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Case Report

Potentials and Challenges of Wildlife Conservation in Abijata-Shalla Lakes National Park, Central Rift Valley, Ethiopia

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ABSTRACT

An internship is a short-term experience in which students receive training and can build skills in a specific field or career area and can be paid or unpaid and can vary in hours and length. The important element that distinguishes an internship from a short-term job or community service is the intentional "learning agenda" that the intern brings to the experience. The objective of conducting an internship is to select a personal ecotourism and wildlife professional field of interest with in large working ecotourism and wildlife domain and gain real working and research experience on academic journal. An internship in Ecotourism and Wildlife management course is totally depends on field work and students can choice their interest to conduct the internship in parks, sanctuaries, other protected areas or other wildlife and ecotourism related organization's for experience sharing. So, I was conducted my internship in Abijata Shalla lakes national park. Abijata Shalla Lakes National Park is one of the national Parks in Ethiopia which is established for protection of aquatic birds that use Lake Abijata and Lake Shalla. The park covers an area of 887 km^2, over half of which is taken up by Lakes Shalla, Abijata and Chitu. The park has high potentials of natural wildlife conservation opportunities and tourist attraction sites, like; Ostrich site, Pelican site, Fike Mountain, viewpoints, hot springs, abundance and diversity of bird species. Even though the park faces too much wildlife conservation challenges: i.e. the water level of Lake Abijata has dropped, biodiversity in the park has diminished, and savanna, riparian, and dry forest ecosystems have been converted to farm land and grazing land. Illegal settlements and rapid intensification of upstream agricultural activities led to overexploitation of water resources and threatening of biodiversity in the Park. Hence it is important to give attention from different stakeholders to save the park from these threats.

Keywords: Abijata; Agriculture; Lake; Pelican; Shalla

Introduction

Background

Protected areas are created throughout the world to conserve biological diversity, protect critical watersheds, prevent overexploitation of forest resources, and preserve scenic natural areas. In Africa, the need to conserve which their numbers were drastically declining due to increased hunting, led to the establishment of formally protected areas starting early in the twentieth century [1]. Such conservation policy was introduced by colonial powers and later on expanded by the conservation experts [2]. In Ethiopia, national parks came into being in the late 1960s and early 1970s [3]. Nevertheless, their establishment were overlooked the livelihood bases of local people, and the gazetting of national parks are in a direct conflict with local people's livelihoods. These conflicts have challenged practitioners to seek new methods for reconciling the trade-offs between national conservation policies and local people's demand to sustain livelihoods [4].

The designation of protected areas in Ethiopia follows the classical approach characterized by a top–down approach that emphasizes establishment and enforcement of legislation and the assumption of ownership of wildlife resources by the state [3]. As a result, local communities are faced with a rapidly diminishing natural resource base. Disagreement between local communities and conservation authorities has escalated and law enforcement has become less practical and more costly (Homer Dixon, 1999).

Ethiopia is endowed with various cultural and natural attractions with high aesthetic value. There are many cultural and natural outstanding heritage attractions are registered by UNESCO World Heritage Sites, and the country is the first in Africa having such a high number of world heritage sites [5]. Protected areas in Ethiopia are gifted with unique wildlife; marvelous topographic land features with accompanying cultural manifestations that are compatible for wildlife tourism and wildlife conservation which in return help keep the functioning and healthy ecosystems which are essential for sustainable development, especially with regards to providing the services that we and future generations depend on for life [6].

Abijata Shalla Lakes National Park is one of the most well-known tourist attraction sites of the country and it is famous for its high diversity of water birds; Large numbers of Flamingos gather in the Park, together with Great White Pelicans and a wide variety of other water birds [7]. The Park provides temporary or permanent home to over 400 bird species, which amounts to almost half the number recorded for the whole country. It is because of its geographical position that the Park provides wintering and maintenance station for such a large number of terrestrial and aquatic birds, which include Southern African, Sub-Saharan and Palearctic species [7].

Even though the Park is now facing too many challenges especially conflicts between the local communities and park managers. Population pressure during the last three decades has resulted in the conversion of natural vegetation, into cultivated and bare lands through overgrazing of natural grasslands, removal of natural shrub for fire wood, and clearing of forests for construction materials and charcoal making. As a result of these changes in land use/cover, vulnerable sloping areas in the area face increased erosion and depletion of nutrients required for vegetative growth, and the unique bird species found in the park now become endangered as a result of different habitat disturbance factors [8].

Objective

General objective

To assess the opportunities and challenges of wildlife conservation in Abijata Shala lakes National Parks

Specific objective

To assess the wildlife conservation opportunity of Abijata Shalla lakes national parks
To assess the wildlife conservation challenges in Abijata Shalla lakes national park

Background information of the of the park

Location of the park

Abijata -Shalla Lakes National Park is located about 200 km from Addis Ababa at N 70 30' E 380 30' and approximately 550 km From Jimma and it lies between the elevation range of about 1540-2075 m.a.s.l.. The National Park encompasses three lakes: Abijata, Shalla and Chitu, and varying shoreline and woodland vegetation surrounding the lakes. The woodland vegetation covers 382 km^2 (43%) of Acacia woodland. The two big lakes, Abijata and Shalla cover an area of about 506 km^2 (57%) including Chitu Lake with an area over of 500 m^2 with four nesting islands and spots of hot-springs (Tefrea and Almaw, 2002).

The park covers the total area of 887 km^2 out of which 405 km^2 is Land and 482 km^2 is water. The area is characterized by a semi-arid to sub-humid type of climate with mean annual precipitation and mean annual temperature of 600 mm and 25c close to the lakes, respectively and the dominant vegetation is open Acacia woodland, which is extensively overgrazed and deforested because of encroachment. (Legesse *et al*., 2002). The Abijata- Shalla lakes National Park has been established predominantly for a bird sanctuary in 1972 [9].

Mission, vision and core value of the park

Mission of the park

To scientifically conserve and manage the parks wildlife and its habitats in collaboration with communities and stakeholders for the ecological, economical and social benefits of the present generation, and pass to the next generation as a heritage.

Vision of the park

In to make the ASLNP the best and preferable tourist destination by Sustainably developing its natural, cultural and historical assets.

Core Values of the park

✓ Respect diversity
✓ Hospitality
✓ Professionalism
✓ Accountability
✓Transparency
✓ Readiness for change
✓ Operational excellence
✓ Participatory

Purpose of the park establishment

Abijata-Shalla Lakes National Park (ASLNP) was established as a proposed National Park in1972. The proposed park was created to protect spectacular resident and migrant birds, their breeding islands, and the remarkable scenery of the area as well as to: Conserve biodiversity; maintain ecological processes; Generate economic benefit through tourism; and Promote scientific research and education (ASLNP Office, 2018).

Organizational structure of the park

The Abijata-Shalla Lakes National Park (ASLNP) has a number of employees (the structure needs about 142 personnel) and now a day 77 personnel are working in the institution under the following main structures of the park.

Park Warden	3
Wildlife Professional	7
Human Resource Coordinator	2
Accountant	4
Cashier	2
Secretary	1
Scout Head	4
Scouts	49
Janitor	1
Guards	2
Driver	2
Total	77

Source: (ASLNP Office, 2018)

Table 1: Organizational structure of ASLNP

Personnel and resources used

During the time of my internship in Abijata Shalla lakes national park, I was done my activities with different personnel of the park; those are: the park manager; (Chief Warden, research and conservation monitoring warden and tourism society warden), experts, scouts, car drivers (as trip), secretary, and human resource management office workers (for facility contribution agents). Also I was used different types of the park resources, like: broachers, Gust house/lodges, car, water etc.

Main Tasks (Responsibilities) in Abijata Shalla Lakes National Park during the Intern Ship

During the internship work in Abijata Shalla lakes national park it was very an interesting stay, and my main task /responsibility/ was firstly, active participation, punctuality and respect ground rule of the park etc. In my practical work, I was traveled in the different parts of the park to conduct and observe the needed information, and I was shared experience with the park workers; how to manage the protected areas. The has park has many potentials that attract tourists; like three lakes of the park, wildlife's and bird species (ostriches, gazelles, worthok, pelican's, flamingos and others, although there are many challenges inside and nearby the park like; conflict over resource: (sand extraction, charcoal making, deforestation), human wildlife conflict especially warthog- human conflict, illegal population settlement in the boundary of the park, etc. during these I was shared the ideas with the park managers, expertise, scouts how to solve the conflict, and also I was collect an information from them and local communities, the cause of conflict and haw to solve or mitigate the conflict, and from these information I was got a very important practical knowledge for best management of protected areas and wildlife conservation.

Result and Discussion

Wildlife conservation opportunities of the park

The Abijata-Shalla Lakes National Park is one of the major wildlife conservation and ecotourism potentials sites in Ethiopia endowed with multitude habitats, which attract birds of Africa, Europe and Asia because of high altitudinal elevations (1351 to 1837) meters above sea level, in Central Ethiopia Rift Valley lakes [9]. Some of the potential wildlife conservation opportunities of the park are as follows:

A. Headquarter of the park:

The Headquarter of the Abijata Shalla lakes national park is one of the potential wildlife conservation and ecotourism development sites of the park, due to the presence of Ostrich, Grant's Gazelles (*Gazella soemeringi*), Warthogs (*Phacochoerus africanus*), Bohor

Reed back and a lot of color full terrestrial birds. In addition to these the head quarter is nearest to the main road (Addis Ababa to Hawasa) and there are some handicraft association of young people's nearest to surrounding the head quarter. According to [10] for sustainable wildlife conservation and ecotourism development, Ecotourism could help to conserve man made tourist attractions such as intangible attractions (religion, music, songs, language, festivals, funeral ceremonies, wedding ceremonies, political order and way of life of the entire population) and tangible attractions (eco-friendly lodges/businesses and enterprises, traditional housing style and handicraft shop.

Vegetation

The vegetation of the area is categorized as tropical savannah and the Park features semi-arid acacia woodland, bush land, shrub land, and open plains; which are crucial components of the park ecosystem, keeping the highly fragile soil of the area intact. Some of the common tree species are; Acacia tortoise, A. seyal, A. senegal, A. etibica, Balanties, Croton aegpticus and Ficus sycomorus. Acacia trees are dominant and important means of livelihood for the local people. In addition to woody species a variety of grass species are also found in the park.

C. Mammals

ASLNP is the home for diversified and populated wildlife species, as the data of the park shows that, a total of 76 Mammals' species including bats and rats are recorded in the park. Grants gazelles, BoharReedbucks', and warthogs are common around the Headquarters. Greater kudu are abundant on the goligo hills and Mt Fike; colobus are plentiful immediately eastern forest edge of Lake Shalla and along the strip of dedeba river forest. Aardvarks are common throughout the park and can be seen during the moonlight, Hyenas and black-backed jackals are common and widespread; Hippopotamus, Bush Buck, Rabbit, Monkey, and Ape are also some of the mammals that are found in and surrounding the park (field observation, 2018).

D. Avifauna

The major fascinating faunas in the park are the great numbers of bird species that reside in the lakes. Lake Shalla is serving as a breeding site, and Lake Abijata is serving as feeding site for the bird life. Some of them are Great White Pelicans, Flamingos; Ostrich (both massai and Somali races) in group, Ducks, and many other birds are among the avifauna's that are found in and around Abijata-Shalla Lakes National Park (ASLNP). the tropic bird features of 452 species are recorded, about 53% of the country total recorded, including-endemic;6-near-endemic; and 8-endangeredspecies.the park serves as "reception of restaurant" for its 140 migratory flying guests from Europe, western Asia and other parts of Africa and this park is one of the best breeding sites in Africa. Bird watchers do stay in the park for quite a long time not just watching but they even enjoy melodies of their songs, many different flight modes (style), different displays, specular plumage patterns and various distinctive vocalizations.

Figure 1: Photos taken during field observation (ostrich)

Lakes

E. Lake Abijata

It is located about 70330N–90300 E, and it is a relatively shallow in depth (7m,) small, alkaline, closed lake (Ayenew, 2002). These Lake is the most exciting with largest concentration of birds and it is the best and most accessible bird area in Ethiopia. At Lake Abijata several thousand flamingos with Greater and Lesser Flamingos; and Great White Pelicans and other species of birds of Ethiopian and those migrating birds from other countries are residing here [9] (field observation 2018).

As the park expert said and the secondary data of the park shows that, it is (100.sq.km.) and it is a highly productive valley lake, which serves as major feeding ground for 100 wetland bird species and Birdlife of this lake is exceptional, as a bird sanctuary this lake could have no rival in Ethiopia and could compare favorably with the best in Africa. During the months of the northern hemisphere winter, the resident and migratory African birds join in this lake by thousands of palaeracting migrant bird species could present a different picture. The Lake is major feeding site for aquatic and terrestrial birds including both migratory and resident ones. Flamingos and White Pelicans are among the water birds that depend on the Lake.

F. Lake Shalla

The lake shalla is the other potential opportunity of wildlife conservation and ecotourism site of the park, as information collected about the lake from the park experts, secondary data sources shows and direct observation of the lake during the internship. As the park experts explanation, Lake Shalla is an alkaline closed crater lake, and it is located in the southern part of ASLNP (7030'N – 38030'E). The Lake has the lowest altitude, 1570 m.a.s.l, from the other three lakes in the central Rift Valley. Lake Shalla is 3 km south of Lake Abijata and they are separated by an elevated strip of land, which is part of the old crater rim. Lake shalla is (329sq.km.) and it is the deepest lake in Ethiopia ,with maximum depth of 266m and because of its depth it has by the largest volume of the Ethiopian lakes 37 billion cubic meters and it is also the largest caldera lake on the continent with a longest diameter of 28km and one of the unique characters tics of the lakes is the blue-black color of the water which makes it different from the rest of the rift –valley lakes and it is" a lake of scenic beauty" and its 4 islands provide secured nesting sites for many wetland birds, Particularly the pelican island is famous in the world as one of the few breeding site. The lake supports eight islands. The eight Islands are found on the south and western part of ASLNP; site of great white pelican in Africa; about 12,000 pair has been found breeding annually (from February-Janu, specifically on the western part of Lake Shalla. They are ranging in size from a few hundred square meters to over 0.25 km^2. The Islands are ecologically and culturally significant as their names indicated and are namely: Sacred Island, Pelican Island, Abdim Island, Cormorant Island, Edo Island, Flat Island, Little Island and Rock Island (Tefera and Almaw, 2002).

G. Lake Chitu

Lake Chitu is the other very important wildlife conservation potential tourist attraction site of the abijata shalla lakes national park, with its pea-green water in cup-sided creater and it is very small in size (0. 8sq.km. sq.). This lake is situated about 82km, from south western edge of lake shalla and the half km track leads to the rim of the creater, gives superb views of 12,000 to 45,000 of lesser flamingos feeding on the blue-green algae which gives the lake its characteristics' color. On the other hand, at the mouth of Dedeba river on the eastern shore of Lake Shalla it is usual to see flocks of plecon either feeding or flaying with fascinating modes approaching the lake and I could confirm these by direct observation of the lake, during my field work.

H. Hot Spring

There are numerous hot springs 10 km away from the Park headquarter, along the south west and eastern shores of Lake Shalla, which directly flow into Lake Shalla from a distance of 200-300 meters. Therefore, hot springs are hydro logically linked to Lake Shalla and the springs vary considerably in size and temperature, as the recorded data of the park shows that, the temperature of hot springs is about 93.4^{oc} and the pH of the water is 8.38. the spring bleaved by the in habitants to have a curative property [11] (ASLNP Office, 2018; field observation, 2018)

Figure 2: Photo taken during field observation (Lake Chitu)

I. Mount Fike (Mt Fike)

It is the highest peak in the park (2075m a.s.l) and located between the two lakes, where a superb viewing of the three lakes including lake Langano from its summit. There are trecs of one-hour duration for those who wish to experience the pleasure trekking. Greater kudus are found here (ASLNP Office, 2018; field observation, 2018).

J. View Points

This park is believed to be one of the most scenically beautiful spots of Ethiopia and the impressive beauty of the area can be viewed widely from the Humo shalla and gike view points and all visitors to have sight of magnificent scenery of the park (ASLNP Office, 2018; field observation, 2018).

No	Name of the site	Distance from head quarter
1	Ostrich	In the head quarter
2	Abijata Lake	6km
3	Shalla lake	9km
4	Chitu lake	82km
5	Fike Mountain	24km
6	View point	5km
7	Pelican site	16km

Source: ASLNP

Table 2: Major potentials/Attraction sites with their distance from the head quarter

Accommodation

There are several hotels, resorts and lodges that can play great role for the park; such as Filwaha hotel, 10,000 Flamingo lodge, Merina hotel and resort, hara langano resort, African Club, Sabana resort, simbo resort, Borat resort etc. located in nearby on lake langano and lake shalla giving easy access to the park (ASLNP Office, 2018)

Major wildlife Management challenges of ASLNP

In sub-Saharan Africa, many protected areas were first created during colonial times as hunting grounds or parks for European elites, with little or no regard for the needs or desires of local communities [12]. Today, many of these areas are source for long-standing conflicts over land tenure and resource utilization (IIED, 1994). These conflicts could create tensions between local communities, protected area staff, and conservation goals (Whitesell *et al*., 2002). In Ethiopia; protected areas are facing many challenges due to growing populations human, border conflicts, illegal settlement, grazing lands, resource extraction and recurring drought [13].

According to the information gathered from the park experts and field observation; deforestation, expansion of farming, overgrazing and over extraction of water and minerals are some of causes of conflicts between the park and local communities in ASLNP. [14] report shows that, these problems result in soil erosion, vegetation degradation, wildlife depletion, fish reduction and other associated factors. The woodland cover within the Park is alarmingly depleted through extraction for fuel wood, construction wood and charcoal making. Increasing demand for land by the growing population is the other key factor contributing to deforestation. [15] According to the park experts, the other problem of the park is reduction of inflow of water to Abijata Lake caused due to the reduction of volume of *Bulbula* River and *Hora Kelo* River and the consumption of Bulbula river in the form of irrigation on the upper slopes and abstraction of this lake by soda-ash factory at lower slopes from the Abijata-Lake. The reduction amount of Abijata water in volume leads to the reduction of available food requirements such as blue algae and fishes which provided the avians with available foods. [16] These effects are reducing the avians found in and surrounding lake Abijata; which reduces the beauty of the park and leads to the reduction of tourists coming here.

As I observed, the natural *Acacia* woodland can only be found in the fenced headquarter of the Park. The rest woodland components are found mixed with farm plots and homestead with sparsely distributed acacia trees [17]. Due to the disturbance, habitat loss and competition with domestic animals for forage; the acacia woodland hosts few mammals which have decreased in number, like ostriches and grants gazelle. Generally, expansion of settlement, farmlands in the forest area, extensive livestock grazing and water intake of by soda ash factory from lake abijata are the major threats to the natural resources of the park [18].

Charcoal production

The Abijata Shalla Lakes area is an important charcoal production area because of its Acacia trees, but the use of charcoal wood from the Park is illegal. It serves as subsistence income for the households and it is the main source of energy for the nearby towns and cities', including Addis Ababa and it is very difficult to control because, it is directly/indirectly tied to the livelihood of local people. Kefyalew (2008) observed that, about 70% use acacia trees for charcoal making, Households from inside/outside the Park are the main producers of charcoal from the Park, i.e. about 91% of the households. About 77% of households from inside the Park produce charcoal. Only 23% of households from outside the Park produce charcoal from the Park area. Local people use the charcoal for sale and own use. It can be concluded that about 84% of the households produce charcoal for sale and/or for sale and home use. The use of charcoal wood by households inside/outside the Park is greater than those who live inside the Park. However, those households from inside/outside are far from the Park administration and have access to sell (adjacent to the main road) the charcoal produced. As a result, they produce more charcoal.

Mineral Extraction

The activity of sand and other mineral exploitation in the park is jeopardizing the woodland and the water bodies in different ways. On the eastern side of Lake Abijata and the southwest of Lake Shalla, salty soil is commonly collected for fodder and sold even at the market (park expert). These practices are accelerating soil erosion and sedimentation of soil materials in the lakes also damaging the natural shoreline of the lakes. During my stay in abijata shalla lakes national park, I was seen these challenges; it was a great conflict between the park managers and those of sand extractor [19].

Reduction of the lake Abijata

As the park experts said that, the water level of Lake Abijata has significantly dropped since mid-1980's, which cannot be attributed to natural climatic variability and rainfall record. Seyoum *etal* (2015) report shows that some70% of the water loss from the lake was

attributed to human-induced causes. An irrigation project on the upper reach of the river is ongoing and as the result the water flow in the Bulbula River has significantly reduced (Ayenew, 2002). Irrigation is the largest water user activity in the basin. Large-scale irrigation agriculture from Lake Ziway, its tributaries, and the Bulbula River is used in the production of horticulture, vegetables, and flowers [20].

In parallel, Abijata Soda Ash Company could be the second possible anthropogenic causes for the water level reduction the Company was established by the Government of Ethiopia with a large production process that began in 1985 (Kumssa and Bekele ,2014). The factory has limited itself to produce trona (Na3H (CO3)2.2H2O). Currently, the factory is producing trona by pumping water from the lake into several concentration ponds about 17 ponds [21]. In this way, each year 13, 000,000 m^3 of water is removed from the lake and the amount of water removed can reach up to 30,000,000 m^3 per year. Since the water extracted from the lake into the ponds does not return to the lake, the shore of Lake Abijata has reduced for years (Ayenew, 2002).

The Over All Internship Experience

The working environment was very interesting site, as it has different scenery of landscapes, lakes, vegetation's, different types of bird species and other wild animals which gives practical knowledge and mental satisfaction for anybody who can gate a chance to visit the ASLNP.in general I got different practical skills which I was theoretically learned in the class like: practical protected area management system, Ecotourism development activities', attitude of local peoples towards protected areas and wildlife's, different challenges facing to protected areas and how to solve the problem related to natural resources in protected area [22].

Opportunities and challenges during the internship

During the internship I was gate different opportunities and also faced different challenges: *opportunities* like; the personnel's from the EWCA to the park was very interesting and they were share their experiences relating to wildlife conservation and management, provide different services which was needed to accomplish the internship and help for my future experience, the park establishment is nearest to the road and Negele city; this helps to get different facilities at nearest to the park, I was seen different types of wild animals and different bird species like,: pelican, flamingo, ostrich for the first time, personally this is very interesting . The serious challenge faced during my internship were, the conflict raised between local communities and the park managers because of sand extraction in the boundary of the park. The other challenges were transportation during the observation of different sites of the park because of lack of transportation services, logistic (eg. lack of financial support), etc were the main constraints [23].

The benefits gained throughout the internship period

During the internship period all work's done by team and we exchange our experience's to each other and with experts then, I got different experience's from my friends and the park personnel who are experienced with practical knowledge.

Conclusion

The abijata shalla lakes national park is one of the most important protected areas of the country and it has huge potentials of different large, medium and small wildlife species as well as different bird species that can attract tourists from different parts of the world. In addition to these the hot spring of the park, scenery of the landscape and the establishment place of the park by itself is the an opportunity, due to the its closest to Addis Ababa city and nearest to the main road of Addis Ababa to Asossa.Currently the park is fall under different challenges like; Charcoal production, mineral extraction ,expansion of agriculture and grazing lands ,reduction of water body in the core park area due to different anthropogenic interventions such as illegal settlement, water abstraction for industrial activity. Lakes are also changing not only in volume but also in quality as result of chemical pollution produced by the irrigated commercial agriculture. The contamination and reduction of the water bodies is resulting in the changes in physico-chemical and biological variables have changed. Due to, the level of Lake Abijata is lowering at unprecedented manner. Both aquatic and terrestrial biodiversity is declining at alarming rate, as a result of these the park is ecologically and economically under threat. Awareness creation training and capacity building, local communities and stakeholder involvement in park management that increases stewardship by the community and the new approach wildlife management is important

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