Tourism Value Assessment of Typical Wildlife Reserves

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Abstract: Eco-tourism has become the main trend of tourism development in the world today, and it is also a new direction of the development of nature reserves. Nature reserves in the field of eco-tourism has a unique developable resources and broad prospects for development, how to carry out eco-tourism and make it in the protection of natural resources under the premise of sustained development, is the focus of people, especially natural and environmental protection workers. With the development of economy, “eco-tourism” has become a hot spot for the development of all parts of the world, and eco-tourism areas, three-state economy and nature reserves are also in full swing. Because the ecological bad environment is very fragile, in the development and construction at the same time, we should grasp the degree of protection and development, to avoid inappropriate development to the resources and ecological environment of the impact and destruction. Therefore, in the planning and construction of various regions, the protection and development of eco-tourism resources is the focus of its planning and construction, and it should be developed moderately on the basis of effective protection of resources. Based on the analysis of the resource status and advantages of the resources of a wildlife reserve, this paper makes a preliminary study on the development and utilization of the eco-tourism resources of the wildlife reserve, and puts forward the principle sands and guiding ideology objectives of the development, taking the research area as the research object, and analyzing the resource status and advantages of the protected area. By using travel expenses to explore the value of a typical wildlife sanctuary, assess whether a wildlife sanctuary is worth developing, and the benefits of its post-development tourism.

Key words: Wildlife Sanctuary, Eco-Tourism, Travel Expenses, Development Value Assessment

1. Introduction

As the material basis for human survival and development, natural ecosystem not only provides physical ecological products for human beings [1-4], but also provides more types of non-physical ecological services for human beings with its rich biodiversity. These services can bring great benefits to mankind and have great economic value. However, because these non-physical ecological services are generally indirectly affecting human economic life, their economic value can not be reflected through the commercial market, it is difficult to quantify its value and often neglected, resulting in the development and utilization of natural resources in the process of short-term behavior, resulting in serious damage to the ecological environment. This ultimately leads to damage to the service functions of ecosystems, reducing the benefits that ecosystems provide to human-being, and directly threatening the foundations of sustainable human development.

Wild animals are important members of biological systems, which are closely related to natural ecosystems, and “pull the whole body together”, which is not only of great significance in maintaining ecological balance, but also plays a great direct or indirect role in human production and life. Wildlife is the most active and visible component of the ecosystem. As an important part of biodiversity, wildlife has multiple values. At the same time, the value of wild animals also depends on people’s perspective, that is, people’s own interests. The realization of wildlife service function can not be separated from the natural ecosystem. In the early days of human civilization, human beings used wild animals to protect themselves from the cold. At that time, people took advantage of the direct value of wild animals. However, in recent years, people advocate returning to the truth and returning to nature, while the direct value of wild animals has declined, the indirect value of wild animals, such as ecological value and cultural value, is rising. Wild animals can provide huge ecosystem service function, which plays an increasingly prominent role in people’s daily life and national economy.

Leisure tourism activities with wild animals as the object of the development of leisure tourism industry is an important part of the development of leisure tourism industry, and in the current development of leisure tourism industry with wildlife as the object, on the one hand, because of the development, management and understanding of wildlife value misunderstanding, resulting in the development of leisure tourism activities with wild animals as the object of blind development. One-sided pursuit of economic benefits, neglect of its ecological and social value, underestimate the value of wildlife resources utilization, wildlife resources leisure
products prices are distorted, wildlife leisure industry policy formulation and implementation is difficult, and on the other hand, because there is no proper coordination of the relationship between wildlife resources protection and utilization, So that the value of non-expendable utilization of wild animals has not been realized, resulting in the waste of wildlife resources, the contradiction between nature reserves and local government, community residents, single management mode and a series of problems, based on the above background, this paper specifically carry out the leisure tourism activities targeting wild animals generated by the economic, social, Ecological influence and find out the main factors affecting such leisure tourism activities, clear the value of leisure tourism that can be created by this activity, in order to correctly understand and objectively evaluate the purpose of leisure tourism activities with wild animals as the object, which undoubtedly has important theoretical and practical significance.

This paper chooses a typical wildlife nature reserve as the research object, uses the theories and methods of ecotourism and landscape ecology, draws lessons from the experience of ecotourism development in nature reserve at home and abroad [5, 6], takes ecological bird watching as an example, adopts the travel cost method to study the ecotourism conservation development of wildlife nature reserve [7, 8]. The sustainable development of wildlife nature reserves, the promotion of a virtuous cycle of natural ecological environment, the improvement of economic benefits and the living standards of local community residents, as well as the awareness of the public to protect the ecological environment, are of great significance. It can provide reference for the local government, tourism management departments and tourism developers, with a view to providing reference for our country. The development of eco-tourism in the same type of nature reserves can provide reference [9-12].

2. Wildlife Sanctuary

2.1. Status of Wildlife Resources

The construction of wildlife reserves is an important measure to realize the protection of biodiversity in situ [13], and it plays an irreplaceable and positive role in maintaining ecological balance, maintaining biodiversity stability, regulating climate, improving people’s living environment and promoting the development of national economy.

The wildlife reserve is the natural background of the ecosystem, which contains the various ecosystems that are the product of the long-term interaction between life and the environment, and this natural background also provides guidelines for evaluating the merits of human activity. Nature reserves preserve many extremely rare and endangered wildlife species and the ecological environment on which they depend, and are natural reservoirs for various ecosystems and biological species [14], as well as a haven for endangered species. The wildlife reserve sits in a complete ecosystem, rich species and its biome resources, which provides a good base for us to carry out a variety of continuous and systematic long-term observations, rare species breeding, domestication research, etc., and become a natural laboratory built on nature. The nature reserve has a well-preserved natural ecosystem, precious and rare wildlife resources and address profiles, which has an irreplaceable tourist attraction. At present, the development of eco-tourism in nature reserves has become one of the ways to bring social and economic benefits to nature reserves.

The inherent classification of animal industry has been very clear, so this paper in the nature reserve wildlife tourism resources before the evaluation, no longer its subdivision, but direct reference to the classification criteria of the animal industry, that is, animals, birds, fish, amphibians, reptiles, insects, on this basis, the resource evaluation. Because this study only evaluates the wildlife resources suitable for tourism in nature reserves, which have a strong attraction to tourists, the author selects animal, bird and insect resources as the object of evaluation [15]. Because most of the species in amphibians and reptiles can make tourists feel psychologically uncomfortable or afraid, the author does not consider them here, while fish do not consider here because they are not convenient for tourists to observe in wildlife tourism.

![Figure 1. Classification of the object separated in the evaluation of wildlife tourism resources in nature reserves.](image-url)
Nature reserves refer to areas where the land, land water bodies or sea areas where protected objects such as representative natural ecosystems, rare and endangered wildlife species, and natural relics of special significance are designated for special protection and management according to law.

Wildlife in wildlife protection law refers to precious and endangered terrestrial, aquatic wild animals and beneficial or important economic and scientific research value of terrestrial wildlife. It may include all the economic activities and products that are created by animals that live in an environment suitable for its free habitat and that are cultivated by animals that still maintain wildlife characteristics and are targeted at wildlife. Its scope should include wildlife resources as defined by the National Wildlife Protection Act, as well as artificially cultivated wildlife resources and products and services that are targeted at both resources. This paper mainly discusses the leisure tourism activities and value created by the use of wildlife resources. Leisure tourism activities are people in the wild, through watching, hunting wild animals and to achieve relaxation, satisfaction of interest and so on, generally in the wild natural free state or semi-natural state, so the concept of wildlife defined in this article refers to living in the wild natural or semi-natural free state of land-based wildlife It is not included in the scope of this paper for aquatic wildlife resources products and services.

2.2. Tourism Value of Wildlife Sanctuaries

Eco-tourism in nature reserves is based on the natural landscape, natural life and natural society in nature reserves, and within the control index of the environmental capacity and ecological carrying capacity of nature reserves, to enjoy nature and understand, study the natural landscape, as well as wildlife, related cultural characteristics for tourism purposes. Special forms of tourism behavior with the aim of not changing the structure and function of ecosystems and protecting natural and human ecological resources and the environment in order to enable nature reserves and communities to benefit economically and to give back to the cause of nature conservation.

The value of wildlife resources is classified differently from different angles. From the economic point of view of the understanding of the value of natural resources, the value of natural resources is divided into (1) utilization value or useful value (2) non-utilization value or intrinsic value. The utilization value can be further decomposed into direct utilization value, indirect utilization value and selective value. Use value refers to the ability to satisfy a person’s needs or preferences when an item is used or consumed. The value of direct utilization is determined by the direct contribution of natural resources to current production or consumption, which refers to the value of directly meeting people’s production and consumption needs. Indirect utilization value refers to the benefits provided from natural resources and indirectly obtained from the various functions of current production and consumption activities, similar to ecological service functions in ecology. Selective value refers to the insurance that a consumer is willing to pay for an unused asset in order to avoid losing it in the future. Non-use value is an intrinsic attribute of natural resources and environmental goods, and it is generally accepted that the value of existence is one of the most important forms of non-use value, which is obtained only with the satisfaction of the existence of the asset, although there is no use of the use. Since the vast majority of people have meaning for natural and environmental resources, the willingness to pay is the basis of the value of existence. Economists have put forward several examples for the existence of the existence of value, which shows that people think that resources and environment have existential value because of the bequest motive, gift motive, and sympathy motive.

According to the above-mentioned economics related theory on the value composition of natural resources, the value composition of wildlife resources can also be divided into direct utilization value, indirect utilization value, selection value and existence value, animal products, recreational activities, animal genes provided by wildlife resources. The knowledge education of wildlife resources belongs to the indirect utilization value of wildlife resources, including the biological chain nutrition cycle of wild animals, food chain balance, biodiversity and other ecological values. The choice value of wildlife resources refers to the insurance money that people are willing to pay in order to avoid losing wildlife resources in the future. The existence value of wild animal resources is fully reflected in the value of wildlife resources, people have sympathy and concern about wildlife resources, with the strengthening of people’s awareness of environment and wildlife protection, the vast majority of people have the willingness to pay for the existence of wildlife resources, which is the basis of the existence value of wildlife resources.

2.3. The Theory of Eco-Tourism

Using the theory of sustainable development, protect and build tourism resources and environment in nature reserves, so that their characteristics are unique and the environment is beautiful, so as to benefit the development of eco-tourism in nature reserves. The theory of sustainable development points out the goal of eco-tourism development in nature reserves, and the goal of eco-tourism development in nature reserves is to regulate the relationship between tourism activities and the changes of natural, social, economic and cultural systems, so that it can achieve the goal of sustainable development of tourism, which is universally recognized.
by mankind, that is, without harming the ecological environment. It not only meets the tourism needs of the present generation, but also does not endanger the development of future generations to meet their own tourism needs. The theory of sustainable development defines the working principles of the relevant personnel for the development of eco-tourism in nature reserves, and managers should not only consider economic benefits, but also attach importance to ecological and social benefits, adopt a conservation-oriented and economical management model, and ensure the sustainable development of tourism tourists should consciously protect tourism resources and environment. As far as possible to reduce the destruction of resources and environment in nature reserves planners should have the view that the interests of the present and future generations fair point of view, that is, intra-generational equity and intergenerational equity, to protect the material basis of sustainable development of eco-tourism. The essence of eco-tourism in nature reserves is to enjoy the tourism activities of experiencing ecological beauty, tourists should pursue ecological beauty, developers should strive to find and create ecological beauty, managers should try to protect ecological beauty, etc. are the specific requirements of ecological beauty theory for the development of nature reserve eco-tourism. The theory of ecological aesthetics has important guiding significance to the development of eco-tourism in nature reserves. With the continuous development of eco-tourism, eco-tourism in nature reserves, as an important part of eco-tourism, on the basis of the above three theories as theoretical guidance, learn from the research results of other related disciplines, absorb environmental ethics, landscape ecology and other related theories, and lay a more perfect theoretical system for the development of eco-tourism in nature reserves.

3. The Theory and Method of Tourism Value Assessment in Wildlife Reserves

3.1. Assessment Theory

Wildlife resources belong to natural resources, China’s wildlife protection law clearly stipulates that wildlife resources belong to the state, and wildlife resources are renewable public goods resources, renewable goods resources refers to not owned by any particular individual, but can be enjoyed by anyone, renewable resources. Such renewable resources have at least one of the following characteristics that consumption is not selective or non-exclusive.

The value assessment of natural resources is the quantitative assessment of the goods and services provided by natural resource assets in the form of monetization, with the aim of measuring the degree of preference for natural goods and services. The value of natural resources and environmental values in the market can’t be accurately reflected, or ignored the value of natural resources and environmental goods and services, resulting in the value of natural resources in the market low price situation. The assessment methods of natural resources and environmental damage and benefit are divided into three types of direct market evaluation method, revealing preference method and stating preference method. Direct market evaluation method is based on the change in productivity to assess the impact of environmental quality changes to reveal that the preference method is through people to examine market-related behavior, especially in the market closely linked to resources and the environment to pay prices and the benefits they obtain, indirectly infer people’s preference for natural resources and the environment. The travel cost method is often used to evaluate the value of natural attractions or environmental resources without market prices. The main assessment is the income that tourists make by consuming these environmental goods or services, or the willingness of tourists to pay for these places of travel.

Wildlife leisure tourism refers to the leisure tourism activities in the wild or semi-wild natural state of wildlife resources, which mainly take the form of tourism, entertainment, recreation and so on, the value of wildlife leisure tourism mainly refers to the value of recreation, but people in the process of watching and hunting, While experiencing the leisure value brought about by leisure tourism, it also embodies the aesthetic, social and educational values of wildlife resources. The value of wildlife leisure tourism is divided into utilization value and non-utilization value from the angle of economics.

Figure 2. Tourism value composition of wildlife sanctuary.
3.2. Assessment Methods

The travel expense method assumes that all consumers consume the environmental goods or services with equal total benefits, which is equal to the travel costs of marginal tourists, and that the consumer sits with the least surplus of the user farthest from the evaluation site, while the user closest to the evaluation location has the largest surplus of consumers. The travel expenses method applies to the evaluation of areas such as recreation sites, nature reserves, national parks, forests and wetlands for recreation. In this paper, it is proposed to use the travel cost method to assess the value of eco-bird-watching tours, since the application of the travel cost method generally requires the conditions to be met for these locations to be reachable, at least within a certain period of time, to reach the place in question without direct ticket revenue, or the low cost of people to reach such a place. It takes a lot of time or other overhead. Eco-bird-watching this kind of leisure tourism activities, basically meet the above-mentioned requirements, first, the current ecological bird watching ticket price is low, while ecological bird-watching needs a longer time, must also prepare the corresponding bird watching equipment, which is more expensive, so the use of travel costs to evaluate the value of ecological bird-watching tourism.

Eco-bird-watching tourism is a special kind of eco-tourism. The particularity of bird-watching tourism is reflected in one thing: bird-watching has seasonality. In the process of bird-watching, eco-bird-watchers have different classifications of Bird-watching Tourists because of their different motives, behaviors and economic aspects. Some researchers divide Bird-watching Tourists into random Bird-watching Tourists and interested ones. Bird watchers, active birdwatchers and professional birdwatchers. The cost of Bird-watching Tourists with different characteristics varies greatly, the most important one is the cost of bird-watching equipment. Therefore, according to these two aspects, in order to determine the value of bird-watching tourism, it is necessary to distinguish the season of bird-watching from the difference between casual bird-watching and professional bird-watching. Because there will be tourists coming for leisure in bird-watching season and non-bird-watching season, we must correctly determine the number of bird-watching tourists. We must also consider the impact of the number of non-bird-watching tourists in bird-watching season. Because the bird-watching tourists have professional and casual or non-professional bird-watching tourists, their travel costs are poor. Different, the purpose of professional bird-watcher tourism is to come to watch birds. The professional bird-watching equipment is complete, the bird-watching time is long, non-professional bird-watchers travel, bird-watching is one of the contents of their travel. Non-professional bird-watchers travel in addition to bird-watching, there are other leisure tourism projects, in bird-watching tourism destinations will also participate in other entertainment. Music projects generally do not carry professional bird-watching equipment, bird-watching travel time is relatively short, so non-professional bird-watching travel costs should be allocated by a certain ratio, so in the specific evaluation of ecological bird-watching tourism value, the determination of travel costs must be classified and determined. According to the principle of the method, the value of eco-bird-watching tourism is the value of travel cost and the value of consumer’s remaining travel time.

The main steps of calculating tourist consumer surplus by using tourist rate are as follows.

1. Calculate the rate of travel from each departure area to bird-watching point, and apply the formula.
   
   \[
   Q_j = f(TC_j, A_j, S_j, INC_j) \tag{1}
   \]

   In the formula:
   
   \( Q_j \) - Travel Rate of Area \( j \);
   
   \( TC_j \) - Consumer expenditure (including all kinds of expenses and time expenditure) from residential area \( j \) to recreational sites;
   
   \( A_j \) - Tourist preferences (including education, aesthetics, etc.);
   
   \( S_j \) - Alternative places for tourists to choose;
   
   \( INC_j \) - Per capita income of tourists in area \( j \);
   
   \( j \) - Area number \( j = 1,2,3, \ldots, n \).

2. Find out the influence of travel expenses on tourism rate.

   The travel rate, travel cost and various social and economic variables of each departure zone calculated by the above formula are regressed, and the demand curve of the first stage, that is, the impact of travel cost on the travel rate, is obtained. The Basic Model of Tourist Rate Function

3. Multivariate regression analysis is used to find out the quantitative relationship between tourist rate, travel cost and other related factors. Generally, logarithmic model is used to analyze the relationship. The econometric model of tourism rate and travel cost is used to analyze the tourism rate and the number of tourists.
corresponding to the ticket price increasing gradually from zero. The number of tourists changing with the change of travel cost is obtained, and the demand function is obtained.

\[ q = f(p, x) \]  \hspace{1cm} (2)

- \( q \) - Number of visitors;
- \( p \) - Travel expenses including ticket prices;
- \( x \) - Socio-economic factors.
(4) Calculating consumer surplus

After calculating the demand function, the consumer surplus formula is used.

\[ CS(j) = \int_{p(0)}^{\infty} f(p, x) dp \]  \hspace{1cm} (3)

In the formula:
- \( p(0) \) - Existing prices of a travel agency;
- \( CS(j) \) - Consumer surplus.

In order to make the valuation accurate, this study uses two methods: regression analysis of the relationship between tourism rate and travel expenses, and regression analysis of the relationship between the number of tourists and travel expenses, to estimate the consumer surplus in the value of bird-watching tourism, and uses the average value of the two methods to determine the consumer surplus.

Travel time value = hourly wage standard * total hours of travel * time opportunity cost.

4. Experiments

The total value of wildlife tourism resources in nature reserves consists of three aspects: ornamental value, cultural value and value of science popularization and education.

![Total Value of Tourism Resources in Wildlife Reserves](image)

**Figure 3.** Optimal yield of each species.

In the wildlife leisure tourism, the behavioral characteristics of the recreational tourists have a great influence on the wildlife leisure tourism activities. This section will take the eco-bird-watching tourists in the eco-bird-watching tourism as the research object, make a concrete analysis of the behavioral characteristics of the eco-bird-watching tourists, and analyze and summarize the behavioral characteristics of the current wildlife leisure tourists in China. This will contribute to the development of wildlife leisure tourism market and provide analysis data for the development and management of wildlife resources management departments. In this section, the behavioral characteristics of Bird-watching Tourists are analyzed, and the basic characteristics and consumption behavior of eco-bird-watching tourists are discussed by questionnaire survey.

The sex ratio of eco-tourism has always been controversial. Different researchers have different results on the proportion of men and women in eco-tourism. Some researchers believe that men account for a larger proportion. In the survey conducted in this paper, the proportion of women eco-bird-watching tourists is 35%, the proportion of men is 65%, and the proportion of men is higher than that of women.
Eco-bird-watching tourism is a kind of leisure tourism with high investment and high cost of travel equipment in the process of tourism, which requires that Bird-watching Tourists generally have high economic income. According to the questionnaire survey of Bird-watching Tourists in this paper, 71.43% of the people whose monthly income is 1000 yuan to 5000 yuan account for 71.43%, while the proportion of people whose monthly income is less than 1000 yuan is lower than 15%, including some of the students in school. The specific income structure of birdwatchers is shown in Figure 5.

**Figure 4.** Sex structure of ecological bird watchers.

Based on the analysis of the behavior characteristics of bird watchers, a questionnaire was designed to investigate the degree of love for bird watching activities, bird knowledge, and attitude towards wildlife, catering and accommodation. Bird-watching activities are very familiar with 4%, very familiar with 6%, understanding 33%, not knowing 35%, not knowing 22%, love bird-watching activities: the number of people who like bird-watching activities accounts for 84%, the number of people who do not feel 10%, the number of people who do not like 6%. From the questionnaires, we can see that people who like bird-watching activities all think that they should strengthen the protection of wildlife, so most of the eco-bird-watchers are eco-environmentalists. They love birds and wildlife, but they don’t know much about birds or wildlife, and they don’t know much about eco-bird-watching tourism activities. Familiar with them, so they belong to the group of random bird watchers who have a better understanding of bird activities. They have more than two bird watches,
and have a better understanding of bird-related knowledge. Therefore, from this point of view, we can see that more than 20% to 30% of bird watchers are interested in bird watching activities, and relax to achieve the purpose of leisure.

![Figure 6. Figure of Birdwatcher’s Understanding of Birdwatching Tourism.](image)

![Figure 7. Favorite bird watching activities.](image)

From the accommodation situation, we can see that the requirements for accommodation of bird-watchers are not very high, which coincides with the impact of accommodation conditions on bird-watchers. The number of bird-watchers who spend less than one day accounted for 24%, the number of bird-watchers who spend 34%, the number of bird-watchers who spend two days accounted for 20%, and the number of people who spend more than three days accounted for 22%. Second, birdwatchers spend less time watching birds, but it can also be seen that bird-watching tours take longer than general public tours in scenic spots.
5. Conclusions

The advantage of wildlife tourism in wildlife reserves is to enhance tourists’ experience and reality of wildlife tourism resources. But at the same time, we should also pay attention to the development of wildlife tourism in nature reserves in the future in line with the principle of moderate development. We should strengthen the protection of areas where tourists’ activities are relatively concentrated, and regularly adopt closed protection and management measures to ensure that their impact on wildlife survival and ecological environment is minimal. Only when wildlife tourism and ecological construction in nature reserves develop synchronously, wildlife tourism in nature reserves can be more deeply rooted in the hearts of the people and ultimately realize the sustainable development of nature reserves. This paper discusses the tourism value of a wildlife reserve through the travel cost method, and analyses the applicability of the method through questionnaire survey. The greatest contribution of the travel cost method is the creative utilization of consumer surplus. As we all know, there is no market exchange for public goods, and its marginal benefit is that consumer surplus can’t be calculated. For the first time, the travel cost method introduces the important concept of consumer surplus into the valuation of public goods and calculates its value. This is not only a breakthrough in the field of public goods value assessment, but also a reference for other public goods value assessment.

References


