If I run through the code, I get something like this in a more "formal" mathematical way:

$$n.sp = \text{N species} \tag{1}$$
$$S = \Sigma_{i=1}^{N} y_i \tag{2}$$
$$z0 = (i * \mu) \tag{3}$$

where i is a vector from 1 to N species and $\mu = \frac{S}{\text{N species}}$.

$$z1 = (y_{cum,i}) \tag{4}$$
$$\tag{5}$$

where $y_{cum,i} < y_{cum,i-1}$ i.e. the cumulative abundance $y_{cum,i}$ is a vector ordered in a decreasing way.

$$g = \frac{1}{N} \Sigma_{i=1}^{N} (y_{cum,i} - i * \mu) \tag{6}$$
$$g = \frac{1}{\frac{1}{N} \Sigma_{i=1}^{N} i * \mu} * \frac{1}{N} * \Sigma_{i=1}^{N} (y_{cum,i} - i * \mu) \tag{7}$$

So our final Gini coefficient can be stated something like:

$$G = \frac{1}{\mu \Sigma_{i=1}^{N} i} \Sigma_{i=1}^{N} (y_{cum,i} - i * \mu) \tag{8}$$