



## Inspire! Grants for Small Museums

Sample Application IGSM-245869-OMS-20  
Project Category: Collections Stewardship and Public Access

### Alabama Museum of Natural History, University of Alabama

Amount awarded by IMLS:	\$37,776
Amount of cost share:	\$0

The project description can be viewed in the IMLS Awarded Grants Search:  
<https://www.ims.gov/grants/awarded/igsm-245869-oms-20>

Attached are the following components excerpted from the original application.

- Narrative
- Schedule of Completion

Please note that the instructions for preparing applications for the FY2021 Inspire! Grants for Small Museums grant program differ from those that guided the preparation of FY2020 applications. Be sure to use the instructions in the Notice of Funding Opportunity for the grant program and project category to which you are applying.

## 1. Project Justification

### *Overview and Need*

The University of Alabama Museums, Department of Museum Research and Collections is tasked with preserving and documenting Natural History and Archaeological collections for The University of Alabama. One of the strengths and active parts of the collection is the entomological collection, including over 200,000 specimens, more than 30% of which are cataloged. Among these specimens are three valuable historical collections of Lepidoptera and Coleoptera donated by the estates of Henry P. Loding, Ralph and Ottilie Chermock and J. Manson Valentine. With new leadership within the museums and new staffing in the natural history area, the University of Alabama is poised to reinvigorate natural history collections and to greatly enlarge its contribution to natural history research in the southeast. This goal of the UA Museums is integral in the strategic plan developed in 2017, with the help of Lord Cultural Resources, in which natural history collections play a major part.

The Alabama Museum of Natural History (ALMNH) has identified **The Chermock Lepidoptera Collection** as high priority for rehousing and digitization. This valuable pinned collection has been accessed multiple times in recent years by authors of a book on Alabama butterflies, providing a wealth of data for the butterflies of Alabama, the southeast, and more broadly, the US. We have already devoted much of our limited resources to this collection, but request funding from the *Inspire! Grants for Small Museums* program of IMLS to complete the project.

### *Background*

The ALMNH entomology collections date to the 1910s, starting with Herbert H. Smith, Museum Curator. Although ALMNH mounted collecting expeditions during the 1920s and 30s, significant growth of our holdings occurred when Valentine and Chermock were curators (1949 to 1966). A huge increase of specimens occurred when we received a large donation of Coleoptera from the estate of Henry P. Loding in 1942. After a period without a permanent, active insect curator, the museum recently increased significantly its holdings through a donation of 23,000 vials and specimens of aquatic insects by the current curator, Dr. Milton Ward, and 50,000 specimens (mostly Odonata) from Dr. John Abbott. Overall, our insect holdings include pinned, papered and alcohol preserved collections of terrestrial and aquatic insects primarily from the southeast and western US, with additional holdings from Canada, Central and South America, the Caribbean, Africa and Asia. At present, the capacity of ALMNH to house pinned specimens is 11 Cornell Cabinets and 10 other metal cabinets designed to hold 505 drawers.

**The Chermock Lepidoptera Collection** consists of ~ 30,500 specimens including ~18,500 pinned specimens plus ~12,000 that are papered, all dating from the 1930s - 1960s covering the length of Dr. Chermock's career. Specimens were collected both by Ralph Chermock and Ottilie Chermock. The collection spans the breadth of the US and includes ~875 papered specimens from Costa Rica from the early 1960s. Pinned specimens are currently housed in 178 very old custom-sized, glass-topped display drawers, arranged by taxa across sampling locations to exhibit intra-specific geographic variation. For preservation and curatorial purposes, there is a critical need to replace all of the Chermock display boxes with tight-fitting Cornell drawers. The pinned specimens are well curated and generally well preserved, with associated ID and collection information on the pins.

### *Recent Curation of Chermock Collections*

During the summer of 2019, using a \$10,000 private donation to ALMNH, we purchased 80 Cornell drawers + pinning trays and funded two undergraduate students for 40 h/wk. We accomplished the transfer of ~8,000 specimens to standardized Cornell drawers (Fig. 1) from 73

Chermock drawers (Fig. 2). We imaged ~1,900 specimens. (dorsal and ventral) and digitized the verbatim data along with the transfer of specimens (Fig. 3). We still have ~9,500 specimens to transfer and ~15,500 data records to digitize. We maintained daily records of student progress in all phases of the project. These data inform us as to the quantity of drawers, pinning trays and labor needed to transfer and photograph remaining specimens, as well as to enter collection data. These data also permitted us to identify adjustments to our protocols to better estimate supply and labor needs proposed here.

With a focus on the pinned butterflies, our primary goals for the proposed project are:

- 1) Further stabilize and protect the Chermock Collection by acquiring additional storage drawers and transferring pinned specimens to 200 new Cornell drawers.
- 2) Inventory the collection by digitally imaging both the specimen (dorsal and ventral side) and the associated labels.
- 3) Transcribe verbatim label data to excel spreadsheets.
- 4) Georeference and correct the verbatim label data.
- 5) Place digital imagery and label data in Arctos (<https://arctos.database.museum/alumni.es>). These data are distributed to global platforms like GBIF ([www.gbif.org](http://www.gbif.org)) & IDigBio ([www.idigbio.org](http://www.idigbio.org)) insuring the data are available to the broadest international community possible.



**Figure 1.** Example of reboxed collection into standard Cornell drawers, with unit trays.



**Figure 2.** Example of original Chermock drawer and arrangement of specimens.



**Figure 3.** Student worker, Lauren Henk, in front of digitization station, showing the photographs of both specimens and labels and the addition of barcodes to track specimens.

**Why focus on the Chermock Butterfly Collection now?** The Department of Museum Research and Collections at the University of Alabama Museums is undergoing revitalization. New staff hires, increased investment in collections, and expanded research programs emphasize the need for data and accessibility for researchers and the public. There are two major reasons for focusing on the Chermock Butterfly Collection now.

*1. Research Relevance*

The scientific value of the Chermock Butterfly Collection has largely been ignored and greatly undervalued because of a lack of accessibility. Although this collection is not currently online and only partially digitized, social media and directed outreach efforts towards researchers have brought awareness to the importance of this collection. As an example, Paulette Haywood Ogard and Sara Bright, authors of the 2010 *Butterflies of Alabama*, made several visits to the collection to obtain data for their book. Additionally, the coordinators of the *Alabama Butterfly Atlas* have also examined the Chermock Butterfly Collection (<https://alabama.butterflyatlas.usf.edu>). The last two decades have seen an almost unimaginable increase in avocational entomology, which has in turn directed professional researchers to amass large datasets addressing biodiversity. There is a tremendous opportunity for research on this collection once the data have been digitized.

*2. The Chermock Butterfly Collection is both Scientifically and Historically Significant*

This collection is particularly relevant and high profile because Dr. Ralph Chermock was not only a prolific collector, but also a mentor to the venerable Dr. Ed O. Wilson of Harvard University. Dr. Wilson completed both his B.S. and M.S. at The University of Alabama and, on a recent return trip, had the opportunity to see the Chermock butterflies. Dr. Wilson is perhaps the best-known entomologist in the world, and some of the specimens in the collection were actually collected by him while he attended The University of Alabama under Dr. Chermock. The historical importance and significance of this collection are well understood. The donation we received in early 2019 to initiate re-housing of the Chermock Collection attests to the importance of the collection as viewed by private donors.

**Who and what will benefit from this project?** The groups that will benefit from the rehousing and digitization of the Chermock Butterfly Collection at The University of Alabama include museum and university faculty, staff and students, non-UA researchers and students, and the general public. These collection improvements will allow specimen accessibility for teaching, research, and outreach. Natural history collections usage within the UA Museums has increased substantially over the past 6 years. New courses involving the collection include: entomology, invertebrate zoology, paleontology, naturalist outreach, and a new Museum Studies certification program that all use collections on a regular basis. Making this part of the entomology collection more accessible will benefit UA courses and students.

In its current condition, the Chermock Butterfly Collection is not terribly conducive for research. By properly housing and digitizing this collection, it will demonstrably increase its research potential. Once visible and accessible to potential researchers, the collection will certainly see an increase in activity. The general public will greatly benefit from the digitization, especially imaging, of the collection. Accessibility to images of the collection will allow poorly funded elementary and high school classes from Alabama (in particular) to take a virtual tour of the specimens. In most school districts in Alabama, funding is extremely low, and field trips are very limited. Bringing the collections to the classroom virtually is a more feasible approach and will increase knowledge about Alabama's rich entomological resources to young students. Accessibility will also aid amateur entomologists in identification of their own butterfly finds, which results in greater contributions to the entomological knowledge of the state. There is a strong amateur entomology, and in particular butterfly, community in Alabama.



**How will the project advance the University of Alabama Museums mission?** The project addresses both the mission of the University of Alabama Museums and the Department of Museum Research and Collections, which is to *broaden the knowledge of natural sciences and cultural heritage through collections and quality programs of research, instruction and service*. By rehousing and digitizing the historically significant Chermock Butterfly Collection, we will be able to broaden the knowledge of researchers, students, and the public. It will enhance research and instruction within our university system and the greater scientific community.

This project also fits with the mission of the Department of Museum Research and Collections, which is to *employ current professional museum standards to care for and manage our unique cultural and scientific heritage, preserving it for future generations, while facilitating collections based research and learning for greater public understanding of the region in which we live*. This project will use modern museum standards to preserve an important and historically significant collection for both research and a greater public understanding of the entomology in Alabama, the southeast and the United States as a whole. Students and researchers will be able to search and visualize the specimens in our collections without having to travel to the museum. The general public will have a new resource to learn about Alabama’s rich butterfly fauna as well as the U.S.

**2. Project Activities and Work Plan.** Given our initial experience with re-housing and digitization in summer 2019, we have produced a very focused and well thought out work plan. Initially, we will re-house all of the Chermock Lepidoptera. In summer 2021 we will focus on data entry for the 5,600 specimens transferred, but not digitized, in summer 2019, then pivot to newly re-housed specimens. The table below identifies tasks and predicted progress toward project completion.

**Work plan.**

September 2020-May 2021: In addition to purchasing Cornell drawers and unit trays, we will search for an undergraduate student, ideally with some entomological training, for 10 hrs/week. We will carefully recruit someone who can train and provide a high level of oversight over additional students hired in the summers of 2021 and 2022. The *Student Manager* will learn every aspect of the project, but complete rehousing of specimens in the course of the fall 2020 and spring 2021 semesters (~133 hours).

Summer 2021: The *Student Manager* will be hired 20 h/wk. Two additional undergraduate students will be hired for 20 h/wk each. These three students will focus on image and label photography as well as verbatim label data capture.

August 2021- May 2022: The *Student Manager* will stay on the fall and spring semesters at 10 h/wk, continuing the image and label photography and verbatim data capture.

Summer 2022: The *Student Manager* and two undergraduate students will work 20 h/wk. Upon completion of project, data will be uploaded into Arctos by UA museum staff.

Anticipated progress for transferring 10,500 Specimens, Photographing 15,100 and Recording Data for 15,100 specimens. Numbers in table below represent specimen count.

Task	Fall 2020	Spring 2021	Summer 2020	Fall 2021	Spring 2022	Summer 2022
Transfer specimens to Cornell drawers	10,500					
Specimen photography			7,550			7,550
Data record entry			7,200	350	350	7,200

**Resources Needed for the Project.** We request funds to purchase Cornell drawers and unit trays to properly rehouse the Chermock butterfly collection. These items are archival quality and will bring the collection up to the professional standards they deserve. The remaining requested funds will be used to hire of three undergraduate students to complete the project. Project Director Abbott and Key Personnel Ward will be responsible for overseeing the students. This project will use facilities and equipment in the Department of Museum Research and Collections. The department currently owns a Nikon D7100 and a Canon 7D Mark II camera body, each with a 50mm macro lens. Imaging stations have been setup in a dedicated space within the department which includes both mac and pc computers, professional copy stands and an Ortech Photo-e-Box Plus.

**Tracking progress.** The project goal is to re-house 10,500 butterflies and moths, photograph 15,100 re-housed butterflies and digitize collection data for 15,100 specimens (5,600 butterflies transferred in summer 2019 + 9,500 butterflies). We will set weekly/monthly goals for re-housing and digitization. As we did in summer 2019, we will track progress daily & weekly. Since summer 2019, we have implemented a number of procedures to increase efficiency and curtail potential errors. For example, we will run a python script to automatically rename image files based on the bar-coded catalog number captured with each image. Based on work already completed, plus new efficiency measures, we anticipate one trained student should be able to re-house specimens at a rate of 80 per hour, for a total of 133 hours and finish by May 2021. Similarly, we anticipate rates of specimen/label photography of 13-15 specimens /hour, and data label transcription at 30 records/hour. At this rate, the entire Chermock butterfly collection will be cataloged by August 2022.

**Sharing project results.** Captured information will conform to DarwinCore standards and will be uploaded to our Arctos collections management platform. In Arctos, the data will automatically be shared with different data gathering portals such as iDigBio and GBIF.

**3. Project Results.** The primary results of this project will be: 1) the rehousing of a scientifically and historically significant butterfly collection at The University of Alabama, bringing it up to modern standards, 2) digitization of the collection through image capturing of individual specimens and their corresponding label data, 3) sharing resulting images and data through the Arctos collections platform, and 4) training undergraduate students in proper modern curatorial techniques. We anticipate that when these data are available to a wide audience, multiple publications will result.

**Collections Stewardship and Public Access.** This project perfectly supports the goals of *Collection Stewardship* and *Public Access* outlined in the Inspire! Program. When completed, one of the most historically and scientifically significant butterfly collections in the United States will be conserved and shared with an international community. This project will affect numerous stakeholders, including researchers, on and off campus, three undergraduate student employees learning modern digitization and collections management techniques, and ultimately an international public community of incalculable size that will have access to this collection through Arctos, GBIF and iDigBio. The general public will also benefit in having these butterflies available for viewing in public exhibits and outreach events. We have already created a video for the UA Museums channel highlighting the work we have done thus far, <https://youtu.be/mhFIC-cyvMY> and have plans to produce others.

**Measuring Success.** We will measure the success of our project by: 1) Producing daily/weekly metrics for progress toward re-housing and digitizing specimens and 2) reaching our proposed target of completely rehousing and digitizing the entire Chermock butterfly collection. The metrics we measure will track our progress toward completion of the project and also inform us whether to alter procedures should our progress lag behind expectations.

## Schedule of Completion

TASK	FALL 2020	SPRING 2021	SUMMER 2020	FALL 2021	SPRING 2022	SUMMER 2022
PURCHASE/RECEIVE CORNELL DRAWERS, PINNING TRAYS	█					
INTERVIEW/HIRE/TRAIN STUDENT MANAGER	█					
STUDENT MANAGER REHOUSES COLLECTION AND BEGINS DIGITIZATION AND IMAGING		█				
INTERVIEW/HIRE/TRAIN 2 STUDENT ASSISTANTS		█				
SPECIMEN PHOTOGRAPHY & DATA RECORD ENTRY (2 STUDENTS + STUDENT MANAGER)			█			
SPECIMEN PHOTOGRAPHY (STUDENT MANAGER)				█		
COMPLETE SPECIMEN PHOTOGRAPHY & DATA RECORD ENTRY (2 STUDENTS + STUDENT MANAGER)						█