A tiny protozoan parasite inhabits the reproductive tract of cattle virtually everywhere in the world, including Wyoming. To qualify as a parasite, an organism must be detrimental to its host species and live in or on a host animal in a long-term, intimate relationship. The “star” of this story, *Tritrichomonas foetus* (*T*. *foetus*), fully qualifies as a parasite within those terms, living in the penile sheath of bulls and the vagina and uterus of cows and causing reproductive failure in pregnant cattle.

**Biology of the Problem**

The protozoan flagellate causes little or no damage in the sheath of a bull, which, once infected, may remain a carrier for life. When bred by an infected bull, a cow receives the protozoan in addition to the semen delivered by the bull. If the cow becomes pregnant, *T. foetus* invades the fetal membranes, usually causing early death and resorption or abortion of the developing foetus. A few infected cows produce normal calves, but the majority of infections result in termination of pregnancy. As infected cows begin ovulatory cycling after aborting, they transmit the protozoan to uninfected bulls that breed them. Most bulls are thought to remain infected for life, whereas most infected cows lose the infection spontaneously within about 100 days of sexual rest; however, a few cows are also known to retain a long-term infection. The few chronically infected cows that produce normal calves provide a hidden reservoir from which “clean” bulls can acquire the parasite. As the transmission continues to cycle among breeding animals, the number of infected hosts in a herd increases and reproduction decreases. The disease results in significant economic loss to cattle producers. The co-mingling of cattle on...
public grazing land, the purchase and/or borrowing of mature bulls and cows for breeding purposes, and the contact of bulls with cows through broken fences are some of the many ways the disease trichomoniasis has infected cattle herds in Wyoming.

Pre-War Conditions
Prior to the year 2000, cattle were bought, sold, traded, mixed on public grazing allotments, and shipped into Wyoming without concern for the importance of *T. foetus*. Low reproduction in a herd sometimes prompted cattlemen to have their animals tested for one of the viral or bacterial agents known to cause reproductive failure, and a few were tested for *T. foetus*, usually at the urging of an experienced veterinarian. During the 1970s, 80s, and early 90s, as few as 10 herds of cattle in some years and as many as 400 in other years were tested for *T. foetus* at the Wyoming State Veterinary Laboratory (WSVL). Awareness of the problem increased during the late 1980s and the decade of the 1990s, raising concern among producers who began to have larger numbers of their bulls tested. It became apparent to many in the cattle industry that regulations were needed to combat the problem.

The Battle Plan
During the late 1990s, numerous public meetings took place around the state of Wyoming to educate producers, veterinarians, and the public regarding the presence, spread, effect, economics, and options for control of bovine trichomoniasis. After much input, the Wyoming Livestock Board (WLB) drafted rules designed to enable producers to eliminate the agent and protect their animals from re-infection. Former Governor Jim Geringer signed the Chapter 15 Trichomoniasis Rules into effect in March 2000. Since the rules took effect, any “non-virgin” bulls to be released on common grazing allotments must test negative once before release. A waiver can be granted bypassing the rule for testing if all members of a grazing association request it in writing. “Virgin” bulls are exempt from testing. One negative test is required prior to importation into Wyoming of any bull intended for breeding in the owner’s herd. Three successive negative tests, with at least a week’s time between each sampling, are required on any bull intended for breeding prior to any change of ownership or leasing. A bull that breaches a fence and mingle with cows of another owner is required to undergo a single test. When an in-
fected bull is identified, the entire herd of exposed animals is quarantined. Quarantine release requires all infected bulls in a herd to be branded with a “V” on the base of the tail and sent to slaughter; other bulls in the herd must be found uninfected by three negative tests. Depending on the time of year and the breeding season, cows in a trichomoniasis-positive herd may also be quarantined to prevent transmission of the protozoan to “clean” bulls.

Trichomonas test results are sent to the Wyoming State Veterinarian’s office, where diagnostic data are logged and enforcement procedures coordinated. Veterinarians who participate in trichomoniasis control sampling and/or analysis must be certified by the WLB to ensure consistency and quality diagnosis. The certification workshops for veterinarians are scheduled by the Wyoming State Veterinarian and conducted annually at various locations in Wyoming.

Initial Results of Combat
As the informational meetings stimulated enthusiasm from the livestock industry and regulations to combat trichomoniasis became imminent, diagnostic samples received and processed in the parasitology lab at the WSBL increased. In 1999, for example, 1,525 bulls were tested, 41 of which were found to be infected. Prior to that year, the largest number of tests performed was 1,040 and the fewest less than 50. In contrast, 4,604 (76 positive) were analyzed in 2000, a total of 6,025 (78 positive) in 2001, and 6,151 (65 positive) toward the end of 2002.

As shown on the prevalence map, infected bulls have been detected in many counties in Wyoming. The numbers on the map are based only on data from the files of the WSVL. The results of tests conducted by individual veterinary clinics, if added to those shown, would enlarge the prevalence and distribution figures.

Ongoing Skirmishes
Bovine trichomoniasis will not be easily eliminated. Undetected, chronically infected cows and bulls will provide a reservoir from which the tiny parasite can gain access to healthy hosts for many years. Management practices such as testing bulls, culling infected bulls and open cows, maintaining a battery of young bulls, avoiding the use of borrowed and leased bulls, keeping fences in good condition, and avoiding the co-mingling of herds with unknown history can all be used to control trichomoniasis.

Consistent cooperative and individual efforts of livestock producers and state regulatory personnel are a key factor in determining the degree of victory that can be achieved over this disease.