Re: Haldane's Dilemma and quantitative genetics

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- *From*: "Perplexed in Peoria" <jimmenegay@xxxxxxxxxxxxx>

- *Date*: Wed, 28 Jun 2006 16:37:57 −0400 (EDT)

"Bigfoot" <drforce2003@xxxxxxxxx> wrote in message news:e7rkol$2qkp$1@xxxxxxxxxxxxxxxxxxxxxx

> Walter ReMine wrote:
>
> > Perplexed in Peoria wrote:
> >
> > > Though I suspect Walter is wrong both
> > > about the limit (Walter makes it too low) ...
> >
> > That misrepresents me. The "limit" is not mine, and I did not "make"
> > the limit (much less make it "too low"). The limit comes from Haldane,
> > and evolutionists never revealed its meaning to the general public. I
> > did.
>
> I am sorry Walter this is one your most ridiculous statements. You have
> only added more confusion to the issue and certainly no one has hidden
> anything from the general public. The number of generations to the
> fixation of a beneficial allele at a single locus is about 300
> generations with a selection coefficient of .01 which you report
> correctly. However, you have always misled the public into the idea
> that two substitutions in a sexual species which act additively with
> respect to fitness would require twice as long. This is false. It only
> takes about 5−10% more generations for 2 substitutions than for 1. If
> your concept of the cost requires twice as many generations for two
> substiutions then maybe there is something wrong with the 'Remine Cost'
> concept.
>
> The 'Remine Cost' is the needless distraction and confusion factor
> because it hides the fact multiple substitutions can go simultaneously
> with only a slight increase in the number of generations required in
> sexual species. This can be clearly shown with computer simulations and
> has been. I have done it before but there was no need to publish
> because A) you will claim it wrong because it came from an evolutionist
> and B) Nunney has published similar simulations dealing directly with
> Haldane's dilemma. showing that multiple substitutions in a sexual
> species is different and clearly much larger numbers of substitutions

> can occur than 1667. And of course now Malcom has taken his time to write some simulations too to show a similar effect. But you don't like his simulations either. Don't reply with your arm chair theorizing. Do the simulations yourself or get someone to help you. If you can show the effect then report it if not then atop perpetuating the 'Remine Myth'.
>
> The real limiting factor from these type of simulations shows the real limiting factor is not Walters 'cost' but rather the rate of beneficial mutations in populations.
>
> > You cannot blame the "limit" onto me.
>
> Its time you stop making the same ridiculous claims over and over again. The limit is for a single locus not multiple freely recombining loci which act additively. You have milsed trhe public and continue to obfuscate the issue. Of course if you actually did the simulations then you might figure out Remine's Limit is Red Herring and not the stuff of scientific revolutions.

Bigfoot, may I say respectfully that with friends like you, Darwin doesn't need enemies. Your ignorance is appalling. You have apparently not understood what Haldane has written, what ReMine has written, nor what Nunney has written. You are a poster−boy example of the confusion that ReMine claims has grown up around Haldane's Dilemma.

Where to start? Well, lets begin with Nunney's paper. It can be found online here:
http://www.sekj.org/PDF/anz40−free/anz40−185.pdf
Nunney clearly understands, as you apparently don't, that the estimate made by Haldane of 300 generations per substitution has nothing to do with setting the selection coefficient to 0.01. The estimate is pretty much independent of the selection coefficient. And it does not assume that only one substitution is taking place at a time. Haldane clearly contemplated multiple advantageous alleles proceeding to fixation at any particular time. However, he suggested that progress toward fixation by one allele would interfere with progress by another allele in that both alleles 'compete' for a limiting resource − selective deaths.
Or, so said Haldane.

Now Haldane may well have been wrong in his estimates and in his theory. Nunney points out that some of the assumptions that Haldane made are unrealistic, in at least some circumstances. One such assumption made by Haldane is that the population size is effectively infinite and that unfavorable alleles are present in the population at the level set by the mutation/selection balance. Hence, when the environment changes, and a formerly slightly disadvantageous allele becomes advantageous, it is already present in the population. No need to wait for a mutation to

get started. However, as Nunney points out, in a small population, there is no selection/mutation balance. Those rare alleles that may be needed to respond to environmental change are probably extinct. So, the population must wait for a saving mutation, even before beginning to consider issues of time to fixation and the cost of selection. At low population sizes, the rate of substitution is limited by the rate of mutation − which becomes a more stringent limit than the one Haldane and ReMine focus on. Nunney demonstrates this in his simulation. And if you think that this point refutes ReMine, then you are hopelessly confused.

Another point made by Nunney may be more significant. Nunney points out that Haldane's logic ignores the possibility that density dependent effects might modulate selection coefficients. If I am reading Nunney correctly, he suggests that Fisher−Wright additivity of selection coefficients might be correct in the low−density range − with each organism competing against the environment. But in the high−density range, where each organism tends to compete against other organisms, you might get something more like truncation selection, and selection might become more efficient − advancing more advantageous alleles with each selective death. It is an interesting idea, and I think it has some validity. But I don't see that this suggestion is really backed up by Nunney's simulations.

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