

Equation (S1): The equation used to calculate the Shannon Diversity Index is as follows [58,59]:

$$H' = - \sum_{i=1}^S p_i \ln p_i \quad (S1)$$

where;

H' = Calculated Shannon diversity index

p_i = proportion of individuals belonging to the i th species ($\frac{N_i}{N}$).

S = numbers of species encountered

\sum = sum from species 1 to species S

Equation (S2): The equation used to create Figure 5 of Shannon Diversity was as follows, with an r^2 of 0.76:

$$eH' = 5.789 - 0.0010E + 0.0453S - 0.0046A - 0.134rh25 + 0.124rh50 - 0.0389rh75 - 0.0379rh100, \quad (S2)$$

where:

eH' = Estimated Shannon diversity index

E = Elevation

S = Slope

A = Aspect

rh25: relative height of 25% of the canopy density

rh50: relative height of 50% of the canopy density

rh75: relative height of 75% of the canopy density

rh100: Mean canopy height within the footprint

This equation was used in ENVI's band math to calculate the new layer of Shannon diversity.