

S3 Table: Governing equations of the model for  
competition structure III

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Primary cheaters	$\frac{dn_{00}}{dt} = r_{00}n_{00} \left( 1 - \frac{n_{00} + n_{01} + \theta(n_{10} + n_{11})}{k + \beta_0 R} \right) - mn_{00}$
Secondary producers	$\frac{dn_{01}}{dt} = r_{01}n_{01} \left( 1 - \frac{n_{00} + n_{01} + \theta(n_{10} + n_{11})}{k + \beta_0 R} \right) - mn_{01}$
Primary producers	$\frac{dn_{10}}{dt} = r_{10}n_{10} \left( 1 - \frac{\phi(n_{00} + n_{01}) + n_{10} + n_{11}}{k + \beta_1 R} \right) - mn_{10}$
Global producers	$\frac{dn_{11}}{dt} = r_{11}n_{11} \left( 1 - \frac{\phi(n_{00} + n_{01}) + n_{10} + n_{11}}{k + \beta_1 R} \right) - mn_{11}$
Resource	$\frac{dR}{dt} = g(n_{10} + n_{11}) - lR$

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