DEPARTMENT OF BOTANY
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16. I. 31.

Dear Fisher,

Many thanks for your letter of the 7th. I have been thinking about the problem of species frequencies, but can't claim to have got very far with it.

Most of Romell's contributions to the subject are in Swedish, unfortunately, but in view of the interest of this paper in Ecology, I think it would worth while to have them translated. I was most interested in the three assumptions upon which he bases his "theoretical" F%. curves, particularly in the assumption that "every species is adapted to a definite site". By "definite" I suppose he means a definite range of intensities of the site factor: otherwise

it would be a gross simplification of the actual state of affairs. (Or does he mean that the species attains its modal frequency about an intensity of the rate-factor which is constant over the whole area occupied by the species?) Whatever the exact meaning of the assumption, I take it as equivalent to assuming that the ~~chance of a given species~~ probability that a given species shall occur within a sample area does not depend merely on the size of the area, as would be the case if individual plants were distributed at random.

I followed without difficulty your conclusion from the formula

$$F = 1 - e^{-A'/a}$$

but cannot derive the formula. I should be much obliged if you would explain it — and if you can spare so much time I should also like to see a demonstration of your conclusion that with several independent environmental factors, and for certain sizes of quadrat, there may be concentration

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3.

not mean F = 100 but are some other high value such as 60.

It would be most valuable for ecological if the Raunkiaer presence-or-absence method can be made to give really useful information, since it is so much less laborious than the method. Might it not be possible to determine a quadrat size for each species which would enable direct comparisons to be made not only between the frequencies of the same species in different areas, but also of the frequencies of different species? It should be possible to draw a graph

& F% against quadrat size for each sp.,
and hence to deduce the size which gives
some definite multiple, KF_0, of the "true"
frequency [illegible] be - perhaps the
size would not be constant over the whole
area covered by the species.

Yours sincerely,

A R Clapham.