PAIRED PASSAGE: NATURAL SCIENCE (ACT)

Passage A is adapted from the article "Saving Species in Central Africa" on the Smithsonian National Zoological Park website. Passage B is adapted from the article "Engaging citizens on a large scale in biodiversity discovery" by Sally Plumb.

Passage A:

The forests of central Africa—the Congo River basin and along the Gulf of Guinea—are some of the most important, and largest, wild ecosystems in the world. They are home to stunning numbers of diverse species and habitats. And while they have been subjected to deforestation and degradation, some large areas remain intact.

How best to protect that area and to ensure the wellbeing of its human and non-human populations are thorny issues. However, the study and application of evolutionary biology can support conservation efforts and identify important research and education priorities.

Scientists from North America, Europe, and Africa recommended increased research on species and habitats of conservation concern, more targeted research, monitoring and conservation strategies, and broader education outreach.

Specifically, they identified six urgent regional priorities:

1. More research is needed to understand species and areas that haven't been studied (especially remote and difficult-to-reach areas deep in the Congo basin).
2. New genetic techniques should be used to help scientists understand how species and biodiversity have evolved. This research can then shed light on how populations may respond to future challenges, including climate change.
3. Wide-ranging monitoring programs, using existing techniques, will help scientists understand the state of native populations, what threats they face, what invasive species may be present and causing changes to native ecosystems, and how human land use may be changing.
4. More than just studying individual species, evolutionary biologists and ecologists need to take a high-level look at how communities of species and ecosystems work and respond to threats.
5. Scientists need to focus on new and emerging diseases that may be present in the region now or in the future. Diagnosing these diseases and finding ways to prevent their spread, will help ensure the future biological integrity of the region.
6. Regional universities and labs should be supported in training the next generation of scientists and conservation professionals.

Focusing on these priorities for research and education will help scientists, conservationists, managers, and stakeholders make strategic and sensible decisions as they work to save the species and the heart of one of the most valuable ecosystems on the planet.

Passage B:

The National Park Service (NPS) is charged with protecting the biodiversity of its lands and waters, yet the majority of species remain undiscovered, including invertebrates, nonvascular plants, fungi, and microorganisms. This lack of knowledge hampers the protection of living resources from threats such as invasive species, disease, population pressure, and climate change. Indeed, changes induced by these environmental factors will likely appear in the lesser-known animal groups before they are reflected in large, iconic ones.

In an effort to identify life in parks, the National Park Service introduced "Biodiversity Discovery," an initiative that fosters development of activities and events in which members of the public, including professional scientists, park visitors, students, seniors, and children, participate in the discovery of living natural resources.

The National Park Service has been engaging in biodiversity discovery since 1996, when a bioblitz was held at Kenilworth Park and Aquatic Gardens in Washington,

D.C. The first large-scale biodiversity discovery program, an All-Taxa Biodiversity Inventory, began in Great Smoky Mountains National Park in 1997 through the coordinated efforts of the park and its nonprofit partner, Discover Life in America. Since then, many parks—large, small, urban, wild, naturally or culturally oriented—have initiated their own bio diversity discovery activities. As of 2014, approximately 118 parks have conducted work of varying levels and scopes.

Preliminary evaluations of the visitor experience in the large-scale NPS–National Geographic Society BioBlitzes, conducted through a cooperative agreement with Texas A&M University, reveal numerous favorable results:

1. Improvement in the quality of the visitor experience through development of direct connections to park resources
2. An increase in public awareness and sense of stewardship in park visitors through their engagement in firsthand scientific research
3. Increased relevancy and awareness of parks among the nation's youth
4. Public education about lesser-known species through educational products, services, and interaction with NPS staff

Host parks of biodiversity discovery events enumerate additional scientific and management benefits:

1. More knowledge of species in national parks across the country, allowing for more informed management decisions
2. Establishment of baseline knowledge of lesser-known flora and fauna against which changes can be measured
3. Increased collaboration with scientists and universities that continues long after the biodiversity discovery effort has concluded
3. Establishment of numerous fruitful collaborations with notable partners, such as the E. O. Wilson Biodiversity Foundation, National Park Foundation, Discover Life in America, Encyclopedia of Life, and National Geographic Society

The benefits of biodiversity discovery are so apparent that when the National Park Service announced a Call to Action in 2011, item 7, "Next Generation Stewards," envisioned the creation of a new generation of citizen scientists by conducting biodiversity discovery activities of varying levels and scopes in at least 100 parks by 2016.

Source: Passage A - http://nationalzoo.si.edu/SCBI/IntheField/Biotropia15.cfm
Source: Passage B - http://www.nature.nps.gov/parkscience/index.cfm?ArticleID=665

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1. The author of Passage A uses the phrase "thorny issues" (line 11) concerning discussions surrounding conservation in Central Africa in order to suggest that:

A) physical conflicts between communities are a major concern in the region.
B) the sustainability of spinose vegetation is of primary concern in the region.
C) the most aggressive argument is likely the most valid.
D) heated critical debates are common.

2. All of the following are characterized in Passage A as being priorities of conservationists in Central Africa EXCEPT:

A) extensive monitoring of the land.
B) research of previously non-studied areas.
C) expanding the tourism industry.
D) diagnosing new diseases.

3. The author of Passage A argues that, in order to make progress in sustaining the forests of Central Africa, conservationists must:

A) create collaboration between the native populations and government officials.
B) conduct biological research and disseminate their findings.
C) identify and then focus on one problem until it is solved.
D) eliminate species that negatively affect the land.

4. The author mentions the National Geographic Society (lines 106-107) and other organizations (lines 141-145) in order to suggest that:

A) the NPS is planning to hand over control of the National Parks to a non-governmental organization.
B) private organizations are responsible for funding the majority of NPS projects.
C) the NPS's current research is being disrupted by outside organizations.
D) collaborative partnerships contribute to positive change in the National Parks.

5. According to the author of Passage B, the primary reason the National Park Service created the "Biodiversity Discovery" program was that:

A) too many species were going extinct.
B) too many species have yet to be studied adequately or at all.
C) too many species are considered unpopular by visitors to National Parks.
D) too many species are expanding their populations at an alarming rate.

6. Each of the following are cited in Passage B as being positive aspects of the NPS visitor experience EXCEPT:

A) an increased interaction with park services.
B) an increased sense of stewardship and general awareness.
C) an increased demand for camping sites.
D) an increased familiarity with obscure species.

7. Passage B suggests that the continued success of the "Biodiversity Discovery" program would produce:

A) a greater number of adolescents with an interest in the sciences.
B) additional revenue for the NPS.
C) a revival of previously suspended research projects.
D) an opportunity to create new hybrid plant and animal species.

8. Which of the following statements summarizes a major theme present in both passages?

A) Research is needed to preserve valuable ecosystems.
B) Relationships with private companies are unnecessary for land management.
C) Youth involvement is a likely and intended consequence of environmental initiatives.
D) Specific locations around the globe have lost the opportunity for successful preservation.

9. Which of the following statements from Passage A is most closely related to the motivation for creating the "Biodiversity Discovery" program in Passage B?

A) "And while they have been subjected to deforestation and degradation, some large areas remain intact" (lines 6-8).
B) "More research is needed to understand species and areas that haven't been studied" (lines 24-26).
C) "Evolutionary biologists and ecologists need to take a high-level look at how communities of species and ecosystems work and respond to threats" (lines 45-49).
D) "Scientists must focus on new and emergent diseases that may be present in the region now or in the future" (lines 50- 52).

10. Both authors would likely agree that:

A) Individuals do not have enough influence to create positive environmental change.
B) Climate change and its effects need to be better understood.
C) The problems in Central African forests are identical to those in the U.S. National Parks.
D) New initiatives are needed to conserve the environment.