

According to Webster's Dictionary, a parasite is a plant or animal living in, on, or with another living organism (its host), at whose expense it obtains food and shelter. More than 150 different kinds of parasites have been found to infest horses. Almost all horses harbor some parasites. External types include lice, flies, ticks, mange, and ringworm. The internal types, which we will deal with in this lesson, include strongyles or blood worms, ascarids, stomach worms, pinworms, and bots.

Every horse owner should have his animal on a parasite-prevention and control program. In order to draw up such a program, it is important to know the life cycle of the various worms so that proper preventive and treatment procedures can be followed.

### **Economic Importance**

The effect of the presence of worm parasites are not usually spectacular. However, they do cause decreased work efficiency, poor utilization of food, are one of the causes of colic, may be the cause of intermittent lameness, may cause a chronic cough and bronchitis, and occasionally death due to blood clot. Some adult worms produce toxins that destroy red blood cells, leading to an unthrifty anemic condition. Immature worms migrating through body tissues open the way for bacteria and fungi to enter, causing other serious diseases.

### **Prevention of parasitism**

Internal parasites gain entry to the animal body in the form of eggs, larvae, or adults. This may be largely prevented by various forms of management which break the life cycle of the parasite. Those worms already present will have to be killed by drugs, depending on the kind of parasite present. The following practices have been found to be effective in reducing parasite numbers:

- 1) Do not feed hay or grain on the floor. This prevents contamination of feeds with manure, which may contain large numbers of parasite eggs or larvae.
- 2) Do not allow horses to obtain water from barnyard pools or water holes on pasture, since manure drainage into these areas makes them a source of internal parasites.
- 3) Clean stalls and rebed as often as possible so that there will be less chance of internal parasites getting on feeds from fecal material.
- 4) If the stall floor is of earth, remove ten to twelve inches once or twice yearly and replace with clean soil.
- 5) Remove manure from premises daily and either spread on a field where horses will not graze for a year or where the field will be plowed and reseeded before horses have contact with it.
- 6) If manure must be left near the barn, keep in a covered pit where it can heat and thus kill parasite eggs and larvae. This will also prevent fly breeding.
- 7) Small, heavily used pastures tend to build up a heavy parasite load. Small exercise yards should not contain pasture grasses which encourage animals to eat contaminated material. It is best to have them gravelled.

8) Rotate pasture plots as frequently as possible to break the life cycle of the parasites.

9) Flies should be prevented from breeding by keeping surroundings free from manure, wet straw, and bedding.

10) Grain should be kept in covered containers away from flies, birds, and rodents, which may carry parasites from farm to farm.

### **Treatment**

Treatment is a necessary but small part of the total parasite control program. Major emphasis should be on prevention. Even though adult worms are eliminated from the animal, damage has already been done by larval migration through body tissue. All drugs used for worming are dangerous and must be used with extreme care. In most cases, it would be best to have your veterinarian perform this service.

A regular program for worming horses should be adopted in cooperation with your veterinarian. Horses should be wormed in the fall after the first killing frost, and again in the spring before they go out to pasture. If strongyles are a particular problem continuous low-level feeding of phenothiazine should be considered.

In some areas, worm control programs are organized on a community or county basis. Since some of these parasites are transmitted by insect vectors, area action tends to reduce the possibility of this type of transfer. Such projects should be considered with your veterinarian, your county agent or your 4-H club leader.

### **Bot Flies**

There are at least three species of horse bot flies. It is their habit to hover about the horse, and then quickly darting toward the animal they glue individual eggs to the hair in a matter of seconds. The female of the common bot usually lays up to 500 eggs. Eggs are usually deposited on the hair of the forelegs, although they may be deposited on the mane, shoulders, belly, chin, and occasionally the flanks.



**BOT FLY**

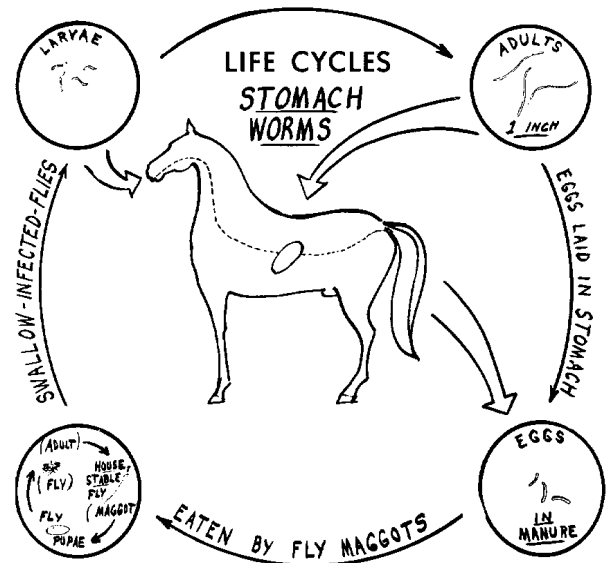
The horse tends to lick or bite itself where the eggs are attached, thus stimulating hatching, and the newly-hatched larvae are taken into the horse's mouth in this manner. Some larvae burrow into the tongue and migrate through the body tissues until they finally arrive in the stomach where they attach to the stomach wall. They arrive in the stomach in three to four weeks. They mature in the stomach in ten to eleven months, at which time they release their hold on the stomach wall and pass out with the animal's feces. Mature larvae burrow into the ground and change into pupa stage. In fifteen to seventeen days the mature bot fly emerges from the pupa case and mates to begin the cycle again.

**BOT LARVA**



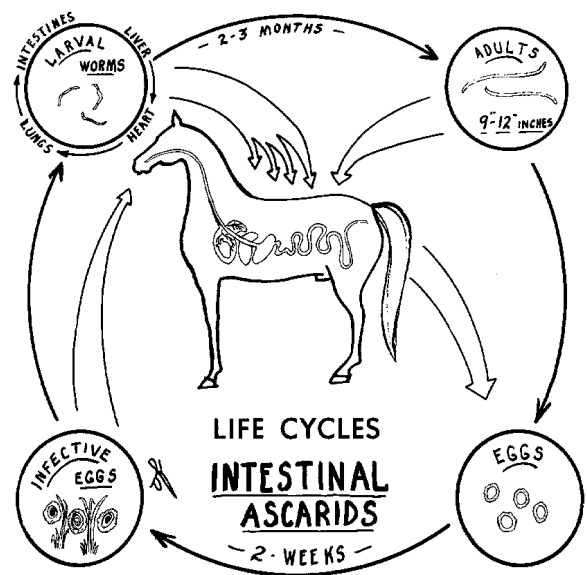
**Stomach Worms**

There are at least ten different types of stomach worm, four of which are known to cause lesions, resulting in an inflammation of the stomach wall. The larval forms of the larger stomach worms are thought to be responsible for a skin disease of horses called "summer sores." The larger stomach worms are approximately an inch to an inch and a half in length. Adult worms in the horse's stomach lay eggs which are passed out with the manure and picked up by maggots (larval forms) of the house fly or small stable fly. The stomach worm eggs hatch in the head region of the adult fly where they had come to rest as the fly matured. Horses probably swallow infested flies accidentally, or larval worms may leave the flies while they are feeding on the moisture around the horse's lips. Once in the horse's mouth, they are readily swallowed and mature into adult worms in the horse's stomach to repeat the cycle.



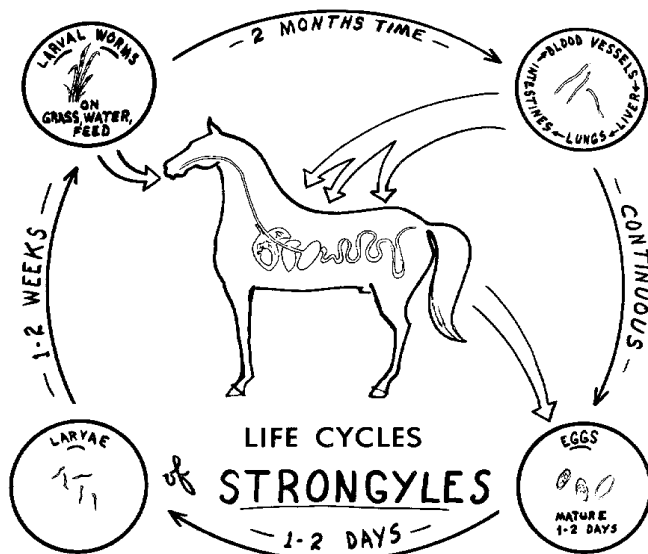
**Ascarids (intestinal worms)**

Adult worms in the small intestines deposit eggs which pass out with the manure. During warm weather, embryos develop within the eggs and are infective in about two weeks. Embryonating eggs are swallowed by grazing horses, the embryos are liberated in the small intestine, penetrate the gut wall, and are taken by the blood stream to the heart and lungs. After about one week's period, the larvae escape from the lungs, migrate up the trachea to the throat region where they are once again swallowed and the worms develop to maturity in the small intestine. Adults are approximately nine to twelve inches in length.

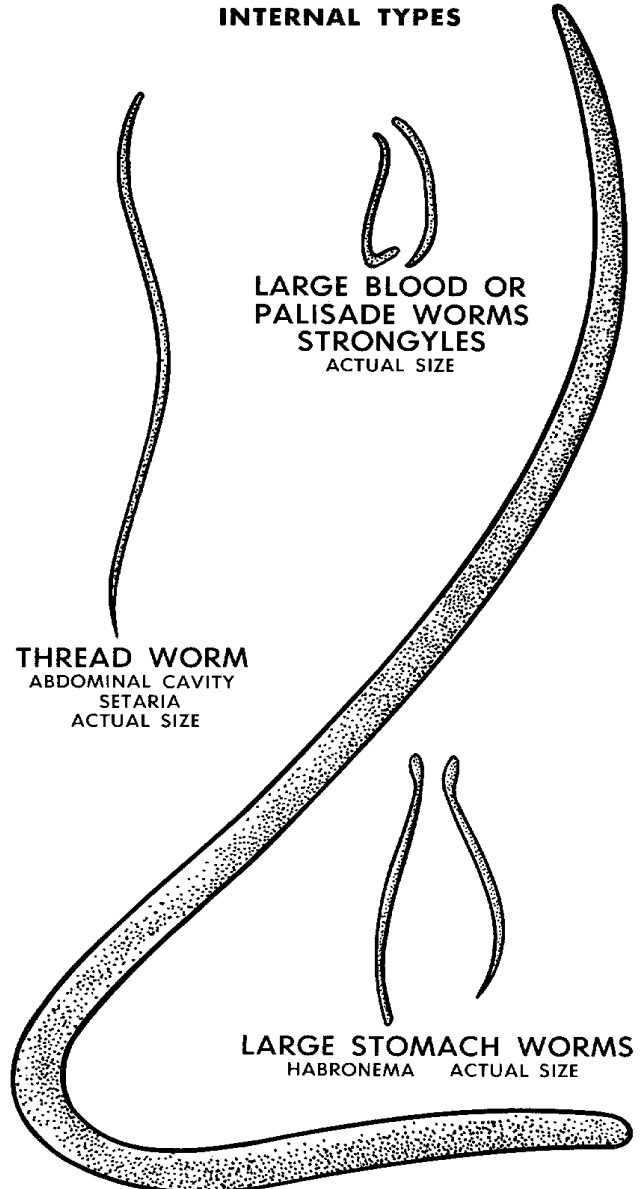


**Strongyles (blood worms, palisade worms)**

The horse strongyles are a large group of approximately forty species infesting horses. Most of them are less than an inch in length and scarcely visible to the unaided eye. They are usually found firmly attached within the host, sucking blood. Female worms deposit large numbers of eggs which leave the horse with the manure. After the eggs hatch, the larvae molt twice before becoming infective. Infective larvae climb to the upper portions of pasture grasses and are usually swallowed by horses during grazing. Larvae migrate to various organs within the body, depending somewhat upon the species. Those that favor the walls of the arteries are responsible for certain types of lameness and even death due to embolism by restricting or blocking blood flow in the arteries.



**INTERNAL TYPES**



**Pinworms**

Pinworms are approximately two to three inch long white-appearing worms with long slender tails. They are frequently seen in the feces of infected animals. The worms mature in the large intestines, and females full of eggs proceed outward through the small colon and the rectum, sometimes crawling out of the anal opening. The irritation causes infested animals to rub themselves against posts and other objects. Adult worms in this manner are crushed, at times leaving the eggs glued to the anal region. Normally, however, the eggs develop in manure and are picked up during grazing or feeding by horses to repeat the cycle. The vigorous rubbing of the posterior parts results in the loss of hair and occasionally injury may result in secondary infection. Fourth stage larvae are also found attached to the mucosa of the colon and are voracious feeders.

