

Introduction

Of all of the organisms on Earth, the number belonging to the phylum Arthropoda is greater than the number of organisms in all other classifications combined. In addition to insects, this phylum includes the arachnids (mites, ticks, and spiders), crustaceans (pillbugs, shrimp, and crabs), diplopods (millipedes), and chilopods (centipedes). Because they are so numerous, they are common in daily life and may be considered to be 'pests' when they show up in homes, offices, playgrounds, and other places where they are not wanted.

Where are these pests found?

Under optimal conditions, large populations of an insect, rodent or other pest can occur in your yard, home, farm or neighborhood. Large numbers of a pest species can develop in trees, stumps, flower beds, mulch, leaf litter, garbage, wood piles, ditch banks, animal carcasses, stored products, spilled materials, sewer lines and other sites. Pests enter homes through openings in the walls, floors, around pipes or cracks, and under doors or windows. Pests seeking shelter build nests or hibernate within the walls, attic or in living quarters.

What attracts them to your home?

Pests are attracted by light, warm air, moisture and food. Odors from a dead bird, rodent, dead insects or nest in a wall, soured mop or spilled materials can also be attractive. They seek protection and shelter in dark cavities in walls or crawl spaces.

How insects affect man?

Insects have a long history through many geological periods. They appeared in the world long before man; yet insect fossils from coal, amber and limestone deposits differ little from their present-day descendants of 250 million years. As man appeared on earth and changed, his parasites and pests evolved with him.

In the world today, about 1.5 million species of insects are present, but Scientists believe more. Terry Erwin – Entomologist in Latin America reported that there might be 30 million species. That means insects are the largest biomass of all animals. It is estimated that there are 10 quintillion (10,000,000,000,000,000,000) insect alive on our earth. Another way – 200 million

insects are present for every human. The New York Times claimed that World holds 300 pounds of insects for every pound of human. For centuries man has fought insects as pests, carriers of disease and destroyers of his food. This combat will continue, for humans have never eradicated a single species. Today, many of the most important species are showing increasing resistance to insecticides. Consequently, other methods of control, either alone or in combination with insecticides, are necessary.

Insects are often thought of as man's most formidable competitors. Not only do they damage crops, but insects such as flies, fleas, lice and mosquitoes directly attack man and domesticated animals. Others attack indirectly by transmitting dangerous diseases to man and animals.

Transmission of human disease

Although insect bites or stings occasionally cause severe illness or are fatal to humans and animals, their disease-laden saliva or contaminated bodies are responsible for many illnesses or deaths over the world.

Mechanical or passive transmission of disease occurs, for example, when the housefly merely transports organisms – such as dysentery bacteria on its feet, body hairs and other surfaces – from filth to humans. Other examples include cockroaches and vinegar gnats that visit sewers and liquid excrement and then move to human habitations.

Biological transmission of disease occurs when an insect, such as the flea, mite or tick, is essential for the completion of the life cycle of the disease or parasite. Certain Anopheles mosquitoes, for example, are essential carriers and vectors of the malaria parasite. This parasite undergoes a portion of its life cycle in the Anopheles carrier and another portion in the human host.

Disease is also transmitted through the host-vector relationship. Such transmission is often further complicated by more than just the direct carrier of the disease from one host to another. Some other hosts called “reservoirs” are not affected by the disease but are able to perpetuate the disease organism by providing safe harborage for the disease organism. Some birds, for example, are reservoirs of mosquito-borne encephalitis (sometimes called “sleeping sickness”). The birds

are apparently unharmed by the encephalitis virus, but when the mosquito sucks blood from the bird and then bites man or horses, the virus may produce serious or fatal results.

Insects generally cannot transmit disease unless they have already bitten a diseased host. For example, an *Anopheles* mosquito cannot transmit malaria unless it has first bitten a person with the malaria parasite (in addition, there is often an “incubation period,” a period between when the disease is picked up by the insect and the time when it is able to transmit the disease). Some ticks and mites, however, are able to transmit disease-causing organisms, such as the rickettsia causing Rocky Mountain spotted fever, directly to their offspring through the egg.

Myiasis is the infestation of man or animals by living larvae (maggots) of flies. Maggots mostly infest dead tissue. An example of the other type is the “true screwworm” which attacks the living tissue of livestock and rarely man. The maggots of some flies, including the rat-tailed maggots of flower flies, may be accidentally swallowed and cause intestinal upsets.

Poison, Irritation and Allergy

Many insects and some spiders, scorpions and centipedes have developed poisoning mechanisms for self-defense or for paralyzing their prey. Stings and bites may be intensely irritating to humans but seldom cause death in Arkansas. Probably the most dangerous are the bites of the black widow spider, *Latrodectus mactans*, and the sting of a small scorpion, *Centruroides vittatus*. The brown recluse spider, *Loxosceles reclusa* may inflict a serious bite, which may result in sufficient dead tissue that skin grafting is needed. Even the stings of bees and wasps may be serious or even fatal to persons highly allergic to their venoms.

Some insects, such as the dermestid beetle larvae, have stiff hairs that when touched feel like stinging nettles. Cantharidin, present in the blood of blister beetles, causes painful blistering of the skin when the insect is crushed. Mosquitoes, fleas, chiggers and other pests have done much to irritate man.

Another, more recent finding concerning insects and allergy is the relation between cockroaches and asthma. Studies have shown that with increased weather-tight buildings, indoor air quality has been lowered and, in structures where roaches are present, cockroach dust will increase the likelihood of childhood asthma.