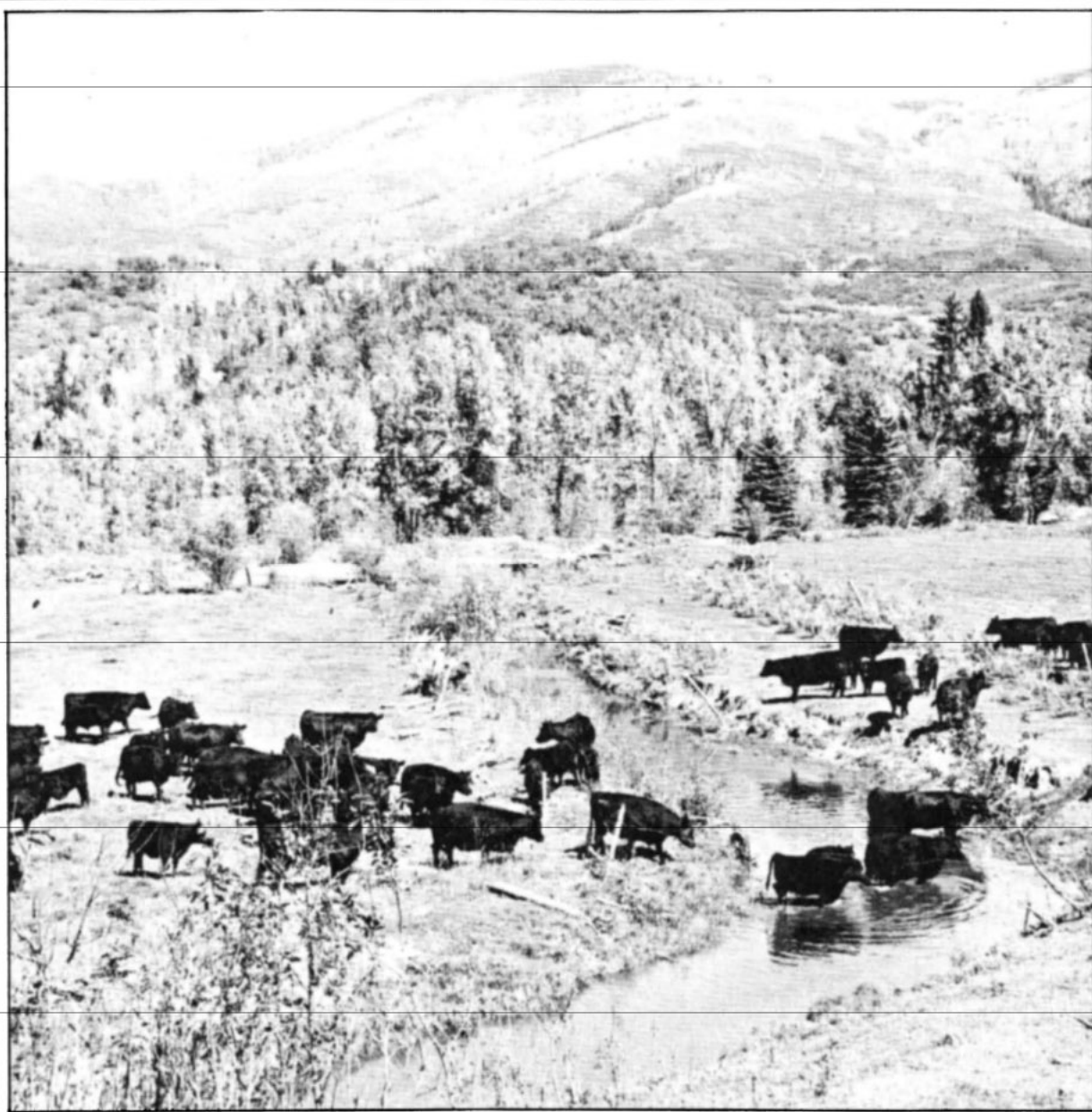


# HERD HEALTH

## External Parasites

by Dan Schoenfelder



Parasites cause literally hundreds of thousands of dollars loss to cattlemen annually. These losses take the form of increased feed costs, reduced weight gains, lower milk production, impaired value of products and even the loss of animals. The loss is not always immediately obvious, which allows it to drain much of the cattleman's profit before detection. Constant vigilance is necessary to limit the losses to a minimum.

There are two basic categories of parasites for cattle: External parasites or ectoparasites and internal parasites or endoparasites. Both types can be equally costly.

External parasites are divided into two basic groups: Insects, which include lice, flies and mosquitos; and arachnids, which include ticks and mites. Weight loss or anemia due to parasites living off the flesh or blood of the host is the most common effect of infestation by ectoparasites. High levels of infestation or lack of treatment can lead to death. Ectoparasites may also cause indirect damage by the mechanical transmission of pinkeye, mastitis, anaplasmosis, blue tongue and other infectious diseases. The constant annoyance of buzzing and biting flies causes cattle to spend more time in nervous activity and less time eating, causing reduced feed consumption and weight loss. Rubbing due to irritation by lice can leave cattle with bare patches of raw skin. The rubbing also increases the cost of maintaining fences, which are often used as scratching posts.

#### FLIES

Flies are insects with transparent wings. They cause damage and irritation by biting. They also cause contamination. Quite often the larvae are more damaging than the fly itself, which may deposit eggs in or on the body of the host. The following are some of the more common flies which bother cattle.

Blowflies (Plate I, below) are usually about 1/2 inch long and either metallic or yellow in color. Blowflies include the black

blowfly, the blue-bottle fly (common blowfly) and the green-bottle fly. The blowfly will lay eggs in open wounds. The blowfly maggot or larva feeds off the flesh of the host, increasing the size of the wound.

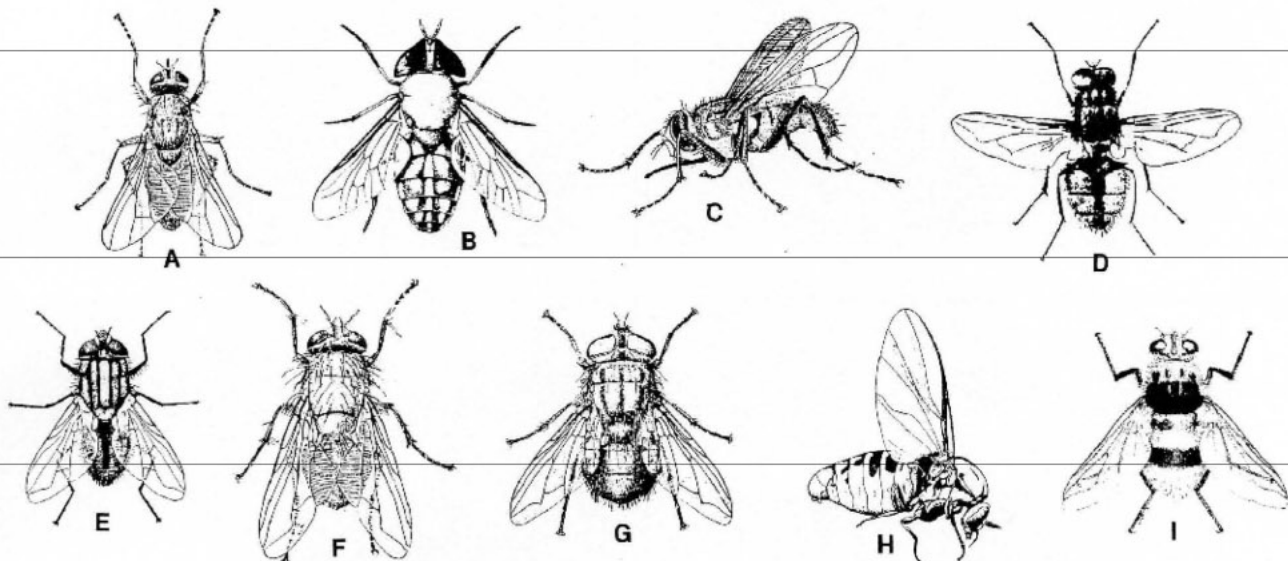
The buffalo gnat or black fly (Plate I, below) is a small black fly less than 1/6 inch long. It is a blood-sucking insect which is attracted to the ears, eyes and nostrils of the host.

The heel fly or warble fly (Plate I, below) of cattle is approximately 1/2 inch long. Its body is black and yellow striped and hairy, with orange hairs at the posterior end of the abdomen. They are present in the early spring and glue their eggs in rows to the hairs on the legs and lower parts of cattle. The larvae (called grubs) emerge and burrow into the skin of the host animal. They migrate slowly to the back of the host, where they form a small bump, which can be easily felt. The grubs winter in the back of the host and emerge in the spring. The pupae stage lasts approximately five weeks outside the host, and when the adult fly develops, the cycle begins again. There is only one generation of heel flies each year. The larva, which is called a warble or grub, causes loss of weight and reduced milk production. It also may damage the hide of the animal, which is a valuable by-product.

The horsefly, also called the deer fly, ear fly or gadfly (Plate I, below), is another blood-sucking fly. It is a large brown or black fly ranging in size up to 1 inch. They breed in marshy areas and attack cattle by biting them and sucking blood. Losses are caused mainly by annoyance and loss of blood.

The face fly (Plate I, below), is slightly larger than a common housefly. It breeds only in fresh manure. It feeds on the mucus around the eyes, nose and mouth of the cattle. It is mainly an irritation but can transmit pinkeye.

The horn fly, also called the stock fly or cattle fly, (Plate I, below), is the most common fly around cattle. It is about half as



#### PLATE 1—FLIES

A. Horn fly. The adult flies leave the cattle only to lay eggs. B. Horsefly. This is the greenhead horsefly, one of the many species. C. Stablefly. Its bite is very painful to man and domestic animals. D. Face fly, male. Closely set eyes almost meet. Abdomen is orange, with dark stripe. Mature larvae are yellow. E. Housefly. F. Blowfly. A species of metallic or yellow color. G. Screwworm fly, adult. H. Buffalo gnat, adult female. I. Heel fly, adult female.

Picture Credits (Plate I)

Plate I—A, C, D, E, F, G

United States Dept. of Agriculture

Plate I—B

Bulletin 256, Preliminary Studies on Arkansas Horseflies. H.H. Schwartz and D.G. Hall, University of Arkansas

Plate I—H

Leaflet 27, Buffalo Gnats. G.G. Knowlton and J.A. Rowe, USAC

Plate I—I

Bulletin 155, Grubs and Lice on Cattle. W.E. Shull, H.S. Manis and G.H. Holm, University of Idaho

large as the housefly and similar in appearance. It is also a blood-sucking fly but is different from other flies in that it spends most of its life on the host. It feeds and rests on the host, leaving only to lay eggs. It often rests around the base of the horn.

The housefly (Plate I, preceding page) is mainly an irritation to livestock. It has four black stripes on its back and feeds on the secretions around the eyes, nose and other orifices. It can carry disease and eggs of smaller parasites.

The screwworm fly (Plate I, preceding page) is probably the deadliest fly. It is bluish-green, with a yellowish-red face and three blue stripes on its back between the wings. The fly itself does not attack the host but lays its eggs in open wounds. The maggots or larvae, called screwworms, feed on the flesh of the host. The screwworm fly is resident only in the southern parts of the United States and Central America.

The stablefly (Plate I, preceding page) is also called the biting housefly because its appearance is so similar to the common housefly. It bites the cattle usually on the lower leg and sucks blood. It does not remain on the host but, rather, rests in the shade. It breeds in decaying vegetation.

## LICE

Lice are flat wingless insects with three pairs of legs. The body of a louse is divided into three segments and is yellow or grey in color. Lice are less than 3/16 inch long. Lice spend their entire lives on the host and are especially abundant during the winter when the host's hair is longer and thicker. Rubbing due to irritation often causes bare patches and raw skin. Lice are passed by contact with the infected host and are more prevalent in poorly fed cattle. There are two basic types of lice which attack cattle: Biting lice and blood-sucking lice.

The chewing cattle louse or little red louse (Plate II, opposite page) is the only species of biting cattle lice. It has a blunt head and longer jaw than blood-sucking lice. Its body is yellow, with eight dark crossbars. It chews on the skin of the host, causing irritation.

There are several species of blood-sucking lice which have compressed heads and pointed mouths. They are bluish-slate in color. The most common varieties are the long-nosed cattle louse and the short-nosed cattle louse (Plate II, opposite page). The little blue louse, the tail louse and the buffalo louse are other species of blood-sucking lice. They feed by sucking blood from the host. They cause irritation and in severe infestations can cause anemia.

## MOSQUITOS

Mosquitos are small blood-sucking insects. The female must eat before laying eggs. The eggs are laid on the ground or on the surface of the water, usually in swampy areas, and are hatched by contact with water either through rain or flood. As a result of their breeding habits, mosquitos populate damp humid regions, usually near marshy waters. They are often present in swarms that cause great irritation to livestock and man.

## MITES

Mites have four pairs of legs and undivided bodies. They are microscopic in size and are whitish in color. They live off the skin tissue of the host and cause cattle scab, mange, itch or scabies. Mites are spread by contact with the infected host or from objects which have been in contact with an infected host.

The psoroptic mite causes common scab. The mites feed on the skin of the host, which becomes covered with scabs that form over the mites. Hair may come out in patches. The scabs usually appear first on the neck and around the base of the horns. In severe cases, they spread to the legs.

Sarcoptic mites (Plate III, opposite page) cause barn itch or scabies, which is the most severe form of mange. Lesions first appear around the head and neck and spread to other parts of the body. The lesions are characterized by a crusted appearance and actual thickening of the skin, which forms large folds.

The chorioptic mite (Plate III, opposite page) is responsible for tail mange, which is the most common type of mange in cattle. It develops chiefly in the tail region and spreads to other areas of the body.

The follicle mite is a minute worm-like mite which burrows

into the pores of the skin. It usually attacks around the head and shoulders, causing lumps under the skin.

## TICKS

The tick is a large blood-sucking parasite. It primarily cause loss of blood and irritation, but its secondary effects are more serious. The tick acts as a vector for other diseases, and the wound it leaves can become infected or infested with other parasites. They have an oval unsegmented body with eight legs

There are more than 300 species of ticks divided into two major families—the hard ticks and the soft ticks. Hard ticks spend more time on the host, mating. They are multiple-host parasites usually spending three portions of their lives on different host and dropping off between times. They are normally prevalent in the spring and summer. The mouth pierces the skin of the host and has barbs to make removal difficult. The hard tick uses tree and brush to make contact with the host. Soft ticks live in crack and crevices and feed on the host at night while it is sleeping.

The lone-star tick (Plate IV, opposite page) is a hard tick with silvery markings on its shield. The male has a pattern of markings, while the female has only one dot. It is a vector for Rocky Mountain spotted fever.

The gulf coast tick is also a hard tick which is dark brown with silver markings on its shield. It usually attaches itself to the inside of the outer ear. The Rocky Mountain wood tick is reddish-brown hard tick. The shield of the male is marked with silver, while that of the female is solid silver.

The cattle fever tick (Plate IV, opposite page) was previously a serious danger as a vector for the protozoa which caused babesiasis. It has been eradicated in the United States and is no longer such a serious threat.

The winter tick (Plate IV, opposite page) is different from other hard ticks in that it is a single-host tick and attacks cattle in the winter and early spring.

The spinose ear-tick (Plate IV, opposite page) is a soft tick whose larvae infest the ears of livestock. They are common in the arid region of the southwest, especially in cattle kept in confinement.

## METHODS OF CONTROL

There are many means of reducing or controlling the number of external parasites around cattle. By far the more popular method is the application of systemic insecticides to the host animal. Although sometimes applied to only one area of the animal's body, these insecticides spread throughout the entire system. The method of application depends on the facilities and labor available, the size of the herd and the parasites whose elimination is desired.

### Spraying

Applying insecticides by mixing them with water and spraying them on the animal under pressure is probably the most common method of treatment. Emulsifiable concentrates and wettable powders both are designed to mix with water. In order to insure a uniform mixture, constant agitation of the liquid is important.

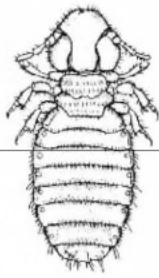
Spraying can be accomplished by one person, but large groups of cattle make it difficult to apply the spray uniformly to all cattle in the group. It is fairly easy to tell which animals have been treated, since their hair will be wet and matted.

### Fogging

Fogging or misting the spray mixture is also possible. The machines for this type of application use a lower volume than sprayers. This requires the mixture to have a higher concentration. The mist or fog is allowed to drift over the animals while they are contained. This method is simple for one man but requires calm wind conditions and makes it difficult to tell whether a particular animal has been treated adequately.

### Dipping

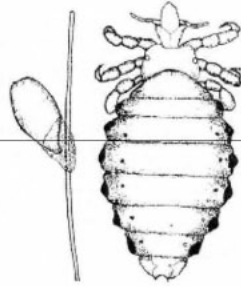
Insecticides also can be applied by preparing a large quantity of the solution and placing it in an underground vat. The animal are then either herded into the vat one by one or lowered into it a hydraulic cage. This is the most thorough method of applying insecticides, since the animal is almost entirely submerged in the



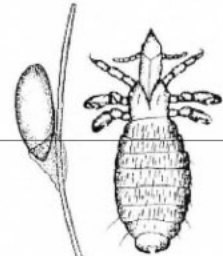
A



B



C



D

**PLATE II—LICE**

**A.** Chewing cattle louse, a biting louse. **B.** Hairy cattle louse, a blood-sucking louse. **C.** Short-nosed cattle louse, a blood-sucking louse, and egg attached to animal hair. **D.** Long-nosed cattle louse, a blood-sucking louse, and egg attached to animal hair.

*Picture Credits (Plate II)*

*Plate II—A*

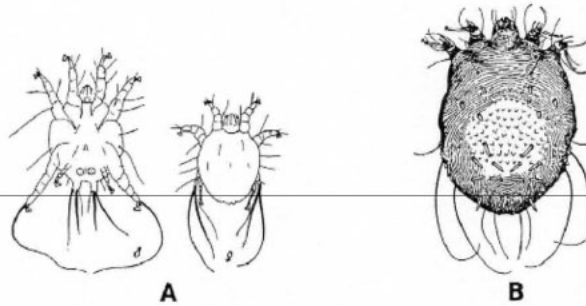
*United States Dept. of Agriculture*

*Plate II—B*

*Bulletin 591, Cattle Lice. J.L. Lancaster Jr., University of Arkansas*

*Plate II—C, D*

*Bulletin 324, Winter Control of Cattle Lice. J.A. Munro and H.S. Telford, North Dakota*



A

B

**PLATE III—MITES**

**A.** Chorioptic mite. **B.** Sarcoptic mite.

*Picture Credits (Plate III)*

*Plate III—A, B*

*United States Dept. of Agriculture*



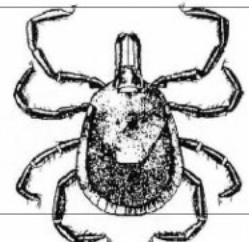
• 5  
A



B



C



D

**PLATE IV—TICKS**

**A.** Cattle fever tick, mature male. **B.** Spinose ear-tick numph, fully engorged. **C.** Winter tick. **D.** Lone-star tick, female.

*Picture Credits (Plate IV)*

*Plate IV—A, B, C*

*United States Dept. of Agriculture*

*Plate IV—D*

*Circular 387, External Parasites of Cattle. E. Hixon, Oklahoma A&M College*

solution, insuring complete coverage. It is probably the most expensive method of applying insecticides as well and to be practical requires that the animals be centrally located for treatment. It is excellent for feedlots and central treatment facilities. The control of some parasites such as scabies requires dipping.

#### Pour-On

Some insecticides come in a ready-to-use formula intended for application directly to the back of the animal. These are not meant to be diluted and are usually concentrated so that a small dose of 1/2-1 oz. per 100 lb. of weight is required. Application is simple, requiring only accurate measurement and the restraint of the animal in a chute. The insecticide is applied along the back of the animal and is absorbed into the system.

#### Dust

Some chemicals come in a dry powder also intended for application directly to the animal without mixing. They are applied in a fashion similar to pour-ons. Their effectiveness is not so long-lasting, since they are not absorbed into the system so readily as liquids.

Dusts also can be put in self-applicators called dust bags. The bags are hung where the cattle can rub against them and under them. In this manner the cattle treat themselves. Then they become accustomed to the fact that the dust bag provides relief from pests, they will use the bag whenever they are bothered by flies or lice.

#### Cattle Oilers

Back rubbers or cattle oilers are similar to dust bags in that the animals treat themselves by walking under the oiler or rubbing on it. There are many types of cattle oilers, ranging from flaps soaked in the insecticide solution to scratching posts with wire mesh. In all cases, contact with the oiler places the insecticide on the animal and provides relief from parasites.

#### Residual Sprays

Systemic insecticides are especially effective with parasites that spend much of their time on the host. Other approaches are necessary for parasites that feed only briefly on the host and rest and breed in other locations. In most cases, the most effective

means of eliminating parasites is to destroy their breeding grounds or make it unfavorable to their reproduction. Residual sprays can be used in and around barns and lots. These sprays can be applied to the surfaces where insects congregate as well as to the manure. Like systemic insecticides, they can be sprayed directly on the surface or applied in a fog or mist. These sprays are highly concentrated and may be diluted with diesel oil mineral oil or, in some cases, not at all.

#### Feed Additives

Insect breeding grounds also can be destroyed by feeding insecticides to the hosts with their normal rations or through mineral supplements. The insecticide passes through the animal's system and is deposited in the manure. This method is effective only if all manure deposited in the area is treated in a similar manner to eliminate all breeding grounds in the vicinity. Most additives are larvacides, which kill the larvae as they hatch.

#### Sanitation

Another method of eliminating breeding grounds is mechanical. It consists of cleaning pens frequently and removing the manure on a regular basis. The manure can be removed to a different location, scattered so that it dries, or piled so that it crusts over. In all cases, the purpose is to make the manure unsuitable as a breeding grounds.

#### Genetics

There is one more method of reducing the threat of parasites to the herd. That is by breeding animals resistant to parasites. The Brahman breed and Brahman crossbreeds possess a certain degree of resistance to ectoparasites that can be claimed by no other breed.

#### Combine methods

There is no simple means of controlling all ectoparasites. Each method has special areas of effectiveness. The smart beef producer combines all methods at his disposal, hoping that each effort reduces the threat by some degree. Continuous inspection of animals for parasite infestation is the best indicator of the effectiveness of control.

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### COMMON INSECTICIDES—APPLICATION AND CONTROL

Insecticide	Form	Method of Application	Parasites Controlled
Coumaphos (Co-Ral <sup>1</sup> )	4% Ready Mixed	{ Pour-On	{ Grubs (heel fly larvae) Lice Horn Flies (some effectiveness)
	5% Dust	{ Dust Bags or Shake-On	{ Lice Screwworms Horn Flies Face Flies
	11.6% Emulsifiable Concentrate or 25% Wettable Powder	{ Spray (.375-.5%)	{ Lice Horn Flies Face Flies Ticks
Crufomate (Rulene <sup>2</sup> )	12% Ready Mixed	{ Pour-On	{ Grubs Lice Horn Flies
	25% Emulsifiable Concentrate	{ Spray (.375%) or Dip (.25%)	{ Grubs Lice Horn Flies Face Flies
Toxaphene	5% in Oil	{ Back Rubber	{ Lice Horn Flies Ticks (some effectiveness) Face Flies
	40% Wettable Powder or 60% Emulsifiable Concentrate	{ Spray or Dip	{ Lice Horn Flies Face Flies Mites Ticks
Lindane	3% Smear	Direct to Wound	Screwworms

<sup>1</sup>Registered trademark of Chemagro Corp.

<sup>2</sup>Registered trademark of Dow Chemical Co.