

STUDIES ON DIVERSITY OF INSECTS AT OHANKWU, NDUFU-ALIKE, IKWO L.G.A., EBONYI STATE NIGERIA

Tobechukwu, Ebele Okeke*, Monday Chukwu Nwanchor **, Chioma Jenifer Nwedufo*** Sunday Ifeanyi Okpani ****, Emmanuel Okey Umunnakwe*****

* Department of Biology, Alex-Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State, Nigeria. e-mail. okekete15002f@gmail.com

** Department of Zoology, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria. e-mail. mn.nwanchor@stu.unizik.edu.ng

*** Department of Biology, Alex-Ekwueme Federal University, Ndufu-Alike Ikwo, Ebonyi State, Nigeria. e-mail. chiomanwedufo@gmail.com

**** Department of Zoology, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

***** Department of Zoology, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Abstract

*Biodiversity is the variety of life, while biodiversity index quantifies differences in species composition and biomass within an ecosystem. This study examined insect diversity and abundance in Ohankwu, Ndufu-Alike, Ikwo L.G.A., Ebonyi State, Nigeria, from June to August 2024. Insects were sampled three times weekly (Monday, Wednesday, and Friday) using pitfall traps, sweep nets, light traps, and handpicking during morning and evening hours. A total of 1,748 insects belonging to 11 orders and 40 families were recorded across two sites. Out of these, 947 (54.18%) were collected from site 1, while Site 2 had 801 (45.82%). The identified orders included Blattodea, Coleoptera, Diptera, Hemiptera, Homoptera, Hymenoptera, Isoptera, Lepidoptera, Odonata, and Orthoptera. Hymenoptera had the highest relative abundance (54.28% in Site 1 and 53.93% in Site 2), followed by Blattodea (25.03% and 25.59%, respectively). Homoptera and Dictyoptera showed the lowest abundances (0.11% and 0.25%). Species composition differed significantly between sites ($P = 0.001$). *Dorylus* sp. (44.88%) was most abundant, followed by *Macrotermes bellicosus* (21.62%). Site 1 had a slightly higher Shannon–Wiener diversity index (2.16) than Site 2 (2.13), while Site 2 showed higher Margalef richness (9.12) and Simpson's dominance (0.26). Both sites had equal evenness (0.52). These findings indicate that social insects are key contributors to ecosystem stability, influencing decomposition, soil aeration, and nutrient cycling. The study emphasizes the importance of conserving diverse habitats—such as farmlands, forests, and grasslands—and promoting organic farming practices to sustain insect biodiversity and ecosystem services while reducing dependence on pesticides.*

Keywords: *Insects, diversity, relative abundance, agro-ecosystems, site preference, Ohankwu*

INTRODUCTION

Insects are the most diverse and specie-rich group of animals on Earth, comprising over a million described species and potentially millions more yet to be discovered (Rajabi, and Gorb, 2021). Insects are divided into approximately 29 orders belong to the class Insecta (Du and Yang, 2022). They are hexapod arthropods characterized by a chitinous exoskeleton with articulated sclerites, and segmented body divided into head bearing one pair of antennae, compound eyes and mouthparts, the thorax and an abdomen housing the bulk of the digestive and reproductive systems. (Wan and Gorb, 2023). The insect orders Coleoptera (beetles), Hymenoptera (ants, bees and wasps), Diptera (true flies) and Lepidoptera (butterflies and moths) represent the four largest lineages within the hyper-diverse holometabolous insects (those undergoing complete metamorphosis) (Smith and Jones, 2020).

Insects were the first animals to develop flight, and have spread acrossmost continents and diversified into a wide range of niches, including mammal parasites and plant feeders. Their diversity, abundance and rapid life cycles make them sensitive to

environmental change, so documenting local assemblages provides an indispensable baseline for conservation and land use planning (Didham *et al.*, 2020). Their adaptability, reproductive efficiency, and varied ecological roles make them fundamental to the stability and functionality of ecosystems. Insects play essential roles as pollinators, decomposers, biological control agents, and as a source of food for many vertebrates (Barragán-Fonseca, *et al.*, 2025). They underpin (support) the functioning of terrestrial and freshwater ecosystems through pollination, decomposition, nutrient cycling and foodweb support (Eggleton, 2020). Insect distributions are strongly influenced by environmental factors, including microclimatic conditions such as temperature, humidity, and rainfall, as well as vegetation characteristics like plant diversity and structural complexity (Oecologia, 2020). Microclimates create specific ecological niches that determine where particular insect species can thrive, while diverse vegetation provides essential resources such as food, shelter, and breeding sites. Changes in climate patterns, often driven by broader environmental shifts, further affect these distributions by altering habitat suitability and availability (Kalu *et al.*, 2025). Moreover, human activities, such as land use changes, migration, and socio-political instability, indirectly influence insect populations by modifying vegetation and microclimates (Idigo, 2022; Okonkwo & Idigo, 2025). For instance, conflicts and governance failures can lead to habitat degradation, which in turn disrupts local insect communities (Idigo & Nwankwo, 2025; Idigo & Osegbue, 2025). Understanding these interactions is crucial for biodiversity conservation and ecological management strategies.

Variation in vegetation characteristics and the availability of requisite resources are linked to differences in insect abundance and species diversity (Song, *et al.*, 2023). Natural enemies can alter the composition and trophic structure of insect communities (Schmidt-Entling, *et al.*, 2020). Many arthropods exhibit a high degree of host specificity, and this contributes to its diversification, as adaptation to distinct hosts can lead to ecological specialization and, eventually, speciation. For example, plant-feeding insects frequently evolve host fidelity based on plant chemistry, morphology, and phenology, while parasitic arthropods specialize in particular host species due to physiological compatibility and immune defenses. This variation influences ecological dynamics, and biodiversity patterns within ecosystems (Forister, *et al.*, 2023). Variations in land-use patterns create a mosaic of habitats that support diverse insect assemblages by offering a range of ecological niches and resources. (Happe *et al.*, 2020).

METHODS

Methods shall employ rational, empirical, and systematic explanation on the approach of the research being used. In addition, the presentation of the methods or models shall put the references if they have been published before. The presentation shall include at least (a) types and sources of data and (b) analysis methods being used (including analysis tools).

Types and sources of the data shall be described in detail so that the readers will quickly find out the type of the research and the whole data of the research being used. Meanwhile, the analysis methods shall describe procedures or approaches, including the determination of parameters or variables, the data collection methods, the processing methods, and the analysis of data. The description can also include mathematical formulas or specific formulas so that the numerical results can be validated. The formulas or materials that have been standardized, unless they have been modified, do not need further explanation, but the references need to be mentioned. The explanation of the methods shall be provided thoroughly so that other researchers can use the same research methods.

If mathematical formulas come up in a manuscript, the Microsoft Equation Editor or Math Type feature can be used. The position of formulas is indented, just like writing a new paragraph (5 spaces). The formulas shall be followed by a continuous dot and the sequence number of the formulas. The example of the writing of formula is as follows:

$$p(x,y) \quad ; (0 \leq x \leq M-1, 0 \leq y \leq N-1) \dots\dots\dots (1)$$

Which

p : the probability of p .

M : the probability of M .

RESULTS AND DISCUSSION

Study Area

The study was carried out in two selected study sites at Ohankwu (Site 1, and Site 2) which lies on Latitude $6^{\circ}8'37''N$, Longitude $8^{\circ}6'53E$ for site 1 and Latitude $8^{\circ}9'10''N$, Longitude $8^{\circ}6'53E$ for Site 2. Ikwo has an area of approximately 500 km² and a population of 214,969 (2006 Census). The study area is within the tropical rainforest zone of Nigeria with two clearly distinguishable annual seasons – wet and dry seasons. The annual rainfall ranges from 1,800–2,200mm and a mean annual temperature range of $25^{\circ}C$ to $30^{\circ}C$ (Ebonyi State Government, 2024). The climate of Ikwo LGA is characterized by high rainfall and consistence warm temperatures (Ebonyi State Government, 2024). Ohankwu was selected for the study due to its vegetation composition and land-use pattern.

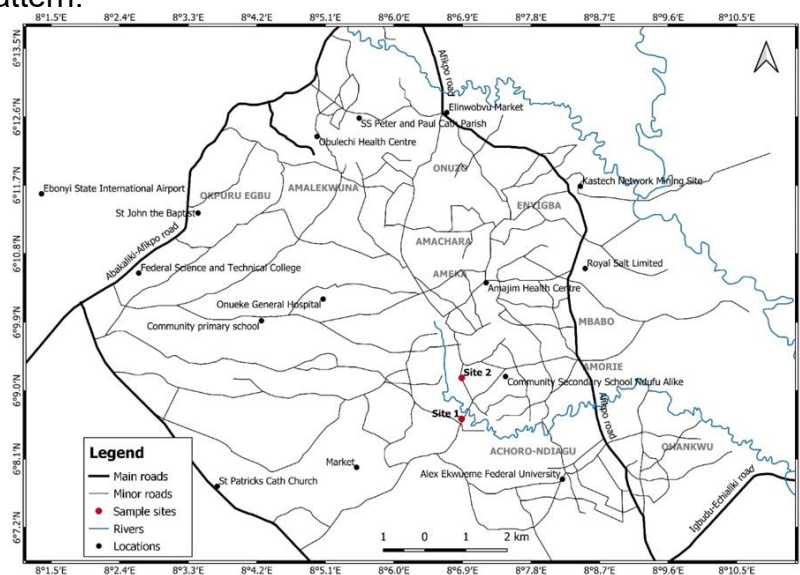


Figure 1: Geological map of the study area

2.2 Experimental Design

The study was an experimental work which involved investigating insect diversity at Ohankwu Ndufu-Alike Ikwo in a Randomised Design method. Two sites were selected for the study (site 1, and Site 2) which measured 1 km away from each other.

Insects Collection Methods

Pitfall Trap

A pitfall trap consists of a container buried placed on soil surface and the rim flush with the ground such that ground-active insects and other arthropods fall into the container inadvertently and are unable to escape. The trap is usually filled with a preservative or killing fluid (e.g. detergent-water mix, ethanol, propylene glycol) to preserve specimens. This method is used to collect insects such as Coleoptera (ground beetles, rove beetles), Hymenoptera (ants), Orthoptera (ground crickets), Araneae (spiders) etc. ground-active insects and other arthropods fall walked into the container inadvertently and are unable to escape (okeke *et al.*, 2024).

Handpicking:

Insects were also collected directly from plant surfaces, leaves, and flowers using forceps during early morning and evening hours. Care was taken to prevent damage to specimens, which were preserved in 75% ethanol (Akunne *et al.*, 2014).

Sweep Net:

A sweep net measuring 38 cm in diameter and fitted with a lightweight aluminum handle (100 cm long) was used for sampling vegetation-dwelling insects. It was firmly held at the handle and swept back and forth through vegetation (grasses, plants, shrubs, herbaceous) to dislodge, capture, and retain insects resting on or flying from vegetation. The net is often drawn in a figure-eight or arc motion. This was used to collect insects such as Hemiptera (e.g. leafhoppers, bugs), Coleoptera (leaf beetles, weevils), Lepidoptera (small moths, larvae), Orthoptera (grasshoppers), Diptera (flies), Hymenoptera (small bees, wasps) (Greyvenstein, *et al.*, 2020).

Light Trap

A light trap was constructed with a wooden materials with designed with an opening door for easy activation and accessibility of capture. A 48W rechargeable bulb was suspended at the centre of the wooden frame of the trap to attract nocturnal insects (which exhibit positive phototaxis), the insects fall into a collecting container or are trapped beneath the lamp as they move towards the light source (illuminating target area).

Phototactic insects such as Lepidoptera (moths), Diptera (mosquitoes, midges, moth flies), Coleoptera (e.g. certain beetles), Hemiptera (some nocturnal bugs), also other night-active orders are collected with this method (Wakefield, *et al.*, 2018).

Sorting and Identification of Insects

Insects collected were sorted in the Biology Laboratory of Alex Ekwueme Federal University Ndufu-Alike, Ikwo (AE-FUNAI). Flying insects, particularly moths and butterflies, were pinned in insect boxes due to their delicate nature, whereas specimens captured through light traps, and pitfall traps were examined under a light microscope. The liquid contents of collection jars were reduced using a syringe, and the insects were transferred to Petri dishes for detailed sorting.

Specimens were carefully handled (sorted) with camel-hair brushes and grouped into taxonomic orders using standard entomological keys. For

authentication, reference specimens preserved in ethanol were forwarded to the Insect Museum, Department of Crop Protection, Institute of Agricultural Research, Ahmadu Bello University, Zaria. All samples were subsequently returned and stored at AE-FUNAI for reference purposes.

$$\text{All Relative Abundance} = \frac{\text{Number of individuals of a species}}{\text{Total number of individuals of all species}} \times 100$$

Samples were subsequently returned and stored at AE-FUNAI for reference purposes.

Determination of Relative Abundance

The relative abundance of each insect order and species was calculated using the formula:

$$\text{Relative Abundance} = \frac{\text{Number of individuals of a species}}{\text{Total number of individuals of all species}} \times 100$$

This approach allowed for quantitative comparisons among the different insect groups captured during the study period (Akunne *et al.*, 2014).

Determination of Species Diversity and Dominance Indices

Species diversity was determined using the Shannon–Wiener Diversity Index (H), which accounts for both species richness and evenness:

$$H = -\sum (P_i \ln P_i)$$

where P_i is the proportion of individuals belonging to i^{th} the relative to the total number of individuals.

Species dominance was assessed using, expressed as:

$$\text{Simpson's Dominance Index (C)} = \sum (P_i)^2$$

This index highlights whether a few species dominate the assemblage. Species richness was measured using the Margalef Index, given by:

$$D = \frac{S - 1}{\ln N}$$

Where S is the total number of species and N is the total number of individuals (Djidjonri *et al.*, 2019). Together, these indices provided complementary measures of diversity, dominance, and richness, enabling robust ecological interpretation of the insect community structure at Mgbuchi.

Statistical Analysis

The data were analyzed using descriptive statistics to assess the abundance of insects at the mining sites. Insect collection data were subjected to Z-tests and the Kolmogorov–Smirnov test to compare abundance between species. All analyses were performed using the SPSS software package (version 25).

The insects found in two studied sites at the study area is presented in Table 1. A total of 1748 insects eleven (11) insect orders and forty (40) families were collected from the two studied site at Ohankwu in Ndufu-Alike Community, Ikwo. Out of these, 947 (54.18%) were collected from site 1 and 801 (45.82%)

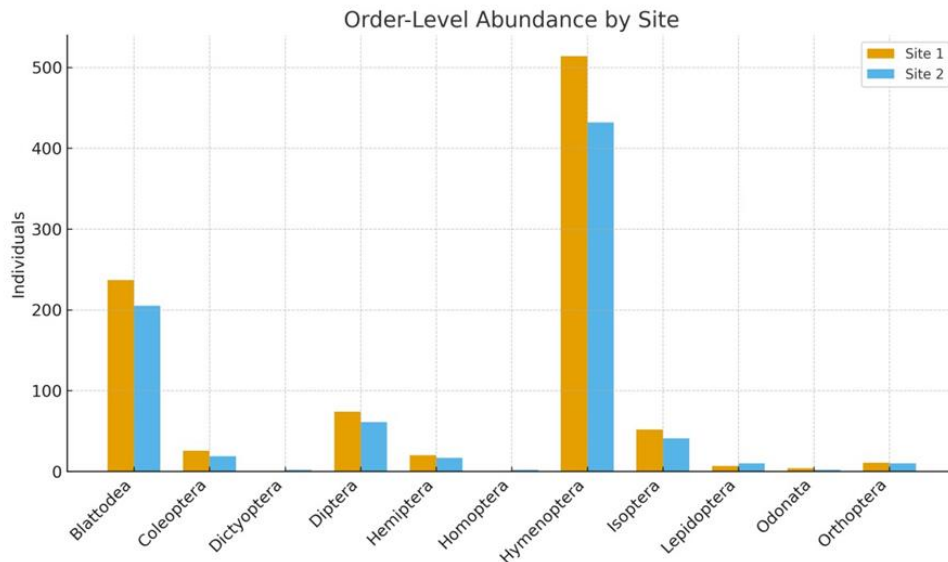
were collected from site 2. The insect orders collected were Blattodea, Coleoptera, Diptera, Hemiptera, Homoptera, Hymenoptera, Isoptera, Lepidoptera, Odonata and Orthoptera. The results showed that that Diptera (7.81%), Isoptera (5.49%), and Coleoptera (2.75%); recorded the higher relative abundance in Site 1 than Site 2 (7.62%, 5.12%, and 2.37% respectively). However, the result further revealed that Orthoptera (1.25%), Lepidoptera, (1.25%), Hemiptera (2.12%) had higher relative abundance in Site 2 than Site 1 (1.16%, 0.74%, and 2.11% respectively). Hymenoptera recorded the highest relative abundance in Site 1 (54.28%) than Site 2 (53.93%) follow by Blattodea in Site 2 (25.59%) than Site 1 (25.03%). The results also revealed that Homoptera and Dictyoptera both recorded the lowest relative abundance of (0.11%) in Site 1 than Site 2 (0.25%). There was a significant difference in the the abundance of insect Orders found at the the two studied sites, Site 1 and Site 2 ($P=0.001$). The results of the insect species found at the two studied Sites Ohankwu, Ndufu-Alike is presented in Table 2. The table revealed that *Dorylus* sp. (44.88%) recorded the highest relative abundance in Site, followed by *Macrotermes bellicosus* (21.62%) in Site 2. The results further revealed that *Bupphonella* sp., *Pachnoda interrupta*, *Diplognatha gagates*, *Entella* sp., *Cryptoflata* sp., *Acrosternum acuta* Schidium sp., *Epyric* sp., *Xylocopa inconstans*, *Poophilus costalis*, *Azygophleps* sp., *Euchromia folletii*, *Polyurea sempronius*, *Euphaedra phaethusa*, *Papilio domodocus*, *Palpopleura Portia*, *Nesciothmis farinosa* *Oxya hyla*, *Acrida conica*, *Neocurtilla hexadactyla*, *Tettigonia viridissima*, and *Homorocoryphus nitidulus* had the least relative abundance of (0.11% respectively). There was a significant difference in the the abundance of insect species found at the the two studied sites, Site 1 and Site 2 ($P=0.05$).

Table 1: Order-wise distribution and relative abundance of insect species collected from the two sampling sites

Order	Site 1	Site 2	Total
Blattodea	237(25.03)	205(25.59)	442(25.29)
Coleoptera	26(2.75)	19(2.37)	45(2.57)
Dictyoptera	1(0.11)	2(0.25)	3(0.17)
Diptera	74(7.81)	61(7.62)	135(7.72)
Hemiptera	20(2.11)	17(2.12)	37(2.12)
Homoptera	1(0.11)	2(0.25)	3(0.17)
Hymenoptera	514(54.28)	432(53.93)	946(54.12)
Isoptera	52(5.49)	41(5.12)	93(5.32)
Lepidoptera	7(0.74)	10(1.25)	17(0.97)

Odonata	4(0.42)	2(0.25)	6(0.34)
Orthoptera	11(1.16)	10(1.25)	21(1.2)
Total	947(54.18)	801(45.82)	1748(100)

P = 0.001



(Figure 1): Graphical presentation of insect by Orders

Table 2: Diversity and Relative Abundance of Insect Species Collected from Site 1 and Site 2

Order	Family	G/sp	Site 1	Site 2	Total
Blattodea	Termitidae	Macrotermes bellicosus	195(20.59)	174(21.72)	369(21.11)
		Macrotermes natalensis	42(4.44)	31(3.87)	73(4.18)
Coleoptera	Chrysomelidae	Buphonella sp.	1(0.11)	0(0)	1(0.06)
		Brachinus sp.	3(0.32)	2(0.25)	5(0.29)
	Coccinellidae	Coccinella magnifica	2(0.21)	2(0.25)	4(0.23)
	Cerambycidae	Ceroplesis sp.	2(0.21)	1(0.12)	3(0.17)
	Eclateridae	Heteroderes coctus	0(0)	1(0.12)	1(0.06)
	Lampyridae	Lampyris noctiluca	2(0.21)	3(0.37)	5(0.29)
	Scarabaeidae	Onthophagus sp.	2(0.21)	1(0.12)	3(0.17)
		Deltochilum gibbosum	5(0.53)	2(0.25)	7(0.4)
		Pachnoda interrupta	1(0.11)	2(0.25)	3(0.17)
		Diplognatha gagates	3(0.32)	2(0.25)	5(0.29)
	Slaphylinidae	Paederus sabaeus	2(0.21)	1(0.12)	3(0.17)
	Tenebrionidae	Gonocnemis fairmairei	3(0.32)	2(0.25)	5(0.29)
Dictyoptera	Mantidae	Entella sp.	1(0.11)	2(0.25)	3(0.17)

Diptera	Agromyzidae	Melanagromyza nigrimaculth	3(0.32)	2(0.25)	5(0.29)	
	Calliphoridae	Chrysomya albiceps	11(1.16)	8(1)	19(1.09)	
		Lucilia sericata	13(1.37)	9(1.12)	22(1.26)	
	Sarcophagidae	Sarcophaga sp.	5(0.53)	3(0.37)	8(0.46)	
	Muscidae	Musca domestica	5(0.53)	3(0.37)	8(0.46)	
	Culicidae	Culex fatigans	8(0.84)	6(0.75)	14(0.8)	
		Culex thriambus	2(0.21)	2(0.25)	4(0.23)	
		Culex tigripes	2(0.21)	1(0.12)	3(0.17)	
	Ceratopogonoidae	Culicoides sonorensis	25(2.64)	27(3.37)	52(2.97)	
	Hemiptera	Aphrophoridae	Poophilus lcostais	2(0.21)	3(0.37)	5(0.29)
Cicadellidae		Cofana unimaculata	2(0.21)	1(0.12)	3(0.17)	
Coreidae		Anoplocnemis curvipes	6(0.63)	4(0.5)	10(0.57)	
Flatidae		Cryptoflata sp.	1(0.11)	1(0.12)	2(0.11)	
Pentatomidae		Acrosternum acuta	1(0.11)	2(0.25)	3(0.17)	
Miridae		Hyalopeplus sp.	3(0.32)	2(0.25)	5(0.29)	
Reduviidae		Pasira basiptera	2(0.21)	1(0.12)	3(0.17)	
		Schidium sp.	1(0.11)	2(0.25)	3(0.17)	
		Rhynocoris rubricus	2(0.21)	1(0.12)	3(0.17)	
Hymenoptera		Bethylidae	Epyris sp.	1(0.11)	1(0.12)	2(0.11)
	Apidae	Apis mellifera	6(0.63)	4(0.5)	10(0.57)	
		Xylocopa sp.	2(0.21)	1(0.12)	3(0.17)	
		Xylocopa inconstans	1(0.11)	2(0.25)	3(0.17)	
	Formicidae	Camponotus sericious	5(0.53)	4(0.5)	9(0.51)	
		Bothroponera sp.	3(0.32)	2(0.25)	5(0.29)	
		Dorylus sp.	425(44.88)	363(45.32)	788(45.08)	
		Camponotus perrisi	19(2.01)	13(1.62)	32(1.83)	
		Pachycondyla procidua	11(1.16)	10(1.25)	21(1.2)	
	Isoptera	Solenopsis invicta	38(4.01)	29(3.62)	67(3.83)	
Icheumonidae			Echthromorpha variegata	2(0.21)	1(0.12)	3(0.17)
			Sphecidae	Belonogaster sp.	1(0.11)	2(0.25)
Rhinotermitidae		Reticulitermes sp.	52(5.49)	41(5.12)	93(5.32)	
Homoptera		Cercopidae	Poophilus costalis	1(0.11)	2(0.25)	3(0.17)
		Lepidoptera	Cossidaea	Azygophleps sp.	1(0.11)	2(0.25)
Erebidae			Euchromia folletii	1(0.11)	1(0.12)	2(0.11)
Nymphalidae			Acraea acrita	2(0.21)	2(0.25)	4(0.23)
			Polyura sempronius	1(0.11)	1(0.12)	2(0.11)
			Euphaedra phaethusa	1(0.11)	2(0.25)	3(0.17)
Odonata	Papiliolidae	Papilio domodocus	1(0.11)	2(0.25)	3(0.17)	
		Palpopleura portia	1(0.11)	0(0)	1(0.06)	
	Libellulidae	Palpopleura lucia	2(0.21)	1(0.12)	3(0.17)	
		Nesciothemis farinosa	1(0.11)	1(0.12)	2(0.11)	
Orthoptera	Acrididae	Oxya hyla	1(0.11)	2(0.25)	3(0.17)	

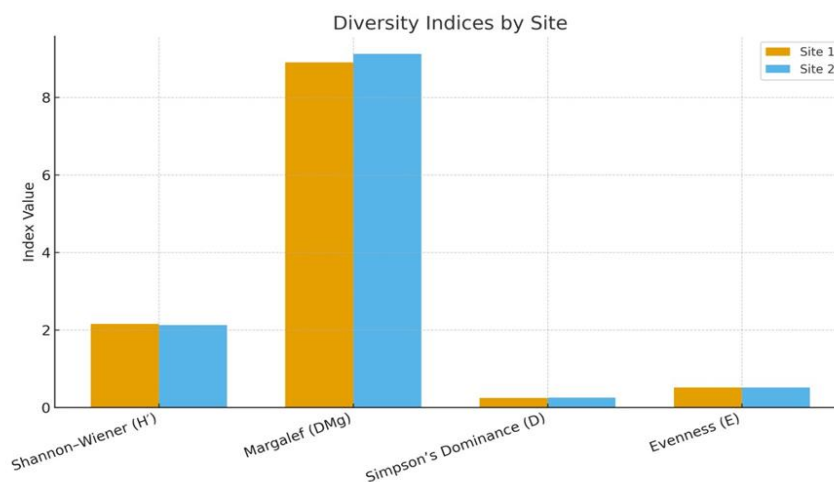
	Acrida conica	1(0.11)	1(0.12)	2(0.11)
Gryllotalpidae	Neocurtilla hexadactyla	1(0.11)	2(0.25)	3(0.17)
Pyrgomorphidae	Zonocerus elegans	6(0.63)	3(0.37)	9(0.51)
Tettigoniidae	Tettigonia viridissima	1(0.11)	0(0)	1(0.06)
	Homorocoryphus nitidulus	1(0.11)	2(0.25)	3(0.17)
		947(54.18)	801(45.82)	1748(100)

Table 3: Shannon-Wienwr, Margalef, Simpson's Dominance and Evenness of Insects in Ohankwu

Indices	Site 1	Site 2
Shannon-Wiener (H')	2.16	2.13
Margalef (DMg)	8.90	9.12
Simpson's Dominance (D)	0.25	0.26
Evenness (E)	0.52	0.52

Result of Dominance, Diversity and Richness of Insects in Ohankwu.

The results on dominance, diversity and richness of insects collected from Ohankwu in the two Sites studied are presented in Table 3. The results shows that Site 1 had a higher Shannon–Wiener diversity index (2.16) than site 2 (2.13). Site 2 had a higher Margalef richness index (9.12) than Site 1 (8.90). Site 2 had a higher Simpson's dominance index (0.26) than Site 1 (0.25). Site 1 and Site 2 had equal Shannon Weiner Evenness of (0.52).



(Figure 2): Graphical presentation of diversity indices between Site 1 and Site 2

The findings of this study provides insight into insect diversity and abundance in the two studied Sites at Ohankwu Ndufu-Alike Ikwo. This research entails quantifying insect populations across eleven orders to offer a deeper understanding of the ecological dynamics influencing the environment. The total insects counted across the two Sites were 1748, showcasing a rich species

diversity. Site 1 demonstrated a substantially higher insect abundance with 947 insects (54.18%) compared to the 801 insects (45.82%) collected from Site 2. These variations in insect numbers could be attributed to several factors, including land-use pattern (agronomic practices), vegetation structure, and resource availability. Such differences in insect diversity and abundance have been observed in other studies as well Happe *et al.*, (2020) who reported that variations in land-use patterns create a mosaic of habitats that support diverse insect assemblages by offering a range of ecological niches and resources. Similar study by Song, *et al.*, (2023) also reported variation in vegetation characteristics and the availability of requisite resources are linked to differences in insect abundance and species diversity.

Among the identified insect Orders, Hymenoptera recorded the highest relative abundance in Site 1 compared to Site 2. This findings align with the work done by Monday and Uhuo (2024) who reported highest relative abundance and diversity in Hymenoptera order in the same area. Conversely, Blattodea demonstrated greater abundance in Site 2. This differences may arise from variation in microclimate and vegetation cover. This agrees with the work done by Oecologia, (2020) who reported that insects diversity are affected by microclimates (such as temperature, humidity, rainfall, micro-climate) and vegetation cover (such as plant diversity and structure). The disparity could also be as a result of natural enemy activities. This is also in line with Schmidt-Entling, *et al.*, (2020) who reported natural enemies can alter the composition and trophic structure of insect communities.

The investigation of insect species witt in the two studied sites at Ohankwu, Ndudu-Alike, and Ikwo revealed a more complex view of insect diversity their site-specific associations. The results presented in Table two deneate the relative abundance of insect species across the two sites showcasing the meaningful insight into the insect community composition. The data highlighted a remarkable distinction in the relative abundance of specific insect species between the two sites. Among the identified species, *Dorylus* sp., occurred as th3 most abundant (45.32%) insect species in in Site 2 while *Macrotermes bellicosus* was highest (20.59%) in Site 1. This diversity in species distribution underscores the complex interaction of environmental factors and habitat preferences among insect species. This is in consunance with the work of Forister, *et al.*, (2023) who reported that many arthropods exhibit a high degree of host specificity, and this contributes to its diversification, as adaptation to distinct hosts can lead to ecological specialization and, eventually, speciation. For example, plant-feeding insects frequently evolve host fidelity based on plant chemistry, morphology, and phenology, while parasitic arthropods specialize in particular host species due to physiological compatibility and immune defenses. This variation influences ecological dynamics, and biodiversity patterns within ecosystems

CONCLUSION

The study highlighted a rich and diverse assemblage of insect species across the studied Sites. The study also documented the insect species domicile at the area and the level of Site specificity of different insect species. The findings

provide a baseline inventory of insects in the area and reveal both the ecological benefits and the potential risks associated with the harmful insects (insect pests of plants, household pest, and material-structural-destroying insects) at the study area. The study thus advocates the need for proper insects conservative measures for sustainable agricultural practices considering their ecological relevance and importance to humanity

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