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Outcomes of the moonlander simulation

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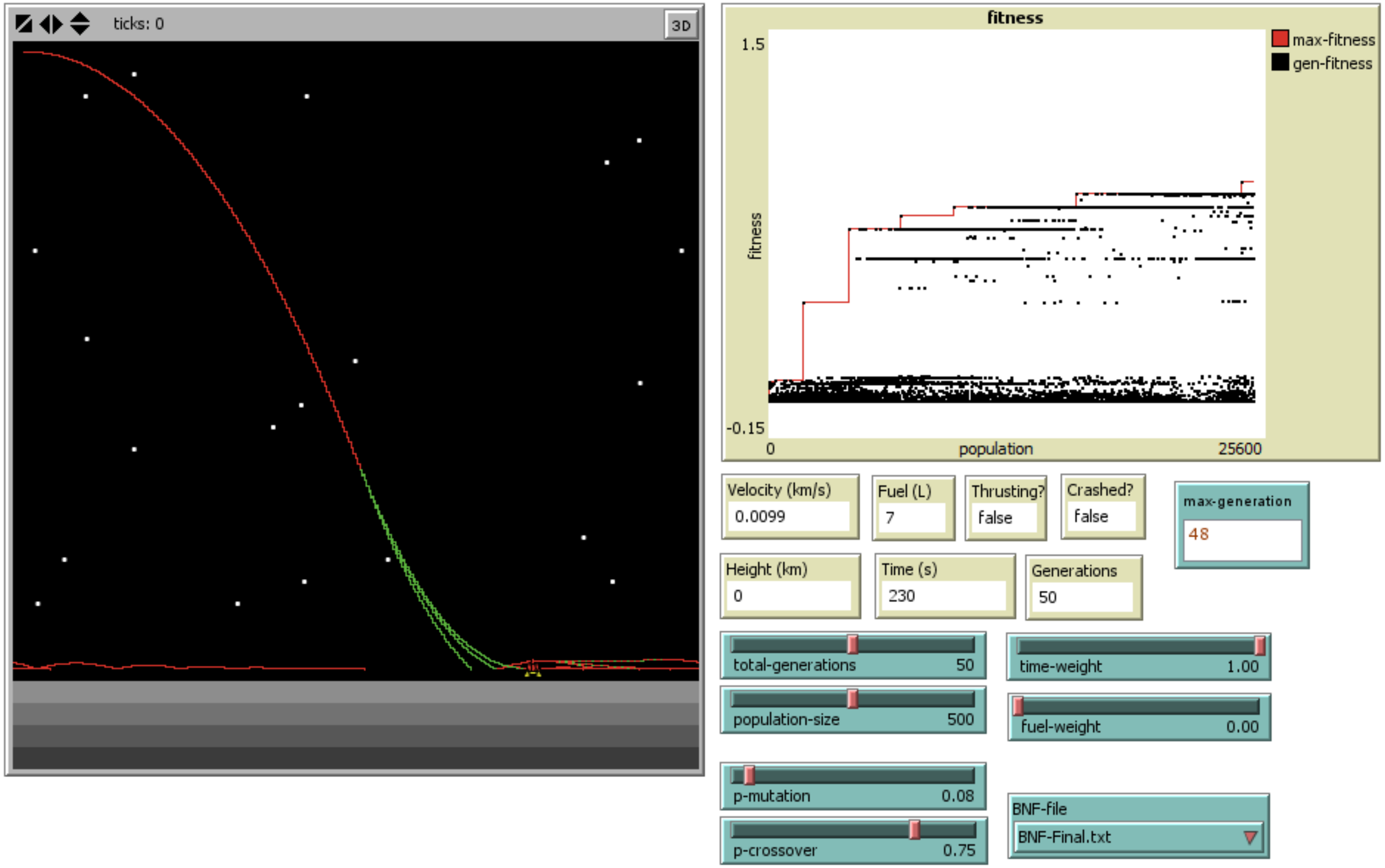
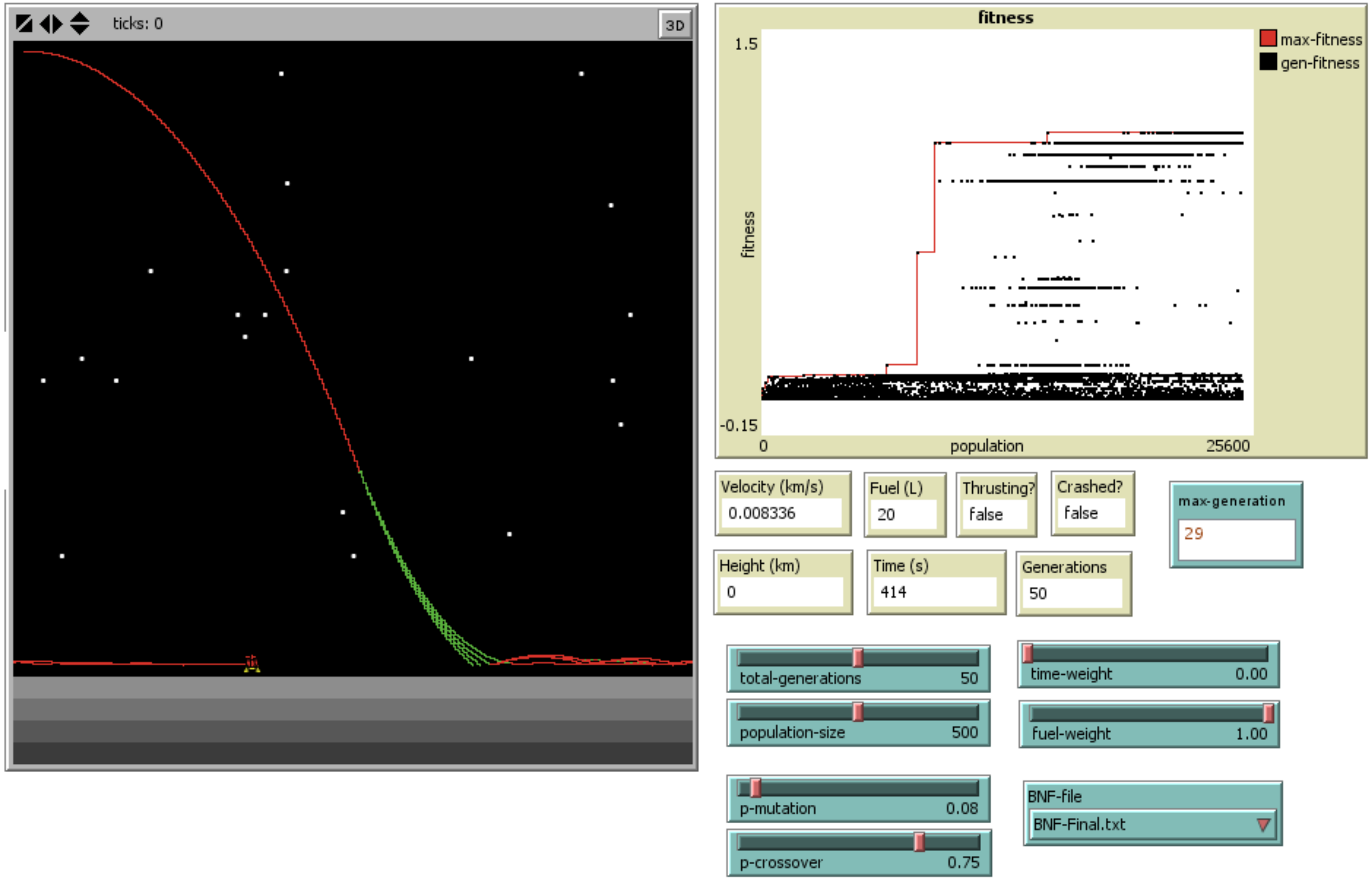
Time Optimization

As you can see the fitness graph shows interesting results. At first, a gen suddenly lands. Because of the high fitness function, this gen is copied quickly. Later, several landing options are visible . It is also interesting to see that the density of the lower fitness function becomes less as the simulation proceeds.



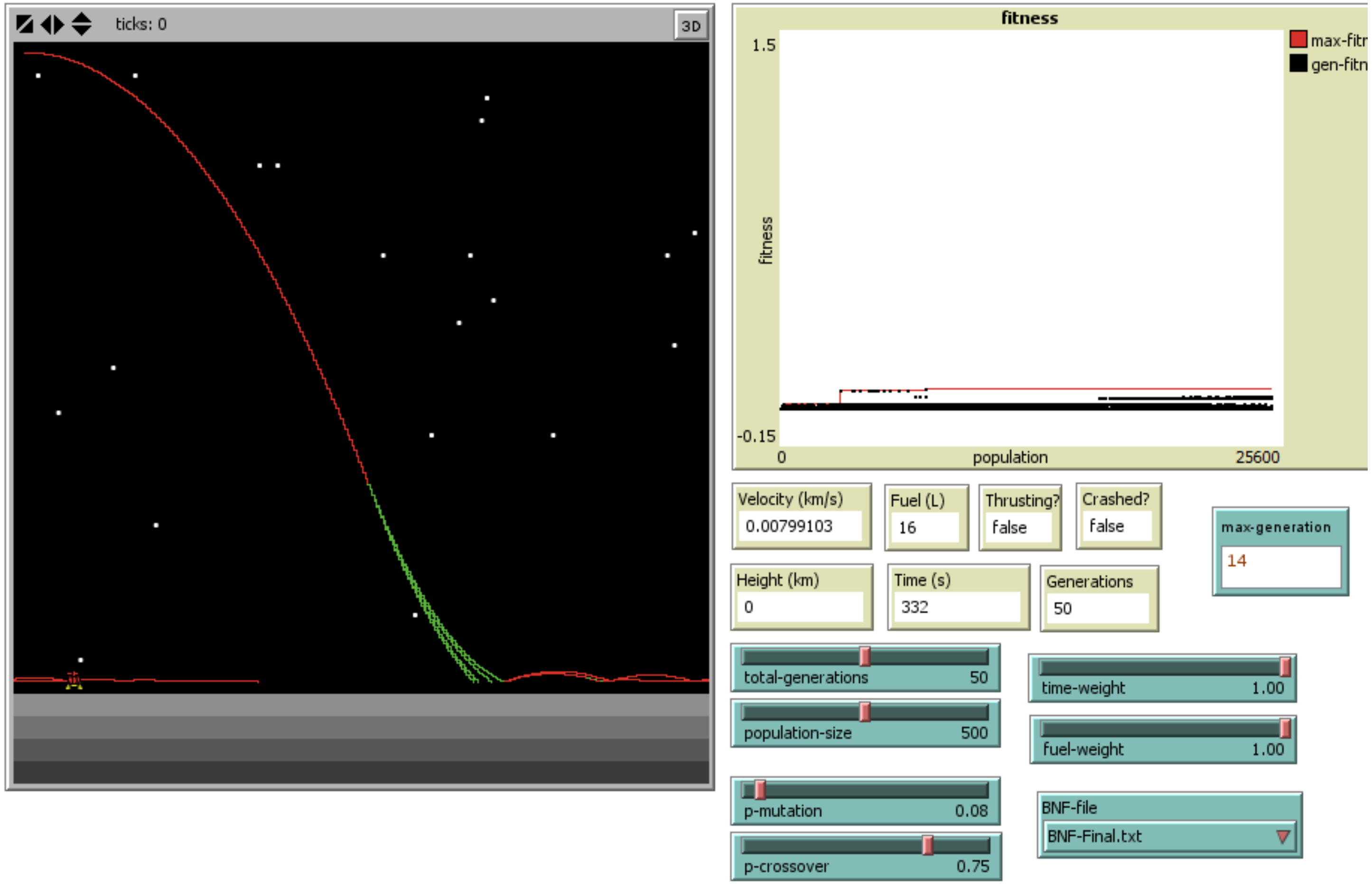
Fuel Optimization

Although the result is very different from the time optimization (a much longer landing and more fuel left), the graph looks very similar. What occured me as remarkable was the fact that there are quite a lot of low fitness gens at the end of the simulation. I believe this is due to the fact that a landing with a lot of fuel is very close to a crash with a lot of fuel.



Both

In this simulation, a satisfying result is found which lies nicely between a maximal fuel and the shortest time. Please note that the I have used a different fitness value for this simulation. I multiplied the values of time and fuel, to make sure that the combination of fuel and time would be fitter than maximum fuel or maximum time.



Time, small population

As you can see in the graph, the change of a good gen is smaller in a small population. Thus, a little luck is needed.