

# BioConnect Student Pre and Post Assessment

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Section 1: Biomimicry Knowledge and Application

1. What is biomimicry?

- A. Creating a design that only looks like something in nature.
- B. Creating a design made with or from something in nature.
- C. Creating a design based on how natural organisms or systems function.
- D. I don't know.

2. Give one example of how a plant, animal or ecosystem could inspire a human invention.

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## Section 2: Biodiversity and Biomimicry

On the line before each of the following statements, use the scale below to indicate how you generally feel about each one. Be as honest as you can. There are no right or wrong answers.

|                      |   |                               |   |                   |
|----------------------|---|-------------------------------|---|-------------------|
| 1                    | 2 | 3                             | 4 | 5                 |
| Strongly<br>Disagree | → | Neither Agree<br>nor Disagree | → | Strongly<br>Agree |

- 1. \_\_\_\_ Different species can teach humans different ways to solve problems.
- 2. \_\_\_\_ Protecting biodiversity is important because organisms may have adaptations humans can learn from.
- 3. \_\_\_\_ When species go extinct, humans lose opportunities to learn from nature.
- 4. \_\_\_\_ Nature can inspire more sustainable human designs.
- 5. \_\_\_\_ Even small or unpopular species can be important to ecosystems.

## Section 3: Connectedness to Nature

On the line before each of the following statements, use the scale below to indicate how you generally feel about each one. Be as honest as you can. There are no right or wrong answers.

|                      |   |                               |   |                   |
|----------------------|---|-------------------------------|---|-------------------|
| 1                    | 2 | 3                             | 4 | 5                 |
| Strongly<br>Disagree | → | Neither Agree<br>nor Disagree | → | Strongly<br>Agree |

- 1. \_\_\_\_ I pay more attention to how organisms survive.
- 2. \_\_\_\_ I enjoy spending time observing nature.
- 3. \_\_\_\_ I notice patterns in nature that I did not notice before.
- 4. \_\_\_\_ I think observing nature can lead to new inventions.

## Section 4: Scenario-Based Reasoning

A scientist discovers a desert insect with a unique way of using energy from the sun.

Why might it matter to protect this species?

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## Section 5: Empathy & Value of Nature

How do you feel about observing nature? Choose one from the image to the right.

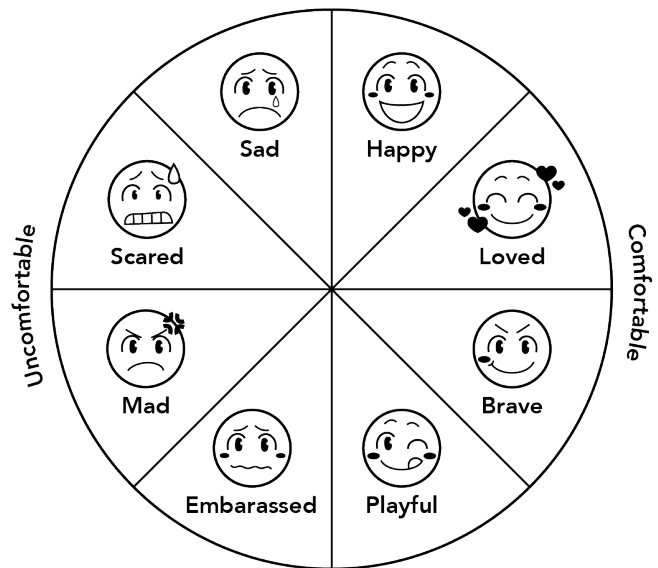
I feel this way because

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## Section 6: Open-Ended Reflection

Biodiversity is short for "biological diversity". Biodiversity is all the different organisms and habitats that exist in an ecosystem. If there is high biodiversity, that means there are a lot of different plants, animals, fungi and habitats in an area. If biodiversity is low, that means there is very little variety of living things and habitats in an area.

Why might protecting higher biodiversity be important for future inventions or technologies?

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# BioConnect Student Pre and Post Assessment

Name: **ANSWER KEY** \_\_\_\_\_ Date: \_\_\_\_\_

## Section 1: Biomimicry Knowledge and Application

1. What is biomimicry?

- A. Creating a design that only looks like something in nature.
- B. Creating a design made with or from something in nature.
- C. Creating a design based on how natural organisms or systems function.**
- D. I don't know.

2. Give one example of how a plant, animal or ecosystem could inspire a human invention.

**Answers will vary but could include:**

- The scientist that invented Velcro noticed was inspired by the seeds (burrs) of the burdock plant that got stuck to his dog's fur while hiking. He examined them under a microscope and the seed structure inspired the design of the hook and loop system of Velcro.**
- The aerodynamic beak of the kingfisher bird inspired the design of the nose of the bullet trains in Japan.**
- The bumps and ridges on the back of the Namib beetle inspired the moisture collecting design of the Warka tower system which collects water from fog in the air**

## Section 2: Biodiversity and Biomimicry

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1. \_\_\_\_ Different species can teach humans different ways to solve problems.
2. \_\_\_\_ Protecting biodiversity is important because organisms may have adaptations humans can learn from.
3. \_\_\_\_ When species go extinct, humans lose opportunities to learn from nature.
4. \_\_\_\_ Nature can inspire more sustainable human designs.
5. \_\_\_\_ Even small or unpopular species can be important to ecosystems.

### Section 3: Connectedness to Nature

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1. \_\_\_\_ I pay more attention to how organisms survive.
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4. \_\_\_\_ I think observing nature can lead to new inventions.

### Section 4: Scenario-Based Reasoning

A scientist discovers a desert insect with a unique way of using energy from the sun.

Why might it matter to protect this species?

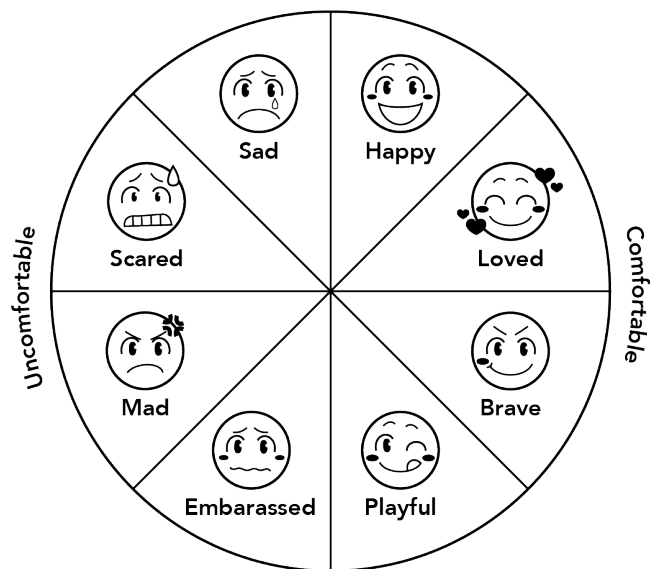
**Protecting this species matters because it could inspire breakthroughs in renewable solar energy.**

### Section 5: Empathy & Value of Nature

How do you feel about observing nature? Choose one from the image to the right.

I feel this way because

**Answers will vary.**



### Section 6: Open-Ended Reflection

Biodiversity is short for “biological diversity”. Biodiversity is all the different organisms and habitats that exist in an ecosystem. If there is high biodiversity, that means there are a lot of different plants, animals, fungi and habitats in an area. If biodiversity is low, that means there is very little variety of living things and habitats in an area.

Why might protecting higher biodiversity be important for future inventions or technologies?

**Life on Earth has been creating solutions for challenges in the environment for 3.8 billion years.**

**Protecting higher biodiversity provides a living library of unique chemical compounds, genetic designs, and biological solutions that can inspire new medicines, materials, and technologies.**