



# Using Narrative Nonfiction and Content Acquisition Podcasts to Teach Introductory Biology

J. Phil Gibson, PhD

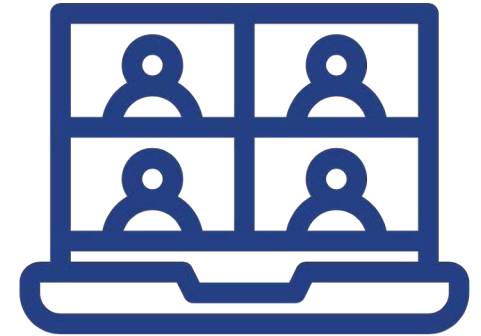
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If you have an additional  
device available, go to  
[menti.com](https://www.menti.com)

# The plan for today.



## Actions

- Overview of educational podcasting
- Evaluate Biology Through Audio (BioTA) Podcast
- Work through an example

## Goals

- Evaluate use of educational podcasts.
- Consider how you could use podcasts
- Discussion, brainstorming, and sharing ideas
- **Working group?**

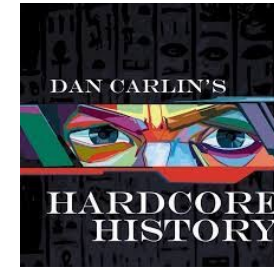
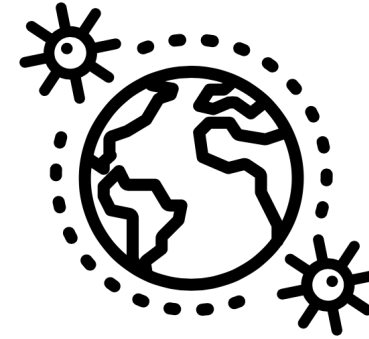
Menti poll: Go to [www.menti.com](http://www.menti.com) and use the code **TBA**

There will be 2 poll questions today.



# Why podcast?

- **Economic Botany assignment**



Survey of Introductory Biology Students' Opinions on the Pandemic Transition to Crisis Distance Education

J. Phil Gibson, Kristen K. Shelton

JCST, 2021: 12-18.

# What is a podcast?

- Personal On-Demand audio device
- Broadcast like radio using RSS 2.0 technology

## Audio Only

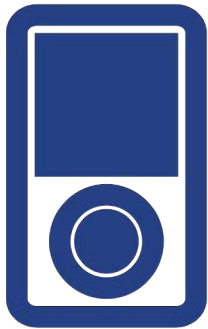
- Not vodcasts (short video) or enhanced podcasts (slide show)

## Intentionally designed media

- Not a Lecture Recording (aka Profcast)

## Engaging audio experience

- Not an audiobook

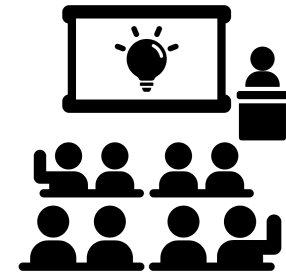


iPod + broadcast = Podcast

# Why podcast?

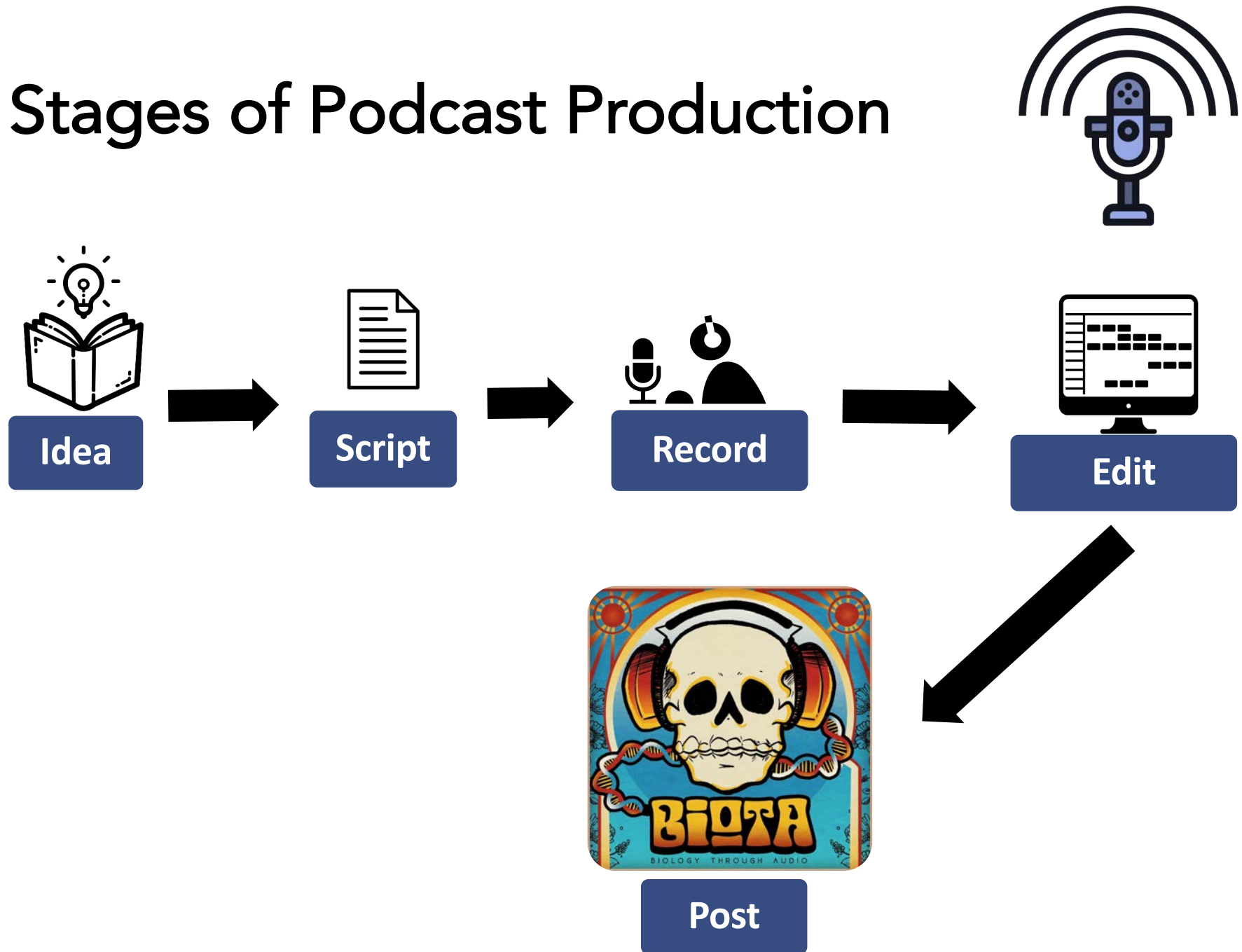
## Podcast Features & Affordances Relative to Video

- Portable
- Spontaneous
- Ubiquitous
- Personal/Authentic
- Unobtrusive
- Contextual
- Informal
- Low-tech
- Creative
- Low expense

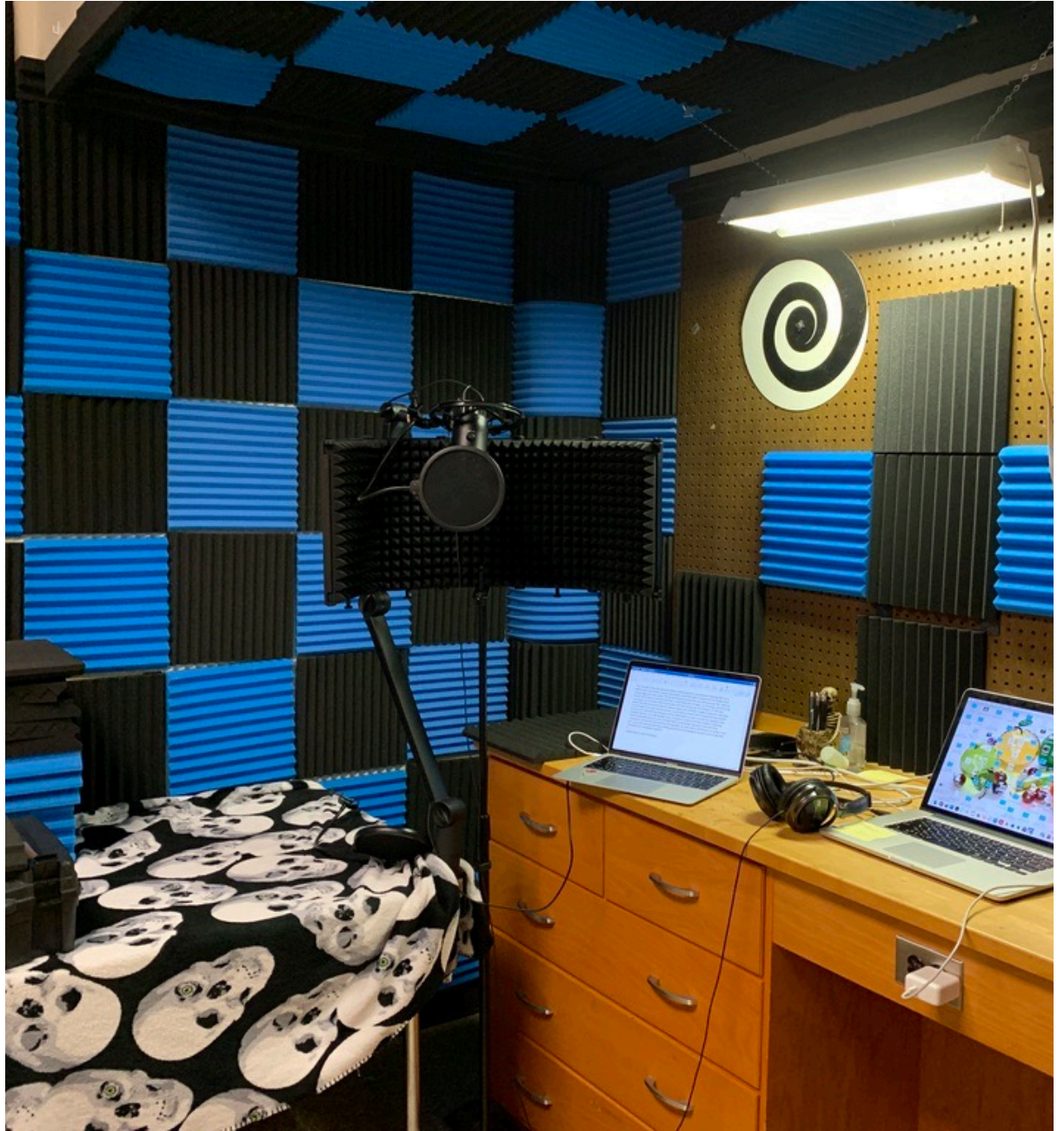


(Hew 2009, Drew 2017)

# Stages of Podcast Production



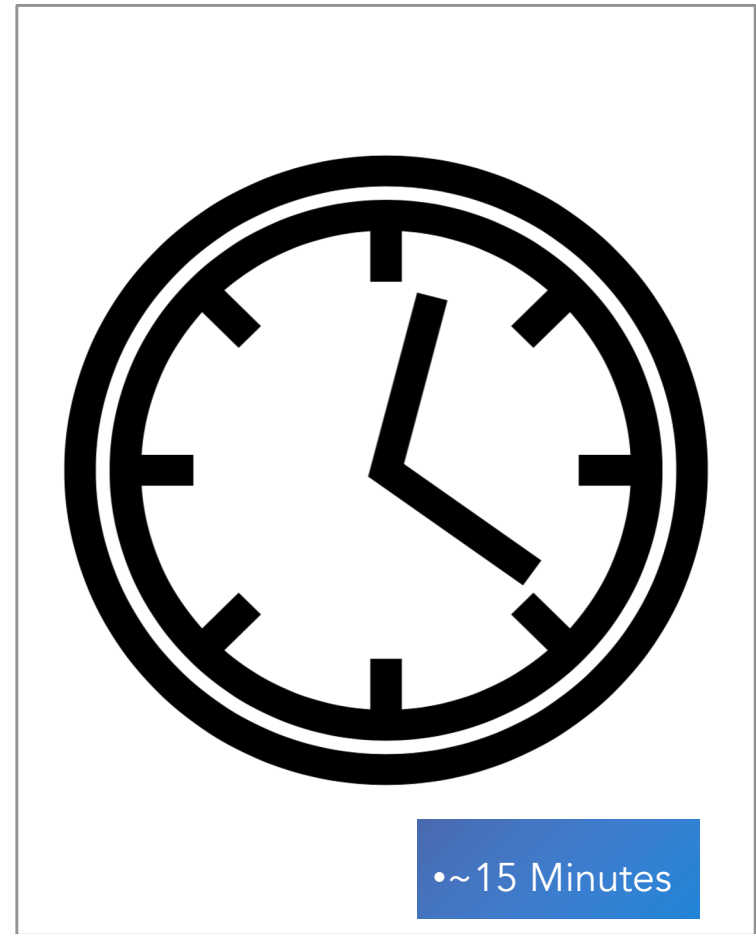
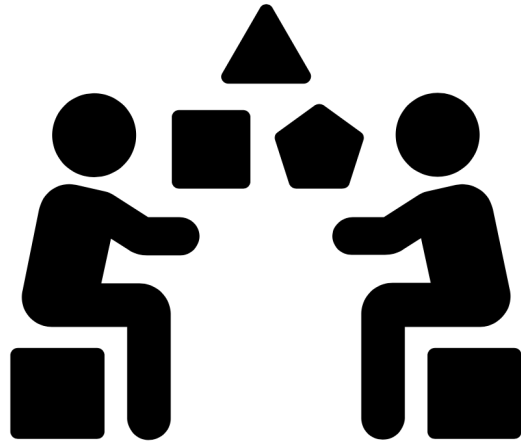






# Breakout Rooms

- Quick introductions, identify reporter
- You will be assigned to a breakout room. Breakout group number is your group number
- Go to the Jamboard for your group to compare and contrast the three podcast episodes (Trees, Bloodsucking Vectors, Botany of Halloween)



# Breakout Rooms – Share Out

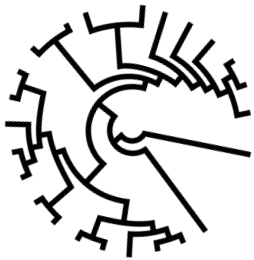
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# Content Acquisition Podcasts

- Short
- Focused
- Single Concept

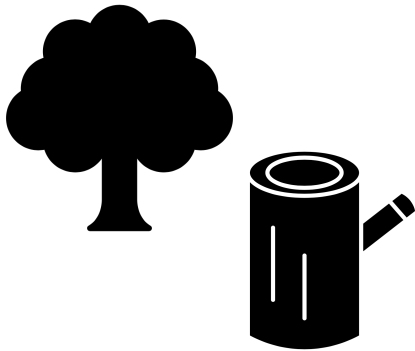


## # 012 Missing Links Episode: Trees (Quick Burst)

- What is wood?
- How do trees grow?

## # 010: Tree Thinking (Tutorial)

- How to construct and interpret phylogenetic trees
- Diagrams to support episode content are available on Canvas

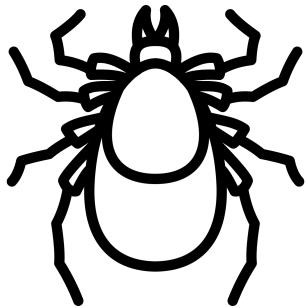






# Narrative Nonfiction Podcasts

- Longer
- Interviews
- Stories
- Multiple or Complex Concepts



## # 004: Bloodsucking Vectors (Interview)

- What are disease vectors
- Arthropod diversity
- Disease ecology



## # 005 Botany Of Halloween (Storytelling)

- Ethnobotany
- Phytochemistry



# Podcast Genres

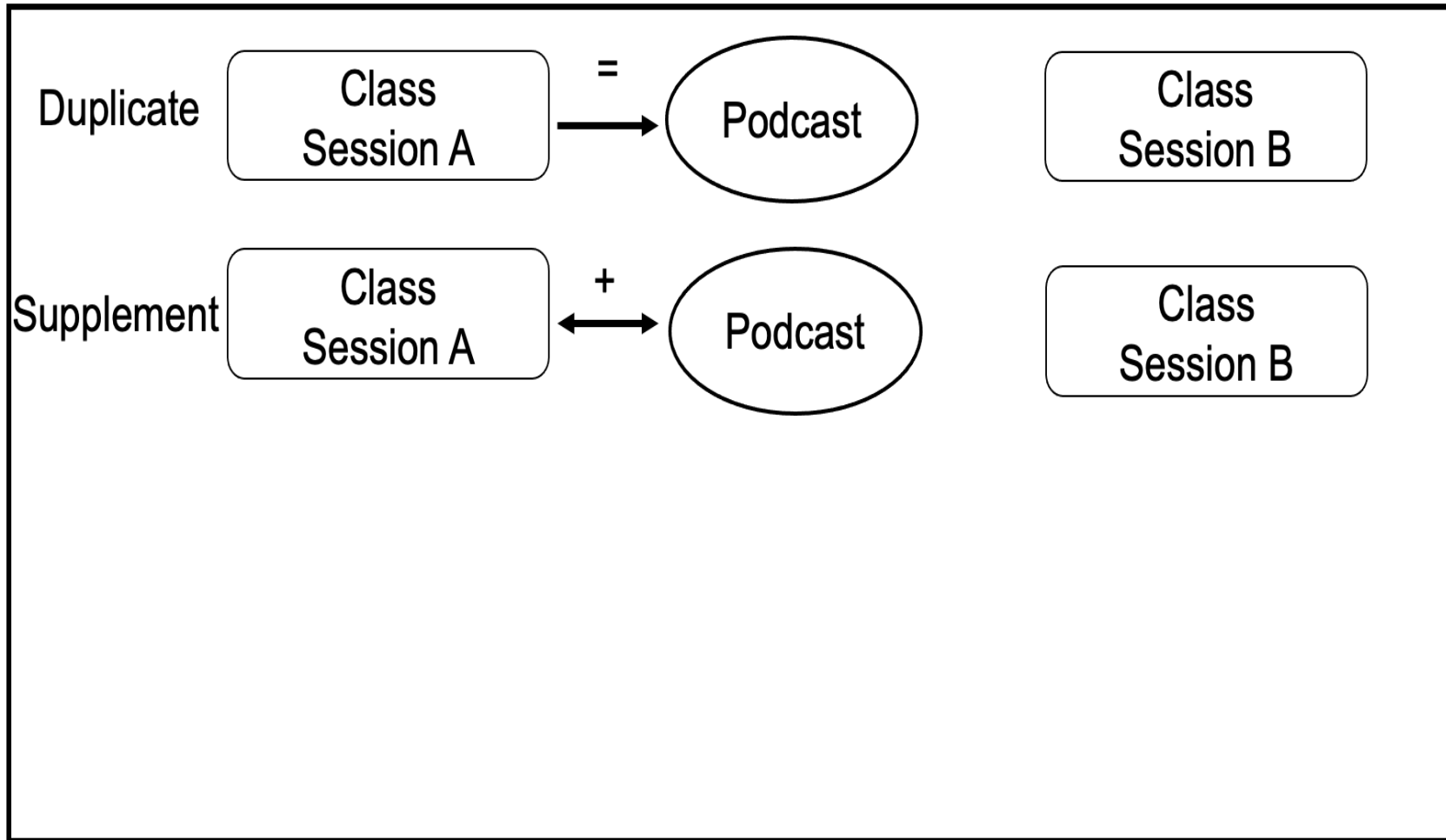
(Drew 2017)



Genre	Length	Features
Content Acquisition Podcast (CAP)	Quick Burst	5-10 minutes <ul style="list-style-type: none"><li>• Short, focused information delivery.</li><li>• Singular idea or concept.</li><li>• Lively, crisp, energetic, and fun.</li><li>• Recall and understand.</li></ul>
	Tutorial	5-10 minutes <ul style="list-style-type: none"><li>• Short, focused explanation.</li><li>• Describes sequence of events or tasks.</li><li>• Models process and components.</li><li>• Explain and apply.</li></ul>
Narrative Nonfiction Podcast (NNFP)	Narrative	40-80 minutes <ul style="list-style-type: none"><li>• Storytelling and weaving connections among content.</li><li>• Longer, complex topics in non-fictional narration.</li><li>• Personal and reflective, shaped with voice and audio effects.</li><li>• Analysis, synthesis, and evaluation.</li></ul>
	Chat Show	20-60 minutes <ul style="list-style-type: none"><li>• Conversation or interviews with terminology and ideas in context.</li><li>• Gateway to complex or controversial topics.</li><li>• Personal with opportunities for engagement, humor, and emotion.</li><li>• Analysis, synthesis, and comparison.</li></ul>



# Incorporating Podcasts Into Classes

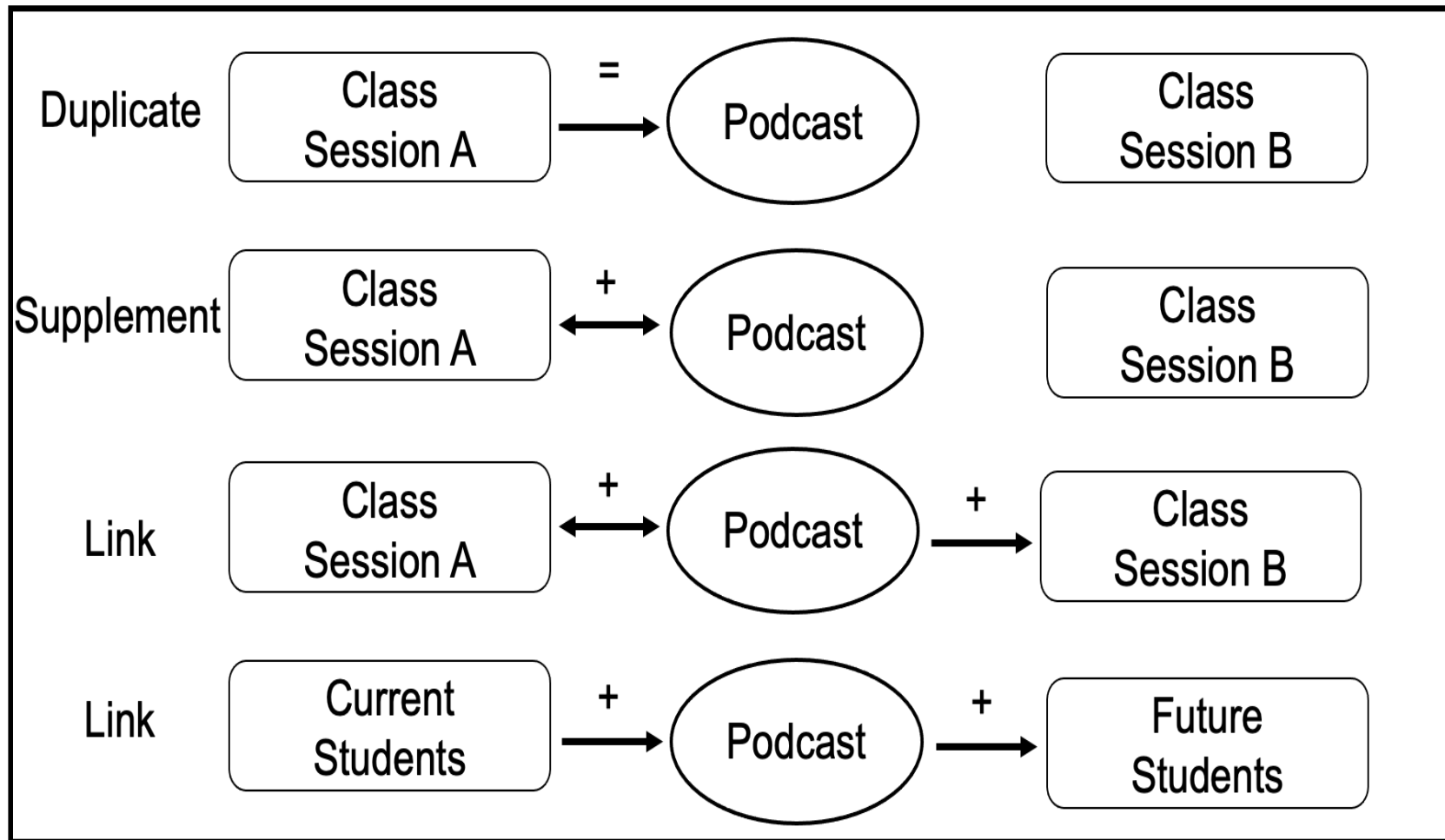


(Hew 2009)





# Incorporating Podcasts Into Classes



(Hew 2009)



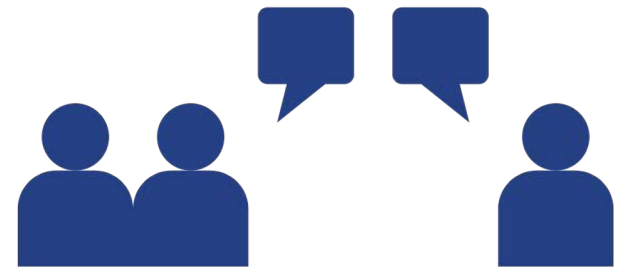
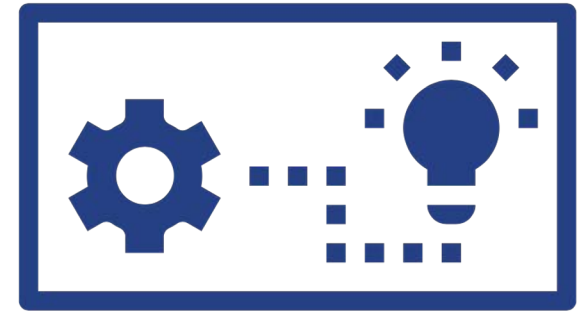
# Let's Workshop A Podcast Case Study Experience

## #004 Bloodsucking Vectors

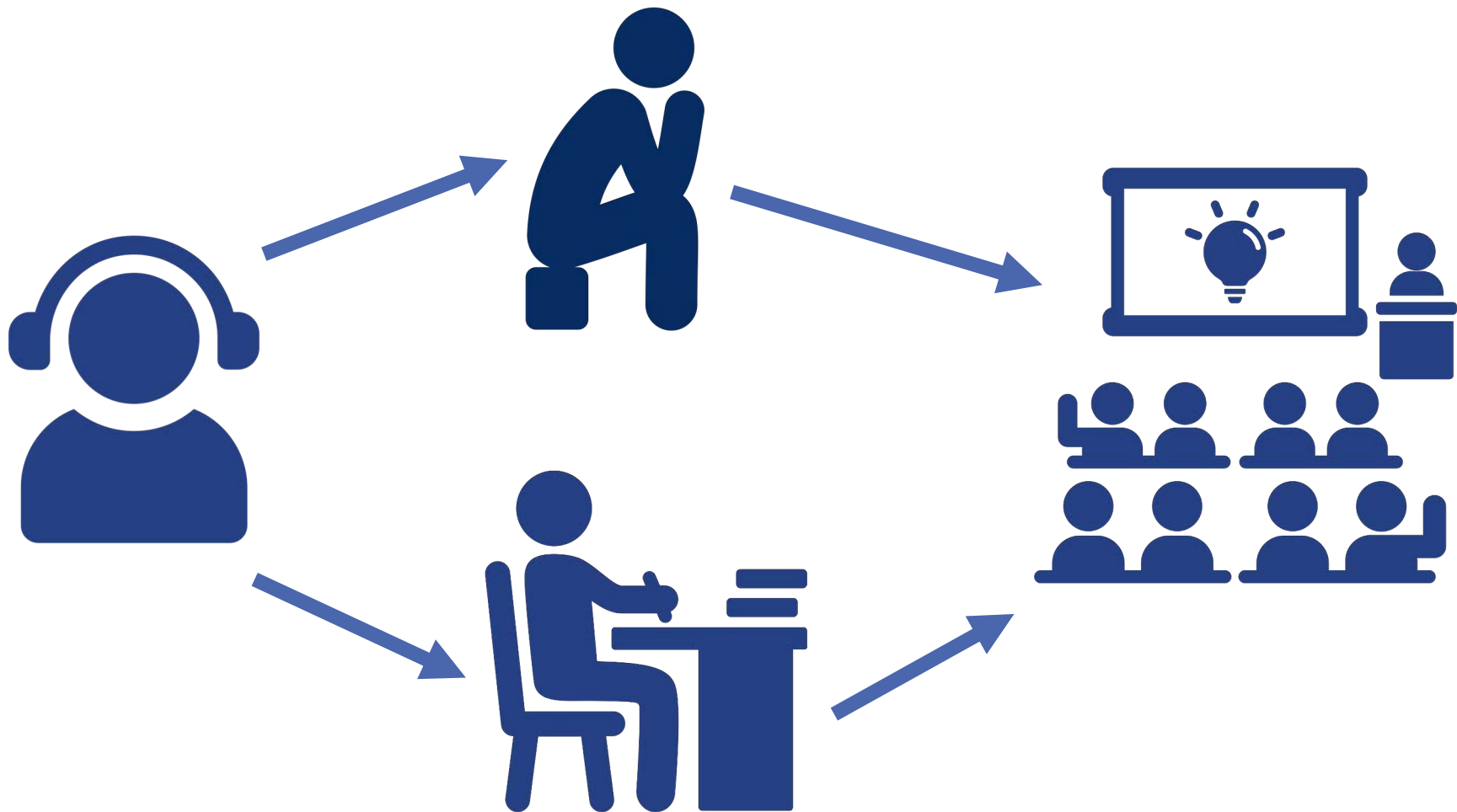
- Narrative Nonfiction Podcast
- Interview
- Combine with data interpretation activity

## Student Learning Outcomes

- Epidemiology they might encounter
- Arthropods they might encounter
- Data interpretation and visualization skills

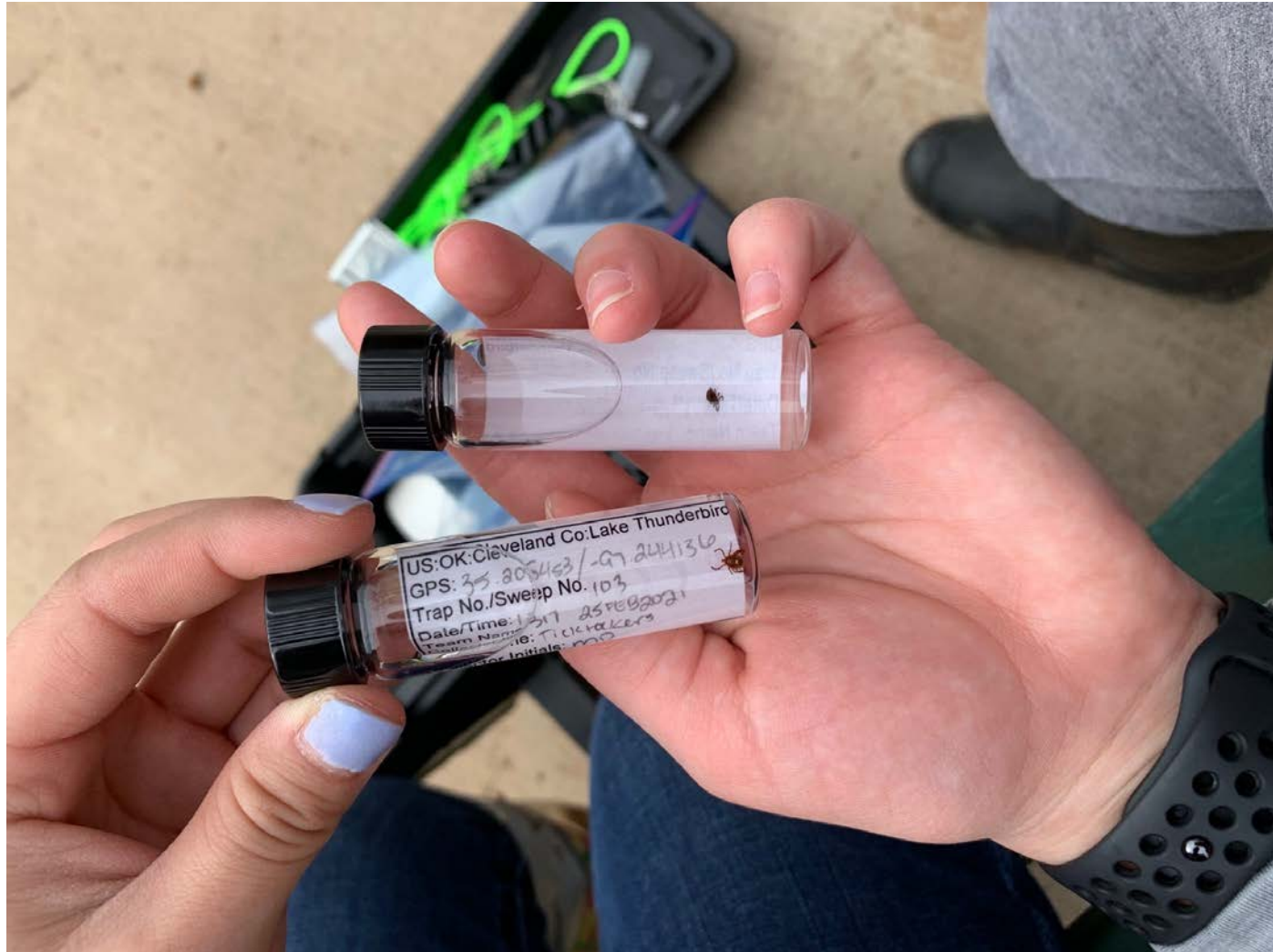


It's basically a flipped class.

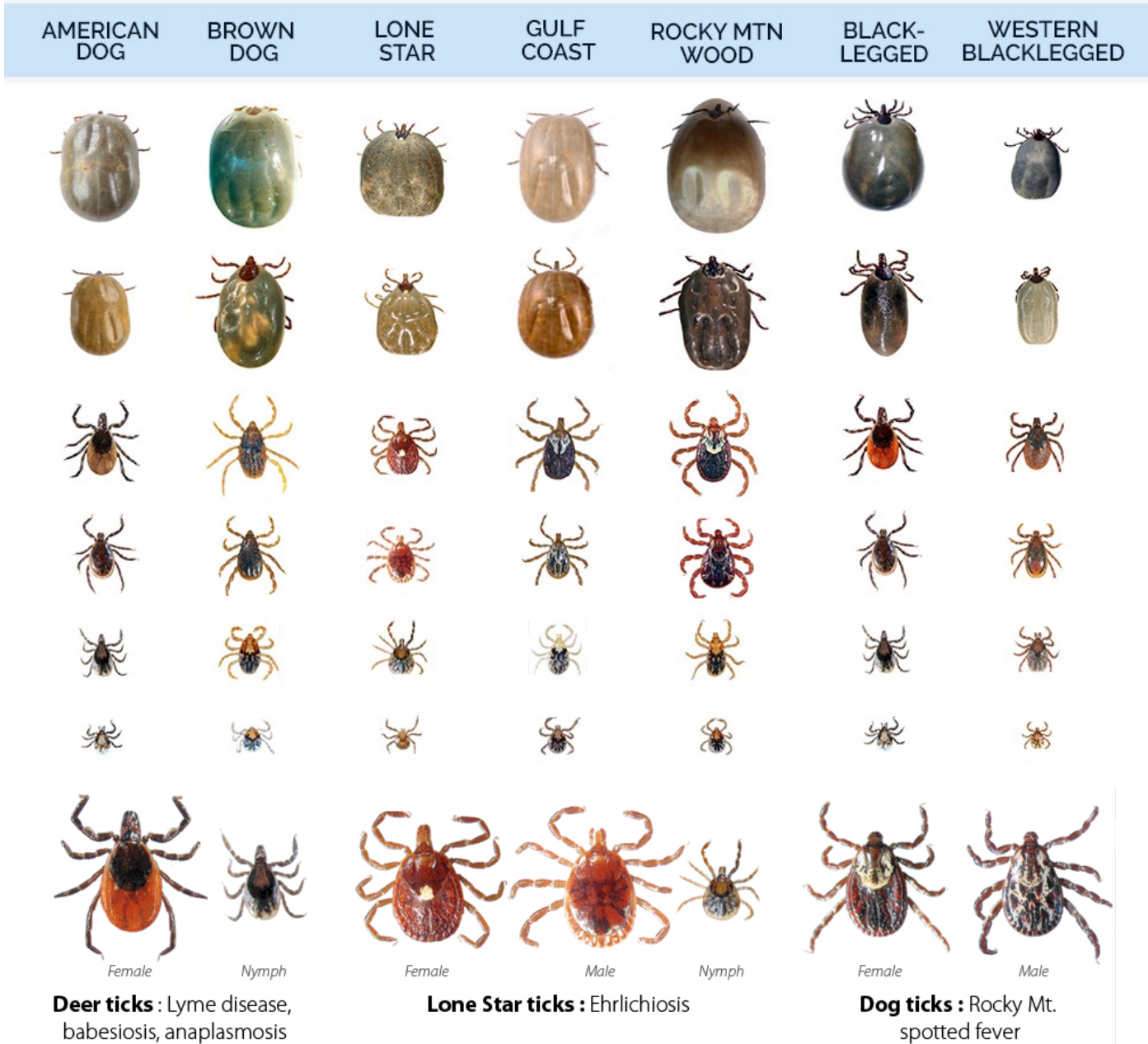


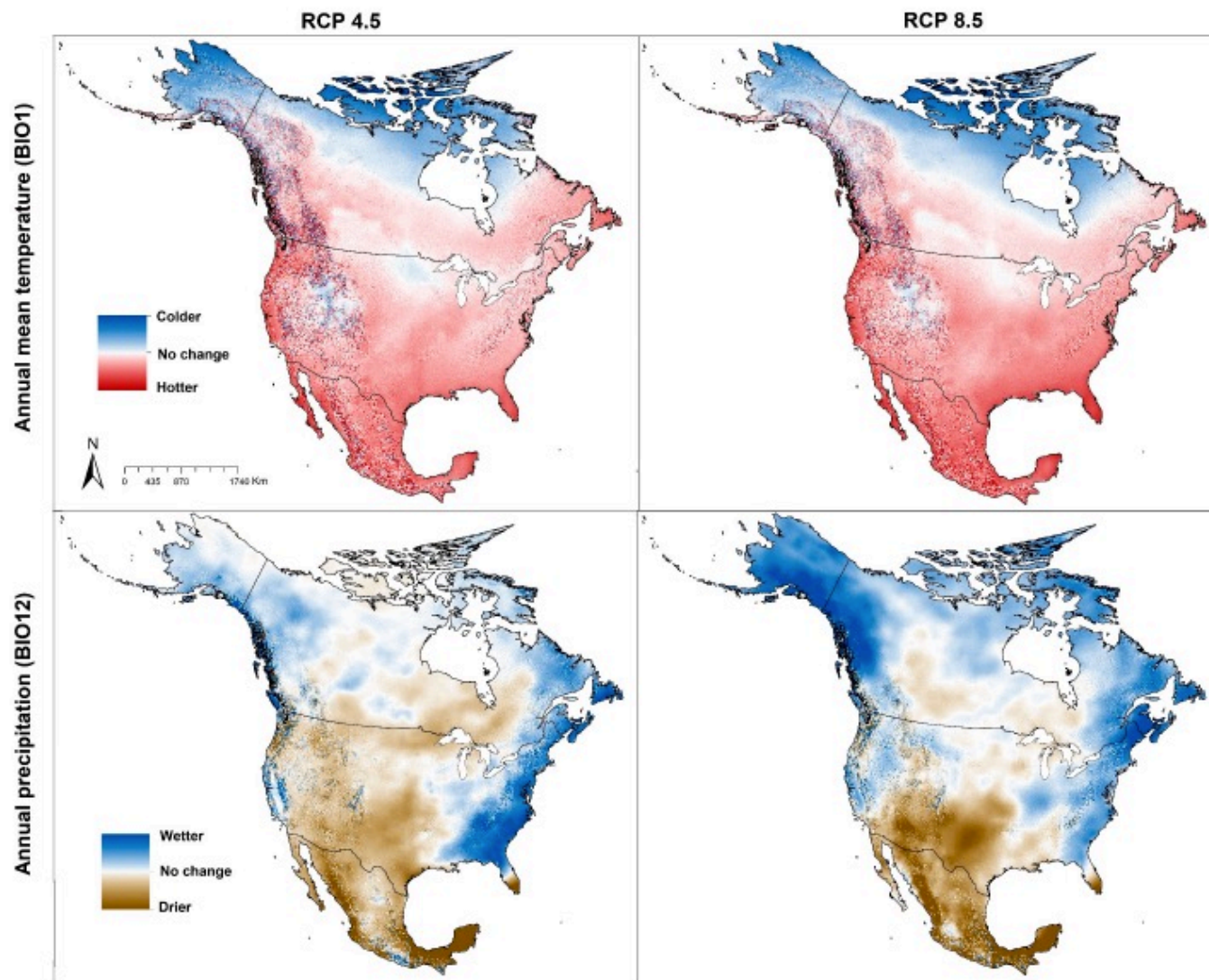


# Ticks!



# Chelicerata: Mites and ticks





**Figure 1.** Climate variables for present (white color = no change) and future conditions (National science foundation department of energy, national center for atmospheric research, USA). General circulation model (GCM: CESM1) under representative concentration pathway (RCP 4.5 and RCP 8.5) for the year 2050.

Alkische, A.; Raghavan, R.K.; Peterson, A.T. Likely Geographic Distributional Shifts among Medically Important Tick Species and Tick-Associated Diseases under Climate Change in North America: A Review. *Insects* 2021, 12, 225. <https://doi.org/10.3390/insects12030225>



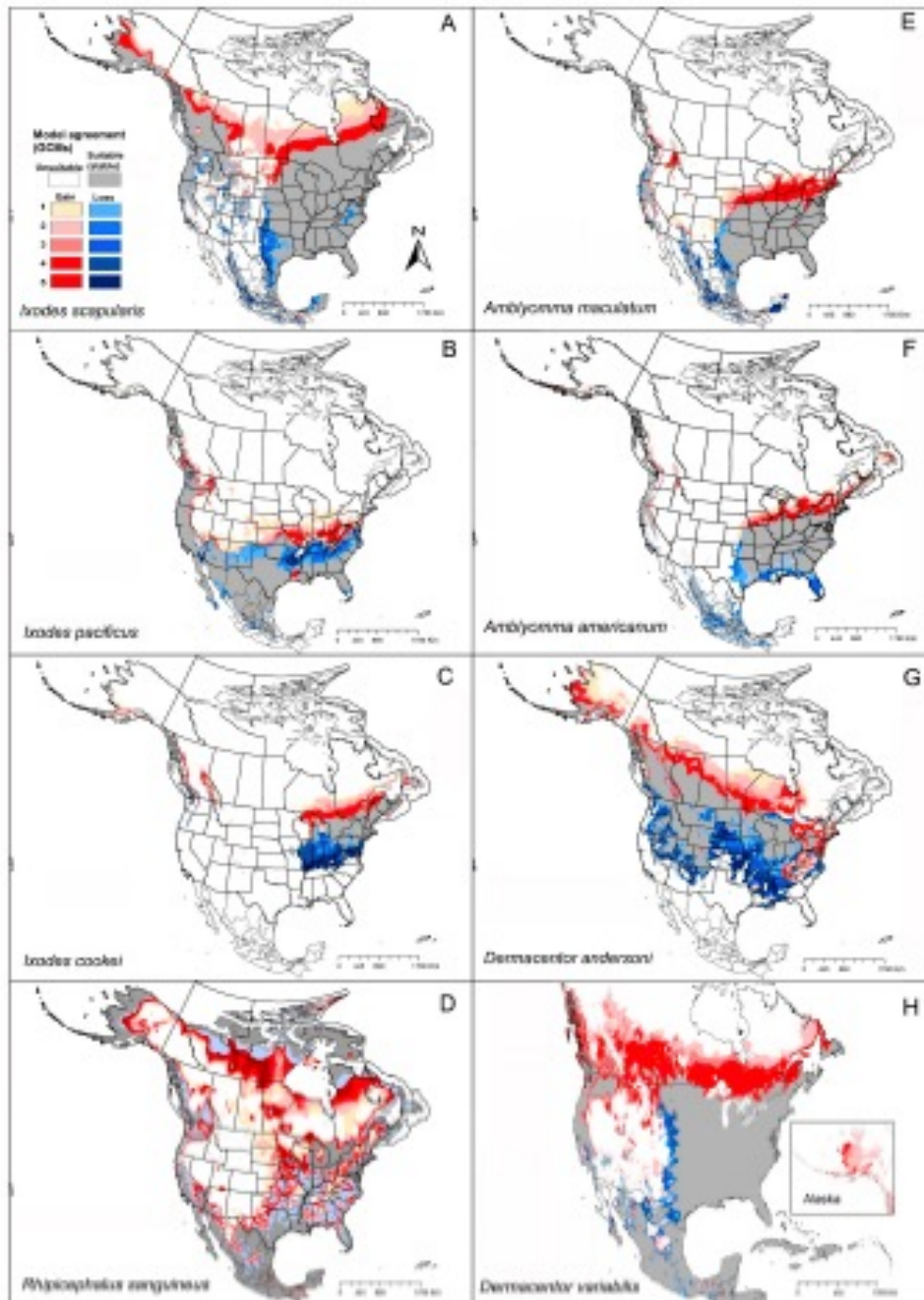
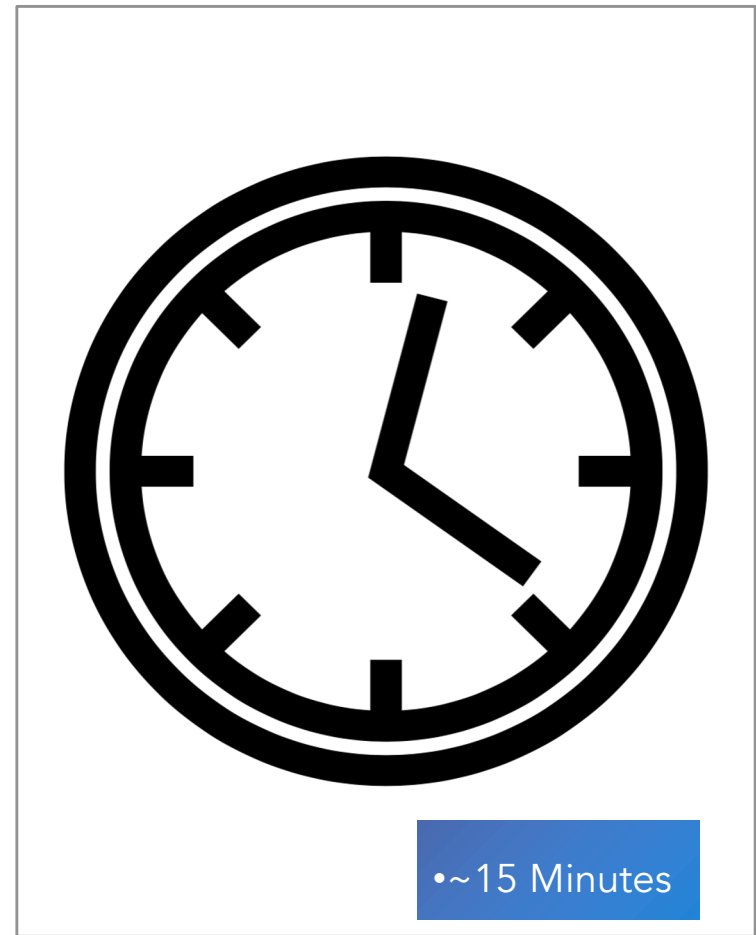


Figure 2. Summary of the potential geographic distributions of eight medically important ticks, both at present and into the future (under RCP4.5). Gray represents stable suitable areas. Red indicates expansion suitable areas under future conditions (dark red = high model agreement, light red = low model agreement). Blue indicates suitable in current time, but not suitable in future (dark blue = high model agreement, light blue = low model agreement).

Alkische, A et al. 2021

# Breakout Rooms

- In your breakout room, go to the new Jamboard.
- Discuss what you think the figure shows.
- Devise a sampling strategy you would use to determine if that is what is happening.





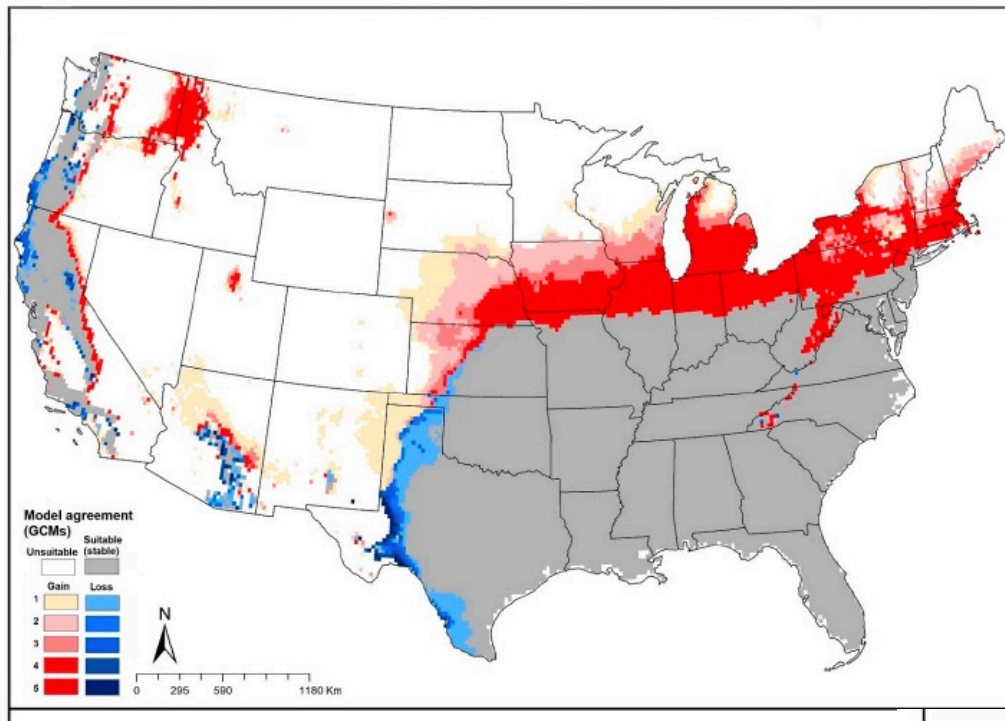
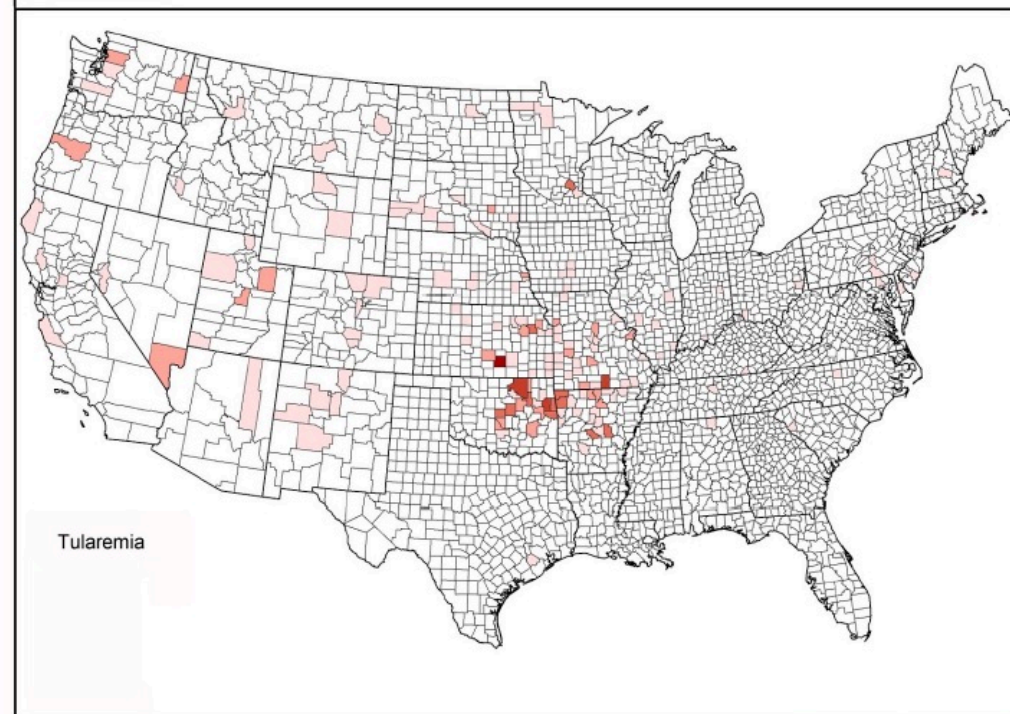
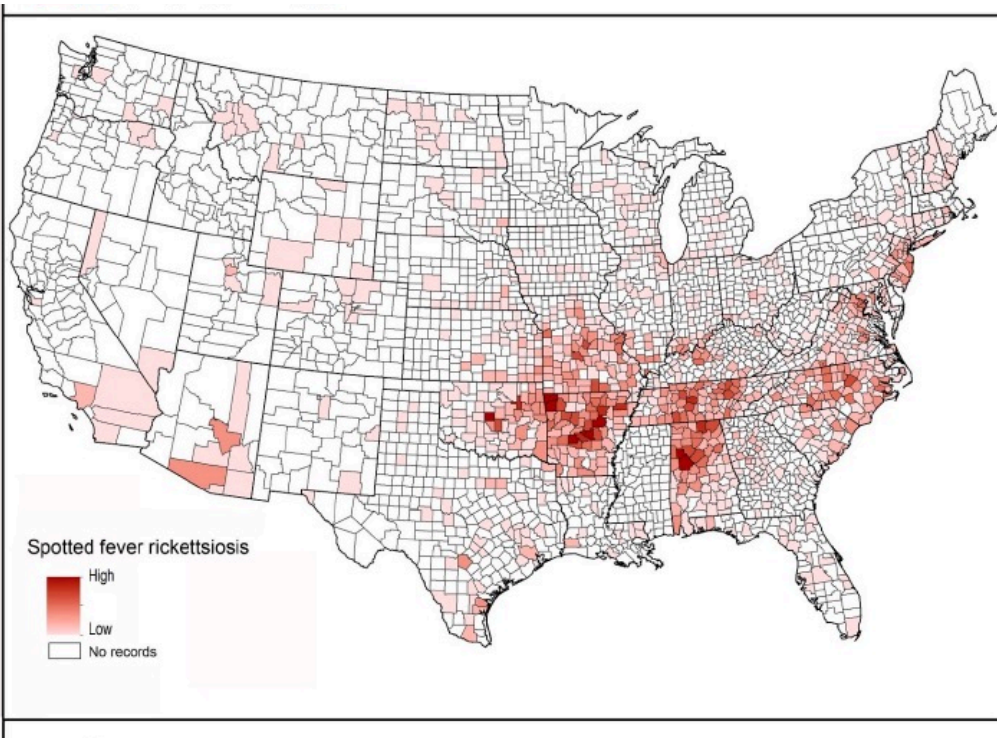


Figure 7. Geographic distribution of *Amblyomma maculatum* (left) and the diseases that it likely transmits in the United States (below). Dark pink represents high incidence, light pink indicates low incidence. White represents no records.

Alkische, et al. 2021



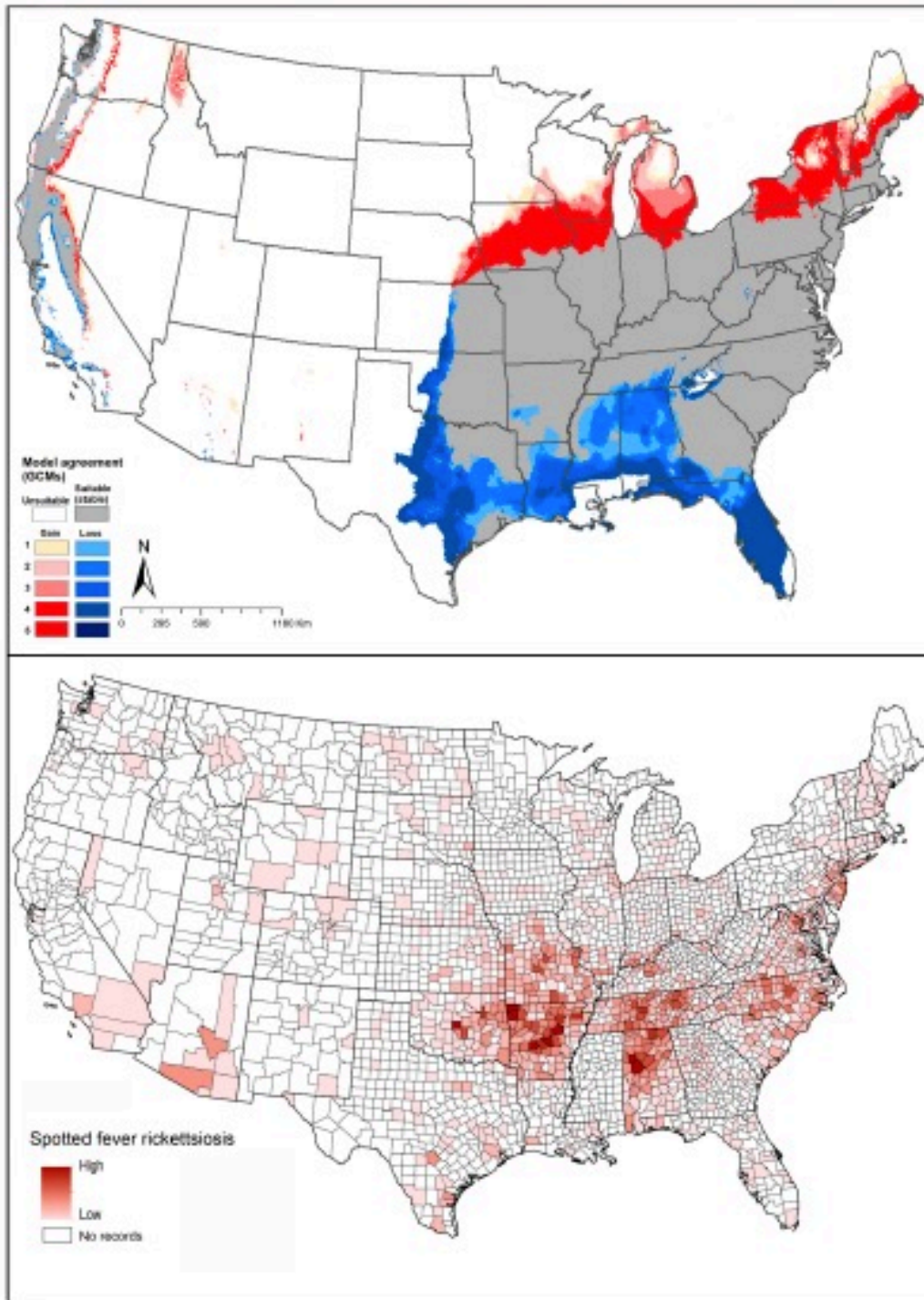
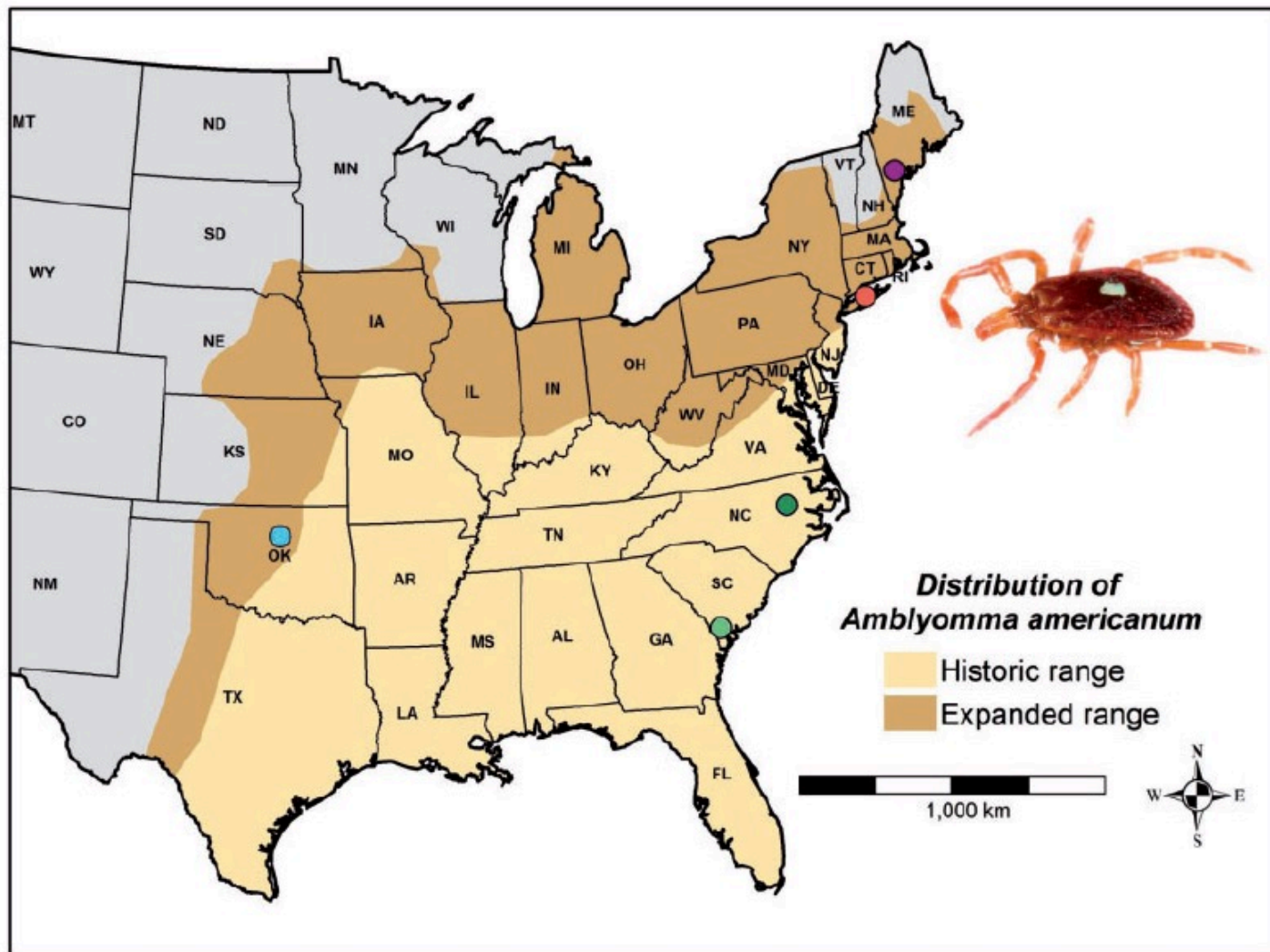


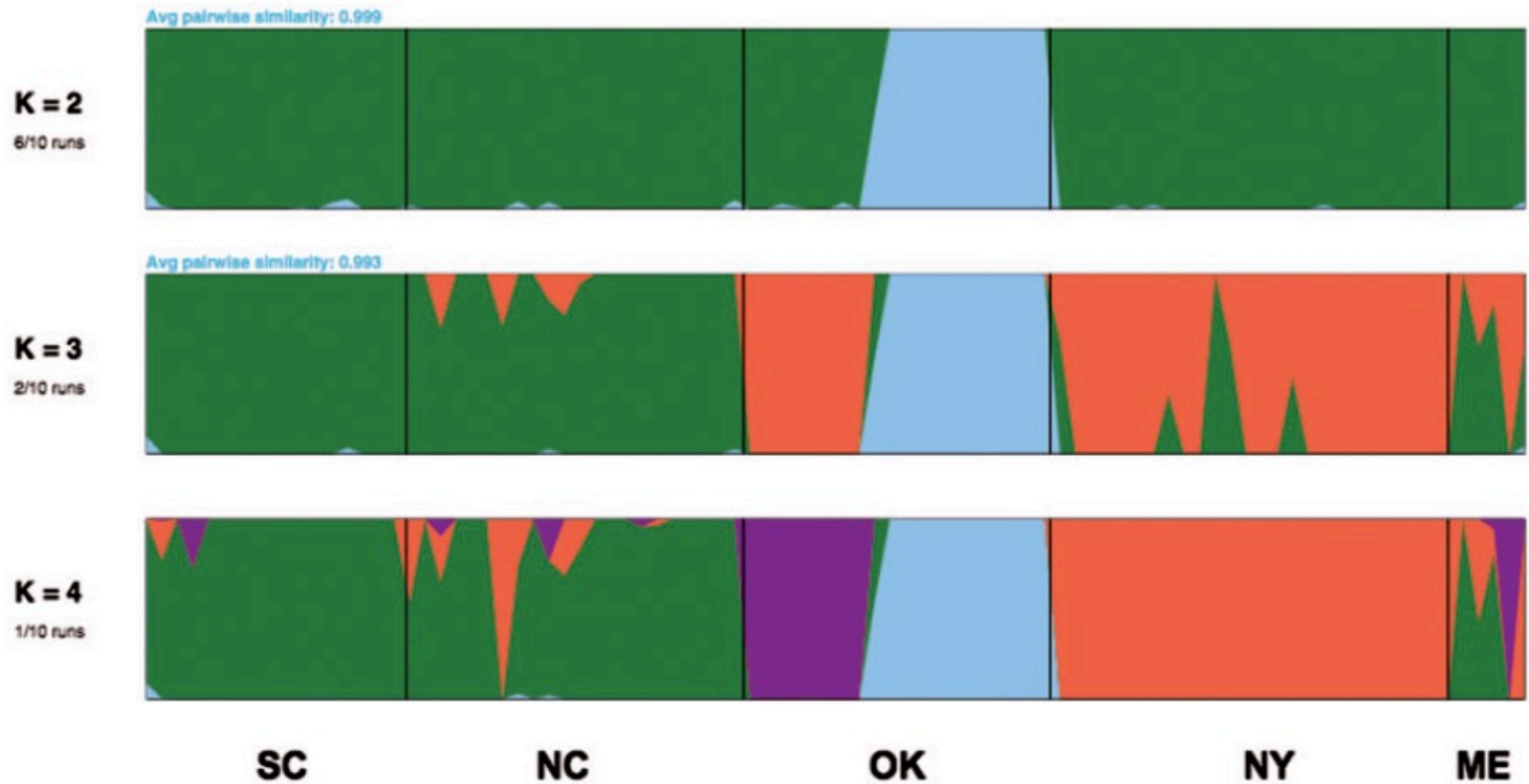
Figure 8. Geographic distribution of *Amblyomma Americanum* (upper) and the disease that it likely transmits (lower) in the United States. Dark pink represents high incidence, light pink indicates low incidence. White represents no records.

Alkische, et al. 2021





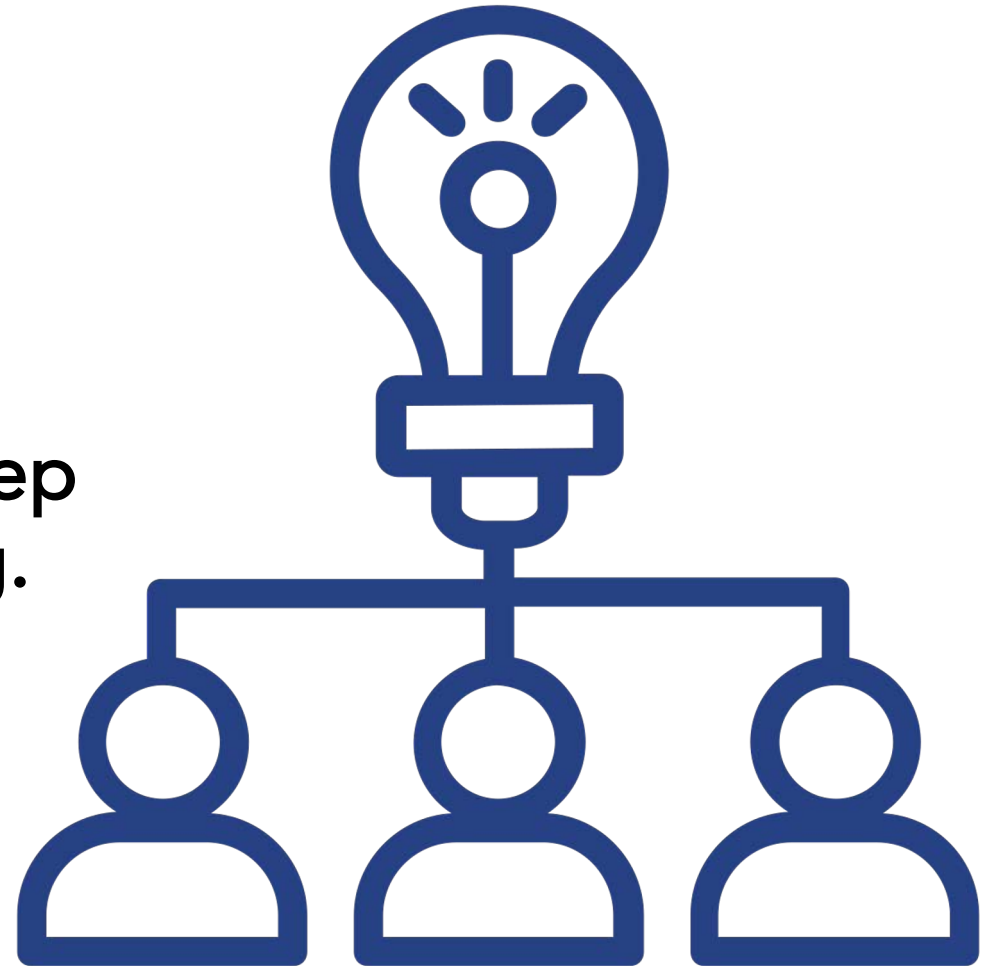
**Fig. 1.**—Historic and current expanded distribution of *Amblyomma americanum*, showing sampling locations in ME, NY, OK, NC, and SC. Historic range from Bishopp and Trembley (1945). Expanded range from Barrett et al. (2015), Cortinas and Spomer (2013), and Springer et al. (2014). Photo credit: J.P. Lawrence.



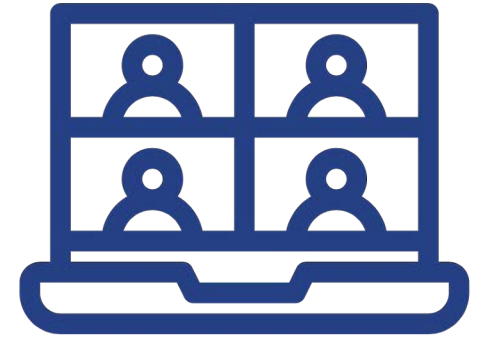
**FIG. 3.**—Ancestry of individual ticks assuming  $K$  clusters of genetic similarity, based on the results of ADMIXTURE analyses. Individuals span across the x axis, sorted by population, and ancestry percentages are visualized as colors on the y axis. The colored proportions for each individual represent the contribution of ancestral genetic clusters. The major mode present across ten runs at each  $K$  value is presented along with the agreement in cluster assignment across discordant runs (average pairwise similarity). At  $K=2$ , most OK ticks appear distinct. At  $K=3$ , the optimal  $K$  value, the next primary distinction separates historic range (NC and SC) ticks from expanded range (NY) ticks. At  $K=4$ , substructure within OK and ME is detected and multimodality is present. Visualization was created with pong.

# Discussion

- Questions?
- How can you envision using podcasts in your teaching?
- Interested in collaborating? Let's keep the conversation going.



# What We Did Today.



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# Biology Through Audio (BioTA) Podcast



## The Botany of Saturnalia, Yule, and Christmas 024

Many holiday traditions trace their origins to ancient beliefs and rituals that indicate awareness of the importance of the sun and seasonal changes. In this BioTA episode we explore why we have these...



Dec 2021 · Played ✓



## Chocolate Is Life 023

Chocolate is one of the most popular food items in the world. How did cacao, the main ingredient in chocolate, go from small tropical tree to the foundation of a multi-billion dollar industry? How will...



Nov 2021 · 38 min 50 sec



## The Oklahoma Mesonet (Part 2) 022

In Part 2 of my interview with Senior Climatologist Gary McManus, he discusses how we don't have to wait to see evidence of climate change in Oklahoma and the rest of the world, because "It's already..."



Oct 2021 · 24 min 8 sec



## The Oklahoma Mesonet (Part 1) 021

The Oklahoma Mesonet ([www.mesonet.org](http://www.mesonet.org)) is a state of the art weather monitoring system that provides unparalleled information about the dynamic Oklahoma atmosphere and mesoscale...



Oct 2021 · 26 min 30 sec



## Missing Links Episode: Population Concepts and Brood X 020

During the spring and summer of 2021, the periodical cicadas in Brood X emerged from the soil where they had been living for the past 17 years. Once they came to the surface, all they wanted was to eat...



Sep 2021 · Played ✓



## Virus, Vaccines, & Variants 019

In this one year anniversary episode we revisit the SARS-Cov-2 virus and talk with Dr. Carlos Goller, a biotechnology specialist from North Carolina State University, about where we are at in the pandemi...



Aug 2021 · Played ✓



## Smokey Okies Cannabis Growers Interview 018

Medicinal cannabis legalization has introduced a new player in the agricultural industry of many states. But how is medicinal cannabis grown on a large scale? In this episode I interview one of the owners o...



Jul 2021 · 34 min 10 sec left



## N. I. Vavilov – Plant Hunter (Part 2) 017

This episode continues the story of Nikolai Vavilov and his efforts to protect plant diversity and the field of genetics against Josef Stalin and the pseudoscientist Trofim Lysenko. Hear how Vavilov's...



Jul 2021 · Played ✓





Podcasts to link lectures (audio flipped classroom).

Topics related to course topic and current events.

Freedom, flexibility, access.

Developing additional resources.

*Comments? Ideas? Suggestions?*



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