

## **Introduction to Collections and Research in Natural History Museums**

ZOO6927 Section 1713 (class: 21736)

ANG6930 Section 6F07 (class: 27958)

Instructors: Dr. David C. Blackburn, Dr. Michelle J. LeFebvre

### **General Class Information:**

#### ***Course Summary***

This course will introduce graduate students to research and collections in natural history museums, with a focus on the Florida Museum of Natural History (FLMNH). Each week we will engage with faculty and staff in the Florida Museum of Natural History, including virtual tours of collections, and engage in panel discussions with invited speakers from UF and other institutions on topics related to the operations, management, and use of scientific collections. This course will be conducted entirely on-line.

2 Credit hours

#### ***Course Meetings***

Tuesday, Period 7 (1:55 – 2:45 PM)

Thursday, Period 7 (1:55 – 2:45 PM)

The course will meet twice each week using video conferencing (via Zoom). Readings will be distributed each week by Canvas.

#### ***Instructors***

Dr. David C. Blackburn

Associate Curator of Herpetology  
Florida Museum of Natural History

Email: [dblackburn@flmnh.ufl.edu](mailto:dblackburn@flmnh.ufl.edu)

Office hours: Via Zoom: Tuesday 11:00 AM – 12:00 PM

Dr. Michelle LeFebvre

Assistant Curator of Archaeology  
Florida Museum of Natural History

Email: [mlefebvre@floridamuseum.ufl.edu](mailto:mlefebvre@floridamuseum.ufl.edu)

Office hours: Via Zoom: Thursday 9:30 – 10:30 AM

#### ***Grading and Exams***

Grades will be based on attendance and active participation in all class meetings, including discussions. Students will be expected to do any reading of any course materials before each class; readings will be distributed via Canvas. Before each panel discussion, students will submit two questions based on the readings and/or class discussion with FLMNH faculty and staff earlier in the week. Via an on-line platform, students will then vote on questions to be asked during the

panel discussion. As part of learning about communicating museum-based science to the public, students will complete one term paper (between 3 and 5 single-spaced pages in length) about a topic related to the course, pending approval from the course instructors by 30 October 2020. This paper will be due by our last day of the course on 8 December 2020.

Break-down of grades: Attendance, 30%; Participation, 20%; Weekly Questions, 20%; Term Paper, 30%.

***Attendance Policy***

Students are expected to attend all classes. Absences will be excused with a doctor's note provided within 1 week or if previously arranged with the instructor. If you are unable to connect to the video conference due to technology issues, options will be available to call in and participate by phone.

**Land Acknowledgment:**

The Florida Museum of Natural History respectfully acknowledges that Gainesville, Florida, the primary location of the Florida Museum's Research and Exhibits facilities, and Pine Island, Florida, the location of the Florida Museum's Randell Research Center, are within the ancestral and current homelands of the Seminole, Miccosukee, Potano and other Timucua-speakers, and Calusa, as well as other federally recognized indigenous communities and those currently lacking federal recognition.

The Florida Museum recognizes that portions of our cultural heritage and biological collections are from places with which indigenous communities have long had and continue to have deep and sincere relationships with the landscape and surrounding biodiversity.

## Course Details

### Schedule

#### Week 1:

September 1: Introduction to course; guest: Doug Jones, FLMNH Director

September 3: Panel discussion with current FLMNH graduate students

Guest speakers: Trevor Duke, Johanna Jantzen, Shamindri  
Tennakoon, María Vallejo-Pareja

#### **Assigned Readings:**

Das S, Lowe M. 2018. Nature Read in Black and White: decolonial approaches to interpreting natural history collections. *Journal of Natural Science Collections* 6: 4–14.

Marshall A. 2020. What is a Museum? A dispute erupts over a new definition.

<https://www.nytimes.com/2020/08/06/arts/what-is-a-museum.html?smid=em-share>

Meineke EK, Davies TJ, Daru BH, Davis CC. 2018. Biological collections for understanding biodiversity in the Anthropocene. *Phil. Trans. R. Soc. B* 374: 20170386.

<http://dx.doi.org/10.1098/rstb.2017.0386>

*Other suggested reading:*

Rocha LA et al. 2014. Specimen collection: an essential tool. *Science* 344: 814–815. DOI: 10.1126/science.344.6186.814

Tseng M, El-Sabaawi RW, Kantar MB, Pantel JH, Srivastava DS, Ware JL. 2020. Strategies and support for Black, Indigenous, and people of colour in ecology and evolutionary biology. *Nature Ecology & Evolution*. <https://doi.org/10.1038/s41559-020-1252-0>

Winker K, Withrow JJ. 2013. Small collections make a big impact. *Nature* 493: 480.

2014–2019 Florida Museum of Natural History Strategic Plan:

<https://www.floridamuseum.ufl.edu/wp-content/uploads/sites/12/2017/03/2014-2019-Strategic-Plan.pdf>

Recent Florida Museum of Natural History Annual Report: <https://www.floridamuseum.ufl.edu/wp-content/uploads/sites/12/2019/12/Florida-Museum-Annual-Report-2018-2019.pdf>

#### **Week 2:**

September 8: Public Programs and Exhibits

Guest speaker: Darcie MacMahon (Director, Education & Public Programs)

## September 10: Panel Discussion on Public Programs

Guest speakers: Myriam Springuel (Director, Smithsonian Institution Traveling Exhibition Service); Lisa White (Director of Education and Outreach, Museum of Paleontology, University of California, Berkeley)

### **Assigned Readings:**

Baer K, Wise K. 2014. The role of information design in sparking visitor interest, engagement, and investigation. *Exhibitionist* (Sp 2014): 62–67.

Walker WS. 2013. The universal museum: Shaping cultural exhibition at the Smithsonian. In *The Smithsonian and the Transformation of the Universal Museum*. University of Massachusetts Press, Boston.

*Other suggested reading:*

Wintle C. 2016. Decolonizing the Smithsonian: museums as microcosms of political encounter. *The American Historical Review* 121: 1492–1450.

### **Week 3:**

#### September 15: Vertebrate Paleontology

Guest speaker: Jon Bloch (Curator, Vertebrate Paleontology)

#### September 17: Panel Discussion on Paleontology

Guest speakers: Talia Karim (Collection Manager of Invertebrate Paleontology; University of Colorado, Boulder); Sterling Nesbitt (Associate Professor; Virginia Tech University)

### **Assigned Readings:**

Karim TS et al. 2016. Digitization workflows for paleontology collections. *Palaeontologica Electronica* 19.3.4T: 1–14.

Koch PL, Fox-Dobbs K, Newsome SD. 2009. The isotopic ecology of fossil vertebrates and conservation paleobiology. In *Conservation Paleobiology: Using the Past to Manage for the Future*. The Paleontological Society.

Marshall CR, et al. 2018. Quantifying the dark data in museum fossil collections as palaeontology undergoes a second digital revolution. *Biology Letters* 14: 20180431.  
<http://dx.doi.org/10.1098/rsbl.2018.0431>

*Please also browse:*

iDigPaleo website: <https://idigpaleo.org/>

Member Bylaw on Ethics Statement, *Society of Vertebrate Paleontology*:  
<http://vertpaleo.org/Membership/Member-Ethics/Member-Bylaw-on-Ethics-Statement.aspx>

## **Week 4:**

September 22: Mammalogy

Guest speaker: Verity Mathis (Collection Manager, Mammalogy)

September 24: Panel Discussion on Mammalogy

Guest speakers: Joe Cook (Professor and Curator; Museum of Southwestern Biology, University of New Mexico); Sharlene Santana (Associate Professor and Curator; Burke Museum, University of Washington)

## **Assigned Readings:**

Galbreath KE et al. 2019. Building an integrated infrastructure for exploring biodiversity: field collections and archives of mammals and parasites. *Journal of Mammalogy* 100: 382–393. DOI:10.1093/jmammal/gyz048

Riemer K, Guralnick RP, White EP. 2018. No general relationship between mass and temperature in endothermic species. *eLife* 7: e27166. DOI: 10.7554/eLife.27166

Rowe KC et al. 2015. Spatially heterogeneous impact of climate change on small mammals of montane California. *Proceedings of the Royal Society B* 282: 2014857. <http://dx.doi.org/10.1098/rspb.2014.1857>

## **Week 5:**

September 29: Biodiversity Informatics

Guest speaker: Rob Guralnick (Associate Curator, Informatics)

October 1: Panel Discussion on Biodiversity Informatics

Guest speakers: Ramona Walls (CyVerse, University of Arizona); John Wieczorek (University of California, Berkeley)

## **Assigned Readings:**

Drew JA, Moreau CS, Stiassny MLJ. 2017. Digitization of museum collections holds the potential to enhance researcher diversity. *Nature Ecology & Evolution* 1: 1789–1790.

Nelson G, Ellis S. 2018. The history and impact of digitization and digital data mobilization on biodiversity research. *Phil. Trans. R. Soc.* 374: 20170391. <http://dx.doi.org/10.1098/rstb.2017.0391>

LeFebvre MJ, Brenskelle L, Wieczorek J, Kansa SW, Kansa EC, Wallis NJ, et al. 2019. ZooArchNet: Connecting zooarchaeological specimens to the biodiversity and archaeology data networks. *PLoS ONE* 14(4): e0215369. <https://doi.org/10.1371/journal.pone.0215369>

## **Week 6:**

October 6: Lepidoptera & McGuire Center

Guest speaker: Andrei Sourakov (Collection Manager, Lepidoptera)

October 8: Panel Discussion on Entomology

Guest speakers: Corrie Moreau (Professor, Curator and Director; Cornell University Insect Collection); Jessica Ware (Assistant Curator, Entomology; American Museum of Natural History)

### **Assigned Readings:**

Kharouba HM, Lewthwaite JMM, Guralnick R, Kerr JT, Vellend M. 2018. Using insect natural history collections to study global change impacts: challenges and opportunities. *Philosophical Transactions of the Royal Society B*, 374: 20170405. <http://dx.doi.org/10.1098/rstb.2017.0405>

Short AEZ, Dikow T, Moreau CS. 2018. Entomological collections in the age of Big Data. *Annual Review of Entomology* 63: 513–530. <https://doi.org/10.1146/annurev-ento-031616-035536>

## **Week 7:**

October 13: Ethics & Permitting

Guest speakers: Elise Lecompte (Registrar) and Tom Webber (Collection Manager, Ornithology)

October 15: Panel Discussion with Charlie Cobb (Curator, Archaeology) and Brad Lieb (Director of Chickasaw Archaeology)

### **Assigned Readings:**

Lacey Act: U.S. Fish and Wildlife Service Office of Law Enforcement.  
<https://www.fws.gov/le/pdf/files/Lacey.pdf>

The Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 U.S.C. 3001-3013) <https://www.ecfr.gov/cgi-bin/text-idx?SID=4190db928ef02ce24445b2992b4b6cae&mc=true&node=pt43.1.10&rgn=div5>

Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity.  
<https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>

Graham M, Murphy N. 2010. NAGPRA at 20: Museum Collections and Reconnections. *Museum Anthropology* 33: 105–124. DOI: 10.1111/j.1548-1379.2010.01090.

*Other suggested reading:*

Kansa E. et al. 2013. On Ethics, Sustainability, and Open Access in Archaeology. Decolonizing the Smithsonian: museums as microcosms of political encounter. *The SAA Archaeological Record* September: 15–22.

## **Week 8:**

October 20: Science Communication

Guest speaker: Natalie van Hoose (Science Writer)

October 22: Panel Discussion on Science Communication

Guest speakers: Erin Chapman (American Museum of Natural History); Amy Maxmen (Senior Reporter, *Nature*)

### **Assigned Readings:**

Hayden EC. 2019. More inclusive science journalism is better science journalism. *Undark*. <https://undark.org/2019/10/24/more-inclusive-science-journalism-is-better-science-journalism/>

Nisbet MC, Scheufele DA. 2009. What's next for science communication? Promising directions and lingering distractions. *American Journal of Botany* 96: 1767–1778. doi:10.3732/ajb.0900041

Maxmen A. 2019. Behind the front lines of the Ebola wars. *Nature* 573: 178–183.

Please watch:

<https://www.amnh.org/shelf-life/33-million-things>

<https://www.amnh.org/shelf-life/object-conservation-guts-glory>

Suggested listening, reading, browsing:

Biology of Superheroes podcast: <https://thebiologyofsuperheroespodcast.podbean.com/>

Blog about Alexander Grousis-Henderson, co-founder of Black Birders Week:

<https://www.pbs.org/wnet/nature/blog/alexander-grousis-henderson/>

Urban Nature Research Center, Natural History Museum LA: <https://nhm.org/research-collections/departments/urban-nature-research-center>

## **Week 9:**

October 27: Ichthyology

Guest speaker: Rob Robins (Collection Manager, Ichthyology)

October 29: Panel Discussion on Ichthyology

Guest speakers: Katheryn Maslenikov (Collection Manager, Ichthyology, Burke Museum, University of Washington); Luiz Rocha (Associate Curator, California Academy of Sciences)

### **Assigned Readings:**

Murphy CA, Gerth W, Pauk K, Konstantinidis, Arismendi I. 2020. Hiding in plain sight: historical fish collections aid contemporary parasite research. *Fisheries* 45: 264–270.

Simmons JE. 2014. The history of fluid preservation. In *Fluid Preservation, a Comprehensive Reference*. Rowman & Littlefield, Lanham.

Singer R, Ellis S, Page LM. 2019. Awareness and use of biodiversity collections by fish biologists. *Journal of Fish Biology* 96: 297–306. <https://doi.org/10.1111/jfb.14167>

*Suggested reading:*

Blog on Patrick Campbell, Curator of Reptiles at Natural History Museum, London:  
<https://www.nhm.ac.uk/discover/patrick-campbell-on-being-young-and-black-in-science.html>

## **Week 10:**

November 3: Genetic Resources

Guest speaker: Pam Soltis (Curator, Molecular Systematics)

November 5: Panel Discussion on Genetic Resources

Guest speakers: Logan Kistler (Curator, Archeobotany & Archeogenomics, National Museum of Natural History); Caroline Storer (Assistant Scientist, McGuire Center)

## **Assigned Readings:**

Austin RM et al. 2019. Opinion: To curate the molecular past, museums need a carefully considered set of best practices. *Proceedings of the National Academy of Sciences USA* 116: 1471–1474.

Holmes MW et al. 2016. Natural History collections as windows on evolutionary processes. *Molecular Ecology* 25: 864–881.

Wade L. 2018. To overcome decades of mistrust, a workshop aims to train Indigenous researchers to be their own genome experts. *Science*. doi:10.1126/science.aav5286.

*Suggested reading:*

Ruane S, Austin CC. 2017. Phylogenomics using formalin-fixed and 100+ year-old intractable natural history specimens. *Molecular Ecology Resources* 17: 1003–1008.

Yeates et al. 2016. Museums are biobanks: unlocking the genetic potential of the three billion specimens within the world's biological collections. *Science* 18: 83-88.

## **Week 11:**

November 10: Imaging

Guest speakers: Ed Stanley (Associate Scientist) and Zach Randall (Imaging Specialist)

November 12: Panel Discussion on Imaging

Guest speakers: Heather Richards-Rissetto (University of Nebraska, Lincoln); Diane Zorich (Director of Smithsonian Digitization Program Office)



### **Assigned Readings:**

Niven L et al. 2009. Virtual skeletons: using a structured light scanner to create a 3D faunal comparative collection. *Journal of Archeological Science* 36: 2018–2023.

Richards-Risetto, H. 2017. What can GIS and 3D mean for landscape archaeology? *Journal of Archaeological Science*. 84:10–21.

Sweeney PW et al. 2018. Large-scale digitization of herbarium specimens: development and usage of an automated, high-throughput conveyor system. *Taxon* 67: 165–178.

*Suggested reading:*

Hipsley CA, Sherratt E. 2019. Psychology, not technology, is our biggest challenge to open digital morphology data. *Scientific Data* 6: 41.

Luparell JL, Summers AP, Buser TJ. 2019. Digitizing North America's fishes. *American Currents* 44: 14–16.

### **Week 12:**

November 17: Environmental Archeology

Guest speaker: Nicole Cannarozzi (Collection Manager,  
Environmental Archeology)

November 19: Panel Discussion on Archeology

Guest speakers: Madonna Moss (Curator, Museum of Natural and  
Cultural History, Oregon); Torben Rick (Curator, North American  
Archeology, National Museum of Natural History, Smithsonian)

### **Assigned Readings:**

ArchaeoGLOBE Project. 2019. Archaeological assessment reveals Earth's early transformation through land use. *Science* 365: 897–902.

Murphy C, Fuller DQ. 2017. The future is long-term: Past and current directions in environmental archaeology. *AAA General Anthropology Bulletin of the General Anthropology Division* 24: 1–10.

Riede F et al. 2016. Does environmental archaeology need an ethical promise? *World Archaeology* 48: 466–481.

*Please also browse:*

DINAA website: <http://lux.opencontext.org/archaeology-site-data/>

### **Week 13:**

**\*\*NO CLASS: THANKSGIVING BREAK\*\***

**Week 14:**

December 1: Herbarium

Guest speaker: Lucas Majure (Assistant Curator, Herbarium)

December 3: Panel Discussion on Herbaria

Guest speakers: Charles Davis (Professor and Curator, Harvard University Herbaria); Jenn Yost (Associate Professor and Director, Robert Hoover Herbarium, Cal Poly San Luis Obispo)

**Assigned Readings:**

Kemp C. 2017. *The Lost Species: Great Expeditions in the collections of natural history museums*. Introduction (pp. xii–xxi) and Chapter 23 (pp. 193–198.)

Willis CG et al. 2018. Phylogenetic patterns of species loss in Thoreau's woods are driven by climate change. *Proceedings of the National Academy of Sciences USA* 105: 17029–17033.

**Week 15:**

December 8: Course wrap-up

## University of Florida Policy Statements

### **Grades and Grade Points**

For information on current UF policies for assigning grade points, see:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

### **Absences and Make-Up Work**

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### **Online Course Evaluation Process**

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

### **Academic Honesty**

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Pledge:

*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the university, the following pledge is either required or implied: On my honor, I have neither given nor received unauthorized aid in doing this assignment.*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action.

For more information regarding the Student Honor Code, please see:  
<https://sccr.dso.ufl.edu/process/student-conduct-code/>

### **Software Use**

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator.

Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

### **Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general wellbeing are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
- U Matter We Care, [www.umatter.ufl.edu/](http://www.umatter.ufl.edu/)
- Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

### **Services for Students with Disabilities**

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

0001 Reid Hall, 392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

### **Student Complaints**

Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See <http://www.distance.ufl.edu/student-complaint-process> for more details.

### **Sexual Harassment**

It is the policy of The University of Florida to provide an educational and working environment for its students, faculty, and staff that is free from sex discrimination and sexual harassment. In accordance with federal and state law, the University prohibits discrimination on the basis of sex, including sexual harassment. Sex

discrimination and sexual harassment will not be tolerated, and individuals who engage in such conduct will be subject to disciplinary action. The University encourages students, faculty, staff, and visitors to promptly report sex discrimination and sexual harassment. If you believe you have been subjected to sex discrimination or sexual harassment please report the incident to me or any University official, administrator, or supervisor. The Office of Human Resource Services investigates all complaints. Incidents should be reported as soon as possible after the time of their occurrence (larry-ellis@ufl.edu).