

ENTOMOLOGY

Pest Control Progresses

Biological and environmental control of unwanted pests is an effective method of reducing insect populations and is proving safe for man and wildlife—By Barbara Tufty

► THE "GREAT AWAKENING" in the United States to demand slum clearance, clean rivers and clear skies also includes using safe biological methods instead of harmful chemicals to control destructive insects.

Man is now entering a "golden age of biological sciences" in his continual battle against insects, Dr. E. H. Smith of North Carolina State University, Raleigh, told a four-day symposium on scientific pest control, sponsored by the National Academy of Sciences and the National Research Council.

Scientists are searching for new methods to manipulate the biology and environment of insects to keep down their huge populations.

For instance, natural enemies of insects such as bacteria, viruses and protozoa are being bred and released in the vicinity of crop-damaging insects. Research is being carried out to breed plants and animals that are resistant to such insects. Insects with lethal genes are being developed so their offspring will not live, and the sterilization of

male insects so no offspring will be produced has already proven highly successful in controlling the screwworm in the southeastern United States.

High-energy gamma rays, infrared and other powerful radiating waves are other new methods being studied to kill or repel insects without using chemicals, two scientists reported at the same symposium.

Energy waves such as sound, light and heat are also used in man's battle against bird and insect pests that destroy crops and fibers, said Dr. Stuart O. Nelson of the U.S. Department of Agriculture at the University of Nebraska and Dr. John L. Seubert, with the U.S. Fish and Wildlife Service, Laurel, Md.

Various pests can be controlled through prescribed use of four ranges of electromagnetic energy, including infrared energy, visible and ultraviolet radiation and X-rays, gamma rays and other ionizing radiation.

X-rays and gamma rays are extremely penetrating types of radiation that ionize atoms in living tissue and can be very damaging if the energy is too high.

Scientists are also studying the effects of different intensities of ionizing radiation on stored grain that would be effective against insects but not harmful to humans who ate the grain.

Visible radiation and ultraviolet radiation have been successfully used to attract insects to traps where they can be killed. Scientists also hope to upset normal insect development by exposure to light energy.

Energy in the form of ultrasonic waves is also being studied to control insect and bird pests. The use of sounds, higher than human ear can hear, may keep bollworms from cotton fields, loopers from cabbage patches and budworms from tobacco fields.

Insects are some of the most successful forms of life on this planet. They have been living, breeding and multiplying on earth for about 250 million years, as compared to the scant one million years man has been around. During this time, insects have acquired an amazing ability to adapt to conditions many other animals including humans cannot stand—extremes of hot and cold, high altitudes and salty seas. Because of their small size and small demands for food, these creatures have continued to increase, and today they account for 85% of all animal species on earth.

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CONSERVATION

Eagles' Nests Protected In Safe Square Mile

► THE BALD EAGLE, symbol of American democracy, has been given increased Federal protection.

One square mile around each nesting site is to be closed off on all National Wildlife Refuges to keep people from disturbing the eagles during the nesting season. No timber is to be cut at any time within one-half mile of these nesting trees, Secretary of the Interior Stewart L. Udall stated in recent directions.

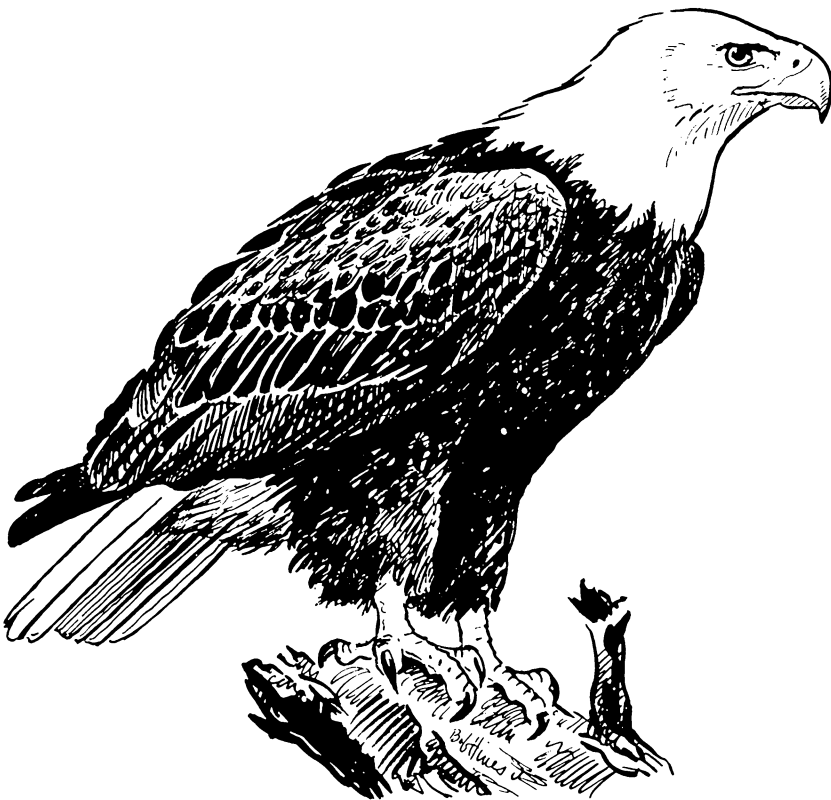
If trees bearing nests are in danger of falling, they are to be reinforced throughout the approximately 300 refuges protected by the U.S. Government.

Bald eagles are large hawk-like birds, with dark brown plumage and a pure white head and tail. Their numbers have been decreasing so rapidly that they have been classified as "rare," making it unlawful to kill or molest them.

The southern variety formerly lived throughout the southern United States, extending to California and into Mexico. Now these eagles are found only along the coastal areas of the southern Atlantic Ocean and Gulf of Mexico. In the last count, taken in 1963, there were about 230 active nests and an estimated total of 144 young.

Illegal shooting and the increase in human population around the nesting areas have been the main causes for the decline of the birds. Loss of nest trees and possible deaths from pesticides taken in food have also reduced numbers of the proud freedom-loving bird.

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U.S. Department of the Interior

RARE EAGLE PROTECTED—The bald eagle, symbol of America, is being given fuller protection in Federal refuges, where one square mile around each nesting tree is now closed off.