



AgroBorealis

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School of Agriculture and Land Resources Management
Agricultural and Forestry Experiment Station

UNIVERSITY OF ALASKA FAIRBANKS 

Dean, Director discusses outlook for School, Experiment Station

As I watch events unfold in Alaska and the nation, I am reminded of the opening lines of Charles Dickens classic *A Tale of Two Cities*. "It was the best of times; it was the worst of times!"

This well-known quote precisely describes the Agricultural and Forestry Experiment Station today. It is the "best of times" for some of the work we've done and work we're continuing. In the last couple of weeks, a delegation from the community of Delta Junction visited us seeking help in expanding their economy now that Department of Defense reductions are severely cutting back Fort Greely, their largest employer.

We had some potential good news for them. Dr. Charles Knight's year long investigation into specialized niche crops offers more opportunities for Alaska development. Market opportunities are expanding for Alaska's Interior forests.

Our newly developed Geographical Information Systems investment is paying off. Students have learned to use GIS in everything from land use to mineral exploration to finding an appropriate site for the Fairbanks North Star Borough's new waste disposal site. Additionally, students tell us that our field course emphasizing on-site studies of resource industries in Alaska is a highlight of their

"We had some potential good news for them. Dr. Charles Knight's year long investigation into specialized niche crops offers more opportunities for Alaska development."



DR. JAMES V. DREW

educational experience.

As gratifying as this progress is, it is also the "worst of times" for us. Last November the only federal agricultural research in Alaska—the USDA's Agricultural Research Service (ARS) subarctic unit in Fairbanks—was closed. After almost a century of research by federal agricultural scientists in Alaska, now there is none. This is particularly difficult for us because AFES and ARS had developed an efficient and effective partnership without duplication of effort or personnel.

Now, Alaskans can no longer draw on the ARS researchers in agronomy and weed science who were stationed here. What effects will increased atmospheric carbon

dioxide have on crop growth at high latitudes? We won't know because ARS research to find out was halted after only one year.

Not all of our "worst of times" is a result of federal cutbacks. In fact federal formula funding for agricultural and forestry research at the experiment station has remained constant for several years. But because of cuts in university funding we had to eliminate research in food science, and reduce our research in agronomy, animal science, and

resource economics.

The men and women, scientists and technicians, faculty and staff are actively working to make ours a positive future. But much of our destiny is beyond our ability to direct. Decisions—vital to our continued ability to provide positive, growth-oriented answers to real Alaskan situations—are being made elsewhere. The optimist in me believes our work is recognized and that we'll be able to continue serving Alaskans. The pessimist in me fears that short range thinking will cripple our ability to find those needed answers.

Dickens also wrote, "It was the season of Light; it was the season of Darkness." Let's hope for sunshine.



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CONGRATULATIONS DR. TODD



Dr. Susan Todd recently completed a doctoral degree in Natural Resources Management. Dr. Todd is an assistant professor of regional and land use planning. (AFES photo)

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SALRM takes to the Internet

SALRM has two new ways for you to communicate with us:

1. Through Internet email at
fynrpub@aurora.alaska.edu
 You can request AFES publications or be added to the *Agroborealis* mailing list.
2. Through the World Wide Web at
http://www.lter.alaska.edu/salrm/salrm.html
 At this welcome page you will find links to information about SALRM and AFES, about our undergraduate and graduate programs, and about our research.

If you are not sure how these services can benefit you, contact your systems administrator, or your Internet provider.

1994 readership survey follow-up

The *Agroborealis* was first printed in 1969. In its 26 years, it has fluctuated between a technical scientific journal format, to a popular magazine format. We have now transitioned the *Agroborealis* back to a magazine format written and designed for the nonscientific audience. Our goal is to communicate clearly with people who work in the natural resources areas—including agriculture, forestry, and natural resources management, people who have been trained in those areas, as well as legislators, consumers, Alaskans in general, and people interested in Alaska.

Having said that, it is vital that we indeed meet our readers' needs. To discover if we are at least headed in the right direction, we sent a readership survey form with the 1994 Summer/Fall edition of the *Agroborealis*. We want to share the feedback with you. Table 1 highlights some of the comments we received. Where possible (for instance, some respondents wanted information that isn't within our realm of expertise) we

will try to cover some of the suggested topics in upcoming issues of the magazine. The results of format questions are printed in Table 2.

Of course, each survey respondent has his or her likes and dislikes. Not surprisingly, we received conflicting comments. One reader said, "Way too much of the magazine has been devoted to reclamation of North Slope and various mines. No space should be devoted to recreational management or some of the other subjects it has covered." Another respondent said, "...Would like to see more papers regarding tourist oriented economy as it grows and how it relates to natural resources, passive and active recreational opportunities. Compare with current oil state economy."

The following comments were directed to the editorial policies. "More applied. Individual articles are technical enough but would like to see more research results — even just a summary in *Agroborealis*. Report findings." "How about summarizing research in plain English? No metric, kgs and so on — it's tough to get much out

Table 1.

Survey Comments

- Is there a program available where we can teach our children to plant and grow trees, birch alder—for wind protection, enhancement, preservation, etc.? *For starters, turn to page 28.*
- Is anyone in Alaska raising yak? Are there any bison farms in Alaska? *We are not aware of anyone raising yak and the Ag Experiment Station hasn't done yak research since the 1930s. There are numerous bison farms. In the Interior, for example, there are two near Delta Junction and one near North Pole.*
- Need more food product - processing - market research. *The next issue of the Agroborealis will feature work that Dr. Carol Lewis and her classes have done in market research and sensory panels.*
- Like to see more articles about cabbage, lettuce and potato research. *We have numerous publication about ongoing research in these areas.*
- Need more studies of compost fish meal and emulsion bone meal and seaweed and wood such as fertilizers. *We are trying to get funding to study.*
- Practical growing tips for Alaska fruit growers. • I enjoy the publication! Keep going on fruit tree production; especially Norwegian varieties where the climate is similar to our southeast and southcentral coast. • Articles on ornamentals, greenhouse management, and berry production. • We have apple, pear, and plum trees, gardens (vegetables and flower), kiwis, currants and other berries. Also are very interested in roses (hardy such as rugosa). • I am interested in having native species and ornamental hardy varieties commercially available in Alaska. I have 115 varieties of fruit trees. I am interested in experimentation of fruit production in Zones 1-3. I am interested in growing fruit trees and plants exotic to Alaska. • Successful home gardening greenhouse technology composting. • Any studies on the cultivation of wild and/or domestic cranberries, processing, and marketing? • Can you key some gardening articles to the recommended varieties list put out by the Extension Service? More focus on vegetables and flower gardening information that is useful for Interior Alaska. More on native tree and shrub species. *Our horticulturist, Dr. Pat Holloway, has published numerous papers and updates them annually on both vegetables and flowers. Indeed, Dr. Holloway provides this information to the Extension Service for them to get out to you the public. We will also continue running articles about many of these topics in the Agroborealis.*
- Need info on wildflower propagation on disturbed soils, reforestation for small land owners, attracting wildlife to property.
- Carry stories of successful farms like Hollenback in Delta Junction. Want to see some positive stories — like the success stories of Delta. We farm at Kenny Lake but there is no more Ag land available. *This is a great idea and we will highlight a positive natural resources manager in the 1996 issue.*
- Some articles spend too much space on what was done or worse, may or will be done, not what was found out. On the other hand your reports on experiments that failed are refreshing and appreciated. • Stop feeding a dead horse — Get back to helping real people with real problems — stop dealing with proven unprofitable Ag ventures.
- What about southeast Alaska? Very few articles about this dynamic area. *We ran two stories on the forest research in the southeast in the Spring 1994 Agroborealis.*
- More about machinery adapted for Alaska conditions. *We are not aware of any.* • Wind/solar important for rural living. • Could you include entomology research? *Within AFES there are no qualified researchers in these areas.*

Table 2.

Agroborealis Format

Agroborealis should contain more articles related to:

Scientific Results

Number of Responses: 122

Percentage of Responses: 20.23

People Stories

Number of Responses: 42

Percentage of Responses: 6.86

Keep Current Mix

Number of Responses: 440

Percentage of Responses: 73.41

Did Not Respond

Number: 17

Percentage: 2.83

In the future Agroborealis should be:

More Technical

Number of Responses: 68

Percentage of Responses: 11.20

Less Technical

Number of Responses: 53

Percentage of Responses: 8.70

Remain the Same

Number of Responses: 458

Percentage of Responses: 76.42

Did Not Respond

Number: 24

Percentage: 4.00

Because respondents could check more than one box, percentage results may total more than 100%.

of an article when you have to read with a calculator in hand!" "I believe a less technical publication would have wider appeal." "Not sure of your audience—if it is not scientists, use more 'layman' approach."

We want to reach the layman and we don't want there to be a question in the future about who our target audience is. In the future we will print data using the American measuring units as the primary unit.

One respondent wanted "Less administrative news, more useful information about actual projects (i.e. who cares about promotions and awards except close family and close friends, and they already know!)" We think, however, we can bring you research information and people information. Our people are important and we like to recognize their successes. We find that, for the most part, readers also enjoy this news.

"Why not a question and answer section where readers ask questions concerning agriculture and you provide answers with latest research?" asked one reader. Another suggested, "Including an opinion piece is good. Possibly should include more in-depth articles by researchers in their area of work." We'll think the opinion piece through before committing to it but we agree with the in-depth research articles and will be bringing them to you in nontechnical, non-jargon English. The question and answer suggestion sounds like a good idea and we will seriously consider it. The major drawback is that people who have questions want and probably need them answered immediately. Thus, we encourage people to contact us when they need information. Please call (907) 474-7188 if you have a burning question and we will put you in touch with an expert.

"Personally I love the technical," wrote another

respondent, "BUT very few of the lay gardeners or farmers would understand much of this publication—especially the annual report. This audience should be served—not just the academic." This comment leads right into one area that concerns me. We have a large number of readers who are scientists or who have advanced technical training and knowledge. These people were most likely to indicate they wanted the *Agroborealis* to be more technical. While we don't intend to restart the circular path from whence we've come, we're pleased to inform this group that we have other options for them. Most of our scientists publish their research in technical journals or in AFES circulars, research progress reports or miscellaneous publications which should provide the more technical format some readers want.

If you have access to the Internet, you can find an entire list of AFES publications through the SALRM welcome page on the World Wide Web, at <http://www.lter.alaska.edu/salrm/salrm.html>. Also, we publish a list of all of our scientists' previous year's publications in the summer/fall *Agroborealis*.

If you see one of our station publications that you would like a copy of please contact us via the Internet at fynrpub@aurora.alaska.edu or write to us at: Publications, AFES; P.O. Box 757200; Fairbanks, AK 99775-7200. We'll be glad to send you the information. Also, if you have any suggestions or comments to improve the *Agroborealis*, send them our way. It's you, our readers, that we are here to serve.



Dr. James V. Drew, AFES Director and SALRM Dean, recognizes Verlan Cochran, Dr. Jeff Conn, and other members of the USDA-ARS team for their contributions to agriculture in Alaska for almost a century (photo by J. Stephen Lay).

Farewell to Alaska's USDA—ARS

by: Donna Gindle
Editor

It's a different stanza of the same old song, and this time that song had a local message. The federal government, in an attempt to balance the budget and streamline bureaucracy, brought out the ax and began to chop. Mercilessly.

Alaska's only United States Department of Agriculture—Agricultural Research Service unit fell victim when it was marked for closure. The USDA-ARS was co-located with the Agricultural and Forestry Experiment Station at the University of Alaska Fairbanks.

Verlan Cochran, research leader for the unit, said he was first notified of the possible closure in February 1994.

"The president, through USDA, asked ARS to come up with \$18 million in savings. Our national program staff came up with a list of locations and then evaluated that list, taking inputs from affected people and community leaders. Some stations on the first list were

dropped because the committee thought Congress wouldn't approve. Administrators finally selected 19 stations for closure."

After the unit received notice it was being considered for closure, the employees continued their day-to-day activities while waiting and hoping they would get a reprieve.

Seven months later the waiting was over. For most of the 14 local ARS folks, it was time to start looking for another job. Unlike many agencies and corporations, though, the USDA worked with full-time, permanent employees to help relocate them to other units.

"Dean Plowman's (ARS director) policy was to work with every ARS employee and find him or her a job," Cochran said. "This concern for our well-being was well received. We appreciated the top leaders' efforts to try to find us jobs."

"In all honesty, though, I have to tell you that most people were not in a position to accept a transfer."

Only half, seven employees, qualified for relocation. They were Cochran; Jeff Conn, USDA scientist; technicians Sharon Schlentner,

Bill Saari and Richard Deck; Jacque Grandbois, administrative assistant; and Sherri Parker, administrative officer. Of those only Cochran, who transferred to Sidney, Mont. and Grandbois, who transferred to Pendleton, Ore., accepted USDA's offer.

Conn, Saari, and Schlentner all had spouses employed locally, and did not want to leave Alaska. Parker's husband, a U.S. Army helicopter pilot, decided to accept an Army reassignment, so they moved to New Mexico. Deck, a bachelor, didn't want to leave Alaska.

Dr. Elena Sparrow, USDA scientist, wasn't given the option of relocating because she was a term employee—hired to do a specific job. However, ARS appointed her to oversee and finalize the closure. She said the whole process, which took about three months, was a learning experience.

"ARS has never done this (close stations) before and it's been tough to make the process as orderly as they wanted it to be. I can tell you that I've learned a lot about moving

equipment," Sparrow said.

The federal government, after the initial costs of moving people, will save \$725,000 annually, said Cochran. This amount covered salaries, benefits and operational costs for the research unit.

While the government saved money, the university stood to lose substantially from this closure.

People within ARS and AFES worked closely together and had a mutually beneficial relationship.

"We had an agreement that if we could use the university's equipment, instead of buying our own, we did," said Cochran. "And likewise, they used ours."

The closure meant divvying up that equipment. When interviewed in December, Cochran said that they were still working out all the details of what was going to other ARS stations and what would be staying at UAF. Essentially if the gaining units needed certain office or field equipment, the outgoing folks could claim them for their new offices.

"I know that my Sidney office needs the chromatograph (used for measuring green house gas emissions), office computer, fax, and a truck and trailer. I'll be taking them with me. When she left, Jacque took her computer and electronic typewriters," said Cochran.

Any equipment not taken by Cochran or Grandbois was tagged

as surplus and could be claimed by other ARS locations. The gaining location had to pay freight or shipping costs. What ARS offices didn't take could be acquired by other USDA agencies and the AFES.

While Sparrow didn't have the authority to decide who would get what equipment, once ARS headquarters made its decision, she would oversee the equipment transfer. As of the end of March, Sparrow had dispersed most of it, and was waiting for a final shipment to be sent to Riverside, Calif. and Pullman, Wash.

Ordinarily, non-ARS agencies would not have priority in their efforts to get the equipment. But, Cochran explained, AFES has a USDA component through the Cooperative States Research Services. Dr. Jim Drew, AFES director, is also the CSRS director for Alaska. In that capacity Drew has control over CSRS formula funds, giving the experiment station equal basis as other USDA agencies for getting surplus.

"Because the university has hosted ARS for so many years," Cochran said, "and because of our close cooperation throughout those years, we're working closely with the university to ensure they get the equipment they need to continue their work."

Besides equipment, Sparrow



AFES bid USDA-ARS goodbye at a party held in their honor (photo by J. Stephen Lay). Dr. Ellen Sparrow (top right), oversaw the actual closure of the USDA-ARS office co-located with AFES (photo by Donna Gindler).



Sharon Schlentner, research technician, was one of 14 employees affected by the unit's closure (photo by J. Stephen Lay).

solved pay problems, followed up on personnel issues, and forwarded mail and bills to the proper people.

"It has been quite an experience doing this kind of work," she said. "Most of all, I gained more appreciation for the people who work in the front office and deal with the intricacies and bureaucracy involved in running an office."

Although Sparrow's administrative role officially ended February 28, she has put in more than a hundred "volunteer" hours following the task to its absolute end.

"People tell me that I don't have to keep coming in and doing the work. And I know that I don't have to. But, I can't just ignore the fact that there is still work to be done or tell people to call California."

The closure, which was effective Nov. 30, 1994, ends a research relationship which began in 1905 in Fairbanks and in 1898 in Sitka with the opening of a state agricultural experiment station. The USDA started the experiment station when Alaska was a territory. Later the station's federal and state missions separated.

Since 1985, when the ARS station moved from Palmer to Fairbanks, the USDA-ARS research mission was conservation tillage for the newly cleared lands in the Delta Agriculture Project. In the Delta Junction area, located 100

miles southeast of Fairbanks, the winds cause the land to erode. This mission continued until 1992 at which time it switched to monitoring global change.

"We began looking at greenhouse gas emissions in the soil, including methane, nitrous oxide, and carbon dioxide," said Cochran. "Our research examined the effects of fertilizer, residue management and tillage on the flux of nitrous oxide and methane. We also looked at plant responses to elevated CO₂ in the atmosphere."

So what effect will this closure have on the state's research efforts?

"I can't predict that right now," Cochran admitted. "But I can say with certainty that it will reduce the amount of research done here. When you remove a portion of agriculture research funds and people, you put the entire burden on the university."

"Perhaps my biggest concern is how the closure may influence the thinking of university administrators. I pray they don't think that since ARS isn't putting emphasis up here, there isn't as much need for the research as there was in the past. This is a negative scenario that I hope won't become the truth."

"I say this because most of the world's food is produced in the northern hemisphere of North



Verlan Cochran takes time for an interview prior to his departure (photo by Donna Gindie).

America, Europe and Russia. Most land mass is in the temperate to northern temperate, and the largest land mass for agriculture expansion is in the north temperate to subarctic climates.

"If global warming does occur, and some people are already convinced that it has begun, this would accelerate expansion in the north because of more favorable climatic conditions."

This closure will affect the local community in varying ways. Perhaps the most noticeable will be felt in September when ordi-

narily ARS folks would be donating potatoes to the Food Bank (an offshoot of ARS' research was an abundance of potatoes). For the past five years, the unit has donated about two tons of potatoes, and in 1994, they also donated the spuds to the village flood victims.

Federal agriculture research has been in Alaska since the late 1880s. AFES scientists are working hard to ensure that agriculture research remains in Alaska and grows well into the 21st century.



Verlan Cochran and Dr. Jeff Conn in front of the CO₂ chambers. USDA-ARS recently began a study to determine the impact of increased CO₂. The research's future has not been resolved (photo by Keith Swarner).



The faces of yesterday

Diana Cochran, (top left) AFES secretary, supported the 1994 Delta Junction Open House. Cochran and her husband, Verlan, moved to Sidney, Mont. when USDA-ARS was closed. Lynn Bundy (top right) was a student assistant for USDA-ARS. Dr. Elena Sparrow (above) mixes medium for growing soil bacteria. Sherri Parker (right), was the administrative officer for USDA-ARS. She and her family have since moved to New Mexico (photos by Donna Gindie).

USDA-ARS closure impacts field research site

Scientist discusses the experiment station's future in Delta Junction

by: Dr. Stephen Sparrow
Agronomist

"Rumors of our demise have been greatly exaggerated!"

When the United States Department of Agriculture closed its Agricultural Research Service unit in Alaska in October 1994, uncertainty was in the air. However, the University of Alaska Fairbanks' Agricultural and Forestry Experiment Station (AFES) is pleased to report that we will continue operating on a scaled-down mode at the Delta Junction Field Research Site. However, doing research at Delta Junction and other outlying stations is expensive. In the worst possible scenario, if our funding continues to decrease, we will have no choice but to drop our work at Delta.

The field research site is located at Mile 1408 Alaska Highway, about 14 miles southeast of the town of Delta Junction. Work at the site has traditionally be done by AFES, USDA-ARS and Alaska Cooperative Extension researchers. Research has focused on soil management, especially conservation tillage and effects of various management practices on the flux of nitrous oxide and methane ("greenhouse gases"); soil-plant relationships, especially relating to optimum fertilizer use by various crops and nitrogen fixation by forage legumes; decomposition of organic matter such as forest floor material and crop residues; and

management practices for various crops including barley, canola, and forage legumes. For the past seven years, farm manager Ron Riesgaard lived on the site and helped maintain the research equipment and field plots.

The loss of USDA-ARS in Alaska and recent reduction in university funding means less support will be available to carry out research at Delta. Additionally, ARS scientists' expertise will not be available. This means we will no longer have the weed science program and will have to reduce the soil erosion and soil fertility research. Add to that the loss of our employee support including Riesgaard, and inevitably research at the site will decrease.

A major concern following the ARS closure announcement in Alaska was that much of ARS' equipment would be moved out of state. Indeed some important equipment was moved, but we were allowed to keep the most vital equipment to use for agricultural and forestry research. Total equipment loss would have devastated AFES' field research capabilities, especially at Delta.

Despite reduced financial support, we intend to continue our research at Delta. Loss of an on-site farm manager means scientists and lab technicians will have to

travel more frequently from Fairbanks and Palmer and that maintaining our equipment and facility will be more difficult.

Likewise, loss of ARS scientists will mean less variety in our research capabilities. Our current plans are emphasizing more on-farm research in which we use local farmers' land and equipment. This will require greater cooperation and time involvement for those farmers but will mean our research is more directly applicable to farms with soil and climate situations which are different from those found at the Mile 1408 site. We plan to continue research on various crops including barley, canola and forages, as well as research on conservation tillage practices and, hopefully, limited weed control research. However, we have discontinued all work concerning greenhouse gases, and much of the soil erosion and other soil management research at Delta.

Thus, despite what you may have heard, AFES is not planning to close its Delta Field Research Site. We are still assessing the impacts of the ARS closure and reductions in university support, and determining the exact research curtailment. We are also exploring all possible funding options to partially replace ARS funding.



Dr. Stephen Sparrow, agronomist, works at the Delta Junction Field Research Site (AFES photo).

The Delta Bison Management Plan

Can we ever hope to resolve our conflicts?

by: Ouina C. Rutledge
M.S. NRM

12 **“W**e must indeed all hang together, or, most assuredly, we shall all hang separately,” said Ben Franklin, American statesman.

More than 200 years later those words ring prophetically through courtrooms, legislative halls, and other areas where opposing minds meet. Our activities today seem to become polarized when people feel emphatically about issues. At times it seems the issues will never be resolved.

Recognizing this, experts are recommending resolving conflict through a consensus building process. Consensus building includes prenegotiation, negotiation and implementation. In this article I examine a conflict that erupted with the Delta Bison Management Plan and explain how prenegotiation and negotiations could have been used to resolve the conflict.

Background

In 1928, 23 plains bison were transplanted from the National Bison Range in Montana to the Delta River near the mouth of Jarvis Creek in Delta Junction, located 100 miles southeast of Fairbanks. Herd size steadily increased until 1950 when the state authorized controlled hunting to limit the numbers.

At the same time people were homesteading in Delta. As the farms developed, the bison became a nuisance because they were eating the hay and cereal crops. This crop depredation increased with the development of



Bison graze near the Delta Ag Project (photo by Verlan Cochran).

the Delta Agricultural Project in 1979.

The Alaska Department of Fish and Game documented the bison's migration patterns and learned the animals spent the summer along the Delta River floodplain and adjacent uplands between Black Rapids Glacier and the mouth of the river. Between July and September, the herd migrated to the Delta area agricultural fields. The Alaska legislature established the Delta Junction Bison Range in 1979 to provide adequate winter bison forage and alter bison seasonal movements to hopefully diminish damage to agriculturally developed land.

From the summer range, the bison migrate in fall to the Delta Ag Project farms. Although the Delta Junction Bison Range was established to provide forage for the bison in fall, they still migrate and cause damage to farmers' fields.

The herd was maintained at 275 to 325 animals until 1987 when it was allowed to increase. As the herd size increased, the bison began migrating into the agricultural

project as early as July, severely damaging the crops. It became evident that the bison had to be kept away from the crops until the farmers harvested in late August or early September.

During testimonies people talked about sustaining financial losses because the bison damaged their crops.

One farmer explained that he didn't "want to see the herd decrease but I really don't want to see it increase." He said it would cost \$14,000 per mile to fence.

Another farmer said there were too many bison for the summer range and that they can be fenced in but can't be fenced out. Bison were observed destroying different types of fences to enter fields to feed.

The farmers in the area don't want the bison to go away, they want a compromise, a solution that benefits both the farmer and the bison.

"If we could just figure out some way (to keep the bison out of the agriculture project). I'm willing to build a fence. It makes me mad but

I'm willing to do that...I would like to see somebody else go a year without pay. That's what happens when the buffalo come in and take (eat) your crop," said a local farmer.

The Alaska Department of Fish and Game addressed the issue in the *Delta Bison Management 1990-1995 Plan*. In the plan, the ADF&G advocated controlling the herd size and reducing the current herd by approximately 150 animals.

The plan was met with opposition. While one side said that limiting the herd population was the only cost effective option, the other side preferred to improve the winter bison range and build fences to keep the animals out of the ag project. Those opposed to the plan felt the plan catered to the agricultural interests.

As a major controversy erupted, a group of people formed the Citizens Against Bison Reduction (CABR). After gathering some 2,000 signatures on a petition, the group brought its case before several state officials and pressured ADF&G to form a citizens' advisory board (CAB) to help rewrite the bison management plan. This began prenegotiation.

Prenegotiation

In prenegotiation, participants and their agencies are identified, a decision is made on whether to have a facilitator or mediator, the goals and agenda are established and essential data is acquired.

Participants

The ADF&G selected CAB members based on the prospective

member's knowledge of the bison herd and the associated conflicts. The state agency discussed some of the selections with the leaders of CABR, contacted the prospective interest groups and requested each group nominate a representative (Table 1).

Because members of a dispute negotiation team are vital to the success of the team's mission, ADF&G minimized conflict by asking the various interest groups to nominate a representative. However, other major problems developed because of certain participants or nonparticipants.

Conflict resolution experts, S. Carpenter and W. J. D. Kennedy, advise against having confrontational people serve on the group. They said that group members should be able to review the participants and approve or object to the nominated representative.

The CAB did have a confrontational person, "Member X," who refused to discuss herd size reduction or limitations and threatened a lawsuit if the objective to increase the bison herd was not incorporated into the new plan.

After six months, group members began to show their frustration. Various members complained to state officials about other participants and asked that any documents the group produce be voided.

Another problem with the group was that several key interest groups weren't represented. The bison herd migrates across U.S. Army property, BLM land, and private land, yet the only major land owners represented were the Army

and the farmers. After analyzing group participants, it was realized that the Bureau of Land Management and Division of Agriculture should have been represented.

Facilitator

During prenegotiations, the parties should jointly choose a facilitator. A facilitator, according to conflict resolution experts, remains neutral, focuses on the process, rarely interjects personal ideas, and provides assistance to the disputing parties. The facilitator also keeps the group focused on reaching consensus and away from destructive arguments.

In this case, though, the ADF&G assigned the facilitator's duties to one of its staff. The facilitator established ground rules at the first meeting; however, the members never approved the rules. The rules were not posted at the beginning of each meeting, the members were not reminded of the rules, and the facilitator did not adequately enforce the rules.

Rules

The group was told repeatedly that its recommendations would be reached by consensus, but ADF&G took the group's recommendations under advisement only.

Meanwhile, Member X was adamant that the group formed to prevent the proposed bison herd reduction. The remaining participants, however, understood that the group's purpose was to solve the conflict between bison and agriculture and to employ methods to alleviate the conflict—which could include reducing the herd.

Table 1.

Delta Bison Working Group members

- ◇ Statewide hunting and business. Nominated by the Alaskan Outdoor Council.
- ◇ Delta Junction businesses. Nominated by the Chamber of Commerce.
- ◇ Agriculture. Nominated by the Alaska Farmers and Stockgrowers Association.
- ◇ Major landowner (Ft. Greely Army Post). Nominated by Garrison Commander, Ft. Greely.
- ◇ Delta Junction community. Nominated by previous mayor of Delta Junction.
- ◇ Ad Hoc member. Asked by the ADF&G to serve as an expert in forage crop management in Interior Alaska.
- ◇ Ad Hoc member. Asked by the ADF&G to represent Citizens Against Bison Reduction.

A group needs to "brainstorm" all the issues and solutions to a problem before settling on one solution. This lets the group clarify its interests and prevents individuals from taking positions and trying to win concessions.

Member X's attitude was a major stumbling block and the participants and ADF&G were already locked on positions and not interests. The facilitator should have spent time during the first meeting establishing each member's desires and concerns.

Recording the meeting

Conflict resolution experts recommend that someone record the meetings and annotate main points and decisions on flip charts. This allows everyone to see the same information easily and clearly. It also increases knowledge and awareness of each other's concerns. On the other hand, the lack of a recorder and a flip chart can create problems.

During the October 1992 meeting, the members discussed the wording of different management goals of the original plan. Because there was not a centralized flip chart, confusion erupted as members flipped through pages and had difficulty staying on the same page and same goal.

Negotiations

The negotiation phase includes brainstorming, packaging agreements, producing a written agreement, binding the parties to their commitments, and approving the agreement.

Constraints

Before a group can work effectively and make the best possible solution decision, its members must brainstorm all possible options. They must then analyze the options and recognize the constraints.

The constraints, such as limited funding, were not evident when the group first formed and only evolved over several meetings. The group did not even acknowledge the funding constraints when the final

Table 2.

Alternatives for herd size objectives

- ▷ Reduce current herd size from a precalving herd of 360 bison to a precalving herd of 200-225 bison.
- ▷ Reduce current herd size from a precalving population of 360 bison to a precalving herd size of 300 bison.
- ▷ Maintain present herd size at a precalving population of 360 bison. Increase permit application fees to \$15, with the additional funding being dedicated to resolving bison/agriculture conflicts. After three years, if conflicts are acceptable, increase precalving herd size to 400 bison.
- ▷ Increase current precalving herd size of 360 bison by 5% per year until herd growth reaches a biological limit.

alternatives were written.

The group also worked under time constraints. They had only six months to make recommendations to ADF&G who had to write the final agreement by the end of December 1992 and present the plan to the Alaska Board of Game in Spring 1993.

An example, though, of the group addressing constraints was when an official explained that fencing was a good idea. However, the official emphasized, the state could not pay for damages because it is not ADF&G's policy to compensate farmers for losses incurred due to bison damage.

Written agreement

Eventually the group decided to list the alternatives and each member contributed a solution or agreed to another solution. With the help of a makeshift flip chart, members charted the options to the bison population issues. The different herd size numbers had corresponding alternatives which limited bison within the agricultural project and the budget limitation constraints such as funding for fences and range improvement. (Table 2). The group wrote the options without reaching consensus on an alternative recommendation.

Although no consensus was reached, and the conflict was not resolved ADF&G is to be lauded for their work in getting public involvement. The agency advertised in all major Alaska newspapers announcing public workshops where citizens could review the draft plan.

It also sent letters to interested parties advising them of the draft plan publication. Enclosed with the draft was a survey or questionnaire asking for additional comments and concerns. All surveys were to be reviewed and, if possible, the comments and concerns addressed in the final plan. ADF&G scheduled three public workshops. The draft plan was reviewed by the Board of Game.

Improving the process

The negotiation process was riddled with serious flaws which effectively precluded a satisfactory solution. Some possible solutions are:

1. Avoid a "zealot" on the planning team by letting the group mutually select the participants. Ask interest groups for a list of three names representing their group. From that list select a representative.
2. Insure all key interest groups are represented.
3. Select a non-biased facilitator to mediate the dispute.
4. Define consensus and reinforce its role in the process.
5. Designate a recorder who should use a flip chart at meetings to avoid confusion.
6. The group should mutually write ground rules that should be posted at all meetings, and the facilitator must enforce the rules.
7. Collect all pertinent data.
8. "Brainstorm" and develop the

issues from "scratch" thus allowing the group to separate problems from underlying interests. Goals can then be written.

9. The facilitator should outline and emphasize constraints such as funding.

There were some positive aspects in this planning process case study. Public involvement in the final draft plan recommended by the group was excellent. An agency member identified any individual or group remotely interested in the Delta bison herd and mailed a letter informing them of the publication of the draft plan. The survey forms requesting additional comments and concerns highlight the commitment to the negotiation process.

The public workshops were well planned. All aids necessary to inform and educate the public were used, i.e., maps, flip charts, and data information. However, the workshops should have been open to public comment instead of ADF&G informing the public of both the draft plan and the process of writing the draft plan. The survey forms were handed out at these meetings for written comments and concerns. ADF&G felt that the group was the public process and now it was up to ADF&G to educate and inform the general public.

The bison management plan should be a learning experience for ADF&G. Negotiation is a long and difficult process that must involve experts. It can be made more difficult when there is no foundation from which to begin the resolution. Participants must desire to solve the conflict and not advocate their personal agenda to the exclusion of the other participants. Agencies or any other groups can achieve plans that can be implemented without losing control of the process once they acknowledge that society is more likely to accede to a plan if they had a part in writing the plan.

Update: The Alaska Dept. of Fish and Game issued hunting permits last year to control herd size.

*Note: Dr. Susan Todd served as student adviser on this research.

Experts offer thoughts for managing conflict

Conflict management resolution teams—through a consensus-building approach—might resolve problems without expensive and time-consuming court litigations or hasty compromises. This sidebar overviews conflict resolution thoughts by experts. While researching this topic, I referred to several conflict resolution experts including S. Carpenter and W. J. D. Kennedy in *"Managing Public Disputes,"* J. E. Crowfoot and Wondolleck in *"Environmental Disputes: Community Involvement in Conflict Resolution,"* M. Doyle and D. Straus in *"How to Make Meetings Work,"* R. Fisher and W. Ury in *"Getting to Yes,"* and L. Susskind and J. Cruikshank in *"Breaking the Impasse. The Consensual Approaches to Resolving Public Disputes."*

- Fisher and Ury in their book, *"Getting to Yes,"* said, "The parties' problem appears to be a conflict of positions, and since their goal is to agree on a position, they naturally tend to think and talk about positions—and in the process often reach an impasse."
- The objective in conflict resolution is to reach a consensus, said Susskind and Cruikshank. The consensus-building process involves negotiation, which can be subdivided into prenegotiation, negotiation and implementation.
- "No group should choose to be part of a negotiation if what it can obtain 'away from the bargaining table' is better than what it is likely to get by negotiating," said Susskind and Cruikshank. "On the other hand, if a group sees an opportunity to get more than its best alternative to a negotiated agreement through negotiation, it has ample reason to come to the table. And when a member thinks that it can satisfy its minimum concerns by putting its case before a judge—and a bare minimum is enough of a victory—that party is unlikely to go through a more elaborate and perhaps unpredictable process."
- "Abrasive or confrontational personalities should be avoided and all prospective group members should have the opportunity to review the list of participants and approve or object to the nominated representatives," said Carpenter and Kennedy.
- Carpenter and Kennedy suggest that a group "brainstorm" to develop multiple proposals to resolve the conflict but not to settle on one solution until all alternatives have been identified. This lets the members avoid focusing on their respective positions.
- "If its (group) interests are met, the group's satisfaction level will go up. Thus, for any group entering a public dispute, its first priority ought to be to clarify its interests," said Susskind and Cruikshank.
- To help alleviate members opposition to any viewpoint but their own, experts suggest acknowledging interests as part of the problem. The facilitator can question each member why he or she was present at the meeting.



NRM 215

Instructor propagates student inspiration

by: Donna Gindle
Editor

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Light pours forth from the greenhouse walls and casts a welcoming refuge from December's pervading darkness. As temperatures chill the outside air to 38° below zero, people hasten into the inner sanctuary. With a slam of a door, they enter a humid, 76° paradise.

Let lab begin.

Natural Resource Management (NRM) 215 is one of the great secrets of the UAF curriculum, according to its students. Dr. Patricia Holloway teaches the course, Plant Propagation, every other fall semester. A three-credit course, it has classroom lectures and hands-on labs.

While the university catalog describes it as the, "Principles and practices of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation projects and plant research. Emphasis on both macro-



Sampson pours seeds into the seed-cleaning machine to separate out chaff from the seeds.

and micropropagation, tissue culture, of Alaska native plants by seeds, spores and vegetative propagules such as cuttings," the students describe it in less technical and more glowing terms.

"This is the best class," and "My favorite class ever," were comments students made as they examined root growth from one project and documented grafting results from another.

Jennifer Sampson, a senior NRM major, said her favorite part of class was taking tissue cultures from ferns and African violets in her quest for knowledge in propagating plants. But the longer she thought about it, the longer her list of favorites became. Sampson, who graduates in May 1995, acknowledged that her career ambitions aren't in this area.

"I really want to be a helicopter pilot with the Alaska Air Guard," she said.

Fellow classmate Betsy Bilyeu, originally from Oregon, came to Alaska to commercial fish with her uncle off Kodiak Island and to attend UAF.

"When I got to UAF I was a wildlife major. But I took NRM 101 and it was so interesting I switched my major to natural resources management."

Bilyeu, who spends a lot of time in the lab outside of class, works as a student assistant to Dr. Meriam Karlsson. In that role she helps gather data and information, transplants plants, collects seeds and, yes, washes and cleans up the lab.

She readily lists NRM 215 as her favorite, saying she likes working with plants, learning what Holloway has to teach, and enjoying the course's relaxed atmo-



Jennifer Sampson, NRM senior, shows the root growth of a kiska raspberry.

sphere. Her goal is to use the knowledge she's gaining to open the world to her.

"With a degree in NRM I have a better chance of getting a job in the Peace Corps," she said.

The students aren't alone in their excitement for this class. Ponytail, necklace plant, rabbits foot fern, kiska raspberry and African violets, are some of the more than 200 plants thriving in this 65 percent controlled humidity environment. They grow abundantly, fighting to offer their foliage up to those studying them.

And Debbie Rimer relishes it all. Rimer is a junior math major, who recently decided to minor in NRM.

"Although I spend a lot of time gardening and I love plants, I had no science at all prior to taking this course. I admit I was nervous this semester when I began taking this class, NRM 211, and a biology course all at the same time. At first I thought that I wouldn't be able to make it through the classes. The truth is that when the information finally came together it started making sense. It came alive to me. This is such a low stress level class and anyone who loves plants and gardening will get past everything else."

Rimer, who said she is challenged by and fascinated with orchids and math, would like to teach school in the fall and winter and operate a horticulture business during the summer. When she does open a business, she plans to specialize in exotic flowers.



Dr. Pat Holloway, instructor, and student Betsy Bilyeu, examine root growth.

"I hope to create an interest in and a market for orchids."

The message Holloway emphasizes to her students is not to be afraid of what they don't know.

"True, you must know a lot of botany to be a good plant propagator. But, I don't force people to memorize information. I want to get them familiar with techniques that are used in the industry and home. Once they dig their hands in and get them dirty, once they actually do what I lecture about, they relax and enjoy the class."

Holloway also offers plant propagation short courses through the Georgeson Botanical Garden at various times throughout the summer. As a testament to

thoughts expressed by students, though, the propagation classes are usually the first to fill up and have a waiting list.

Whether it's inside a greenhouse or under the rays of the midnight sun, Dr. Pat Holloway sees the world as her garden. And she opens that garden to others.

*photos by
Donna Gindle*



Betsy Bilyeu, NRM student, checks the root growth rate of junipers in the mist beds at the greenhouse.

Holloway offers tips on air layering, propagating plants by division

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1 Students in NRM 215 learned various methods of plant propagation. In this series of photos, Betsy Bilyeu and Jennifer Sampson, demonstrate air layering.

Air layering is a good method for propagating plants that are difficult to root from stem cuttings such as this rubber plant. Also, large plants that have lost a lot of leaves and have become leggy can be rejuvenated by air layering. Choose a portion of the stem that has few leaves or remove one or two leaves. Make a downward slanting cut into the stem using a knife or thin-bladed saw. Be careful not to cut more than halfway through the stem. Also, provide support for the top part of the stem so it doesn't break off.



2 Using a knife blade or flat stick, coat all cut surfaces with a rooting powder such as Rootone® or Hormodin®1. Moisten a large handful of unmilled *Sphagnum* moss or decorative moss. Push some of the moss into the cut with a knife to prevent the cut from healing. Form a ball with the remaining moss and completely surround the stem with the moss. The wound should be buried in the ball of moss.

3 Secure the ball of moss to the stem by wrapping it with clear plastic wrap. Make sure the plastic is large enough to circle the stem at least twice to minimize moisture loss. Secure the plastic wrap above and below the ball with twist ties. Aluminum foils can also be used to secure the ball, but the clear plastic allows you to see the roots as they grow. Check the moss ball frequently to prevent drying. Add more water, if necessary.

4 If growing conditions are good, and the plant is healthy, roots may form from one week to several months after layering depending on the species. After long, well-branched roots are visible at the surface of the ball, the stem can be removed from the mother plant. Remove the plastic and twist ties, but leave the moss ball intact. Sever the stem just below the moss ball and plant the newly-rooted plant into another container.





Student Debbie Rimers propagates a plant by division under the guidance and instruction of Dr. Pat Holloway. Many plants such as this *Cymbidium* orchid must be divided every few years in order to maintain healthy growth and promote flowering. Plants that are propagated by division have a crown composed of several growing points located at the soil surface.

photos by
Donna Gindle



The key to successful division is locating the growing points and dividing the plant into sections, each of which contains at least one growing point and plenty of roots. Each section is then potted up into separate containers and watered well.

Agroborealis

Spring 1995

Dreams of helping 'Johnnie' grow

Gardening nurtures minds

by: Donna Gindle
Editor

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If you give a man a carrot, you nurture him for a day.

If you teach him to garden, he can nurture his body for a lifetime.

If you teach him in a garden, he nurtures his mind and his body.

A movement that combines education and gardening is growing in Fairbanks, Alaska. Six years ago, a parent convinced Denali Elementary School officials to add gardening to its science curriculum. And in 1994, the Georgeson Botanical Garden director began working with that same parent to build a children's garden.

The parent, Jan Hanscom, is also a horticultural research technician with the Agricultural and Forestry Experiment Station. Hanscom believes that a garden can help teach elementary-age students science, math, and practical living skills.

"But this is a fact we've known a long time," she said and referred to a passage in *"The Beginner's Garden Book,"* by Allen French.

"One of the most striking education movements of recent times is toward the interesting of children in gardening. The advantages are very plain," wrote French.

"In the first place, children, whether through an awakened love of flowers or an understanding of the economic value of vegetables, are brought into direct contact with nature, and most necessarily profit, mentally and physically.

"In the second place, children are kept busy who otherwise might be idle. They learn to work, they understand the values created by work, and they gain from this both self-respect and respect for prop-

erty. Gardening, thus becomes a lesson in civics. The garden movement is, for all these reasons, of even national importance."

These words prefaced a textbook published in 1914.

Gathering the seeds

In 1989, Hanscom and a group of parents, teachers and administrators at Denali Elementary expressed concerns about students' low math and science scores. Hanscom, who volunteers with both a 4-H club and the GBG, convinced the group that a school garden would let students learn science by getting their hands dirty. An avid gardener, researcher, and reader, she explained how this technique was being successfully applied in schools throughout the nation.

Motivated and hopeful, the group began seeking funding for the program. They secured a state education \$10,000 innovative science grant to fund the vegetable and flower gardens, and a RJR Nabisco Next Century Schools

Grant and Eagle Scout support for the bog garden. Felicia Lepizig, fourth grade science teacher at Denali, also received funding to build a water garden where students could study aquatic plant and animal ecology and water quality.

While gardening is now firmly immersed within Denali's science curriculum, they spent years fine tuning the curriculum plan through trial and error. It follows a child from kindergarten to sixth grade.

•Kindergarten children plant potatoes.

•First graders plant herbs to use to study the five senses in second grade.

•Second graders plant pumpkins to use for seed studies in the third grade.

•Third graders plant everlastings to use in dried flower arrangements for art and studying flower parts in fourth grade.

•Fourth graders plant potatoes and onions to use for microscope work in fifth grade.

•Fifth graders plant pumpkins and tomatoes to use in sixth



Jan Hanscom drags the children's pond aqualiner into place. Hanscom and a cast of volunteers started building the pond during the summer of 1994 (photo by Donna Gindle).



Rochelle Hanscom works in the Denali Elementary School garden (photo by Donna Gindie).

grade for Halloween activities with kindergarten buddies.

- Sixth graders sell plants to raise money for the garden.

"This system lets the children plant a vegetable or begin a project in the spring that they harvest and study in the fall. We struggled to make the garden a logical progressive learning experience," explained Hanscom.

"In the beginning it seemed that we faced a new set of problems each year. We had freezing temperatures after we set out seedlings and had to replant them; we had frosts before the students returned to school. In spite of these trials and tribulations, the project continued as a labor of love."

Since summer vacation occurs during the peak gardening time, Hanscom organized the Denali 4-H club to handle gardening and landscaping during this season.

Once a week throughout the summer, 4-H members, ranging in age from five to 15, and their parents clean the garden, till the soil, plant, weed, water and harvest the vegetables and flowers.

"Man can choose to develop land in a positive way or a negative way. Development doesn't have to be bad," Hanscom philosophizes. "We live in an urban world, with skyscrapers and concrete. Children raised in an urban community often miss experiences that develop respect for the land. But I want them to be adults who desire to protect the land and make it the best it can be, to see the beauty of a tilled field as well as the untouched wilderness. I want my children and other

children to see and realize the beauty and potential of the land."

When her project at Denali blossomed, Hanscom's visions grew. She looked at possibilities with the Georgeson Botanical Gardens, located at the University of Alaska Fairbanks. She and Dr. Pat Holloway, horticulturist and GBG director, thought the botanical gardens could support a children's garden.

The GBG pond

Moving to a college environment and the GBG seemed a natural progression to Hanscom.

"We needed a place that youth would like to visit and an environment that would be educational so educators will use it. The GBG meets those requirements."

Hanscom emphasized the difference between the garden at Denali and the children's garden which is developing as part of the

Georgeson Botanical Garden.

"At Denali, the children actually do the work. They grow, build, plant and feel by doing. They get the actual experience of gardening."

"On the other hand, the children's garden will be typical of all botanical gardens. Its purpose is to let visitors experience and feel the garden, to enjoy the emotions of gardening and the tranquillity of nature."

The GBG currently enjoys the public support and consequently was a good location to build a children's garden. In 1993 more than 700 youth participated in organized activities at the botanical gardens. The children's garden will have broader appeal with specialized mini-gardens tailored specifically for youth and designed to teach them specific skills.

The children's garden began phase one of its growth in 1994 when the GBG received a \$5,000 grant from the Alaska Science and Technology Foundation to build a pond.

"From the start we asked the Denali 4-H club members to tell us what they would like to have in their pond," Hanscom recalls. "They looked at pictures of other water gardens and came up with lists. They were unanimous in wanting it to contain fish, rocks and stepping stones, a waterfall and a sandy beach."

"It's funny how determined the students can be. We tried to get them to change their minds and go with a pebble beach, but they insisted they had to have sand for their pond."

From those suggestions, adult coordinators came up with a design and started putting sweat equity into what they've nicknamed "the beach."

Last August volunteers dug an 18 x 20 x 2 foot hole, covered it with a waterproof liner and put in edging. One spot was excavated to a three-foot-depth so a lily pad can be added. The young people were encouraged and allowed to do as much of the work as possible.

"They learned many skills in this one project alone," said Hanscom.



Volunteers dig the pond for the children's garden. The volunteers included Betsy Bilyeu, Kenton Hanscom, Dan Neber, Matthew, Bob, and Jacob Van Veldhuizen, and Rochelle Hanscom (photo by Jan Hanscom).

"When we were putting in the aqualiner, for instance, they learned to use a leveler."

After the snow melts in 1995, the groups will finish the pond and landscape the beach. During the winter, Hanscom continued developing plans.

"We are developing a science curriculum for the pond for grades three through six. We intend for it to provide real science education and not just be a place to play," said Hanscom. "For instance, students will collect water from the pond and study microorganisms. They will perform water quality tests, or water volume and water velocity tests to figure out how fast water flows. They can also set up rain gauges and study water evaporation. Eventually we plan to build a deck that has acrylic viewing boxes so students can study organisms underwater."

Designers considered safety issues in all aspects of the pond. In areas where young people will be encouraged to use stepping stones, the pond will be shallow and muddy. The beach will gradually slope so users can easily climb out. Initially the pond was to be five feet deep but the designers felt the potential for danger was too high at

that depth. They decided to limit it to two feet and extend it to three feet only where the lily pad will nest.

What to grow

Plans for the GBG children's garden include waterfalls, and scent, ABCs, butterfly, weather, and Alaska theme gardens.

"Many of the ideas are just dreams. No one knows how much funding we will be able to get. Nor is it clear how long people will be willing to work for free," admits Hanscom. "So far we've depended upon volunteers to do all the work and this is a tough project to accomplish that way."

While funding is a major concern, Hanscom is enthused about the project and its potential. She has visited and studied other gardens to define her goals.

One of her favorites is the weather garden, where designer's arranged flora and fauna to form a big sundial. Sun-sensitive flowers open at different times throughout the day and night.

"In a Virginia children's garden that I've been looking at, children enter through a stile and get a colonial perspective. They can study the sundial and check current

conditions using a weather vane, thermometers and a rain gauge," explained Hanscom pointing out items on a diagram in a horticulture magazine. "Plants will be sun colored."

Last fall, Jennifer Sampson, a natural resources management undergraduate student, contacted primary school system teachers in the Fairbanks North Star Borough, day care facilities, and youth organization leaders to see if they were interested in the GBG's children's garden and what areas would best complement their curriculum (Table 1).

"The feedback was terrific," Sampson said.

Teaching topics included water quality, conservation and wetlands; insects; plant identification; patterns in nature—mathematical relationships and plants; a sensory garden; weather and weather records; color garden; recycling; art in the garden; and indigenous Indian and Eskimo uses of plants.

Potential adult users chose the indigenous Indian and Eskimo uses of plants, and recycling gardens as their highest priorities. Bob Heyman, a special education teacher from Weller Elementary, also found the idea of dealing with

plant genetics and heredity of interest.

"Kids may relate this to their own familial traits," he pointed out.

Kim Pfister, a kindergarten teacher asked for hands-on activities rather than a strictly visual tour. Her suggestions included painting with plant dyes, Native ice-cream making and eating, wild edible plant taste sampling, and computer interactive models.

A North Pole Elementary third grade teacher was excited but concerned that it might cost too much money for classes to use the garden.

If University of Alaska or federal funds can't be obtained for this

project, Hanscom and Holloway are considering a \$2 per student user's fee and trying to get corporate sponsors. MAPCO recently agreed to donate funds to cover the cost of an interactive video for the "Ethno" garden, which will feature plants traditionally used by Alaska Natives for food and medicine.

"The garden will have signs explaining how these plants are used and their benefits and values to the people," Hanscom said. "We are also considering plans for an Alaskan theme garden which will include a log cabin, about the size of a playhouse, and trails."

If Hanscom's dreams do come true, future generations of children

will experience the beauty of learning through nature's magic and splendor.

"Gardens are so wonderful because they are so beautiful. A garden is a place where people can sit quietly and enjoy the beauty and excitement of the solitude. Botanical gardens also show how people can manipulate their environment and make it beautiful.

"Children raised in an urban community often miss experiences that develop respect for the land."

Eighty years after French's book was published, we're just beginning to realize the full meaning of his statement, "The garden movement is, for all these reasons, of even national importance."

Table 1.

Children's garden survey

Age/Interest Groups	Priorities	Top Rated Ideas
Day Care, Kindergarten, First Grade	<ul style="list-style-type: none"> •Indigenous Indian and Eskimo Uses of Plants •Sensory Garden 	<ol style="list-style-type: none"> 1. Sensory Garden 2. Alphabet Garden 3. Color Garden 4. Recycling in the Garden
Second, Third, & Fourth Grade	<ul style="list-style-type: none"> •Indigenous Indian and Eskimo Uses of Plants •Recycling 	<ol style="list-style-type: none"> 1. Indigenous Indian and Eskimo Uses of Plants 2. Recycling 3. Insects (Bees, Beekeeping) 4. Patterns in Nature
Fifth & Sixth Grade	<ul style="list-style-type: none"> •Plant Identification •Recycling 	<ol style="list-style-type: none"> 1. Plant Identification 2. Recycling 3. Indigenous Indian and Eskimo Uses of Plants 4. Insects (Bees, Beekeeping)
Unspecified grades, Resource teachers, Youth organizations	<ul style="list-style-type: none"> •Plant Identification •Recycling 	<ol style="list-style-type: none"> 1. Recycling 2. Indigenous Indian and Eskimo Uses of Plants 3. Plant Identification 4. Insects (Bees, Beekeeping)
Special Education	<ul style="list-style-type: none"> •Indigenous Indian and Eskimo Uses of Plants •Alphabet Garden •Color Garden •Recycling 	<ol style="list-style-type: none"> 1. Garden and Wildlife 2. Art in the Garden 3. Recycling 4. Color Garden 5. Alphabet Garden 6. Indigenous Indian and Eskimo Uses of Plants 7. Water Quality
The four priorities and # 4-7 ideas listed in response numbers		

Note: Jennifer Sampson, natural resources management senior, completed a survey of the primary school system teachers in the Fairbanks North Star Borough, day care facilities and youth organization leaders to learn if they were interested in creating a Children's Garden at the Georgeson Botanical Garden. She asked them for topics that would best complement their curriculum. Sampson received responses from almost 150 educators and 16 child care facilities and youth organizations (graphic by Keith Swamer).



by: J. Stephen Lay
Communications director

Northern belle exudes southern charm

Carolayne Wallace administers SALRM's office for 23 years

Carolayne Wallace, left, at work (photo by J. Stephen Lay).

"Good morning, Dean and Director's Office." With the charm of her Texas accent warming the telephone lines, Carolayne Wallace greets hundreds of callers phoning the School of Agriculture and Land Resources Management. Her pleasant tone and complete professionalism give a positive first impression of the School and its staff.

"Carolayne is the first contact most people have with our School," said Dr. James V. Drew, SALRM dean and director of the Agricultural and Forestry Experiment Station. "She has the ability to instantly know how to react to callers or visitors."

"She can be the true Southern belle or when the occasion demands, she's harder than those nails we always hear about. Not only is she good at working with people, I've never known her instincts to fail her."

Wallace has been working at the University of Alaska Fairbanks for more than two decades. She joined the university staff in 1972 shortly after she moved to Alaska with her husband Chick and five children: Clay, Christopher, Coke, Cullen and Courtney. Four of the five earned degrees from the University of Alaska Fairbanks and four of the five live and work in Alaska.

Chick, now retired and a full-time real estate associate broker, headed UAF's Support Services and the Custodial Department at the Physical Plant for 15 years. He was working at the University of Northern Colorado as Director of Faculty Housing when he was recruited by Dick Moriarty, former director of the UA Physical Plant.

"I remember when I first started working here," Wallace said. "They were paying me \$5⁴² an hour. I thought I'd died and gone to heaven. And then to make it even more unbelievable, they told me I'd get benefits including retirement."

Wallace was among the first part-time permanent employees to be members of the Public Employee Retirement System—or PERS—program at the university. When she went to work for Dr. Bonita J. Neiland, they were a department of three people in the old College of Biological Sciences and Renewable Resources. Several changes occurred over the next couple of years until the School of Agriculture and Land Resources Management was approved in 1975. The little school grew steadily over the years, with Neiland and Wallace handling the myriad of details involved.

She did not stay part-time for very long. A month after she was hired Wallace was asked to be the part-time secretary for the Faculty Assembly. That group represented all the faculties of all the campuses, meeting in

Anchorage and Fairbanks.

"Governance was simple back then," Wallace said. "They didn't have an office and I worked out of my living room using my own typewriter."

When the department of land resources became one of the components of SALRM in 1975, Wallace gave up her second part-time position and became the full-time administrative assistant with Dr. Neiland.

"It was a great challenge and lots of fun," Wallace said.

When Dr. Neiland retired in 1988, Wallace became the administrative assistant to Dr. Drew. Since then she has witnessed many changes at UAF. Indeed, she's been a major factor in causing and implementing several of those changes. She spent eight years on the campus grievance council and was one of the first members of what is now the Support Staff Council. She has served on and chaired numerous ad hoc committees over the years, including one that got the present "Leave Share" policy approved by the Board of Regents.

She most recently served on the Statewide Program Assessment Committee and on the Chancellor's Coordinating Committee for Program Assessment. Other council members remember that in all cases her position was based on fairness and the regulations as established by the Board of Regents.

Besides doing the thousand and one activities required of a dean's administrative assistant—some would say this means actually running the department—Wallace also stays informed about rules, policies and regulations applicable to the School.

Chick Hartman, AFES and Alaska Cooperative Extension business office director, who served on the grievance council with her remembers—in absolute wonderment—"Carolynne always keeps up with the changes the Regents make to campus regulations. That's quite a task because what's against policy one year is perfectly okay the next. When I'm in doubt about something I rely on Carolynne to make sense out of it."

"I've enjoyed working on the various committees and boards," Wallace said. "But most of all I've enjoyed working with the students. They make it all worthwhile. It's important that we never forget their education is the reason for this place."

The students are enthusiastic in their praise of Wallace as they remember her contributions to their education. After they graduate, many students maintain contact with her through Christmas cards, and wedding and birth announcements.

"Carolynne fills lots of roles. She's a friend, but she's also a confessor and adviser. Students know they can go to her and get good, practical advice. When something's wrong, she tells you what to do and often she corrects it before you have to," recalls one former student.

"But don't ever go to her if you're looking for pity. You won't get it. She'll tell you how it is and how to make it work, but she isn't going to let you wallow in self-pity."

Both Carolynne and Chick are active in the community. Over the years they've worked on numerous political campaigns. Wallace said that she is a long time Republican and was very active in the party, "Until the Moral Majority took over."

Wallace belongs to a philanthropic education club and she and her husband, Chick, love to dance and play party bridge. She loves to travel and would do a lot more if time permitted. She and her husband met at Texas Tech University in Lubbock.

Waterford crystal, antique cut glass, C. Alan Johnson Alaska figures in porcelain, bronze and pewter; Lardo's and Hummels fill Wallace's house and satiated her love of collecting. She and her husband also have a vast collection of Alaska art decorating the walls of their homes.

"They're mostly prints," she hastens to add. Their favorite artists include James Robinson, Kes Woodward, Byron Birdsall, Ray Sandberg and, of course, Sidney Lawrence.

With five children including four hockey-playing sons they've actively supported youth sports or little league, soccer, and numerous other activities.

"I bet I've sold at least two hot dogs to every kid in town," Wallace said. "When all the boys were playing sports, I thought I earned my living running a hot dog stand. We had our share of concession stand duty."

"But at least it was warmer working at the hot dog stand," Wallace asserted. "I've frozen parts of this Texas girl's body that I didn't know could freeze—despite that very popular expression."

Wallace exemplifies the Southern belle image. She's quick-witted, and an accomplished joke teller, she is efficient and positive, poised and strong-willed. Her manners and mannerisms are reminiscent of a true southern belle.

But while this transplanted "Northern Belle" misses her family who live in Texas, she has no plans to return to the south except to visit.

"We have so many dear and wonderful friends here in Alaska that neither my husband nor I can imagine leaving here for good. We probably will become Alaska snowbirds when we retire," Wallace said, "but we'll go Outside from January through March or April, and return to Alaska in time to enjoy the wonderful summers."

Wallace has a deep love for UAF. "It's been fun. I can truthfully say I've enjoyed the years I've worked here—not every minute mind you—but overall it's been great. I'm glad I had this opportunity."

"I have worked with some wonderful people over the years and the university has been wonderful to me and to my family. It is painful to see the terrible problems besetting the university in the past decade or so. We have become far too top heavy with administrators. But in defense of this proliferation, at least 80 percent of those positions are in response to faculty or agencies outside the university demanding more services. I think we could and should return to a provost on each campus with a strong statewide president."

Coordinator enrolls people skills to enhance student retention

by: Barbara Pierson
Student affairs coordinator

Enrollment. Orientation. Financial aid deadlines. These are some of the university student enrollment procedures I knew as a former student when I accepted the position of student recruiter for SALRM in 1988. Many of the facets of promoting Natural Resources Management Bachelor of Science and Master of Science degree programs, were an unknown. It was time to try

something new, and I was eager to begin!

"A good program attracts students"—a bit of advice I learned early and heed often.

While I was learning the ins and outs of student recruitment,

SALRM faculty were reviewing the curriculum and creating exciting revisions to NRM degree requirements. A good program existed but it was getting better!

With a good program in place, I began advertising in various mediums to create a student demand for information prior to their applying for enrollment. The primary advertisement is a color brochure to which I attach a personal letter highlighting the program.

When prospective students telephone, I answer their questions immediately and then refer them to one of our faculty or direct them to the appropriate campus office. I stand firm in my belief that an immediate response to prospective students indicates our serious and sincere commitment to individuals seeking a university "home".

Once a student applies for admission to UAF and declares Natural Resources Management as a major, my role shifts from initial contact to follow-up. It is important for students to feel that we are interested in them even after they have applied for admission.

Incoming freshmen often apply to more than one university and are looking for "the best deal." The deal usually includes a financial aid package with loans, grants and scholarships, but can also include student

employment opportunities, extracurricular activities, faculty-student ratios, promise of summer employment and adventure. UAF can offer all of the above and I am responsible for making that message loud and clear to potential students as they make their college career decisions.

Many NRM majors transfer here to complete a degree which they have delayed because of job, family, or academic reasons. "Ms. Pierson, I finally figured out what I want to do and UAF and Alaska is where I want to be," is what I frequently hear from students considering a transfer. As our conversation continues, we discuss in detail how courses are transferred, and how to establish contact with a faculty adviser.

Another critical element in a recruitment plan is enrollment yield. In other words, how many students accepted for admission actually enroll? During student orientation in the fall semester, I nervously await the number and the questions abound. "Did my message get through? Did summer jobs create a comfortable nest egg to allow enrollment? Did parents change their mind? Did another university score more favorably? What could I do differently next year?"

Despite the answers, I'm always looking for innovative ways to maximize enrollment and student satisfaction. After classes begin, I reflect on the past recruitment year and assess our success. A minute is usually all I have because new prospective students are on the phone requesting information for next semester or next year.

Student recruitment is an important function for a university and I am pleased to be able to serve in this capacity for as long as I can answer most of the questions with confidence. In the five years I've been doing this job, student contact continues to be the most rewarding yet most challenging of all my duties. I develop a rapport with students on the phone or through the mail and they trust me to represent their best interest. They trust me to be honest as I answer their academic concerns as well as off campus issues.

Questions like, "Where do I look for a cabin?" "How do students live without running water?" "Can my spouse find a job?" "How long does it take to drive the Alaska Highway?" And of course, the most frequently asked question, "How cold does it get and what is it like in the winter when it is so dark?", are serious concerns of folks anticipating a move to Fairbanks. It's their future and my reputation on the line.

By the way, what IS it like in Alaska when it is so dark? I haven't noticed. My office doesn't have windows.



Barbara
Pierson

Garden party

SALRM welcomes new, returning students



Food, fun and fall semester

School of Agriculture and Land Resources Management students, prospective students, faculty and staff enjoy plenty of food and great weather during the annual student barbecue held at the Fairbanks Experiment Farm. Barb Pierson, student affairs coordinator, organizes the barbecue to give students a chance to meet the school's faculty and get ready for the school year.

Above, Peter Boyle hands his daughter, Barbara her silverware. Boyle's wife and daughter, Sarah and Alyssa wait their turn in the serving line while Dr. John D. Fox Jr., looks on.

Research assistant Bob Van Veldhuizen (top right) and his son Jake fill their plates.

Darel Razor, unidentified person, and Scott Rupp make their way through the line (middle right).

Steven Becker, who graduated with a degree in NRM in May, and Stephen Lay, communications director (right), serve up the main course.

(Photos by Donna Gindie)



SALRM students plant Senator Murkowski's tree of honor

United States Sen. Frank Murkowski selected the Agricultural and Forestry Experiment Station to receive an ornamental chokecherry tree in his honor. The American Forest & Paper Association, through its Tree of Life program, donated the chokecherry for Murkowski's birthday.

Faculty and students from the School of Agriculture and Land Resources Management planted the tree in front of the Georgeson Botanical Garden visitor's center September 9. Dr. Jim Drew, SALRM dean and AFES director, chose the location so that Interior people can enjoy the tree's growth and beauty.

"We are pleased that Senator Murkowski recommended the Fairbanks Experiment Farm. The tree will add to our collection of plant materials and can be viewed by the more than 50,000 visitors who annually visit our garden and farm."

The tree planting was held in conjunction with a barbecue welcoming new and returning SALRM students. Dr. Pat Holloway, horticulturist, and Tony Gasbarro, Alaska Cooperative Extension forestry specialist, demonstrated a new tree planting method which the American Forestry Association adopted.

In its new guidelines, the association recommends planting a tree so that roots can grow into the sur-



Dr. Jim Drew welcomes SALRM students to the tree planting ceremony (photo by Donna Gindie).

rounding soil and produce healthy, vigorous branches, foliage and roots. Rather than a planting hole, the association advises a person to dig a wide, but not deep, planting area.



Tony Gasbarro, ACE forestry specialist, describes the new planting procedures to Drs. Jim Drew and Pat Holloway (photo by Donna Gindie).



Gasbarro and volunteer students help backfill around the chokecherry and then water the newly planted tree (photos by Donna Gindle).

The following guidelines are excerpted from the *Urban Forest Forum, Technical Update*.

Prepare a planting area five times the diameter of the root ball. Set the tree on undisturbed solid ground in the center of the area so that the upper surface of the root ball is level with the surrounding soil. Cut and remove all wires or rope holding the burlap in place. The tree should be perpendicular to the ground so the main stem grows straight.

Backfill around the root area and gently pack the soil to prevent major air pockets. You can use water instead of your foot to help the soil settle and prevent overpacking. Rake the soil even over the entire area and cover it with two to four inches of mulch, such as bark, wood chips, old sawdust, pine needles or leaf mold. Some mulches decompose quickly and will have to be replenished once or twice a year. Maintaining the mulch layer carefully will improve tree growth.

Preferably, the tree should not be staked and protective tape should not be wrapped around the stem. Use water to pack or settle the soil around the root ball. Do not create a water-holding berm by mounding the soil at the outer edge of the planting area.

"We admit that tree planting is a more involved process than was once thought," said Gary Moll and Phillip Rodbell, in the *Technical Update*. "New information requires more thought and more labor, but the

result is also very rewarding. We estimate young trees can grow twice as fast when planted correctly and will live at least twice as long as trees improperly set out."

During the fall of 1994, more than 90 organizations across the United States received seedlings donated by one of their members of Congress.

"We donate the trees as a living reminder of the many ways in which our forests contribute to the quality of our lives," said Elizabeth Vodra, executive assistant with the program.



Gasbarro inspects the completed project. Visitors can view the tree and visit the Garden at their leisure from May through September (photo by Donna Gindle).

"We donate the trees as a living reminder of the many ways in which our forests contribute to the quality of our lives."

—Elizabeth Vodra—

AFES honors women in agriculture

Three women, Lois M. Lintelman, Suus Vanderweele and Cyndie Warbelow Tack, were recipients of the 1994 Alaska Women in Agriculture awards. Dr. Jim Drew, School of Agriculture and Land Resources Management dean, and Bob Franklin, Alaska Farm Bureau president, made the presentation during the Agricultural Symposium held in

Anchorage November 18-19.

Lintelman is co-owner and operator of Northern Lights Dairy and Northern Lights Ice Cream Products in Delta Junction. She worked for and managed the Alaska Farmers Co-op during the first five years after it was formed and helped establish it as an essential part of the agricultural infrastructure in



Lois M. Lintelman

(photo by Don Quarberg)



Cyndie Warbelow Tack

(courtesy photo)

Interior Alaska. Lintelman is actively involved in marketing and distributing dairy products across the state to provide Alaska-produced dairy products in local supermarkets.

Vanderweele and her husband, Ben, have developed one of the most prosperous potato and

vegetable farms in Alaska. The Palmer resident helps seed greenhouse-produced lettuce and cabbage transplants, is involved in the production of virus and disease-free seed potatoes from Cornell University, oversees the grading and bagging of potatoes for the retail market

and manages the books and records for their farm.

Warbelow Tack is co-owner of Tack's General Store, located off Chena Hot Springs Road. The store includes a greenhouse, cafe and mercantile, and is well known throughout the community for high-quality bedding plants and fabulous custom flower baskets. Warbelow Tack began growing vegetables commercially in 1977 and was a founder of the Tanana Valley Farmers' Market. She earned a degree in biology from UAF, a master's degree in zoology from the University of Michigan, and has earned numerous hours towards a doctorate degree. She also writes and publishes a greenhouse newsletter, *Seeds for Thought*.

AFES Research Farm's open house in Delta Junction



The Agricultural and Forestry Experiment Station and the Alaska Cooperative Extension held their annual open house at the AFES Research Farm in Delta Junction July 28.

"The event brings local agriculturists to visit the university's research farm, meet the researchers, and review the current year's experiments and trials," said Don Quarberg, event coordinator and ACE agent in Delta Junction. "People are encouraged to ask questions and suggest additional projects for future research."

The farm is located at Mile 1408 Alaska Highway. Speakers included Verlan Cochran and Dr. Jeff Conn, USDA-ARS, Don Quarberg, ACE, and Drs. Fred Husby, Steve Sparrow, and Charlie Knight, AFES.

At left, participants listen as speakers highlight research. Topics included foxtail barley control trials, legume trials, managing bluejoint grass with various mowing and fertilization regimes, potato variety, forage oat and alfalfa and lime trials; field pea trials, conservation tillage trials, results of alternative crop production trials; no-till drill advantages and disadvantages and the affect of tillage, fallow, residue and weed control on long-term cereal yields.



Don Quarberg, ACE, explains results of his potato variety trials (photos by Donna Gindler).

Highlights & happenings

Who's who

Dr. Meriam Karlsson, associate professor of horticulture, was one of 25 Fairbanks teachers and professors honored in the 1994 Who's Who Among America's Teachers. She is among 66,500 teachers selected by former students who themselves are listed in "Who's Who Among American High School Students" or "The National Dean's List," both of which recognize the top 5 percent of high school and college students around the country.

Who's where

We recently heard from the following alumni:

Daniel D. Page (B.S., 1987) is a captain in the U.S. Army and he is stationed at Fort Rich in Anchorage, Alaska.

Quina Cochran Rutledge (M. S., 1994) is living in Delta Junction, Alaska.

Dave Lacey (B.S., 1980) is the general manager of Dinyee in Fairbanks, Alaska. He has two children: Philos, 15, and Von, 10.

Bethany Schulz (M. S., 1993) is an ecologist for the Forest Health Management Group within the state and private forestry branch of the U.S. Forest Service. She lives in Eagle River, Alaska. Her thesis was, "Movement of Metasystex R-2 in an Alaskan Landscape Soil."

Carol P. Scott (M.S. 1993) is currently employed by POLARIS and the Fairbanks North Star School District. Her thesis title was "Continuity and Change in the Wiseman Area of Alaska—A Look at Land and Renewable Resource Use."

Bachelors march for dimes

Dr. Alan Jubenville, natural resources management, and **Robert Ott**, Ph. D. candidate in forest ecology, participated in the

1995 March of Dimes Bid for Bachelors. The two raised almost \$1,000 for this charity that fights children's birth defects. Bachelors must put together a "date package" which is auctioned off at a formal fund-raiser.

Jubenville's package included a dozen roses donated by College Floral, a winter hat from Alpine Haus, a swim suit from Beaver Sports, lunch at the Greenhouse Cafe, a day snowmobile trip to, and swimming at, Chena Hot Springs, and dinner at Two River's Lodge.

Ott's winning bidder received a trip north of the Arctic Circle for Spring Equinox. On March 20, the two were flown to the Brooks Range communities of Coldfoot and Wiseman. Dr. Jim Drew piloted the airplane and Marilyn Drew was the stewardess. The trip included cross-country skiing, a candle-light champagne dinner at Arctic Acres, dog mushing training and trip under the supervision of Joe and Sherry Henderson, Coldfoot Services souvenirs, and a flight back to Fairbanks on Larry's Flying Service.

Recognizing employees

The following SALRM faculty and staff were honored for continuous permanent service with UAF as of Nov. 30, 1994. They are:

20 years:

Joseph Offner
Pat Wagner

15 years:

Alan Jubenville
Grant E. M. Matheke
Robert Van Veldhuizen

10 years:

Tobi Campanella
Debra Gavlak
Pat Holloway
Darleen Masiak
Heather McIntyre

George "Allen" Mitchell Jr.
Alan Tonne

5 years:

Mary Comeau
Stephen Dofing
Phyllis Gallatin-Banks
J. Stephen Lay
Mary Mathis
June Muniz
Beth Tillman
James Walworth

Thesis

K. Richardson's thesis, listed in the 1994 *Agroborealis*, Vol. 2, was Alaska Wolves 1981–1991: some political and philosophical sources of conflict. It was changed to: Wolves in Alaska: philosophical conflicts and political constraints in their management.



Amy Justine Covey, 4, holds her friend, a recently born piglet, last summer at the AFES barn. Amy's grandmother, Marilyn Drew, said Amy loves visiting the pigs. "She talks me into taking her to the barn at least six times each summer," Drew said, "and there's no telling how many times she gets her mother to take her." (Courtesy photo)

Undergrad never gives up

Jeanne Pigors is a single mother of two, homemaker, and student who perseveres on life's course

by: Donna Gindie
Editor

32 "It's never too late to try again," is the greatest lesson Jeanne Pigors has learned in life. This natural resources management senior and single mother of two epitomizes that lesson.

Pigors is from Ferney, S. D. After graduating from Groton High School in 1985 she attended Northern State University in Aberdeen studying chemistry and environmental science. She married as a college sophomore and soon started a family. Her children are Amanda Joy, 7, and JoAnna Marie, 5.

"I went to school for a while after I had kids, but then I found I needed a break from school and I needed a chance to be a mom," Pigors said. "One thing I learned is that I'm not a very good juggler. If I go in more than two directions I lose it. I must keep focused."

But life didn't get easier. When Pigors' marriage ended in a divorce, she found herself at odds. That's when her niece, Rochelle, became a dominant factor in her life.

"Chelle had already decided to attend UAF, and wanted me to join her. Since I was looking for a university to finish my degree and since I was really impressed with the NRM program at UAF, I decided to come north with her."

Pigors never expected the undertaking to be easy. She said that the toughest thing about being a student and a mom is, "Taking the time necessary to do my

work to my full potential. I want to excel but I get easily distracted and I have to admit that I'm a chronic procrastinator."

Admitting that she always set high standards for herself and is disappointed if she can't meet them, Pigors said life has taught her to set more realistic goals.

"For example, last semester I thought I was going to graduate so I took 17 credits hours. I spread myself way too thin and wound up failing my calculus class. Not only did that bring my GPA down, but I also had to retake calculus, which meant I had to go to school for another semester. At first I took that setback pretty hard. But this is what I meant when I said that it is never too late to try again. I just keep trying.

"Chelle, though, is the reason I am able to get my college degree. She is a full-time student herself and maintains a 4.0 average. When I need to study, she baby-sits for me. She is the other parent to my kids. I could not have done any of this without her."

After graduating in May, Pigors wants to get involved in sustainable agriculture.

"My dream, though, is to try my hand at subsistence in Alaska. I always wanted to live the subsistence life even before I came here. My parents are from the 'dirty 30s era' and lived on a farm. They were able to make do with so little and it always impressed me.

"In Alaska a lot of folks do just that. I feel this is the place to find out what all I can do for myself; to learn how much I can do on my own without depending on others. My NRM classes tie together what I'm learning and my heritage."

The 28-year-old woman is also interested in finding uses for wild plants, reading, camping and cooking. Her favorite classes were soil conservation, environmental law, history of the civil war and hockey.

"I'm taking hockey this semester and having a blast."

Pigors said that successfully getting her daughters to clean their rooms is her latest accomplishment, while her greatest achievements were making it up the Alcan Highway alive, and completing "my senior thesis presentation without having a nervous breakdown."

Pigors' list of favorites include:

Food: Chocolate, preferably in quantity

Place in Alaska: Endicott Mountains near the Dalton Highway

Place outside of Alaska: Bigstone Lake, South Dakota

Plant: Cottonwood tree

Animal: Any which are a potential source of t-bone steak

Publication: *Natural History*

Singer: Jo Stafford

Movie: *Young Frankenstein*



Jeanne Pigors is surrounded by her daughters, Amanda Joy, 7, and JoAnna Marie, 5. (Photo by Daniel E. Proulx)

Graduate student strives to quench his knowledge thirst

by: Donna Gindle
Editor

When it comes to learning, you can never get enough.

That's the assessment from Natural Resources Management graduate student Tim Hammond. A serious and quiet man, Hammond can usually be found in SALRM's Geographic Information Systems' computer lab, working on his thesis project, processing satellite imagery and analyzing natural resource data, or various other projects.

"I've been working on a climate zone map of the state of Alaska. We're taking information that the National Weather Service provides over the Internet and building the map.

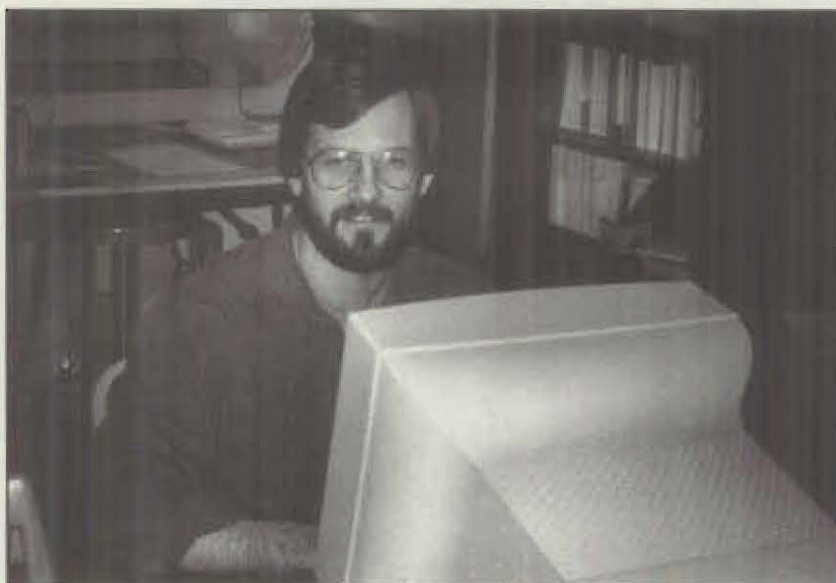
"The long-term goal is to build a forest carbon dynamic model for the state which will be a baseline for the potential affects for global change. This should enable us to make predictions about the role of Alaska forests if global change happens."

Hammond warms up to this complicated topic in much the same way the former southerner from Oklahoma warmed up to Alaska. He went from driving tractors in wheat fields to analyzing statistics on technologically advanced software systems; from feeding, raising, butchering and eating chickens to showing poultry.

Hammond's road to Alaska took him through a four-year stint in the military. He enlisted in the U. S. Army in 1984 after attending Oklahoma State University for a year.

"I joined the Army because I had been going to college and spending a lot of money and still had no idea why I was going to school."

For his service, Hammond was awarded the Army Achievement Medal and the Army Commendation Medal, first oak leaf cluster.



Tim Hammond, an NRM graduate student, working in the Geographic Information Systems computer lab. (photo by Donna Gindle)

After being honorably discharged, he enrolled at the University of Alaska Fairbanks and majored in natural resources management. The SALRM faculty chose Hammond as the Plant, Animal and Soil Sciences' Outstanding Student of the Year for the 1992-1993 school year.

Hammond is active in university activities and civic organizations which include the: Golden Key National Honor Society, American Poultry Association, American Bantam Association, Frosty Feathers Poultry Club, UAF Peer Academic Adviser (1991-92), UAF Student Ambassador (1992-93), American Society for Photogrammetry and Remote Sensing, Society of American Foresters, National Eagle Scout Association, and Tanana Valley State Fair Livestock Committee. He recently presented a poster at the SAF National Convention.

His interests include old maps and books, breeding show poultry and playing the guitar. Of course, he said, his top interest is his fiancée, Becky Landingham, an animal control officer for the

Fairbanks North Star Borough. Hammond is scheduled to complete his course work in May and to finish his thesis in time for him to graduate in December.

Hammond's thesis is, "Techniques for improving the accuracy of forest maps derived from satellite imagery."

When he graduates he said, "I'd like a research-oriented job with opportunities to use GIS and remote sensing in modeling ecological and bio-social systems."

From infantryman to student, Hammond has excelled in what he is doing. He plans to earn a doctorate degree, "Somewhere along the way."

The 29-year-old graduate student lists some of his favorites as:

Food: Homemade chicken and noodles

Plant: Quaking aspen

Animal: Mallard ducks

Publication: "Outdoor Oklahoma"

Singer: Nanci Griffith

Place in Alaska: Anywhere in the Tanana Valley

Outside Alaska: Gunnison, Colo.



Roscoe Taylor, research agronomist, checks a stand of oats in experimental plot at the Agricultural Research Farm.

Grain breeding shows success, but further work remains

Grain breeders in Alaska have made great progress in the past 20 years, according to the University of Alaska's Roscoe Taylor. Agricultural Sciences have been working to develop a high-yielding grain which can withstand the rigors of the Alaskan environment and cope with the limited growing season.

To put this into a challenge would be to think he might be a great wheat breeder. Roscoe Taylor also has been involved in an historic experimental program since 1952. Taylor, a research agronomist at the Institute of Agricultural Sciences, has tested thousands of varieties of barley, oats and wheat in an effort to determine the best hardiness for Alaska. The work has not been easy, and at times it has seemed like a lost cause.

Nevertheless, today, after years of testing and making heads of it by trial

and error, there are some grain varieties which are being grown successfully in Alaska. As Taylor points out, though, "There are lots of many types of grain grown in Alaska which are not just an ideal environment here. Within the tremendous range of varieties of cultivated grain varieties, perhaps there's better than others. The entire cereal research program in Alaska is almost a disaster. However, developing better varieties for use in the state."

A "better variety" in this case is a better yield. To achieve this, however, many factors must be taken into account, Taylor explains.

"It would be wonderful to have a program toward genetic improvement of grain. However, in reality, we are dealing with what I call 'hardship' yield, or the grain actually obtained at the end of a commercial production operation, where we are attempting to cope with

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In Memoriam Dr. Roscoe Taylor 1923-1995

Roscoe Lee Taylor, 71, died suddenly of a heart attack January 24 in Palmer, Alaska.

Born Dec. 1, 1923 in Wolsey, S.D., he earned his bachelor of science degree from South Dakota State University and his master of science degree, with additional graduate study, at Iowa State University.

Taylor served in the U.S. Army Air Force in England during World War II as a bombardier. His B-26 medium bomber aircraft was shot down over France one week before D-Day and he was held as a prisoner of war in Stalag Luft III.

In 1951, Taylor moved to Alaska and worked as an agronomist at the University of Alaska's Agricultural Experiment Station in Palmer. He married Alice McCann on Nov. 28, 1952. During his 35 years of research accomplishments in Alaska, he was employed by both the University of Alaska and the U.S. Department of Agriculture. He served as head of the agronomy department for many years and for three

years was location and researcher leader for the USDA Agricultural Research Service program in Alaska, before retiring in 1988.

Taylor's primary focus was cereal crop improvement for both grain and forage production. His work led to the release of several improved varieties: five barley: Otal, Datal, Lidal, Thual, and Weal; two oat: Ceal and Toral; one rye: Bebral; and three wheat: Gasser, Ingal and Nogal. All of these possess the early maturity essential for production in Alaska, as well as incorporating other desirable agronomic traits including nutritional quality characteristics and resistance to lodging and diseases.

Otal barley gained widespread acceptance in the Peace River region of Alberta, Canada where it became the most widely grown, early maturing barley variety in that area (140,000 acres in 1984). Taylor effectively maintained professional ties with breeders in Scandinavian countries, from where he obtained

much of the germplasm used in developing these varieties.

Beginning in 1957, he provided leadership for an innovative and rewarding program that assessed the agronomic potential of Alaska's indigenous grasses and legumes. With funding from The Rockefeller Foundation, he and station colleagues conducted extensive plant exploration, collection, and evaluation activities to determine the potential of numerous native plant species and ecotypes for forage, turfgrass, and soil stabilization. Contributions from this program included the release of Nugget Kentucky bluegrass and Arctared fescue. Benefits to Alaska from this far-reaching program that tapped the riches of the State's native flora will continue.

Taylor was active with North Central Regional Technical Committees, and served on the advisory board of the Alaska Plant Materials Center. In 1976 he received the award for distinguished service by the Alaska Association of Soil Conservation Subdistricts. He was a member of Grange, Alaska Farm Bureau,



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Alaska Ex-Prisoners of War, Pioneers of Alaska, National Association of Retired Federal Employees, Veterans of Foreign Wars and American Legion. Upon his retirement he received the award of professor emeritus from the University of Alaska Fairbanks, and a citation from the Alaska Legislature for meritorious contributions to the state.

Roscoe and Alice retired to their rural home near Palmer where they enjoyed visits by their eight children and nine grandchildren. They actively participated in church, community service and fraternal organizations. Each year they travelled to Arizona and visited families and friends elsewhere.

—Written by Les Klebesadel, professor emeritus
Top right photo courtesy of Les Klebesadel

Roscoe Taylor

Development Of Cereal Crops Has Two Goals



ROS COE TAYLOR
Feeding His Cows

Although Roscoe Taylor's life is marked almost exclusively by the development of cereal crops for use in Alaska, his job is a somewhat double-barreled. Most researchers working with cereal crops should be aiming for a faster grain. This is a major part of Taylor's work, but at the same time he's working on improvement of cereal crops as forage.

Taylor, Research Agronomist at the Alaska Agricultural Experiment Station in Fairbanks, has spent a good deal of time in the development of crops as a forage crop as well as a grain. In fact, his research has led him to a point where the two objectives are not mutually exclusive. He appears to make more sense enough to be grown as a grain crop, yet it is vigorous enough to be used as a forage.

Although each time he considers a new crop in Taylor's experimental plots in the Fairbanks valley, he is particularly turning his eye to cereals which are adapted to the harsh and variable characteristics of both crops.

Barley, which is widely used by farmers in Alaska, is the subject of much of Taylor's most intense research. The most popular variety right now is Ridd barley, a strain which came to Alaska from Sweden, but which the Swedes have actually discarded now in favor of newly developed varieties.

Recently, Taylor is working to achieve what he calls "good grain and

which the farmer can realize." He explains that while he may have a barley which will produce a high yield under optimum conditions, it may have little value to the farmer and where there are no real problems, why not when nature is fairly kind to him by "stratifying" the crop.

According to Taylor, there are two types of stratifying and he is working to produce a plant which does not shatter under normal Fairbanks Valley winter conditions "most stratifying" is a term which Taylor uses to describe the unique strain where the heads of the barley plants stay off the stem — in a common problem in Alaska. To correct it, Taylor is attempting to develop a stiffer strawed plant which can withstand the wind. He is also working to produce a plant which does not shatter under normal Fairbanks Valley winter conditions.

At this time, Taylor is not studying other barley or wheat for possible industrial use (such as in brewing), but mostly as a livestock feed. To this end he has started work and now is furthering his work in the hope of finding the perfect crop for Alaska.

A good example is one plant which may eventually become useful to farmers in an isolated area as an industrial crop, but which actually makes better than any other crop, but which can produce a reasonable yield in a short season. This barley, which before may not have been able to grow any where,

if it were not for the fact that it is not a very good crop if the yield is not in good proportion. This illustrates the type of individual problem which Taylor is trying to solve.

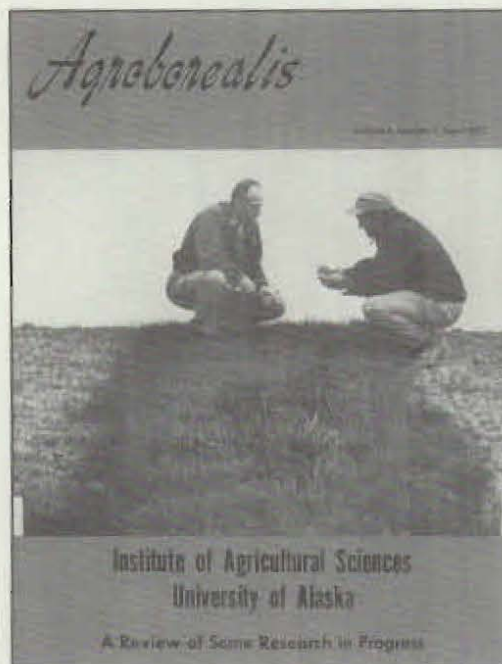
Taylor, born in Sioux Falls, Dakota, in 1921, came to Fairbanks in 1951 and has worked at the Experiment Station ever since. He met his wife Alice in Fairbanks and the couple was married in 1952. They have two children ranging in age from five to 17.

After serving three years on active duty in the Air Force, Taylor graduated from South Dakota State University in 1948 with a degree in agriculture. Two years later he earned his masters in crop breeding from Iowa State University.

Taylor made his decision to come to Alaska when he was a student, although he had intended to stay just two years until his original contract. "I figured after three years in the Air Force, I could spend two years anywhere," he said with a grin.

In addition to his primary work in cereal crop breeding and management, Taylor has picked up two jobs at the Experiment Station by "default." He is also involved in breeding and management of forage and winter breeding. He gained these responsibilities after several staff members who were questions in these fields left the Experiment Station.

With such a full schedule, Taylor is not exactly a man with time on his hands, but when he can sneak away, he enjoys both hunting and fishing.



Institute of Agricultural Sciences
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A Review of Some Research in Progress



Farewell and best wishes to the men and
women of Alaska's USDA-ARS



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