

his/her quota to the positive development of this journal. If you think you are too small or young in this Society to make a difference, then you have not spent a night with mosquitoes.

2. Directory of Nigerian Entomologists (3rd ed. 2015)

During my tenure, the Council and members of the Society considered and approved the need to accurately document the profiles of the authentic members past and present to practise entomology. This gave rise to the publication of Director of Nigerian Entomologists (3rd edition 2015) edited by Professors Dan A. Enobakhare, FESN and M.O. Ashamo FESN, President and Secretary respectively. In the document is listed (a) 35 ESN Foundation members (b) National executive members (c) 4 Trustees of the Society (d) Past till present National officers (e) 53 (now 57) ESN Fellows and year of award (f) Honorary Fellows (g) Life members (30) (h) 24 branches of the Society. Names, postal addresses, e-mail, telephone nos, qualifications/awarding institution, membership registration number, area(s) of specialization, membership/Fellowship status and colour photographs of members are in the Directory.

3. Certificate of Incorporation of the Society with Corporate Affairs Commission, Abuja

Revalidation of our certificate was made on 16 May 2014 with inclusion of Professor M.C. Dike to replace late Professor B.A. Okwakpam in the Board of Trustees.

4. Certificate of Conference attendance

At the 44th Annual Conference in Yenagoa in 2013, members were given certificates of conference attendance for the first time. Since then, certificates have been issued to members who attend and register for conferences of our Society. In this conference in Ilorin, attendance certificates will be given at AGM and will not be issued by proxy. These certificates have been printed and donated by Professor Timothy Epidi of Ph/Yenagoa branch.

5. Minutes of Council Meetings from 2009 – 2015

Approved Minutes of Council meetings from 2009 – 2015 are now in Bound copies which are accessible to all members. Prof. M. Ashamo, FESN (National Secretary) is in the process of binding corrected and approved minutes of AGM for the same period. I am greatly indebted to him for his steadfastness and unprecedented cooperation and zeal in working with me in peace.

6. Membership progression since my tenure 2012 – 2016


To the glory of God, the membership of this Society has progressed steadily since 2012 when I took over as President,

2012, we had 396 members

2013, we had 457 members

2014, we had 555 members

2015, we had 633 members



LIVING WITH THE “DEAD” TO PROVIDE FOOD FOR HUMAN, ANIMAL AND PLANT EXISTENCE.

Prof. Dan Aisa Enobakhare, FESN, KSM

Agricultural entomologist/Applied insect taxonomist
Faculty of Agriculture, University of Benin, Benin City

Introduction

Living organisms cannot live forever. When they die, decomposition of their bodies takes place naturally to provide nutrients for their offspring. The organisms that cause this decomposition are called decomposers. The decomposers break down dead or decaying organisms and in doing so, they carry out the natural process of decomposition. Like herbivores and predators, decomposers are heterotrophic i.e. they use organic substrates to get energy, carbon and nutrients for growth and development. Decomposers are principally bacteria and fungi. Decomposers and scavengers break down dead plants and animals.

They also break down the waste (poop) of other organisms. Therefore when plants and animals die, including humans, they become food for decomposers like bacteria, fungi, earthworms and some insects. Consequently, decomposers or saprophytes recycle dead plants and animals into chemical nutrients that are released back into the soil, air and water to sustain other plants and animals. Always & everywhere, remember “dust to dust” in the scriptures!

Bacteria, fungi, earthworms and insects recycle nutrients for existence. Bacteria (singular: bacterium) can be found everywhere. They live in water, in the air and land. They are prokaryotic i.e they do not have a nucleus like other single-celled organisms. They are among the smallest forms of life on Earth. In fact, you may have up to 100 million bacteria in your body right now as you read this article. Some bacteria are harmful and cause diseases like typhoid and cholera. Others are helpful. Bacteria in the digestive tract kill more harmful bacteria. Some ruminants like sheep and deer have bacteria in their stomachs that help them digest plants which they have eaten. Also, bacteria help turn milk into cheese, cucumbers into pickles and cabbage into sauerkraut. Other bacteria help decompose dead plants and animals to recycle their nutrients for other living organisms to develop.

Fungi (singular: fungus) like mushrooms, mildews, mould and toadstools are not plants. They do not have chlorophyll (i.e. the green substance in plants that absorbs light from the sun to help them grow) and so cannot make their own food. Fungi release enzymes that decompose dead plants and animals. Fungi absorb nutrients from the organism they are decomposing. There are over 50,000 species of fungi known at the moment. Like bacteria, most fungi are very small. Some are also helpful. For example, penicillin and other antibiotics are made from fungi. Some fungi like mushrooms, truffles and yeast are edible or used for making food. Others are harmful. It should be noted that some mushrooms are not edible and should be avoided.

There are well over 2000 species of earthworms. They are hermaphroditic i.e. they have both male and female reproductive organs. Earthworms need moist environments to survive. If they dry out, they will have trouble burrowing into the soil and they will die. Earthworms eat dead plants and animals including humans. When they eat, they also take in soil and tiny pebbles. They take in nutrients from micro-organisms in the materials they ingest. Remember that human beings, plants and animals have micro-organisms in their bodies. They can excrete wastes in the form of casts. Casts are rich in nutrients like



11. Council Meetings in branches

The Council of ESN meets on third Saturday three times annually in March, July and October. The first Council meeting in which I presided was in Usmanu Dan Fodio University, Sokoto on 06 April 2013. From 2013 – 2016 we have had eleven (11) Council meetings in Sokoto (06/04/13), Lagos (6/7/13), Yenagoa (7/10/13), Bida/Badeggi (22/3/14), Awka (19/07/14), Abuja (07/10/14), Benin (14/03/15), Ile-Ife (11/07/15), Lagos (07/10/15), Makurdi (16/07/16) and Ilorin (10/10/16). We missed only one in 12 expected meetings due to fuel crisis in the Country in 2016.

12. Apeji/Tola Badejo/Okelana Foundation

ESN operates three Foundations established to assist postgraduate entomology students attend and present papers in ESN Annual Conferences. The worth of the grant is ten thousand naira per student who qualifies. The Awards Committee is currently headed by Professor Adeyinka Adesiyun, FESN with tenure of four years. This year, there are three postgraduate students i.e. Mr. Larayetan Ayo Adebawale, Department of Biology FUTA, Akure, Mr. Babalola Abiodun, Department of Biology FUTA, Akure, Mr. Ohadiwe Augustine C. Department of Zoology, UNILAG.

In all, from 2012 we have had eight beneficiaries of this Foundation. I am grateful to this committee for an excellent contribution to the progress of our Society. Their tenure ends this year 2016.

13. ESN land in University of Abuja for permanent Secretariat/Insect Museum

A temporary Secretariat of ESN exists in Ahmadu Bello University, Zaria where we have equipment bought with TETFUND grant. We also have publications of ESN there. This Secretariat is in custody of Rabi S. Adamu, Jonathan George and Oparaeke A.M. in Zaria.

At the 45th Annual Conference in University of Abuja in 2014, our Society requested for a space of 100 x 100m (1ha) to build its permanent National Secretariat/Insect Museum within the premises of the University. The Architectural design, working drawings, electrical drawings, dimension of roof (roofing plan) and building estimates were considered by our Council. This was redrawn after the topographic survey of the land. After due consideration, a formal letter of approval and Memorandum of Understanding was given to us by Council of the University of Abuja on 19 October 2015. The plot acquired free of charge to the Society, has been surveyed with beacons erected. A plaque has also been erected during the ground breaking in March this year after the payment of compensation by University to indigenes of the community. We have taken possession of the land and what is left now to be done is to build our Secretariat/Museum.



been used for centuries as a soft yet strong and highly durable fabric.

Challenges of research and innovation

The challenges of ensuring global food and nutrition security cannot be adequately addressed without the participation of the entomological research. In the past, the focus has been on increasing food production to meet a growing demand but recently more emphasis has been put on the fact that up to a third of the world's food production is lost or wasted due to postharvest losses that are greatly associated with insect and other arthropods infestation of farm produce on the field and store. Moreover, food consumption patterns in combination with sedentary lifestyles can turn into significant and rising burdens on public health. Thus, it is of paramount importance to take a "food systems" view. This requires equal attention on improving agricultural and fisheries' productivity, reducing the negative environmental impacts of production (including reducing emissions of greenhouse gasses), reducing waste at all

stages in the food chain and helping citizens in consumption of healthier food.

Solutions to global food and nutrition security via entomological researches and innovation

Thus, it is necessary to take a "food systems" view giving equal attention to improving agricultural and fisheries' productivity, reducing the negative environmental impacts of production, reducing waste at all stages in the food chain and helping citizens of all countries eat more healthily. The EU has excellent intellectual resources for research and innovation which can mitigate the risks associated with global food insecurity and lead to simultaneously improving economic growth, public health

and the environment. An important strategic innovation addressing these issues is the concept of the knowledge-based "bioeconomy", pioneered by the EU, and Germany in recent years, and subsequently adopted by many other countries.

Agriculture is increasingly considered as a key part of the bioeconomy, i.e. the production, transformation and utilisation of bio-based resources and materials. The agri-food system and its impacts on the environment and public health is inherently complex. Whilst research may be able to abolish or resolve some of the inherent trade-offs (e.g. between production of food and environmental protection), many will remain. A trade-off implies the need for a societal choice on how best to balance between the different ecosystem services and whilst entomological research can help identify the issues, and underpin good policy by providing knowledge, it cannot itself determine solutions to trade-offs. To address the global food and nutrition security challenge both new knowledge and enhanced movement of knowledge into use are



Identification of Insect pest of crop

Dr. A. A. Denloye - *Business Manager*
Prof. A.M. Malgwi - *Treasurer*
Prof. A. A. Adesiyun FESN - *Trustee*
Prof. E.O. Ogunwolu FESN - *Trustee*
Dr O. Ajayi FESN - *Trustee*
Prof. D. A. Enobakhare FESN, KSM - *Trustee*
Prof. S.C. Ewuim - *Chairman, Awka Branch*
Prof. E.A. Omudu
Chairman, Makurdi/Yandev/Lafia Branch
Prof. S.B.A. Umeotok
- Chairperson, Calabar/Uyo Branch
Dr V.C. Adaigbe
Chairman, Benin/Ekpoma Branch
Dr A. A. Denloye - *Chairman, Lagos Branch*
Prof. A. Idowu - *Chairman, Abeokuta Branch*
Dr S. A. Dialoke - *Chairman, Owerri Branch*
Prof. G.S. Mwamsat - *Chairperson, Awka Branch*
Dr B. U. Abdullahi - *Chairman, Bida/Minna Branch*
Dr. (Mrs.) A. Jonah - *Chairman, Zaria/Kaduna Branch*
Dr. T. N. Gbarakoro
- Chairman, Port Harcourt/Yenagoa Branch
Prof. A. T. Ande
Chairman, Ilorin/Ogbomoso Branch
Dr. S.R. Yusuf - *Chairman, Kano Branch*
Dr M.B Sosan - *Chairman, Ile-Ife Branch*
Dr J.O. Akinneye - *Chairman, Akure Branch*
Dr K.O.K Popoola - *Chairman, Ibadan Branch*
Dr T. N. C Echendu -
Chairman, Umudike/Umuahia Branch
Dr B. Lawal - *Chairman, Sokoto Branch*
Dr B.D.J. Kabir - *Chairman, Maiduguri Branch*
Dr M.M. Degri
- Chairman, Yola/Jalingo/Gombe Branch

Honourary Fellows of ESN (HFESN)

Major General Sam Momah - 1996
Alhaji Jimeta Gambo - 1996
Nse Desmond Iwuagwu - 1996
Mr Bertram Obi - 1996
Engr. I.J. Wakama - 1996
Lt. Col. A.U. Aniebo - 1997
Hajiya Falmata Mani - 1997
Mr. B.S. Chandrashekara - 1997
Dr Shetima Mustapha - 1997
Prof. Peter Ejiofor - 1998
HRH Igwe Peter Anukwu - 1998
Wing Commander F.U. Ukaegbu - 1998
Chief (Engr) Ifeanyi Nwokoye - 1998
Alhaji (Dr) Ado Bayero - 1999
Vice Adm. Muritala H. Nyako (Rtd.) - 1999
Hajiya Binta Abdulkarim - 1999
Alhaji Abdul-Azeez Abba - 1999
Dr. Tim Menakaya - 2000
Dr. Umore Omoti - 2000
Mr. Tony Ogunbor - 2000
Prof. Richard Abumire Anao - 2000
Prof. Dennis Agbolanhoa - 2000
Alhaji Ahmad Muhammad Makarfi - 2000
Alhaji Muhammadu Liman - 2001

Environmental Biology of Imo State University Owerri has been appointed Dean, Postgraduate School, Imo State University, Owerri.

2. Prof. M.O. Onuh has been appointed the Head, Department of Soil Science and Environment, Imo State University Owerri.

KWARA BRANCH

Prof Ahmed has been appointed Deputy Vice Chancellor (DVC) Academic of Kwara State University KASU!

MAKURDI / LAFIA BRANCH

Professor Buba Ibrahim Ahmed Appointed as a Member of Tertiary Education Fund Tetfund's Standing Committee on Research and Development

ABUJA BRANCH

Dr, A. A. Oyerinde was elected Assistance Secretary, Nigerian Apicultural Platform and member interministerial Committee on Beekeeping

ABEOKUTA BRANCH

Miss OYINLOYE Naomi of FUNAAB and Mr SALAU Adedayo Richard of OOU successfully defended their M.Sc. Zoology (Entomology) and M.Sc. Medical Entomology theses respectively in the month of June, 2016. Dr A.A. Osipitan was appointed Chairman of TIMTEC (Examination time table committee) at FUNAAB.


Prof A.B. Idowu
(Branch Chairman)



ILE-IFE BRANCH

Professor Sylvester S. Ogbogu delivered the 287th Inaugural Lecture of Obafemi Awolowo University, Ile-Ife titled "Urbanization, Freshwater Biodiversity Conservation and the Critical Role of Aquatic Insects" on Tuesday, May 24, 2016 at Oduduwa Hall, Obafemi Awolowo University, Ile-Ife.

Professor 'Tola Badojo resumed back to Obafemi Awolowo



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They feed on honey bee larvae in large amount. They have the power to finish up to 40 honey bees in a minute.

6. Kissing bugs grow up by sucking blood of vertebrates; they have been rated as 6th most deadly insect in the world. Kissing bugs named after their habit of biting the lip of human while they sleep. They also transmit parasite called as trypanosoma cruzi. The kissing bug disease or 'chagas' kills 12000 people every year. The chaga disease spread to animals and pets in the same way. The kissing bug bite could result in instant changes within victim's body such as welts and rashes.

7. The 7th deadly insect of the world is Fire ant. There are 285 different species of fire ants in the world. Once disturbed, they would sting the intruder repeatedly. The fire ant sting is very painful also. A white pustule caused by fire ant sting last for weeks. Their venom also would cause several skin problems. Fire ants usually attack in the group that contains ten to hundreds of ants. The venom of fire ants could also result in allergic reaction.

8. Fleas are ranked 8th on the world's list of deadly insects. Fleas are external parasites that suck blood from humans, birds, reptiles and wild or domestic animals. The fleas could cause itching spots on the skin of hosts. Fleas only have a size of the tip of a pen and reproduce very quickly. Every female flea lay 2000 eggs within their life span.

There are 2000 known species of fleas in the world. Young fleas can consume volume of blood that is over 15 times their own body weight. The flea bites on human body result in red bumps. They commonly found around waist, knecs and elbows. The bite of fleas is very itchy and it may also lead to infection.

9. The Botfly is the 9th most deadly insect in the world. The larvae of botflies are internal parasites of mammals. Unfortunately, the dangerous larvae also live beneath human's skin and cause horrible effects. The human botflies mostly found across Central and South America. 'Myiasis' known parasite infestation makes severe changes in skin

tissues.

The young female botflies laid eggs within the skin of mammals. The larvae penetrate through skin and lives in subdermal zones of human skin for more than 60 days. The patients could feel the movement of larvae beneath their skin. Once larvae development gets complete it leaves out of the body.

10. The Bullet ant is the 10th most deadly insect. Bullet ant is the largest of all ant families in the world. They are mostly found in rainforests of Nicaragua and Paraguay. Bullet ants named after their painful sting. After the bite, their victim would feel like being shot. In fact, the sting by a bullet ant is 30 times more painful than of a wasp or a honey bee.

The one inch sized bullet ant also called as '24-hour ant' by locals. It is because one full day pain followed by its sting. Each bullet ant colonies contain hundreds of members. They usually make a nest at the base of large trees. Bullet ants also release unpleasant odour once they found or feel the presence of any predator. If that trick won't drive the predators away, they would attack together with the powerful sting.

Reference

Top 10 Deadliest insects:
<https://themysteriousworld.com/top-10-most-dangerous-insects-in-the-world/> Retrieved 10th August, 2017





THE ROLES OF INSECT RESEARCH TO FOOD SECURITY, HEALTH AND THE ENVIRONMENT



The problem of food security in the developing countries is prominent in Africa and Nigeria in particular. Factors escalating the problem can be associated to pronounce increase in demographic trends in the third world nations which requires increase in food production to cater for mouths that has to be fed. Presently the shrinking global carrying capacity equally compounded the gruesome scenario as the earth is getting warmer due to climate change; deforestation and



desert encroachment in the northern part of the country while the south have escalating flooding, ocean upsurge and erosion. These translate to the fact that the potential resources for making more food are limited and thus call for concerted effort to

curtail these emerging problems that bothers on the availability of food and also the resultant health and environmental implications.

Insect research engenders the use of insects as food and feed that has many environmental, health and sustainability

benefits which include:

Environmental benefits

Insects have high feed conversion efficiency because they are cold-blooded. The feed-to-meat conversion rates vary widely

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THE ESN PRESIDENT'S ENVIRONMENT (II)

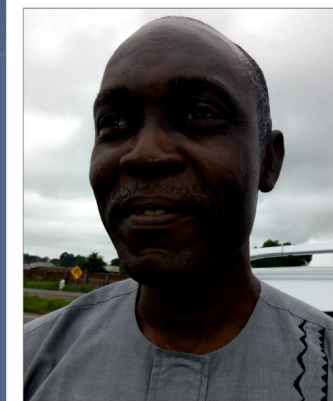
Dear Fellow Members of the Entomological Society of Nigeria,
In a previous message [THE ESN PRESIDENT'S ENVIRONMENT (I)] which I sent to all through branch chairmen, I addressed a number of issues concerning the activities of the society, and finally appealed for the support of all in moving the society forward. In this message, I am focusing on our roles as insect scientists (Entomologists) in national development. By virtue of his/her training, the Insect Scientist is generally interested on the biology of insects as well as the impacts of their activities on their immediate and larger environment. Therefore, the scientists' role in national development should not be overemphasized.

Over the years, insect scientists in Nigeria have been working hard in their various sub-disciplines of insect science, producing novel information on the biology as well as methods for eradication and/or management of insects of agricultural, and health importance in Nigeria. Not left out are scientists whose interest are in the environment and of

given to the important role Insect Scientists can play in the synthesizing the strategies resulting from such discussions. It is a fact that over the years, Nigerian Entomologists have been working hard and have produced excellent and ground-breaking research results. However the impacts of these are not felt in articulation issues bothering on Entomology which are directly concerning or tangential to national development. It boils down to the fact that just like in some other disciplines, research results are left to gather dust in shelves. Little or no attention is given to the idea of harnessing the results.

Worse still, the need to involve Insect Scientists in policy-making activities is easily overlooked. A case in point is the current initiative against Fall Army Worm (FAW) in Nigeria. It is sad to note that the Entomological Society of Nigeria that has been in existence as professional body since 1965, was not represented in all the activities leading to the occasion in which Nigerian government and Food and Agriculture Organisation (FAO) signed an

They must think out of the box in ensuring the application of their research findings, thereby increasing the impact of insect science on the society, as well as rekindling the visibility of ESN in national development efforts. It is hoped that as a starting point, this line of thought will be brought to bear in drafting the usual conference communique at the impending annual conference of Entomological Society of Nigeria scheduled for Awka in Anambra State. early in



ESN/0183	AKINWALE, Mohammed-Monzoor Z
ESN/0184	AKPAN, A.J.
ESN/0185	AKPAN, Edna A.
ESN/0186	ALHAJI, Baba Bida
ESN/0187	ALHASSAN, Tswako Maji
ESN/0188	ALI, Augustine S.
ESN/0189	ANASO, Chinwe E.
ESN/0190	ARANNILEWA, Samuel Taiwo
ESN/0191	AWE, Omolara O.
ESN/0192	AYAKPAT, Henrietta Ngozi
ESN/0193	BABA, Jeremiah Danjumah
ESN/0194	CHEREN, Samuel
ESN/0195	CHUKWU, Stella Nwakaego
ESN/0196	DOSUNMU, Roberta T.
ESN/0197	DUNA, Madu Mailafiya
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ESN/0199	EWUM, Chima Sylvanus
ESN/0200	GBAYE, Olajire Ayodele
ESN/0201	GEORGE, Jonathan Butcher Danladi
ESN/0202	GWADI, Kaleson Wesley
ESN/0203	ILYASU, Abubakar Sadiq
ESN/0204	IMANDEH, Godwika Nyiutaha
ESN/0205	ISHAKU, Abubakar
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ESN/0207	JAMES-RUGU, Naomi N.
ESN/0208	KABIR, B.G.J.
ESN/0209	KASHINA, Boniface David
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ESN/0225	NOCK, Haruna Ishaya
ESN/0226	NONGO, Nyiyongo Nicholas
ESN/0227	NWILENE, P.
ESN/0228	NZEKWU, Anthony Nmora
ESN/0229	OGEDEGBE, A.B.O.
ESN/0230	OGBALU, O.K.
ESN/0231	OGWURIKE, Bose A.
ESN/0232	OKOH, Evelyn Kehinde
ESN/0233	OMOTOSHO, O. Temitope
ESN/0234	OMUDU, Edward Agbo
ESN/0235	OSENI, Aminu Mohammed
ESN/0236	OYENUGA, Babatunde Adefenwa
ESN/0237	OTHMAN, Bukar
ESN/0238	OZOLUA, Kelly O.O.
ESN/0239	SHAIKA, Stephen Saikiu
ESN/0240	SHORUNGBE, Adewale Ayodeji
ESN/0241	SOSAN, Mosudi Babatunde
ESN/0242	SOYELU, Olalekan
ESN/0243	SULEIMAN, Abba
ESN/0244	TURAKI, Joy Z.

ESN/0306	UCHE, Fidelia Belta
ESN/0307	ENWE, N.
ESN/0308	UZAKAH, Richard
ESN/0309	MORRIS, J. G.
ESN/0310	THOMAS, C
ESN/0311	ZAKA, U.
ESN/0312	NDAM, O. N.
ESN/0313	YULA, H. Z.
ESN/0314	OKOROAFOR, Eunice
ESN/0315	BANKE, R.O. K.
ESN/0316	ANDA, D.A.
ESN/0317	AHOM, Rosemary I.
ESN/0318	OVELADE, O.O.
ESN/0319	ALABI, J.
ESN/0320	OLANIRAN, O.A.
ESN/0321	UGWU, Juliana Amaka
ESN/0322	ONEKUTU, Amana
ESN/0323	AJELARA, Kafayat Oluwakemi
ESN/0324	ALAFIA, Azeezat Oyindamola
ESN/0325	BABALOLA, Oluwaseun O.
ESN/0326	UKPO, William
ESN/0327	OYEDIRAN, Isaac o.
ESN/0328	ANYIM, Alozie
ESN/0329	AGUNBIADE, Tolulope Adebimpe
ESN/0330	OYEDOKUN, Adegoke Victor
ESN/0331	LAWAL, Olusegun Adebayo
ESN/0332	FASUNWON, Bamidele temitope
ESN/0333	BANJO, Folake M.
ESN/0334	ADEOYE, Temitope
ESN/0335	ADEROLU, I. Adeniran
ESN/0336	OKORIE, Patricia Nkem
ESN/0337	ADEKANMI, Jeremiah O.
ESN/0338	IBITOYE, Olufisayo
ESN/0339	ADETORO, Fouad
ESN/0340	ANOGWILL, Joy
ESN/0341	SADIKU, Bukola
ESN/0342	ODUOLA, Adedayo
ESN/0343	James Adebayo OJO
ESN/0344	Abiodun JODA
ESN/0345	Olaniyi Olamide IJADARE
ESN/0346	Bukola Toyin SADIKU
ESN/0347	Luke Chinaru NWOSU
ESN/0348	Onehireba UDAH
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ESN/0353	EKRAKENE, Taidi
ESN/0354	OMOIGBERALE, Michael Osasele
ESN/0355	IYARE, O. Osadolor
ESN/0356	ANENI, Thomas Idemudia
ESN/0357	OKAKA, Christopher Ehighaukhua
ESN/0358	EKPERUSI, Ogheneruemu Abraham
ESN/0359	OSHAKUADE, Thompson
ESN/0360	OLOGUN, Pius Foluso
ESN/0361	OYINLOYE, Naomi Adedoyin
ESN/0362	NOUTCHA, Aline Edith
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ESN/0364	NWABUEZE, Ebere
ESN/0365	GEORGENILL, Chiemezie C.
ESN/0366	MOHAMMED, Dalhatu Lawal
ESN/0367	AJAYI, Shindi Hassan
ESN/0368	OGBEDEH, Kenedy Okwudili
ESN/0369	NWOKEJI, Ephraim M.

ESN/0122	TOBIH, Francis Okeremute
ESN/0123	ABBA, Abdul-Azeez
ESN/0124	ABDULLAHI, Baba Umaru
ESN/0125	ABDULLAHI, Jamila
ESN/0126	ABDULRAHAMAN, Hauwa T.
ESN/0127	ABDULSALAM, Kola Suleiman
ESN/0128	ABODUNRIN, Joseph Oyewole
ESN/0129	ADAIGBE, Victor Chuks
ESN/0130	ADAMU, Rabiu Saliu
ESN/0131	ADEBOTE, David
ESN/0132	AGBIDYE, Francis Sarwuan
ESN/0133	AJAYI, Folorunso Abiodun
ESN/0134	AJAYI, Olufunmilayo Eunice
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ESN/0137	ANKYAMBE-AKUE, Kbalagh Eric
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ESN/0139	BEN-KALIO, Gloria
ESN/0140	BOB-MANUEL, Rosetta
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ESN/0142	EKANEM, Mfon Sunday
ESN/0143	EKESI, Sunday
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ESN/0148	KOLADE, Kolawole Oyekola
ESN/0149	MAFUYAI, Hayward B.
ESN/0150	MAKANJUOLA, W.A.
ESN/0151	OGBOGU, Sylvester S.
ESN/0152	OGUNKOYA, Mary Omofolarin
ESN/0153	OGUNLEYE, R.F. (Late)
ESN/0154	OJIAKO, Frank Onyemaobi
ESN/0155	OKOLO, Chinwe Grace
ESN/0156	OKONKWO, Nnaemeke Joe
ESN/0157	OLOFU, Daniel Abah
ESN/0158	OSUNLOLA, O.S.
ESN/0159	OTITODUN, Olufunke Grace
ESN/0160	OWOADE, Rasheed Adeyinka
ESN/0161	PESSU, Patricia Onoghoexe
ESN/0162	UMEOZOR, Odidika Christian
ESN/0163	UMOETUK, Sylvia Bassey
ESN/0164	ASAWALAM, E.F.
ESN/0165	EMEASOR, K.C.
ESN/0166	IDOWU, A.Babatunde
ESN/0167	OSIPTAN, A.A.
ESN/0168	NWAUBANI, Samuel Ihueze
ESN/0169	UMEH, V.C.
ESN/0170	MUSA, Abdulrasak Kannike
ESN/0171	BABARINDE, Samuel Adelani
ESN/0172	ADEBAYO, J.A.
ESN/0173	OYEGOKE, Oyebamiji Oyewole
ESN/0174	AKINTOLA, A.J.
ESN/0175	ALU, O.S.
ESN/0176	ALABI, Olajumoke
ESN/0177	ABEGUNDE, Thaddeus Towoju
ESN/0178	ADULOJU, Solomon Olalekan
ESN/0179	AHMED, Buba Ibrahim
ESN/0180	AKINNEYE, Joseph O.
ESN/0181	AKINSOLA, Grace Folasade
ESN/0182	AKINTOYE, Maroof Adeniyi



I remain ever grateful to you all for the little achievements during my tenure. To those members who have expressed their satisfaction and praises, I want to say that everything I did was through your cooperation, love, advice and consultations. Human success is in the hands of God. I have heard it said by some members that if you have the right person in the right place, there is multiplication but if you have the right person in the wrong place, there is confusion. It is my prayer that we be in the right place at the right time for the right appointment.

I have always said that as entomologists, we must resolve to make ourselves relevant not only in the policy of Nigerian development but also worldwide. To realize this, we cannot be seen to take the back seat or remain indifferent in matters of academic, health or agricultural policies that have to do with insects as pests, vectors of pathogens on man and our livestock or in academic curriculum development. A case in point is the tomato pest infestation that was politicized this year in the country. Nigerian entomologists immediately responded in many ways and spontaneously to draw the attention of relevant authorities to the indifference they have always shown to Nigerian experts in different professions.

We wrote a letter and delivered to the Minister of Agriculture stating our resentment in referring the pest problems to the so called "experts" in Kenya for solution. He replied and pleaded belatedly for our cooperation in resolving the problem.

You elected me unopposed without competition to serve you as President for four years and I have reached the end of my tenure. While in office, I begged God to help me complete what was lacking in my human efforts to lead the Society to greater heights.

Accept my gratitude for the opportunity to serve and please forgive my shortcomings.

Thank you and enjoy the grace of God.

Professor Dan A. Enobakhare, FESN, KSM

National President, 2012 – 2016.





Election in 2012 – 2016

The consideration of election of the present National officers was discussed in the Council meeting held in Ilorin on Saturday 21 July 2012. By October of that year, posts of National President, Vice President and Secretary expired. The business manager, Prof. A.M Oparaeke was re-elected at Ibadan conference on 05 October 2011 for another term of 5 years which will expire this year 2016. The Assistant Secretary, Haliru Bandiya was elected in 2010, re-elected in 2012 and ended in 2014 to give way to the present Assistant Secretary, Akeem Oyerinde for first tenure of two years which ends this year.

The treasurer, Prof. Sylvester Ogbogu was elected in 2008 to 2014 since according to the Constitution, "the treasurer shall be in office for a maximum of two terms of three years each" making a total of six years. At the expiration of his tenure, he was coopted to Council. Professor A.M Malgwi became National treasurer in 2014 in Abuja.

In the 43rd Annual conference in 2012 in Benin, Professor D.A. Enobakhare, M.O Ashamo and Dr. K. Kemabonta were duly elected unopposed as President, Secretary and Vice-President respectively for two years and re-elected in 2014 in Abuja for another two years. With reference to our Constitution, the tenures of President, Vice-President and Secretary have now expired and not re-electable.

There is a vacancy in the composition of the Board of Trustees with the death of Prof. M.C. Dike on 7th January 2015. Consequently, there will be election this year to fill all vacancies. I wish to state that the exercise of any office in the National executive is one that is received directly from members of the Society through a valid election process and it is ordained by God. It is to render service for which the officer will need prayers to be blessed by God who provides the energy and zeal to perform. The human heart may plan a course but it is God that makes the steps secure (Ecclesiasticus). We have all worked as a team to achieve all that we planned. If you are in office, it is to contribute to the progress and further the development of the Society. You will lose nothing when you serve. A candle loses nothing when used to light another candle.

Promotions, Recognitions, Appointments and Awards (2012 – 2016)

During my tenure, there were many promotions, appointments, awards and recognitions of our members. Inaugural and public lectures were also presented at various Institutions. These have been duly acknowledged in all my Presidential addresses, Council meetings and AGMs.

I rejoice with all of you for your achievements. In general, some were appointed Vice-chancellors and Deputy Vice-chancellors, Provost College of Health Sciences, Deans and Heads of Department, Chairmen of Councils, etc. Many had sabbatical leave appointments and one Fellowship placement in ICIPE, Kenya. We also had a winner of distinguished long serve award i.e Professor E.O. Ogunwolu. Professor A.





Black Harvester Ants



***Pogonomyrmex badius* workers transporting a seed to add to their granary**



***Messor* sp. carrying seeds into their nest**

impinges on humans though, generally this is when a colony of red harvester ants builds their home on someone's lawn or on a golf course as not only are the mounds displeasing to the eye but these areas are frequently walked upon and consequently many people are at risk for being bitten or stung. It is generally a good idea to call in pest control professionals to eliminate unwanted colonies of red harvester ants in order to reduce the likelihood of being injured during elimination. Red harvester ants are most efficiently eliminated through the use of fire ant bait; however, this bait is poisonous and should be used with care.

The red harvester ant colony works like a machine and while they often make themselves unwanted by virtue of their mound placement they are creatures that prove the true miracle that is nature. Each individual red harvester ant may not amount to much but within a colony where each ant has its own specific job and knows nothing about the entire machine within which it works, the individuals come together to work as one well-oiled machine. With a duty for each ant and a hard-working ant for each duty, its colonies are a clear example of what it means to work as a team and to live as one. With just one group of their colony removed a mound

of ants would be unable to function and perform the duties necessary to its survival but through an elegantly adapted means of communication the entire ant colony is able to work together and create a safe and secure life for every member of the colony. They may not appear to be much on the outside but in the grand scheme of things these little insects are a sign of what truly miraculous creatures walk the planet Earth.

Like other ant species, red harvester ants are divided into castes within their colonies. Worker ants are sterile females who forage for food and perform routine colony maintenance as their primary responsibilities. Male ants exist for the sole purpose of reproduction and die soon after mating. The fertilized females establish new colonies and become queens. During red harvester ant mating swarms, winged males and females emerge from their colonies. They are attracted to each other by pheromones. After mating, the mated females shed their wings and establish new nesting sites. Red harvester ant mating swarms occur annually in warm environments and at elevated heights. Their queen lives 20-30 years and stores sperm from her first mating in the spring of her first year. She uses the sperm to continually

produce offspring for a lifetime. They seal their nests up every night with pebbles to protect the nest from predators and the cold. The ants that do not make it home before the nest closes have to stay outside all night. They die if it is too cold. They are most active in warm temperatures, and mating swarms typically occur in the afternoon after rainfall or heavy storms. Although mating swarms occur between June and October, they are most common in the months of August and September. Red harvester ant mating swarms take place within a single day. The swarming behavior of red harvester ants is commonly synchronized with nearby colonies. For this reason, it is common to witness large numbers of winged ants appearing in one area. Red harvester ants participate in "hill-topping," gathering around prominent points within a landscape — such as tall trees, chimneys and towers — while searching for mates. While red harvester ants are known to dwell primarily outdoors, winged ants can accidentally invade homes during swarming periods. Some venom from species of the Red Harvester Ant has been used for hallucinogenic and therapeutic purposes among some Native American tribes and in some areas of Latin America.



strategies. Insects can be directly and easily collected in the wild. Minimal technical or capital expenditure is required for basic harvesting and rearing equipment.

Insects can be gathered in the wild, cultivated, processed and sold by the poorest members of society, such as women and landless people in urban and rural areas. These activities can

pastes or ground into meal, and their proteins can be extracted.

The Edible Insects Programme at Food and Agriculture Organization (FAO) also examines the potential of arachnids (e.g. spiders and scorpions) for food and feed, although by definition these are not insects.

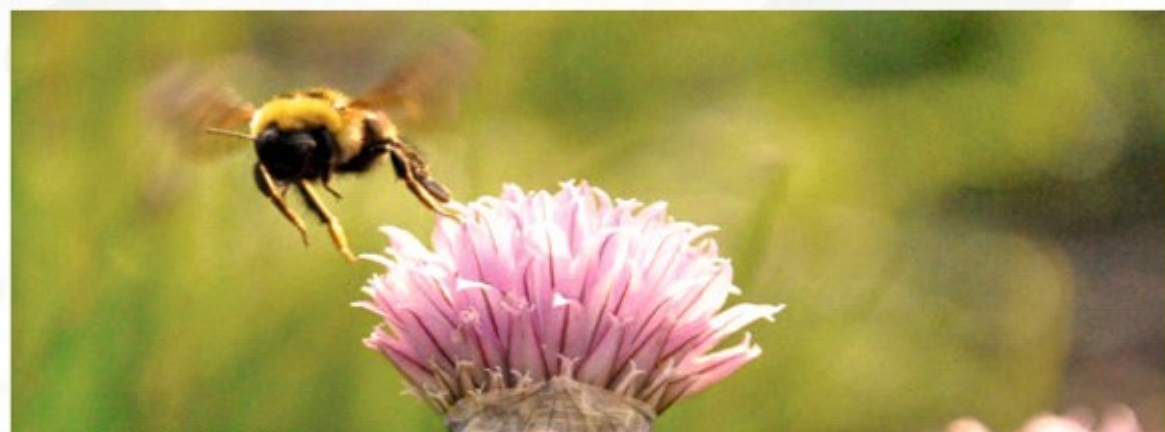
More than just food

Insects provide other important and

innovation for many years in the form of:

Bio-mimicry, which draws on the attributes of natural organisms and processes to spark innovation, has used the features of beehives, spider webs and termite hills to inspire the designs of a range of products and processes.

Insects have formed part of traditional medicine for thousands of years. For example, fly maggots



Insect pollinating plant

directly improve diets and provide cash income through the selling of excess production as street food.

Insect harvesting and farming can provide entrepreneurship opportunities in developed, transitional and developing economies.

Insects can be processed for food and feed relatively easily. Some species can be consumed whole. Insects can also be processed into

useful functions beyond food and feed:

Insects are important providers of ecosystem services. For example, insects play an important role in pollination, biological control and the decomposition of organic litter. Insects are being tested to reduce livestock manure, such as that generated by pigs, and to mitigate foul odours. Larval flies can be used to transform manure into fertilizer and consumable protein. Insects have inspired human

have been used to clean dead tissue in wounds, and bee products such as propolis, royal jelly and honey have been used for their healing properties.

The natural colour of insects has been exploited by different cultures for centuries. For example, the Aztecs used the red colour produced by the cochineal (scale insect), and this insect is still used today as a natural food colouring in cosmetics and as a dye.

Silk, a product of silkworms, has

needed.

Conclusion

It is now glaring that for Nigerian government to provide enough food for our growing population, enough funds must be channeled to our entomological researches that will provide our experts with adequate technological tools to meet the challenges of food security. Emphasis must be placed on the new opportunities offered by

engaging use of biotechnology

ecological constraints that impede the availability and affordability of food resources in the country.

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Rearing of Insect

techniques as one of the contextual framework that can be engaged to ameliorate the prevailing agro-

potential of insects as food and feed in assuring food security. P. Vantomme, E. Mertens, A. van Huis & H. Klunder, eds. Summary report, 23-25 January 2012, Rome,



Salient Facts about Harvester Ants

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Environment has so many enthralling creatures for us to observe. These creatures differ in morphological attributes such as size, colour, structures etc. These creatures can have multiple functions in their respective habitats. They can be either beneficial or harmful and even both. One can find these wonderful creations on land, in water and in the sky. Among these amazing zoological beings, the harvester ants are not less fascinating. They are little crawlies staying under the ground, but still, they have an astonishing world of facts to explore. From their lifestyle to their feeding habits to the agonizing bites, everything compels the human nature to learn about them. No wonder the bible said "O ye slogan, learn the ways of ants and be wise!" In Nigeria and elsewhere around the world, ants, being among the most abundant insects on earth, play a major role in the ecosystem. Through foraging activities of their workers, they engage in seed dispersal and improve the soil structure by breaking down dead matter while aerating the soil. However, certain species of ants can damage property and cause painful stings. Others are known to harvest seeds (harvester ants) as well as grains from mature produce. As at today, not fewer than 300 ant species have been identified as it is hard to identify them all. Harvester ants are one of the species of ants that are abundantly found all over the world.

They are considered as a helpful creature in protecting, securing and dispersing the seeds. They are very beneficial in the desert regions where they keep the seeds safe in their nests and also provide essential nutrients to the desert land. Thus, this species becomes a vital source of the survival of the desert plants.

Harvester Ants

Harvester ant is a common name for any of the species or genera of ants that collect seeds (called seed predation), or mushrooms as in the case of *Euprenolepis procera*, which are stored in the nest in communal chambers called granaries. They are also referred to as any of several different genera of ants (e.g., *Messor*, *Atta*, *Pheidole*, *Pogonomyrmex*) that gather seeds and leaves. *Messor* species collect, husk, and store seeds in their nests. *Atta* species collect leaves and use them to grow fungi, which they eat. Some *Pheidole* members have large strong jaws that are probably used to crush the harvested seeds. *Pogonomyrmex*, another seed harvester, can inflict a painful sting. They are commonly known as red ant. They are reddish to dark brown in colour and create large mounds at the entrance of their nests. Their nests are located outside around door steps, paths, yards, and especially in open fields. The red harvester ants can be aggressive. Sometimes, the stings of harvester ants can cause allergic reactions,

especially to those sensitive to their venom. Aside from their powerful stings, harvester ants also bite nastily. A queen red harvester ant can live anywhere from one year up until approximately twenty years, all the while producing worker ants to populate her colony. In a natural agro-ecosystem, when harvester ant populations are left alone they can be beneficial to the environment because they help to disperse seeds and serve as food for other wildlife. A harvester ant can be as large as one-half inch long and may be red, black or brown. The large mounds they create are one of their most notable characteristics, and they tend to form their colonies alongside gardens and other plant-filled areas.

Harvester ants usually become a problem when their mounds are located near farms and places where people may encounter them. They are primarily a pest during stand establishment. They eat seedlings and will carry the planted seeds and seedlings back to their nest. They can also be a pest to people working on the field by swarming them and inflicting painful bites. They feed on seeds and vegetation, often resulting in desolate surroundings up to 20 feet away from the nest. So, everyone hopes for a good harvest, but no one really wants harvester ants around. Because they are known to aggressively defend their colonies and can inflict one of the most

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ESN/0478	MOGBO, Tochukwu Chinedu
ESN/0479	ONYIDO, Angus Ejidikeme
ESN/0480	ONONYE, Benjamin Uzonna
ESN/0481	UGOCHUKWU, Godwin Chidozie
ESN/0482	NWANKWO, Edith N.
ESN/0483	OGBUSU, Vivian Onyinyechukwu
ESN/0484	NGENEGBO, Uche
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ESN/0487	CHIMA, Gladys Nneka
ESN/0488	AKUNNE, Chidi Emmanuel
ESN/0489	DURU, Vincent Chiagozie
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ESN/0491	OKAFOR, Kasarachi Patricia
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ESN/0494	LATEEF, Saheed Adekola
ESN/0495	ABDULBAKI MUDASHIR KIJA
ESN/0496	ADEOTI, Omolola Folasade
ESN/0497	KEHINDE EZEKIEL AYOBAMI
ESN/0498	AJIBOYE, Olalekan Gbolahan



Youdeowei, foundation member, President and editor in ESN was selected as Winner of the 2015 International Plant Protection Award of Distinction (IPPAD), conferred at the 18th International Plant Protection Congress in Berlin, Germany in August 2015. 12 members were promoted from Associate Professor to full Professorial rank, 9 senior lecturers to Associate professors, 5 to senior lecturers and many assistant lecturers. 17 defended Ph.D thesis while 12 had their Masters degrees in Entomology. One member won a TETFUND award and yet another professor was made a traditional ruler (Oba). In our Society, we have 5 Emeritus professors and 2 celebrated their 70th birthday. 6 inaugural lectures and one public lecture were delivered by members in various Universities. Some also retired from service.

On a sad note however, we lost 13 entomologists including a curator and an ex national President. Members also lost their dear ones. May their souls rest in peace. **Gratitude**

Just to say thank you will not be enough to show appreciation for the wonderful cooperation and concern I received from everyone of you. I consulted with the elderly and young entomologists. The Trustees of our Society willingly opened their minds to me on various matters. I benefited from the wise counsel of an elder called "critical comments". The past Presidents in and outside Council were with me. The Secretary and Vice-President were indispensable in giving me advice. The former was meticulous in documenting all minutes and reports promptly and accurately. What can I say of the ex-National treasurer, Prof. Ogbogu who though did not study Accounting, was ingenious in devising systems for accountability in expenditure, withdrawals and income of our Society account. This is a clear demonstration of the versatility of entomologists who show great ecological adaptability like their insects. The chairman and members of Apeji/Tola Badejo/Okelana Foundation were exceptional in their evaluations of applications. Professor Adesiyun who is chairman was ready to give useful advice. Dr. Olupomi Ajayi who is a Trustee and also chairman of FESN award committee, has been resilient and audacious in taking decisions to select the most qualified candidates as Fellows without bias. So the work of the Board of fellows was light in ratifying their recommendations.

I am grateful to all members of the Editorial Advisory Board of NJE led by its Editor in-chief, Professor Jonathan George. My gratitude to you all has no limits. In particular, I was fortunate to have a gender sensitive executive. With the Vice-President, Dr (Mrs) K. Kemabonta and the treasurer, Prof (Mrs) Anna [Malgw](#) in the executive, I received a copious motherly advice, moderation and protection.

Conclusion

The account of the Society has been duly audited free of charge from 2012 – 2016. Our website (www.esn.org.ng) is active. Efforts are on at the moment to upgrade and reorganize its management to accommodate the Society's journal in order to have an open access, e-archival system for old journals and a newsletter engine for news from branches etc.



painful stings among all ant species. They could bite, hang on, and inflict a painful, venomous sting when disturbed. Some species will leave the stinger in the wound, causing symptoms to last for several days. One harvester ant bite can be the equivalent of 12 bee stings. Those that are allergic to their venom can experience prolonged pain and swelling that may require immediate care. Like most other ants, their population is highly visible as they travel along trails to their colony. They range in size depending upon their position in the colony. Worker ants are approximately one-sixteenth of an inch long and queens can be as large as one-fourth of an inch. Controlling harvester ant populations will generally involve eliminating the queen and then handling subsequent mounds that are built. However, identifying the different species of these ants is essential for recognizing the diversity of the state's ecosystem.

Although ants play a vital role in the environment, it is important to implement control measures when faced with aggressive or destructive species of ants. Identification will help to understand which ants species are threatening man and his

interest and should be acted upon while allowing non-threatening ant populations to thrive. Nests can reach up to 6 feet high, 20 feet deep and the workers can forage as far as 130 feet from their nest. All the worker ants seen around camp are sisters and only females can sting. The stingerless males have wings and their doom is to die after mating. Just 12 stings from a harvester ant can kill a 4.4 lb rat. On the other hand, 350 stings could kill a 150 lb human. The Harvester ant sting is a two part process. First, it bites with its mandible's. Then it holds on tight and stings as many times as they can while attached. Consequently, removing the ant quickly is a must to reduce the amount of venom injected.

Their colonies usually contain a single queen who is responsible for producing the eggs. Winged reproductives, also called swarmer or alates, are produced in the summer. Males die soon after mating with the females, who go on to find new colonies. The presence of ants and the large mounds, almost 53 inches across in some cases and denuded vegetation near to the nest are the most visible signs of harvester ant activity and infestation. Most

harvester ants are poisonous and very aggressive. In general, the harvester ants in the genus *Pogonomyrmex* are aggressive biters that inject potent and painful venom with their stingers. Like most stinging insects, their level of aggression and venom potency differs between species within the genus.

These little ants seem tiny and harmless but can be a negative force against the agricultural lands. The harvester ants can be a blessing in disguise. On the one hand they help in the spreading of seeds, but on the contrary, they can be equally disastrous for the harvesters by damaging the seeds and the crops. They are aggressive enough when it comes to safeguarding their colonies. Hence, before their menace spreads quickly, it is important to get rid of them through the available methods. Interestingly, the Harvester Ant is believed to be the most poisonous insect in the world. Fortunately, it only injects a small amount of venom. So while a sting can be very painful and long lasting, they are rarely something to worry about.

Maricopa harvester ant *Pogonomyrmex maricopa*



P. maricopa worker

Scientific classification

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Formicidae
Subfamily: Myrmicinae
Tribe: Myrmicini
Genus: *Pogonomyrmex*
Species: *Pogonomyrmex maricopa*



The leafcutter ant *Atta colombica* is a type of harvester ant

WORLD'S TOP TEN (10) MOST DEADLY INSECTS

Compiled by

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Faculty of Agriculture

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1. Mosquitoes have been rated as world's most dangerous insect species on Earth. This deadliest insect causes 1 million death every year by transmitting dangerous malaria disease. Mosquitoes carry malaria germs from one place to another and they transmit germs into the blood of victim by biting. WHO estimated that in every 30 seconds a child dies due to malaria and 500 million cases of malaria are reported every day.

Actually malaria is a blood transmitting disease. This disease won't affect by contact with the sick person. It is transmitted through parasites, mainly by bites of mosquitoes. In addition to malaria mosquitoes also spreads dengue fever, yellow fever, encephalitis and west Nile virus.

2. Driver ant is world's second most deadly insect, it has been reported that it has the largest colony than any other insects in the world. Each colony of driver ants has members up to 22 million. Even elephants would run away from the group attack of driver ants. They try to finish off any animal that comes across their path.

Driver ants normally kill thousands of different animals within a single raid. They make repetitive wounds on animals and humans using their strong mandibles.

Driver ants also raid nests of other insects for food and kill them.

3. Killer bees also known as Africanized honey bees have been rated as world's 3rd most deadly insect. It is one of the very aggressive and dominant insects in the world. A group of killer bees could follow their victim for more

than a mile. In normal case, a group of killer bees consist of hundreds or thousands of members. They attacked in the group and make repetitive stinging.

The killer bees mainly target the face and eyes of humans. In fact, their toxin is not so dangerous but an attack by group of killer bees could cause even death. They live within large colonies that contain more than 80000 members. Once they get disturbed, the bees become alert and would remain so for as long as 24 hours and would attack any animals or humans that come within their range.

4. Tsetse fly is world's 4th deadliest biting insect native to Africa. They mainly feed on the blood of vertebrates. The extreme dangerous insects inject powerful toxin on each sting. It is estimated that about half a million people lost their lives by the attack of tsetse flies in Africa. At the primary stage, the venom of tsetse flies would makes sleeping sickness on the victim. But it may lead to fatality without proper treatment.

5. Giant Japanese hornet is the largest species of hornet in the world and the 5th most deadly insect. They grow up to a size of 2 inches. Every year up to 40 deaths are recorded by the sting of Japanese hornet. The venom of Japanese hornet would cause an allergic reaction and dissolve tissues within the short time. The repeated stinging from the group of hornets could also results in death.

Japanese hornets are very aggressive and fearless in nature. Each colony of Japanese hornet contains up to 700 members.

Entomological Society of Nigeria National Executive at the
National Secretariat Site University of Abuja
on 22nd July, 2017





Professor Dan A. Enobakhare, FESN, KSM

Department of Crop Science

Faculty of Agriculture

University of Benin, Benin City

Presidential/valediction address delivered at the 47th annual conference of the Entomological Society of Nigeria held at the University of Ilorin 10 – 13 October 2016

Protocol,

Distinguishing ladies and gentlemen,

Fellow entomologists

It is again my pleasure on this unique occasion to welcome you all to the 47th annual conference of our Society holding in University of Ilorin. Since 1965, the Entomological Society of Nigeria (ESN) has made serious efforts to fulfill the declared objectives of the Society i.e. “To further the study of insects in Nigeria”. To this end, it has been a ritual in ESN to have annual conferences in October. Since the establishment of the Society remembers that we have only missed four conferences. It is therefore heartwarming to note that we are meeting again joyfully a year after the golden jubilee anniversary proudly and successfully hosted by Lagos branch in the University of Lagos.

Reminiscences of the glorious and unprecedented assembly of many entomologists including some foundation members and the golden decoration of halls and event center in UNILAG are still fresh in our memories. The climax of the celebration was the golden annual dinner. Fellow entomologists, ladies and gentlemen let us give a standing applause to members of the Local organizing committee of the Lagos branch.

In the special edition of the Nigerian journal of Entomology (golden jubilee edition vol. 31, 2015) of ESN, you will find the account of the establishment of the Society. At the inception in 1965, there were thirty five (35) foundation members. As at December 1977, there were six life members. Before December 1974, the *Bulletin of the Entomological Society of Nigeria* represented the main scientific journal. Other publications like *Nigerian Entomologists Magazine* and the *Occasional publication*, have since been replaced by our main *Nigerian journal of Entomology*, the *ESN Newsletter* and the *Directory of Nigerian Entomologists*.

The Society has twenty four (24) branches nationwide with two moribund branches retrieved and reactivated. They are Abeokuta and Owerri and a new one created i.e Abuja. After due consideration, Council in July 2016 meeting adopted a request to change the name of Yola/Jalingo/Mubi to



Cont. from Page 1 ▶▶▶▶

THE ROLES OF INSECT RESEARCH TO FOOD SECURITY, HEALTH AND THE ENVIRONMENT



widely depending on the class of the animal and the production practices used, but nonetheless insects are extremely efficient. On average, insects can convert 2 kg of feed into 1 kg of insect mass, whereas cattle require 8 kg of feed to produce 1 kg of body weight gain.

The production of greenhouse gases by most insects is likely to be lower than that of conventional livestock. For example, pigs produce 10–100 times more greenhouse gases per kg of weight than mealworms.

Insects can feed on bio-waste, such as food and human waste, compost and animal slurry, and

can transform this into high-quality protein that can be used for animal feed.

Insects use significantly less water than conventional livestock. Mealworms, for example, are more drought-resistant than cattle.

Insect farming is less land-dependent than conventional livestock farming.

Health benefits

The nutritional content of insects depends on their stage of life (i.e. metamorphic stage), habitat and diet. However, it is widely accepted that:

Insects provide high-quality protein and nutrients comparable

with meat and fish.

Insects are particularly important as a food supplement for undernourished children because most insect species are high in fatty acids (comparable with fish). They are also rich in fibre and micronutrients such as copper, iron, magnesium, manganese, phosphorous, selenium and zinc.

Insects pose a low risk of transmitting zoonotic diseases (diseases transmitted from animals to humans) such as like bird flu and mad cow disease.

Food security and sustainable livelihood

Insect gathering and rearing can offer important diversification



Marketing of Edible Insect



7. Membership numbers and certificates

In 2013, I proposed to Council and it was approved that thenceforth the Society must have minimum standards for membership. Consequently, a probation period of 3 – 5 years would be given to prospective members. Thereafter, on recommendation by branch chairmen, they will be given membership certificates which will be valid for 5 years and renewed by Council on recommendation by branch chairmen. This is incorporated in the Constitution. Thus from 2013, all members were given membership numbers with regular updates before annual conferences.

8. The Constitution of the Entomological Society of Nigeria

In December 2013, the Constitution of the Society was reviewed by a competent committee set up by Council in 2012 and I headed this committee when I was Vice President. Amendments of the Constitution were adopted at AGMs in 1979, 1980, 1989, 1993 and 2013. I urge every member to purchase a copy of this Constitution from the Business manager as this organization operates and is governed strictly by this Constitution.

Indeed, the National President and Secretary should be familiar with every aspect of the Constitution which is a reference document at all meetings and in all places.

9. Agricultural Insecticides Available in Nigeria

This document reviewed and first published by Donnelly in 1966, was again published by Adeyemi and Donnelly in 1970 and another by Okatahi and Onyibe in 1999. Commissioned by Council, Amatobi and Omoloye reviewed and produced a comprehensive handbook which was recently edited by Rabiun S. Adamu, C.I Amatobi, A.O. Omoloye and M.B. Sosan. A clean copy of this document includes a list of approved pesticides (insecticides, fungicides and herbicides) updated in line with NAFDAC regulations and a list of banned pesticides based on NAFDAC publications, Stockholm Convention and Crop life Nigeria reports.

10. Entomology Curriculum for Tertiary Institutions

During my tenure, Council mandated Professor Sylvester Ogbogu to review “Entomology Curriculum for Tertiary Institutions” to meet current academic standards. After an extensive consideration by the Society, it was approved. Copies were sent to National Universities Commission Abuja for consideration and possible inclusion in Basic Minimum Academic

ESN/0061	MALAKA, S.L.O.
ESN/0062	AKIBU, Sule A.
ESN/0063	OREAGBA, Lateef O.
ESN/0064	ECHENDU, ThankGod Nnamdi C.
ESN/0065	APPIAH, Fred Orighoye
ESN/0066	MISARI, Stephen Madujos
ESN/0067	OHIAGU, Clifford E.
ESN/0068	OMOOGUN, George Adewole
ESN/0069	AKANBI, M.O.
ESN/0070	IDOWU, O.L.
ESN/0071	HASSAN, T.
ESN/0072	ASHIRU, M.O.
ESN/0073	IVBIJARO, M.
ESN/0074	MEJULE, Folasade O.
ESN/0075	EGWUATU, R.A.
ESN/0076	UMEH, Ethel-Doris N.
ESN/0077	OKELANA, F.A.
ESN/0078	ALEBIOSU, A.
ESN/0079	AIGBODION, Felix Iruobe
ESN/0080	ADEDIRE, Chris Olukayode
ESN/0081	ONYEKA, Johnnie O.A.
ESN/0082	OGUNWOLU, Emmanuel Oladele
ESN/0083	AGBEDE, Roland Ibrahim Shehu
ESN/0084	AISAGBONHI, Charles I.
ESN/0085	ALEGBEJO, Matthew Dada
ESN/0086	ANAVHE, Anthony Osilama
ESN/0087	ANDE, Adeolu Taiwo
ESN/0088	AWOPETU, Idowu
ESN/0089	BADEJO, M. Adetola
ESN/0090	EPIDI, T.T.
ESN/0091	FASORANTI, Joshua Olaniyan
ESN/0092	MUSE, Wasiu Adesola
ESN/0093	NWANZE, Kanayo F.
ESN/0094	ODEYEMI, Olusola Olasumbo
ESN/0095	ODEYEMI, O.
ESN/0096	OFUYA, Thomas Inomisan
ESN/0097	OGUNLANA, Michael Ogunleke
ESN/0098	OKONKWO, Egobude Ulu
ESN/0099	ONU, Isa
ESN/0100	UKWUNGWU, Mark Nwoye
ESN/0101	VAJIME, C.G.
ESN/0102	WILLIAMS, Joseph Oluropo
ESN/0103	OLAIFA, Julius I.
ESN/0104	EWETE, P.K.
ESN/0105	OLATOYE, K.
ESN/0106	SASTAWA, B.
ESN/0107	PITAN, O. R.
ESN/0108	KEMABONTA, Kehinde O.
ESN/0109	TAIWO, Bolaji
ESN/0110	OIGIANGBE, O.N.
ESN/0111	BANJO, A.D.
ESN/0112	OLATUNDE, G.O.
ESN/0113	EGWURUBE, Elizabeth Agbenu
ESN/0114	AKPABIO, Eno Essien
ESN/0115	LALE, N.E.S.
ESN/0116	ASHAMO, Michael Olufemi
ESN/0117	OKUNADE, Samson O.
ESN/0118	KOLO, Isa N'Usman
ESN/0119	UKWELA, Monday Unwabune
ESN/0120	OMOLOYE, Adebayo A.
ESN/0121	OPARAEKE, Alphosus Mbonu



THE ROLES OF INSECT RESEARCH TO FOOD SECURITY, HEALTH AND THE ENVIRONMENT



The Roles of insect research to food security, Health and the environment

The problem of food security in the developing countries is prominent in Africa and Nigeria in particular. Factors escalating the problem can be associated to pronounce increase in demographic trends in the third world nations which requires increase in food production to cater for mouths that has to be fed. Presently the shrinking global carrying capacity equally compounded the gruesome scenario as the earth is getting warmer due to climate change;

deforestation and desert encroachment in the northern part of the country while the south have escalating flooding, ocean upsurge and erosion. These translate to the fact that the potential resources for making more food are limited and thus call for concerted effort to curtail these emerging problems that bothers on the availability of food and also the resultant health and environmental implications. Insect research engenders the use of insects as food and feed that has many environmental, health and sustainability benefits which include:



Environmental benefits

Insects have high feed conversion efficiency because they are cold-blooded. The feed-to-meat conversion rates vary



S/No. / ESN Registration No.	Name
ESN/0001	ADEYEMI, S.A.O.
ESN/0002	AINA, J.O.
ESN/0003	AJOMALE, S.V.A.
ESN/0004	APEJI, Samuel A.
ESN/0005	BAKER, E.F.I.
ESN/0006	BALDRY, D.A.T.
ESN/0007	BOOKER, R.H.
ESN/0008	BOWDEN, J.
ESN/0009	CASWELL, G. Harry
ESN/0010	CORNES, M.A.
ESN/0011	DEEMING, John C.
ESN/0012	DICKSON, II.
ESN/0013	DONNELLY, J.
ESN/0014	EGUAGIE, William E.
ESN/0015	EVERARD, C.O.R.
ESN/0016	GERARD, B.M.
ESN/0017	HAYWARD, John A.
ESN/0018	HUTCHINSON, M.T.
ESN/0019	KOGBE, J.O.S.
ESN/0020	LEGER, R.G.T.
ESN/0021	LIBBY, J.I.
ESN/0022	OBOITE, Albert U.
ESN/0023	ODIYOMA, V.B.
ESN/0024	OKIWELU, S.N.
ESN/0025	OKWAKPAM, B.A. (Late)
ESN/0026	OSISANYA, E.O.
ESN/0027	PHIPPS, J.
ESN/0028	PIPET, J.
ESN/0029	QUERESHI, A.H.
ESN/0030	RILEY, J.
ESN/0031	RIORDAN, K.
ESN/0032	TAYLOR, T. Ajibola
ESN/0033	TOYE, Samuel Afolabi (Late)
ESN/0034	USUA, E.J.
ESN/0035	YOUDEOWEI, Anthony
ESN/0036	ENE, J.C.
ESN/0037	AKINGBOHUNGBE, Amos Eniola
ESN/0038	BALOGUN, R.A.
ESN/0039	LASEBIKAN, B.A.
ESN/0040	MATANMI, Babajide A.
ESN/0041	ADENUGA, A.O.
ESN/0042	MEDLER, J.T.
ESN/0043	GAMBLES, R.M.
ESN/0044	ADESIYUN, Adeyinka Adenrele
ESN/0045	AJAYI, Olupomi
ESN/0046	AMATOBI, Christopher Iwumune
ESN/0047	DARAMOLA, Ajibola M.
ESN/0048	OSUJI, F.N.C.
ESN/0049	FADARE, T.A.
ESN/0050	DIKE, Michael Chidozie
ESN/0051	ENOBAKHARE, Daniel A.
ESN/0052	EZULIKE, T.O.
ESN/0053	HAMID, A.
ESN/0054	ILOBA, Beatrice N.
ESN/0055	JAWONISI, Ibitoye Edward
ESN/0056	NWANA, Ifedioramma Eugene
ESN/0057	OPFOR, I.I.
ESN/0058	UVAH, Ignatius I.
ESN/0059	ODERIYI, J. Adedayo
ESN/0060	AKINLOSOTU, Taiwo A.

ESN Fellows (FESN)

It is the policy of the Society to give Fellowship Awards to deserving members every two years. This is done after screening proposed candidates with approved criteria and recommended to Council by the FESN Award Committee. Recommendation is ratified by the Board of FESN Fellows as provided by the Constitution in Article XIV p. 13. Consequently, in 2014 during the 45th conference in Abuja, we had two Fellows i.e. Professors Ashamo and Makanjuola. There was none in 2012 and 2013 in Benin and Yenagoa conferences respectively. In this 47th conference in Ilorin we shall have four (4) Fellows. They are: Aisagbonhi Charles of Benin branch, Ewuim Sylvester Chima of Awka branch, Oparaeke, A.M. of Zaria/Kaduna branch, and Malgwi Anna Mohammed of Yola/Jalingo/Gombe branch. They will be decorated in this conference with the prestigious award and Muffler of FESN. With this, we have six (6) Fellows in four (4) years of my tenure as President.

Today, we have fifty seven (57) Fellows as against fifty three (53) in 2014 and fifty one (51) in 2012 with thirty nine (39) honorary Fellows and thirty (30) Life members.

The FESN award committee's tenure of four years from 2013 ends in 2017 and is headed by Dr. Olupomi Ajayi. Other members of the Committee are Professors Adeyinka Adesiyun, Emmanuel Oludele Ogunwolu, Thomas Ofuya and Adedire Olukayode. I am grateful to you on behalf of Council and members for the excellent work you have been doing for the Society.

ACHIEVEMENTS

1. ESN Journal (NJE)

During my tenure (2012 – 2016), all efforts were made to maintain and upgrade the standard of our journal. We may not have been able to satisfy you because of some hiccups we experienced during its production. Our journal, NJE ought to and should be guided by an editorial committee consisting of the Society's leading entomologists. Consequently, Council approved my proposal to reconstitute an editorial advisory board in 2013 led by the Editor in-chief (Professor Jonathan George). Other members include Professors S.N. Okiwelu, E.O. Ogunwolu, M.C. Dike (now late), Adedire O. Olukayode and the business manager, A.M. Oparaeke with a tenure of four (4) years except that of the Editor in-chief according to our Constitution. In this committee, three of the five (5) members have been Editors in-chief of our journal with a minimum of five years in office. Consequently, there is absolutely no reason why our journal should not be ranked within the top ten National journals which are highly cited in scientific literature. The publication of this journal was further aided by the N5m TETFUND grant for two years to publish vols 28 and 29 of NJE. They were published and the first and second tranches of N4m advanced to my predecessor was retired by

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nitrogen, phosphorous and potash. In addition to breaking down organic materials and adding nutrients to the soil, earthworms also help loosen the soil to allow air to circulate. This helps plants to grow very well.

Insects like others above play a prominent part in the disintegration and decomposition of dead wood, plant debris, fungi and animal faeces. Consequently, they are involved in the cycling of plant and animal nutrients. Embioptera, larvae and adults of beetles, larvae of Lepidoptera (butterflies and moths), and many other insects live on leaf mould and so speed up the destruction of vegetable matter. Their tunneling aerates the soil, improves its moisture-holding capacity and assists in the burial of the grass. When the soil holds moisture, it provides adequate water to plants for growth. These plants give nutrients to phytophagous animals like goats, sheep, horse, cows etc. In turn, other animals feed on them for survival in what is known as food chain.

Consideration of myiasis (the act of insects breeding on flesh) leads to the question of carcass decomposition. In some countries, the blowflies chiefly the species of Calliphora are the prominent primary destroyers of cadavers. However, there is a long succession of other flies etc before the skeleton alone is left.

The decomposed materials again serve as nutrients for plants to grow and for animals to feed on. Insects have an intricate web of relationships with micro-organisms ranging from symbiotes to virulent pathogens. Carbohydrates are essential elements in the diets of several insects, but others, such as the clothes moth, can live on a wholly protein diet. Termites can survive for some time on pure cellulose, but cannot grow on this diet, as they need organic nitrogen which is normally supplied by micro-organisms, fungi and organic debris within the wood they eat. Thus, termites feed on sound and decayed wood, grass, fungi and other materials of vegetable origin such as dead leaves, bark, humus and the dung of herbivores. The principal material utilized by the wood eaters is cellulose.

Conclusion

Micro-organisms, insects and earthworms live with dead plants and animals and break them down to provide nutrients for food improvement for living plants and animals, thus confirming "dust to dust".



ESN/0370	UWASOMBA, Chukwudi Festus
ESN/0371	EHISIANYA, Collins N.
ESN/0372	WALI, Abdullahi A.
ESN/0373	JATAU, Abdullahi Jatau
ESN/0374	NWOSU, Luke C.
ESN/0375	ALAYANDE, Musbaudeen Olayinka
ESN/0376	MUSA, Ishaku
ESN/0377	MAGAJI, Turaki Bitrus
ESN/0378	BAWA, Livinus Yakubu
ESN/0379	KWANASHIE, Adobe
ESN/0380	SADIKU, Bukola Toyin
ESN/0381	AMUSAN, Babatunde O.
ESN/0382	UDAH, Onchireba
ESN/0383	AROGUNDADE, Funlola Justina
ESN/0384	ODEDEYI, Elizabeth Funmilayo
ESN/0385	ABDULLAHI, Nurudeen
ESN/0386	ADEBAYO, Raphael Abiodun
ESN/0387	ADESINA, Jacobs Mobolade
ESN/0388	AFOLABI, Lawrence Adebayo
ESN/0389	OLA-SALAWU, Bukola Bunmi
ESN/0390	ONI, M.O
ESN/0391	ADERO Cosmos Taiwo
ESN/0392	OGUNGBITE, Olaniyi Charles
ESN/0393	KAYODE, Olufunke Yemisi
ESN/0394	ADEYEMO, Adenike Christy
ESN/0395	AKINKUROLERE, Rotimi Oluwafemi (Late)
ESN/0396	ILEKE, Kayode David
ESN/0397	ALIYU, G. Mungadi
ESN/0398	PETGRAVE, Meyer Godfrey
ESN/0399	ENYI, Nwanyibuaku
ESN/0400	ADOLPHUS, Okachuku Junior
ESN/0401	ISAH, Musa Dan'azumi
ESN/0402	NNAMEZIE, O. Nwamaka
ESN/0403	NWANKPA, Akachukwu Pius
ESN/0404	TINOK, Andrew
ESN/0405	ONOTU, Christopher Sunny
ESN/0406	ANCHAU, Rukayya Garba
ESN/0407	AMAWULU, Ebenezer
ESN/0408	OKOM, Monday Ajigah
ESN/0409	USMAN, Baba Musa
ESN/0410	SAMUEL, Rebecca Naphtali
ESN/0411	EGBON, Ikponmwosa Nathaniel
ESN/0412	HAMMAN, I. Sunday
ESN/0413	MBAIL, Ogbonnaya Ibomus
ESN/0414	OGUNDARE, Moses Odunayo
ESN/0415	AKEWETA, Emmanuel Samaila
ESN/0416	KWAIPA, Nasiru Muhammed
ESN/0417	WAHEDI, Jasini Alexander
ESN/0418	UBAIDU, Mani
ESN/0419	IDACIABA, Peter Napoleon
ESN/0420	ABDULAH, Sule Ojo
ESN/0421	HABIBU, Danjuma
ESN/0422	AHMED, Joy. E
ESN/0423	OGAH, Emmanuel Omogo
ESN/0424	OKOREDJE, K.S
ESN/0425	ONYIRIOHA, Caroline. U
ESN/0426	JONAH, Alice Onyeché
ESN/0427	UKEH, Donald. A
ESN/0428	MADUIKE, Eberechukwu. M
ESN/0429	LAW-OGBOMO, Kolawole Edomwonyi
ESN/0430	ESSIEN, Rosemary Anietie
ESN/0431	SAMBO, Fatimo
ESN/0432	NGWAMAH, Jacob Sule
ESN/0433	KASANG, Naman

4. Harvester Ant Bite

Harvester ants can be dangerous to the human health. They often bite the people as they come across them and feel threatened. They pass a venomous solution through their bites that might not claim the lives but can transmit skin allergies. These bites can be cured instantly with several domestic remedies. In more severe cases a medical assistance can be sought.

a. Why They Bite People

The harvester ants are very aggressive. They get irritated when they find some human existence around them. If any human presence threatens their nest and the food they can bite them aggressively causing mild to very severe bites.

b. Sign and Symptoms

Once the ant bites and injects the venom into the skin, the initial reactions become evident immediately. After the harvester ants bite a human subject, there are chances that they might attack again and again. There is a possibility of serious consequences of the ant bite which cannot be dealt with easily at home, and as an aftermath, the subject has to be taken for proper medical assistance. The early signs of inconvenience start with pain. The pain of the bite ranges from minor to most intense pain. The sting can cause redness and swelling of the affected skin area. The impact of the sting varies from the game and the immunity of the subject. In more severe cases when the bite is not taken care of at the early stage anaphylaxis is also reported. It is a complex allergic reaction that is characterized by continuous sneezing attacks, nausea, wheezing, diarrhea, breathing problems and dizziness. In later hours the subject can report of itching, loss of blood pressure swelled eyes and ultimately fainting spells.

c. Treatments

It is important to note that if affected by a harvester ant sting, the subject must immediately part of the body thoroughly with warm, soapy water. Pull out the stinger if detached in the skin, and apply calamine lotion or after-bite cream to soothe the burning and reduce itching. You can take an antihistamine pill to lessen allergic reactions and an ibuprofen pill to lessen pain. Some people experience a severe allergic reaction; if this is the case, it is better to seek the advice of a physician/doctor.

Allergy Symptoms of Harvester Ant Sting

- * Pain.
- * Redness.
- * Swelling (in area of sting and sometimes beyond)
- * Flushing.
- * Hives.
- * Itching.
- * Anaphylaxis (less common), a potentially life-threatening reaction that impairs breathing and can cause the body to go into shock.



While many of the more aggressive ant species bite, the primary reactions are caused by the sting and resulting injection of venom into the skin. Aggressive ants such as harvester ants are medically important since their targets are usually stung many times and in some cases are stung many times by a single ant. Most sting symptoms are minor and involve moderate or intense pain that will go away within several hours. Other symptoms such as redness and swelling occur around the sting site. Depending on the age of the person stung, the number of stings inflicted and the degree of allergic reaction to the ant's venom, more serious symptoms and perhaps anaphylaxis may occur. Anaphylaxis is a complex response, but simply stated is a potentially life-threatening allergic reaction that may occur within a very short period of time after exposure to an allergen. Signs of an allergic reaction may include sneezing, wheezing, hives, nausea, vomiting, diarrhea, sudden anxiety, dizziness, difficulty breathing, chest tightness and itching or swelling of the eyes, lips or other areas of the face, rapid loss of blood pressure, fainting and coma. In general, if a person is highly allergic to wasp and bee stings, they are usually highly allergic to ant stings.

How to Control Harvester Ants

The black harvester ant is one of several species of harvester ants found in the United States. These ants are common from southern California to western Texas. Harvested seeds are their primary food source. These ants will collect seeds or plants until the supply is exhausted, at which point they will begin harvesting another type of seed. The black harvester ant's antennae consist of 12 segments without a club. Under the head is a row of long hairs, known as the psammophore. The thorax and head contain shallow parallel grooves, with a pair of spines located atop the thorax. Unlike many other pest ant species, black harvester ants do not nest inside human structures. Instead, they seek out areas that are open and clear of vegetation. They build their mounds and cover them with gravel, charcoal, tiny rocks or fragments of dead vegetation. This debris serves as a solar energy trap, controlling nest temperature. Black harvester ant nests are excavated deep within the ground. Black harvester ants can relocate their nest, if necessary, due to climate changes. Swarming black harvester ants are common during the summer. Soon after mating, male ants die and females search out new nesting sites. Colonies of black harvester ants are populous, but contain only one queen. Because they are desert dwellers, black harvester ants do not commonly encounter humans. However, they do sometimes build nests near human dwellings, and black harvester ants sting when disturbed or attacked by predators.

1. Appearance and size (*Pogonomyrmex occidentalis*)



Source: <https://www.sciencenews.org>

Pogonomyrmex occidentalis is also known as the western harvester ant. These ants are abundantly found in the high elevations of the region of the west. They are not much different in appearance from the other ants. They are either red or dark brown in color. The body is divided into three distinct parts. These tiny creatures are not much large. The harvester ants live in deep holes under the ground which are known as galleries. The apparently harmless red creatures can cause severe skin allergies with their bites. While dwelling in the ground, they can be aggressive if their nest, colony or food stock is in danger.

1. Diet and Behaviour

The harvester ants are classified into three different species. Each of these has different habits, feeding behavior, and nesting habits. Unlike usual ants, they prefer staying outside in the yards and gardens. They are by nature very aggressive and can cause a painful. The harvester ants are considered as agricultural pests. These little creatures usually feed on seeds that come from various plants. They also feed on insects. The harvest ants are great at searching and then traveling to their food source. As they move towards the food source, they leave behind a characteristic smell.


2. Reproduction and Life Cycle

In the case of harvester ants, there is one queen per colony. It is the queen ant that lays the eggs. Once the eggs are laid in the hibernation seasons, they hatch in the summers. The new ones emerge as the winged creatures that are known as a swarmer or *alates*. The life of the male ants ends after the mating is complete.

3. Habit and Habitat

You can find the harvester ants or the *Pogonomyrmex* in the South Western part of the American continent. They are also reported to be seen in many areas of Mexico also. Their favorite habitat is the desert. Usually, they prefer open areas. They dig galleries into the dry lands that go at a depth of 4.5 meters.

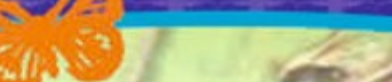
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ESN/0246	UMARU, A. Baba
ESN/0247	YUSUF, Abdulhammed Umar
ESN/0248	YUSUF, Baba Ali
ESN/0249	YUSUF, S.R.
ESN/0250	TUKUR, Z.
ESN/0251	AKINWANDE, K.L.
ESN/0252	OLUJIDE, M.G.
ESN/0253	ALAMENE, A.
ESN/0254	USMAN, Z.
ESN/0255	MINIMAIL, P.
ESN/0256	UKOROJE, R.B.
ESN/0257	COMMANDER, T.
ESN/0258	SOW, J.G.
ESN/0259	ISONG, I.U.
ESN/0260	FAKUNLE, B.A.
ESN/0261	ADU, B.W.
ESN/0262	OKE, O.K.
ESN/0263	IBRAHIM, K.
ESN/0264	POPOOLA, K.O.K.
ESN/0265	ECHIEREOBIA, C.O.
ESN/0266	LAWAL, A.A.
ESN/0267	ADEMOLU, K.O.
ESN/0268	ADELEKE, M.A.
ESN/0269	OGUNFUNMILAYO, A.O.
ESN/0270	IBRAHIM, Nasir Dole
ESN/0271	UMAR, Y.F.
ESN/0272	YAHAYA, M.A.
ESN/0273	YAHAYA, M.M.
ESN/0274	BANDIYA, H.M.
ESN/0275	DANJUMA, B.
ESN/0276	OYEYEMI, B.F.
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ESN/0279	FADAMIRO, H.
ESN/0280	ANIKWE, J.C.
ESN/0281	NWOSU, C.J.
ESN/0282	ADESIYAN, S.A.
ESN/0283	ADEYEMI, N.A.
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ESN/0286	OKORE, O.O.
ESN/0287	IHEJIRIKA, G.O.
ESN/0288	OYELEADE, O.J.
ESN/0289	OYEWOLE, I.O.
ESN/0290	OJIANWUNA, C.C.
ESN/0291	NWAKAEGHO, M.
ESN/0292	AYANSOLA, A.A.
ESN/0293	ASOGWA, E.U.
ESN/0294	FOLORUNSHO, D.O.
ESN/0295	AYANNUGA, A.J.
ESN/0296	OPOOSUN, Olufemi
ESN/0297	MOKWUNYE, I.
ESN/0298	OLAYIWOLA, M.A.
ESN/0299	OKE, Abiola
ESN/0300	ALAMENE, A.
ESN/0301	AMACHREF, Esther Ibim
ESN/0302	BAWO, D.D.S.
ESN/0303	BENSON-EDE, W.C.
ESN/0304	DIMKPA, S.
ESN/0305	DOSUNMU, R. T.



Red Harvester Ant

The red harvester ant is most recognized by myrmecologists (i.e. ant lovers) as the ant most recommended to living in **ant farms**. However, they can also be found in the **wild** as well. Red harvester ants are known for the red orange color, hence the name "red harvester ant" and are predominantly found in the Southwestern United States. They are easily recognized as being a much larger ant species than other commonly seen ants; measuring $\frac{1}{4}$ to $\frac{1}{2}$ an inch long as worker ants and their habitats are particularly recognizable as well. They make their homes in open areas and remove all vegetation from that area in a circular pattern so they are relatively easy to spot. Worker ants within the colony may deposit small rocks close to the entrance of the colony which can be as small as one foot in diameter or as wide as four feet and can be anywhere from two to ten inches high. Oftentimes red harvester ants will remove vegetation in an extremely large circle that radiates as far as thirty-five feet away from the colony mound. The reason for cleaning their territory is generally unknown although some entomologists believe that it could be to help regulate temperatures within and around the mound while others believe that it has more to do with making it easier to spot intruders and predators around the colony. The worker ants are believed to deposit small rocks or dead leaves around the top of the mound as well in an effort to keep the colony warm.


They feed predominantly on **seeds** which they locate locally to their mound. While the red harvester ants will feed on a variety of seeds as well as grasses and even dead insects they tend to prefer to keep their diet homogenous until no more of that food is available to the colony when they will begin to eat a different food staple. The ants in the colony obtain food by traveling out from the nest as far as **31 miles** in search of seeds and other food supplies. Looking at the top of a red harvester ant mound will sometimes reveal trails leading out from the colony. Trails can be as few as three or as many as eight and are used by the ants to go out to seek food and bring that food back to the colony.



Within the red harvester ant colony there are a variety of different ants whose duties within the colony change depending on their position. The **scout ants** are assigned the job of scouting for food which means that they are responsible for exiting the mound each morning and following the trails that emanate from the mound in search of food. As they progress along trails the scout ants leave scent markers so that the **worker ants** that follow will be able to track them and collect any food that has been recovered. Ants will follow the existing trails that emanate from the mound until they end, if no food is found on the existing trail then the ants will continue out from the existing trails in varying directions with one ant per direction. These scout ants that forge new pathways are looking for new supplies of food to mark for the worker ants to bring back to the colony. Food is brought back to the colony where it is hoarded in stores.

While, within the colony, the scout ants are out looking for new food sources and the worker ants are busy fetching these new food sources back to the colony, the remaining ants, the "**middens**" tend and care for the colony and the mound. The middens are all **female ants** as are the workers. The middens clean the colony by removing dead ants and taking them to an area of the colony that humans would recognize as a trash pile. Within a trash pile are dead ants as well as various other items that the ants consider trash and wish to remove from the active colony. It is through this **assignment of roles** within the colony that the ants maintain such an **ordered hierarchy in their society**. With each ant having a specific duty there is no question as to where each ant should be during the daily routine.

The hierarchy of the red harvester ant colony begins, like many other insect hierarchies, with the queen. The **queen** is a winged alate (an ant capable of mating) that has been fertilized by a male alate. The males generally die after mating and the queens leave to begin their own colony. The queen red harvester ant is the source of the worker ants within her



colony and throughout her lifetime she will continue to produce worker ants. A queen red harvester ant can live anywhere from one year up until approximately **twenty years**, all the while producing worker ants to populate her colony. Although red harvester ants are utilized in many ant farm businesses the ants that are shipped to individuals wishing to begin their own ant colony are only worker ants and therefore the colony will eventually die out. It is illegal within the United States to ship a queen red harvester ant because if she escaped and began a colony in a non-native area it could become quite a problem for the new area she inhabits while ant farms can survive for months at a time without a queen, but they will not survive indefinitely due to the lack of reproduction within the all female colony of worker ants.

Like many other species of ants the red harvester ant does not carry likely scent to any intruder to their colony, whether this intruder is the foot of a human or another ant. Even if an intruding ant is another red harvester ant it will not be accepted in to the mound by the colony. Ants that hail from one colony carry a distinct scent that is unique to their colony and ants that come from a different colony carry a different scent. Upon moving into another ant's colony the individual intruder will be attacked just as any other creature stepping into the red harvester ant mound would be attacked. Red harvester ants, however, are not believed to be cannibalistic even though they do feed on other dead insect carcasses; it is believed that at least within their own colony dead red harvester ants will be taken to the "trash pile." What is ultimately done with invading red harvester ants from other colonies is unknown as they would surely not make it out of the foreign red harvester ant colony alive.

Red harvester ants are generally not a nuisance to humans as they do not enter the home or seek shelter indoors. These large ants are strictly **outdoor insects** that feed and thrive outdoors (or at least within the safety of a secluded ant farm) and are not happy to live indoors. There are occasions when the red harvester ant