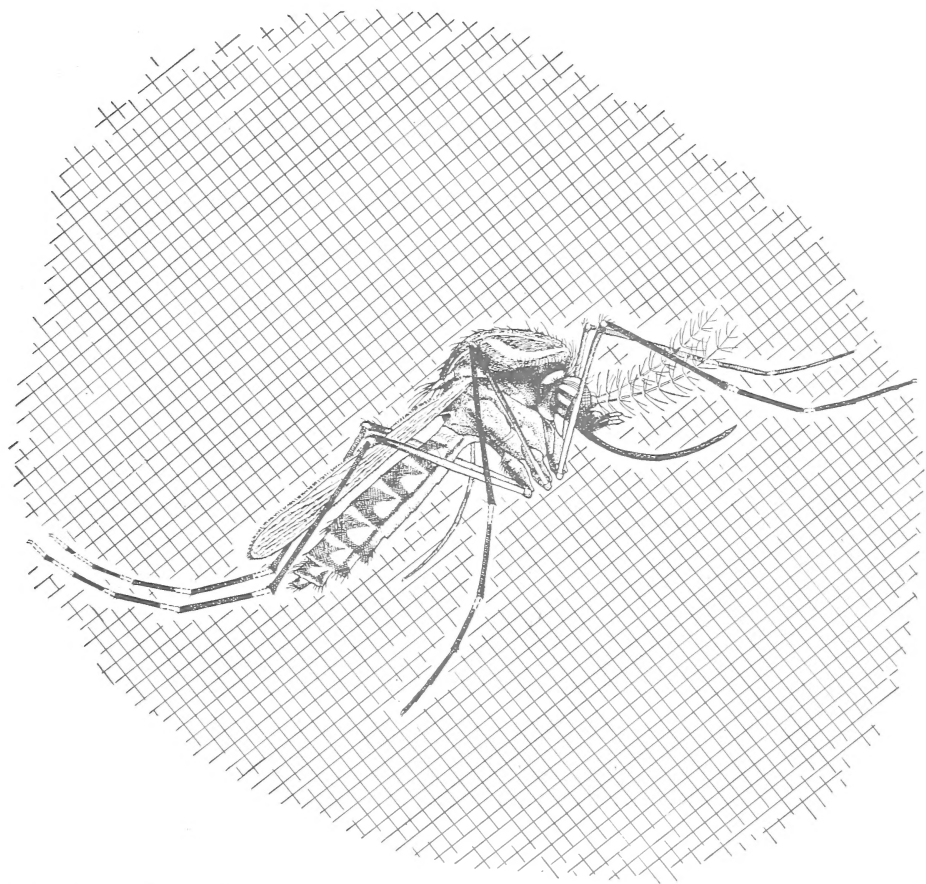


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Domestic Mosquitoes



Leaflet No. 186

United States Department of Agriculture

DOMESTIC MOSQUITOES

By F. C. BISHOPP, *assistant chief, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration*

MOSQUITOES of several kinds are pests of man and may be found around his home. In the northern part of the United States and in Canada the most widely distributed of the so-called domestic mosquitoes is the northern house mosquito.¹ A similar species known as the southern house mosquito² is common in the South.

These mosquitoes are pests principally because they bite man and otherwise annoy him, but they may carry diseases. The yellow-fever mosquito,³ present throughout the South, is also domestic in its habits.

MOSQUITOES AND DISEASE

The yellow-fever mosquito is the principal carrier of the dreaded disease of man that its name indicates. Yellow fever is a malady native to South America and Africa, and strict quarantine regulations are enforced to keep it out of the United States. Therefore, although this mosquito occurs in this country, a person is not likely to contract the disease from its bite. However, modern rapid transportation, particularly by airplane, increases the danger of introducing and spreading the disease, and consequently the importance of vigorous enforcement of quarantine measures to exclude it. When yellow fever gets a start in a country where it is not native, the resulting sickness, death, and economic losses are enormous. The yellow-fever mosquito is also a carrier of dengue, or breakbone, fever, as well as sleeping sickness of man and horses.

Mosquitoes of other species transmit malaria and other diseases, but they are not considered domestic mosquitoes since they breed in places more remote from man's habitation. Fortunately malaria is much less prevalent in this country than it formerly was, largely because of community efforts to control the common malaria mosquito.⁴ Some of the measures for controlling the domestic mosquitoes, as given in this leaflet, are also effective against that species, and home owners and health departments should continue their efforts to combat this disease.

WHERE MOSQUITOES BREED

All mosquitoes breed in water. Some kinds lay their eggs on the ground, but the eggs do not hatch until they have been covered with water. The larvae must also have water in which to develop. Weeds, tall grass, shrubbery, and vines harbor the adults; untidy yards and uncut grass also hide tin cans and water-filled depressions in which the pests may breed.

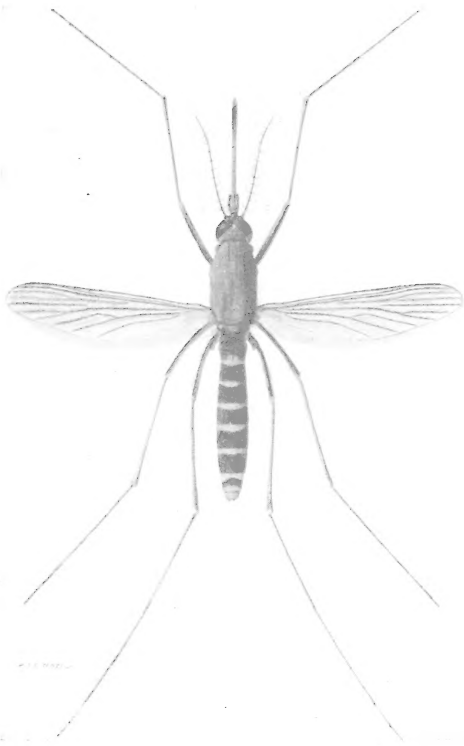
¹ *Culex pipiens* L.

² *Culex quinquefasciatus* Say.

³ *Aedes aegypti* (L.).

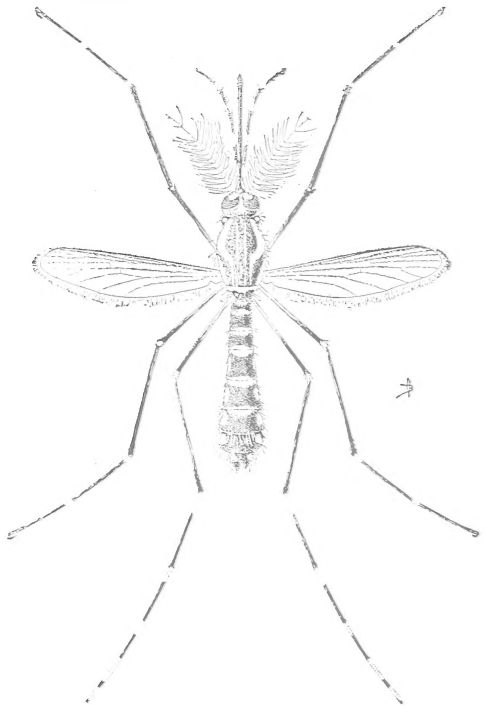
⁴ *Anopheles quadrimaculatus* Say.

Issued August 1939
Revised April 1951



Southern house mosquito (female, enlarged). The northern and southern house mosquitoes are very similar in appearance. They are pale brown, with whitish bands across the abdominal segments but no other conspicuous markings. Note the threadlike antennae, which distinguish the female from the male.

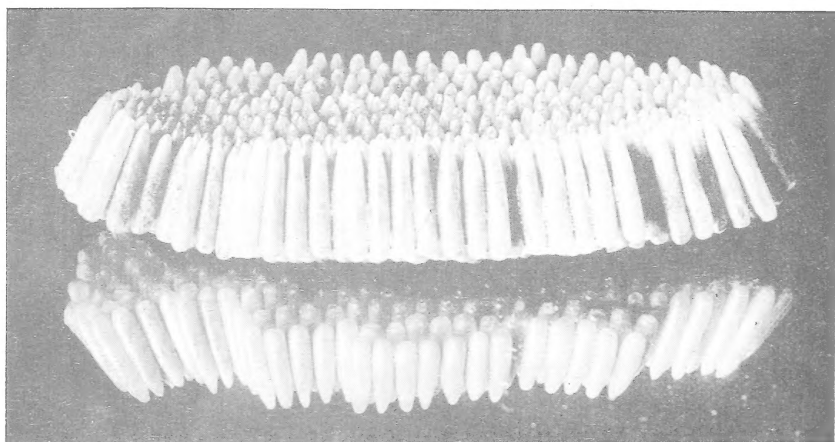
Yellow-fever mosquito (male, enlarged). (After Edwards.) This mosquito is very dark, with a silvery lyre-shaped mark on its back and silvery bands across the abdomen and legs. Note the plumed antennae.



The kind and amount of water, as well as the type of container and its location, largely determine the kind of mosquito that will breed in it. Some kinds may breed in salt marshes, the margins of ponds or streams, tree holes, or temporary rain pools, but the domestic mosquitoes prefer water close to man's habitation.

The house mosquitoes may breed in any place in and about the house where water is standing. Unless properly constructed and cared for, cesspools and septic tanks may be sources of prolific breeding, as are barrels containing manure water for watering plants. Goldfish ponds no longer containing fish harbor the domestic mosquitoes. These mosquitoes also breed in water retained in eaves troughs, on flat roofs, in street catch basins and gutters, as well as in ornamental pools and sluggish streams contaminated with manure or sewage.

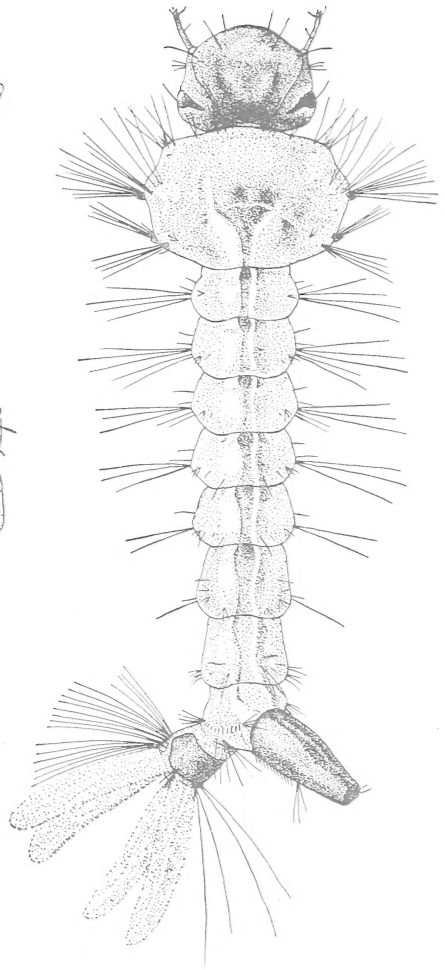
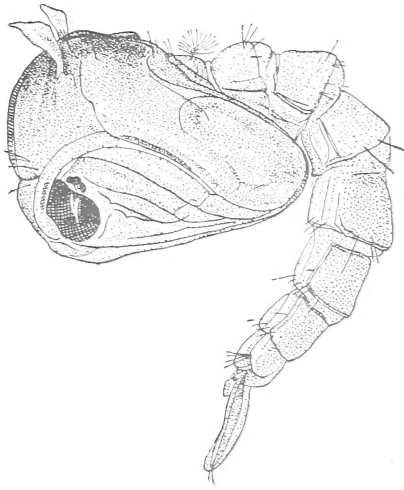
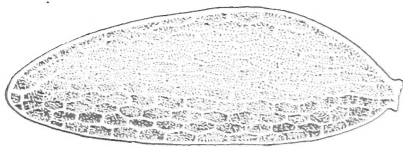
The yellow-fever mosquito prefers clear water. It breeds usually in artificial containers and seldom, if ever, in natural pools. Larvae, or wigglers, may be found in cisterns and in cans, bottles, jars, and other vessels that will hold even a very little water. They may occur in such unexpected places as discarded automobile casings, flower vases, holy-water and baptismal fonts, urns in cemeteries, water pans for chickens, dishes of water under legs of refrigerators, and unused toilet bowls.



Boat-shaped mass, or raft, of eggs laid directly on water (note reflection) by a northern house mosquito. Enlarged.

HOW MOSQUITOES DEVELOP

House mosquitoes usually lay their eggs in boat-shaped masses, or rafts, on the surface of the water. The yellow-fever mosquito, however, lays black eggs on the side of the container, just above the water surface. These eggs may remain viable for some time if they are not moistened. They hatch in a few hours to 2 days after they become wet.



Immature stages of the yellow-fever mosquito: Egg and pupa, or tumbler (left); larva, or wiggler (right). Greatly enlarged.

Newly hatched wigglers are very light in color and so small that they are not easily seen. They are rather active, moving jerkily to the bottom of the container and then back to the water surface for air. They become full grown in 6 to 8 days, and are then about one-third of an inch long. After about 2 days in the inactive pupal, or tumbler, stage, the adult mosquitoes emerge.

HABITS OF DOMESTIC MOSQUITOES

Biting Habits

Only the female mosquitoes bite. They feed on the blood of man or animals, whereas the males feed on the nectar from flowers. The house mosquitoes bite at night, and hide away in dark places, usually in houses or outbuildings, during the day. The yellow-fever mosquito bites late in the afternoon or early in the morning. In cloudy weather or in the darker portions of rooms it may bite throughout the day.

Flight Habits

The domestic mosquitoes do not fly far. When abundant about a house, they are probably breeding nearby. The yellow-fever mosquito seldom travels more than a few hundred yards from its breeding place, but the house mosquitoes may invade homes as much as a mile away. All these mosquitoes can be carried long distances in trains, boats, automobiles, and aircraft.

Overwintering

The house mosquitoes overwinter as adults, but only the fertilized females survive. They hide in buildings and other protected places, such as street drain traps and storm sewers. In cool places they remain inactive, but in warm places they may continue to breed throughout the winter.

The yellow-fever mosquito is killed by cold weather in the northern part of its range. Farther south it may overwinter in the egg stage, and in warm buildings it may continue breeding during the winter. In the extreme southern portion of this country and in the Tropics it breeds the year around.

HOW TO CONTROL DOMESTIC MOSQUITOES

Eliminate Breeding Places

You can eliminate the breeding places of the domestic mosquitoes by the following practices:

(1) Inspect your premises frequently. Remove all temporary water containers. Punch holes in the bottoms of tin cans or remove both ends and flatten them. See that cesspools, septic tanks, rain barrels, and tubs in which water is stored are tightly covered, and that open cisterns are covered or screened and the spouts screened.

(2) Once a week empty and thoroughly wash bird baths and pans used for watering chickens.

(3) Examine eaves troughs occasionally to find out whether they are stopped up or sagged, and after rains examine flat roofs to see that no water is on them.

(4) Do not permit water that may be drained under the house from the refrigerator to stand in puddles, or water from any source to form pools in the yard or in the street gutters.

(5) Interest your neighbors and local officers in the prevention of mosquito breeding.

Treat Breeding Places

If you have standing water on your premises that cannot be abolished, treat it with a larvicide as soon as you see any young mosquito wigglers. Kerosene is used most commonly for the purpose. A tablespoonful scattered on top of the water in a barrel or cistern will destroy the wigglers in a few hours. The same quantity of an oil solution containing 5 percent of DDT will be effective for a longer time. For unused toilets and fire buckets and for drain traps in basements and areaways, use kerosene, 5-percent DDT, or powdered borax. Kerosene must be applied every week or two, but borax and DDT last longer. **Do not apply DDT to water used for drinking or cooking.**

For the treatment of damaged cesspools sprinkle a pint of used motor oil and kerosene (equal parts) or spray a 5-percent DDT solution or emulsion over the surface of the water. If the cesspool cannot be reached easily, introduce the DDT mixture through a toilet every 3 or 4 weeks.

To prevent mosquitoes from breeding in water that may collect in old automobile tires, dust the tires occasionally with DDT or borax, or spray them with a 5-percent DDT solution or emulsion.

Stock ornamental pools with goldfish or, better, with top minnows. Do not feed the fish, and keep the vegetation cleared out enough so that the fish will have access to the entire water surface. A light application of a pyrethrum-kerosene larvicide will destroy any wigglers without staining the pool or injuring the plants or fish. **Do not use DDT; it might kill the fish.**

CAUTION.—DDT is poisonous to human beings and animals. Store it in plainly labeled containers out of the reach of children and pets. Do not allow DDT to come into prolonged contact with your body, or let it get into drinking water.

The treatment of sewage-polluted waters is the responsibility of the community. Weekly spraying with No. 2 fuel oil or 5-percent DDT will control mosquito breeding in such places until the pollution can be eliminated. The DDT is effective for a longer time and smaller quantities are needed. Cleaning and straightening the banks of polluted streams and lakes also help prevent mosquito breeding.

The community is responsible for the prevention of mosquito breeding in sewage filter beds and in water standing along streets and alleys and in public buildings and parks. Some counties and cities have mosquito-control units to do work of this kind, and they may also conduct house-to-house inspections to emphasize the importance of mosquito-control measures and the householders' responsibility. Some pest-control operators contract their services for fogging premises infested with adult mosquitoes.

KILL ADULT MOSQUITOES WITH SPRAYS

Few mosquitoes will enter your house if you spray the porch and both sides of the screen doors with DDT. Use an oil solution or an emulsion containing 5 percent of DDT. Such preparations are available at grocery, hardware, and drug stores. Follow the directions on the container.

If you do find mosquitoes indoors, you can kill them with a good household spray. Such sprays usually contain pyrethrum in a highly refined kerosene, and some contain DDT as well. Apply with a flitgun or similar hand sprayer. Aerosol bombs are even more effective. A few seconds'

release is sufficient to treat most rooms. Close the room before spraying and keep it closed for 15 minutes afterwards. These sprays are called space sprays because they kill insects that are moving about in the room.

DDT applied to surfaces will kill mosquitoes that light there for the next 3 or 4 months. For such residual treatments use a compressed-air sprayer. Apply a coarse, wet spray to the walls and ceiling of the room and to the places where mosquitoes may hide, such as behind pictures, under furniture, and in closets. However, do not spray surfaces that might be soiled by the treatment.

HOW TO PROTECT YOURSELF AGAINST MOSQUITO BITES

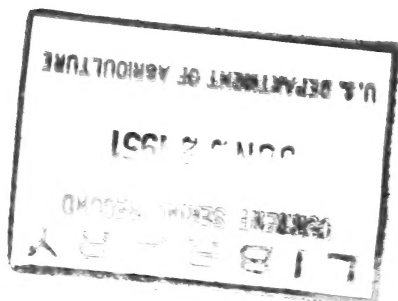
Use Screens or Bed Nets

Well-fitted screens will keep most mosquitoes and other flying insects out of houses. Screens made of 16-mesh wire cloth are generally satisfactory. Yellow-fever mosquitoes, however, can get through these screens. You can keep them out by applying screen enamel to 16-mesh screen or using 18-mesh wire cloth. In humid climates screens of copper, bronze, or other rust-resisting alloy are most durable; in dry climates those of galvanized or painted wire are satisfactory. Full-length window screens give better protection than half screens or those inserted under the sash. Screen doors should open outward. It may also be necessary to screen the vents to fireplaces and other openings into homes.

In unscreened or poorly screened houses or for sleeping out of doors a bed net gives much protection. Keep it free from holes and tuck the edges under the mattress. For added protection spray the bed net with a mosquito repellent or a 5-percent DDT solution.

Use a Repellent

A repellent applied to the skin or clothing will protect you from mosquito bites for a few hours. The most common repellents contain Indalone, dimethyl phthalate, or Repellent 6-12, or a mixture of these materials. For best all-round protection massage the exposed parts of the body lightly with the repellent and spray the outer garments with it.



U. S. GOVERNMENT PRINTING OFFICE: 1951

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 10 cents

