OVERVIEW - RAILROAD MOOSE KILLS

Alaska State Legislature

REPRESENTATIVE DICK SHULTZ

Member
Finance Committee

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January 30, 1990

All Legislators
P.O. Box V
Juneau, Alaska 99811

Dear Colleagues;

The slaughter of moose along the Alaska Railroad has got to stop. Not only do we lose significant portions of our moose populations, the meat is often rendered unfit for human consumption as the moose are literally exploded on impact by A.R.R. locomotives.

I have attached for your review a proposal by Mr. Nick Colombo from Delta Jct.. Mr. Colombo has travelled to Juneau and has presented his plan to the Legislature and Department of Fish and Game on several occasions. Presently Mr. Colombo has retained two defunct tracts of Delta Ag. land. He has spent many thousands of dollars of his own money to put up chain link fence and has created prime buffalo range. Presently Mr. Colombo has a herd of some thirty buffalo which are doing very well. He has spent extensive time researching game ranches and has corresponded with researchers, biologists and Canadian University research groups. In short Mr. Colombo is very serious about his endeavors. His obvious success with buffalo ranching can be repeated with moose if he is allowed to capture and transport them to Delta. To personally witness what Mr. Colombo has in mind, one need only travel to Whitehorse and view one of the most successful game ranches in North America. The Canadians once again have out distanced us in dealing with natural resource development.

I, and Mr. Colombo have met with Fish and Game officials and have proposed a joint venture in which moose would be removed from the railroad, placed on his Ag. tracts, and they would be kept and studied. Here is an example where a private person will fund a substantial portion of a project, provide a place for the endangered moose, and allow Fish and Game to conduct research. The response to date from the Department has been cool. Even though they promised to visit Mr. Colombo's operation this summer, they failed to do this.

I enlist your support for this project for several reasons.

1. We will reduce the moose slaughter.

2. We will make good use of Ag. land which otherwise would grow back to scrub.

3. Mr. Colombo has the financial and physical resources to make this project work.

4. There is little expense to the state when one considers the cost of the present carnage which continues year after year. (Figure each moose to be worth in excess of $ 2000.00)

5. Fish and Game would have a moose research station at little public expense.

6. Tourists will have great viewing opportunities.

7. Last, but not least, I have not heard of any better solutions, have you?

Thank you for taking the time to review Mr. Colombo's proposal. It is time we attempt a solution with action instead of words and studies. We have everything to gain and absolutely nothing to lose.

Sincerely,

Dick

Dick Shultz

Alaska Railroad Corporation
Moose/Train Contact Report

Total Number of Railroad Moose Mortality since State Ownership
(for the period October 1 through March 31)

1988-89	239
1987-88	329
1986-87	120
1985-86	21
1984-85	316

Total # Killed on Railbelt Highways (from Dept. of Transportation)

1988	not known
1987	321
1986	308
1985	362
1984	342

Railroad Moose Mortality Under Federal Ownership*

Year	Number
1978-1979	163
1979-1980	54
1980-1981	24
1981-1982	50
1982-1983	144
1983-1984	63

*Statistics compiled by Alaska Dept. of Fish and Game for full calendar year

Table 1. Numbers of moose killed by collisions with trains in the Alaska Railroad right-of-way between Seward and Fairbanks during winter (October through April) and summer (May through September) periods, 1963-86.

Year[a]	Period		Total
	Summer	Winter	
1963-64	-	45	45
1964-65	7	37	44
1965-66	4	34	38
1966-67	5	49	54
1967-68	2	30	32
1968-69	2	9	11
1969-70	2	7	9
1970-71	3	149	152
1971-72	2	87	89
1972-73	5	23	28
1973-74	2	16	18
1974-75	1	69	70
1975-76	7	30	37
1976-77	4	23	27
1977-78	9	14	23
1978-79	2	162	164
1979-80	1	52	53
1980-81	4	16	20
1981-82	9	37	46
1982-83	18	130	148
1983-84	8	57	65
1984-85	7	375	382
1985-86	20	15	35

[a] Data obtained from Alaska Railroad (Department of Transportation) dispatch files. Many moose hit and killed by trains are not reported (Rausch 1956).

Giants star gets $15 million deal

Sports, B-1

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)RAGE, ALASKA, TUESDAY, JANUARY 23, 1990 PRICE 25 CENTS

The Associated Press photos

Soviet army tanks.

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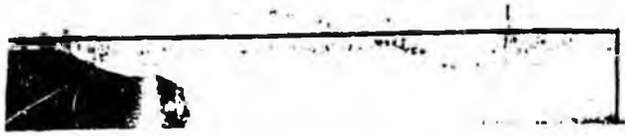

Moose dying at record rate along railway

By CRAIG MEDRED
Daily News reporter

The trains of the Alaska Railroad in the last month have been killing an average of almost 10 moose per day on the stretch of tracks between Palmer and Denali National Park and Preserve, according to officials of the railroad and the Alaska Department of Fish and Game.

Almost 50 of the animals died over the weekend, the railroad reported Monday. The total death toll for January has reached 204.

State wildlife biologist Carl Grauvogel said that is a record for the month. November and December kills bring the total death toll to almost 300 moose so far this winter.

It appears certain the railroad will set a new winter record for moose kills. The existing record is 360 dead, and records show that most moose die in the spring as snows deepen along the rails and winter-weary animals search for easy walking.

Deep snow is already being blamed for this year's carnage. Moose that stray onto tracks banked with 5-foot or higher snow berms are unwilling to jump back into the snow to get out of the way of oncoming trains, Grauvogel said.

"There are solutions to the problem, but they're going to cost money," he said. "There are not solutions that are cost effective from the railroad's standpoint."

"I don't know the answer to it," said railroad spokeswoman Vivian Hamilton. "I really don't."

Some Alaskans are saying the answer might rest in making the state-run railroad pay.

"Public pressure made Exxon spend billions of dollars," said Jean Lee, who has a cabin along the tracks north of Anchorage. "The public has got to do some-

Please see Back Page, MOOSE

MOOSE KILLS

- SUNDAY: 30
- JANUARY: 204
- WINTER: Almost 300
- RECORD: 360

Sources: Alaska Railroad and state Department of Fish and Game

towns and cities in Azerbaijan, which has a population of more than 7 million. It has set suspending the state of emergency imposed on Baku Friday by Gorbachev.

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Thus, t

MOOSE: Trains killing at record pace

Continued from Page A-1

thing about this. The public has to be aware.

"We were up there over the weekend ... and my husband had a scanner, and we were listening to the railroad. Even the train men were getting upset (about the number of dead moose)."

Thirty of the big animals were run down on Sunday, Hamilton said.

"Our crews are not happy about it," she said. "It's not a pleasant thing for them to do."

The railroad has tried tactics to minimize the kill, Hamilton added. Efforts have been made to plow wider than the tracks to give the moose a shallow-snow area toward which to flee, and trains have been slowing down, even stopping at times, to give moose an opportunity to get off the tracks.

"Other than stopping trains altogether, I don't know what else we could do," Hamilton said, and the trains can't be stopped.

"We have a lot of customers," she said. "A lot of customers would be without freight."

She also questioned why the railroad should be charged for the moose it kills.

"Are they going to do the same thing for motorists?" Hamilton asked. Motor vehicles collide with an kill an estimated 800 moose in Alaska in deep-snow winters.

"We don't have the funds to pay that," Hamilton added. "It would increase the cost of doing business."

And it isn't like the railroad is intentionally killing moose, she said.

But some are concerned that the willows that grow in the railroad right of way create an attractive nuisance that lures moose near the tracks.

Grauvogel was reluctant to talk about this issue because of fears he could damage what he considers a good working relationship with the railroad; but he noted that moose kills have declined in areas where the railroad has cleared large areas on either side of the tracks.

"The areas they brushed out last year, they did an excellent job," Grauvogel said. "They took the food back to the tree line," and most of the moose stayed back there, too.

Brushing more areas won't save all the moose, Grauvogel added, but it could help save some. The big problem, he said, is that brushing should have been done over the summer.

"You can't do much in the winter," Grauvogel said.

Snow in the Talkeetna area is now about 6 feet deep, and it just keeps coming. Train crews have had a tough time keeping the tracks clear of snow. Moose are a secondary priority. Lee said that has to change.

"All anyone says is, 'There's nothing we can do,' " Lee said. "That's what everybody says: 'There's nothing we can do.' I just get angrier and angrier."

Train crews are trying, Hamilton said. Some have slowed so much in the effort to avoid killing moose that they have been unable to make the Anchorage to Fairbanks run in under 12 hours, Hamilton said, forcing the railroad to make emergency crew changes to comply with federal laws on train operations.

Section crews have also been working hard to retrieve all the moose carcasses. Edible portions are donated to charity. Inedible portions are saved for a state project to feed wolves in the Tok area this spring.

Still it is not enough, Lee said. A 50-year-old, who has been visiting the family cabin along the tracks 190 miles north of Anchorage for 36 years, she has never witnessed anything like the carnage this year.

"My husband works for the labor union, and he's not an environmentalist," she said. "But he agrees something's got to be done."

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Some help for the moose

This is in regard to the slaughter of moose by the Alaska Railroad.

Something must be done to slow or stop this wasteful slaughter. Following are some suggestions:

- Fine the railroad $500 or more per animal.
- Make the railroad slow down in known high-impact areas.
- Plow a larger area along tracks for moose to get off to one side.
- Plow areas away from the tracks so that the moose have a snowless area and are not tempted to go on the track.
- Increase moose kill for cows, calves and bulls during hunting season in railroad corridor.
- Install a laser light that would warn engineer of impending collision.
- Wolf or bear howl on tape instead of a horn. These predator sounds should scare them off.
- Spray a strong repellant on tracks.
- Fence or tunnel high impact areas.
- Have a man ride shotgun with rubber bullets; scare them off.
- The vast majority of moose are killed at night in the winter. Make the railroad use daylight hours as much as possible.
- Report kills and give salvageable meat to charitable organizations.

There is no one way to stop this "wanton waste," "poaching," or whatever the Department of Fish and Game might call it. The railroad killed over 300 moose last year. With a $500 fine per animal, the railroad would soon have new ideas.

What happened to Yankee ingenuity? Is it that no one cares?

The railroad made a lot of money last year. Let's see some of it go to a good cause. Help stop the slaughter.

— *Bill Samuelson*
William Hyter

OUTDOORS

Record moose suffering deadly winter

By DELIA DORRAN
Frontiersman staff

An average of 10 moose nightly are being hit by trains due to deep snow and no escape pathways, according to game biologists and Alaska Railroad officials.

"Railroad kills are going to set a record," said state game biologist Carl Grauvogal. As of 5 a.m. Wednesday, approximately 360 moose had fallen victim to trains. Of those collisions, 250 occurred since Jan. 1.

Vehicle collisions with moose don't number as high, with around 150 reported so far this year.

The trains are a reluctant weapon of a villainous winter with deep snow and unforgiving pathways. Grauvogal related several officials receiving reports of starving calves and moose lingering near homes. Area residents want to do something about the situation and Grauvogal hopes to provide opportunities soon.

"Usually we don't get a rash of those calls until March or late March," explained Grauveogal.

A growing number of starving calves have officials and the public alarmed and working on possible action. We're definitely working on the department (Fish and Game) coming out with options for involvement," he said.

"We might only save a few hundred, but that's very important," added Grauvogal.

Along the Parks Highway through Willow, a moose calf has wandered near mile 68 for over a week and is being fed hay by concerned residents.

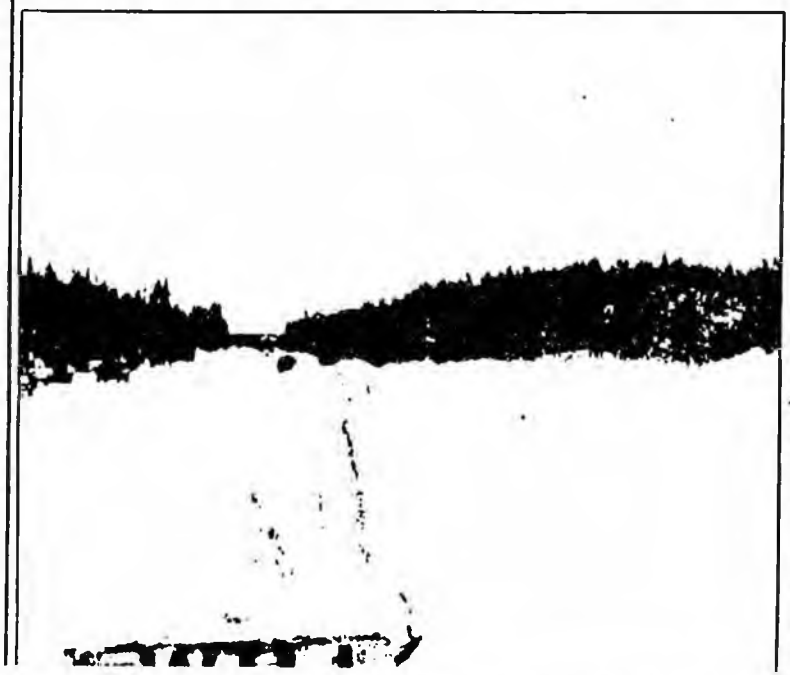
Gene Newman, owner of Newman's Hilltop Service, notes the severity of the moose/snow problem. "It's a concern shared by everyone. "They've definitely been a problem," said Newman.

Grauvogal expects the calf survival rate to be below 50 percent in areas north of Willow, and, "only so-so in the Palmer-Wasilla area."

Two containers full of dead moose sit by the railroad tracks in Willow. The moose were hit by trains but were unsalvageable for human consumption, according to Vivian Hamilton of the Alaska Railroad Corp.

Hamilton explained the moose will be stockpiled until spring when they will be used for predator research by the Dept. of Fish and Game. Game researchers are trying to develop a solution, using the dead moose, to increase calf survival rates.

Rep. Curt Menard has called an emergency meeting of the House Resources Committee to address the record number of train-killed moose. Scheduled for Jan. 30 at 7 p.m. the meeting will be teleconferenced and public testimoney will be taken at the Legislative Information Office in Wasilla.



Frontiersman

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Associate Editor

The Valley's killing fields

The daily carnage taking place on Southcentral's roads and railways has reached devastating proportions. The combination of heavy snowfall and heavy machinery is decimating our area's moose herd this winter, and everyone with the least bit of compassion for struggling symbols of Alaska is feeling the pain.

The wintertime tragedy is taking place in three zones. Certainly the Alaska Railroad right-of-way is the bloodiest, where locomotives are mowing down dozens of animals each day as moose seek a snow-free path. Additional destruction is taking place on the roadways where moose seeking easy walking are endangering themselves and motorists alike. Finally, some of the worst, but least-visible, death is taking place in the woods where deep snow is exhausting the moose who must struggle through it for their food. Yearling calves are especially susceptible, expending more energy to move through shoulder-deep snow than they can take in by browsing.

It's easy, if unpleasant, to chalk up the carnage to Mother Nature, who periodically decides that a certain species of plant or animal needs thinning. But man has an equal role in this tragedy and an equal responsibility to do something about it. Unfortunately, man's options are limited.

Stopping car and train traffic in the moose belt is an unlikely measure, as is clearing alternative pathways through the drifts. Food drops to starving moose are doomed to go unsponsored. But we must try something, anything.

Even if the only thing we do is schedule an emergency subsistence hunt along the railroad's right-of-way, at least the animals won't suffer the pain of maiming and death at the hands of a multi-ton locomotive and half of their meat won't be wasted.

We feel extremely powerless in this situation, and we can only imagine how the railroad engineers must feel. Alaskans everywhere are grieving over this slaughter; Valley residents have been especially

Method sought to reduce kills

By BILL KELDER
Times Valley Bureau

WASILLA — Over the past five years, the Alaska Railroad Corp. has tried everything from guns with blanks to ultrasonic whistles to get moose off the railroad's tracks before an oncoming train hits and kills them.

"We do not like being printed up every winter as moose killers, and have been working with the state Department of Fish and Game and the University of Alaska to develop a technique that will keep moose off the railroad tracks before they get hit by an oncoming train," said Vivian Hamilton, the railroad's director of communciations.

"Unfortunately, nothing we have tried thus far has worked," she said. "We are open to suggestions, but we recommend that people with ideas they think will work first run them by the Department of Fish and Game. We cannot use any method the department has not first approved," Hamilton said.

Among the methods tried:

- The railroad invested $15,000 through the University of Alaska Fairbanks to develop ultrasonic, or high pitched, whistles to try to get moose off the tracks. The effort was fruitless as the moose never responded to the ultrasonic whistles.
- Sirens, like those on fire trucks, were used on trains to try to scare the moose off the tracks. The moose were scared alright, but ran down the tracks instead of getting off them.
- Guns with blanks were fired from trains approaching moose on the tracks. The results were the same as in the siren tests.
- The Fish and Game Department, using a locomotive loaned by the railroad, tried using slower speeds as a way to avoid moose kills. When the engine's normal 50 mph speed was cut in half, there was no appreciable difference in kills.

"I think there were 19 'paper' kills at 50 mph and 18 kills at 25 mph, or maybe it was vice versa," said Fish and Game wildlife biologist Carl Grauvogel.

Grauvogel said department personnel have been meeting regularly with railroad officials for the past five years to try to find a workable solution to the moose problem.

Hamilton said some suggestions received by the railroad just are not practical.

"One group of school children in Fairbanks suggested running a helicopter in front of every train to scare the moose off the tracks," she said. "But the cost of contracting for helicopters makes that proposal unfeasible."

Other suggestions included running the trains only in daylight hours.

"First, in the winter it takes longer to run a train from Anchorage to Fairbanks than there is daylight. Second, moose get killed in the daylight and in the summer just as in the winter, though they are more prone to get off the tracks in the summer months, so the number of incidents are fewer," Hamilton said.

A suggestion to mount a water cannon on the locomotive to squirt at moose to get them to move proved technically and financially unfeasible, she said.

Another idea is to use rubber bullets to scare the moose off the track, but there is no guarantee that a moose scared by a rubber bullet in the winter will do anything other than run down the center of the tracks as it does when blanks are

ing works

ed.

DF&G's Grauvogel said one idea is to run an electrified wire mesh down the center of the tracks between the rails. The wire would be low amperage but high voltage to possibly train the moose to avoid the tracks altogether.

"The problems would be breakage of the wires, causing a break in the current, and keeping the wires uncovered during the winter so the moose would feel the shock," he said.

"Other countries with similar winter problems, such as Canada and Sweden, have tried a number of techniques that also failed," Grauvogel said. "They finally concluded that the only effective method that would work is to put up a fence along each side of the railroad right-of-way in areas of heavy moose population. That is probably the best solution, but it, too, has drawbacks," he said.

Grauvogel said his department estimated the cost of building an electric fence along the 60-mile stretch from Willow to Chase was $3.5 million, including an $863 per mile maintenance cost for the first three years of operation.

He said such a fence would not be continuous for 60 straight miles, and would have guided openings through which moose would be "ushered" out if they wandered into a fenced area by following the railroad tracks.

One problem with the electric fence idea is people — snowmobilers, cross-country skiers, trappers and others who come across a barrier are not going to be pleased, Hamilton said.

She said other problems with the fence idea are jurisdictional.

"Who pays for the fence, its maintenance and the power needed for the electricity," she asked. "There is also a big question of liability. Who is responsible if a person or their pet gets shocked by the fence? How high could the cost of damages go in the case of a lawsuit?"

Grauvogel said one long-term solution might be to develop moose habitat areas away from the railroad's right-of-way, gradually training the moose to winter in the habitat areas. That might be done in conjunction with planned timber harvests, he said.

"It is important to point out that no economically feasible method or technique to keep moose off the railroad tracks is going to be 100 percent effective," Gravaugel said. "Some moose, winter or summer, are simply going to be walking down the tracks when a train comes and get hit and killed."

1-28-90 Anc Times

Railroad takes toll on moose

By BILL KELDER
Times Valley Bureau

WASILLA — More than 360 moose have been hit by Alaska Railroad trains this winter. Heavy snowfall between Willow and Hurricane Gulch could lead to record moose kills along the Railbelt, according to railroad, state and legislative officials.

Snowfall of five to eight feet in the 60-mile stretch along the rail line from Willow to Hurricane is causing more and more moose to seek lower ground and easier walking and feeding, according to Carl Grauvogel, wildlife biologist with the state Fish and Game Department's Matanuska-Susitna office.

"As of 5 a.m. (Friday), railroad officials have reported 257 to 277 moose struck by trains for the month of January," Grauvogel said. "Another 104 hits were recorded in November and December of this winter."

Grauvogel said railroad officials report moose hits to his department regularly during the winter months, and then send personnel out to confirm whether a moose was actually killed.

"I would say approximately 95 percent of the hits are confirmed," Grauvogel said, adding the 361 reported kills thus far this winter should mean a record number of moose will be killed by trains this year.

Rep. Curt Menard, co-chairman of the House Resources Committee, has called an emergency committee meeting to discuss possible solutions to the problem of moose being killed by trains. The meeting is set for 7 p.m. Tuesday in Juneau, but will be teleconferenced to communities along the Railbelt, which stretches from Seward to Fairbanks along the Parks Highway.

Menard, D-Wasilla, said Fish and Game and railroad officials will brief legislators on the situation. Public testimony also will be taken.

"A valuable wildlife resource is being destroyed at an astounding rate," Menard said in a statement issued by his office this week. He said he hopes the meeting will lay the groundwork for solutions.

Though Grauvogel feels this winter's kills will set a new record, he said the department has only been keeping accurate records of moose killed by trains since the early 1980s. Since that time, the record was set in 1984-85 when 382 moose were killed by trains.

"There were probably some heavier moose fatalities in earlier years, but no one was keeping accurate records at the time," Grauvogel said.

Railroad officials have been working with the state for five years to come up with a viable solution, according to ARR spokeswoman Vivian Hamilton.

"We do not like this situation any more than anyone else in the state. And we have tried a number of solutions over the years but, to date, none of them have worked," Hamilton said Wednesday afternoon.

She said 242 moose were killed last winter, a number already exceeded in this month's first 24 days.

Grauvogel said heavy snowfall drives the moose down from higher to lower ground in search of food and to avoid the deep snow. But this year's record snowfall makes even lower ground travel difficult [illegible] the moose go they seek food. Some moose

rate of kills

[illegible]ase," Grauvogel said. "In some areas the snow [illegible] five feet deep and up the moose's belly or shoulder. Where the snow is eight feet deep, it is up their noses," he said.

Moose that wander onto the railroad tracks, which are kept relatively clear by the daily passage of freight trains between Anchorage, Healy and Fairbanks, tend to stay on the tracks for the easier traveling.

"The moose probably do not really see the trains as trains," Grauvogel said. "To them, this is a large predator roaring down the tracks at them, shaking the ground and whistling as it comes."

He said 2 million years of moose evolution have taught the animals to run to avoid predators.

"In the summer, the moose will more often than not, get off the tracks and run into the woods," Grauvogel said. "But in the winter, particularly after they have just walked through snow up to their bellies, they will prefer to run down the tracks rather than get back into the deep snow where behavior and experience have taught them they will have less chance of surviving."

The problem is that moose run 12 to 15 mph, and trains at half-speed move at about 25 mph.

"So no matter how far the moose runs, the train evenutally catches up to it and hits it," Grauvogel said.

He said there are several thousand moose in the Parks Highway corridor that includes the rail line, according to the latest DF&G counts.

"Not all of these moose will use the Susitna River basin or wander onto the railroad tracks, but some of them will and that is when the problems begin," Grauvogel said.

Hamilton said railroad engineers try to slow down when they see a moose in the hope the moose will get off the track before the train reaches it. But the plan does not always work.

"Five locomotives pulling 45 rail cars take about [illegible] a mile to a [illegible] stretch of track," Hamilton said. "But frequently a train will come around a bend and, suddenly there is the moose with no time to slow down, let alone stop."

Hamilton said one railroad employee in a hi-rail car — a pick-up truck fitted to run on railroad tracks — once followed a moose for 40 miles before the moose finally made up its mind to get off the tracks.

"We are not killing moose intentionally," she

1-27-90 ane tenies

Moose grow weary, hungry as heavy snow buries foo

By JOSEPH DITS
Times Writer

Moose in Cantwell and Trapper Creek are giving up. Many of them are kneeling down on the roads and dying from starvation.

Heavy snowfalls a week and a half ago buried most of the edible foliage, forcing moose into some of the biggest herds seen in years along the roadways and railroad tracks, say Alaska State Troopers.

Radio dispatchers for the area say they have been fielding twice as many moose calls as last winter.

And troopers issued warnings about the fatigued wildlife and icy snow-packed roads last week to drivers on roads north of Trapper Creek. They suggest traveling 45 mph or slower.

"Citizens have been up here 21 years and say they've never seen it like this," said Trooper Roger Ellis of Cantwell, who said he was counting 15 to 20 moose per mile last week.

But Roberta Winfield, a clerk with Fish and Wildlife Protection, said the office has had no chance to tally the casualties.

"I'm spending my entire day going from one moose kill to the other, and I haven't had time to count them up," she said.

Several groups are working on possible solutions to the moose herds, said state wildlife biologist Carl Grauvogel. Thursday, road crews began to plow openings so wildlife may have "escape routes" through the high snow berms along the roads.

State and Matanuska-Susitna Borough officials are meeting with railroad officials on more extensive plans that Grauvogel said would be announced within two weeks.

A guide and pilot counted about 90 moose and 40 caribou last week on an eight-mile stretch of the George Parks Highway centered at Cantwell. Ray Atkins, a 25-year Alaskan, said he saw about 200 moose within a couple of hundred feet of the road when he drove from Cantwell to Willow last week.

Ellis said from his Cantwell office he could see as many as 100 caribou on a nearby hill.

Palmer police Chief Ron Otte said moose-related calls hit a "frustrating" level for his dispatchers, who handle Matanuska-Susitna Borough calls north of Willow.

Palmer dispatcher Jackie Smith said the department was answering about 20 to 30 calls a day, twice as many as last winter.

In the Talkeetna area, troopers reported 20 moose shot in four days while people were defending lives and property. Compare that with the usual two or three a month.

Dispatcher Brad Ault in Talkeetna said the moose have lost their patience with humans trying to shoo them away. "They flat lay their ears down and charge you," Ault said.

The moose have become so tired, many have given up their search for new ground.

Many calves have exhausted more calories clamoring through the high snow and seeking food than they've been able to eat. Ault said three-fourths of the calls lately have regarded moose calves.

"It's breaking my heart," A
"I'll frankly be surprised if a s
of them survives."

About 25 moose were
starved in one week, he said.

Reports of large numbers o
began pouring in Jan. 16, when
conditions blew in several feet
Ault said. Similar conditions p
during the winters of 1970-71 an
he said.

No significant snowfall was
for this week but sub-zero temp
were, the National Weather
said. It got to a low of minus-30
twell Friday.

Both Ellis and Ault are uns
the moose will survive the freez

Ellis said the moose maint
body heat by eating more. "A
the cold eats up all their energy.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

P.O. BOX 3-2000
JUNEAU, ALASKA 99802-2000
PHONE: (907) 465-4100

July 19, 1989

The Honorable Kay Brown
Alaska State Representative
P.O. Box 20-2661
Anchorage, AK 99520

Dear Representative Brown:

In the past you have expressed an interest in the railroad moose kill problem. This letter is to bring you up-to-date on our efforts to reduce this loss of moose and to suggest an option that could be tested should the Legislature wish to provide the funding. This letter has been sent to several other legislators in the Anchorage-Matanuska Valley area.

Every winter moose are killed by trains operating between Seward and Fairbanks. The average annual kill reported since 1980 has been 153 moose. Losses have been as high as 382 moose in winters with deep snow, and far fewer in mild winters. Such losses adversely affect the moose population and significantly reduce public use opportunities and associated local economic benefits. This possibly avoidable loss of moose is of concern to many Alaskans, partially because many of the moose struck by trains are unfit for human consumption. You and our department have received many public inquiries and requests to "do something" about reducing the number of train killed moose.

Since the winter of 1984-85, the department and the Alaska Railroad have been working together on methods to reduce moose kills. The railroad has improved its documentation of train/moose collisions to identify sections of track where remedial actions would be most effective, and the salvage and distribution of moose meat to qualifying families has been much improved. A number of devices (lights, horns and other sonic devices, a cushion bumper, and a water cannon) have been considered or tested for moving moose from the tracks. However, moose habitually stay on the railbed and attempt to outrun approaching trains rather than move off into deeper snow. Plowing snow on both sides of the tracks has not altered this behavior, probably because moose prefer to stay on the higher flat surface of the railbed rather than negotiate the deeper snow and sloping sides of the railbed apron. Most recently, brush has been removed near

the track in areas of especially high moose kill, and we believe this will reduce some mortality. We are also investigating a chemical repellent, but we believe that this option holds little hope.

We have also considered and tested changes in train speed, schedules, and other operational aspects, but such options are very limited if the basic services provided by the railroad, as well as safety and cost-effective operations, are not to be unduly compromised. Last winter we conducted a statistically designed field test to determine if slower train speeds would reduce the moose kill. Unfortunately, slowing the test train to the lowest economically operable speed (25 mph) did not reduce the number of moose struck.

We believe that the best way to significantly reduce the killing of moose is to keep them from getting on or lingering on the railroad tracks. This also has been the conclusion of other states, provinces, and countries with similar problems. Moose-proof fencing appears to be the most effective solution available. For example, fencing along a portion of the Glenn Highway has dramatically reduced the incidence of moose-vehicle accidents in that area. However, the fence was costly to construct, about $100,000 per mile. Building the same kind of fence along the railroad would be even more costly due to the added expense of clearing the fence right-of-way and working in more difficult and remote areas. However, a less expensive option is available in the form of an electrified fence.

We have investigated the feasibility of a moose-proof electrified fence, available in Alaska through a Homer vendor, at a constructed cost of approximately $50,000 per mile of track. Preliminary investigations of this fencing at the department's Moose Research Center on the Kenai Peninsula were promising, but a complete field testing along the railroad is needed. If an electrified fence is effective in keeping moose off the tracks, fencing could be considered for sections of track where the moose kill has been historically high. For example, on the average about 60 percent of the annual railroad moose kill occurs in a 60-mile section of track between Houston and Chase (ARR mileposts 180-240).

The cost of construction for a 60-mile fence is estimated at about 3.5 million dollars. Fencing is an expensive solution and may or may not be an appropriate use of public funds at this time. That is a decision for the Legislature to make. Because many interested parties have asked us for an immediate solution to the railroad/moose mortality problem, we are providing the electrified fence as the only option which we currently believe would significantly reduce mortality.

Should you and other legislators decide to seek funding for a limited railroad fencing project, the enclosed project description provides details on project location, costs, and construction/monitoring schedule. Test fencing on both sides of a 5-mile section of track should be built and its effectiveness carefully evaluated and verified before construction of a fence along the entire 60-mile section of track. The findings of such a test would also have substantial value in considering use of electrified fencing to exclude moose or other wildlife species in other situations. The Alaska Railroad will allow construction of a fence on the railroad right-of-way, but is not interested in constructing or maintaining an electrical fence, nor in administering contracts to accomplish the project. A suitable agency would have to be designated to oversee construction and maintenance. The Department of Fish and Game is not staffed to administer such a major construction project, except for the initial 5-mile test fence.

Whether or not electrified fencing is tested/constructed, we will continue to seek other means of reducing the railroad moose kill. However, there are relatively few options that hold promise. If you would like additional information about the proposed fencing project or any other aspect of the railroad moose kill problem we would be pleased to provide it. Questions relating to railroad operations and salvage procedures should be directed to Vivian Hamilton at the Alaska Railroad (265-2675). For information on the moose population or public use of moose, historical railroad moose kills, options we have considered for reducing moose losses, and the proposed fencing project, please contact the following Division of Wildlife Conservation staff: Carl Grauvogel, Palmer Area Biologist (745-5015); Greg Bos, Management Coordinator (267-2200); or Dan Timm, Regional Supervisor (267-2193).

Thank you for your interest in wildlife conservation issues.

Sincerely,

Don W. Collinsworth
Commissioner

Enclosure

cc: Greg Bos, ADF&G
Carl Grauvogel, ADF&G
Lew Pamplin, ADF&G
Dan Timm, ADF&G
Vivian Hamilton, Alaska Railroad Corporation
Frank Turpin, Alaska Railroad Corporation

CONSTRUCTION AND EVALUATION OF AN ELECTRIFIED FENCE TO REDUCE MOOSE MORTALITY ALONG THE ALASKA RAILROAD (ARR)
1989

Description of Project

The Alaska Department of Fish and Game (ADF&G) believes an 8-foot electrified fence would prevent moose from gaining access to railroad tracks. Trains run predominantly between the port of Seward and Fairbanks, a distance of 470 miles. In the past eight years, an average of 153 moose have been killed annually, and in two of the past five winters the kill has exceeded 370 moose. Fencing appears to be the best long-term solution for keeping moose off the tracks, but construction along the entire 470-mile rail line would be extremely costly and in some areas virtually impossible. A more economical and reasonable approach is to construct fencing only in areas where moose mortality has been consistently high. Approximately 60 percent of the annual moose kill occurs within a 60-mile section between the communities of Houston and Chase (ARR mileposts 180 to 240). This project description identifies the principal elements (including costs) of constructing an electrified fence in this area.

The project could be accomplished in two phases: 1) a two-year test phase involving five miles of track (fence on both sides); and 2) final fence construction along the remaining 55 miles of track. If results from Phase I (outlined below) indicate that the project will not be effective or has adverse and unsolvable effects that outweigh potential benefits, the project would be terminated. For example, people using the railroad right-of-way may not accept the fence. It could however, be built to accommodate human passage.

Phase I

Five miles of test fence would be constructed on each side of the track in an area where moose mortality has been high and where a mix of environmental conditions occur, such as stream crossings and moose migration routes (mileposts 197 to 202 are initially selected). The fence would be tested for two years to determine:

a) Effectiveness in keeping moose from gaining access to the railroad bed;

b) Reliability of operation and maintenance costs;

c) The best fence configuration for stream and trail crossings;

d) Whether the fence is compatible with ARR operating procedures;

e) Public reaction to the fence;

f) Whether one-way exit gates will be needed (how often do moose become trapped between fences), and if one-way gates are needed, what is the best functional and economical design: and

g) Whether moose will pass under railroad bridges during migration (we believe they will).

Phase II

If the results from the Phase I test fence indicate that an electrified fence is an effective and practical means to reduce moose mortality, then funding would be requested for an additional 55 miles of fence to be constructed on each side of the railroad track between mileposts 180 and 240.

The ARR has told us that because an electrified fence requires specialized operational and maintenance skills, and because ARR personnel do not now have these skills, fence maintenance and operation would be contracted for at least three years after construction.

Administration and Costs

Projected cost of the entire 60-mile project is $3,497,052 (FY 89 dollars). The cost to determine whether an electrified fence is a viable option to reduce moose mortality (Phase I) would be $436,372, or 12 percent of the total project.

Phase I fence construction and maintenance would be accomplished under contracts administered by ADF&G. The Division of Wildlife Conservation would evaluate the effectiveness of the test fence. Phase II construction and maintenance would be accomplished under contracts administered by, as yet, an unidentified entity (perhaps the borough or a regional corporation). The following is an itemized summary of estimated costs of each project phase.

Phase I

1. Contractor

Construction and initial maintenance costs for test fence for 5 miles of track (mileposts 197-202)

Surveying, clearing and right-of-way preparation for fence construction at $12,000 per track mile, clearing both sides of track:	$ 60,000
Materials and labor for fence installation at $38,000 per track mile, both sides of track, assuming some transportation support from ARR:	$ 190,000
Maintenance of 10 linear miles of fence at $8,630 annually ($863.00/mile) for 2 years:	$ 17,260

Construction of one-way gates and different types of stream and road crossing designs:	$ 60,000
Subtotal	$ 327,260

2. Evaluation Costs

ADF&G--Division of Wildlife Conservation

Wildlife Biologist II, 8 months per year (November-June), 16 months total at $3,782.00 per month (includes salary and benefits):	$ 60,512
Transportation and equipment:	$ 5,000
Temporary housing, food, and miscellaneous field living costs $800/month (12 months total):	$ 9,600
Radio-collar 20 moose in test area during winter (10 east of tracks and 10 west of tracks):	$ 10,000
Monitor moose movements on ground and at least twice monthly with aircraft:	$ 24,000
Subtotal	$ 109,112
TOTAL PHASE I	$ 436,372

Phase II

Contractor

Fence construction and maintenance costs for 55 miles of track (mileposts 180-240)

Clearing and right-of-way preparation for fence construction at $12,000 per track mile (clearing both sides of track):	$ 660,000
Materials and labor for fence installation at $38,000 per track mile (both sides of track):	$2,090,000
Maintenance of 120 linear miles of fence at $103,560 annually ($863.00/mile) for 3 years:	$ 310,680
TOTAL PHASE II	$3,060,680
TOTAL PHASE I AND PHASE II	$3,497,052

file

STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 3-2000
JUNEAU, ALASKA 99802-2000
PHONE: (907) 465-4100

February 2, 1987

The Honorable Kay Brown
Alaska State Legislature
P. O. Box V
Juneau, AK 99811

Dear Representative Brown:

You recently requested information about moose mortality on the Alaska Railroad (ARR) and the guiding industry. In your discussion with Regional Game Supervisor Dan Timm he said that the department would provide more information on these subjects. This letter responds to your letter to Dan Timm of January 19 regarding the issue of moose mortality. I will follow-up with a letter on the guiding industry shortly.

With respect to moose mortality on the ARR, I have enclosed several documents which summarize the problem, actions we have suggested that the railroad take to help reduce mortality, and the railroad's response. I have also included information about road kills in the Matanuska/Susitna Valley.

Prior to state ownership of the ARR, moose mortality was notably under reported. As you can see from the enclosures, July 1, 1984 - June 30, 1985, was the worst year on record with 382 moose killed. The great majority of animals were killed between Houston and Chase between late-January and late-March. When the packed snow depth is 30 to 35 inches, the mortality rate increases markedly. At that point, moose are primarily looking for areas of minimal snow depth to conserve energy; because they are plowed, railroad and highway rights-of-way are highly attractive.

Many moose-railroad collisions result in unsalvageable meat. However, moose meat fit for human consumption is taken by ARR personnel to the nearest crossing and the location is reported to Fish and Wildlife Protection (FWP) officers. A list of needy families in the Matanuska/Susitna Valley is maintained by FWP, and when salvageable moose meat becomes available, a family is called. Other animals probably are picked up and used by residents living near the track. When

animals are unfit for salvage, the ARR removes the carcasses from the immediate right-of-way and puts them in heavy brush, ravines, or similar locations. Although we do not have records on the proportion of moose salvaged in prior years, as of January 3, 44 moose had been killed by train this winter and 10 were reported for salvage to FWP.

It is possible that some of the 34 unreported animals were utilized by local residents, but most were unfit for salvage. As of January 3, 60 moose have been killed by cars in the same area, and nearly all of these animals were salvaged.

Our interpretation of current regulations is that the ARR is not required to notify FWP when an animal is killed. You asked whether legislation should be introduced to require salvage. In our view the ARR, under state ownership, is being sufficiently cooperative in the salvage of most moose fit for human consumption, particularly considering the remoteness of the area, winter weather conditions, the relatively few workers on the line during winter months, and the relatively high cost of salvaging meat. With continuing public interest and concern for train-caused moose mortality, the ARR should remain very cooperative.

You also asked if the ARR has been cooperative in trying to reduce moose collisions. As you will see from the enclosed letters, the department has made a number of suggestions to reduce collisions, and we will make additional suggestions to the ARR after we have analyzed currently available data. Unlike the situation which existed when the railroad was federally owned, ARR officials have been very cooperative in letting us see their daily records and in openly discussing the problem.

Some of our suggestions have been adopted and likely reduced moose mortality in the latter part of the 1984-85 winter. Others have not been adopted because of federal regulations governing railroad operations, high monetary cost, or other reasons.

Nothing short of complete fencing on both sides of at least 65 miles of track with over- or underpasses to facilitate moose movements will reduce moose mortality to a bare minimum. However, fencing and maintenance of moose passage structures would cost several million dollars and even then would not eliminate mortality. Sweden, British Columbia, and other areas have problems such as ours, but they too have not found an adequate solution.

Following the high moose mortality in the winter of 1984-85 on the railroad and highways, the Board of Game acted to reduce hunter harvest in the affected area. The moose population has responded well. It is preferable that

hunters take moose during severe winters than for trains to kill them. However, hunting along the ARR right-of-way can also create problems because the ARR has concerns with people being on or near the right-of-way, or using the railroad right-of-way for access.

Thank you for the opportunity to provide you with background information and suggestions regarding moose mortality. If you have any questions on this material, please do not hesitate to contact us. Best wishes for success in your new role as state representative.

Sincerely,

Don W. Collinsworth
Commissioner

Enclosures

cc: William Nix, Acting Commissioner
Department of Public Safety

Lew Pamplin, Director
Game Division, Department of Fish and Game

STATE OF ALASKA

BILL SHEFFIELD, GOVERNOR

DEPARTMENT OF FISH AND GAME

D I V I S I O N O F G A M E

333 RASPBERRY ROAD
ANCHORAGE, ALASKA 99502

344-0541

March 7, 1985

Mr. Frank G. Turpin
President & Chief Executive Officer
Alaska Railroad Corporation
Pouch 7-2111
Anchorage, AK 99510-7069

Dear Mr. Turpin:

The recent high rate of moose/train collisions prompted us to investigate the problem and to recommend possible solutions. We appreciate your cooperation in this matter and your concern for the animals has been apparent.

The following discussion and recommendations would result in fewer moose mortalities on the railroad. Some of these actions have already been taken by the railroad and some may not be feasible. Obviously, our expertise is not in running a railroad! The recommendations are based on a graduate student's study of moose on the railroad in the late 1950s, our area biologist's (Jack Didrickson) past experience with this chronic problem, and two recent trips by Jack between Wasilla and Fairbanks in a lead engine's cab. Mr. Didrickson has been the area game biologist at Palmer for nearly 20 years, and his area of responsibility includes the Willow to Talkeetna track which has been the area of greatest moose mortality for many years.

IMMEDIATE ACTIONS

1. <u>Accurate reporting of milepost locations on moose/train encounters should be required daily</u>.

   We have had difficulty acquiring accurate information in the past concerning specific collision sites and annual total moose mortality on the railroad. We request that you develop a system to provide us with daily records of moose collisions by milepost location. This will provide a firm basis on which to implement other recommended actions, and it will help us in

management of the moose population. In some winters, such as this one, mortality is significant and accurate mortality reporting will assist in setting annual hunting regulations and evaluating overall population mortality. Expedient reporting by milepost will also aid in the efficient salvage of moose meat. We would appreciate receiving any records you may have regarding moose/train collisions in previous years. It would also be helpful to us if you could supply a "track chart" from Wasilla to Chase. Finally, we should exchange information about moose concentrations this winter and in subsequent winters.

2. Train speed should be reduced in problem areas.

Your orders to reduce train speed to 20 to 30 mph from Willow to Talkeetna were well placed and have already resulted in fewer collisions. Without the benefit of precise locations of collisions, we recommend an expansion of the slow order to include the area between Wasilla and Chase. As information is compiled for the rest of this winter and in subsequent winters, slow orders can undoubtedly be modified to allow increased train speeds between moose concentration areas. There will be some winters (and portions of others) when slow orders are not necessary. As you know, the slower a train is going the more time a moose has to get out of the way (if it is so inclined), and the more time the engineer has to further slow the train. We realize that it may take a mile or more for a train to stop, depending on speed, train weight and track grade. It may not be feasible to stop when moose are encountered, but any extra slowing by the train should help. Moose will quickly disperse from the tracks when temperatures warm and snow settling and thawing occurs. Slow orders should remain in effect until snow depths decrease and moose disperse.

3. Maximum distance of snow removal should be continued in problem areas.

The removal of snow with a spreader or wing blade from up to 20' from the tracks was a positive action on your part. A narrow tunnel or sidewalls of snow leaves the animals no escape route. As specific chronic locations are identified, the wing blade can be used only in those areas. For the remainder of this winter, we recommend continued use of the wing blade where terrain permits between Willow and Talkeetna and expand this to include the area between Wasilla and Chase. New snow should be removed as soon as possible because moose increase their movements from place to place immediately after a snow.

4. Adjust timing of train runs.

During winters of heavy snow when moose are concentrated near the right-of-way, we believe that running trains during daylight hours would substantially reduce collisions. Moose and other wildlife are more easily approached and less wary during the night and increase their activity during early morning and late evening hours. Based on limited observations, it appears that one train closely following another by an hour or less difference would be desirable. Moose are oftentimes scared from the tracks by a train and they may not move back on the tracks until a second train has passed. This behavior was observed the night that Mr. Didrickson was on a train immediately behind another one. Future observations by railroad personnel and our biologists would test the validity of this recommendation.

5. Adjust engine headlight.

An upward adjustment of at least one of the two or four headlights on each engine would allow the crew to see moose at a greater distance. The train could thus be slowed more, giving an animal increased time to clear the tracks. We endorse the engineers' "tactics" of turning off the lights once a moose is seen, and then flashing the lights and using the whistle. Constant bright lights at night disorient and "mesmerize" wildlife, so the animals should not be fixed with a steady beam.

6. Continue experiment with ultrasonic scare device.

The initial test of the effectiveness of an ultrasonic scare device was inconclusive. The devices were attached to the lead engine on one run to Fairbanks and moose behavior was observed. One moose was killed on that run. The devices were removed on the return run, but moose behavior was similar and no moose were killed. We put the devices back on engine #3008 and have asked your personnel to keep track of moose collisions by #3008 versus other lead engines. Even if ultrasonic sound can reach animals over the train noise, placement of such devices on the engine is a problem. The devices are easily plugged with snow, rain or other matter, and the manufacturer says they are not wind-activated until speeds reach 30 mph. In this regard, we were pleased to hear of your efforts to develop an electronically activated ultrasonic scare device. Hopefully, it will prove effective in conjunction with other preventative measures.

LONG-TERM SOLUTIONS

Moose/train collisions are a chronic problem which become acute in winters of deep snow accumulation such as this year. The moose population using the Wasilla to Talkeetna right-of-way has been increasing since the severe winters of the early 1970s and this increase undoubtedly has contributed to the present high collision rate. There are, however, actions which can be taken to reduce moose mortality in future years; complete elimination of the problem is not, unfortunately, a realistic goal. In addition to the proposed actions discussed above, the following recommendations may assist in developing long-term solutions to this problem.

1. Replace walkways on bridges.

We understand that metal walkways between rails on bridges were removed sometime ago when electronic sensors on the underside of trains were installed. The metal walkways caused the sensors to be inoperative. If waterproof plywood were placed between rails, the animals would once again have a safe travel lane across bridges. This becomes especially important when a moose is running ahead of a train at night and the animal tries to cross a bridge. Furthermore, without this modification, an animal that drops between the ties and is hit by a train is reportedly more apt to damage the traction motors located on the underside of the engines.

2. Create "artificial" rights-of-way.

Moose frequent the railroad right-of-way for two main reasons: the area is comparatively snow free and it provides a good source of food. Large numbers of moose are driven from the high country by deep snow and they encounter the railroad during their migration to lowlands. Some moose continue westward and winter near the Parks Highway and along the Susitna River. Other moose come from west of the Susitna River and also winter in the river bottom and east to the railroad. In total, moose in the river-highway-railroad corridor from Willow to Talkeetna probably now number at least 3,000.

The growth of moose food or browse (small trees and brush) has been stimulated in the right-of-way from, as we understand, two main factors: tree-clearing by dozers, particularly near crossings to enhance visibility; and the termination of brush control by spraying for environmental reasons.

After a system of accurate moose/train collision reporting has been established and the more serious problem sections of track identified, mechanical means of brush control in the right-of-way should be implemented. Depending on terrain, permafrost conditions, and land ownership, dozers or other suitable machinery could create and maintain an "artificial" right-of-way some distance from the track during winters of deep snow accumulation. This would provide areas of lesser snow depth for the animals and would stimulate regrowth of browse.

Another habitat-oriented recommendation is to create large areas of browse at least ½ mile from the tracks. Excellent quality and abundant food sources would attract moose away from the tracks. Large scale habitat enhancement can be accomplished by "chaining" with dozers, fire, or mechanical "tree crushers" depending upon site specific conditions. The department has used all three techniques in Alaska and we own three 40-ton tree crushers for such work on the Kenai Peninsula. We would be pleased to explore the possibilities of large scale habitat enhancement with the railroad, should you feel this is a feasible alternative. We have advanced the possibility and desirability of moose habitat enhancement within the Susitna River Valley north to Talkeetna, but other priorities and funding limitations probably preclude such work in the immediate future.

Your cooperation and sensitivity to the moose/train collision problem are appreciated and the positive actions to date have resulted in reduced moose mortality. Thank you for the opportunity to allow our biologist to make first-hand observations from a locomotive. Should deep snows continue, we would again like to observe from your locomotives. We will continue working with you to reduce the severity of the problem and I am sure that after an accurate collision reporting system is implemented we can make more definitive recommendations.

Sincerely,

W. Lewis Pamplin, Jr.
Director

cc: Don Collinsworth, Commissioner
Bob Hinman, Deputy Director
Regional Supervisors

ADN 1/30/90

running the Valdez aground on Bligh Reef. The ruptured tanker dumped nearly 11 million gallons of crude oil that floated free over thou-

through a pool of about 100 potential jurors today. Judge Karl Johnstone said

Please see Back Page, **TRIAL**

Anchorage Daily News/Erik Hill

Defense attorney Michael Chalos and Joe Hazelwood monitor the proceedings Monday in Anchorage Superior Court.

Railroad experiments with ways to trim moose deaths

By **CRAIG MEDRED**
Daily News reporter

Susitna Valley moose are continuing to die at record rates beneath the wheels of Alaska Railroad locomotives.

State wildlife biologist Greg Bos said Monday the death toll is rapidly closing in on the grisly record of 360 dead moose, and the traditional months of carnage — February and March — are still ahead.

Railroad officials have begun experimenting with new means to chase moose off the tracks.

A pilot truck was leading the Anchorage-to-Fairbanks train from Willow to Talkeetna Monday night, said Arnie Polanchek, railroad operations officer.

Earlier experiments with the pilot truck appeared to show some promise, Polanchek said. Railroad employees were able to frighten some moose off the tracks with the truck or by peppering the animals in the rump with birdshot.

But some moose still refused to get out of the way, and Polanchek said it remains unclear whether the moose that fled were reacting to the new form of harassment or responding to the plowing of the right of way along the tracks.

The railroad last week plowed some stretches to a width of 20 feet on either side of the rails to give moose room to walk. Unusually heavy snows have forced the animals out of the woods in search of easier walking.

Polanchek said it was snowing again in the Talkeetna-Willow area Monday evening. He said the new snow should help railroad officials gauge the effectiveness of their new harassment techniques.

Rep. Curt Menard, D-Wasilla, who plans to hold teleconference hearings tonight from Juneau on ways to minimize the moose kill, said the railroad has to do some-

Please see Back Page, **MOOSE**

Discovery may speed computers

Machines might run 1,000 times faster

By **JOHN MARKOFF**
The New York Times

Scientists at Bell Laboratories introduced Monday an experimental machine that uses pulses of light rather

New voices of protest

Russians deplore use of troops in troubled republics

By **MICHAEL PARKS**
Los Angeles Times

MOSCOW — "My son was not born to die in Azerbaijan!"

The hand-lettered sign, held up by a Russian mother at a weekend rally in Moscow, demanded the withdrawal of the troops sent to Azerbaijan and Armenia to prevent a potential civil war between the two southern Soviet republics.

■ **STRIKE EASES:** Many Azerbaijanis heeded their leaders' call and returned to work Monday, despite attempts by extremists to keep workers from their jobs in Baku. **A-7**

ing its way into the Azerbaijan capital of Baku a week ago, strong sentiments are developing, particu-

THE BACK PAGE

MOOSE: Railroad tries pilot truck, birdshot in attempt to cut moose toll

Continued from Page A-1

thing. It has been trying to get the Alaska Department of Fish and Game to solve the problem, but Menard said the railroad has the primary responsibility.

"I don't feel that we've received a full-fledged effort from the railroad," Menard said. "It seems to be a problem they don't want to get involved with."

Railroad officials have said there is little more — short of shutting down the railroad — that can be done to stop the slaughter.

Unusually heavy snows are to blame for the high death toll, said railroad spokeswoman Vivian Hamilton, and the railroad can't do anything about the weather.

Moose get onto the tracks to avoid foundering in the snow, and they simply refuse to get off the tracks, Hamilton said. She rode in an engine last week to assess the problem herself. Some moose ran right off the tracks as soon as the engineer blew the horn, she said, but others just kept running down the rails until the engine ran them over.

Slowing the trains, blowing the whistle, flashing the lights — none of these techniques have make any real difference in forcing moose of the tracks, according to railroad employees and state biologists. The moose, they said, often refuse to get off unless there is an area of shallow or packed snow onto which they can flee.

Railroad employees in the pilot truck have even tried shooting moose with rubber bullets last week, said Raymond Lee, a cabin owner along the tracks north of Willow.

"They had chased off nine, and by the time the freight came to (Sheep Creek) it'd only hit one," he said. "That was effective."

The problem, Lee said, was that the moose-shooing truck ran into two moose that couldn't even be driven from the tracks by a barrage of rubber bullets. The freight train, meanwhile, was closing in on the pilot truck. The truck finally had to maneuver onto a siding to avoid getting run over. The moose never did move.

"The train got those two," Lee said.

Back when the federal government ran the Alaska Railroad, Lee said, railroad workers used to come along with a tractor and plow moose escape routes perpendicular to the tracks every quarter-mile or so in years of unusually deep snow.

That gave the moose somewhere to flee, he said, and the animals took advantage.

Hamilton said the railroad is worried that trails perpendicular to the tracks might just attract more moose to the rails.

Bos, Fish and Game's regional wildlife supervisor, said he isn't sure snowmobile trails are possible everywhere, but there are areas where they might help.

"We could give it a try," he said, providing the railroad is willing to cooperate. The railroad would have to haul the snowmobiles into remote areas.

The last time this idea was suggested to the railroad, Bos said, railroad officials said they didn't have the equipment or the personnel to do it.

"They're just looking at the profit and loss column," he said. "It is frustrating."

TRIAL: Jury selection under way

Continued from Page A-1

he expects to spend at least a week sitting a jury and three or four alternates.

Media relations and arguments on the sort of fine legal points appreciated mostly by lawyers dominated the first day of the trial:

• Defense attorneys Michael Chalos and Dick Madson lost on a motion to dismiss the charges against Hazelwood, but they hadn't expected to win anyway. They argued that state courts don't have jurisdic- Hazelwood's con-ing, Madson said, but not commercial shipping.

"I don't think the state can argue that the Exxon Valdez was some kind of recreational Love Boat," Madson said.

The analogy didn't help. Johnstone, who had rejected a similar motion last year, denied this one, too.

• Johnstone plans to pare the long list of questions defense and prosecution attorneys proposed for jurors. The defense could lose 13 of its 70 questions, including inquiries about the receipt of permanent fund dividends, whether prospective have treated them unfairly.

Jurors spent part of Monday filling out a three-page questionnaire asking, among other things, if they have lived or worked around Prince William Sound, if the oil spill affected them personally or financially, and if they've been the victim of an alcohol-related accident.

• Johnstone issued press badges so jurors and witnesses will know when they're talking to reporters. He also set some guidelines for courthouse decorum, asking reporters not to disclose the names of jurors during the trial and ruling hallways

NEW DEVICE: Bell Labs machine may substantially speed up computers

Continued from Page A-1

to collect and analyze the vast amounts of data produced by a government-financed atom-smasher now being planned in Texas.

Optical computers are expected to be available commercially early in the next century. The device introduced Monday, which is based on a synthesis of new technologies developed over the last five years, is the first publicly demonstrated example of a processor that would be the heart of such form computations. An array of laser beams is rapidly switched on and off and combined with other arrays to perform simple addition and subtraction. The lenses focus and direct the beams, and the mirrors pass them to other optical switches.

Optical computers show promise because of the unique properties of light. The limits on existing computers are largely established by the bottlenecks that restrict the amount of data that can be processed at one time.

[illegible] will require "parallel computing," in which the processor simultaneously addresses millions of tasks.

Among such tasks are image recognition — for example, discerning human faces in a security system, or acting as the "eyes" for a robot assembling a product on a factory floor — and computing more easily the most difficult problems for which today's supercomputers are used.

The Pentagon has invested in optical computing to attempt to meet the immense processing require-

COLOMBO

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PROPOSAL

1. I be allowed to capture one hundred (100) head of yearling moose per year from the Alaska Railroad right-of-way.
2. I would transport them to the Delta area, where there is 100,000 acres of cleared land suitable for moose habitat.
3. Fence the required number of acres to protect the herd.
4. Raise them as domestic animals for a red meat industry.
5. Set up a visiting program to educate not only the tourist but the people of Alaska.

BENEFITS PRODUCED BY THIS PROPOSAL

1. Fewer moose kills will result along the Alaska RR, thus saving time and money for clearing, as well as producing better PR for the railroad.
2. The state has thousands of acres that are laying fallow because of the unsuccessful attempt at farming in the Delta area. I would and could improve the fallow land with fencing and making the farm a success.
3. This would not interfere with the moose available to the hunter or subsistence user because the moose are currently being killed. I am requesting only yearlings which are not legal bounty anyway.
4. Alaska imports most of its red meat from the lower 48 or from Australia. We could not only furnish exotic, low cholesterol meat to Alaska but begin an export business to the world.
5. Delta is economically depressed with the state foreclosing on farms, homes and commercial properties. This could help recover the economic situation in Delta Junction.
6. Trucking would once again become a profitable industry in the state. Back-hauling would be cheaper, sparking the industry even further.
7. With the extreme colds, food supplies ran short in Alaska because of transportation problems. We could become more self-sufficient in providing food and products from ourselves.
8. As a private game farm, the hassles at State Fish and Game would not be a real problem. Political pressures would be relieved at the State level.

This is not setting a precedent, since reindeer, musk-ox and bison farms have already been established using our state's wildlife to originate these managed farms.

Please consider this proposal. I will be more than happy to furnish any information that you want or need. I have done extensive research in this project and am convinced that it can work. I am therefore asking the legislature to consider changing the law to allow me to raise moose as a domestic animal, creating a red meat industy, bearing in mind that my program would be a result of capturing the moose on the railroad before they are killed and a total loss to the people and the State of Alaska.