A start-up game farm

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Outline

Game farm

Figure: Game farm for sale

Problem statement

Suppose you purchase a piece of land that is suitable for a game farm. A suitable piece of land means that:

- There is a reliable source of water i.e a lake or river.

- There is suitable vegetation for grazing animals.

- There is adequate shelter.

You obtain a loan from the bank for X amount. Part of this problem is to determine how much you need to borrow from the bank. You decide to build a self-sustainable game farm that requires very little human intervention. You also want to make money so you need the type of animals that will attract tourists.

Key points

There are many different aspects to this problem. Some of these include:

- You need to tell the bank how much you want to borrow. If you do not borrow enough money, or if you use the money incorrectly, your game farm will likely fail.

- You need to choose the number and type of animals very carefully. You want a self-sustaining farm. So, for example, you cannot only purchase predators.

- Your plan for purchasing animals must adhere to the carrying capacity of your piece of land.

Key points

- You want to attract tourists. Rhinos attract tourists, but they also attract poachers leading to a possible loss of revenue. Rhinos also require a lot of space.

Trophy hunting

Figure: Hunted leopard

Other points

There are many other points that can be discussed. These include decisions that may infringe on what is considered moral or ethical.

- You may consider allowing trophy hunting in your farm.

- You may lose animals to neighboring farms.

- Culling of animals.

Mathematical model

Start off with a simple problem! As an example, consider the following:

- You only consider two different species. For example, both can be herbivores, both carnivores or one of each. You will need to analyse these cases and determine their chance for success and cost effectiveness.

- Use either differential or difference equations.

- Discuss the solutions and stability etc.

- Now adapt this model.

Conclusions

- Develop a cost effective strategy that leads to a self-sustaining game farm and a profit.