SocModelAnalysis

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Function:

$\frac{dF_1}{dt} = r_1 F_1(1 - F_1) - \frac{h_1 * F_1(1-X_1)}{F_1+s_1} - i_2 F_1 + i_1 F_2$

$\frac{dF_2}{dt} = r_2 F_2(1 - F_2) - \frac{h_2 * F_2(1-X_2)}{F_2+s_2} - i_1 F_2 + i_2 F_1$

$\frac{dX_1}{dt} = k_1 X_1(1 - X_1)[\frac{1}{F_1+c_1} - \omega_1 + d_1(2X_1 - 1) + \rho_1(2X_2 - 1)]$

$\frac{dX_2}{dt} = k_2 X_2(1 - X_2)[\frac{1}{F_2+c_2} - \omega_2 + d_2(2X_2 - 1) + \rho_2(2X_1 - 1)]$

Table 1: Default parameter values used in this analysis

Parameter	Population_1	Population_2	Def
r	0.35	0.35	Fish net growth
s	0.8	0.8	Supply and demand
h	0.5	0.5	Harvesting efficiency
k	1.014	1.014	Social learning rate
ω	0.35	0.35	Conservation cost
c	1.5	1.5	Rarity valuation
d	0.5	0.5	Social norm strength (within pop)
i	0.2	0.2	Fish immigration (from patch)
ρ	0.5	0.5	Social norm strength (opposite pop)

Table 2: Starting values used in this analysis

Parameter	Population_1	Population_2
F	0.406	0.406
X	0.240	0.240

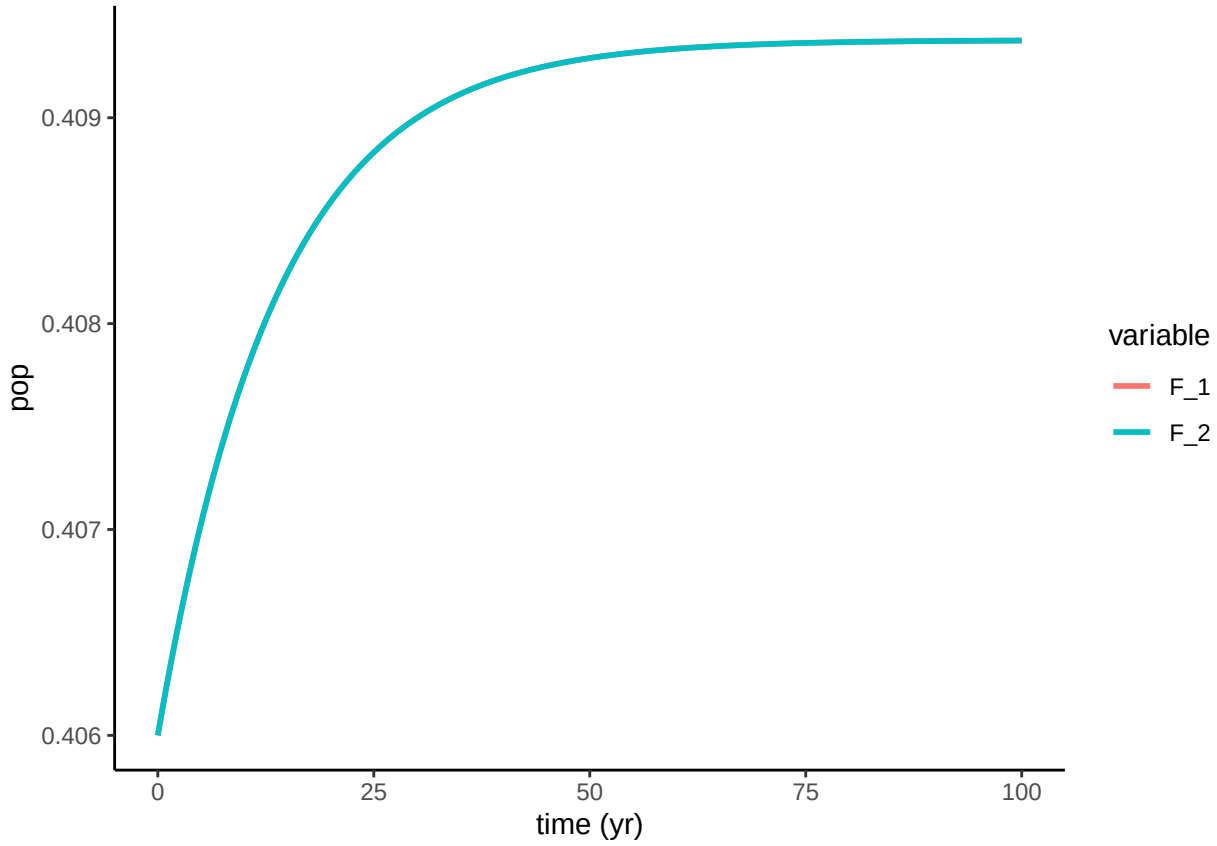

Figure 1: Model without social dynamics

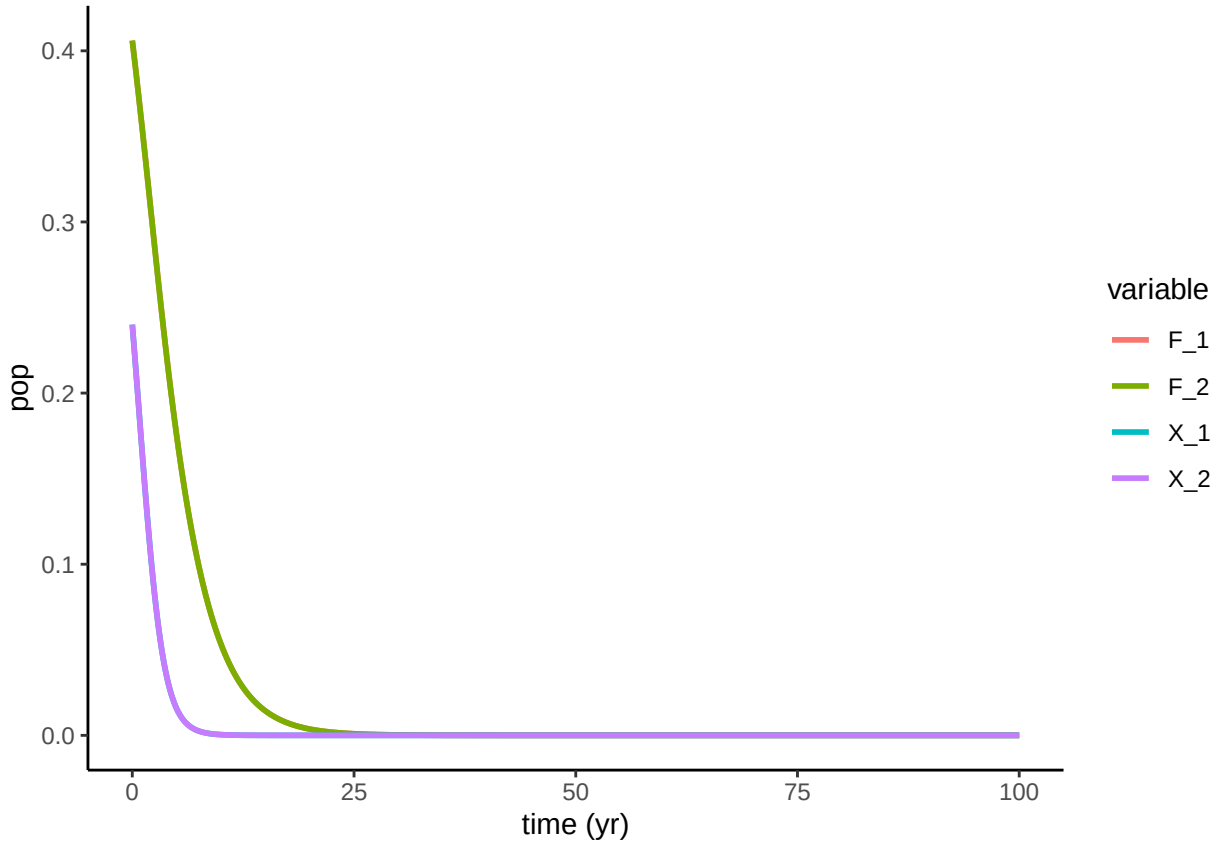

Figure 2: New Model with social dynamics