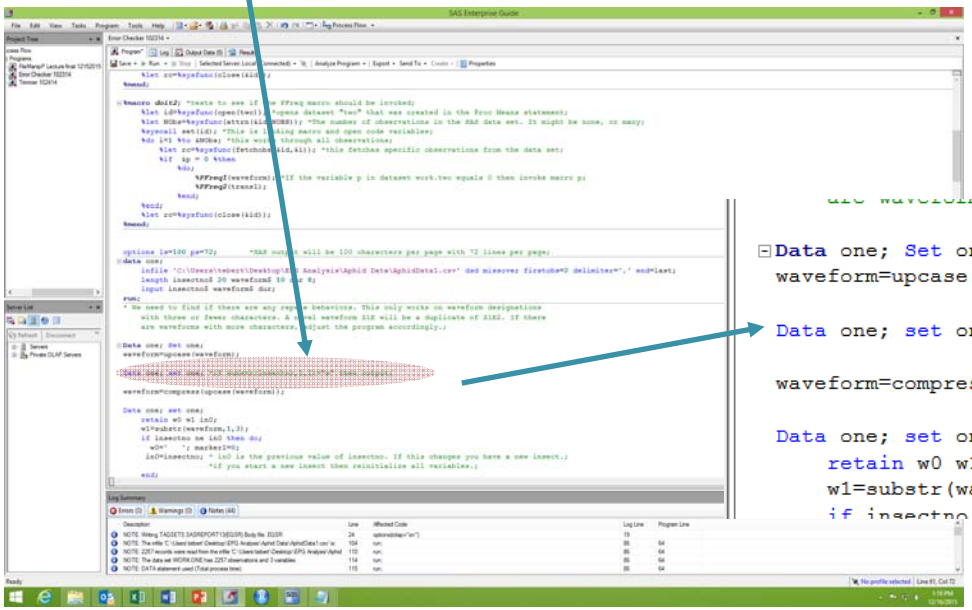
Treatments

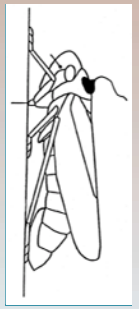
- Find this section in Error Checker



```
Data one; Set one;
waveform=upcase(waveform);

Data one; set one; *if substr(insectno,1,1)="e" then output;

waveform=compress(upcase(waveform));

Data one; set one;
    retain w0 w1 in0;
    w1=substr(waveform,1,3);
```

- Delete the asterisk and change the “e” to “a” then run. Change file names to AphidData1aT.csv and run.

EPG Work-shop



Results

- Table 1 has TNWE (Total number of Waveform Events) parameter 26 in Backus et al 2007.
- Tables 1 and 2 for treatment a

waveform	Frequency	Percent	Cumulative Frequency	Cumulative Percent
C	250	49.7	250	49.7
E1	3	0.6	253	50.3
F	2	0.4	255	50.7
NP	58	11.53	313	62.23
PD	190	37.77	503	100

trans1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
C to E1	3	0.6	3	0.6
C to F	2	0.4	5	1
C to NP	54	10.8	59	11.8
C to PD	190	38	249	49.8
E1 to C	3	0.6	252	50.4
F to C	2	0.4	254	50.8
NP to C	57	11.4	311	62.2
PD to C	188	37.6	499	99.8
PD to NP	1	0.2	500	100

Backus, E.A., A.R. Cline, M.R. Ellersick, and M.S. Serrano. 2007.
Lygus herperus (Hemiptera: Miridae) feeding on cotton: new methods and parameters for analysis of nonsequential electrical penetration graph data.
Annals of the Entomological Society of America. 100(2) 296-310

Results

- Go back to the "if" statement and change "a" to "b" and rerun the program.
- Table 1 and 2 for treatment B

waveform	Frequency	Percent	Cumulative Frequency	Cumulative Percent
C	376	49.67	376	49.67
E1	8	1.06	384	50.73
E2	3	0.4	387	51.12
F	2	0.26	389	51.39
G	1	0.13	390	51.52
NP	23	3.04	413	54.56
PD	344	45.44	757	100

trans1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
C to E1	8	1.06	8	1.06
C to F	2	0.27	10	1.33
C to G	1	0.13	11	1.46
C to NP	18	2.39	29	3.86
C to PD	344	45.74	373	49.6
E1 to C	4	0.53	377	50.13
E1 to E2	3	0.4	380	50.53
E2 to C	3	0.4	383	50.93
F to C	2	0.27	385	51.2
G to C	1	0.13	386	51.33
NP to C	23	3.06	409	54.39
PD to C	343	45.61	752	100

Compare the tables

- One can now get an overview of treatment differences.
- In this case the task is pointless because the data are barely sufficient to enable this tutorial.
- As a class exercise, students should go back and redo the analysis by 1) deleting insect A1; 2) redo the analysis again but leave all the data in. Compare the results.

A final thought

- If I use all the data and if all my recordings are exactly 8 hours. Then a mean duration of C by insect is the expected duration of C within an 8 hour recording session.
- If I delete artificially terminated events then the mean duration of C by insect is the expected duration of C for the insect being studied (assuming that the variation in the duration of C in the recording period is fairly constant over the life of the insect).
- Neither approach is wrong, they are just slightly different.
- The difference becomes trivial as the quantity of data increases. It is most important if only a single event in one treatment out of all the insects examined determines the outcome.