikon to cover repairs, emergencies, and software associated with the scanner. 2 years of funding. Attached to the updated Work Plan are two images from Nikon, Inc. detailing the two possible Annual Service Contracts available, based on which machine is purchased. After the 1-year warranty, these contracts include annual preventative maintenance, 1 radiation certification, Inspect-X Software updates, parts, labor, and travel expenses. This is continued coverage of parts and labor for the machine after the warranty. This	X				$690,000

			prevent issues with the machine and allows for the machine to work efficiently and effectively.					
							Sub Total	**$690,000**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
							Sub Total	**-**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$955,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Capital Expenditures		Nikon XTH-225 CT Scanner	Information about the internal morphology of organisms has historically been hard to obtain, but modern technology, such micro-CT scanners, allows us to preserve intact specimens and obtain valuable information about internal structures to inform diet, sensory systems, pathologies, and anatomy. This new equipment will be a scanner dedicated to biodiversity research and will function as a complementary and affordable way to foster collaborative studies on Minnesota organisms, both native and invasive. Annual maintenance contract through Nikon to cover repairs, emergencies, and software associated with the scanner. 2 years of funding. Attached to the updated Work Plan are two images from Nikon, Inc. detailing the two possible Annual Service Contracts available, based on which machine is purchased. After the 1-year warranty, these contracts include annual preventative maintenance, 1 radiation certification, Inspect-X Software updates, parts, labor, and travel expenses. This is continued coverage of parts and labor for the machine after the warranty. This prevent issues with the machine and allows for the machine to work efficiently and effectively. **Additional Explanation :** Our long-term goals are to scan the entire Bell Vertebrate Collection and ensure the equipment is always available for scanning Minnesota organisms, beyond the grant time period.
Equipment, Tools, and Supplies		Desktop computer, Computer monitor	Necessary equipment to properly run the CT scanner and its relevant software. The scanner will not function without a desktop computer with approximately 128GB of RAM and a high-quality graphics card. **Additional Explanation :** This equipment is necessary for running the requested equipment and will remain with the micro-CT scanner for the entirety of the computer's lifespan.

Non ENRTF Funds

Category	Specific Source	Use	Status	$ Amount
State				
In-Kind	University of Minnesota	Unrecovered indirect costs (55% of $955,000 UMN direct costs with indirect charged to the first $25,000 of each of three subawards)	Secured	$525,000
			State Sub Total	**$525,000**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**$525,000**

Total Project Cost: $1,480,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: 895b1506-a82.pdf

Alternate Text for Visual Component

The graphic shows current data housed in Minnesota's Bell Museum collections, the missing information (internal morphology), and the Missing Link to obtain that data: a micro-CT scanner (Nikon XT H 225). The graphic shows collaborators who would use the equipment for research purposes, along with our sustainability model....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Letters of Support	406773f1-8b0.pdf
Ford Endorsement letter	12e544bc-4d2.pdf
Example of Annual Service Contract for Nikon XTH225. Describes what is included and cost.	ccd033f4-b2e.jpe
Example of Annual Service Contract for Nikon XTH225 ST. Describes what is included and cost.	06a052a4-fdb.jpe
Budget Supplement: Sustainability Model for Usage	25873126-8c6.png

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

The following were changes from the Draft Work Plan to the Final Work Plan:
Narrative Section:
The project completion date was changed to match the appropriation end date (June 30, 2028).

The changes to the work plan include the following changes to better represent the timeline of the project (see the implementation of the sustainability model for maintenance costs). The total cost of the project was also changed to reflect the amount funded (reduced from $1,062,000 to $955,000). Specific changes are listed below:

General Information Section:
-What is the best scale to describe the area impacted by your work?
Statewide instead of regional (previously all state regions were selected)

Activities and Milestones Section:
-New Activity Budgets
Activity 1) Remains the same = $695,000
Activity 2) Changed to reflect personnel cost changes = $195,500
Activity 3) Changed to reflect personnel cost changes = $64,500

-New Activity Timeline
Implement Sustainability Model (begin advertisement of scanner and protocol to request access) January 31, 2027
Changed year to reflect model being implemented in Year 2

Budget Section:
-Budget Line Items
1) Reduce Technician from 2 years to 1.5 years
2) Reduce KLF summer salary from 2 years to 1 year
3) Add 10% salary of existing personnel (Angela Hornsby) for 2 years
4) Reduce Graduate Assistantship from 12 months to 9 months
5) Reduce 3D printing equipment from $10,000 to $6,500
6) Added details to Capital Expenditures Section: Attached to the updated Work Plan are two images from Nikon, Inc. detailing the two possible Annual Service Contracts available, based on which machine is purchased. After the 1-year warranty, these contracts include annual preventative maintenance, 1 radiation certification, Inspect-X Software updates, parts, labor, and travel expenses. This is continued coverage of parts and labor for the machine after the warranty. This prevents issues with the machine and allows for the machine to work efficiently and effectively.

-Capital, Equipment, Tools, and Supplies
Reduce to 1 (one) 3D printer = $2,500
Reduce supplies for 3D printer = $4,000

-Non-ENRTF funds
Added unrecovered indirect costs to budget, as the University of Minnesota will not receive any indirect costs as a result of this funding. This does not change the overall cost of the funding for LCCMR. Unrecovered indirect costs are $525,000

-Total Budget
Reduced from $1,062,000 to $955,000, per the funding approved by LCCMR.
Total Budget changed from $955,000 to $1,480,000 with the unrecovered indirect costs included.

Attachments Section:
-Added three images:
1) Example of Annual Service Contract for Nikon XTH225
2) Example of Annual Service Contract for Nikon XTH225 ST
3) Photo with the Sustainability Model for Usage to be implemented during Year 2

Dissemination Section:
-Dissemination Plan added

Comments and Revisions:
Additional information about the maintenance plan and annual service contract were added to the capital expenditures section of the budget, along with attachments detailing the price and purpose of the plan.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

Yes

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

N/A

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

Yes

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

No

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF? If so, describe here (1) the source and estimated amounts of any revenue and (2) how you propose to use those revenues:

Yes, During the first year of the grant, the scanner will be free to use and restricted to Minnesota researchers. After the first year of scanning, we will transition to a projected sustainable budget model to obtain $20,000 per year for annual maintenance costs. We will assess tiered fees ranging from $25/hour to $50/hour, depending on the services provided, the researcher's institution, and if the project involves Minnesota organisms. We will continue to keep the machine free for Minnesota-focused researchers for the first two years and longer if we can maintain a sustainable budget. Those fees will only be used to cover maintenance fees for the machine during its lifespan.

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this project:

Dr. Kassandra Ford (UMN-Bell Museum), Jennifer Olson (Bell Museum), Blaine Chaulklin (Sponsored Projects Administration UMN)

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include

competitive bidding and prevailing wage requirements

N/A