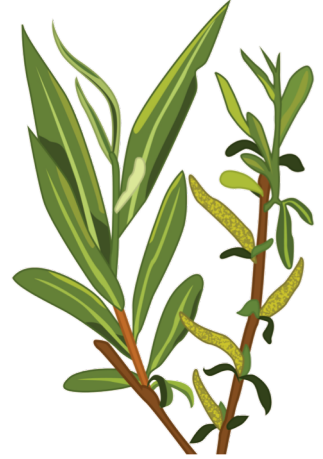


Our educational materials are suitable for grade 8 - college level classes

## Jonah Ventures Educational Material: Diet

**Upon completion students will:**

- Understand what eDNA is, how it is measured, why it is useful, and its limits.
- Learn the eDNA laboratory process, from collection to analysis.
- Understand how primers work, and that they are specific to groups of species.
- Be able to replicate the PCR process on their own, beginning with a single strand of DNA.
- Understand how Next Generation Sequencing works and how sequences are matched to species.
- Be able to think critically and extrapolate conclusions from their research.



**Our educational materials include:**

- Lesson slides
- Key words and follow-up questions
- Teacher instructions
- Student instructions
- Hands-on educational activity
- Student worksheet

# Lesson Slides

# Diet Reconstruction with DNA metabarcoding

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What group have?


about this plant (range, habi

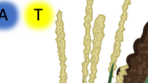
## Prairie Junegrass (*Koeleria macrantha*)

Plant Sequence Library


- **Barcode Sequence:**



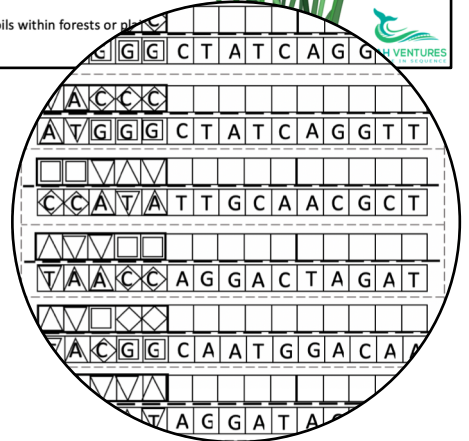




- Endangered in Ohio and Kentucky, critically impaired in Louisiana
- Native to the United States but introduced to Hawaii
- Good forage
- Grows in rocky or sandy, well drained soils within forests or open areas with direct sunlight



# Hands-On Educational Activity



What group have? \_\_\_\_\_

about this plant (range, habitat, native/invasive, etc.): \_\_\_\_\_

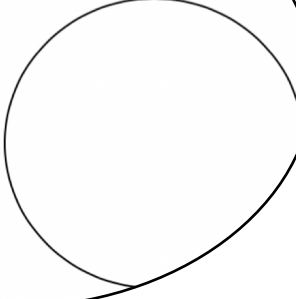
\_\_\_\_\_

\_\_\_\_\_

of plant species the bison ate:

Make a pie chart, complete with percentages:

Species	Tallies	Percentages
June grass		
Willow		
Aster		
		100%



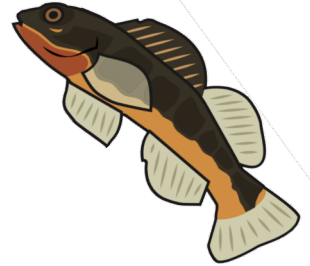
## Student Worksheet

Our educational materials are suitable for grade 8 - college level classes

## Jonah Ventures Educational Material: Fish

### Upon completion students will:

- Understand what eDNA is, how it is measured, why it is useful, and its limits.
- Learn the eDNA laboratory process, from collection to analysis.
- Understand how primers work, and that they are specific to groups of species.
- Be able to replicate the PCR process on their own, beginning with a single strand of DNA.
- Understand how Next Generation Sequencing works and how sequences are matched to species.
- Be able to think critically and extrapolate conclusions from their research.



### Our educational materials include:

- Lesson slides
- Key words and follow-up questions
- Teacher instructions
- Student instructions
- Hands-on educational activity
- Student worksheet

**Bighead Carp (*Hypophthalmichthys nobilis*)** Fish Sequence Library

- Least Concern, Invasive
- Feeds primarily on plankton and detritus
- This fish is native to large rivers and the floodplain lakes of Asia

Barcode Sequence:

T A C C C T C T T G G G A A T

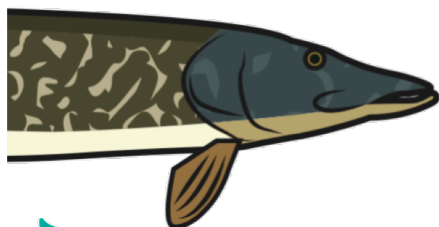
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KNOWLEDGE IN SEQUENCE

### Lesson Slides

**Assemblage Reconstruction with Environmental DNA and Metabarcoding**

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### Hands-On Educational Activity



your group have? \_\_\_\_\_

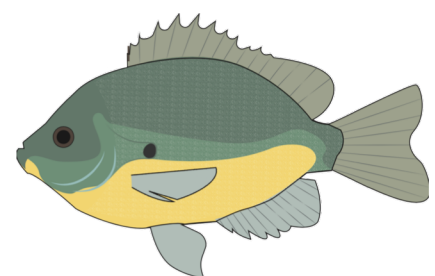
about this fish (range, diet, habitat, native/invasive, etc.): \_\_\_\_\_

ally of fish species in the classroom: \_\_\_\_\_

Make a pie chart, complete with percentages:

Species	Tallies	Percentages
Northern Pike		
Bighead Carp		
Bluegill		
Gilt Darter		
		100%

most abundant in this ecosystem? \_\_\_\_\_



### Student Worksheet