EFFECT OF CLIMATE CHANGE ON WILDLIFE SPECIES IN DAJIN BATURIYA WETLAND AREA OF HADEJIA LOCAL GOVERNMENT AREA OF JIGAWA STATE

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ABSTRACT

The study focused on effects of climate change on wildlife species in Baturiya wetland Area in Jigawa state. The methodology employed in the study was sampled plots. The results reveal that decreasing cold fronts, decrease in precipitation, decreasing vegetation structure, soil moisture and increasing heat intensity are the effects of climate change and on other hand the causes of climate change on wildlife specie in Dajin baturiya wetland include overgrazing, logging, wildfires, illegal mining and erosion. It also identifies ant poaching, fire tracing, erosion control and tree planting as measures to mitigate the impacts of climate change in the study area.The findings show that in all the four plot there exist factors causing climate change. These causes identified include overgrazing Which expose the bare soil to sunlight and erosion. Illegal logging, wildfires which kills fauna and flora in the area. Erosion exposes the roots and uproot trees. The recommendations are the concern authorities should beef up ant poaching patrol so as to stop humans from entering the area and setting fires, cutting trees, grazing and killing animals. Environmental education campaigns, should be carried out in the communities around the area on conservation and the impacts of climate change and global warmingImproving legal and political frameworks for climate change, global warming and the environment in general. The work would help the policy makers, stakeholders to achieve goals especially in the area selected, Baturiya wetland of Kirikasamma local government in Jigawa State.

Keywords: Wildlife species, Climate Change, Wetland, Descriptive Statistics, Plots

INTRODUCTION

The term "climate change" refers to changes in the mean and variation in basic climate parameters (temperature, precipitation and wind) that result from both natural and man-made factors, such as the concentration of greenhouse gases and aerosols in the atmosphere and the earth's orbit, volcanic activity, and crustal movements. Among the natural reasons are variations in solar activity, volcanic eruptions, marine water temperature, ice cap distribution, westerly waves, and atmospheric waves, whereas man-made causes include carbon emissions from industrial activities, agricultural mechanization, deforestation, and Freon gas ozone layer destruction, with global warming as the representative (Presidential Advisory Council on Education, Science & Technology: PACEST, 2007).

Climate change disrupts the agricultural environment by changing agricultural climatic factors like temperature, precipitation, and sunlight and impacting the livestock, agriculture, and hydrology industries. Floods, droughts, and increasing rainfall variability are already affecting agriculture due to climate change-induced changes in the global hydrological cycle, which negatively influence the yields of important crops, including maize, soybeans, rice, and wheat. In a warmer world, these shifts are anticipated to persist, resulting in lower crop yields from rain-fed agriculture and less water available for irrigation in areas with water scarcity (IPCC, 2022).

The current global warming trend is causing physical and biological changes to occur throughout the entire planet and is impacting regional climates, ecosystems, and the organisms that inhabit them in a number of ways (IPCC, 2007). Animal species can only survive within specific ranges of climatic and environmental factors, if conditions change beyond the tolerance of species, or too rapidly for evolutionary adaptations, then animals may exhibit ecological responses to these changes (IPCC, 2007). The threat of extinction to species which are unable to adapt or have limited habitat is expected to increase with climate changes, and the extinction of some species has already been directly linked to climate change (Kirby, 2004).

Change is animals' penology, such as migration, breeding and spring appearance, has occurred throughout the world and is linked to seasonal variability. Changes in the spatial distribution of animals, particularly pole ward and elevational shifts, is occurring as suitable habitat disappears or extends beyond its current range (Kirby, 2024). Arctic and marine ecosystems are undergoing physical environmental changes that are affecting that inhabit them. Temperature change and melting sea ice in the arctic is adversely affecting the species of the region, and sea level rise, increased sea temperature and higher pH are among the issues changing the planets marine ecosystems (Kirby, 2024). Spread of pests and diseases are occurring as a result of milder temperatures. All of these changes threaten the planets ecological biodiversity and changes projected for the environment will increasingly affect all life on Earth.

Climate change is occurring as a result of the greenhouse effect, which is the amount of solar radiation that is trapped in Earth's atmosphere, and which regulates the temperature of Earth. Anthropogenic greenhouse gases, primarily carbon dioxide and methane, are causing an increase in the amount of solar radiation that gets reflected back to Earth. The atmospheric concentrations of greenhouse gases have increased since the pre-industrial era due to human activities, primarily the combustion of fossil fuel and land use change (IPCC, 2022). In response, changes in the Earth's climate over

the 20 century have accelerated beyond normal environmental conditions. Some of the changes include an increase in land and ocean temperatures, changes in spatial and temporal precipitation patterns, sea level rise, reduction of sea ice, changes in vegetation, Seasonal changes, and increases in tie frequency and intensity of weather events (IPCC, 2022). Animal responses vary greatly between species, but climatic changes lead to disruption of biotic interactions, such as predator prey interactions, and changes to ecosystem composition and functioning (IPCC, 2007). Habitat fragmentation and loss, competition from invasive species, natural disturbances, pollution and other human induced issues have already been stressing animal populations and are expected to increase and compound with climate change factors (Karby, 2024).The projected increase in temperatures over the next centuries is expected to lead to mass extinctions and have drastic, irreversible effects on biodiversity and ecosystems (IPCC, 2007a).

Biodiversity is short for biological diversity; the term biodiversity describes the richness and complexity of life on earth. Biodiversity refers to both the number of living species and the number of different genes in those species' gene pools (Sierra Club, 2008). The composition of most ecosystems is likely to change as species migrate at different rates and are affected differently by climatic changes, and by changes in vegetation and ground cover (IPCC, 2022)

Climate change can affect individual organisms, populations, species distributions, and ecosystem function and composition both directly and indirectly (TPCC, 2022). While the long term impacts and existing trends still need more research, and may not always link directly to climate change, climatic changes are affecting all of the physical and biological systems on the planet (1PCC, 2007a). What is happening in the study area shows that the area is not an exception to this scenario because climate change is a global issue affecting almost everywhere.

Study Area

Baturiya wetland is located as the southern tip of jigawa state, it borders with hadejia local government and it is located in kirikasamma local government of jigawa state. It has an area of 1000sq km. And dissected by a main river named as river hadejia, that flow from southern part of the reserve and direct run down, as a source of irrigation.The climate is semi arid mostly hot all the years round except in August during rainfall December to February when Hammatan is higher.The annual rainfall need from 800mm-1000mm, it experience the rainfall once a year, mostly from April to month October.The reserve fall in to the guinea savannah consisting of gallery forest that runs, at the both side of river. Medium trees shrubs, herbs, sapling and grasses of different varieties (species).
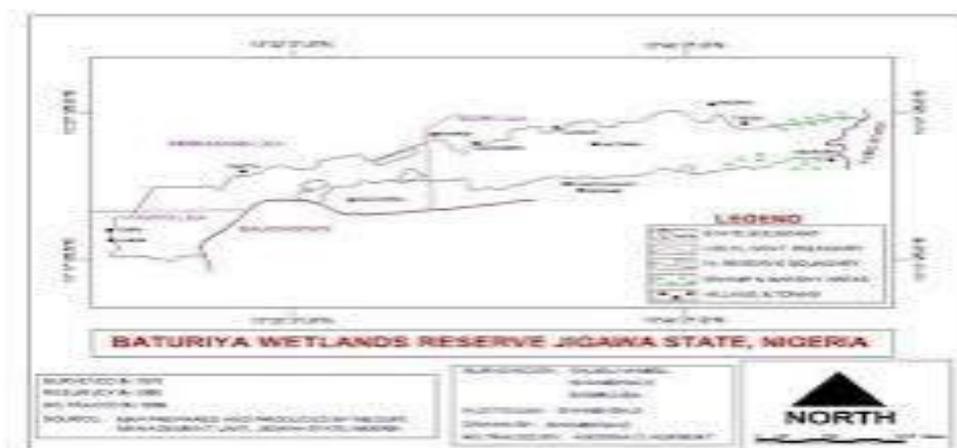

Figure 1: Map of Hadejia Local Government Showing Dajin Baturiya Wetland
Source: GIS LAB (BUK) 2025

MATERIALS AND METHODS

A reconnaissance survey was carried out in the study area prior to the detailed study access the effect of climate change to see were plot can be laid in the study area.The entire study area was classified in to 4 sample plots 5 by 5 km based on existing species each plot observation were out. To once 7:00am to 5:00pm weekly for each plot.The materials used

include ranging pole, pegs, paper, and pain.Direct sightings employed in the 1dentification of areas affected by climate in the study areas within the sampled plots. Interaction was also entertained for water assessment.Data collected were analyzed using descriptive statistic frequencies data were obtained using table..

Table 1: Wetland Effect

PLOT1	PLOT 2	PLOT3	PLOT4	PLOT5
	PLOT1	PLOT2		
Wetland Effect				
Erosion	Desertification	Erosion		Erosion
Total				
Desertification	XX	XX	XX	XX

Source: Fieldwork, 2026

Key

Presence (+)

Absence (-)

RESULTS AND DISCUSSION

The results on the effects of climate change in the study area are presented in Table. 1. The result showed that cold fronts, rate of precipitation, vegetation structure, and soil moisture at drastically decreasing in the study area while heat intensity is increasing. The findings shows that in all the sampled plots the effects of climate change exist in all the four sample. These effects as identified includes decrease in cold fronts, increase heat intensity, decreasing rate of precipitation decreasing vegetation structure and decrease in soil moisture content. The identified effects from the findings are in line with IPCC, (2007a) which asserted that the projected increase in temperature over the next centuries is expected to have lead to mass extinction and drastic, irreversible effects on biodiversity and ecosystem. Knapp et al, (2008) asserted that there are multiple effects of climate change that potentially influence natural vegetation structure and function. Simply, climate change modifies seasonality, the frequency and intensity of heat, cold fronts, alter natural precipitation regimes, soil moisture regimes, relative humidity and ambient temperature (Knapp *et* al, 2008).

Table 2: The Effects of Climate Change in the Study Area

S/No.	EFFECTS	PLOT 1	PLOT 2	PLOT 3	PLOT 4
1	Colds fronts	-	-	-	-
2	Heat intensity	+	+	+	+
3	Rate of precipitation	-	-	-	-
4	Vegetation structure	-	-	-	-
5	Soil moisture	-	-	-	-

Source: Field survey, 2025

Presence (+)

Absence (-)

Causes of Climate Change

The result of Causes of climate change in the study area is shown in table 2. the result shows the overgrazing, illegal logging, wildfires and erosion are all present in all the sampled plots, while illegal mining is present in one sample plot. The findings show that in all the four plot there exist factors causing climate change. These causes identified include overgrazing Which expose the bare soil to sunlight and erosion. Illegal logging, wildfires which kills fauna and florin the area. Erosion exposes the roots and uproot trees while illegal mining is less in the study area. these are in line with assertion by the European Commission which says humans are increasingly influencing the climate and the earth temperature by burning fossils fuels, cutting down trees and livestock, many of these gases occur naturally, human activity is increasing the concentration of some of them in the atmosphere, in particular.

Table 3: The Causes of Climate Change in the Study Area

S/No.	Causes	PLOT 1	PLOT 2	PLOT 3	PLOT 4
1	Overgrazing	-	-	-	-
2	Logging	+	+	+	+
3	Wild fires	-	-	-	-
4	Illegal mining	-	-	-	-
5	Erosion	-	-	-	-

Source: Baturiya Field survey 2025

Presence (+)

Absence (-)

Possible Measures to Minimize the Impacts of Climate Change in the Study Area

The results on the possible measures to minimize the impacts of the climate change in the study area are shown in table 3. The results showed that ant poaching patrol, stopping logging activities, tire tracing, erosion control, and reducing overgrazing could be measures that Can minimizes the impacts of climate change in the study area as observed and identified by the researcher. The findings shows that measures to minimize or reduce the impacts of climate change in the study area in relation to the identified effects and causes of climate change includes; ant poaching patrol to reduce or minimize human activities. This is in line with assertion by the European Commission as Retrieved from 12" Oct., 2019 10:40 am that CO2 is the greenhouse gas produced by human activities and it is responsible for 64% of the man made global warming. Other measures includes stopping logging activities, fire tracing reduce fire incidence, erosion control and reducing overgrazing and organizing tree campaigns.

Table 3: Measures to Minimize the Impacts of Climate Change in the Study Area

S/N	Measures to Minimize the Impacts of Climate Change	PLOT 1	PLOT2	PLOT 3	PLOT 4
1	Anti-poaching patrol	+	+	+	+
2	Stopping logging	+	+	+	+
3	Fire tracing	+	+	+	+
4	Erosion control	+	+	+	+
5	Reducing overgrazing and tree planting	+	+	+	+

Source: Baturiya Field survey 2025

Suggested (+)

Denied (-)

CONCLUSION

The study focused on effects of climate change on wildlife species in Baturiya wetland Area in Jigawa state. The methodology employed in the study was sampled plots. The results reveal that decreasing cold fronts, decrease in precipitation, decreasing vegetation structure, soil moisture and increasing heat intensity are the effects of climate change and on other hand the causes of climate change on wildlife specie in Dajin baturiya wetland include overgrazing, logging, wildfires, illegal mining and erosion. It also identifies ant poaching, fire tracing, erosion control and tree planting as measures to mitigate the impacts of climate change in the study area.

RECOMMENDATION

Findings of the study concluded that effects of climate change are increasing at an alarming rate. This shows that relatively few successful species such as birds, reptiles, amphibians and some mammals like primates are found in the area. It also indicates that the Baturiaya wetland area is quite stressful with few ecological niches where only few species are really adapted to the environment. This is as a result of human activities like setting up of fire, cutting of trees and overgrazing etc. it is therefore imperative to ensure that there is proper management of species habitat for species sustainability in Baturiya wetland area. However, the following recommendations were made based on the findings of the study. The reserve authorities should beef up ant poaching patrol so as to stop humans from entering the area and setting fires, cutting trees, grazing and killing animals. Environmental education campaigns, should be carried out in the communities around the area on conservation and the impacts of climate change and global warming

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