In version b I have added the program sinf.exe to allow samples (without replacement) to be taken from the infile.

msvar0.4.1.c Made a modification so that rounding errors in the times (i.e. zero time interval between events) generated by tchange are trapped. Uses global integer Illegal. Also made a modification so that standard deviation of random deviate used to update demographic/mutation parameters is 5 times greater when t_f only is changed (the rationale is to try to cause better mixing, which appears to work).

msvar0.4.c has been modified from msvar0.3t.c to remove the use of the uniform random update for tf in msvar0.3.c when r is close to zero. I have also allowed the user to specify the scale for updating the parameters in init_v_file. Also - specify that if 1 locus, twidpars = 0.05, otherwise 0.01.

msvar0.4.c was derived from msvar0.3t.c, which came from msvar0.3.c The differences between these versions is that msvar0.3.c (and msvar0.2.c) attempted to rescale the times of events in the genealogy whenever tf or r were updated. This was done to try to improve convergence rates. A particular problem, with many loci, is that the acceptance rate becomes very very low when tf is changed when there is a star genealogy. I decided the rescaling in msvar0.3.c and msvar0.2.c was wrong - ie the MCMC did not converge to the required answer. So msvar0.3t.c is like previous versions (eg glik3m.c ) but with extra (correct) twiddles to try to improve convergence. The reason that convergence is a problem is that we are trying to run all loci simultaneously. The results described in Beaumont (1999), the accuracy of which were verified in a number of different ways, used a single locus version of the program that did not have this rescaling. Thus people who have used versions prior to msvar0.2 and subsequent to msvar0.3 should not be affected by this problem.

Here is the preamble to msvar0.3.c

```
/* This version done 7 April 1999. Modification of timings
so that init_v_file refers to numbers of thinning intervals
rather than the total number of iterations. Slight modification
of width of updating function in choosepars from 0.5 -> 1.
Changed twidpar interval to 0.01. Changed the tf-only bit of
choosepar so that 50% chance of not rescaling time every time tf
is changed */
```