



Teacher's Guide to **STREAMING SCIENCE** — Bats and Beyond

DATE: Thursday, November 15th, 2018
START: 2 p.m. and 4 p.m. Eastern Time
(approx. 45 minutes in length)

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INTRODUCTION

Thank you for [registering](#) to participate in our **electronic field trip (EFT) - *Streaming Science: Bats and Beyond!*** Bats can be found in many places, including from the Caribbean shores of The Bahamas to sunny Florida. What are the benefits of bat research to science? How can bats aid our understanding of the environment? Join us on this *Streaming Science* EFT to meet University of Florida scientists who study these unique mammals, learn about the bat houses on the university's campus, see inside the Florida Museum of Natural History's bat collections, and learn about scientists' current research tracking bat populations in the Bahamas. *Streaming Science* is produced in partnership with graduate students and Dr. Jamie Loizzo in the [Department of Agricultural Education and Communication](#) (AEC) at the University of Florida and scientists with the [Florida Museum of Natural History](#).

No need to schedule transportation, pack a lunch, or even leave your school when you visit us on an EFT. Our scientists interact with your students on a variety of food, energy, water, and people related topics through our live, interactive mobile web-streaming programs. Classes are designed to fit within your schedule, curriculum needs and are aligned with national science standards.

Please use this Teacher's Guide to help plan and prepare for implementing a successful *Streaming Science* LIVE interactive web-stream experience for your students!

SCIENCE EDUCATION STANDARDS

'Bats and Beyond' is intended for middle and high school students and to support Next Generation Science Standards (NGSS) such as:

MS-LS4-4

MS-LS1-5

MS-ESS3-2

MS-ESS3-3

MS-ESS3-4

HS-LS2-6

HS-LS2-7

HS-LS2-8

HS-LS4-1

HS-LS4-4&5

The program also intends to support Florida's Next Generation Sunshine State Standards for Science:

Big Idea 1: The Practice of Science

Big Idea 2: The Characteristics of Scientific Knowledge

Big Idea 3: The Role of Theories, Laws, Hypotheses, and Models

Big Idea 6: Earth Structures

Big Idea 7: Earth Systems and Patterns

Big Idea 14: Organization and Development of Living Organisms

Big Idea 15: Diversity and Evolution of Living Organisms

Big Idea 17: Interdependence

Scientific inquiry and nature of science standards are supported through an introduction to scientists, science careers, and real-world scientific field research.

TECHNOLOGY

At least **two weeks before the LIVE webstream**, work with your school's technology specialist to test your web streaming connection. We will stream the program through online video platform IBM Cloud Video (<https://video.ibm.com/>). You will want to make sure your school's firewall does not block the site.

We will rehearse from 11am-1pm on Wednesday, November 14. You might try connecting to make sure the video and sound will work for you, before the live webcast on November 15.

USE THIS WEBSITE TO CONNECT TO THE 'BATS AND BEYOND' WEBSTREAM:

<http://www.ustream.tv/channel/yfFcNfuEN5n>

○ Room Reservation

Ideally, you will adjust your daily schedule to participate in the LIVE webstream. Treat this like a real-life field trip event, build up the hype with your students, and take time out of the daily routine to meet university scientists through the magic of technology!

Reserve a large enough space for students to participate together. You will also want either:

- a) a couple of laptops at the front or back of the room for students to submit their questions in the web stream window or
- b) laptops/tablets at each individual student’s desk connected to the web stream

○ **Supplemental Materials**

These materials are designed for classroom use before and/or after the LIVE webstream.

- [1] Electronic Field Trip overview information:
<https://streamingscience.com/electronic-field-trips/>
- [2] Bat Background Florida Museum Information:
<https://www.floridamuseum.ufl.edu/bats/>
- [3] Two Florida Museum live Bat-Cams:
<https://www.floridamuseum.ufl.edu/bats/streaming/>
- [4] National Park Service background information about Bats:
<https://www.nps.gov/ever/learn/nature/bats.htm#insertlearning>
- [5] Post a 2-minute FlipGrid video from your students and have them tell us what they know about bats:
<https://flipgrid.com/batsbeyond>
- [6] Research the participating ‘Bats & Beyond’ scientists:
 - [Dr. David Reed](#), Associate Director for Research and Collections and Curator
 - [Dr. Verity Mathis](#), Mammal Collections Manager at the Florida Museum
 - [Lauren Hammer](#), PhD Student, Department of Biology, Florida Museum
- [7] Follow our social media for more materials, tips, and interactivity:
 - a. Facebook: www.facebook.com/StreamingScience (@StreamingScience)
 - b. Twitter: @Streaming_Sci

○ **Recommended Timeline for Using Supplemental Materials**

DAY 1: Pre-assessment
 DAY 2: SUPPLEMENTAL ACTIVITY 1
 DAY 3: SUPPLEMENTAL ACTIVITY 2
 DAY 4: LIVE web-stream
 DAY 5: Post-assessment
 One week later: review scientists’ answers to web-stream questions

—OR—

Back-load Approach

DAY 1: Pre-assessment
 DAY 2: LIVE web-stream
 DAY 3: SUPPLEMENTAL ACTIVITY 1
 DAY 4: Post-assessment
 One week later: review scientists’ answers to web-stream questions

○ **Assessment Procedures and Timeline**

You and your students' participation in the assessment portion of this program will be crucial in helping us further develop *Streaming Science*. We have created a pre-/post-assessment to gauge your students' content learning, STEM engagement, and interest in the program.

When you register for 'Bats and Beyond', please indicate your whether or not you are willing to participate in the assessment. If you indicate 'yes', we will follow-up with an email to you with assessment instructions. Students will be permitted to take the pre- and post-surveys via an online Qualtrics form, and we have a PDF form that can be printed, completed by pencil, and mailed to us. We also have an online post-survey for teachers to complete.

The approximate assessment timeline:

- November 1-2: research study information goes home to parents; parents who do NOT want their child to participate should sign and return forms
- Week of November 5-9: students complete pre-survey online or paper
- November 15: participate in EFT
- November 16 or Week of November 19-23: students complete post-survey
- Week of November 26-30: Teachers complete online post-survey

LIVE WEBSTREAM ARCHIVE (optional)

A recording of your LIVE webstream Streaming Science experience will be available online the following week.

To access the archive video, please visit:

<https://streamingscience.com/bats-and-beyond/>

CONTACT THE STREAMING SCIENCE TEAM

Before the LIVE webstream:

Dr. Jamie Loizzo

Assistant Professor of Agricultural Communication

Department of Agricultural Education and Communication

University of Florida

352-273-1663

jloizzo@ufl.edu | Bryant 121D

November 14 morning rehearsal and November 15 LIVE webstream:

Dr. Jamie Loizzo

cell phone: (402) 405-9293