

Station 1

A1. Identify (common name) three (3) of the five aquatic invertebrates found on the table.

3 points

ANSWER: Grass Shrimp, Dragonfly Larvae, Midge Larvae, Aquatic worm, diving beetle or TBD

Which one (1) of these species is considered most tolerant and an indicator of poor water quality?

1 point

ANSWER: Midge Larvae or aquatic worm

A2. List three (3) aquatic plants (common name or scientific name) present in this marsh.

3 points

ANSWER: Cattails (*Typha*), Pickerel weed (*Pontederia cordata*), Bald Cypress (*Taxodium distichum*), Rattlebox (coffee bean; rattlebush; rattle bean) (*Sesbania drummondii*), Bushy bluestem (*Andropogon glomeratus*), White and yellow Lillie, Yankee Weed or Dog Fennel, Sagittaria species, etc.

A3. List three (3) services that wetlands provide society.

3 points

ANSWER: Remove nutrients from water, remove sediment from water, provide habitat for wildlife, and help with flood control, carbon sequestration, etc.

A4. Which is more likely to suffer from eutrophication caused by excessive nutrient loading, tidal bayous or rivers?

1 point

ANSWER: tidal bayous

11 total points

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- 1 point
- CI 1. Draining fields for agricultural production is a common practice in commercial agriculture. Describe one (1) way that preserving wetlands and water features make agriculture more sustainable.

ANSWER: Wetlands and water features contribute to maintain soil moisture and recharge of groundwater reservoirs. They also reduce local surface temperatures, contribute humidity, and support insect and bird populations that pollinate and disperse seeds. They can serve as local water sources in times of drought, and as effective drainage areas during rainy periods. Keeping these features intact increases landscape and habitat diversity, which in turn enhances the ecosystem diversity and function in the entire area.

- 1 point
- CI 2. How do manmade ponds contribute to sustainable agriculture? Name one (1) way.

ANSWER: Manmade ponds increase insect, bird, and wildlife diversity in an area. The more diverse biota provides additional pollinators, seed dispersion mechanisms, and natural pest predators.

- 2 points
- CI 3. What is meant by the term “Food Deserts”? What impact can this phenomenon have on a local community?

ANSWER: A food desert is a geographical area where affordable and healthy food can be difficult to obtain, especially for families without a vehicle. The distance needed to travel to a store varies in different definitions, but in Houston the distance is one mile. Impacts include more expensive food, fewer healthy options, and health impacts. etc.

- 1 point
- CI 4. Describe one (1) way in which sustainable agriculture is good for local communities.

ANSWER: Fresher food available, family farms stay viable, increased employment opportunities increased local economic activity, etc.

- 3 points
- CI 5. Why are bee numbers in the United States decreasing? List two (2) reasons. What can you do to help bees? List one (1) action.

ANSWER: After WWII, mono-crops became the norm—these are food deserts for bees, pesticide residues, mites, viruses, diseases, and parasites. Individuals can: plant a diversity of bee friendly plants that have overlapping bloom times, avoid using pesticides, plant trees as wind brakes and borders that are bee friendly, plant native plants, plant cover crops, leave rotten snags for homes, plant alfalfa and clover, etc.

- 2 points
- CI 6. Describe two (2) ways in which small family run farms can sell their produce to the local community.

ANSWER: farm shops, food co-operatives/box schemes, farmer's markets, through a local store, etc.

10 points total

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- 2 points F1. Identify the species of the tree labeled F1. Give one (1) commercial use that this species has? You may use the provided field guide.

ANSWER: Cherrybark Oak (*Quercus pagoda*). Grade hardwood lumber for furniture as well as lower grade materials such as pallets and RR ties.

- 3 points F2. Identify the dominant species of understory brush along the edge of the woods, labeled F2. Is this an invasive species? What, if any, hazards does it pose if this forest were to experience a wildfire?

ANSWER: Yaupon (*Ilex vomitoria*), native non-invasive. It can seriously flare up in a fire due to volatility of waxy leaves. This would create a hazardous situation for firefighters and could cause considerable mortality to the overstory trees.

- 1 point F3. What, if any, value to wildlife does this same brush species labeled F2 have?

ANSWER: Yaupon is a preferred browse species for white-tailed deer and the berries are favored by turkey, quail, raccoons, and numerous other species of wildlife.

- 3 points F4. Using the provided field guide, identify the common name of the species of tree labeled F4. What are the shelf-like features found on the trunk of the tree? What do these features indicate?

ANSWER: Sugarberry (*Celtis Laevigata*). Those are fungal conks growing on the trunk of the tree. These are the fruiting bodies of a parasitic fungus that has invaded the tree and is consuming it.

9 total points

Station 1

S1. The plants growing in this wetland are likely growing in a _____ soil. How is this type of soil formed?

2 points

ANSWER: Hydric. Hydric soil is formed under conditions of flooding, long term saturation or ponding long enough in the growing season to develop anaerobic condition in the upper part.

S2. What is soil organic matter?

1 point

ANSWER: remains of plants and animals that are in the process of decomposition.

S3. The amount of organic matter in a typical soil is about _____ percent?

1 point

ANSWER: 1-5 percent, accept any ANSWER between 1 and 5 %

S4. What periodic element is the primary component of organic matter?

1 point

ANSWER: Carbon (C)

S5. Name two (2) roles of organic matter in soils?

2 points

ANSWER: Stabilization of aggregates, decrease plasticity, reduces color value, Increases: porosity, permeability, water holding capacity, aeration, drainage, and amount of micronutrients (N especially, SP, Mn). Energy source.

S6. Soil organic matter is typically higher on what type of a soil. Circle your ANSWER?

1 point

A) Forest

B) Red

C) Prairie

D) Gray

S7. Describe two (2) roles of macro and microorganisms that live in the soil.

2 points

ANSWER: Decomposition of residues, formation of humus (final residue of dead organic matter), Nitrogen fixation of atmospheric nitrogen and denitrification (bacteria), inorganic transformation of elements (N,S, Fe, Mn, Ca), physical mixing of materials (macro organisms—worms, snails, slugs)

S8. Describe one (1) way in which flooding can be detrimental to soil health.

1 point

ANSWER: Deposition of material can be detrimental. Scouring can remove valuable material; decreased crop yield can reduce organic matter available.

11 total points

Station 1

W1. Look at the bird photo on the table. Identify the bird species by common name.

1 point **ANSWER: Belted Kingfisher**

W2. How do herons and ibises differ in their feeding methods? *Hint: What different senses do these birds use to capture prey?*

2 points **ANSWER: Herons are visual/sight hunters: wait for prey to pass close by or actively pursue prey and use spear-like bill and quick reflexes to capture prey. Ibises are sensory/ hunters/ feel for prey: use long de-curved bill to probe waters and sediment to feel for food and use quick beak reflexes to capture prey.**

W3. Give the name of the most common aquatic turtle in Texas. This species of turtle is frequently found sunning on rocks and logs. What do these turtles commonly do to escape the cold of winter?

2 points **ANSWER: Red-eared Slider Turtle, bury themselves in loose soil or mud**

W4. What is the largest reptile found in Texas? This animal was once on the Endangered Species list, but was removed in 1985. Is this reptile a carnivore, omnivore, or herbivore?

2 points **ANSWER: American Alligator, Carnivore**

W5. Look at the photograph labeled "W5". It was taken by a wildlife monitoring camera in north Houston. This animal has also been observed near this site at UHCL. What is the common name of the animal in the photograph?

1 point **ANSWER: Bobcat**

W6. List two (2) reasons for amphibian declines.

2 points **ANSWER: Habitat loss/destruction, habitat alteration/degradation, disease, climate change, invasive species, pollution**

10 total points
