

Entomology

Challenge for a Lifetime

If you are interested in science and ready for a challenge, entomology is the career for you. As an entomologist, you can use your natural curiosity and enthusiasm to help solve some of the world's toughest problems.

The skills and knowledge of entomologists are needed worldwide—helping farmers to produce crops and livestock more efficiently through sound pest management strategies, fighting to save endangered species and fragile ecosystems, and preventing insects from spreading agents that cause serious diseases.

What is Entomology?

Entomology is both a basic and an applied science that deals with the study of insects and their relatives. Entomologists are at the cutting edge of scientific research in such areas as systematics, physiology, biological control, and integrated pest management. Applied entomology helps further develop and transfer the knowledge and understanding gained through basic research to those who can benefit directly. Employers include universities, government agencies, and private industry. There are ample opportunities to work with people.

No matter what your interests, skills, and background, there's a place for you in entomology. Because of its diversity, entomology provides many choices and opportunities for those interested in nature and the sciences. Some entomologists work in the field, others work in the laboratory or classroom, still others find a niche in regulatory entomology or international activities.

If you like to work with computers, there are jobs developing software to aid farmers, foresters, and others in predicting and managing pest outbreaks. Computer models help them to apply pest control measures most effectively, with the least cost and the greatest safety. If you enjoy chemistry or physiology, you can conduct research on pheromones or population genetics. If your interest is in life sciences, you can use recombinant-DNA technology to improve plant and animal resistance to insect attacks.



Why Study Insects?

Insects provide a readily accessible resource for you to use in developing a better scientific understanding of the world around you. For more than 350 million years, insects have evolved and adapted to become the creatures we know today. Through the millennia, insects have become an essential part of every terrestrial and freshwater ecosystem. They are the most numerous and diverse form of life on Earth. About one million species are known, and it is estimated that 10 million are undiscovered.

Some insects are easy to maintain in a laboratory or a classroom, and their short life cycles make them excellent subjects for research or teaching. The study of insects also helps us understand the physiology and biology of other animals. The study of their actions helps us understand animal social organization and behavior. The study of insect populations helps us understand ecological interactions. The quantity and quality of insect life in and around a pond or stream, for example, can indicate the presence or absence of pollution.

The study of insects helps us increase the bounty of the land and preserve its natural beauty. It also helps us understand how to protect lives and property from harmful insects.

Study Insects-To Feed a Hungry World

American agriculture is the world's leading producer and exporter of food. But American farmers must become even more efficient to compete in the world market.

Food shortages still exist in many parts of the world. About 40 percent of the world's food production is lost to insect pests each year. Sound entomological research and extension programs are at the forefront of the sciences involving these important problems. Although reducing vast insect-caused losses will not automatically solve the hunger problems - other economic and cultural factors are important too - entomology is a central part of the solution.

Study Insects - To Preserve the Diversity of Life

Insects add to the natural beauty around us and are an integral part of the ecological web. Throughout the world habitat, alteration has caused the extinction of many organisms, including insects. By identifying endangered species and studying their habitats, entomologists help describe and restore threatened ecosystems. Entomologists are working to protect the environment and to sustain agricultural production, from the San Joaquin Valley to the Adirondack Mountains, and from the Sudan's parched grasslands to deep in Brazil's Amazon jungle.

In fact, tropical rain forests present special problems and opportunities for entomologists. Rain forests are among the oldest and most complex terrestrial ecosystems, but they are rapidly disappearing. Perhaps half of all plant and animal species are found only in tropical rain forests. Of the millions of insect species that

remain to be discovered, most will be found in these forests. Their genetic diversity will include many beneficial species. Entomologists must discover these species before they cease to exist, and they must find ways to preserve the insects' habitats for future generations. Entomologists also help unravel the complexities of agricultural systems such as crops, livestock, forests, fishponds, and urban gardens.

Entomological research has helped the United States to become a model for all industrialized countries in solving certain public health problems. A century ago, malaria was a major problem in North America. It is now of minor importance. Our knowledge of the causes and means of controlling epidemics of insect-borne diseases has increased because of the hard work and dedication of entomologists.

However, much work remains to be done. Few problems present greater challenges to medical and veterinary entomologists than the widespread distribution of insect-borne disease agents. Vast areas of the world are dominated by insects that transmit parasites that cause yellow fever, river blindness, Chagas disease, and sleeping sickness. Malaria, plague, and tick-borne fevers are diseases of worldwide importance, and entomologists lead the way in research to combat these ailments. Health losses to insects are figured not only in lives but also in money. In North America alone, it costs hundreds of millions of dollars each year to control flies, grubs, lice, and ticks on livestock and poultry. Entomologists are seeking new, less expensive ways to prevent these losses.

There is literally a world of opportunity awaiting you in the science of entomology. Whether your interests lie in conducting genetic research, developing computer software, exploring a remote rainforest, or helping to feed the world, an exciting and rewarding career awaits you.

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