International Baccalaureate
Baccalauréat International
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3D Science Unit Planner

Marietta City Schools

MARIETTA CITY SCHOOLS

Grade & Course: Zoology	**Topic:** Unit 6: **Human Impact and Invasive Species**	**Duration:** 3 Weeks
Teachers: Zoology PLC Teachers		

SZ5a: Ask questions and define problems identifying the cause and effect of human activities on the biodiversity of organisms
SZ5b: Design a solution to preserve species diversity in natural and captive environments with regard to conservation, habitat restoration, breeding programs and management of genetic diversity at local and global levels.
SZ5c: Construct an argument based on evidence of the short-term and long-term impacts of legal, societal, political, ethical, and economic decisions on animal diversity.

Narrative / Background Information

Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)
Students are expected to have background knowledge from their Biology class which includes the understanding of basic cell structures, levels of organization, evolution, geologic history of life, and basic taxonomy and classification.

Year-Long Anchoring Phenomena: (LEARNING PROCESS)
There is a wide variety of animal diversity across the planet.

Unit Phenomena (LEARNING PROCESS)
Phenomenon: Humans transport invasive species that impact local species

Inquiry Statement:
How does human activity impact the biodiversity of life on earth?

Global Context:
SCIENTIFIC AND TECHNICAL INNOVATION - How do we understand the world in which we live?
- Modernization, industrialization and engineering

Approaches to Learning Skills:	**Disciplinary Core Ideas: (KNOWLEDGE & SKILLS)**	**Crosscutting Concepts: (KNOWLEDGE & SKILLS)**
SEP -Asking Questions and defining problems - Obtaining, evaluating and communicating information -Constructing explanations and engaging in arguments	**CORE IDEAS** Research and discuss the economic and ecological role of invasive species in an environment	• Systems and Systems Model • Stability and Change • Cause and Effect • Patterns

Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)
Invasive species movement is natural.
Invasive species increase diversity.
The cost of prevention and management of invasive species isn't worth it.
There is nothing we can do about invasive species.
Biodiversity is declining everywhere
The damage is done and humans can't "fix" their impacts

Human impacts do not affect me personally

Key Vocabulary: (KNOWLEDGE & SKILLS)
Ecology, biotic, abiotic, ecosystem, habitat, niche, biogeochemical cycles, limiting factors, climate, biome, carrying capacity, biodiversity, extinction, invasive species, renewable resources, nonrenewable resources, sustainability

Inquiry Questions:

Factual

What is biodiversity and why is it important?

List the major impacts humans have on the environment

What is an invasive species?

What is the difference between renewable and nonrenewable resources?

What is the primary cause of habitat destruction and loss of biodiversity?

What are ethical decisions that impact species diversity?
What role do economic decisions play in animal diversity?

Conceptual

How do human activities, such as deforestation and pollution, impact the biodiversity of organisms in ecosystems?

What are the long-term consequences of human activities on the biodiversity of organisms, and how can we mitigate these effects?

Why is it important to maintain species diversity in both natural and captive environments?

How does genetic diversity management contribute to maintaining species diversity?

Debatable
Can we strike a balance between conservation efforts and human development to ensure the long-term survival of diverse species in both natural and captive environments?

Do legal decisions regarding habitat protection and conservation efforts impact animal diversity in both the short-term and long-term?

Summative assessment	
Assessment Tasks: **CFA X1** **Research Project** **Final Exam Presentation**	Relationship between summative assessment task(s) and statement of inquiry: The tasks allow students to demonstrate their knowledge of the human impact and species diversity. Students will ask questions to then research/ gather information. They will create a written presentation of their research and orally present/argue with their peers.

Unit Objectives: - Teaching and learning is focused on effective teamwork and collaboration		
Inquiry & Obtain: **(LEARNING PROCESS)**	**Evaluate:** **(LEARNING PROCESS)**	**Communicate:** **(LEARNING PROCESS)**
Weeks 1 Introduction to Ecosystems and Human Impact CFA	- Students will read articles about human impact on the environment and invasive species. They will create research questions from these articles. - Using the questions, students will define problems that affect biodiversity. - Students will be accessed on their knowledge of human impact and biodiversity on a CFA	- Students will peer review their questions in groups and then present the best ones to the class for class consideration. - Students will be formally assessed in a CFA
Week 2 Research Paper/Project	- Students will research how invasive species impact ecosystems. - They will then design a solution to limit the impacts of these organisms focusing on one of the following factors: legal, societal, political, ethical, or economical	- Students will self grade based on a rubric - Students will have check points in their research where the teacher will provide constructive feedback
Week 3 Presentations/Discussions	- Students will present the general findings of their research topic in a class setting. - Students will discuss their findings in small groups	- Students will provide "Glows and Grows" to each other after presentations. - During small group discussions, students will provide more directed feedback and ask questions for further analysis.

Resources (hyperlink to model lessons and/or resources):

- Shape of Life website videos and activities
- Glencoe Science Biology book
- Youtube videos of Dissections of specific animals
- Eyewitness videos
- Preserved specimens slides for observation and dissection
- BBC nature documentaries
- Schoology school course

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit