

Name: _____ Date: _____



Critically Thinking about Wildlife

Purpose:

This exercise will allow you to study real-life situations and learn how the intermingling of science and values can affect management policy. This will be accomplished through your choosing a topic from a list of 8 management scenarios and presenting your plan to the class.

The Scenarios:

- 1) Imagine a fictional city in Pennsylvania, named Meadowburgh. It has exactly 51,457 human residents, most of whom enjoy strolling through the city's 1,000 acre metro park. The town has two new residents, both coyotes (*Canis latrans*), who have been reported in the metropark numerous times in the past month. As you can imagine, some town residents are taking objection to their presence, while others are not. You are a wildlife manager looking to solve this "problem," while making sure to appease the local human population.
- 2) Kruger National Park in South Africa currently contains about 16,000 elephants (*Loxodonta africana*). The park is 19,485 square kilometers in size. Some wildlife "experts" suggest that this is taking a toll on the ecosystem within the park. Other people suggest that the elephants are doing no such thing and are a necessary component to the park. As a park manager, you have to determine what impact the elephants are having and what actions need to be taken considering all aspects of the animal in question.
- 3) Imagine a lake and surrounding open space all of which occupy 170.4 acres in suburban Connecticut. The lake itself covers 4.5 acres and the most recent observations are that *Phragmites australis* is moving in throughout many areas of the property that are damp or wet. Some local residents welcome the new plants as there has been some flooding in nearby basements, supposedly

due to the amount of impervious surfaces created in the environment over the past few decades. Other people are opposed to the presence of this plant for numerous reasons. You are an employee for the town's conservation department and are in charge of determining how to handle this previously unseen plant.

- 4) Remember that town, Meadowburgh, PA.? Well, coyotes are not the only hot topic at the Thursday night meetings. The town is also faced with a growing population of white-tailed deer (*Odocoileus virginianus*). Recent estimates place the deer population throughout the region at about 60 deer per square mile. As usual, some residents welcome this raid and think it adds to the town's charm, while others view it as a direct threat to their very livelihood. As an employee of the local DEP office, you have been placed in charge of figuring out what should be done, if anything, about these deer.
- 5) The Cane Toad (*Bufo marinus*) is expanding its range in Queensland, Australia. Despite the image this animal has as an invasive species, the human population is still torn about how to handle this toad. Ethically some people view their introduction as a "natural" one influenced by humans. Other people simply disagree and push for total eradication. As a wildlife manager, you have been placed in charge of figuring out what to do about this creature. Your work outside of Townsville will set the stage for a larger regionalized approach throughout Queensland.
- 6) As a wildlife manager in Wyoming, you have been placed in the middle of an on-going battle between those in favor of wolves (*Canis lupus*) and those against them. While not so recent anymore, the reintroduction of wolves to Yellowstone National Park has been controversial and you are in charge of assessing the current situation and determining not only what the "plan" is, but also how to appease both those who want the wolves to stay and those who do not.
- 7) Hikers in the Los Angeles area have been noticing numerous signs and news stories about mountain lions (*Puma concolor*) in the area. There are sides to every issue and this is no different. Some residents enjoy the fact that the mountain lion is just steps away while others would like to hike and run with no fear of being attacked. As a manager, you are in charge of determining how to manage this species in the hills outside of Los Angeles so as to benefit all involved.
- 8) Imagine a suburban town of 23.56 square miles in lower Fairfield County, Connecticut. A black bear (*Ursus americanus*) has been spotted in the town milling around bus stops and store dumpsters. At this time, this is the only bear that has been seen in this town, but similar sightings have occurred in adjacent towns in the county, raising much discussion about what should be

done. As a member of the local DEP office, you are in charge of working with the town to establish a plan for handling this new addition to suburbia.

Individuals on different sides of these issues hold deeply entrenched views and it appears a no-win situation for wildlife managers. If animals or plants are simply removed, wildlife managers would appear to be acquiescing to every human desire at the expense of biodiversity. Maybe it is just the beginning of eliminating every single poisonous snake, or even the badgers, bees, wasps and skunks, all of which are viewed by some as threats to humans.

On the other hand, if wildlife managers tell the public that having dangerous wildlife is a price one pays for living next to wild or even semi-wild areas like metro parks or open space, much of the public would strongly object. You have your work cut out for you as you need to develop a management plan that will consider all sides of the issue.

Some interesting questions to consider.....

1. What are the basic life requirements for the species involved?
2. Has an aggressive public involvement program to educate local property owners on the species been implemented?
3. What would or can keep the species in question in one area?
4. Has a thorough monitoring program been developed?
5. Is there a budget to perform monitoring studies?
6. Is there a system to revise and modify management practices (adaptive management) based upon data from studies?
7. Has there been coordination with the agencies responsible for the species?
8. Do predators control prey populations, or do prey populations control predator populations?
9. Should fences be used to control the movement of any of these species?
10. How adaptable are these species, meaning, will they abide by the rules we set forth them, or will they just adapt and fill a new niche?

Procedure:

After reading all the material presented to you, you will break up into a group of no more than three. Your team will be responsible for developing a wildlife management plan for the species mentioned in one of the scenarios. Each team should review the questions presented above to generate your management plan. In addition, you should review the material below regarding the evaluation of sources used during research.

You will be given one week from today to complete your management plan. You will be asked, as a group, to present a **10 minute** PowerPoint presentation on the topic and submit a **five page** policy paper, which will include a statement of decision, rationale for your decision and procedure for implementation of this plan. Teams will perform their own research by using any **reliable** source they are able to access.

Certainly in determining how to manage the species, you should consider all sides of the issue before jumping to any decisions. Use the information on the following page as a guide to understanding how to properly gather materials and review them to the best of your ability....

Critical Analysis in Environmental Science:

Scholars define critical thinking "as thinking that explicitly aims at well-founded judgment and hence utilizes appropriate evaluative standards in the attempt to determine the true worth, merit, or value of something." (www.criticalthinking.org/schoolstudy.htm) It follows that asking targeted questions at the proper time, and having the question answered to your satisfaction, provides you with a sound basis for making a decision.

To evaluate the validity of the evidence you collect, *you should analyze sufficient information so that all legitimate sides of the topic or controversy are represented.* If you do this by analyzing a scientific paper, the resource you use should be peer reviewed and replicated. Critical thinking should be used as a tool to assess the quality of another's research and to improve your own thinking and writing.

The critical thinker interacts with the material presented, asks the right questions and decides what is valuable to keep and what information should be dismissed. To evaluate the validity of the evidence and decide whether an argument is sound and true, avoid the following traps:

- biased statements;
- unsupported inferences;
- arguments that may contain deceptive statistics, fallacies, unsupported conclusions, weak evidence or ambiguities.

When you read material regarding wildlife management, you should ask questions of the material to discover if the information is valid. This is very important in any research you conduct and authors M. Neil Browne and Stuart M. Keeley offer the following questions for you to consider as you do this:

- Do the authors state the values and assumptions on which their argument is based?
- Is evidence sound- does it appeal to authority, testimonials, empirical evidence?
- Is there fallacious reasoning?
- Is this a case of cause and effect or is it a correlation?
- If it is a cause and effect, can there be more than one cause and is the identified cause the correct one?
- What reasonable conclusions are possible?
- Is the use of statistics deceptive in this case?
- Is there information omitted?
- What is the reasoning? (Browne and Keeley)

Critically assess source material to make better judgments. This may involve doing more thorough research. By limiting your research so that all valid views are not represented, or analyzing a scientific study that has not been replicated or peer reviewed, and without filtering what is read through critical lenses of questioning, your views can be biased, unfounded, unsupported, and arguments can be illogical.

Next you should summarize your view in one or two statements. After doing this, you should address the following questions to see if your view still makes sense. If it does not, you should modify your position.

You should consider the following:

- Is this the most accurate way to frame the issue?
- What other information is needed to evaluate the validity of this statement?
- Is it likely that the species in question poses a legitimate threat to humans?
- Are there alternative responses in addition to the three views listed above?
- Would extracting or eliminating the species in question solve any potential problems that may result?
- What secondary effects are possible / probable should the animals be removed?
- What is the environmental implication for removing the plants / animals?
- What is the environmental implication for leaving the plants / animals?
- What human rights / animal rights issues should be considered?

Evaluation:

You will be evaluated according to the following aspects. Note: the key aspect of your grade will be your ability, as a group, to clearly present an argument on how best to manage the species in question, with sufficient support for your conclusions.

Rubric:

Summary of Management "Problem" 10 points _____

Clear statement of Management Plan 20 points _____

Sufficient support for your plan (10 questions from assignment)
20 points _____

Support should include background information on species and their life style so that a clear understanding of how their needs relate to your plan is exhibited

5 points _____

Support should also include the needs of the people in the immediate area

5 points _____

Policy Paper is completed and covers the main aspects of the presentation

30 points _____

All sources are referenced

10 points _____