

**ALASKA LEGISLATURE COMMITTEE FILES 1993-1994 8672**

**8082**

**HOUSE RESOURCES**

347

# Just whose Alaska is this, anyway?

JOHN BALZAR  
ANCHORAGE TIMES

**F** AIRBANKS - In their own rendition of the age-old wheeze about there being two kinds of people in the world, Alaskans tend to make the life this way: There are Alaskans, God love their hardy souls, and there are the Outsiders. For the most part, this is a carefree tradition. Visit Alaska and people here will try to tell you, ha ha, moose droppings glued onto your souvenir swizzle sticks. But they remain respectful enough to capitalize the description "outsiders" in their newspaper columns and letter correspondence.

Which was fine as long as Outsiders remained docile. But some of them haven't been, and Alaskans have grown plenty edgy about it this winter.

There was, for example, the reaction by Outsiders when the state said it wanted to kill some of its wild wolves, thus increasing its moose and caribou herds, which in turn could be shot by Alaska hunters. State officials might as well have suggested igniting an A-bomb over a national forest to help Alaskans down firewood, so

popular was the idea in the Lower 48.

To its shock, the state found the furor was so great that it felt obligated to postpone the wolf kill for further study. In the process, many Alaskans felt their grip weaken on one of their most prideful prerogatives, the management of Alaska's wild animals and lands.

Some Alaska leaders believe the episode has altered the terms of the debate over a broad, basic question: Who will chart the future for America's last unplundered wild? And for what end? Will it be the nation acting for all Americans? Or Alaska on behalf of Alaskans?

Because federal taxpayers hold deed to 60 percent of Alaska's territory, this kind of us-vs.-them friction has put heat to public policy debates here before. But not with the intensity of the wolf-kill and certainly not with the resulting split in Alaska's mighty business and development interests.

Alaska has spent years pursuing expansion of its basic commercial industries: tourism, logging, mining, fishing and energy production. Generally, the leading politicians and institutions of Alaska seemed in agreement that expansion in all these areas was compatible and in the state's best interest.

But the plan to kill 300 to 500 wolves each year for five years did something that nothing else has: The \$1.1 billion travel business, Alaska's No. 3 employer after government and seafood, suddenly broke ranks and said it may no longer share the same vision of Alaska's future as the natural resource industries.

Not only that, tourism leaders demanded a say in wildlands management decisions from now on. Why? Because thousands of Americans heard of the wolf kill and wrote, telephoned and faxed their protest and many of them promised not to travel to Alaska. Animal rights groups followed with an organized call for a tourism boycott.

Gov. Walter J. Hickel said that his office received calls and correspondence from 20,000 Americans, virtually all with the same point of view.

Don't kill the wolves, the Outsiders pleaded. Don't play God and favor one animal over another. Can't one place be left wild? We're going to New Zealand, bye.

Hickel responded by suspending the wolf kill for 1993. The state Game Board will meet again in June, hoping the furor will have cooled.

Please see Alaska, back page

## Alaska...

Continued from Page 1

that time, the whole idea of what Alaskans call "predator control" will be brought to a vote again.

At a recent state-sponsored "wolf summit" in Fairbanks, Tom Garrett, a backcountry guide and member of the Alaska Wilderness Recreation and Tourism Association explained the impact of Outsider protests on the travel industry:

"Whenever people talk about developing or exporting Alaska's resources, they talk only about mining, oil and gas, timber and fisheries. Everyone involved with managing Alaska's resources needs to realize that the resources they are managing are the critical elements of Alaska's tourism industry.

"And altering the resource, whether it is by cutting trees, hunting the bears, mining the land or shooting the wolves, will - I don't say might - will have some impact on tourism."

The big steamship and tour bus companies joined in the outcry.

Environmentalists called it a watershed in modern Alaska.

"What you see happening is the tourism business coming to life as never before as players in the management of natural resources. And the reason is simple: It has a direct bearing on the success of the industry," says Allen E. Smith, Alaska regional director of the Wilderness Society.

But countervailing pressures within the state - pressures to thin out the wolf packs and to develop the wild for the sake of Alaskans - run powerful and deep. And protests from wolf fanciers, environmentalists and the tourism industry seemed only to fuel this rage.

Indeed, the dispute highlights what is undoubtedly one of the greatest cultural gulfs in America - that between space-squeezed urbanites in the Lower 48 and sub-Arctic sourdoughs and natives who live close to the land here in the Last Frontier. So far, it is worth noting, these two divergent sides have almost no sympathy, patience or understanding for each other.

"We have the right to care for this land according to our knowledge of the north. That right must not be trampled, or there will be trouble," the governor told Alaskans recently.

## Elk transplant legislation is a bad idea for Southeast

Dear editor:

I would like to voice my agreement with Loyal Johnson's recent My Turn column regarding the inappropriateness of the elk transplant to Southeast.

Elk are not indigenous game and require abundant grass and leafy plants for survival. Large numbers of the first batch brought

to Etolin Island died of starvation. They were almost domesticated, being from Jewell Wildlife Meadows, where I grew up in Oregon - they were on a protected refuge and fed hay. One of the biologists involved in the transplant couldn't understand why the elk just stood there after being released until I explained to him they were waiting to be fed.

Since there is minimal feed here for these large animals, they compete with the deer - and together neither can be successful.

Another concern is the cost. \$250,000 per year for five years with three additional employees is not a wise use of state funds. This is not necessary spending. It is only for the hunting pleasure of a few in Wrangell Sen. Robin Taylor's district.

I urge people to request that this bill not go any further.

L.K. Larsen

Douglas

JE 3/23/92

## Elk transplant legislation bad for Alaska and the elk

Dear editor:

I am compelled to inform Sen. Robin Taylor that my attraction to Alaska is in no way related to hunting and fishing. He could assume that wildlife, wilderness and exquisite mountains lure me to explore this state. I am in good company and enjoy the friendship of many people in Southeast who do not hunt or fish.

My home before Alaska was the Olympic Peninsula of Washington. I have observed elk herds there hundreds of times and have hand-raised them at a wild animal reserve. They frequent grassy meadows along rivers.

Years ago, the Rocky Mountain goat was introduced to the Olympics and quickly began to thrive. In time, the peninsula's revenues from the logging industry waned and tourism dollars were courted. The mountain goats accommodated most visitors with the close-up pose for a wide-angle lens. People loved to see them.

But the goats foraged on a rare plant and park officials pronounced sentence upon the goats to save the plants. Surely the tourists would still visit without the goats and in spite of the clear-cuts. Several thousands of dollars were spent on research, goat sterilization, goat transportation by helicopter and in final frustration, hunting of the goats by park rangers was allowed. The ultimate fate of an introduced species - death.

Loyal Johnson wrote a sound letter to the editor based on 30 years as a wildlife biologist. Taylor could learn from Loyal's wisdom.

My questions to Taylor are: What are the catch, cage and transportation costs to Alaskans? What is the budget for this project? Where do the funds come from? What do the elk cost? Who owns them? What is the emotional, psychological and physical payment the elk must pay? Will they be drugged for the journey? If so, what are the recurring effects of

the drug?

What mortality rate do you expect for the massive stress endured by the elk? What parasites and other diseases will the elk introduce? How will the eating habits of the elk affect their new neighborhood? How many deer will be displaced?

I worked at a wild-animal establishment for eight years and am familiar with captive wild and their stress tolerances. It is a sad day when we subject a magnificent animal to human manipulation for the purpose of putting a

# Lawmakers' animal legislation i

Sometimes, all of Alaska seems to be an animal story.

This is one of those times. Right now, ruthless mushers are forcing our non-human animal friends to pull heavy loads over treacherous trails, all in the name of so-called sport. Gaia only knows how many of our canine companions will be killed or maimed before the last of the sledding specialists reaches Nome.



**MIKE DOOGAN**

But can our elected officials be bothered to end this senseless degradation of our fellow oxygen breathers? No. They don't care that "dog" is "god" spelled backward. They're too busy with one of their favorite pastimes: messing around with the natural order of things through legislation.

Last week, the state Senate passed bills to kill wolves, transplant elk and ranch moose.

Well, they've got to do something to keep

their minds off their ethics problems. Everybody else's minds, too.

The wolf-killing bill is a response to the death of the plan to have state biologists kill wolves from helicopters in the Interior. State Sen. Bert Sharp, who is guilty of false advertising every time he signs his name, decided to force the state to increase the number of moose and caribou available for human hunters through "intensive management." What does "intensive management" mean? Well, a wolf that's been shot dead has been about as intensively managed as it's possible to be.

This is nothing less than genocide against the wild cousins of our friends that bark and shed. But it could actually mean more moose and caribou for road hunters to kill, good news for flesh-eaters.

Transplanting elk is a much iffier deal. In 1987, then-Rep. Robin Taylor forced the state to transplant 50 elk from Oregon to Etolin Island. The program cost \$50,000 and required us to swap mountain goats and sea otter for the elk. Wolves and bears promptly ate two-thirds of them, and Taylor acquired the nickname "Dead Elk."

## turning Alaska into a real zoo

But the elk have rallied, and probably number around 75. Some swam to a nearby island and set up shop. One was reported to have made it as far as the island that Petersburg's on. Nobody's sure what happened to that one. Maybe it's still there. Maybe it swam back. Maybe it died suddenly and some kind soul decided to preserve its remains in his freezer.

State biologists still don't know how the elk will fare, or what they're doing to the local deer, but Taylor, who is a senator now, is not waiting. His bill would require the state to transplant 300 more elk to four other spots in Southeast.

By my math, that'd cost \$300,000. A small price for letting a handful of hunters kill really big animals, especially when the legislature can make it up easily by cutting welfare payments. The real drawback is finding Alaska animals to swap. That'd be a lot easier if we could get Oregon to accept state senators.

The daffiest of the bills, sponsored by Sen. Mike Miller, would allow moose to be tamed and turned into slaves. They call that

moose ranching, but the most likely result would be a flea-bitten critter chained up at every gas station and gift shoppe from Fairbanks to the Canadian border.

Now, real moose-ranching might have something going for it. The moose is Nature's all-terrain vehicle, with high clearance and go-anywhere hooves. Many parts of the state would be best seen from mooseback, provided you had a good saddle and a stepladder for mounting. It could open up a new chapter in inter-species cooperation.

So maybe killing the wolves and penning the moose isn't all bad. It would leave lots of room for the elk to expand. And if their numbers get out of hand, we can always import Komodo dragons to hunt them.

I know that sounds dopey, but I'll bet I could find a state senator to sponsor the bill.

---

□ Mike Doogan's opinion column appears in the Daily News each Tuesday, Friday and Sunday. You can hear more of Mike Doogan on the Daily Newsline. Call 277-1500 and enter code 2205.

---

# JUNEAU EMPIRE

THURSDAY  
March 25, 1993

*'The Voice of Alaska's Capital City'*

PAPERS CORP.

JUNEAU, ALASKA

16 PAGES, 2 SECTIONS

## Elk flap drives off board member

By DIRK MILLER

THE JUNEAU EMPIRE

A member of the state Game Board said today he is resigning from the panel because he cannot stomach the political maneuvering that led to the board's canceling of a first-ever elk-hunting season in Southeast Alaska.

Kenneth Johns of Copper Center said last week's vote to cancel the season, which had just been approved by the board two days earlier, was driven by politics not biology.

Dick Burley, Game Board chairman, said Sen. Robin Taylor, R-Wrangell, had talked to him about chipping away at the Game

Board's authority if the panel did not rescind its decision to allow a hunting season on transplanted elk near Taylor's hometown.

Last week, the board reversed its vote, 4-3, with members Johns, Jack Didrickson and Roger Huntington voting to keep the season in place.

"Sen. Taylor did mention the possibility of introducing legislation that would take away the board's ability to manage elk," Burley said. "That was probably out of line."

Taylor said that is not how he recalls the conversation.

"I think what I said was I wondered why they hadn't addressed

elk at any other time in the 33-year history of the board," said the Senate majority leader.

Johns said Burley told other board members his version of the conversation with Taylor, and that was likely the reason the elk season was canceled.

"That was a threat," Johns said. "Those were reasons why some of the board members reconsidered the proposal before us. It's the worst form of management I've ever seen in my life."

The board's earlier proposal would have provided a Southeast elk season except on Etolin and Zarembo islands. Board members were concerned that the spreading

elk population could displace native deer.

Didrickson and Johns said the biological information never changed between the vote to allow hunting and the vote to cancel the hunt. That's why he decided to resign, Johns said.

"That vote. That one decision, where the senator got involved in management of game," Johns said in a telephone interview today from Anchorage, where the Game Board is meeting. "I just felt that I'm really just wasting my time ...

"That really, really upset me. I was angry all day."

Johns said he told Fish and Game Commissioner Carl Rosier

of his intentions and also has told other board members. He has yet to send a resignation letter to Gov. Walter J. Hickel. His term was to expire in 1995.

"Immediately after the vote," Johns said, "I got up and talked with the commissioner. I told him I'm done with this, I'm out of here."

Taylor said Johns' decision might be the right thing to do.

"If, in fact, they did what I think they did, he ought to resign," Taylor said. "They're supposed to be up there representing the people of Alaska. I have a hard time believing it's good stewardship to,

Turn to Elk, back page

## Quake

airborne hunting restrictions," DeFazio said.

Carl Rosier, commissioner of the Alaska Department of Fish and Game, said today, "emotionalism" was driving the legislation.

"It's just not based on real understanding of what's going on," he said.

"There's an awful lot of people that feel that it is their business. It's misguided.

The state Board of Game last year proposed killing some gray wolves in the Interior to enlarge moose and caribou herds.

The idea touched off an international outcry and a threatened tourism of boycott of the state.

Critics specifically rejected airborne hunts, saying it is poor sport because pilots can chase animals to exhaustion.

"The Alaska Board of Game figures fewer wolves mean more big game and big game hunters," DeFazio said.

## Elk...

**Continued from Page 1**  
say, only eliminate a portion of wolves in some areas, (but) eliminate all the elk in another area."

Taylor said the politics at play with the elk hunt decision originally came from state biologists. The same is true of a bill he has sponsored this session that calls for the transplant of 400 more elk in Southeast, Taylor said.

The board last week came out with a resolution opposing further elk transplants and opposing another bill that would allow moose farming in Alaska. The board resolution says transplanted elk could compete with native Sitka black-tailed deer for food.

"I think this is the specific activities of biologists who were paid to attend and work at the meeting," Taylor said. "It's a misuse of the board process, by people who should be advising the board on technical matters, taking their political opinions to the board."

Despite opposition from the Department of Fish and Game, both measures have passed the Senate and are being considered in the House.

The original elk transplant several years ago on Etolin Island, across from Wrangell, came at the direction of a bill introduced by Taylor while serving in the House.

Rosier said he also talked with Taylor before the board's elk hunting reversal, and heard no political threats. "It was just that he was extremely upset with the board and department staff over our opposition to the transplant

10,000 to 11,000 years ago.

"It's nice in Alaska to have something a little bit older," said Paul Martin, a University of Arizona emeritus professor of geoscience. Martin said the discovery fits with theories that early Alaskans moved into the American Southwest in as little as 500 years.

The BLM, however, said more sites in Alaska are needed to bolster conclusions about human migration. And Wilson said more ex-

## Usibelli Coal Mi

*Governor's Safety Aw*

*Excellence, for reducing*

*the-job accidents, developi*

*safety plans and programs,*

*offering safety education a*

*training, and involving*

*employees in safety awaren*

*\$25,000*

other bill that would allow moose farming in Alaska. The board resolution says transplanted elk could compete with native Sitka black-tailed deer for food.

"I think this is the specific activities of biologists who were paid to attend and work at the meeting," Taylor said. "It's a misuse of the board process, by people who should be advising the board on technical matters, taking their political opinions to the board."

Despite opposition from the Department of Fish and Game, both measures have passed the Senate and are being considered in the House.

The original elk transplant several years ago on Etolin Island, across from Wrangell, came at the direction of a bill introduced by Taylor while serving in the House.

Rosier said he also talked with Taylor before the board's elk hunting reversal, and heard no political threats. "It was just that he was extremely upset with the board and department staff over our opposition to the transplant, to the bill."

Rosier said he has ordered the Division of Wildlife Conservation to study the transplanted elk population to determine if it is spreading to other islands in the Wrangell area. The elk were transplanted from Oregon to Etolin Island in 1987 by the state and the Ketchikan Sports and Wildlife Club.

Taylor said there have been no studies of the Etolin Island elk, but a doctoral dissertation from Washington state concludes that elk and deer "may have positive behavioral interactions."

Johns' resignation could help resolve another board question. Currently, the Legislature is considering the confirmation of five appointees to four Game Board seats. A Juneau resident, former mayor Ernie Polley, was nominated in January by Gov. Walter J. Hickel. But another hopeful, Jack Didrickson of Palmer, is refusing to give the seat up.

Didrickson had been appointed by Hickel last year, but the governor's office decided to replace him.

John Manly, Hickel's spokesman, said the governor could decide to appoint one of the men to Johns' seat.

"As far as Didrickson, I think our stand is pretty clear, we haven't submitted his name," Manly said. "If (Johns) does submit a resignation, I guess we'll take a look at it."

*training, and involving employees in safety awareness.*

\$25,000

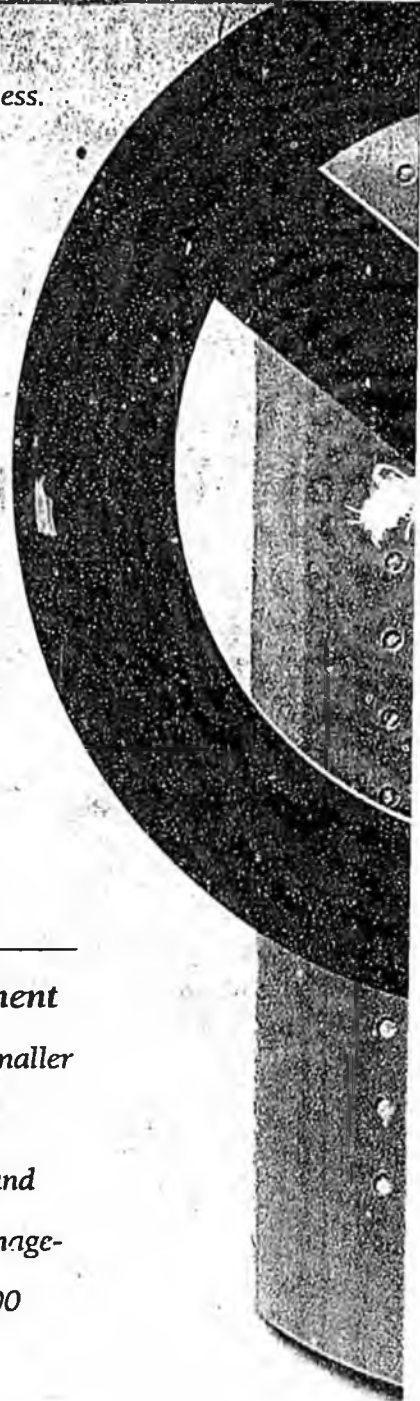
## **Ice Foods, Inc.**

*Outstanding Achievement Award, a leader among smaller companies, recognized for outstanding achievements and improvements in safety management and programs. \$10,000*

*ARCO also honored by the Governor including Echo Bay Medical Services C*

*at*  
*Than*  
*as*

**ARCO**



# Transplanting wild animals can bring trouble

By TOM KIZZIA

ANCHORAGE DAILY NEWS

**HOMER** — Alaska's experience with wild-animal experiments provides plenty of cautionary examples and a little encouragement to legislators debating the merits of elk transplants and moose farms.

Freelance efforts to release domestic rabbits, foxes and northern pike have thrown natural systems into disarray. On the other hand, state efforts to transplant native species such as moose, caribou and deer to new regions some-

times have expanded hunting opportunities without threatening an existing balance.

One apparent success is on the Kenai Peninsula, where a caribou herd introduced in the mid-1960s has grown to the point where the state decided this month to allow hunting for the first time.

Manipulation of fish and game species is restricted by the state, which fears damage to existing wildlife through predation, disease or competition for food.

A private release of pike into a

lake in the 1970s has introduced the voracious predators into the Kenai River system, with its world-class trout and salmon fisheries. Pike have been spreading even more swiftly through the Susitna River drainage.

Along the Kenai, the pike have moved only slowly into the Moose River, a major tributary, and seem to use the main stem of the river only for transit.

But in the Soldotna creek drainage where they were first introduced, pike now outnumber trout,

said Dave Nelson, a biologist with the Alaska Department of Fish and Game.

Ring-necked pheasants have been raised and released into the grass country of Homer where they have survived the recent mild winters. So far, the main problem with pheasants has been one of aesthetics, at least for people who know that the colorful birds aren't natural to Alaska.

But disease is always a concern when domesticated animals are released into the wild, said Fish

and Game biologist Ted Spraker. "Alaska is pretty much disease-free compared to the lesser 48," Spraker said. "We'd like to keep it that way."

Earlier this year, the state filed criminal charges against a Seward man for releasing domestic rabbits on Montague Island in Prince William Sound. Biologists feared a repeat of the rabbit boom on Middleton Island, outside the Sound, where rabbits were released by residents of a former communica-

Please see Game, back page

Juneau Empire 3/29/93

## Game...

Continued from Page 1

tions station.

Don Coisman, 60, told authorities he wanted to hunt New Zealand white rabbits on Montague when he couldn't find blacktail deer — which themselves were introduced in 1916 by the Cordova Chamber of Commerce. The charges of unlawful release of game were dropped this week after surveys indicated the 32 rabbits probably were gobbled up by mink and eagles.

"We're convinced that he understands he shouldn't be doing this and wouldn't be doing it again," said Assistant District Attorney Richard Maki. "He was an Alaskan old-timer, and I don't think he perceived the gravity of the situation."

"It's very unwise," said Cordova Fish and Game biologist Roy Nowlin. "I don't think we have to look very far to find disasters re-

sulting from the introduction of exotics."

Nowlin mentioned Australia, where introduced rabbits were able to spread unchecked by predators and provided one of the world's textbook examples of ecological disaster, stripping the land of vegetation.

Alaska's oldest exotic-species problem may still be its most serious.

Foxes brought by Russians appeared in the Aleutians within a decade of Vitus Bering's 1741 voyage of discovery, and despite eradication efforts toxes still prey on bird rookeries in many remote islands.

A recent debacle involved a government slaughter this winter of reindeer on Hagemeister Island in Bristol Bay where a transplanted herd had devoured all natural food on the island and faced starvation.

A new problem may be posed by people who raise hybrid wolves,

according to Spraker. The Soldotna-based biologist said one of his biggest worries is that hybrids will be released and mongrelize the Peninsula's timber wolves, leaving them less well-suited to survive in the wilds.

Some wildlife experiments have been successful, such as the introduction of the Killey River caribou herd on the Kenai Peninsula in 1985 and 1986.

The state moved 80 caribou from the Nelchina herd to a region where caribou disappeared early this century, probably because of commercial hunting. The Killey River animals now number 222 — enough for the state to grant 25 hunting permits this year, Spraker said.

Other successes cited by the state include moose moved to the Copper River Delta and grayling planted in mountain lakes near Cooper Landing.

The transfer of blacktail deer early in the century from South-

east Alaska to similar coastal ranges in Prince William Sound and Kodiak has been popular with hunters.

But even deer transplants have been controversial, as when the state suggested introducing deer to the Kenai Peninsula mainland several years ago. One opponent was Kenai Fjords National Park, where officials said their mission was to maintain natural systems.

In Juneau, the state Senate has passed legislation this year requiring the state to expand a program moving elk to Southeast from the Lower 48.

Fish and Game opposes the idea, saying it is expensive and would hurt existing deer populations. A second Senate bill would legalize moose farming, which opens another sensitive subject in Alaska.

"The primary controversy in Alaska is that putting an indigenous game animal behind a fence reduces its majesty and mystique.

There's a certain merit to that," said Bill Ward, the state's only operating elk farmer.

Elk are not indigenous to Alaska, although wild herds now exist on Afognak Island as well as in Southeast.

Ward has 56 tattooed and ear-tagged elk on his 160-acre farm south of Soldotna, where he has operated since 1990. He makes money selling velvet elk antlers to Asia markets, and said that as his herd expands he plans to sell meat as well.

Ward said moose are less social than elk and are harder to domesticate. In addition, he said, there is no market for moose meat or antlers.

"My personal opinion is the moose doesn't have the market value, but I'm not going to challenge someone else's business rationale," he said.

Fish and Game biologists say domesticated moose would be sus-

ceptible to disease that could be transmitted to wild moose. State officials also say it would be harder to make cases against out-of-season moose hunters if moose meat were available commercially.

But proponents of the legislation say moose farming has been successful in Scandinavia and Russia. A leading backer of the bill, Doug Welton of Fairbanks, has said he would like live moose at his gift shop as a tourist attraction.

Apart from the questions about moose, Ward said the proposed legislation provides needed regulation of game farming, putting animals such as domesticated reindeer or buffalo under authority of the Division of Agriculture.

"Fish and Game are just philosophically opposed to the private ownership of game animals," Ward said. "I don't want to be regulated by an agency that's trying to put me out of business."

THE  
FOLLOWING  
DOCUMENTS  
ARE  
POOR  
ORIGINAL  
COPIES

By R.T. SKIP WALLEN

I am concerned about the bill to translocate elk to four different areas in Southeast Alaska. The Alaska Department of Fish and Game warned that problems may develop between this exotic species and native Sitka blacktail deer.

Introduced elk have displaced native deer in several areas of British Columbia. Introduction of exotic species sometimes succeeds, but is more often a disaster for native wildlife through the spread of disease, competition for food or space by impacting habitat, or other unanticipated reasons. It's not sensible to risk our highly prized, culturally essential Sitka deer for the doubtful benefits of an exotic species.

Beyond this, there are far more serious concerns for wildlife in the Tongass National Forest, paramount of which is loss of habitat through extensive clear-cut logging. During my time on the Board of Game, we had contact with Southeast area biologists and took expert testimony in the Tongass

### Introduction of exotic species sometimes succeeds, but is more often a disaster for native wildlife through the spread of disease, competition for food or by impacting habitat.

We were presented information that under the present 420 million board-feet-per-year logging plans for the Tongass, we can expect a 35 percent loss of sustainable deer harvest forest-wide, with losses more than double that in some areas.

Compared to the magnitude and importance of addressing this issue, introducing elk is a misguided direction for wildlife management and a needless additional pressure on deer.

The fact that elk eat devil's club has been advanced as a point in favor of the introductions. Such superficial reasons do not give assurance of a well-studied plan. Devil's club, however unpleasant to the touch, is an integral part of the range, a plant that is eaten by

deer, black bears and brown bears.

Then there is the argument that elk will provide a variety of prey for hunters. Even if you buy that line, it is perhaps not widely known that moose from the mainland river valleys are, on their own, with no department tune or money, pioneering some of the islands. They have swum across from the mainland river valleys and established populations in places they have never been before, such that on both Mitkof and Wrangell islands the board recently opened moose seasons.

Neither moose nor deer will survive here beyond a certain stage of forest regeneration, but for now, moose are available to hunters.

The department has been criti-

cized for not doing research to prove its contention that elk may harm deer populations. The department is already short of funds to do vital and overdue research and to deal with pressing management issues. The burden of proof for such an unnecessary venture as this should not be added to the department's burden at this time.

The moose farming-roadside zoo bill which has just passed the Senate is not a good idea either. The Board of Game, acting with the strong support of the department, twice defeated similar proposals during the past three years.


Here is another case of doubtful gains to a few, at the price of great risk to the public wildlife resource.

Greater benefits accrue to all from protecting our wild, native ecosystems and foregoing the introduction of exotics and the farming of wildlife, until there is compelling reason to do otherwise.

\*\*\*\*\*

R.T. Skip Wallen of Juneau is a former member of the state Board of Game.

Fishing & Hunting News  
 Nov 2-8-91  
 Vol 49  
 Issue 417



# Biologist sounds warning on elk transplant plan

## Captive elk can carry, pass on tuberculosis, other human diseases

PETERSBURG — Proposals to transplant elk into southeast Alaska have become a bone of contention now that SB 43 (a bill to encourage the transplants) has moved to within striking distance of becoming law. Proponents of the bill cite Alaska Department of Fish and Game resistance as a major obstacle toward the bill's passage. *F&H News* called Charlie Land in the Petersburg office to discover why ADF&G would oppose transplanting elk. While Land's opinions do not represent the department as a whole, he is one of the most qualified to speak on the subject.

Land's objections to transplanting elk base themselves in experiences in other parts of the globe. "I worked with exotics down in Texas so I have more experience than just reading about it," says Land. "What has happened with (domestic or ranched) elk is that elk have contracted bovine tuberculosis from domestic livestock." "New Zealand had a bad experience with it and in Alberta (Canada) they have 4,000 elk that are supposed to be domestic and they're having to destroy 50 to 80 percent of their captive elk (because of bovine TB.)"

The danger isn't only to elk — humans can contract bovine TB. A study reports that 40 people currently under medical treatment or observation for bovine TB contracted it from dead or living ranched elk. Land reports the disease causes enough problems in humans that veterinarians in

Alberta have refused to work on domestic elk for fear of contracting the disease.

"I just think it's a bad idea," he says. "Bovine TB is very real in the captive elk and it has also been found in free-ranging elk in the Yellowstone National Park area."

Elk can be tested for bovine TB, brucellosis, and a host of other disorders. Unfortunately, Land reports, the tests don't always work.

"Some animals don't test positive when in fact they should. They develop the disease when they are placed under stress such as captivity or long distance transportation.

"Brucellosis is another very serious sort of thing that can pass the screening test and not test positive. Parasites are also sometimes not detected . . . when you start working with ranched elk, you don't know where they came from.

"As a person who has worked with exotics before, in Texas we tested for everything we knew. Now I find out that some of the animals may have slipped by . . . people can honestly represent animals as clean when in fact they aren't."

Land also supports more study of existing herds of transplanted elk in other areas of Alaska before bringing in more animals. "I think it would be very prudent to continue to watch those elk on Etolin (Island) and be sure we didn't bring in anything we didn't want.

"This is not something that we're opposing just to be

contrary," Land adds. "Shoot, I'm a life member of the Rocky Mountain Elk Foundation and I have a pretty nice bull hanging on my wall."

Another item that has raised the hackles of pro-elk activists in Southeast has been concerns over possible competition between elk and deer.


The activists report seeing deer running with the elk, (for protection from the wolves, they contend) and eating different types of foliage. They feel the elk do not compete with the deer, and in fact might even help protect them from predators.

Land disagrees. While he admits that the issue is not well studied, he has gone through most of the available literature. While no one knows just how much elk and deer compete for the same range, he says some competition exists.

"Everything that I've been able to find out says there is some level of competition between the deer and elk."

While Land, and others high in the ADF&G bureaucracy oppose the introduction of elk into Southeast, Land made sure to point out ADF&G's public service role. While he personally may not want elk transplants, he says "it all comes down to what the public wants."


People interested in promoting one side or the other of this issue can contact the ADF&G's legislative liaison Geron Bruce at 465-4100.



### ACROSS THE NATION

**CITIZENS MONITOR WATER QUALITY: LAKE OF THE OZARKS, Mo.** — The Missouri Departments of Natural Resources and Conservation has signed a three year agreement to train public volunteers to monitor water quality in streams, rivers and lakes. The goal of the agreement with the state agencies is to keep the general public informed about the quality of

1993, Game and Parks wildlife biologists have released antelope south of Rushville in Sheridan County. Thirty-nine pronghorns have been released so far. The animals were all trapped in Colorado and transported by truck to Sheridan County. Game and Parks was able to secure a 250,000-acre release area with the cooperation of landowners in the county. The Sheridan County release



## SELL & EARN SCOREBOARD

Sign up your friends to F&H News and get FREE gear!

<p>Sign Up</p> <p><b>1</b></p> <ul style="list-style-type: none"> <li>Alvey 50CI Reel</li> <li>Buck Folding Hunter Knife</li> <li>2 Daiwa Rod/Reel Combos</li> <li>Legend 2 Cell Flashlight</li> <li>Luhr Jensen Smoker</li> </ul>	<p>Sign Up</p> <p><b>2</b></p> <ul style="list-style-type: none"> <li>Abu Garcia 6500-C Reel</li> <li>Caddis Deluxe Float Tube</li> <li>Eureka Prism Tent</li> <li>Fenwick HMG Casting Rod 8'3"</li> <li>Fenwick 11110</li> </ul>
--	---

**THE FOLLOWING PAGES ~~S~~ MAY  
NOT FILM LEGIBLY BECAUSE OF  
THE POOR QUALITY OF THE ORIGINAL**

blem

l the bigger news on the red a sort of substitute for

ble. It's just help. More rather than privileges — loyalty must roll. Pringle ally paid to labor costs.

o back to the three million through one beg the us, 348,000 employe

The public

na, President the leader of

nations

lateral aid

President

the

news cannot

of Yeltsin's

rest for

all the

global

# Point of view

## ADF&G's transplant ideas aren't factual

By ROBIN TAYLOR

It seems appropriate to make a statement regarding the Alaska Department of Fish and Game's efforts to generate hysteria regarding the existing elk transplants and the transplants proposed in Senate Bill 43.

In the late 1920s the federal government transplanted elk and deer on Afognak Island. Six decades later, both species survive in strong numbers and today the deer outnumber elk by a ratio of ten-to-one. I believe the Afognak Island experience clearly shows that elk and deer can live together and do not compete for food.

Unfortunately, in the 66 years since the initial introduction of elk and deer to Afognak, no studies have been conducted to determine the interactions of

these animals.

In 1987, ADF&G and the Ketchikan Sports and Wildlife Club transplanted elk from the Pacific Northwest to Stolu Island. This was done after much foot dragging by the department along with statements that the elk would not survive and the entire project was a waste of money. The Biolin transplant was conducted with the assistance of the wildlife agencies from two other states and included the participation of biologists and veterinarians to assure the elk captured for release were disease free. After the anticipated first winter die off, the Biolin elk have rebounded and now number between 100 and 150.

Unfortunately, in the six years since the Biolin experience the ADF&G

not conducted the studies needed to determine the interaction between the transplanted elk and native Sitka Black-tail deer.

Instead, the department is raising all of the old arguments and predicting the worse case scenario. They claim Canadian studies indicated that elk and deer compete, to the detriment of the deer. My staff contacted the Ministry of the Environment in Victoria British Columbia and the game management in Nunavut. Neither agency had a level edge of any studies conducted in the province demonstrating deer/elk food conflicts.

A doctoral thesis written by Claus R. Svedholm at the University of Washington in 1992 concludes that the original assumption that the elk were so

cially dominant over deer could not be confirmed. Instead it appeared that elk and deer may have positive behavioral interactions. I suspect that one of the reasons ADF&G biologists object to elk transplants is the fact that elk, deer and moose appear to thrive in the logged areas of Southeast Alaska.

In short, ADF&G has done no studies of its own and has based its rhetoric on preconceived conclusions reached in other studies that used inference, not fact.

If only the deer on Afognak could talk! They'd tell that 66 years of "competition" ain't bad. After all, the deer are ahead ten-to-one.

(Robin Taylor of Wrangell is a senator in the state legislature.)

# Letter to the editor

## Not new story

EDITOR, Daily News.

The ecological balance is being upset! How many times have you heard those words in the last 10 years? Well guess what, it's been getting upset since the world began, in the last 66 million years the whole state of Alaska was covered with ice. Boy she was upset!

At one time Alaska had wild horses, elk, giant moose, mammoths, huge cats, and short-faced bears like the one (sketch) found in the caves near Whale Pass.

Apparently the group of people who monitor the "upset" business decided the elk on Etolin and Zarembo islands had to go or the balance would teeter again.

A lot of money and effort went into getting these elk started on the islands, and now I see they are going to get it back by there is not

righteous about his elk transplant bill. He helped pass it out of the Senate with the Department of Fish and Game adamantly opposed. The he appealed (preserved?) Commissioner Rosen to advise the Board of Game to reverse its decision to open elk hunting on surrounding islands around Etolin and Zarembo. Why? Maybe because it was seen as politically damaging to Taylor's bill.

To quote Commissioner Fowler, "He (Taylor) felt that the board basically was deciding state policy in competition with the Legislature." I don't see it that way. I see the Legislature (Taylor) deciding Board of Game policy for state game management in competition to the board's policy/provisions.

I trust the board process the Fish and Game expertise, the advisory board process and public testimony a lot more than I trust political maneuvering by hot-shot politicians trying to drive their agenda right smack over the top.

there are only two areas in southeast capable of supporting any kind of herring fishery anymore.

I feel the recent allocation squabble over the Kah Shakes/Cat Island herring quota is an example of misdirected concern. This allocation issue between Metlakatla and the Kah Shakes permit holders would not even be an issue if we had healthy herring stocks throughout Southeast. It appears we're fighting over the crumbs.

Sincerely,  
ANDREA HERNANDEZ  
Point Baker

P.S. If you are concerned about herring management you can contact The Herring Coalition 7942 S. Tongass Hwy., Ketchikan, Ala: a 99801

## Stocks declining

EDITOR, Daily News:

I have noted the alarming decline of herring in the Narrows and the effort of

walk over to Peacock on the backs of millions of dumplings? Where are those fish today?

Management of herring and salmon plays a big part in the decline of those stocks locally. Management policies have resulted in historically high returns statewide yet their effect of the Narrows has been negative. A comprehensive review is necessary.

It is stupid and shortsighted to harvest herring just as they are about to spawn (ever, a fifth grader can figure that out). Why do we do it with salmon? A more sensible policy would be to only fish salmon when they're not getting ready to spawn - say Oct. 15 until April 14. (Coincidentally, coinciding with the winter troll seasons. Have the trolls been right all along?)

I call for the herring coalition, Tongass Conservation Society, and Historic Ketchikan to join with me in a area-wide effort to reconstruct the Narrows to 1960s levels, restrict harvest



March 18, 1993

Senator Robin Taylor  
Room 30  
State Capitol  
Juneau, AK 99801-1182

Senator Taylor,

To follow up my phone call to your office on March 16th concerning S.B. 43.

First I am wondering where the public input supporting this Bill came from. I have, myself, just recently been made aware of the Bill at a Prince of Wales Advisory Council meeting. The P.O.W. Advisory Council represents all the communities on Prince of Wales Island. Only one of the representatives at this meeting was aware of S.B.43, and all of the membership present were flabbergasted that this measure had passed through the Senate without our comments. (Also notable, those present were opposed to introducing elk to Prince of Wales).

Since learning of S.B.43 I have questioned sport and personal use hunters in Craig and have yet to find any support for the Bill. All those I have talked with firmly believe that the addition of elk to this area can only bring harm to native deer population.

I also see no fiscal note attached to this legislation, it would no doubt be substantial. Senator, there are many on going and proposed projects and programs in this area where this kind of money would be a lot better spent. I strongly urge that S.B.43 be reconsidered and at the very least that Prince of Wales Island be deleted from its text.

Sincerely,

Dennis Watson, Mayor  
City of Craig

cc: Senator Zharoff  
Representative Mackie  
Representative Williams  
Senator Halford  
Representative Barnes

2509 4<sup>th</sup> Ave.  
Ketchikan AK 99901  
15 January 1994

The Hon. Bill Williams  
Representative from Ketchikan  
State House of Representatives      Re: SB 43  
JUNEAU AK 99801-1182

Dear Bill,

I am upset that, in a time of shrinking income to the state, ADF&G wants to spend over a million dollars to bring more elk to SE Alaska, to do who knows what to the Sitka deer habitat. At least ADF&G should wait until the impact of the elk already here has been evaluated. I've heard that the elk are out-competing the deer for food. Isn't there a possibility that these larger animals will eat themselves out of habitat as they multiply? Deer are in balance with available food here in South Southeast. Will elk be?

What effect will introduced elk have on a viable subsistence lifestyle? Will they bring diseases local game may not be able to withstand? Bill, this bill is July scary. Will there availability to predators, i.e. wolves, boost predator populations unacceptably? ~~✗~~

Given the cost of importing an alien species to an area that has been really good for a healthy subsistence life-style, and possibly wrecking that good balance, take heed! Please hold off on this until the facts are in.

Remember what imported pigs did to Hawaii? There are other horror stories that give me pause. The more I think of the damage more imported elk could do to our beautiful land, the more I think SB 43 should not be rushed through. Trophy hunters may think it great. Should we sacrifice our life-style so some trophy hunter can get an elk rack?

Keep SB 43 in committee for a lot of scrutiny, please.

Yours sincerely  
Connie

Constance F. Griffith

Mr. Mike Brown

934 Monroe St.

Ketchikan AK 99901 225-7974

CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: PLEASE VOTE AGAINST ANY BILL CALLING FOR THE  
INTRODUCTION OF ELK OR ANY OTHER NON-NATIVE SPECIES INTO OUR  
FORESTS. THERE ARE ENOUGH ISSUES WITH WILDLIFE AS IT IS:  
SPORT, SUBSISTENCE, AND HABITAT LOSS. PLEASE DO NOT WASTE  
MY TAX DOLLARS ON ELK INTRODUCTION (STATE OR FEDERAL).

THANKS.

DISTRIBUTION 02

DISTRIBUTION 20

FROM: Mrs. Carol Jensen  
8451 Greenhill Wy.

Anchorage AK 99502 344-7078  
NON-CONSTITUENT  
BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: NOTE PAGE B2 OF MARCH 18TH ANCHORAGE DAILY NEWS  
REGARDING ELK DEPLETING THE ISLAND DEER'S FOOD SUPPLY.  
THIS IS ONE EXAMPLE OF THE NEGATIVE IMPACT OF ELK ISLAND  
INTRODUCTION. YEAR AROUND HUNTS KILL YOUNG (THROUGH  
STARVATION/ORPHAN) AND PREGNANT FEMALES.  
DISTRIBUTION 09

FROM: Mr. Elroy Young  
Box 6161

Sitka A.K 99835 747-5155

NON-CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: I OPPOSE SB 43. ELK CAN LOWER DEER NUMBERS IN  
ALASKA AND WE CAN'T AFFORD THE PROJECT FINANCIALLY OR  
ECOLOGICALLY.

FROM: Mr. Bill Davidson  
304 Lake St. Rm 104

Sitka AK 99835 NONE  
NON-CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: AS A HUNTER OF SITKA BLACK TAIL DEER IN THE SITKA  
AREA, I OPPOSE TRANSPLANTING OF ELK TO KRUZOF IS.. I  
TYPICALLY TAKE ONE OR SOMETIMES TWO OF MY DEER FROM THIS  
AREA, AND I RELY ON THIS AREA AS A CONSISTENT RELATIVELY EASY  
PLACE TO HUNT. AN ELK TRANSPLANT COULD RUIN DEER HUNTING ON  
KRUZOF IS.. WITH INCREASED LOGGING PLANNED CLOSE TO SITKA,  
GOOD DEER HUNTING PLACES WILL BE INCREASINGLY MORE  
VALUABLE TO PRESERVE MOST TRANSPLANTS OF EXOTIC FISH OR  
GAME

DISTRIBUTION 20

FROM: Ms Diane Farren  
PO Box 9526

Ketchikan AK 99901 225-4206  
CONSTITUENT

SUBJECT: FISH & GAME (GAME)

MESSAGE: I THINK SPENDING \$300,000 OR ANY AMOUNT OF MONEY ON IMPORTING ELK IS A RIDICULOUS ABUSE OF POLITICAL POWER. OUR MONEY NEEDS TO BE SPENT ON EDUCATION AND HEALTH RELATED PROGRAMS. DON'T ABUSE YOUR POSITION WITH THIS TYPE OF LEGISLATIVE ACTIVITY.  
DISTRIBUTION 60

FROM: Mr. Robert Ellis  
Box 2966

Sitka AK 99835 747-8950

NON-CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: PLESAE VOTE AGIANST THE ELK TRANSPLANT BILL. WE  
HAVE GOOD POPULATIONS OF DEER WHICH ARE USING ALL THE  
AVAILABLE FOOD. ELK COULD ONLY REDUCE THE PRESENT DEER  
HERDS. THIS PROJECT IS BIOLOGICALLY, FISCALLY AND POLITICALLY  
IRRESPONSIBLE. PLEASE HOLD PUBLIC TELECONFERENCED HEARINGS  
AND INVOLVE STATE GAME BIOLOGISTS.  
DISTRIBUTION 21

FROM: Mr. Earl Mossburg  
1450 Tongass Ave.

Ketchikan AK 99901 225-9330  
CONSTITUENT  
BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
SUPPORTS

MESSAGE: I AM 100 PERCENT IN FAVOR OF THIS BILL. FISH AND GAME  
ISN'T AS EFFICIENT AS THEY WISH THEY WERE IN THEIR BIOLOGY  
AND THEIR ETHICS.  
DISTRIBUTION 10

FROM: Mr. Verne Albright  
612 Anderson Drive

Ketchikan AK 99901 225-4785  
CONSTITUENT  
BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
SUPPORTS

MESSAGE: I SUPPORT THE INITIATIVE TO GET ADDITIONAL ELK TO  
TRANSPLANT IN ALASKA.  
DISTRIBUTION 10

FROM: Ms. Megan Garvey  
Box 6215

Sitka AK 99835 747-5832

NON-CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: AM ADAMENTLY OPPOSED TO INTRODUCING ELK TO ALASKA.  
WILDLIFE MANAGEMENT SHOULD BE LEFT TO PROFESSIONAL  
BIOLOGISTS. I APPRECIATE THAT THE ADF&G IS CAUTIOUSLY  
EXAMINING PREVIOUS ELK INTRODUCTION AREAS. NUMEROUS  
PROBLEMS OCCUR WHEN EXOTIC SPECIES ARE INTRODUCED INTO AN  
ECOSYSTEM. MOST VISITORS COME TO SEE ALASKA'S NATURAL  
INTACT ECOSYSTEMS.  
DISTRIBUTION 10

FROM: Mrs. Johanna Fagen  
9084 Sheiye Way

Juneau AK 99801 789-4608

NON-CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: I THINK IT IS A RIDICULOUS WASTE OF MONEY. I AM  
CONCERNED A LACK OF KNOWLEDGE SO SEVERE ON THE PART OF THE  
LEGISLATURE ON THE CONCEPT OF BIODIVERSITY WILL LEAD TO  
FEDERAL INTERVENTION. UNDER THE NATIONAL FOREST  
MANAGEMENT ACT, THE FEDERAL GOVERNMENT IS MANDATED TO  
PROTECT BIODIVERSITY AND THIS WOULD CERTAINLY GIVE  
THEM AN EXCUSE TO INTERVENE WITH STATE MANAGEMENT OF GAME  
ON FEDERAL LAND.  
DISTRIBUTION 06

FROM: Ms. Cheryl Pritchard  
Box 6209

Sitka AK 99835 NONE  
NON-CONSTITUENT  
BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: THE DEPARTMENT OF FISH AND GAME IS NOT KEEPING UP  
WITH MANAGEMENT OF EXISTING REVENUE PRODUCING FISHERIES.  
MANAGE THE RESOURCES HERE FIRST. BRINGING IN ELK IS A PET  
PROJECT FOR A SELECT FEW AT THE EXPENSE OF THE RESOURCES  
THAT ARE HERE  
DISTRIBUTION 60

FROM: Mr. Ken Bare  
Box 6209

Sitka AK 99835 NONE  
NON-CONSTITUENT  
BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: PLEASE VOTE AGAINST SB 43 THE IMPORTING OF ELK TO  
SOUTHEAST ALASKA. MOST STATE BIOLOGISTS ARE AGAINST IT FOR  
SOUND REASONS. THE DEPARTMENT OF FISH AND GAME IS ILL FUNDED  
AS IS.  
DISTRIBUTION 60

FROM: Mr. Lewis Sharman  
Box 21

Gustavus AK 99826 NONE  
NON-CONSTITUENT  
BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: IT SEEMS TO BE A WASTE OF MONEY TO SPEND 1.5 MILLION  
ON SOMETHING THAT HAS RARELY WORKED ANYWHERE ELSE. AS A  
WILDLIFE BIOLOGIST, I RECOGNIZE CLEARLY THE RISKS INVOLVED  
WITH TRANSPLANTING ANY EXOTIC SPECIES INTO A HABITAT IT  
DOESN'T NATURALLY OCCUR IN.  
DISTRIBUTION 07

FROM: Mr. Kenneth Merrill  
379 W. Katmai

Soldotna AK 99669 262-1261  
NON-CONSTITUENT

SUBJECT: FISH & GAME (GAME)

MESSAGE: I HAVE BEEN INFORMED THAT FUNDING FOR THE 'MOOSE  
PENS' RESEARCH CENTER HAS BEEN DELETED FROM THE SENATE'S  
VERSION OF FISH & GAMES'94 BUDGET. THIS APPEARS TO BE SOME  
KIND OF POLITICAL POSTURING ON SEN. TAYLOR'S PART, DUE TO LACK  
OF SUPPORT FOR HIS MOOSE FARMING AND ELK TRANSPLANT BILLS. IF  
THIS IS THE CASE, I WOULD HOPE THE MEMBERS OF BOTH HOUSES  
HAVE THE PRESENTS OF MIND TO CORRECT THIS INJUSTICE AND  
REINSTATE THE NEEDED FUNDING. THANK YOU.  
DISTRIBUTION 60

FROM: Mr. Frank Keim  
Box 54

Fortuna Ledge AK 99585 679-6114  
NON-CONSTITUENT

BILL#: SB 43 GRANTS TO TRANSPLANT ELK  
OPPOSES

MESSAGE: PLEASE VOTE AGAINST SB 43.  
DISTRIBUTION 60

FROM: Mr. Frank Keim  
Box 54

Fortuna Ledge AK 99585 679-6114  
NON-CONSTITUENT

BILL#: SB 77 INTENSIVE MANAGEMENT OF GAME RESOURCES  
OPPOSES

MESSAGE: PLEASE VOTE AGAINST SB 77.  
DISTRIBUTION 60

**THE FOLLOWING PAGES MAY  
NOT FILM LEGIBLY BECAUSE OF  
THE POOR QUALITY OF THE ORIGINAL**

THE  
FOLLOWING  
DOCUMENTS  
ARE  
POOR  
ORIGINAL  
COPIES

#### Alaska State Legislature

According to Robin Taylor there is no evidence supporting the claim that elk and deer will compete for the same food source, nor will the elk introduce any diseases to resident wildlife populations of Southeast Alaska. Mr. Taylor has not taken the time to contact the Alaska Dept. of Fish and Game where in fact there is well documented evidence supporting why he should NOT introduce elk to Prince of Wales Island.

Biologists documented the movements and feeding behavior of elk on Etolin Island for a two year period. During this time the majority of the elk were found in the coastal fringe where the researchers found extensive browsing on blueberry bushes, plants which are very critical to winter deer survival. Elk also show high plasticity, which means they will eat anything from shrubs to conifers. On the other hand deer are much more selective and require such higher nutrient plants found in the forbes and sedges. When elk move through an area they will eat everything, this means a 71% overlap in food sources which causes a very severe food competition with the resident deer.

The potential for introducing diseases and parasites is enormous. The neurological worm parasite is found in resident elk populations throughout the Western United States. This parasite targets the brain, and even though proponents claim each elk will be given a clean bill of health or have only a 50% probability of detecting the parasite. Even having

tuberculosis which is found in elk is not 100% detectable. The giant liver fluke is a flatworm which occurs in deer, elk, and moose. Although deer and elk can survive this infestation, moose do not. The flatworm will destroy the liver of a moose and eventually cause death. Elk can introduce this parasite. Do we wish to destroy the mainland moose populations?

On Vancouver Island, British Columbia elk were introduced to the endemic caribou and wolf populations. Obviously the wolves prey on the smaller prey, the deer. However, as deer populations decline due to wolf predation the wolves turn to elk as an alternative food source. The wolf population remained stable and even increased, the last few remaining deer are taken along with the elk and finally the wolves starve.

Because of this evidence Alberta and British Columbia have installed moratoriums on any elk transplants. Do we have to make the same mistakes? I would think that any rational person can understand why we do not want elk on Prince of Wales Island.

Lewis Hiett

P.O. Box 92

Unalaska, Alaska

99921



March 24, 1993

MAR 26 1993

Representative Bill Williams, Chairman  
House Resources Committee  
ALASKA STATE LEGISLATURE  
Juneau, Alaska 99801-1182

Re: Response to Senate ~~BILLS~~ 43, 46, & 77

Dear Representative Williams:

~~Shaan Seet opposes SB 77~~: An Act relating to the powers of the Board of Game and to ~~intensive management of big game to~~ achieve higher sustained yield for human harvest. This bill does not acknowledge the subsistence priority for the use of fish and wildlife resources within the State of Alaska, and will be detrimental to Native subsistence users.

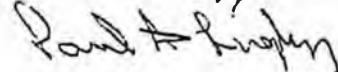
Additionally, ~~Shaan Seet opposes the elk transplantation~~ proposal as contained in Senate Bill 43. This plan is not complete and until the possibility of harm to indigenous game stocks is removed from it, it should not be attempted. The State should maintain a conservative attitude about such proposals and should err on the side of conservation rather than taking a chance that could cause irreparable harm.

Representative Bill Williams, Chairman  
March 24, 1993

Page Two

~~Please let us know what your views are on these bills.~~ We  
would appreciate it!

Sincerely,  
SHAAN SEET, INC.



Paul A. Lingley  
President



March 24, 1993

The Honorable Jerry Mackie  
Alaska State Legislature  
House of Representatives  
Alaska State Capitol  
Juneau, Alaska 99801-1182

MAR 25 1993

Dear Jerry:

Thank you for your letter of March 17, 1993, concerning intensive game management, transportation of elk, and moose farming.

Please be assured that Sealaska does intend to provide testimony on these issues as actions contemplated by the Bills would have direct adverse impact on Sealaska lands not only in terms of subsistence management but also in terms of forest regeneration and silvaculture.

The Sealaska Natural Resources Department will contact the House Resources Committee to schedule testimony.

I enjoyed our conversation yesterday. If there is anything we can do to be of assistance to you, please don't hesitate to contact me.

Sincerely,

SEALASKA CORPORATION

Leo H. Barlow  
President & CEO

cc: Honorable William K. Williams ✓  
Alaska State Legislature  
House of Representatives  
House Resources Committee

Alan L. Williams, Sealaska Chairman

Robert W. Loescher, Exec. V.P.,  
Sealaska Natural Resource Mgt.

LoAnn Swanson  
P.O. Box 1161  
Ward Cou. Ak 99928

1-22-94

Representative W. Williams

State Capitol

Juneau Ak 99801

I am writing to express my opposition to  
S.B. #43. As a 30 year resident of Ketchikan,  
I have lived a subsistence life style & raised my family  
in that fashion. I believe that transplanting elk in  
south-east Alaska would severely threaten the habitat  
of the <sup>sika</sup> black tailed deer & therefore adversely effect the  
many people who depend on these deer for their food.

Please listen to the needs of the people who live  
here

Thank you  
LoAnn Swanson



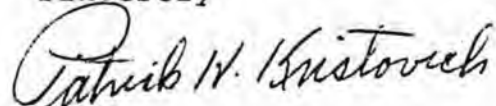
January 18, 1994

Representative Bill Williams  
352 Front  
Ketchikan, Alaska 99901

Honorable Williams:

I am an Alaska Native, born and raised in the Ketchikan area and I would like to express my opinion of Robin Taylor's pet Bill SB 43. In these days of declining revenues I feel it is totally frivolous to spend a million or a million and a half on transporting elk to Alaska. Also in my estimation it has been that every time people transplant one species of thing to a new and different place, something bad happens. I would hate to see the Sitka black tailed deer either wiped out from an imported disease. or crowded out of their forage areas. Anyway I am against this transplanting of elk. Thank you.

Sincerely



Patrick H. Kristovich

PO 3038

Ketchikan, Alaska 99901

1/18/94

Rep. W. Williams  
State Capital  
Juneau, Ak

Dear Mr. Williams,

I recently heard about SB 43, the elk bill. I would like to request that you vote against this bill.

① It is too expensive & will take money away from other valuable fish & game functions. Please don't waste our money!

② It is unnecessary and poor management to import species. New species may negatively affect other species. I don't want this to happen.

Thank you for your attention to ~~go~~ this issue.

Sincerely,

Margaret Clabby  
2968 S. Tongass  
Ketchikan AK 99901

# Elk today, Wart Hogs R Us tomorrow

By PAUL JENKINS

3/23/93

Cheap political meddling and bureaucratic cowardice have no place in wildlife management anywhere, but they're alive and well in Alaska. And the elk fiasco in Southeast Alaska is a good example.

Because state Sen. Robin Taylor has decided he wants to import elk for hunters in his district, the Alaska Board of Game is flip-flopping like a fish out of water and the Alaska Department of Fish and Game's biologists mostly are ignored in favor of politics.

The biologists cannot talk about it, mind you, because of a directive from Fish and Game Commissioner Carl Rosier that all questions about the elk mess be directed to him.

Taylor is the guy who in 1987, over the vehement objections of state biologists, got the boneheads in the Legislature to order 50 elk transplanted from Oregon to 343 square-mile Etolin Island near Wrangell. At state expense.

The biologists objected because elk can make life rough for Sitka blacktail deer, a native species with numbers so low in the Etolin Island area that hunting has been curtailed for years.



Jenkins

Elk also can carry diseases and they wander in herds, eating the deer out of house and home as they go. Of the five previous attempts to introduce elk to Alaska, only one, on Afognak Island in 1928, has been successful.

But the Wrangell Republican's elk were hauled onto Etolin Island, and then, as elk are wont to do, they scattered. About half initially were lost to wolves, bears and other factors.

Now they number somewhere between 75 and 100 and have gotten onto Mitkof, Shrubby and Brushy islands, and, under the elk management plan, they are not to be hunted until their population reaches about 250. And when that happens — in 40 to 50 years — biologists have projected a sustainable harvest of 20 or so animals each year.

The plan also called for containment of the elk to Etolin and Zarembo islands because nobody really knows what they will do to native deer if they spread to other islands or the mainland. Under the



plan, if they meandered off — as they have — the department would either live trap them and return them to Etolin or eliminate them through an open hunting season.

So the Game Board guys, appointed by the governor and allegedly working for the public to set policy for state game management, decided early last week, on Tuesday, to open a hunting season year-round on stray elk found anywhere in Southeast Alaska other than Etolin and nearby Zarembo islands.

But, whoops, Taylor has yet another bill in the Legislature to import up to 400 more elk, despite the same old, ignored objections. He told The Associated Press that elk, because of their nifty big antlers, are a favorite of hunters in his area. It's unclear how that can be, as none of the herd is supposed to be hunted yet.

What actually went on during the few days after the board's decision is unclear, but the Fish and Game's Rosier advised the board to reverse its decision after hearing from Taylor. What Rosier heard to make him roll over is anybody's guess. When I asked him if he had spoken to Taylor about the issue, he first indicated he had not; then that he had.

"He said he was unhappy with the Game Board's action, and unhappy with my staff," was all Rosier would say about his chat with Taylor.

"The board made the right decision. On the other hand they were taking an

action in opposition of a legislator. It doesn't do any good to be at war on these issues. Certainly the fact that the senator was unhappy had to be weighed."

The board, ever mindful of an unhappy Taylor, on Thursday dutifully reversed itself and canceled the hunt.

That decision was lousy public policy.

We have elk spreading in all directions from the first wrong-headed transplant to Etolin Island. We have a board charged with setting game policy in Alaska hamstrung on the issue. We have Legislature toying with the notion of bringing in 400 more elk. If you believe Taylor and his friends that will be done free. If you believe anybody else it'll likely cost \$1.5 million.

And of course, we have a defanged and largely ignored Department of Fish and Game. Who needs their biologists? They just keep coming up with facts that run contrary to what politicians want to do.

To its credit, the board on Friday rightly went on record opposing any more elk transplants. But who cares? Taylor apparently wants them and that seems to be good enough for some people.

Now, if you think any of this is good news for Alaska, you probably live in Taylor's district and are lusting after big antlers.

Or you're like me. I see a tremendous opportunity to get rich in a state dumb enough to even consider the notion of farming moose, importing foreign species or leaving the fate of its native species in the hands of politicians.

Here it is.

Wart Hogs R Us. That's right, a rancid right here in Alaska for those who dream of hunting the wily, toothy African critters, but get airsick or sore fannies on long plane rides.

We can bring the beasts in by the dozens, at state expense, of course, put them loose in Southeast Alaska and off a great hunt for the aerially impaired.

I figure all I have to do is get a legislator willing to set wildlife policy for the Department of Fish and Game and the Game Board to approve the whole deal. And from this elk hunt fiasco in Southeast Alaska, it doesn't look like it should be much of a problem.

All we have to do is get Taylor on the side, and, voila, we're in pigs up to the pokes.

Paul Jenkins is an editor of The Anchorage Times

Would you like to see ELK

TRANSPLANTED to KRUYOFF ISLAND

Name	Address	Phone	AK Resident	Yes or No
PETRO, STEVE	Box 2004	747-6209	AK NATIVE	YES
JOE GRANSON	Box 1995	747-5497	YES	YES
FRAN HALLGREN	Box 1203	747-5076	yes	yes
KEE HALLGREN	Box 1203	7-5076	YES	YES
HOLGA HANSEN	Box 2861	7-5487	yes	yes

# Would you like to see ETK Transplanted to Kruzott Island

NAME	Address	Are you a resident?	How long	Ph.	Yes or No
John Bell	PO Box 913	YES	32 yrs	747-5421	YES
Frank Nelson	607 Ethel St	yes	22 yrs	747-5476	YES
Ed Smith	Box 2166	yes	45	966-2243	YES
Clayton Brown	310 Manie	yes	36	747-8649	Yes
George Kim	4256 14th	yes	29 yrs	747-8700	yes
Will Jones Jr	Box 72 Klawock	yes	23 yrs	755-2227	yes
Al White	1303 West 46th Ave.	Yes	5 yrs	562-0490	yes
Paul Cadiente	1810 Marshall	yes	30 yrs	—	yes
James R. Moore	Box 240438	yes	26 yrs	—	yes
GREG Brown	JUNEAU, AK.	YES	25 yrs	463-7204	YES
Tim Z. Antekoff		YES		7-1468	No
Jeff Stewart	1507 Edgemoor	yes	31	747-4890	YES
Stan Edmunds			33	747-1474	yes
Korey Peters		yes	4 yrs	747-4729	yes
Kenneth Gray	Fullerton	yes	6 yrs	747-4739	yes
Robert Reese		yes	5 yrs	747-3457	YES
Andrew Keene		yes	4 yrs	—	Yes

Would you like to see ELK

Transplanted to Krutzoff Island?

Name	Address	Phone	AK Resident	Yes or No
KEN JUSTIN	Box 634	747-1074	YES	YES
mike Fox	Box 2716 HPR	7 5557	YES	NO
Trent Bayre	Box 2800	7-3714	Yes	Yes
Dick Parneberg	405 Hemlock	7-3461	Yes	Yes
Nark N. Young	Box 2016	7-3518	YES	YES
Bill Paden	610 Etolin	7-8376	YES	NO
John M. Catear	2026-C HPR	7-3176	Yes	NO
David A. Chittman	103 Birch St #E36	7-3603	Yes	Yes
David M. Hill	506 Hurstville St.	7-3912	NO	NO NO NO NO
Steve Skiff	315 Seward St	7-6721	Yes	Yes
Robert K. Mang	315 PETERSON	7-8544	Yes	Yes
Pete J. Orens	320 Kogwinton	7-3978	YES	YES
Rabe Hammer	1722 HPR	7-3498	YES	YES
JOHN LITFIELD	4102 HPR	7-6866	YES	NONON
Roy T. Anderson	Box 721	7-6179	Yes	Yes
Donald's Alka	336 Regent	7-3785	Yes	Yes
Dale Winger	Box 6285	7-0560	Yes	Yes
Doger S.	305 Walker Ave.	7-6747	Yes	Yes

WOULD YOU LIKE TO SEE ELK

TRANSPLANTED TO KRUZOFF ISLAND?

NAME	ADDRESS	PHONE#	AK RESIDENT	YES OR NO ? would like information
Steven D Cox	Box 2404	7-5421	Yes	NO
Steve Clark	Box 2476	7-8236	Yes	NO
Sp & Stahlg	207 lower rd #3	7-0572	Yes	NO YES
Jerry Matthews	Box 1016	7-8930	Yes	Yes
Anthony M. Stryke	Box 1533	7-6421	YES	YES
GLEN A Mitchell	Box 1371	7-3141	YES	YES
Monte McFarland		7-6911	YES	NO
MIKE KERNIN			YES	NO
Don Ballou		7-5829	yes	NO
DON KORPELA		7-8103	YES	NO
LARRY KONKOL	Box 1316	7-8157	yes	yes
Royce R. Rath	3912A	7-8731	yes	yes
St. Leonard	606 Lake	7-8286	yes	yes
Steve Dan Herder	411 avonman	7-9506	Yes	NO OPINION
Rich Sigmund	POB 2163	7-5676	Yes	Yes
Will Wmalle	105 Shaker	747-8091	YES	YES
MARTY J MARTIN	box 2752	7-3815	YES	NO
John Miller	Boarsb		Yes	YES
King Penn		7-6721	Yes	YES
Chris Tricsofield	Box 458	7-9200	Yes	NO BUT NO HUNTING YET THEM
Brian Regak	571 Lakeland	7-8059	YES	YES

Would you like to see Elk

Transplanted to Krutzoff Island?

NAME	Address	Phone	AK Resident	Yes or No
Emre Benharahit	707 SMC	747-3407	37 yrs	NO
Russell Duvall	1619 SMC	747-8517	2 yrs	YES
JM Boyce	Po 3107 SITHA	7-3934	8 yrs	YES
Bruce Langer	Po-Box 6890	7-6086	8 yrs	YES
TONY VERSCHA	P.O. Box 9103	7-6782	1/2 yrs	YES
Bob Poed	Box 855	7-8176	18 yrs	YES
Eric Oa	Box 2026	749-5669	22	NO
Troy Bayne	Bx 1541	747-6720	13	YES
Rob Lawson	Bx 2846	747-6573	10	No
Todd Miller	Box 858	747-4702	24	YES
Mike-Joe	Box 756	747-3858	24	YES
Bill Gall	Box 2214	7-6970	24	YES
LITHCOWAN	605 DEGROFF	7-7416	18	YES
Rusty Williams	104 Eagle Way	7-5905	4	YES
Bob Esca	619 DEGROFF	7-6120	32	YES
Patrick Krutzoff	Box 472	7-8021	31	YES
<del>Patrick Krutzoff</del>				
Don Starns	611 ETOIN ST	7-8067	12 yrs	NO
WIM STARTZ	209 Observer	7-5816	10 yrs	NO
Kristen Mitchell	Box 891	7-5428	9 yrs	No

Would you like to see ELK

TRANK PLANTED to Kruzoff Island?

Name	Address	Phone	AK Resident	Yes or No
Paul Addie	3208 HPR #6	6723	SITKA	NO
Rick Raphun	P.O. Box 1324	6605	SITKA	Yes
Milton Hunt	P.O. Box 2355	747-8492	SITKA	Yes
George R. Howard Sr	PM Box 1833	742-1032	SITKA	Yes
Louis R. Howard Sr	113 New Archangel		SITKA	Yes
Lanny Leonard	PO Box 2108	747-9900	SITKA	NO
Lee Lantz	1801A Alcor Wy	747-8594	SITKA	Yes
Jake Livingston	Box 995	747-5434	SITKA, AK	NO
Mary Howard	PO Box 1033	747-4022	SITKA	NO
Ally M. Larson Sr.	General Delivery 288-3401	ANADON		NO
William E. [unclear]	Box Del Sitka	99835		NO
A.G. Du Bois	6229	8821	SITKA	YES
Allen Irm Van Hum	HPR - PH	747-6581	SITKA	Yes
Mary Jean C. Wayne	2716 HPR #40	747-6490	SITKA	Yes
Norman E. [unclear]	2410 HPR	747-6407	SITKA	YES
Roy W. Howard	Ocean Side #18	747-1072	SITKA	Yes
Jannet L. [unclear]	P.O. Box 6084		SITKA	Yes

Would you like to see Elk

TRANSPLANTED to KRUZOFF ISLAND?

Name	Address	PHONE	AK Resident	Yes or No
Dennis Romine	PO BOX 2483 SITKA AK.	747-8881	yes	YES
Jana Romine	"	"	"	YES
<del>Al Starcher</del>	Box 2457	7-5110	Yes	Yes
<del>John A. ...</del>	2308 4PR	747-1000	30 YRS	Yes
M. ...	Box 2402	7-3871	Yes	Yes
B. Knight	711 SMCR	7-3741	YES	YES
Scott Saline	Bx 3183	77889	Yes	NO

X10!!! Do Not transplant Elk to Kruzoff or anywhere else on Barrow Chief of Island Group.

Don Mitchell  
103 Darwin  
Sitka  
747-5909 85 AK.  
28 yr. resident

This Money should be spent wisely IF EDUCATION etc NOT TAKE MEAT (DEER) OUT OF SUBSISTANCE PROGRAMS

We don't need another permit hunt in AK.

No! We don't need to make it harder for deer. AK do compete with deer for clove food in hard winters.

Scott Brylinski Box 17 4777 Yes No

Would you like to see ELK

Transplanted to Krusoff Island?

Name	Address	Phone	AK Resident	Yes or No
Fred THOMASSEN	702 FALIN	7-8417	52 yrs	yes
Larry Nelson	C-LADY		4	yes
Bruce White	Farmway	7-8294	40 YRS	yes
Alvin C. Lund	PRECINCT 514 #1 231 KATHIAN ST 2-25		11 yrs	yes
NUDE WALLER	3514 REDSTONE RD North Pole, AK 98855		21 YRS	YES
Del Childress	207 CRABAPPLE		25 yrs	yes
Dick Olson	704 LAKE ST	7-8628	29 yrs	YES
Larry Smith	102 Kincaid wy	7-6425	28 yrs	Yes
Shelley Frank	Box 1722	7-3594	was	yes
Kate Sullivan	Box 455	7-8345	was	yes
Wesley Wilson	Box 455	7-7800	was	yes
Steve McGraw	Box 1974	NONE	46 yrs	yes
Ken J. Behrman	Box 2565	5158	2 yrs	Yes
Christine French	3201 #1021PR	3729	21 yrs	sure
Mark H. Jorgensen	P.O. Box 6166	7-5360	1	yrs
David Messner	P.O. Box 6356	747-3117	18 yrs	yes
David H. Jones	P.O. Box 57	747-8909	yes	yes
Don Miller	231 KATHIAN 1-20	747-3718	6 YEARS YES	YES
HENRY OKSVO	11 P.O. 2845		40 YEARS YES	YES
Rick Larson	406 Main st #C	7-2424	22 yrs	yes
GARY EATON	234 LAKEVIEW DR	7-3648	31 yrs	YES
Todd Anderson	1008 5th St	747-8287	33 yrs	yes
Hal Taylor	1603 DAVIROFF ST	747-5524	42 yrs	YES

Would you like to see ELK

Transplanted to Kruzoff Island?

Name	Address	Phone	AK Resident	Yes or No
Rita Ledbetter	Box 2822 Sitka	747-3059	15 yrs	Yes
Beal E. Kibben	Box 6075	747-6143	50 yrs	Yes
Lorraine Bell	410 Hallowood	747-8336		Yes
D. J. Van Noy	P.O. 8013 Pt. A.	AK 508-2266	✓	Yes
Sammy J.	P.O. 6393		YES	Yes
Bryan Adams	P.O. 2724	Sitka		No
William E. Sykes	P.O. 6224	Sitka, AK	Yes	Yes
Mark Ferraro	231 KATWAN ST. 3-16	SITKA AK	Yes	Yes
Dick Wolfe	P.O. Box 1044	Sitka AK	Yes	Yes
William Chinn	P.O. Box 1466	SITKA AK	Yes	Yes
Bob King	P.O. Box 6298	SITKA AK	"Yes"	"Yes"
Choshikubon	P.O. 101 Duffhart Dr. F-41#		YES	Yes
Del Carr	Box 6328	Sitka AK	yes	No
Parves Dozier	1709 HPR #31	7-3321	✓	Yes
Kevin Lance	Box 2516		yes	Yes
Donald M. Duncan	Box 373	Sitka 76554	YES	Yes
Dorinda M. Duncan	Box 373	Sitka 7-6554	YES	Yes
Matthew J. Loncke	Box 1782	Sitka 7-8343	✓	Yes
Dan Williams	1782	Sitka 7-6405	yes	No
Tom Nyer	231 KATWAN ST.		YES?	
Mark Reid	Box 1201		6 months	NO
Beal E. Kibben	1709 HPR		Yes	Yes
Ken Meula	131 SHECKOFF		YES	YES

Would you like to see ELK

Transplanted to Kruzoff Island?

Name	Address	Phone	vsAK Resident	yes or no
Ira Smith	8044 Wab St Port Alexander AK	568-2256	5 yrs	yes
Regis Ozawa	Box 2223 Sitka AK	747-7443	40 yrs	yes
David Turner	Box 624 Sitka	747-3775	6 yrs	yes
Jon Sore	Box 2074 Wrangell	511-5827	6 yrs	yes
Oliver Bickner	Box 1017 Sitka	797-8469	32 yrs	yes
JAMES J. NIELSEN JR	Box 1753 SITKA	7-5478	39	yes
Robert J. Kirkman	Box 2716 Sitka AK	7-5073		YES
Ernest W Barnes	P.O. Box 673 Sitka AK			yes
EAN CAULAN	8023 TRACT B PORT ALEXANDER AK	998-9236	1983's	YES
Ian Caulan	8023 Tract B Port Alexander AK	998-56		yes
Rob Fazel	163 Hobst Oregon city Oregon	97045		yes
Clarence Peterson	1707 Alagamburser	947-5929		yes
Perry Nelson	9020 Port Alexander AK	99836	yes	yes
Roger NESS	326 Lincoln St. Sitka AK	99855	14 yrs	yes
Jim Brightman	409 Etolin Way Sitka		all 80's	yes
Jandra Aertsen	429 KATHIAN Sitka	1039	7 yrs	yes
Jim Simpson	PO Box 493 CRAIG AK	99921	6	yes
Rickard Aky	POB 2316 SITKA AK		15 yrs	yes
Bill Ball	19734 N Tanbess Ketchikan AK		8	yes
Pete Reddy	Box 6436 SITKA		17 yrs	NO
Marj Taylor	Box 6207 Sitka, AK		30 yrs	YES
Charlie Engel	609 Etolin Sitka AK		11	YES
Jim Moran	507 KATHIAN Sitka		8	yes
Bob Phillips	P.O. Box 2670 Sitka		8	Yes 76
Tray Bayne	P.O. Box 1541 Sitka		30	yes 17
MIKE BROOKS	2306 H.P.R. Sitka		24 yrs	yes
Robin Trunaw	704 #13 Sitka		25 yrs	YES

MIKE BROOKS	2306 H.P.R.	SITKA	24 yrs	YES
Robin Truman	704 #13	SITKA	25 yrs	YES
Maryanne Phillips	P.O. BX 2670	SITKA	8	YES

END FAX

195-942  
25 NO

# KETCHIKAN SPORTS and WILDLIFE CLUB

P.O. Box 5122 • Ketchikan, Alaska 99901

## PROPOSAL

### MOOSE INTRODUCTION, REVILLA ISLAND

#### INTRODUCTION

MAR.14, 1993

To establish a self supporting population of Moose to Revilla island. That, up to 25 moose be introduced to a area that will support the objectives of this introduction. The Ketchikan Sports and Wildlife Club membership believes that the introduction of Moose to this area would be a benefit to the residents of Southern Southeast Alaska. That, by introducing Moose to this area, a more diversified population of Wildlife will be established.

#### JUSTIFICATION

Alaska State Statute, Title 16, Fish and Game Chapter 25 Section 16.25.010, Stocking of Public Lands.

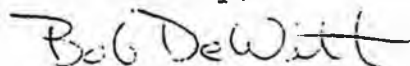
#### PROSPECTIVE COOPERATORS

Alaska Department of Fish and Game

U.S. Forest Service

Ketchikan Sports and Wildlife Club

Sincerely,



Bob DeWitt  
President  
K.S.W.C.

**THE INTRODUCTION OF ELK TO SOUTHEAST ALASKA: AN ASSESSMENT**

Alaska Department of Fish and Game

Division of Wildlife Conservation

December 1993

The Alaska Department of Fish and Game conducts all programs and activities free from discrimination on the basis of race, color, national origin, age, marital status, pregnancy, parenthood, or disability. For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 1-800-478-3648, or FAX 907-586-6595. Any person who believes she/he has been discriminated against should write to: ADF&G, PO Box 25526, Juneau AK 99802-5526 or O.E.O., U.S. Department of the Interior, Washington, DC 20240.

## INTRODUCTION

For decades there has been interest among some groups and individuals to introduce elk (*Cervus elaphus*) into Southeast Alaska. The colonization of elk across Afognak Island following the 1929 introduction has undoubtedly contributed to this interest. Prior to 1987, attempts to introduce 45 elk to various parts of Southeast Alaska were unsuccessful.

The Alaska Department of Fish and Game's species management policies allow for the introduction of nonindigenous species if four minimum requirements are met: 1) the proposed transplant site provides sufficient and suitable habitat to support a viable population of the species as determined by comprehensive study; 2) prior study establishes that the introduction of the species will not significantly adversely affect the numbers, health, or utilization of resident species; 3) protection of the proposed transplant population from incompatible land use is assured; and 4) future public use of the resource is guaranteed.

When these four minimum requirements are met, as they were prior to the 1983 and 1991 mountain goat introductions to Revilla Island and the 1989 reintroduction of goats to Mt. Juneau, the department has been willing to endorse and assist in transplant efforts. However, when there are questions about whether any one of these requirements can be met, the department has felt a responsibility to express its concerns. In the case of elk introductions, wildlife managers have repeatedly expressed concerns about the impacts elk can have on native deer populations.

Our concerns are based on information regarding deer and elk relationships in other parts of North America and staff observations on Etolin Island. This paper is organized by specific concerns under three headings: direct competition for food between deer and elk; predation and its role in the relationship between deer and elk; and disease and parasite considerations.

## BACKGROUND

A state law passed in 1985 required the introduction of 50 elk (33 of the Roosevelt and 17 of the Rocky Mountain subspecies) to Etolin Island in 1987. Although many died immediately following the introduction, recent monitoring reports from department staff indicate that the elk adjusted to their new surroundings and established themselves on Etolin and Zarembo islands. Elk have been documented on the Kashevarof islands off of northeastern Prince of Wales Island and on Mitkof Island. Elk have also been reported by the public to be on Deer Island, adjacent to the Cleveland Peninsula.

The Department lacks any specially appropriated funds with which to study the interactions between elk and deer on Etolin and adjacent islands; we have been limited to occasional, cursory ground observations and periodic tracking of radio-collared elk made possible by helicopter time donated by Ketchikan Pulp Company. In an effort to secure funding for possible future studies on Etolin Island, the department submitted grant requests to the Rocky Mountain Elk Foundation and Safari Club International.

#### DIRECT COMPETITION FOR FOOD

In the book "The Elk of North America," biologist Olaus Murie points out that elk have been known to compete with mountain sheep, antelope, deer, and moose, particularly on winter range. Murie goes on to point out that in planning for deer and elk it is necessary to keep in mind that while elk will utilize practically any type of vegetation present on winter range, deer can be confined to browse, although forbs and cool-season grasses may also be important. Deer are the first to suffer in serious competition, and the range suffers to the detriment of both species by the combined pressure on available forage.

Radio-tracking of elk from the 1987 Etolin Island transplant indicates that elk regularly inhabit the coastal fringe of forested habitat on Etolin and Zarembo islands. This same beach fringe is where deer often concentrate during deep-snow winters. The fact that elk use these areas during relatively mild winters suggests that they are utilizing and impacting plants which are important and necessary for winter deer survival. In fact, through on-the-ground evaluations, department staff have found extensive elk use of blueberry shrubs, an important winter food for deer. In 1989 staff biologists observed that on Marsh Island (a small island near the Rocky Mountain elk release site) elk severely browsed blueberry shrubs only two years after the release date. Similarly in 1991, staff found severe browsing of blueberry shrubs by elk near McHenry Anchorage on Etolin.

Extensive research has been done on the feeding habits of Sitka black-tailed deer in Southeast Alaska and on elk in other areas where they are native. Although forbs are considered critical to the survival and reproductive success of deer, shrubs are important in maintaining sufficient energy levels during winter months when forbs are covered by snow and thus unavailable. The well-documented starvation of deer which periodically occurs as a result of severe winter weather illustrates that competition among deer for limited food can occur even in the absence of an introduced exotic such as elk. Elk can maintain themselves on diets consisting of low-nutrient plants, whereas deer require diets complete with specific high-nutrient plants in order to survive. The fact that elk can, and will, utilize the high-nutrient plants in addition to low-nutrient plants, results in fewer high-nutrient plants being available to sustain deer.

Thus, adding elk, with their greater size and foraging capabilities likely increases competition. The expected result is an even greater loss of deer during severe winters, which would either prolong the time necessary for deer populations to recover or they would stay depressed.

Food competition has been well-documented throughout the Pacific Northwest. British Columbia biologists found that elk on Vancouver Island feed extensively on blueberry shrubs as well as important high-nutrient forbs including bunchberry, twinflower, and deer fern. The use of these forbs is especially noteworthy because they are among the same plants which deer in Southeast Alaska require for protein assimilation and fat deposition.

In Washington, Oregon, and Idaho, biologists have found that elk, which are generally grazers (grass eaters), will utilize browse (shrubs) extensively, particularly in winter. Where browse is the major forage type (as it is during winters in Southeast Alaska), Idaho and Washington biologists have determined direct competition between deer and elk. In northwestern Montana and western Washington, researchers found that dietary overlap between elk and white-tailed deer ranging from 70 to 90 percent with the greatest overlap during the winter. Former Idaho Fish and Game Director Joseph Greenley has concluded that a winter range being used heavily by elk has virtually no carrying capacity for deer. And in Oregon, internationally-recognized deer and elk expert Jack Ward Thomas found that as elk moved into their range, mule deer numbers and distribution decreased.

Earlier proposed elk transplants to Southeast Alaska bogged down on the question of elk/deer competition. In a 1970 report assessing the advisability of introducing elk to Kruzof Island, wildlife biologists A. Courtright and H. Merriam noted that elk would likely compete with deer and, at least during severe winters, a reduction in the deer population would be a probable result. Because of this concern, which was shared by several biologists, the U.S. Fish and Wildlife Service withdrew funding for the proposed transplant.

During May 1972, former Washington State Regional Game Director and elk specialist, E. Reade Brown, visited Ketchikan after receiving an invitation to do so from the Alaska Sports and Wildlife Club (now the Ketchikan Sports and Wildlife Club). After spending time looking at habitat on Revilla Island, Mr. Brown concluded that in his opinion elk could be established in the area, but that the elk would compete quite closely with the existing deer population for the winter food supply. In fact, he went on to conclude that he felt the deer population would probably decline as a result of this competition.

Recent articles and editorials have pointed to Afognak Island as proof that elk and deer can coexist in Alaska. It is true that since their introduction in 1929 elk have coexisted with deer on

Afognak and Raspberry islands. The status of this sympatry is unclear.

Kodiak area wildlife biologist Roger Smith noted that even in years when deer numbers were exceptionally high on Kodiak Island and parts of Afognak Island, the elk-inhabited northwestern part of Afognak Island provided relatively poor deer hunting. Smith is convinced that competition with elk was the reason. Also, elk appeared to have overgrazed their range in the parts of Afognak inaccessible to hunters and those herds suffered the greatest losses during recent population declines. These observations from Afognak have made ADF&G skeptical about introducing elk to Kodiak Island. Notably, there is concern that elk will degrade Kodiak Island's historical ability to support some of the state's highest densities of deer, and thereby reduce public use opportunities.

#### PREDATION AND ITS ROLE IN THE RELATIONSHIP BETWEEN DEER AND ELK

In addition to the concerns about direct competition for food, there is the question of the role wolf predation plays in the relationship between deer and elk. On Vancouver Island, where elk, deer, and wolves occur together, observations have shown that deer populations on some parts of the island have declined substantially as a result of high predation rates. Byron Mason, a former predator-control agent with the British Columbia government, has noted that predation pressure on deer is most severe in wolf territories that have concentrations of elk. This has been attributed to the fact that elk provide a source of alternate prey which enables wolves to continue exerting intense pressure on declining deer populations in elk-occupied areas. British Columbia wildlife biologist D. M. Hebert reported in 1981 that as wolves recolonized the northern half of Vancouver Island they nearly exterminated deer before significantly affecting elk numbers.

#### DISEASE AND PARASITE CONCERNS

Numerous articles and publications have been written about problems and concerns associated with the spread of diseases and parasites through the translocation of wild animals. Regulations generally require that transplanted animals be quarantined and tested for diseases prior to being translocated. The ability of most current tests to confirm particular diseases and parasites is largely unknown when used on native and exotic wild ungulates (hoofed animals) and some diseases and parasites can only be identified from carcasses. Most diagnostic disease and parasite tests were developed for domestic livestock. Most current tests have not been evaluated for their effectiveness in confirming problems in wildlife. Some wild animals which showed no sign of disease when tested in quarantine have developed diseases after being stressed in the wild.

In dealing with elk, specific diseases and parasites of concern include meningeal worms, bovine tuberculosis, giant liver flukes, and bovine brucellosis.

The white-tailed deer is the natural host for the meningeal worm. Adult worms live on the surface of the brain. Although the worm rarely causes problems in white-tails, it can be fatal to other members of the deer family. Translocated elk containing undetected meningeal worms or their larvae could transmit the parasites to native black-tailed deer or even moose, with ensuing catastrophic potential for resident species. Alberta now has a moratorium on the import of wild ungulates. British Columbia also banned the importation of moose, elk, white-tailed deer, and mule deer because of concerns about the meningeal worm.

The geographic range of the meningeal worm has historically been limited to eastern North America. It does not occur in Alaska. In recent years, wildlife management agencies in western North America have become more diligent about keeping this parasite out of their state or province. Researchers have reported that meningeal worms are detected in only 50 percent of live, infected animals. In addition, Canadian biologists have proven that elk can become long-term carriers and transmitters of the worm, and are not the dead-end host as previously believed.

Bovine tuberculosis (TB) is a serious disease affecting wild animals. Infection localizes in the lungs, with often fatal results. TB also poses human health risks, resulting in a debilitating disease called undulant fever. At least one veterinarian and several wildlife technicians in Canada have been exposed and infected with TB after working with diseased elk.

Diagnostic test procedures for TB are often unreliable. Testing a recently infected elk may incorrectly indicate that the animal is not infected. Similarly, animals in advanced stages of the disease may not be detected by current test procedures.

TB bacterium is difficult to control once established in the wild because it is resistant to most environmental conditions. The transplanting of just two elk with TB from a menagerie in Iowa created significant health and economic problems in South Dakota in the early 1980s.

There is no effective treatment for TB in wild animals. At present, the only successful method of human intervention into an outbreak is to slaughter all animals which have come into contact with the infected animal. The chief veterinarian of the USDA in Washington, D.C. has said that bovine TB will be impossible to eradicate if it becomes established in free-ranging elk and deer populations of North America.

The natural host for liver flukes in North America is the domestic sheep. Although they cause few problems in that species, flukes can be transmitted to several members of the deer family. Transmission requires a snail as an intermediate host and is favored by wet or boggy environments. At present, specific elk ranges in the Pacific Northwest are considered hot spots for the giant liver fluke.

Scientific literature suggests that the fluke will not kill deer, moose, or elk. However, recent evidence has documented fatal infections in both moose and elk. Giant liver flukes have become a major concern in British Columbia, Alberta, and Manitoba. A recently-planned relocation of elk from the Kootenai to the Caribou Hills of British Columbia has been suspended because of the risk of spreading this parasite to other ungulates.

Bovine brucellosis is a bacterial disease normally associated with domestic cattle. Abortion, lowered production, and lameness result from the disease. It was transmitted to elk near Yellowstone Park near the turn of the century. Humans are susceptible. Diagnostic tests for brucellosis are not 100% accurate and drug treatment of infected animals is not an effective option. Attempts to eradicate brucellosis from free-ranging elk have only made limited progress. The effort has been hampered by limited funding, intense political debate, and logistics.

#### ANTICIPATED COSTS OF INTRODUCTION

Costs associated with the proposed implementation of CSSB43(FIN) were estimated by extrapolation of costs incurred during the 1987 introduction of 50 elk to Etolin Island. The cost of procuring and releasing 350 elk was estimated at \$955,100, excluding any monitoring of movements and mortality. Inclusion of a modest monitoring program (which would likely be required by the Forest Service NEPA process) increased the total cost to \$1,532,200. Additionally, four new full-time positions would be required during the three-year transplant period, and one position would be required for monitoring for two additional years. Because of concerns over competition and disease transmission, it is highly unlikely that any Pittman-Robertson federal matching funds could be used for elk introductions. Consequently, the primary funding source would be the general fund.

*Tanner reported that in an area of overpopulation, elk competed for food with deer on wintering areas.*

---

**Troyer, W.A. 1960.** Roosevelt elk on Afognak Island, Alaska. *J. Wildl. Manage.* 24:15-21.

*Toyer found that during fall and winter, elk on Afognak Island decreased their consumption of grasses and annual forbs and increased their consumption of browse (shrub) species.*

### HABITAT REQUIREMENTS

**Nyberg, J.B. 1990.** Interactions of timber management with deer and elk. Pages 99-131 in *Deer and elk habitats in coastal forests of southern British Columbia.* J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*Deer and elk on Vancouver Island require mature, old-growth coniferous forests for food and cover during winters. Heterogeneous stands of old trees make the best winter ranges because they provide the optimum combination of characteristics that intercept snow and supply forage in the form of shrubs, herbs, and arboreal lichen litterfall. Where elk occur on northern and western Vancouver Island, their most heavily used winter ranges are often stands of old-growth western hemlock and Sitka spruce.*

*Deer make extensive use of logged areas for feeding except when snow is deep and soft. Elk on Vancouver Island use clearcuts less than deer do, but like deer, elk make heaviest use of areas near cover. Thus, the value of an open foraging area for deer and elk habitat will be higher if the logged area is kept narrow and sufficient growth of shrubs and young conifers has occurred in adjacent units to provide security cover close at hand.*

*Logging slash, depending on depth and density, can pose a serious barrier to deer and elk use by preventing or discouraging them from moving through the logged areas. Slash less than 12 inches has little effect on deer unless it covers more than 50% of the ground, but at slash depths greater than 12 inches, deer expend large amounts of extra energy in moving about because they must jump over obstacles. Because of their longer legs, elk can more easily negotiate greater debris depths, but the extra energy costs as debris becomes denser are still dramatic.*

*Forest canopies close in about 20-25 years following logging. With the development of closed canopies, thermal and snow interception cover begin to form. At the same time, dense lower branches conceal animals well, providing some of the best security cover to be found in any habitat. However, as crowns close, a period of poor forage production begins. This condition may persist for several decades if the stand remains dense, resulting in substantial decreases in forage plants for both deer and elk.*

Nelson, J.R., and T.A. Leege. 1982 Nutritional requirements and food habits. Pages 323-367 in J.W. Thomas and D.E. Towell, eds. Elk of North America, ecology and management. Wildl. Manage. Inst. 698pp.

*In Washington, elk were found to feed primarily on grasses, sedges, and forbs during most of the year; however, during winter they turned almost exclusively to woody browse (shrubs).*

---

Nyberg, J.B., D.W. Janz, R.B. Addison, R.D. Forbes, and E.L. Richardson. 1990. Introduction. Pages 1-29 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*The effects of hunting are of greater management concern for elk than for deer because of the social behavior and lower productivity of elk compared to deer. Elk harvests will continue to be controlled by limited entry hunts on Vancouver Island.*

---

Schwartz, J.E., and G.E. Mitchell. 1945. The Roosevelt elk of the Olympic Peninsula, Washington. J. Wildl. Manage. 9:295-319.

*These authors found that elk in Washington browsed on shrubs as well as grazed on grasses and forbs. During the winter, when all herbaceous plants were buried by snow, the elk used browse exclusively, resulting in extensive use of huckleberry, an important winter deer food. The authors observed that elk are more damaging to a range than deer, and sometimes even more so than domestic livestock.*

---

Short, H.L. 1981. Nutrition and metabolism. Pages 99-127 in Mule and Black-tailed deer of North America. O.C. Wallmo, ed. Wildl. Manage. Inst. Univ. of Nebraska Press, Lincoln. 605pp.

*Deer require over 7% digestible protein in their diets in order to successfully grow and reproduce. This is over 20% higher than the 5.5% minimum requirement for elk (see Brunt 1990). The author explains in detail the physiological components of deer digestive processes and describes the need for high-nutrient forage in deer diets. He indicates that diets consisting of 15-16% digestible protein are necessary for optimum growth and reproduction. Foods with high cell content and low lignocellulose levels provide much more digestible protein than mature woody twigs, dead and withered leaves, or dormant grasses.*

---

Tanner, D.L. 1957. The Soldier Mountain elk herd. Idaho Fish and Game Dept. Pages 8-11.

\_\_\_\_\_, and \_\_\_\_\_. 1988. Resource partitioning and competition among cervids in the northern Rocky Mountains. *J. Appl. Ecol.* 25:11-24.

*In their studies, Jenkins and his colleagues found that a high degree of overlap in spatial, habitat, and dietary patterns occurred between elk, moose, and white-tailed deer in northwestern Montana. Indices of overlap suggested that the greatest potential for interspecific competition occurred between elk and white-tailed deer; the effects of which appeared to be greatest for white-tailed deer because of their low foraging reach and limited tolerance of snow.*

*Jenkins and Wright (1987) found 71-81% dietary overlap between elk and white-tailed deer during mild and snowy winters, respectively. Variable snowpack and forage availabilities promoted opportunistic rather than specialized winter foraging behavior. Low evergreen shrubs, grasses, and forbs were not available during periods of deep snow to permit high levels of food specialization and partitioning between cervids. Jenkins and Wright (1987) believe that adverse effects of forage competition would be most pronounced during consecutive severe winters when cervids are energetically stressed.*

Leslie, D.M., E.E. Starkey, and M. Vavra. 1984. Elk and deer diets in old growth forests in western Washington. *J. Wildl. Manage.* 48:762-775.

*In their study conducted in western Washington, these researchers found that high (78-93%) dietary overlap between elk and black-tailed deer suggested competitive interactions for food, especially during winter when forage resources were least available. Predominant forages in fall and winter diets seemed to afford little opportunity for cervids to select different plant parts.*

Murie, O.J. 1951. *The elk of North America.* The Stackpole Co. Harrisburg, PA. and the Wildl. Manage. Inst. Washington, D.C. 376pp.

*Murie conducted over 35 years of study on elk in Wyoming. He points out that elk are generalized in their food requirements, while deer on winter range are specialized and hence suffer more directly from malnutrition. In the absence of sufficient browse, Murie found deer which had died on diets which allowed elk to thrive. Murie indicates that food habits of big game are not sufficiently specialized to prevent competition among species, and elk being the most omnivorous big game animal, is the most likely to bring on harmful rivalry. Elk have been known to compete with mountain sheep, antelope, deer, and moose, particularly on winter range. In planning for deer and elk, Murie points out that it is necessary to keep in mind that while elk will utilize practically any type of vegetation present on winter range, deer are confined to browse. Deer are the first to suffer in serious competition, and the range suffers to the detriment of both species by a too drastic combined onslaught on its forage resource.*

*Because the rumen:body-weight ratio is higher in elk than in deer, elk are able to digest relatively larger amounts of coarse forage without running short of incoming energy. They can therefore eat more low-energy foods than deer. Winter diets of elk overlap deer diets on Vancouver Island, and consist of many of the same forage species eaten by deer in Southeast Alaska (see below, Bunnell 1990). Minimum digestible protein required for pregnant elk cows to successfully produce a surviving calf is about 5.5%, compared with just over 7% required by pregnant does.*

*Elk cows generally conceive for the first time in their third year of life and give birth to a single calf. Twin calves have not been reported on Vancouver Island. Predation can strongly affect elk population levels, particularly on poor ranges where elk condition is low.*

*Because of their low reproductive rates relative to deer, elk hunting on Vancouver Island is by limited entry drawing. Between 1977-1988, annual harvests have varied from about 50 to 150 elk on the approximately 15,000 mi<sup>2</sup> island.*

**Bunnell, F.L. 1990. Ecology of Black-tailed deer. Pages 31-63 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.**

*Deer have rumens which are 60% smaller than those of elk. This physiological difference makes it critically important for deer to obtain sufficient quantities of high-nutrient forage species in order to survive and reproduce. This is especially important during winters when energetic costs for deer to move through two feet of snow is over four times greater than what is required for elk.*

*Deer on Vancouver Island feed on many of the same plant species as elk and Southeast Alaska deer. Among the plant species which are utilized by both deer and elk are high-nutrient forbs including bunchberry, five-leaf bramble, deer fern, and skunk cabbage. Both species also feed on blueberry (an important winter food) and salmonberry shrubs, and on western hemlock and western red cedar.*

*Does generally reproduce for the first time at age 2 and on good ranges twinning is common. However, the high growth potential of deer populations is reduced by mortality, which can be substantial during severe winters or when predators are abundant.*

**Jenkins, K.J. 1985. Winter habitat and niche relationships of sympatric cervids along the North Fork of the Flathead River, Montana. Ph.D. thesis, University of Idaho, Moscow.**

**\_\_\_\_\_ and R.G. Wright. 1987. Dietary niche relationships among cervids relative to winter snowpack in northwestern Montana. Can. J. Zool. 65:1397-1401.**

*Several relocations of animals resulted in the establishment of new diseases in populations of native ungulates, with devastating and prolonged consequences. Examples given by Welch et al. include rinderpest into Africa, brucellosis and tuberculosis into Wood Buffalo National Park in Canada, and the giant liver fluke into Europe (Tessaro 1986). The giant liver fluke, the carotid artery worm and the meningeal worm, could be transported in infected hosts and become established in previously uninfected wild populations (Samuel 1987). Welch et al. gave probability of detecting parasite infections in fecal samples and decided that examination of multiple fecal samples is not a reliable diagnostic tool for detecting infections of meningeal worm in all infected elk.*

---

Worley, D.E. 1990. The role of internal parasites in management of free-ranging and captive North American elk (*Cervus elaphus nelsoni*). Pages 304-307 in A. G. Christensen, L. J. Lyon and T. N. Lonner, comps., Proc. Elk Vulnerability Symp., Montana State Univ., Bozeman. 330pp.

*Worley said at least 23 species of internal parasites have been reported from wild elk on native ranges in the western United States and Canada. Four are most frequently associated with clinical disease: the intra-arterial nematode, Elaeophora schneideri; the meningeal worm, Paralaphostrongylus tenuis; the thread lungworm, Dictyocaulus viviparus and the giant liver fluke, Fascioloides magna. Expansion of the range of the giant liver fluke via translocation of infected animals has been attributed to movement of both free-ranging and captive elk.*

#### DEER AND ELK FEEDING ECOLOGY, NUTRITION, REPRODUCTION, ENERGY EXPENDITURE, AND COMPETITION

Batchelor, R.F. 1963. Elk investigations-Elk range studies. Alaska Dep. Fish and Game. Proj. W-6-R-3. Job 1-B. Juneau. 65pp.

*Reporting on range conditions on a portion of the Litnik Lake Game Range of southeastern Afognak Island, Batchelor indicated that 95% of all elderberry and 54% of all willows were classified as retrogressives, being unable to maintain the present state of health. He concluded that this was caused either by elk browsing or successional changes in the plant community or both.*

---

Brunt, K.R. 1990. Ecology of Roosevelt elk. Pages 65-98 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*and tuberculosis into Wood Buffalo National Park in Canada through animal transplants.*

---

Thorne, E.T., J.K. Morton, and W.C. Ray. 1979. Brucellosis, its effect and impact on elk in western Wyoming. North American elk; ecology, behavior and management; U. WY, Laramie. M. S. Boyce and L. O. Wing, Eds., pp. 212-220.

*Premature calves are often an effect of brucellosis in elk. Reduced reproductive success of brucellosis-infected females is shown in abortion, premature birth, and birth of non-viable calves.*

---

Thorne, E.T. and J.K. Morton. 1975. The incidence and importance of brucellosis in elk in northwestern Wyoming. Job. Compl. Rep., Fed. Aid in Wildl. Rest., Proj. FW-3-R-21, pp 12-16. Wyoming Game and Fish Comm. Laramie. cited in Kistner (1982).

Thorne, E.T., J.D. Herriges, Jr., and A.D. Reese. 1991. Bovine brucellosis in elk: conflicts in the greater Yellowstone area. Pages 296-303. in A. G. Christensen, L. J. Lyon and T. N. Lonner, comps., Proc. Elk Vulnerability Symp., Montana State Univ., Bozeman. 330pp.

*Thorne and Morton (1975) related Brucellosis and tuberculosis are two feared diseases that are contracted by elk and which are infectious to human beings. Brucella abortus, the etiologic agent of bovine brucellosis (undulant fever in humans) occurs in both bison and supplementally fed elk within 27,000 square miles of Yellowstone National Park and the adjacent National Forests. The disease in elk appears to be associated with feedground elk in Wyoming and Montana. Researchers say there is little opportunity for transmission of brucellosis among non-feedground elk.*

*Thorne et al. (1990) said brucellosis is prevalent in elk of northwestern Wyoming. Occurrence of brucellosis is a consequence of supplemental winter feeding as a substitute for natural winter ranges. Presence of the disease in northern Yellowstone elk may reflect their association with infected bison and interchange with fed elk populations. The Wyoming Game and Fish Department (WGFD) vaccinates fed elk with a vaccine called "strain 19", tries to reduce reliance on supplemental feed through habitat improvement and acquisition and tries to separate cattle and elk during high risk transmission periods. About 50% of infected elk abort their first pregnancy following infection. Chronic brucellosis frequently causes lameness. WGFD spends \$100,000 per year on the elk vaccination program.*

---

Welch, D.A., M.J. Pybus, W.M. Samuel, and C.J. Wilke. 1991. Reliability of fecal examination for detecting infections of meningeal worm in elk. Wildl. Soc. Bull. 19:326-331.

Oldemeyer, J.L., R.L. Robbins, and B.L. Smith. 1993. Effect of feeding level on elk weights and reproductive success at the national elk refuge. Pages 64-68 in R. L. Callas, D. B. Koch, and E. R. Loft, eds. Proc. Western States and Provinces Elk Workshop, Eureka, California.

*Reproductive success (calves surviving until August) of brucellosis-negative adult females was 66.7% vs. 54.2% for brucellosis-positive adult females.*

---

Pybus, M.J. 1990. Survey of hepatic and pulmonary helminths of wild cervids in Alberta, Canada. Jour. Wildl. Diseases. 26(4), pp. 453-459.

Pybus, M.J., D.K. Onderka, and N. Cool. 1991. Efficacy of triclabendazole against natural infections of *Fascioloides magna* in wapiti. Jour. Wildl. Diseases 27(4), pp. 599-605.

*Direct and indirect mortality has been associated with giant liver fluke (Fascioloides magna) infections in moose (Alces alces). The giant liver fluke was found in 18 of 27 adult wapiti in alpine or montane habitat. Pybus (1990) found several other parasites in elk during the survey: Taenia hydatigena, Dictyocaulus viviparus, Echinococcus granulosus, and Thysanosoma actinoides.*

*The giant liver fluke is a relatively benign parasite in the liver of white-tailed deer and elk, but it can cause extensive hepatic damage in moose, elk, and Columbian black-tailed deer (Odocoileus hemionus columbianus). The fluke is translocated easily by infected wapiti into areas suitable for its life cycle (Pybus et al. 1991)*

*Pybus (pers comm.) relates that the giant liver fluke causes problems with moose, and that just a few flukes can kill a moose. In most ungulates, the flukes in the liver seek a mate by tunneling. When they find a mate, they stop and the body's defense mechanism forms a capsule around the two flukes. In moose, the sensory mechanism of the fluke is disrupted and the flukes continue tunneling without locating a mate, causing severe liver damage.*

---

Schwartz, J.E. 1943. Range conditions and management of the Roosevelt elk on the Olympic Peninsula. U.S. Dept. of Agric. 65pp. (Cited by Murie 1951).

*Tapeworms (Thysanosoma actinoides) were reported in Washington in 7 out of 32 Roosevelt elk examined by Schwartz.*

---

Tessaro, S.V. 1986. Existing and potential importance of brucellosis and tuberculosis in Canadian wildlife: a review. Can. Vet. J. 27:119-224.

*Welch et al. (1991) cited Tessaro as the source for information on the introduction of brucellosis*

*Investigations revealed extensive bovine tuberculosis infection in a herd of 50 elk. Eleven of eighteen elk responded to a tuberculin skin test. Ten of the eleven responders were classified as bovine TB reactors using a comparative skin test four days later. Tuberculous lesions were observed in lungs or lymph nodes in seven of the ten reactors. The entire herd was ordered destroyed. At depopulation, 19 of 26 (73%) elk at least two years old had tuberculous lesions, including one animal which had tested negative; overall, 69% of elk at least two years old examined during the course of investigations were infected with bovine tuberculosis. The apparent duration and severity of TB in this herd suggest game ranches throughout the U.S. represent potential reservoirs for the disease that may threaten the success of national eradication efforts.*

---

Murie, O.J. 1951. The elk of North America. The Stackpole Co. Harrisburg, PA and the Wildl. Mgmt. Inst. Wash., D.C. 376pp.

*The winter tick (Dermacentor albipictus) was seen by Murie as a "scourge" that visits the elk each spring. He stated that the ticks usually are attached in large numbers on the neck, back, and about the tail where bare skin occurs, and on the inside of the thigh. Murie went on to say that elk bite at the ticks and he felt that engorged ticks were palatable to elk.*

*Murie reported that Psoroptes communis var. cervinae is the causative mite of scabies in elk. Murie found an old cow elk in the Olympic Mountains to be covered with lice (Bovicula americanum) shortly after death.*

*Murie (1951) said that lungworms (Dictyocaulus hadweni = D. viviparus) were found in elk in Jackson Hole, Wyoming. Schwartz (1943) examined 32 Roosevelt elk and found lungworm in 23 elk. He also reported bloodworms (Cysticercus tenuicollis) in the liver of a number of elk. Tapeworms (Thysanosoma actinoides) were reported in Wyoming Rocky Mountain elk by Murie.*

---

Neiland, K.A. 1975. Further observations on rangiferine brucellosis in Alaska carnivores. J. Wildl. Dis. 11:45-53

Neiland, K.A., A.J. King, B.E. Huntley, and R. Skoog. 1968. The diseases and parasites of Alaskan wildlife populations. Part I. Some observations on brucellosis in caribou. Bull. Wildl. Dis. Assoc. 4:27-37.

*Quoted by V. Geist (1990, see previous reference) as detailing transmission of diseases of ranched game to carnivores, caribou, dogs and people in Alaska.*

---

**Geist, V. 1990.** Game-ranching: menace to the survival of the North American elk. Pages 292-295 in A. G. Christensen, L. J. Lyon and T. N. Lonner, comps., Proc. Elk Vulnerability Symp., Montana State Univ., Bozeman. 330pp.

*Geist decried game ranching as potentially causing the "end" of native elk through genetic pollution, diseases and competition with uncontrollable feral populations of exotics. Game ranching leads to the escape of reportable livestock diseases into wild populations because of technical shortcomings in detecting diseases, inadequate quarantine regulations, the flouting of import and export regulations and the inevitability of ranched wildlife escaping into the wilds. Geist cited authorities (Neiland et al. 1968, Neiland 1975, Broughton et al. 1970, see references) who reported that game ranching passed on swine brucellosis from reindeer to caribou, native carnivores, dogs and native people.*

---

**Jessup, D.A. 1993.** Monitoring health parameters in California's elk herds. Pages 92-97 R. J. Callas, D. B. Koch, and E. R. Loft, eds. Proc. of the Western States and Provinces Elk Workshop, Eureka, California.

*Eighteen new Tule elk herds have resulted from moving about 1,000 animals throughout California. All recent relocations have originated from one captive herd and one free-ranging herd. Some populations have had significant disease problems subsequent to relocation.*

---

**Kistner, T.P. 1982.** Diseases and parasites. Pages 181-217 in J. W. Thomas and D. E. Toweill, eds. Elk of North America, Ecology and Management. Wildl. Manage. Inst. 698pp.

*Elk are normally healthy when their numbers are kept within the carrying capacity of the range, but they are susceptible to many pathological conditions. These include bacterial diseases, fungal diseases, parasitic diseases, rickettsial diseases, viral diseases, toxicological diseases, internal and external parasites, and tumors. Some diseases of elk listed by Kistner were actinomycosis, anthrax, arthritis, brucellosis, clostridia, leptospirosis, necrotic stomatitis, and coccidiomycosis. Kistner said that lungworm has frequently been reported in Roosevelt elk, Rocky Mountain elk, and Tule elk. Kistner cited Thome and Morton (1975) as authorities on brucellosis in elk. See citation below. Kistner listed mites, ticks, botflies, lice, flukes, tapeworms, protozoans, filarial worms, lungworms, threadworms, and whipworms as being found in elk.*

---

**Miller, M.W., J.M. Williams, T.J. Schiefer, and J.W. Seidel. 1991.** Bovine tuberculosis in a captive elk herd in Colorado: epizootiology, diagnosis, and management. Proc. 95th Annual Meeting of U.S. Animal Health Association, San Diego, California, pp 533-542.

*numbers declined, wolf densities could be maintained temporarily at relatively high levels as a result of available alternate prey, including moose and beaver.*

---

**Weaver, J.L. 1980.** Wolf predation upon elk in the Rocky Mountains parks of North America: a review. Pages 29-33 in M.S. Boyce and L. D. Hayden-Wing, eds. North American Elk: Ecology Behavior and Management. Univ. of Wyoming. 293pp.

*Weaver reviewed wolf predation on elk in the literature and stated "In Jasper Park December 1946 and in Banff Park January 1947, biologist E. W. Pfeiffer determined that two separate packs of 5-6 wolves each were killing 3 elk every 2 weeks...If three elk--1 calf, 1 cow and 1 bull--were killed every two weeks, this represents 6.2 kg (13.6 lb.) to 7.5 kg (16.5 lb.) elk per wolf per day, 0.17-0.20 kg elk per kg wolf per day." Weaver also reported that Vernon Bailey collected wolf droppings in central Yellowstone Park in July 1915 which were made up entirely of elk hair.*

---

**Young, E.L., C.R. Land, and D.D. James. 1993.** Mortality and movement of transplanted Rocky Mountain and Roosevelt elk in southeast Alaska. Pages 69-74 in R. L. Callas, D. B. Kock=h, and E. R. Loft, eds. Proc. Western States and Provinces Elk Workshop. Eureka, California. Eureka. May 1990. In press.

*Radio-collared elk were subjected to predation by wolves from the inception of the 1987 elk transplant to Etolin Island. Black bears cached elk carcasses and were thought to have been responsible for some adult elk mortality on Etolin Island.*

#### PARASITES AND DISEASES OF ELK

**Broughton, E., L.P.E. Choquette, J.G. Cousineau, and F.L. Miller. 1970.** Brucellosis in reindeer (*R. tarandus* and the migratory barren-ground caribou, *R. t. groenlandicus* (L.) in Canada. Can. J. Zool. 48:1023-1027.

*Quoted by V. Geist (1990) as discussing transmission of diseases of ranched reindeer to caribou. See Geist reference below.*

---

**Erhardova-Kotrla, B. 1971.** The occurrence of *Fascioloides magna* in Czechoslovakia. Czechoslovak Acad. Sci., Prague. 155pp.

*According to Welch et al. (1991), this paper discusses the introduction of the giant liver fluke into Europe by translocated exotics from North America.*

---

Schlegel, M. 1976. Factors affecting calf elk survival in north-central Idaho—a progress report. Proc. West. Assoc. State Game and Fish Comm. 56:342-355

*Schlegel reported losses of around 50% from black bear predation in an Idaho elk herd.*

Taber, R.D. and K.J. Raedeke. 1980. Roosevelt Elk of the Olympic National Forest. Status Report. Wildl. Sci. Group. Univ. of Wash. Seattle. 107pp.

*Taber and Raedeke discounted predation as an "important mortality agent" in the Olympic peninsula, and pointed out that the wolf (Canis lupus) "is now extinct and that the puma's (Felis concolor) numbers are very reduced. They did not mention the black bear (Euarctos americanus) as being present or as a possible predator. These authors stated, "The recovery of the elk population after the turn of the century resulted not only from the control of predators and the restriction of hunting, but also from changes in the habitat."*

Van Ballenberghe, V., A.W. Erickson, and D. Byman. 1975. Ecology of the timber wolf in northeastern Minnesota. Wildl. Monogr. No. 43.

*This study showed that deer were the primary food item of wolves in Minnesota, while moose and beaver contributed secondarily to the diets of wolves.*

Van Ballenberghe, V. and T.A. Hanley. 1982. Predation on deer in relation to old-growth forest management in southeastern Alaska. Pages 291-296 in W. R. Meehan, T. R. Merrel, Jr. And T.A. Hanley, eds. Fish and Wildlife Relationships in Old-Growth Forests. Amer Inst. Fish. Res. Biol. 425pp.

*Van Ballenberghe and Hanley discussed the problem of wolf predation on deer in southeast Alaska. They stated that some factors which improve the efficiency of wolves as predators in this area are: periodic winters of deep snow that can result in surplus killing by wolves, patchiness of deer winter habitat which reduces search time for wolves, relatively constant sources of food for wolves from the ocean which prevents wolves from declining in concert with deer, and reductions in buffer zones between wolf pack territories as a result of the island nature of the area. They concluded, "These factors, along with high annual kill rates by wolves due to the small body size of black-tailed deer, suggest that predation may be more of a management problem in southeastern Alaska than elsewhere."*

Voight, D.R., G.B. Kolenosky, and D.H. Pimlott. 1976. Changes in summer foods of wolves in central Ontario. J. Wildl. Manage. 40:663-668.

*This study showed that wolves preyed on deer substantially more than moose. However, as deer*

*and elk may readily be maintained on the same range, with a surplus of each for the sportsman."*

*Murie cited I. McT. Cowan as saying that wolves in Canada commonly prey on elk, both on calves and adults, and that a single wolf can kill an elk, which is seized by the throat or flank. He stated that elk may escape wolves by taking to water or deep, soft snow. According to Murie, Cowan also said, "It is concluded that under existing circumstances the wolves are not detrimental to the park game herds, that their influence is definitely secondary, in the survival of game, to the welfare factors, of which the absence of suitable winter forage is the most important." Dr. Cowan was referring to an area where 50 percent of the elk were considered surplus because of range conditions (Murie 1951).*

---

**Oosenburg, S.M. and L.N. Carbyn. 1982. Winter predation of bison and activity patterns of a wolf pack in Wood Buffalo National Park. Pages 43-53 in F. C. Harrington and Paquet, eds. Wolves of the World. Noyes Publ. Parkhurst, N.J. 474pp.**

*In Canada's Wood Buffalo National Park, where wolves prey primarily on bison, data indicated that each wolf ate 5.3 kg/day, or an average of one bison every 78 days per wolf (Oosenbrug and Carbyn 1982).*

---

**Potvin, F. 1988. Wolf movements and population dynamics in Papineau-Labelle Reserve, Quebec. Can. J. Zool. 66:1266-1273.**

**\_\_\_\_\_, H. Jollcoeur, and J. Huot. 1988. Wolf diet and prey selectivity during two periods for deer in Quebec: decline versus expansion. Can. J. Zool. 66:1274-1279.**

*Potvin (1988) found that wolf packs in contact with large deer yards generally used that portion of their territories most intensively during winter. Potvin et al. (1988) also found that although moose were present in their study area, wolves fed primarily on deer in winter, even when deer had almost disappeared locally.*

---

**Scott, B.M.V. and D.M. Shackelton. 1980. Food habits of two Vancouver Island wolf packs: a preliminary study. Can J. Zool. 57:1203-1207**

*On Vancouver Island, B.C., scats indicated that Roosevelt elk were second in importance only to black-tailed deer in wolf diets.*

---

relationships. Pages 54-70 in F. H. Harrington and P. C. Paquet, eds. *Wolves of the World*. Noyes Publ. Parkhurst, N.J. 474pp.

*A Vancouver herd (Hebert et al. 1982) fell from a calf/cow ratio of 50:100 to a ratio of 18:100 in one year in a situation where wolf populations were increasing. Wolf and deer relationships in the coastal forest region of British Columbia and Alaska show wolf predation is capable of reducing and suppressing deer populations under a wide range of environmental conditions.*

*As wolves recolonized the northern half of the island they virtually extirpated deer before significantly affecting elk numbers (Hebert 1981, Hebert et al. 1982).*

Jones, G.W. and B. Mason. 1983. Relationships among wolves, hunting, and population trends of black-tailed deer in the Nimpkish valley on Vancouver Island. B.C. Fish and Wildl. Branch. Fish and Wildl. Rept. No. R-7. 26pp.

*Wolf and deer relationships in the coastal forest region of British Columbia and Alaska show wolf predation is capable of reducing and suppressing deer populations under a wide range of environmental conditions.*

Land, C.R., and D. James. 1989. Annual report of survey-inventory activities, elk. Alaska Dept. of Fish and Game Div. of Wildl. Conserv. Vol. XIX, Part III. Proj. W-23-1, Study 13.0.

*Wolf predation was the largest cause of elk loss during the first year after the Etolin Island 1987 transplant.*

Milne, D.G., A.S. Harestad, and K. Atkinson. 1989. Diets of wolves on northern Vancouver Island. *Northwest Sci.* 63:83-86.

*Black-tailed deer were found to be the most frequent prey and comprised the greatest relative weight in the diet of wolves. Roosevelt elk comprised the next greatest component by relative weight in the diet. Use of alternate prey, including elk, increased when deer abundance was low.*

Murie, O.J. 1951. *The elk of North America*. The Stackpole Co. Harrisburg, PA and the Wildl. Mgmt. Inst. Wash., D.C. 376pp.

*Murie stated that both grizzly and black bears prey on calves in Wyoming and in the Olympic Mountains of Washington but doubted that "bears ever kill adult elk except under very unusual circumstances". Murie stated "In the Olympic Mountain region...the indications are that bears*

*population growth. These conclusions were drawn from an area of high prey density and multiple prey species, including elk, moose, deer and beaver (Carbyn 1983).*

---

**Cowan, I.Mct. 1947.** The timber wolf in the Rocky Mountains National Park of Canada. *Can. J. Res.* 25:139-174

*Cowan stated that elk calves and adults occurred in about equal proportions in summer scats of wolves in Canada.*

---

**Fritts, S.H., and L.D. Mech. 1981.** Dynamics, movements, and feeding ecology of a newly protected wolf population in northwestern Minnesota. *Wildl. Monogr.* No. 80.

*Deer constituted the bulk of wolf diets in this study, and moose contributed secondarily.*

---

**Hastings, A., and T. Powell. 1991.** Chaos in a three-species food chain. *Ecol.* 72:896-903.

*This study suggests that much more complex behavior will occur in three-species food chains (i.e. deer, elk, and wolves) than in two-species chains (i.e. deer and wolves).*

---

**Hatter, I.W. 1982.** Predator-ungulate relationships in second growth forests on Vancouver Island. Problem Analysis. Research, Ministries of Environment and Forests. IWIFR-5. Victoria, B.C. 54pp.

*On Vancouver Island, wolf predation is capable of reducing and suppressing deer populations under a wide range of environmental conditions. Predation pressure on Vancouver Island deer is more severe in wolf territories with elk concentrations. This is believed to be because elk provide a source of alternate prey enabling wolves to continue exerting intense pressure on declining deer populations in areas occupied by elk.*

---

**Hebert, D.M. 1981a.** Wolf management for the benefit of ungulate prey species on Vancouver Island. B.C. Fish and Wildlife Branch. Nanaimo. Typescript. 27pp.

**Hebert, D.M. 1981b.** Predator management for the benefit of prey species in a resource allocation system on Vancouver Island. B.C. Fish and Wildl. Branch. Nanaimo. Typescript. 16pp.

**Hebert, D.M., J. Youds, R. Davies, H. Langin, D. Janz and G.W. Smith. 1982.** Preliminary investigations of the Vancouver Island wolf (*Canis lupus crassodon*) prey

## PREDATION AND ITS AFFECTS ON DEER AND ELK POPULATIONS

Atkinson, K. 1985. Effects of wolf control on black-tailed deer in the Nimpkish valley on Vancouver Island. B.C. Fish and Wildl. Branch. Wildl. Working Rept. No. WR-11. 22pp.

*Although wolf number subsequently declined and the impact of predation on elk stabilized, wolves have continued to suppress deer numbers in areas not affected by wolf control on Vancouver Island.*

---

Batchelor, R.F. 1965. The Roosevelt elk in Alaska, its ecology and management. Fed. Aid in Wildl. Rest. Project Report. W-6-R-5. Juneau. 37pp.

*Batchelor said that brown bear had little or no influence on Roosevelt elk on Afognak Island "with but the taking of an occasional calf."*

---

Brunt, K.R. 1990. Ecology of Roosevelt elk. Pages 65-98 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*Wolves feed primarily on deer on Vancouver Island; however, when deer densities decline, wolves switch to other prey, including elk. Predation can strongly affect elk population levels, particularly on poor ranges where elk condition is low.*

---

Carbyn, L.N. 1974. Wolf predation and behavior interactions with elk and other ungulates in an area of high prey diversity. Canad. Wildl. Serv. Rept. Edmonton, Alberta. 233pp.

Carbyn, L.N. 1975. Wolf predation and behavior interactions with elk and other ungulates in an area of high prey density. Ph.D. Thesis. Univ. of Toronto. 234pp.

Carbyn, L.N. 1983. Wolf predation on elk in Riding Mountain National Park, Manitoba. Jour. Wildl. Manage. 47:963-976.

*In Canada's Jasper Park, Carbyn (1974, 1983) observed that the greater occurrence of elk in wolf scats, beginning in late June, coincided with elk calving, and stated that elk calves are most vulnerable to wolf predation. He concluded that elk calves and mule deer were the preferred prey of wolves. In May and early June wolves in Jasper Park shifted from mule deer as primary prey to elk (Carbyn 1974). It is significant to note that small packs of wolves (2-4 wolves) were just as successful as large packs in taking elk, that most elk taken in winter were in excellent physical and nutritional condition, and that wolf predation was the primary factor limiting elk*

## **ANNOTATED ELK BIBLIOGRAPHY**

**Alaska Department of Fish and Game  
Division of Wildlife Conservation  
Southeast Region**

**Prepared by Division of Wildlife Conservation, Region I**

**September 1993**

# State of Alaska



Department of Fish & Game  
Division of Wildlife Conservation  
Southeast Alaska Region Office  
PO Box 240020  
Douglas, AK 99824-0020  
(907) 465-4265 Fax:465-2034

## FACSIMILE TRANSMISSION

TO: Williams

DATE: 1/11/94

FROM: ADFG

TOTAL PAGES: 17 (INCLUDING THIS COVER SHEET)

MEMO:

FAX 6790

2ND HALF

# ANNOTATED ELK BIBLIOGRAPHY

Alaska Department of Fish and Game  
Division of Wildlife Conservation  
Southeast Region

Prepared by E.L. Young, Area Wildlife Biologist, Sitka,  
D. Larsen, Area Wildlife Biologist, Ketchikan, &  
C.R. Land, Area Wildlife Biologist, Petersburg

April 1993

## PREDATION AND ITS AFFECTS ON DEER AND ELK POPULATIONS

Atkinson, K. 1985. Effects of wolf control on black-tailed deer in the Nimpkish valley on Vancouver Island. B.C. Fish and Wildl. Branch. Wildl. Working Rept. No. WR-11. 22pp.

*Although wolf number subsequently declined and the impact of predation on elk stabilized, wolves have continued to suppress deer numbers in areas not affected by wolf control on Vancouver Island.*

---

Batchelor, R. F. 1965. The Roosevelt elk in Alaska, its ecology and management. Fed. Aid in Wildl. Rest. Project Report. W-6-R-5. Juneau. 37pp.

*Batchelor said that brown bear had little or no influence on Roosevelt elk on Afognak Island "with but the taking of an occasional calf."*

---

Brunt, K.R. 1990. Ecology of Roosevelt elk. Pages 65-98 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*Wolves feed primarily on deer on Vancouver Island; however, when deer densities decline, wolves switch to other prey, including elk. Predation can strongly affect elk population levels, particularly on poor ranges where elk condition is low.*

---

Carbyn, L. N. 1974. Wolf predation and behavior interactions with elk and other ungulates in an area of high prey diversity. Canad. Wildl. Serv. Rept. Edmonton, Alberta. 233pp.

Carbyn, L. N. 1975. Wolf predation and behavior interactions with elk and other ungulates in an area of high prey density. Ph.D. Thesis. Univ. of Toronto. 234pp.

Carbyn, L. N. 1983. Wolf predation on elk in Riding Mountain National Park, Manitoba. Jour. Wildl. Manage. 47:963-976.

*In Canada's Jasper Park, Carbyn (1974, 1983) observed that the greater occurrence of elk in wolf scats, beginning in late June, coincided with elk calving, and stated that elk calves are most vulnerable to wolf predation. He concluded that elk calves and mule deer were the preferred prey of wolves. In May and early June wolves in Jasper Park shifted from mule deer as primary prey to elk (Carbyn 1974). It is significant to note that small packs of wolves (2-4 wolves) were just as successful as large packs in taking elk that most elk taken in winter were in excellent physical and nutritional condition, and that wolf predation was the primary factor limiting elk*

population growth. These conclusions were drawn from an area of high prey density and multiple prey species, including elk, moose, deer and beaver (Carbyn 1983).

---

Cowan, I. Mct. 1947. The timber wolf in the Rocky Mountains National Park of Canada. Can. J. Res. 25:139-174

*Cowan stated that elk calves and adults occurred in about equal proportions in summer scats of wolves in Canada.*

---

Fritts, S.H., and L.D. Mech. 1981. Dynamics, movements, and feeding ecology of a newly protected wolf population in northwestern Minnesota. Wildl. Monogr. No. 80.

*Deer constituted the bulk of wolf diets in this study, and moose contributed secondarily.*

---

Hastings, A., and T. Powell. 1991. Chaos in a three-species food chain. Ecol. 72:896-903.

*This study suggests that much more complex behavior will occur in three-species food chains (i.e. deer, elk, and wolves) than in two-species chains (i.e. deer and wolves).*

---

Hatter, I. W. 1982. Predator-ungulate relationships in second growth forests on Vancouver Island. Problem Analysis. Research, Ministries of Environment and Forests. IWIFR-5. Victoria, B.C. 54pp.

*On Vancouver Island, wolf predation is capable of reducing and suppressing deer populations under a wide range of environmental conditions. Predation pressure on Vancouver Island deer is more severe in wolf territories with elk concentrations. This is believed to be because elk provide a source of alternate prey enabling wolves to continue exerting intense pressure on declining deer populations in areas occupied by elk.*

---

Hebert, D. M. 1981a. Wolf management for the benefit of ungulate prey species on Vancouver Island. B.C. Fish and Wildlife Branch. Nanaimo. Typescript. 27pp.

Hebert, D. M. 1981b. Predator management for the benefit of prey species in a resource allocation system on Vancouver Island. B.C. Fish and Wildl. Branch. Nanaimo. Typescript. 16pp.

Hebert, D. M., J. Youds, R. Davies, H. Langin, D. Janz and G. W. Smith. 1982. Preliminary investigations of the Vancouver Island wolf (*Canis lupus crassodon*) prey

relationships. Pages 54-70 in F. H. Harrington and P. C. Paquet, eds. *Wolves of the World*. Noyes Publ. Parkhurst, N.J. 474pp.

*A Vancouver herd (Hebert et al. 1982) fell from a calf/cow ratio of 50:100 to a ratio of 18:100 in one year in a situation where wolf populations were increasing. Wolf and deer relationships in the coastal forest region of British Columbia and Alaska show wolf predation is capable of reducing and suppressing deer populations under a wide range of environmental conditions.*

*As wolves recolonized the northern half of the island they virtually extirpated deer before significantly affecting elk numbers (Hebert 1981, Hebert et al. 1982).*

---

**Jones, G. W. and B. Mason. 1983.** Relationships among wolves, hunting, and population trends of black-tailed deer in the Nimpkish valley on Vancouver Island. B.C. Fish and Wildl. Branch. Fish and Wildl. Rept. No. R-7. 26pp.

*Wolf and deer relationships in the coastal forest region of British Columbia and Alaska show wolf predation is capable of reducing and suppressing deer populations under a wide range of environmental conditions.*

---

**Land, C.R., and D. James. 1989.** Annual report of survey-Inventory activities, elk. Alaska Dept. of Fish and Game Div. of Wildl. Conserv. Vol. XIX, Part III. Proj. W-23-1, Study 13.0.

*Wolf predation was the largest cause of elk loss during the first year after the Etolin Island 1987 transplant.*

---

**Milne, D.G., A.S. Harestad, and K. Atkinson. 1989.** Diets of wolves on northern Vancouver Island. Northwest Sci. 63:83-86.

*Black-tailed deer were found to be the most frequent prey and comprised the greatest relative weight in the diet of wolves. Roosevelt elk comprised the next greatest component by relative weight in the diet. Use of alternate prey, including elk, increased when deer abundance was low.*

---

**Murie, O. J. 1951.** The elk of North America. The Stackpole Co. Harrisburg, PA and the Wildl. Mgmt. Inst. Wash., D.C. 376pp.

*Murie stated that both grizzly and black bears prey on calves in Wyoming and in the Olympic Mountains of Washington but doubted that "bears ever kill adult elk except under very unusual circumstances". Murie stated "In the Olympic Mountain region...the indications are that bears*

*and elk may readily be maintained on the same range, with a surplus of each for the sportsman."*

*Murie cited I. McT. Cowan as saying that wolves in Canada commonly prey on elk, both on calves and adults, and that a single wolf can kill an elk, which is seized by the throat or flank. He stated that elk may escape wolves by taking to water or deep, soft snow. According to Murie, Cowan also said, "It is concluded that under existing circumstances the wolves are not detrimental to the park game herds, that their influence is definitely secondary, in the survival of game, to the welfare factors, of which the absence of suitable winter forage is the most important." Dr. Cowan was referring to an area where 50 percent of the elk were considered surplus because of range conditions (Murie 1951).*

---

**Oosenburg, S. M. and L. N. Carbyn. 1982.** Winter predation of bison and activity patterns of a wolf pack in Wood Buffalo National Park. Pages 43-53 in F. C. Harrington and Paquet, eds. *Wolves of the World*. Noyes Publ. Parkhurst, N.J. 474pp.

*In Canada's Wood Buffalo National Park, where wolves prey primarily on bison, data indicated that each wolf ate 5.3 kg/day, or an average of one bison every 78 days per wolf (Oosenbrug and Carbyn 1982).*

---

**Potvin, F. 1988.** Wolf movements and population dynamics in Papineau-Labelle Reserve, Quebec. *Can. J. Zool.* 66:1266-1273.

\_\_\_\_\_, **H. Jolicoeur, and J. Huot. 1988.** Wolf diet and prey selectivity during two periods for deer in Quebec: decline versus expansion. *Can. J. Zool.* 66:1274-1279.

*Potvin (1988) found that wolf packs in contact with large deer yards generally used that portion of their territories most intensively during winter. Potvin et al. (1988) also found that although moose were present in their study area, wolves fed primarily on deer in winter, even when deer had almost disappeared locally.*

---

**Scott, B. M. V. and D. M. Shackelton. 1980.** Food habits of two Vancouver Island wolf packs: a preliminary study. *Can J. Zool.* 57:1203-1207

*On Vancouver Island, B.C., scats indicated that Roosevelt elk were second in importance only to black-tailed deer in wolf diets.*

---

Schlegel, M. 1976. Factors affecting calf elk survival in north-central Idaho—a progress report. Proc. West. Assoc. State Game and Fish Comm. 56:342-355

*Schlegel reported losses of around 50% from black bear predation in an Idaho elk herd.*

---

Taber, R. D. and K. J. Raedeke. 1980. Roosevelt Elk of the Olympic National Forest. Status Report. Wildl. Sci. Group. Univ. of Wash. Seattle. 107pp.

*Taber and Raedeke discounted predation as an "important mortality agent" in the Olympic peninsula, and pointed out that the wolf (Canis lupus) "is now extinct and that the puma's (Felis concolor) numbers are very reduced. They did not mention the black bear (Euarctos americanus) as being present or as a possible predator. These authors stated, "The recovery of the elk population after the turn of the century resulted not only from the control of predators and the restriction of hunting, but also from changes in the habitat."*

---

Van Ballenberghe, V., A.W. Erickson, and D. Byman. 1975. Ecology of the timber wolf in northeastern Minnesota. Wildl. Monogr. No. 47.

*This study showed that deer were the primary food item of wolves in Minnesota, while moose and beaver contributed secondarily to the diets of wolves.*

---

Van Ballenberghe, V. and T. A. Hanley. 1982. Predation on deer in relation to old-growth forest management in southeastern Alaska. Pages 291-296 in W. R. Meehan, T. R. Merrel, Jr. and T.A. Hanley, eds. Fish and Wildlife Relationships in Old-Growth Forests. Amer Inst. Fish. Res. Biol. 425pp.

*Van Ballenberghe and Hanley discussed the problem of wolf predation on deer in southeast Alaska. They stated that some factors which improve the efficiency of wolves as predators in this area are: periodic winters of deep snow that can result in surplus killing by wolves, patchiness of deer winter habitat which reduces search time for wolves, relatively constant sources of food for wolves from the ocean which prevents wolves from declining in concert with deer, and reductions in buffer zones between wolf pack territories as a result of the island nature of the area. They concluded, "These factors, along with high annual kill rates by wolves due to the small body size of black-tailed deer, suggest that predation may be more of a management problem in southeastern Alaska than elsewhere."*

---

Voight, D.R., G.B. Kolenosky, and D.H. Pimlott. 1976. Changes in summer foods of wolves in central Ontario. J. Wildl. Manage. 40:663-668.

*This study showed that wolves preyed on deer substantially more than moose. However, as deer*

numbers declined, wolf densities could be maintained temporarily at relatively high levels as a result of available alternate prey, including moose and beaver.

---

Weaver, J. L. 1980. Wolf predation upon elk in the Rocky Mountains parks of North America: a review. Pages 29-33 in M.S. Boyce and L. D. Hayden-Wing, eds. North American Elk: Ecology Behavior and Management. Univ. of Wyoming. 293pp.

*Weaver reviewed wolf predation on elk in the literature and stated "In Jasper Park December 1946 and in Banff Park January 1947, biologist E. W. Pfeiffer determined that two separate packs of 5-6 wolves each were killing 3 elk every 2 weeks...If three elk--1 calf, 1 cow and 1 bull--were killed every two weeks, this represents 6.2 kg (13.6 lb.) to 7.5 kg (16.5 lb.) elk per wolf per day, 0.17-0.20 kg elk per.kg wolf per day." Weaver also reported that Vernon Bailey collected wolf droppings in central Yellowstone Park in July 1915 which were made up entirely of elk hair.*

---

Young, E. L., C. R. Land, and D. D. James. 1993. Mortality and movement of transplanted Rocky Mountain and Roosevelt elk in southeast Alaska. Proc. Western States and Provinces Elk Workshop. Cal. Dept. of Fish and Game. Eureka. May 1990. In press.

*Radio-collared elk were subjected to predation by wolves from the inception of the 1987 elk transplant to Etolin Island. Black bears cached elk carcasses and were thought to have been responsible for some adult elk mortality on Etolin Island.*

#### PARASITES AND DISEASES OF ELK

Broughton, E., L. P. E. Choquette, J. G. Cousineau, and F. L. Miller. 1970. Brucellosis in reindeer (*R. tarandus* and the migratory barren-ground caribou, *R. t. groenlandicus* (L.) in Canada. Can. J. Zool. 48:1023-1027.

*Quoted by V. Geist (1990) as discussing transmission of diseases of ranched reindeer to caribou. See Geist reference below.*

---

Erhardova-Kotrla, B. 1971. The occurrence of *Fascioloides magna* in Czechoslovakia. Czechoslovak Acad. Sci., Prague. 155pp.

*According to Welch et al. (1991), this paper discusses the introduction of the giant liver fluke into Europe by translocated exotics from North America.*

---

Geist, V. 1990. Game-ranching: menace to the survival of the North American elk. Pages 292-295 in A. G. Christensen, L. J. Lyon and T. N. Lonner, comps., Proc. Elk Vulnerability Symp., Montana State Univ., Bozeman. 330pp.

*Geist decried game ranching as potentially causing the "end" of native elk through genetic pollution, diseases and competition with uncontrollable feral populations of exotics. Game ranching leads to the escape of reportable livestock diseases into wild populations because of technical shortcomings in detecting diseases, inadequate quarantine regulations, the flouting of import and export regulations and the inevitability of ranched wildlife escaping into the wilds. Geist cited authorities (Neiland et al. 1968, Neiland 1975, Broughton et al. 1970, see references) who reported that game ranching passed on swine brucellosis from reindeer to caribou, native carnivores, dogs and native people.*

---

Kistner, T. P. 1982. Diseases and parasites. Pages 181-217 in J. W. Thomas and D. E. Toweill, eds. Elk of North America, Ecology and Management. Wildl. Manage. Inst. 698pp.

*Elk are normally healthy when their numbers are kept within the carrying capacity of the range, but they are susceptible to many pathological conditions. These include bacterial diseases, fungal diseases, parasitic diseases, rickettsial diseases, viral diseases, toxicological diseases, internal and external parasites, and tumors. Some diseases of elk listed by Kistner were actinomycosis, anthrax, arthritis, brucellosis, clostridia, leptospirosis, necrotic stomatitis, and coccidiomycosis. Kistner said that lungworm has frequently been reported in Roosevelt elk, Rocky Mountain elk, and Tule elk. Kistner cited Thorne and Morton (1975) as authorities on brucellosis in elk. See citation below. Kistner listed mites, ticks, botflies, lice, flukes, tapeworms, protozoans, filarial worms, lungworms, threadworms, and whipworms as being found in elk.*

---

Murie, O. J. 1951. The elk of North America. The Stackpole Co. Harrisburg, PA and the Wildl. Mgmt. Inst. Wash., D.C. 376pp.

*The winter tick (Dermacentor albipictus) was seen by Murie as a "scourge" that visits the elk each spring. He stated that the ticks usually are attached in large numbers on the neck, back, and about the tail where bare skin occurs, and on the inside of the thigh. Murie went on to say that elk bite at the ticks and he felt that engorged ticks were palatable to elk.*

*Murie reported that Psoroptes communis var. cervinae is the causative mite of scabies in elk. Murie found an old cow elk in the Olympic Mountains to be covered with lice (Bovicula americanum) shortly after death.*

*Murie (1951) said that lungworms (Dictyocaulus haaweni = D. viviparus) were found in elk in Jackson Hole, Wyoming. Schwartz (1943) examined 32 Roosevelt elk and found lungworm in*

23 elk. He also reported bloodworms (*Cysticercus tenuicollis*) in the liver of a number of elk. Tapeworms (*Thysanosoma actinoides*) were reported in Wyoming Rocky Mountain elk by Murie.

---

Neiland, K. A. 1975. Further observations on rangiferine brucellosis in Alaska carnivores. J. Wildl. Dis. 11:45-53

Neiland, K. A., A. J. King, B. E. Huntley, and R. S. Hoog. 1968. The diseases and parasites of Alaskan wildlife populations. Part I. Some observations on brucellosis in caribou. Bull. Wildl. Dis. Assoc. 4:27-37.

Quoted by V. Geist (1990, see previous reference) as detailing transmission of diseases of ranched game to carnivores, caribou, dogs and people in Alaska.

---

Pybus, M. J. 1990. Survey of hepatic and pulmonary helminths of wild cervids in Alberta, Canada. Jour. Wildl. Diseases. 26(4), pp. 453-459.

Pybus, M. J., D. K. Onderka, and N. Cool. 1991. Efficacy of triclabendazole against natural infections of *Fascioloides magna* in wapiti. Jour. Wildl. Diseases 27(4), pp. 599-605.

Direct and indirect mortality has been associated with giant liver fluke (*Fascioloides magna*) infections in moose (*Alces alces*). The giant liver fluke was found in 18 of 27 adult wapiti in alpine or montane habitat. Pybus (1990) found several other parasites in elk during the survey: *Taenia hydatigena*, *Dictyocaulus viviparus*, *Echinococcus granulosus*, and *Thysanosoma actinoides*.

The giant liver fluke is a relatively benign parasite in the liver of white-tailed deer and elk, but it can cause extensive hepatic damage in moose, elk, and Columbian black-tailed deer (*Odocoileus hemionus columbianus*). The fluke is translocated easily by infected wapiti into areas suitable for its life cycle (Pybus et al. 1991)

Pybus (pers comm.) relates that the giant liver fluke causes problems with moose, and that just a few flukes can kill a moose. In most ungulates, the flukes in the liver seek a mate by tunneling. When they find a mate, they stop and the body's defense mechanism forms a capsule around the two flukes. In moose, the sensory mechanism of the fluke is disrupted and the flukes continue tunneling without locating a mate, causing severe liver damage.

---

Schwartz, J. E. 1943. Range conditions and management of the Roosevelt elk on the Olympic Peninsula. U.S. Dept. of Agric. 65pp. (Cited by Murie 1951).

Tapeworms (*Thysanosoma actinoides*) were reported in Washington in 7 out of 32 Roosevelt elk examined by Schwartz.

Tessaro, S. V. 1986. Existing and potential importance of brucellosis and tuberculosis in Canadian wildlife: a review. *Can. Vet. J.* 27:119-224.

*Welch et al. (1991) cited Tessaro as the source for information on the introduction of brucellosis and tuberculosis into Wood Buffalo National Park in Canada through animal transplants.*

---

Thorne, E. T. and J. K. Morton. 1975. The incidence and importance of brucellosis in elk in northwestern Wyoming. *Job. Compl. Rep., Fed. Aid in Wildl. Rest., Proj. FW-3-R-21*, pp 12-16. Wyoming Game and Fish Comm. Laramie. cited in Kistner (1982).

Thorne, E. T., J. D. Herriges, Jr., and A. D. Reese. 1991. Bovine brucellosis in elk: conflicts in the greater Yellowstone area. Pages 296-303. *in* A. G. Christensen, L. J. Lyon and T. N. Lonner, comps., *Proc. Elk Vulnerability Symp.*, Montana State Univ., Bozeman. 330pp.

*Thorne and Morton (1975) related Brucellosis and tuberculosis are two feared diseases that are contracted by elk and which are infectious to human beings. Brucella abortus, the etiologic agent of bovine brucellosis (undulant fever in humans) occurs in both bison and supplementally fed elk within 27,000 square miles of Yellowstone National Park and the adjacent National Forests. The disease in elk appears to be associated with feedground elk in Wyoming and Montana. Researchers say there is little opportunity for transmission of brucellosis among non-feedground elk.*

*Thorne et al. (1990) said brucellosis is prevalent in elk of northwestern Wyoming. Occurrence of brucellosis is a consequence of supplemental winter feeding as a substitute for natural winter ranges. Presence of the disease in northern Yellowstone elk may reflect their association with infected bison and interchange with fed elk populations. The Wyoming Game and Fish Department (WGFD) vaccinates fed elk with a vaccine called "strain 19", tries to reduce reliance on supplemental feed through habitat improvement and acquisition and tries to separate cattle and elk during high risk transmission periods. About 50% of infected elk abort their first pregnancy following infection. Chronic brucellosis frequently causes lameness. WGFD spends \$100,000 per year on the elk vaccination program.*

---

Welch, D. A., M. J. Pybus, W. M. Samuel, and C. J. Wilke. 1991. Reliability of fecal examination for detecting infections of meningeal worm in elk. *Wildl. Soc. Bull.* 19:326-331.

*Several relocations of animals resulted in the establishment of new diseases in populations of native ungulates, with devastating and prolonged consequences. Examples given by Welch et al. include rinderpest into Africa, brucellosis and tuberculosis into Wood Buffalo National Park in Canada, and the giant liver fluke into Europe (Tessaro 1986). The giant liver fluke, the*

*carotid artery worm and the meningeal worm, could be transported in infected hosts and become established in previously uninfected wild populations (Samuel 1987). Welch et al. gave probability of detecting parasite infections in fecal samples and decided that examination of multiple fecal samples is not a reliable diagnostic tool for detecting infections of meningeal worm in all infected elk.*

---

**Worley, D. E. 1990.** The role of internal parasites in management of free-ranging and captive North American elk (*Cervus elaphus nelsoni*). Pages 304-307 in A. G. Christensen, L. J. Lyon and T. N. Lonner, comps., Proc. Elk Vulnerability Symp., Montana State Univ., Bozeman. 330pp.

*Worley said at least 23 species of internal parasites have been reported from wild elk on native ranges in the western United States and Canada. Four are most frequently associated with clinical disease: the intra-arterial nematode, Elaeophora schneideri; the meningeal worm, Parelaphostrongylus tenuis; the thread lungworm, Dictyocaulus viviparus and the giant liver fluke, Fascioloides magna. Expansion of the range of the giant liver fluke via translocation of infected animals has been attributed to movement of both free-ranging and captive elk.*

#### DEER AND ELK FEEDING ECOLOGY, NUTRITION, REPRODUCTION, ENERGY EXPENDITURE, AND COMPETITION

**Batchelor, R.F. 1963.** Elk investigations-Elk range studies. Alaska Dep. Fish and Game. Proj. W-6-R-3. Job 1-B. Juneau. 65pp.

*Reporting on range conditions on a portion of the Litnik Lake Game Range of southeastern Afognak Island, Batchelor indicated that 95% of all elderberry and 54% of all willows were classified as retrogressives, being unable to maintain the present state of health. He concluded that this was caused either by elk browsing or successional changes in the plant community or both.*

---

**Brunt, K.R. 1990.** Ecology of Roosevelt elk. Pages 65-98 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*Because the rumen:body-weight ratio is higher in elk than in deer, elk are able to digest relatively larger amounts of coarse forage without running short of incoming energy. They can therefore eat more low-energy foods than deer. Winter diets of elk overlap deer diets on Vancouver*

*Island, and consist of many of the same forage species eaten by deer in Southeast Alaska (see below, Eunnell 1990). Minimum digestible protein required for pregnant elk cows to successfully produce a surviving calf is about 5.5%, compared with just over 7% required by pregnant does.*

*Elk cows generally conceive for the first time in their third year of life and give birth to a single calf. Twin calves have not been reported on Vancouver Island. Predation can strongly affect elk population levels, particularly on poor ranges where elk condition is low.*

*Because of their low reproductive rates relative to deer, elk hunting on Vancouver Island is by limited entry drawing. Between 1977-1988, annual harvests have varied from about 50 to 150 elk on the approximately 15,000 mi<sup>2</sup> island.*

---

**Bunnell, F.L. 1990.** Ecology of Black-tailed deer. Pages 31-63 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*Deer have rumens which are 60% smaller than those of elk. This physiological difference makes it critically important for deer to obtain sufficient quantities of high-nutrient forage species in order to survive and reproduce. This is especially important during winters when energetic costs for deer to move through two feet of snow is over four times greater than what is required for elk.*

Deer on Vancouver Island feed on many of the same plant species as elk and Southeast Alaska deer. Among the plant species which are utilized by both deer and elk are high-nutrient forbs including bunchberry, five-leaf bramble, deer fern, and skunk cabbage. Both species also feed on blueberry (an important winter food) and salmonberry shrubs, and on western hemlock and western red cedar.

Does generally reproduce for the first time at age 2 and on good ranges twinning is common. However, the high growth potential of deer populations is reduced by mortality, which can be substantial during severe winters or when predators are abundant.

---

**Jenkins, K.J. 1985.** Winter habitat and niche relationships of sympatric cervids along the North Fork of the Flathead River, Montana. Ph.D. thesis, University of Idaho, Moscow.

\_\_\_\_\_, and R.G. Wright. 1987. Dietary niche relationships among cervids relative to winter snowpack in northwestern Montana. *Can. J. Zool.* 65:1397-1401.

\_\_\_\_\_, and \_\_\_\_\_. 1988. Resource partitioning and competition among cervids in the northern Rocky Mountains. *J. Appl. Ecol.* 25:11-24.

*In their studies, Jenkins and his colleagues found that a high degree of overlap in spatial, habitat, and dietary patterns occurred between elk, moose, and white-tailed deer in northwestern Montana. Indices of overlap suggested that the greatest potential for interspecific competition occurred between elk and white-tailed deer; the effects of which appeared to be greatest for white-tailed deer because of their low foraging reach and limited tolerance of snow.*

*Jenkins and Wright (1987) found 71-81% dietary overlap between elk and white-tailed deer during mild and snowy winters, respectively. Variable snowpack and forage availabilities promoted opportunistic rather than specialized winter foraging behavior. Low evergreen shrubs, grasses, and forbs were not available during periods of deep snow to permit high levels of food specialization and partitioning between cervids. Jenkins and Wright (1987) believe that adverse effects of forage competition would be most pronounced during consecutive severe winters when cervids are energetically stressed.*

---

**Leslie, D.M., E.E. Starkey, and M. Vavra. 1984.** Elk and deer diets in old growth forests in western Washington. *J. Wildl. Manage.* 48:762-775.

*In their study conducted in western Washington, these researchers found that high (78-93%) dietary overlap between elk and black-tailed deer suggested competitive interactions for food, especially during winter when forage resources were least available. Predominant forages in fall and winter diets seemed to afford little opportunity for cervids to select different plant parts.*

---

**Murie, O.J. 1951.** The elk of North America. The Stackpole Co. Harrisburg, PA. and the Wildl. Manage. Inst. Washington, D.C. 376pp.

*Murie conducted over 35 years of study on elk in Wyoming. He points out that elk are generalized in their food requirements, while deer on winter range are specialized and hence suffer more directly from malnutrition. In the absence of sufficient browse, Murie found deer which had died on diets which allowed elk to thrive. Murie indicates that food habits of big game are not sufficiently specialized to prevent competition among species, and elk being the most omnivorous big game animal, is the most likely to bring on harmful rivalry. Elk have been known to compete with mountain sheep, antelope, deer, and moose, particularly on winter range. In planning for deer and elk, Murie points out that it is necessary to keep in mind that while elk will utilize practically any type of vegetation present on winter range, deer are confined to browse. Deer are the first to suffer in serious competition, and the range suffers to the detriment of both species by a too drastic combined onslaught on its forage resource.*

---

**Nelson, J.R., and T.A. Leege. 1982** Nutritional requirements and food habits. Pages 323-367 in J.W. Thomas and D.E. Toweill, eds. Elk of North America, ecology and management. Wildl. Manage. Inst. 698pp.

*In Washington, elk were found to feed primarily on grasses, sedges, and forbs during most of the year; however, during winter they turned almost exclusively to woody browse (shrubs).*

---

Nyberg, J.B., D.W. Janz, R.B. Addison, R.D. Forbes, and E.L. Richardson. 1990. Introduction. Pages 1-29 in Deer and elk habitats in coastal forests of southern British Columbia. J.B. Nyberg and D.W. Janz, ed. British Columbia Ministry of Forests and Environment, Victoria, B.C. 310pp.

*The effects of hunting are of greater management concern for elk than for deer because of the social behavior and lower productivity of elk compared to deer. Elk harvests will continue to be controlled by limited entry hunts on Vancouver Island.*

---

Schwartz, J.E., and G.E. Mitchell. 1945. The Roosevelt elk of the Olympic Peninsula, Washington. J. Wildl. Manage. 9:295-319.

*These authors found that elk in Washington browsed on shrubs as well as grazed on grasses and forbs. During the winter, when all herbaceous plants were buried by snow, the elk used browse exclusively, resulting in extensive use of huckleberry, an important winter deer food. The authors observed that elk are more damaging to a range than deer, and sometimes even more so than domestic livestock.*

---

Short, H.L. 1981. Nutrition and metabolism. Pages 99-127 in Mule and Black-tailed deer of North America. O.C. Wallmo, ed. Wildl. Manage. Inst. Univ. of Nebraska Press, Lincoln. 605pp.

*Deer require over 7% digestible protein in their diets in order to successfully grow and reproduce. This is over 20% higher than the 5.5% minimum requirement for elk (see Brunt 1990). The author explains in detail the physiological components of deer digestive processes and describes the need for high-nutrient forage in deer diets. He indicates that diets consisting of 15-16% digestible protein are necessary for optimum growth and reproduction. Foods with high cell content and low lignocellulose levels provide much more digestible protein than mature woody twigs, dead and withered leaves, or dormant grasses.*

---

Tanner, D.L. 1957. The Soldier Mountain elk herd. Idaho Fish and Game Dept. Pages 8-11.

*Tanner reported that in an area of overpopulation, elk competed for food with deer on wintering areas.*

---