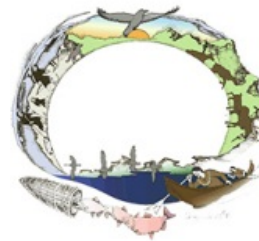


# Reforestation

## *Interior Alaska Experiences...*

State of Alaska, Board of Forestry  
Reforestation Science and Technical Advisory Committee  
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TANANA  
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CONFERENCE





## ***Reforestation Perceptions and Practices – changing over time***

Personal perceptions the result of a number of factors over time:

- Research work as a graduate student at UAF, 1982-1985
- Reforestation projects and regeneration surveys, while working as forester at TCC, 1985 to present.
- Exposure to research results, etc. 1980s onward.



## ***Reforestation Perceptions...***

### **Starting point for reforestation perceptions:**

- Interest highly centered on white spruce; very little attention paid to hardwoods.
- Scarification regarded as absolutely required.
- Heightened interest in artificial techniques because of scarcity of good white spruce seed crops.
- Research being conducted with natural regeneration systems (Zasada, et al).
- Some skepticism with planting:
  - Expense
  - Poor results (planting execution, poor stock)
- FRPA initially enacted in 1978, presumably with reforestation requirements.



## ***Direct Seeding Thesis work***

The challenge was to examine the use of direct seeding for regeneration of white spruce, specifically the use of recently developed plastic seeding shelters from Scandinavia.

### **Thesis research results:**

- Direct seeding survival on scarified spots statistically better than unscarified spots; also higher with seeding shelters than without.
- Shelters also produced better seedling height growth.
- Although shelters produced better survival, an economic analysis indicated that it was not economical to use shelters compared to unsheltered seeding on scarified seedspots.
- Overall survival rates, however, were not that impressive (52% survival on scarified unsheltered seedspots).





## ***Reforestation Perceptions...***

### **Emphasis on Planting:**

Despite the direct seeding interest, primary emphasis on white spruce regeneration continued with planting. Initially, planting projects used container stock (maybe some use of bare-root), with early season plantings.

Some issues:

- Seed source and amounts – Planting is a more efficient use of limited stocks of collected seed.
- Source of cultivated seedlings – in the 1980's, primary source was a State operated nursery in Palmer. However, there were some reputed problems with disease (mold) and seedling quality.



## ***Reforestation Experiences at TCC:***

- Village Corporation Timber Sales
- Native Allotment Timber Sales
- FNSB timber sales – other clients

With a couple small exceptions:

- All in the Tanana Valley
- Mostly white spruce sawtimber sales
- Mostly planted with white spruce



## ***Reforestation Experiences at TCC (continued)***

Most influential project was the reforestation of 640 acres of spruce sales on Toghotthele land on floodplain sites on the Tanana River in the early 1990's (Soldier Slough).

### **Techniques:**

- Planted at 8x8 spacing (680 seedlings/acre).
- Used 5-month-old 1-0 stock grown and shipped from WA or BC.
- Unscarified sites.
- Planted in late-summer (August).





*Reforestation Experiences at TCC (continued)*



Soldier Slough planting in 1993...





## ***Reforestation Experiences at TCC (continued)***

### **Soldier Slough Timber Sales, continued:**

- Had a big seed collection year at the onset of the timber sales (1990), enabled being able to support planting projects.
- The same seed crop in 1990 produced an abundance of natural seedlings in the first phase of the cutting units (~350 acres).
- A couple features turned out to be somewhat innovative:
  - Lack of scarification - Mostly the result of logistics, convenience/expense issues resulting from winter access, and not because of a specific silvicultural desire to not scarify.
  - Late-season planting – A new idea at the time, was the result of logistics resulting from using 5-month old stock and the unwillingness to deal with overwintering the seedlings.
- Regeneration surveys in the late 1990's showed good survival, but with substantial amounts of hare damage.

Viewed years later, plantings appear to have been hugely successful.



## ***Reforestation Experiences at TCC (continued)***

Soldier Slough Unit visit in 2009  
– 15 years after planting







## ***Reforestation Experiences at TCC (continued)***

### **Gerstle River Native Allotment**

1997 timber sale in a decadent white spruce stand infected throughout with *Tomentosus* root rot. Under normal circumstances, this unit would have undergone white spruce planting, but the presence of the rot led to a reluctance to invest in planting. Instead, direct seeding on scarified seedspots was applied about 1998, using specially equipped swing saws to churn out small seedspots in heavy grass sod.

Although we were skeptical of potential success, somehow, after 15 years, there's appears to substantial white spruce regeneration in the unit.





***Reforestation Experiences at TCC (continued)***



**Gerstle River Native Allotment, Direct Seeding in 2000.**







## ***Reforestation Experiences at TCC (continued)***



**Gerstle River Native Allotment, in 2014, 14years after seeding.**





## ***Reforestation Experiences at TCC (continued)***

### **Coppice regeneration of balsam poplar at Fort Yukon**

Recent development of a biomass energy project at Fort Yukon has resulted in some harvesting of a balsam poplar stand, with very promising initial results for regeneration from stump and root sprouting.







## ***Reforestation Experiences at TCC (continued)***

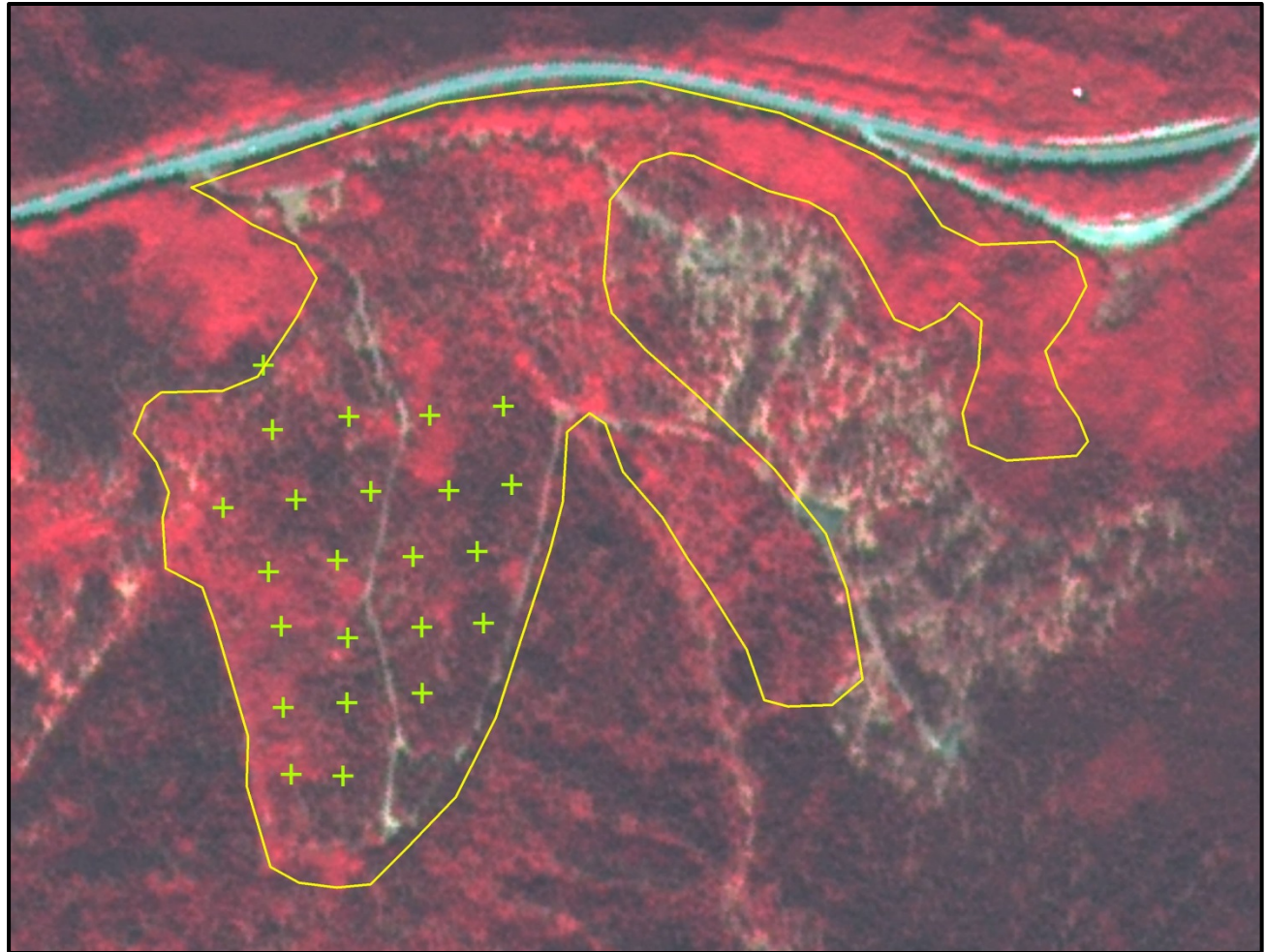
**Regeneration on cut-over areas on Toghotthele land on Nenana Ridge near Fairbanks, dating from the late 1960s and 1970's.**

In the 1980s, this area was perceived as a silvicultural “problem”, with stands that had been extensively cut for spruce sawtimber with some residual trees and heavy grass.



## ***Reforestation Experiences at TCC (continued)***

**Photo points in area  
harvested in 1976**







## ***Reforestation Experiences at TCC (continued)***

Toghotthele 1976 timber  
sale area, in 2013 (37  
years later)







## ***Reforestation Experiences***

### ***U.S. Army lands, from Dan Rees:***

- Very little spruce harvesting, mostly hardwood, mostly summer harvest.
- Rely solely on natural regeneration, very little scarification.
- Somewhat different land management objectives – major consideration is trying to open up training areas for military exercises.
- Major impacts on regeneration by moose. 10 years after harvest, regeneration can still be browsed down low. Implementation of cow harvests resulted in rapid regeneration response.



## ***Reforestation – A few observations...***

- Planting can work well with white spruce.
  - Survival rates are good enough that past planting levels could be considered excessive.
  - Late-season planting has shown great success, and scarification can be considered optional, depending on the site.
- Direct seeding for white spruce regeneration is still an option, provided a seed source is available. Scarification would be required.
- Scarification or some sort of ground disturbance will often be required when relying on natural seeding.
- The use of scarification can be better served by ensuring the presence of some organic material on seedspot micro-sites.
- Natural regeneration of hardwoods not perceived as a problem in the past, but newer management regimes involving hardwood management indicate that it may not be so straightforward.
- Coppice regeneration of hardwoods in some circumstances shows promise, particularly floodplain balsam poplar. Especially promising with some biomass energy projects.
- In some examples, it appears that adequate stocking does occur naturally given an adequate time frame, even in challenging or “problem” circumstances.



## ***FRPA requirements – Where do we stand?***

### **Stocking standards – currently at 450 trees per acre.**

Given good planting survival rates, expected stocking in fully-stocked naturally occurring spruce stands – we feel the standard could be lowered without violating overall sustainability of the resource.

200-300 trees/acre?

### **Time frame to achieve stocking requirement – currently 7 years**

Given evidence that stands are regenerating naturally over a longer time frame, we feel this requirement could be relaxed, recognizing that that raises some administrative and enforcement difficulties.

10-15 years?

### **Uniform distribution of tree stocking**

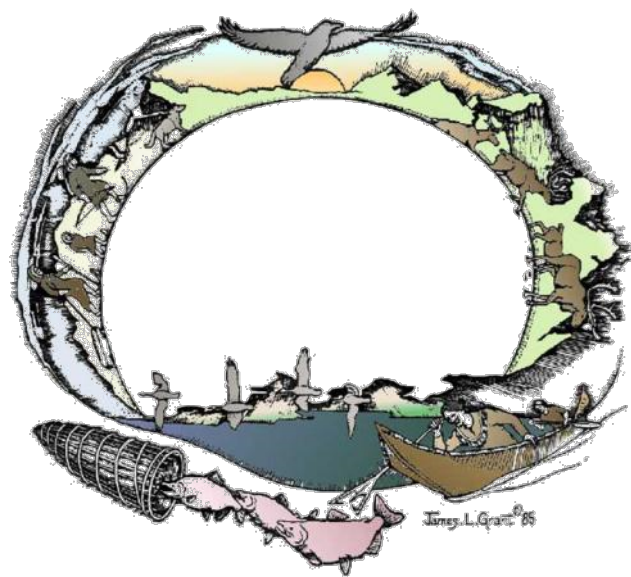
Regulations currently specify < 10% of area can be under reforestation specs.

How critical is this, given the non-uniform character of many naturally occurring stands, and the potential non-timber values (habitat, etc.) that may not be harmed by non-uniformity?





Questions, comments:



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