

Summary of:
Silviculture Systems Final Report.
Researchers:
- R.F. Courtney
- S.J. Michalsky

The Silviculture Systems Study is an extension of the Saskatchewan Forest Habitat Project. The vision of the project was to discover how to sustainably manage the forest in a way that integrates the needs of wildlife with forest industry activities. The goal is to maintain or even enhance wildlife habitat through carefully selected harvesting and silviculture techniques.

The purpose of this study was to compare the effects of 4 different harvesting treatments to the effects of conventional clearcutting. The four harvesting treatments were:

- 1) clump aspen: clumps of aspen, sometimes with white spruce, were left in the clearcut. Clumps were circular, and ranged in diameter from 10-30m.
- 2) high stumps: stumps were left approximately 1m high in strips about 5m wide along the edge of some clearcuts.
- 3) single aspen: single aspen trees were left standing in a clearcut on a 25-30m grid spacing.
- 4) strip cuts: 100m wide rectangular cuts 400-600m long.

In addition, several stand and cutblock characteristics that could influence forest species were assessed to determine what harvesting recommendations could improve biodiversity.

Results:

No significant differences in understory species diversity were found between treatment and control sites. The single aspen treatment showed much less disturbance to the understory than the clearcut control site showed, probably because trenching between standing aspen was difficult. The clump aspen treatment showed greater structural diversity of vegetation in comparison to clearcuts. Both the single aspen and clump aspen treatments resulted in more understory plant cover compared to conventional clearcuts. These two treatments appeared to benefit biodiversity of vegetation within the first two years after treatment.

The clump aspen treatment was the only treatment to have a detectable effect on small mammal use of cutblocks. The effect occurred only in the second year after harvest, at which time clump aspen cutblocks showed increased small mammals diversity, species richness and capture rates for some species. The other treatment types had no effect on small mammals within the first two years after harvest.

Small mammal diversity was lower near cutblock edges, but this effect decreased in the second year. Edge effect will gradually disappear as a clearcut regenerates. Large cutblocks with a lot of edge showed the highest small mammals diversity. To benefit small mammals, clearcuts should be at least 30ha in size and implement the clump aspen harvest treatment.