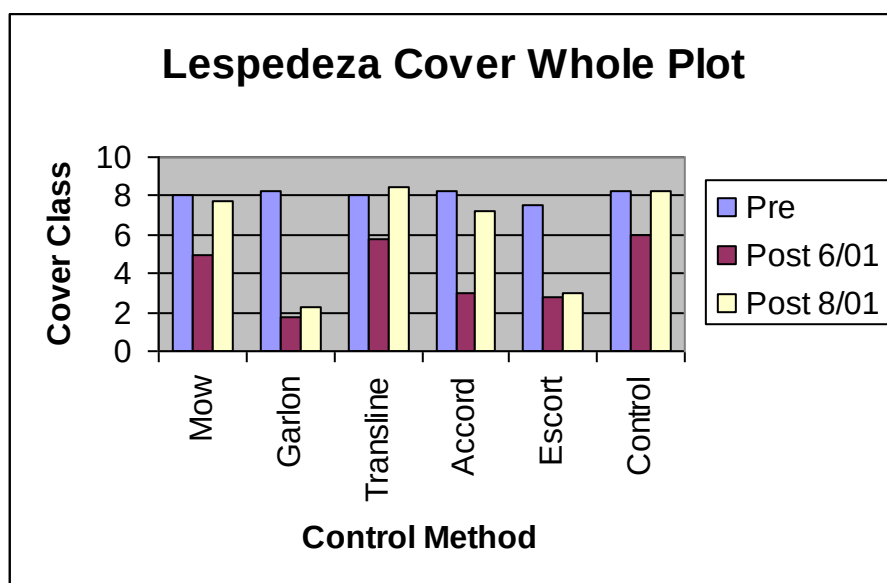


## Cades Cove Lespedeza Plots Post Treatment Data Collection and Analysis

Data was collected from the lespedeza treatment plots two times after the treatment. We wanted to see how the lespedeza and other plant species were doing the first spring after the treatment so the first data collection was completed on June 14, 2001. Then we wanted to complete the second data collection at approximately the same time as the pre-treatment data collection. The second data collection occurred on August 28, 2001.

Note: In the pre-treatment data the Lesp. Sp.1 was lumped together with the Lespedeza cuneata. We determined later that these small lespedeza plants were actually the seedlings of lespedeza cuneata.



### Cover Classes

|          |             |
|----------|-------------|
| 1= 0-.1% | 6= 10-25%   |
| 2= .1-1% | 7= 25-50%   |
| 3= 1-2%  | 8= 50-75%   |
| 4= 2-5%  | 9= 75-95%   |
| 5= 5-10% | 10= 95-100% |

When looking at this particular set of data it is not going to be as important to take into account the spring data. Obviously the cover of the lespedeza is going to be less in the spring than in the fall when the plant is fully mature. From the pre and post 8/01 data it appears that Garlon and Escort were very effective at controlling the lespedeza. The Accord and mow treatments decreased the lespedeza just slightly, while in the Transline plots the lespedeza actually increased slightly, and the control stayed the same.

One year after treatment the Garlon plots went from a pre-treatment cover of 50-75% to a post treatment cover of .1-1%. The Escort plots went from 25-50% to 1-2% after treatment. It appeared from this data that the Garlon might have been a little more effective at controlling the

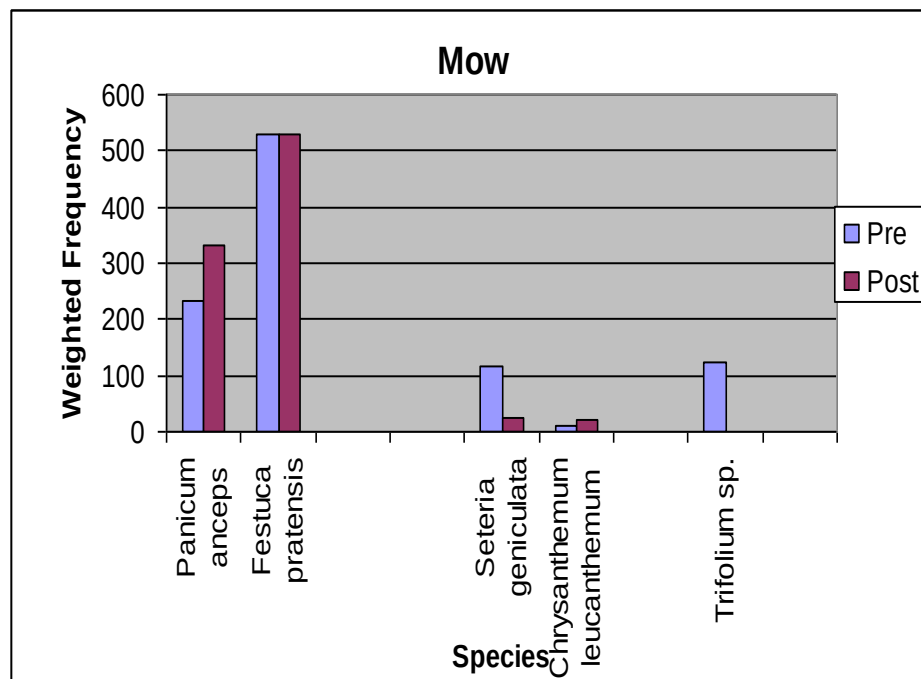
lespedeza. We entered this data into SigmaStat to run a two way repeated measures ANOVA. The means for our treatments are as follows:

|           |      |
|-----------|------|
| Garlon    | 34.1 |
| Accord    | 58.4 |
| Escort    | 25.9 |
| Transline | 67.8 |
| Mow       | 59.1 |
| Control   | 67.8 |

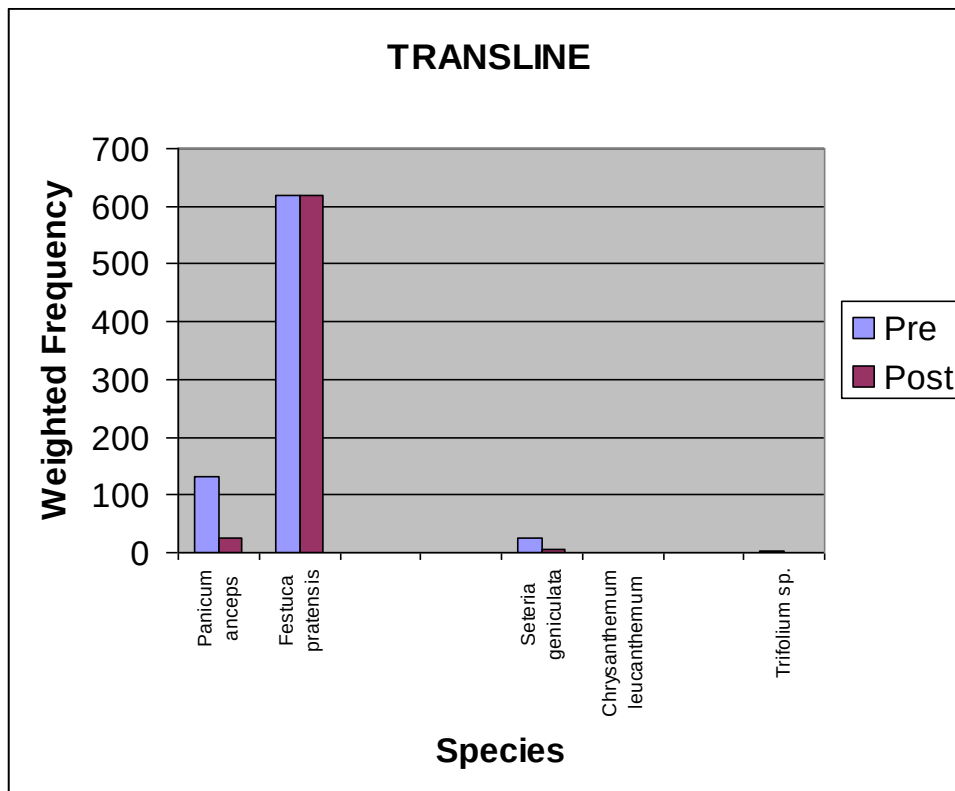
There was not a statistical difference between the pre and post-treatment data for the control, mow, Transline, and Accord treatments. The Garlon and Escort treatments did show a statistical difference with  $P < .001$  between the pre- and post treatments. However, when comparing the differences between the treatments, the Escort vs. Garlon treatments were not significantly different. Therefore, according to the analysis the Garlon and Escort treatments were equal in their control of lespedeza. However, the cost of these two herbicides is not equal. Following the labels for control of lespedeza, the Escort costs \$8.92 per acre while the Garlon costs \$83.43 per acre. Obviously, it is going to cost a lot less to use the Escort to kill the lespedeza.

#### Comparison of Effects of Treatments on Other Species

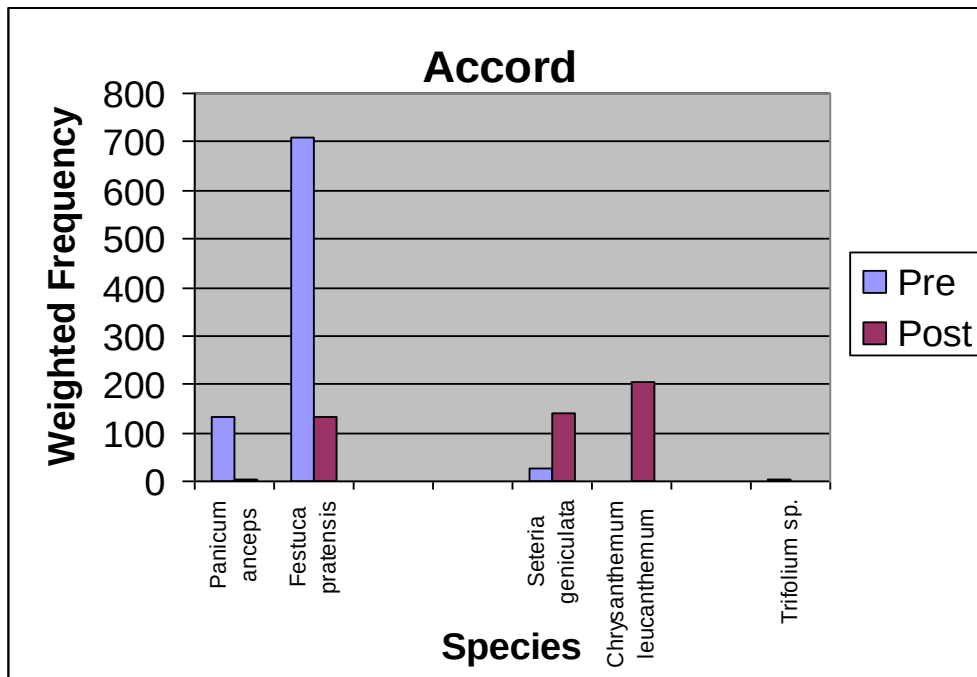
We did collect frequency data on 9 other species besides the lespedeza (see the first lespedeza report for the data collection methods). Unfortunately, we did not collect enough data to have completely accurate results, which is fine because we did not want to spend a lot of time on data collection. After looking at the data for 4 of the species in the control plots, it was clear that we could not depend on the data for those particular species. However, we can use the data on the other 5 species to look at the effects on the non-target plants that might be alarmingly different.



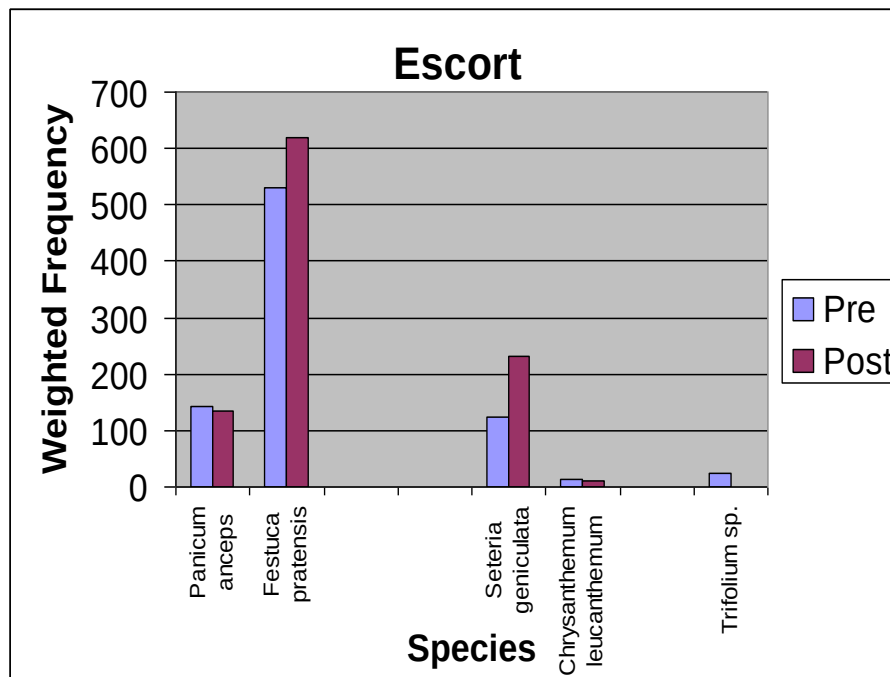
Mow: As expected there was not a very significant change in the species in the plots that were mowed. The panicum seemed to increase a little. The decrease in the Trifolium may be because this species is sometimes hard to see at the time of year this data was collected.



Transline: The analysis of the lespedeza cover of the Transline plots showed that it was not effective at controlling the lespedeza. As seen above the frequency data showed that the fescue was not affected and very little of the setaria, chrysanthemum, and trifolium were even found in the plots. The decrease in panicum is interesting, of course we do not know if this decrease was significant, however it would be something to look at if Transline was to be used more often in the Cades Cove grass fields. According to the label it should not harm the grass species, however sometimes particular species are more susceptible than other species.



Accord: Not surprisingly there were some pretty drastic changes in the non-target species in the Accord plots. The cover data indicated that there was not a significant difference in the lespedeza after the Accord treatment. The panicum and fescue were both negatively affected. It is encouraging to see the decrease in the fescue, however other studies that we have done in the past show that the fescue will probably increase in the following years unless further work is done to control it. Fescue usually shows a drastic decline the year after an Accord treatment but then increases the second year after treatment. The time of year of the treatment probably had a lot to do with why the seteria and chrysanthemum increased. In the fall these species probably take up less herbicide and then the following spring with the decrease of all the other species they are released.



Escort: It is encouraging to see that there is not much change in the panicum anceps in the Escort plots. On the other hand it is not so good to see the increase in the fescue and the seteria after treatment. This herbicide was very effective at controlling the lespedeza. It may be possible that after the decrease in the lespedeza that the fescue was released. The Escort label does say that you can use the product for "selective weed control in unimproved industrial turf", so it should not harm the fescue or bluegrasses. The label also says that Escort can be used to control weeds in established native grass stands including indian grass, bluestems, and switch grass, which is in the same genus as our panicum anceps. So it appears that Escort will control lespedeza at least the first year and will not harm our native grasses.

Some of the other weeds controlled by the Escort include:

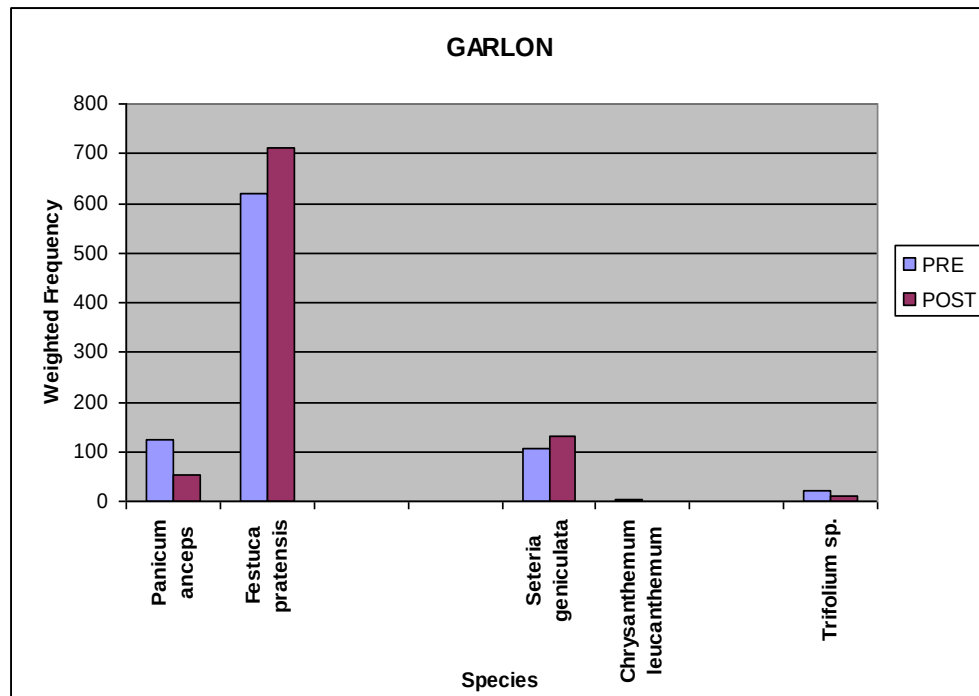
Desirables

Blackeyed-susan  
Aster  
Beebalm  
Bitter sneezeweed  
Goldenrod  
Wood sorrel  
Blackberry

Undesirables

Common yarrow  
Crown vetch  
Dandelion  
Marestail  
Plantain  
Sweet clover  
Honeysuckle  
Multiflora rose  
Musk thistle

Because of some of the desirables listed here we might want to be very careful when we use this herbicide in the cove especially around the asters and goldenrods.



Garlon: As expected the Garlon did not seem to harm any of the grasses that we were taking data on. It did seem to set back the panicum a little. It is interesting that the other grasses (exotic) both increased just a little. Garlon also did a very good job at controlling the lespedeza the first growing season. However, there are a couple negatives to the use of this herbicide. First it is very expensive as mentioned above, and it is a broadleaf herbicide, so it will kill all broadleaf plants.

#### Conclusion:

At this point it appears that Escort might be our best bet for controlling sericea lespedeza. It is less expensive and appears to be more selective than the Garlon. During the fall of 2001 we sprayed a few acres of lespedeza with Garlon in Cades Cove. It will be interesting to look at those sites this year for resprouts and visit these plots again and compare the number and size of resprouts in the Garlon and Escort plots.