

Nakazawa, T. and Doi, H. 2012. A perspective on match/mismatch of phenology in community contexts. – *Oikos* 121: 489–495.

Appendix 1

Numerical models of community modules including species-specific reproductive phenology

	Equations
Tri-trophic food chain	$dN_1/dt = p_1(t)r(1 - N_1/K)N_1 - a_{21}N_1N_2$ $dN_2/dt = p_2(t)a_{21}b_{21}N_1N_2 - d_2N_2 - a_{32}N_2N_3$ $dN_3/dt = p_3(t)a_{32}b_{32}N_2N_3 - d_3N_3$ $dN_1/dt = p_1(t)r(1 - N_1/K)N_1 - a_{21}N_1N_2 - a_{31}N_1$
Exploitative competition	N_3 $dN_2/dt = p_2(t)a_{21}b_{21}N_1N_2 - d_2N_2$ $dN_2/dt = p_3(t)a_{31}b_{31}N_1N_3 - d_3N_3$
Apparent competition	$dN_1/dt = p_1(t)r(1 - N_1/K)N_1 - a_{21}N_1N_2$ $dN_2/dt = p_2(t)(a_{21}b_{21}N_1 + a_{23}b_{23}N_3)N_2 - d_2N_2$ $dN_3/dt = p_1(t)r'(1 - N_3/K')N_3 - a_{23}N_1N_3$ $dN_1/dt = p_1(t)r(1 - N_1/K)N_1 - a_{21}N_1N_2 - a_{31}N_1$
Intraguild predation	N_3 $dN_2/dt = p_2(t)a_{21}b_{21}N_1N_2 - d_2N_2 - a_{32}N_2N_3$ $dN_3/dt = p_3(t)(a_{31}b_{31}N_1 + a_{32}b_{32}N_2)N_3 - d_3N_2$

We use the following parameter values: r (or r') = 1, K (or K') = 1, $a_{ij} = 1$ ($a_{31} = a_{32} = 0.25$ in the intraguild predation module for coexistence), $b_{ij} = 0.5$, $d_i = 0.1$, $u_i = 1$, and $T = 365$.