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## Mini Review

# A census and inventory of wild animals

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## Abstract

The destruction of habitats in ecosystems, the rapid growth of the human population, and climate change have led to a decline in wildlife populations worldwide. It is therefore important to carry out a census and inventory of wild animal species, to determine their size, distribution, and status, especially in the context of accounting for forestry resources. Highlights are also given to the differences between a census and an inventory and how they are carried out. Such as censuses and inventories, how they help in monitoring and understanding animal populations, habitat changes, and developing conservation strategies, and how these approaches can be used to calculate the economic value of forests. This article concludes by discussing the impact of censuses and inventories on sustainable forest management and improving forest accounting by providing more accurate data. However, in carrying out the census and inventory of wild animals there are still obstacles such as limited funds, human resources, and adequate technology. So it is suggested that the need for support from the government, organizations and the community to increase the availability of resources needed to carry out censuses and inventories of wild animals.

## Introduction

The importance of conducting a census and inventory of wildlife, particularly in the context of forestry resource accounting [1]. The rapid growth of human population, habitat destruction, and climate change have led to a decline in wildlife populations worldwide. Census and inventory are essential tools in determining the size, distribution, and status of wildlife populations. The article emphasizes the importance of conducting a census and inventory of wildlife species, and how this data can help develop effective conservation strategies [2-5].

Forest degradation, deforestation, and depletion are serious problems for wild animal populations worldwide. Without censuses [6] and inventories, it is difficult to know the number and distribution of different species, which can lead to a decrease in the quality of their habitat and a reduction in the natural resources available to them. Additionally, deforestation

and forest encroachment can cause wild animals to move to areas closer to human settlements, which can lead to increased conflict between wild animals and humans. And the loss of natural habitats can lead to a decrease in overall environmental quality, reducing the ability of ecosystems to provide valuable ecosystem services [7-9].

## Main text

**Difference between census and inventory:** Both census and wildlife inventory are ways of monitoring wild animal populations. There are, however, some distinctions between the two. A wild animal census is the systematic counting and assessment of wild animal populations in a specific area. The census is carried out by counting the number of individual wild animals found at a time, and the total number is recorded. The census was conducted on animals that can move actively and are easily detected, such as birds and large mammals [10].



Meanwhile, wild animal inventory is the collection of data on the presence of wild animals in a certain area, including their species, abundance, and distribution. An inventory of wild animals is carried out by setting traps, checking for tracks, and evaluating suitable habitats for certain species. Wild animal inventories aim to obtain information about the distribution and abundance of wild animals in an area and become the basis for making decisions about wild animal management and conservation [11,12].

Some examples of censuses and forest inventories such as research conducted by the Zoological Society of London (ZSL) and the Wildlife Conservation Society (WCS) in the Bukit Barisan Selatan National Park (TNBBS), Sumatra, Indonesia. The research found that the Sumatran tiger population has declined by 1992 to around 400 tigers, habitat destruction, and conflict with humans. A census and inventory of wild animals are needed to monitor and understand animal populations [13].

Furthermore, based on research conducted by WWF, the tiger population decreased by 96% during the 15<sup>th</sup> century and it is estimated that there are only around 3,900 tigers in the wild today. Illegal poaching to satisfy market demands for tiger parts used in traditional medicines and cults in popular beliefs has thus become a major threat to their survival. In addition, loss of habitat is also a serious problem for tigers who continue to lose their living space due to deforestation and conversion of forests into agricultural land or industrial areas [14].

Wildlife censuses and inventories are very important methods for monitoring and protecting wild animals. Several contributing factors include:

1. Determine the number of wild animal populations: Scientists and researchers can determine the level of conservation required to keep species from becoming extinct by determining the number of wild animal populations [15]. Identifying the appropriate level of conservation to keep a species from going extinct involves an assessment of population size and threat.
2. Be aware of habitat changes: A census and inventory of wild animals can also aid in monitoring habitat changes. Scientists can analyze the impact of habitat changes on wild animal populations and make recommendations for better habitat management by learning about them [16]. Monitoring habitat changes through a census and inventory of wild animals can help scientists understand how ecosystems are changing and make informed decisions.
3. Develop a conservation strategy: Census data and inventories of wild animals can be used to develop a more effective conservation strategy. Conservationists can better manage limited resources if they know which species require more attention [17]. Carrying out the development of a conservation strategy involves identifying priority species and ecosystems, designing interventions to address their threats, and prioritizing actions based on needs and conservation success.

Forestry accounting relies on this method, especially in relation to recording assets in forestry balance sheets [18–20]. This is our basis for analyzing ecological growth rates, conducting economic assessments of forests, and determining the potential financial value of forests.

## Discussion

In the context of forestry accounting, censuses and wild animal inventories provide accurate and valid data on the number, type, and quality of wild animals found in a forest. Interestingly this then be used to calculate the economic value of forests, including the value generated from ecotourism, sales of forest products and non-timber products, and to assist decision-making in sustainable forest management. Therefore, censuses and inventories of wild animals are essential to ensure the financial sustainability of forests and increase economic benefits for local communities.

Censuses and wild animal inventories not only provide valuable data for calculating the economic value of forests, but they are also important tools for assessing the conservation needs of forest ecosystems. By estimating the population size of species and identifying threats to their survival [21,22], conservationists can develop effective strategies for managing forests sustainably and protecting biodiversity. In this way, censuses and inventories of wild animals play a critical role in ensuring the long-term viability of forests and the economic benefits they provide to local communities [23–25]. To get an appropriate description of that factor, it can be described as follows:

1. The population size of a species must be estimated through various methods, such as direct counting, indirect surveys, or statistical modeling. Therefore, if the population size is below the Minimum Viable Population (MVP), then the species is considered endangered. When determining the appropriate level of conservation needed to keep a species from going extinct it involves assessing the population size and threats faced by the species and taking action to address those threats.
2. In being aware of changes in habitat, monitoring of changes through censuses and inventories of wild animals can help scientists understand how ecosystems change and make informed decisions about conservation and management. Methods such as direct observation, camera traps, and acoustic surveys can provide information on individual numbers, species diversity, and habitat use patterns. The results can be used to make recommendations for better habitat management.
3. Conservation strategies involve identifying the species and ecosystems most at risk of extinction or degradation and designing our interventions to address threats to them. This can be done by analyzing population, habitat, and threat-type data. Interventions may include habitat protection, restoration or management, hunting regulations, captive breeding programs, or education



and public outreach. Conservationists can also prioritize species based on conservation needs and the likelihood of success of different interventions. So census data and wildlife inventories can be valuable tools for this process.

## Impact

In general, those approaches are useful provide important data needed to calculate the economic value of forest assets and account for the impact of a decrease or increase in wild animal populations on the economic benefits generated from forests.

For example, a study in African countries combined elephant census data with an economic profit model to evaluate elephant conservation management and estimate the economic impact of illegal elephant poaching. In this study, the elephant census was used to calculate the elephant population and then used in the economic profit model to estimate the economic value of elephant tourism. The results of the study show that illegal elephant hunting can reduce the economic benefits generated from elephant tourism by US\$25 million per year [26].

## Conclusion

The census and inventory of wild animals is an important step in sustainable forestry management. This approach proves that can provide important information about populations, habitats, and species diversity in forests, which can help develop more effective conservation and management strategies. However, there are still some challenges in carrying out censuses and inventories of wild animals, such as limited funds, human resources, and adequate technology. To increase the availability of the resources needed to conduct a census and inventory of wild animals, there is a need for support from the government, organizations, and the community. In carrying out censuses and inventories of wild animals, it is necessary to choose an appropriate methodology that considers the desired data requirements and available human resource capabilities. Overall, we believe that wild animal censuses and inventories can help improve sustainable forest management and improve forest accounting by providing more accurate data.

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