

Advanced Zoology and Ecosystem Dynamics

Natural Sciences · Answer Key · 8 Questions

1. Which species of deep-sea cephalopod possesses the largest eye-to-body size ratio in the animal kingdom, often exceeding 27 centimeters in diameter?

- A) Giant Squid (*Architeuthis dux*)
- B) Colossal Squid (*Mesonychoteuthis hamiltoni*)**
- C) Humboldt Squid (*Dosidicus gigas*)
- D) Vampire Squid (*Vampyroteuthis infernalis*)

2. In the context of subterranean ecology, which organism is the only known eusocial mammal, exhibiting a queen-based reproductive hierarchy similar to honeybees?

- A) Common Mole-rat
- B) Naked Mole-rat**
- C) Damaraland Mole-rat
- D) Golden Mole

3. Which avian species maintains a symbiotic relationship with acacia trees, specifically the swollen-thorn acacia, to defend the plant from herbivores?

- A) Acacia Ant-bird**
- B) African Gray Parrot
- C) Acacia Weaver
- D) Yellow-billed Oxpecker

4. What is the primary physiological mechanism by which the North American Wood Frog (*Lithobates sylvaticus*) survives sub-zero temperatures during winter dormancy?

- A) Hibernation-induced torpor
- B) Accumulation of high concentrations of urea and glucose as cryoprotectants**
- C) Metabolic rate reduction via bradycardia
- D) Dormancy through rapid insulation via subcutaneous adipose tissue

5. Which specialized organ in the platypus (*Ornithorhynchus anatinus*) allows for the detection of electric fields generated by the muscular contractions of prey?

- A) Lateral line system
- B) Electrorceptors in the bill skin**
- C) Ampullae of Lorenzini
- D) Sensory vibrissae

6. The 'Great Migration' of the Serengeti primarily involves which specific ungulate species crossing the Mara River?

- A) Grant's Gazelle
- B) Blue Wildebeest**
- C) Common Eland
- D) Burchell's Zebra

7. Which high-altitude ungulate, native to the Himalayas, possesses a specialized nasal cavity designed to warm frigid air before it reaches the lungs?

- A) Markhor
- B) Snow Leopard
- C) Tibetan Antelope**
- D) Blue Sheep

8. What is the primary ecological role of the 'nurse log' in a temperate rainforest ecosystem?

- A) Providing a substrate for moss and sapling growth**
- B) Serving as a carbon sink for nitrogen-fixing bacteria
- C) Acting as a predator-deterrent for ground-nesting birds
- D) Facilitating the migration of mycorrhizal fungi