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| **iLearn BI 101**  **Procedures** | **Conserving Biodiversity Assessment:**  **Ecosystems Thrown Out of Balance** |

**Introduction:**

Now is your opportunity to demonstrate what you have learned about conserving biodiversity. After completing this assignment you will be submitting a report through the course website. Upon completion of this assignment with the minimum required score, you will have completed the Conserving Biodiversity module. The details on the grading and submission process can be found on the course website. You will need one additional document, which can be found in the course module:

* **Ecosystems Thrown Out of Balance Report**: Report your research in this document. This report is to be submitted through the submission page on the course’s website.

You will be investigating a case study of an ecosystem thrown out of balance by human actions. Your task is to research a case of your choosing and formulate three possible actions humans could take to restore the ecosystem to balance.

**Research:**

Of the following four topics, select one that most interests you. Explore the resources provided as hyperlinks below, along with your own independent research, to learn more about the issue. You will most likely need to go beyond these resources to complete this assignment, but it is a good place to start familiarizing yourself with the issue. During your research you should focus your attention on lifestyle of the species and the role it plays in the ecosystem it lives in, human activities that pose a threat to the health and/or survival of the species, and the impact that the loss of the species would have on the ecosystem.

**What effects are undersea sound levels having on marine mammals?**

* “[World’s marine mammals under threat from noise pollution.” Wildlifeextra.com, 2008.](http://www.wildlifeextra.com/go/news/marine-noise.html#cr)
* “[Why is sound important to marine animals?” Sound in the Sea, 2011.](http://www.dosits.org/animals/importanceofsound/whyissoundimportant/)
* “[How do you determine if a sound affects a marine animal?” Sound in the Sea, 2011.](http://www.dosits.org/animals/effectsofsound/howdoyoudetermineifasoundaffectsamarineanimal/)
* “[Effects of Human-made Sound on the Behavior of Whales.” Cornell University, 2012.](http://www.birds.cornell.edu/brp/research/effects-of-human-made-sound-on-the-behavior-of-whales)
* “[Beaked Whales: Sounding Off.” BBC, 2008.](http://news.bbc.co.uk/2/hi/science/nature/7642366.stm)

**What is causing the global decline of amphibian species?**

* “[What’s Causing Bird and Amphibian Decline?” National Geographic, 2004](http://news.nationalgeographic.com/news/2004/11/1108_041108_birds_frogs.html)
* “[A World without Amphibians, Interactive map: Frogs Around the World.” PBS.org, 2005](http://www.pbs.org/wnet/nature/episodes/frogs-the-thin-green-line/interactive-map-frogs-around-the-world/4856/)
* “[Worldwide Amphibian Declines: How big is the problem, what are the causes and what can be done?” Amphibiaweb.org, 2012](http://amphibiaweb.org/declines/declines.html)

**What are the effects of factory fish farming on ocean ecosystem health?**

* “[Fish Farming’s Growing Dangers.” Time Science, 2007.](http://www.time.com/time/health/article/0,8599,1663604,00.html)
* “[Hatchery Fish Can Succeed if Bred From Wild.” Washington Examiner, 1012](http://washingtonexaminer.com/study-hatchery-fish-can-succeed-if-bred-from-wild/article/feed/2035163?custom_click=rss#.UG4CW1EhySo)
* “[Why Factory Farming Is Not Environmentally Sound or Sustainable.” The Fish Site, 2011.](http://www.thefishsite.com/articles/1236/why-factory-farming-is-not-environmentally-sound-or-sustainable)

**How is increased urban development harming migratory birds?**

* “[The Importance of Migratory Birds. World Migratory Bird Day, 2012.](http://www.worldmigratorybirdday.org/2012/index.php?option=com_content&view=article&id=18&Itemid=4)
* “[Migratory Bird Mortality: Many Human Caused Threats Afflict Our Bird Populations.” U.S. Fish and Wildlife Service, 2002.](http://www.fws.gov/birds/mortality-fact-sheet.pdf) (This is a pdf file, you may need to remove pop up security on your browser to allow it to open)
* “[Bird Migration: Educational Resources.” Wild Birds Unlimited, 2012.](http://www.wbu.com/education/birdmigration.html)
* “[A Dangerous World for Migratory Birds, an interview with Sarah Lehnen.” Mongabay.com, 2010](http://news.mongabay.com/2010/0104-hance_lehnen.html)

**Report:**

Your report will address the following aspects of your topic. For each aspect listed below, type 2-3 paragraphs addressing all parts of the question in the report. Depending on the topic you choose, some of the questions below will vary on information available. Use your best judgment on which aspects may or may not apply to your chosen topic, but best effort is expected in seeking out information not found in the supplied resources. You will be assessed on use of appropriate spelling, grammar and vocabulary, accuracy of information, use of scientific terminology, and thoughtfulness of answers. To receive full credit, all aspects below must be addressed and three thoughtful plans of action thoroughly explained and analyzed.

**Data:**

Use the ‘Ecosystems Thrown out of Balance Report’ document to report the following information on your chosen topic.

1. Explain your reasons for choosing your topic. Why did this topic interest you the most?
2. For your selected species (or group of species), detail the important aspects of its biology and lifestyle. You may want to select a representative species relating to your chosen topic to limit the scope of this content. Just be sure your representative is one that is actually at risk, and be sure to address the following aspects:
   1. Lifespan
   2. Reproductive strategy (frequency of reproductive events, number of offspring per event, level of parental care, etc).
   3. Social structure
   4. Main food sources and strategies to obtain it
   5. Natural predators if applicable and evasion strategies
3. Describe the ecosystem your species of interest lives in. Be sure to address the following aspects:
   1. Biotic components (Array of species and some interactions these have with the species at risk).
   2. Abiotic components (Location, temperature, weather patterns, water sources, etc).
   3. Human reliance on components within the ecosystem.

1. What type(s) of human activities are negatively impacting the species and ecosystem of concern? Be specific and descriptive!
2. What consequences might result if no protective action is taken, both at a species level and the ecosystem level?
3. Based on your research and personal opinion on the topic, develop THREE potential plans of action to halt and reverse the threats to your selected species and ecosystem. You may want to think about your plans in terms of different levels. For example, develop a plan in which the average person can play a role, one plan that is at the state or national level, and one that is on a global scale that requires cooperation between multiple countries. Evaluate each plan of action, addressing the following issues:
   1. Economic impact
   2. Positions held by various stakeholders in the issue (Industry leaders, scientists, outdoor recreationalists, conservationists, etc).
   3. Timeline of impact (How long will this plan of action take to see measurable results?)
   4. Predict any pitfalls that could come out of this plan (Unintended consequences/impact on the environment, economic hardships, Public outcry/backlash, etc).
   5. Is this plan of action realistically feasible? Would you support it? What is one concrete action that the average person could take to help make this plan a reality?

Need some inspiration? Check out this series of video clips for ideas on how to organize your thoughts. (There is not close captioning for these video clips; however, you can find the video in its entirety with CC by doing a search for “The Secret World of Sharks and Rays” on YouTube.):

[Sharks and Rays: Symbiotic Strategies, PBS, 2009](http://www.pbs.org/wnet/nature/lessons/symbiotic-strategies/video-segments/1496/)