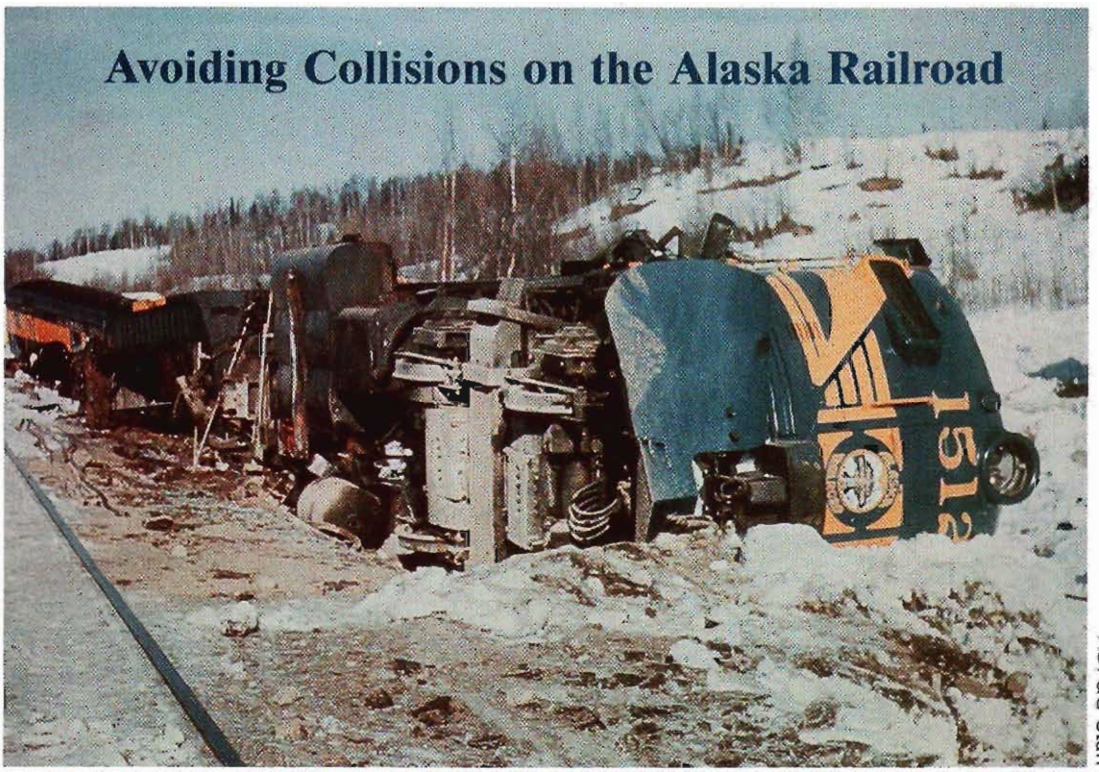
When Moose and Train Meet:

Avoiding Collisions on the Alaska Railroad



ADF&G Staff

by Jack C. Didrickson and Raymond J. Kramer

On the last day of February 1985, Alaska Railroad Locomotive Number 3006N chugged its way out of the Anchorage railroad yards bound for Fairbanks. None of its crew realized that an unwanted record would be set before it arrived at its destination the next morning. Nineteen moose would die that trip, crushed by the locomotive, while the helpless crew watched, unable to save the victims. And, as the winter snows continued, more moose died on almost every run until the annual total for the entire length of the railroad came to 385.

Fortunately, not every year is a duplicate of the winter of 1984-85. This past winter (1985-86), 17 moose were killed along the entire length of the Alaska Railroad.

What causes these mortalities, and what can be done to lessen or prevent them? These are questions of primary importance to not only game biologists and railroad employees, but also to the public, some of whom see this as a shameful situation that could be easily remedied. Although many ideas have been proposed and tried, there is no one good solution.

Initially, both ADF&G and the Alaska Railroad presumed that the high mortality in some years occurred simply because the moose population periodically fluctuated, with most kills occurring when the population was high. We now know this is not the case. By correlating the Alaska Railroad's daily records over the years with weather patterns which coincided with the chronology of high moose losses, we could see a pattern. In years of deep snow depth (three to five feet) for long periods of time, moose losses along the tracks drastically increased. Conversely, in winter periods of little snow, or when spring thaws decreased the snow depths, moose-train incidents significantly declined.

A majority of the 1984-85 mortalities occurred on the tracks between Willow and Talkeetna, in an area known as Game Management Unit (GMU) 14B. This is an area with a large moose population, most of which remains in the high reaches of the Talkeetna Mountains throughout the summer and fall. In winter, as snow and winds increase in these highlands, a large number of the moose move down the mountain slopes to their critical winter food supply of willows along the Susitna River.

Unfortunately, both the railroad and the main highway from Anchorage to Fairbanks bisect their migration path.

When snows exceed three feet, the moose find these man-made "trails" a convenient place to walk or rest, and therein lies the cause of the mortality. Moose are somewhat reluctant to leave these cleared areas and they have not, for the most part, learned to fear trains or autos. As a result, an additional 77 animals were killed by highway vehicles during the 1985 season. Also, many become stressed by deep snow and the lack of nearby browse. In residential areas along the highway, stressed moose belligerently chased dogs, children, and adults, with the result that another 40 were killed in defense of life and property, bringing the total loss of moose in GMU 14B to 502. Hunters, on the other hand, took only 216 animals in the following 20-day September season, before the deep snows set in.

Although a large percentage of mortalities for all years occurs between Willow and Hurricane, with a few other "hot spots," mortalities are otherwise fairly uniformly distrubuted along the entire length of the tracks; therefore, the problem is not merely a local one. A solution must be provided that works along the entire railroad corridor from Seward to Whittier to Fairbanks.

Meetings have been held between the Alaska Railroad personnel and ADF&G game biologists to seek answers and actions, and members of the public have enthusiastically offered innovative ideas, but no single, concrete solution has been found.

There are certain realities which must be faced where "compromise" simply won't work. The trains must run and they must run on or near schedule; too many people and businesses are dependent on the products delivered to interrupt service. Closing down the railroad in winter is no solution. Scheduling the trains to run only in daylight hours won't work, with only four to five hours of daylight present during the critical months. Accurately predicting where and when deep snows will occur is beyond human technology. We must look to the tracks and trains themselves for solutions.

Perhaps the most "far-out" solution offered so far was that of a giant cushioned rubber bumper attached to the front of the locomotive. Here, laws of physics and elasticity come to bear, causing visions of a moose being hit at 40 mph, sinking into this giant cushion, and then being sprung out in front of the train again, only to be picked up and thrust again, endlessly bouncing down the tracks.

Another more realistic attempt was to mount sonic whistles on the locomotive which might alert the animals. The experiment failed, however. When the train moved comparatively slowly, the whistles didn't whistle, and when it was very cold they froze into silence.

Slowing the train from 40 to 20 mph in "hot spot" areas was another idea. Not only did scheduling dif-

In times of heavy snow, moose make use of the cleared areas on the tracks of the Alaska Railroad for walking and resting. Here, a train has stopped for a moose bedded down on the tracks during a snowstorm in the winter of 1985.

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ficulties make this impossible, but the trains couldn't climb certain grades on the icy tracks if momentum was lost.

Decking or covering the ties on trestle bridges to permit moose to safely cross was suggested, but this idea was denied because speed sensors on the train wheels reportedly will not work properly in the presence of the coverings.

One of the major problems in deep snow is that of the "tunnel" effect which trains create with their own snow plow on the front. In this situation, once a moose is on the track, after struggling in deep snow, it won't leave even with a train bearing down on it. There is little room between the train and the wall of snow and the moose are often sideswiped. "Wing plowing," where special equipment plows 20 feet on either side of the tracks seems to have merit in certain areas where topography permits, but this is not the complete answer. When the railroad bed is significantly higher than surrounding terrain, moose still prefer the track bed to jumping down into deep snow.

The best, but perhaps most complicated, scheme offered so far is to allow permit hunters to harvest moose along the railway corridor, at times when heavy snowfall occurs. Logistically, this would prove difficult. First, permits would have to be fairly allocated and there would be no guarantee in any particular year that a hunt would be held. The hunt would occur only in areas determined to be "hot spots" and then only within a narrow corridor along the tracks. When snows are deep, snowmachines bog down and would prove worthless. Furthermore, hunters riding snowmachines, or even walking down the railroad right-of-way, simply would not be safe; eventually someone would be hit by a train.

The only apparent method of getting hunters afield would be to run a "hunter train" which could stop in designated areas, let hunters off for a period of time, and pick them up later, with their harvested moose. This plan, too, offers tremendous logistical problems and would require a great deal of common sense and wintercraft knowledge on the part of each hunter. If regular train schedules were to continue, each hunter would have to be back at his designated pickup point precisely on time, as the train could not delay its schedule. A hunter who took an animal too far away would perhaps have to leave all or part of his moose behind; this is a violation of wanton waste laws and would defeat the purpose of obtaining the meat.

Based on random permit drawing, there is a chance that some inexperienced hunters might be drawn who would have no idea of the severity of camping out in -40° weather. To leave them out in these conditions overnight could prove disastrous, particularly if a storm occurred. Inevitably, someone would get lost, frostbitten, or hypothermic.

For lack of a workable solution, the problem is far from resolved. We would all like to see a harvest shift from trains to hunters. In Canada, Sweden, Norway, and Russia, game managers are also seeking answers to this problem, but as yet no economically feasible solution has been found. Fencing both sides of the railway would not only be exorbitantly expensive, but would also cut the moose off from their winter habitat. Overpasses or underpasses, with wing fences to funnel the animals onto these routes, have shown promise in Europe, but because of the great mileage involved would require literally millions of dollars to accomplish effectively in Alaska. Just such an underpass has been proposed outside Anchorage under the Glenn Highway; the results of this experiment will tell us much over the next few years.

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Frank Box, boilermaker for the Alaska Railroad, welds one of two lights that were attached to the locomotives to chase moose off the tracks.

Can our railbelt moose populations sustain these losses? The answer is a cautious "yes," with the adjustment of seasons and bag limits, but game managers would prefer to see a better use for the tons of meat that are spoiled by a train's crushing impact.

As Alaska moves into the 21st century, answers to this vexing problem may be found. In the meantime, game biologists must continue to obtain basic biological information to justify attempts at possible solutions.

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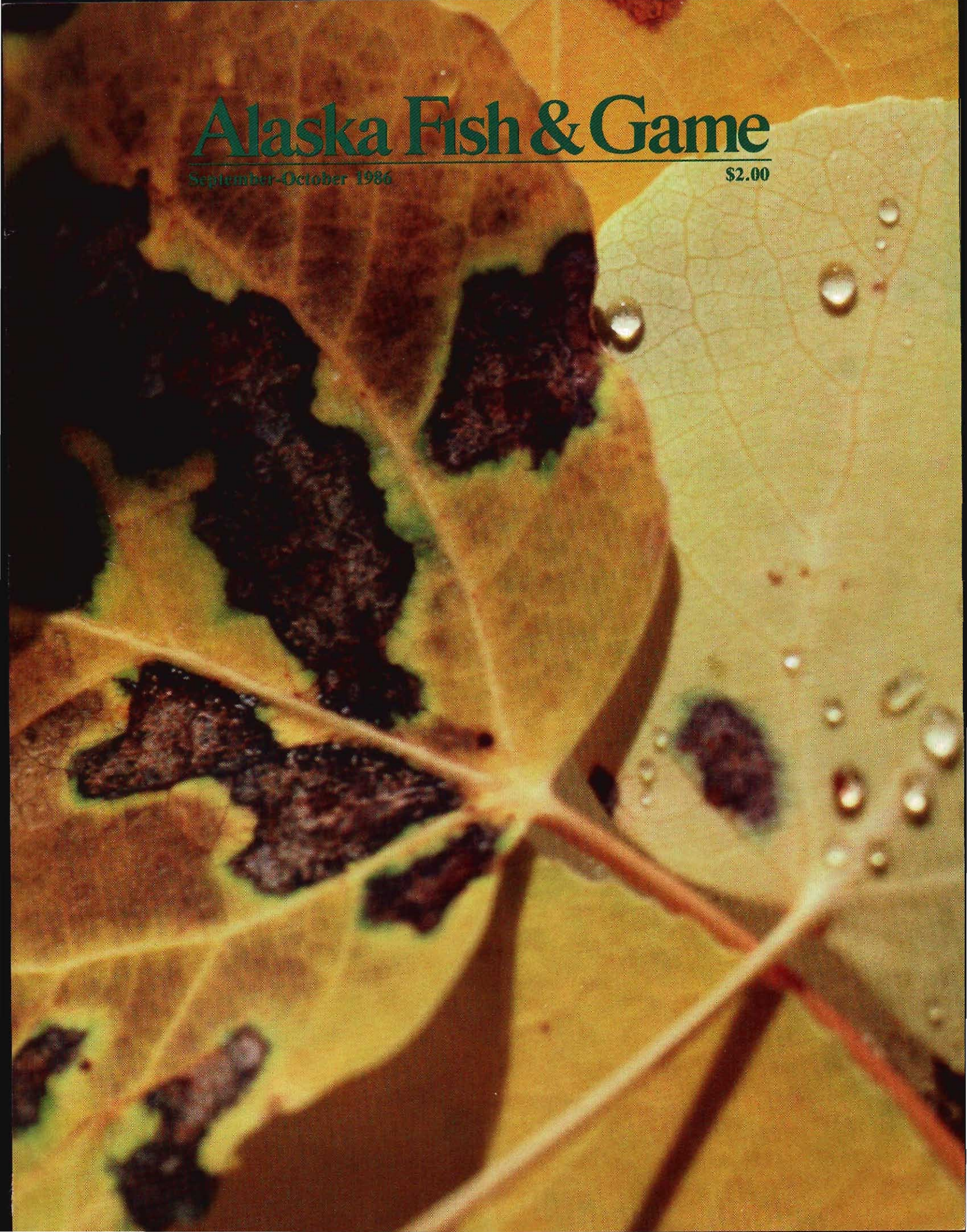

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