Negative Binomial Representations:

1) $P(N=n) = p^n (1-p)^h \binom{h+n-1}{n}$ NegBi (p,h)

h = 'failures'
n = 'successes'

$$\text{mean} = \frac{ph}{1-p} = \lambda \text{ say}$$

$$\text{variance} = \frac{ph}{(1-p)^2} = \frac{\lambda}{1-p} \quad (> \lambda)$$

$$p = \frac{\lambda}{\lambda + h} \qquad \frac{1}{1-p} = \text{ODF}$$

(p,h)

$$\text{Variance} = \lambda + \lambda^2/h.$$

Representation (λ, h)
mean, contagion

Beasley (s', p')
$s' = h$
$p' = 1/\text{ODF} = \left(\frac{\lambda}{\lambda+h}\right)$

or (s, p) Beasley model
where $\begin{cases} s = h \\ p = 1/\text{ODF} \end{cases}$

In @Risk (s', p')
where $\mu = \frac{s'(1-p)'}{p'}$

$$\text{Variance} = \frac{s'(1-p)'}{p'^2}$$

$$\frac{\mu^2}{V} = s'(1-p')$$

$$s' = \frac{\mu^2}{V}\left(\frac{1}{1-p'}\right)$$

so $\left(\frac{1}{p'}\right) = \text{ODF}$

$$s' = \left(\frac{\mu}{\text{ODF}-1}\right)$$