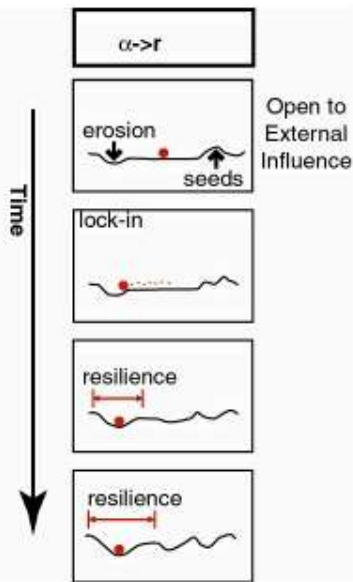
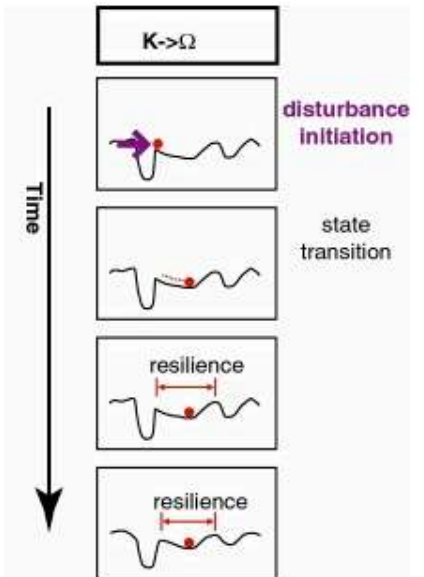
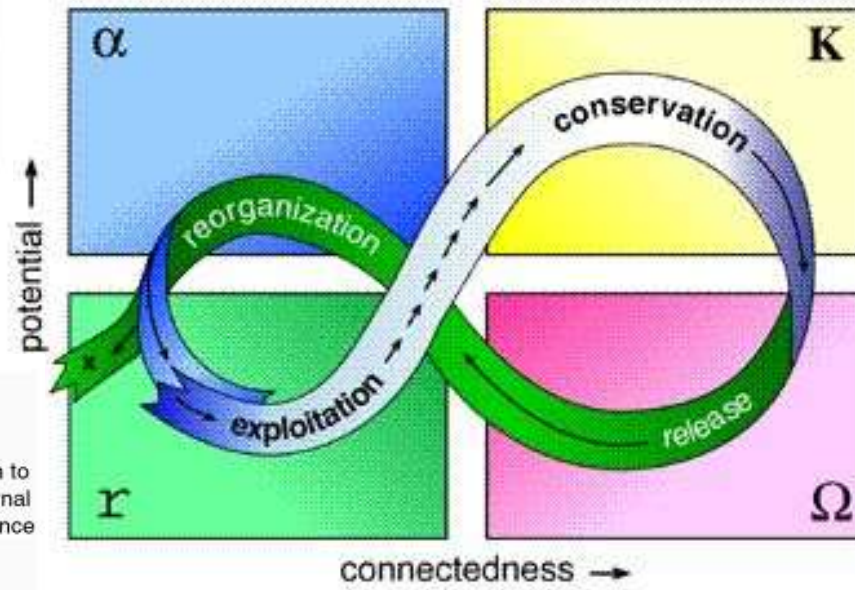
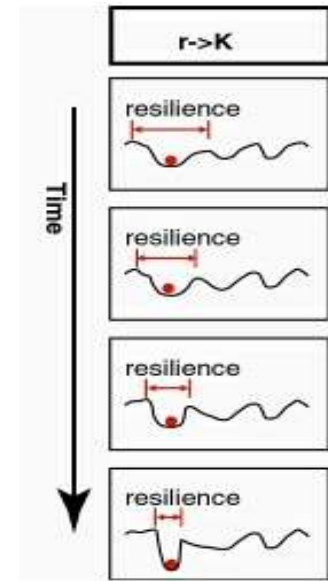
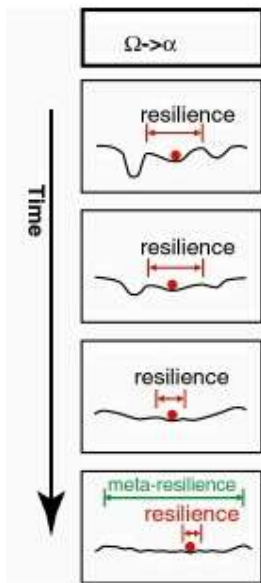
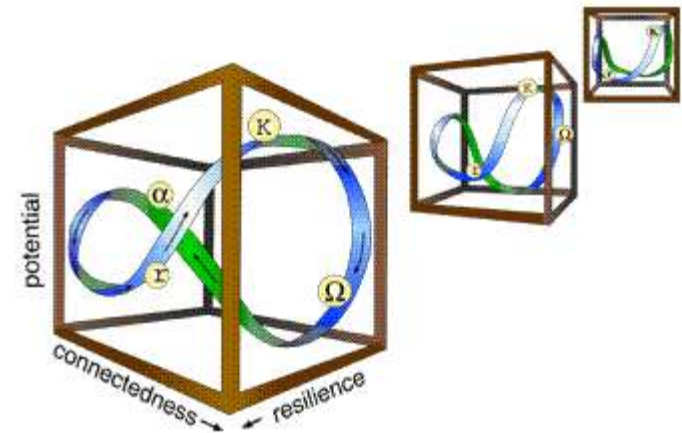
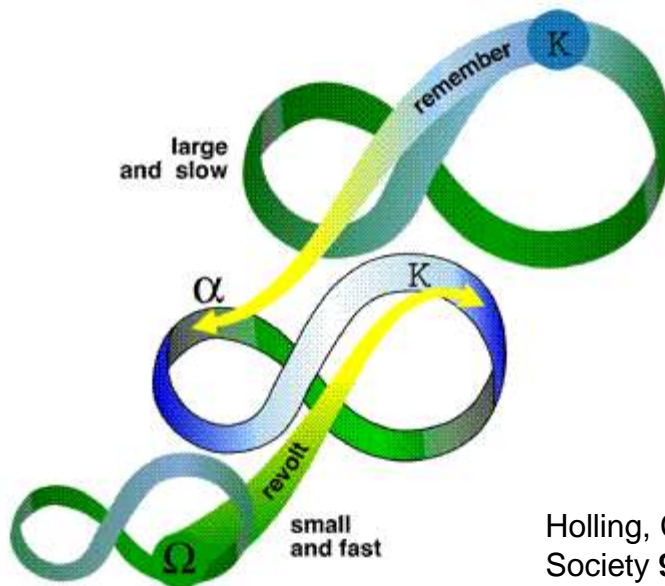
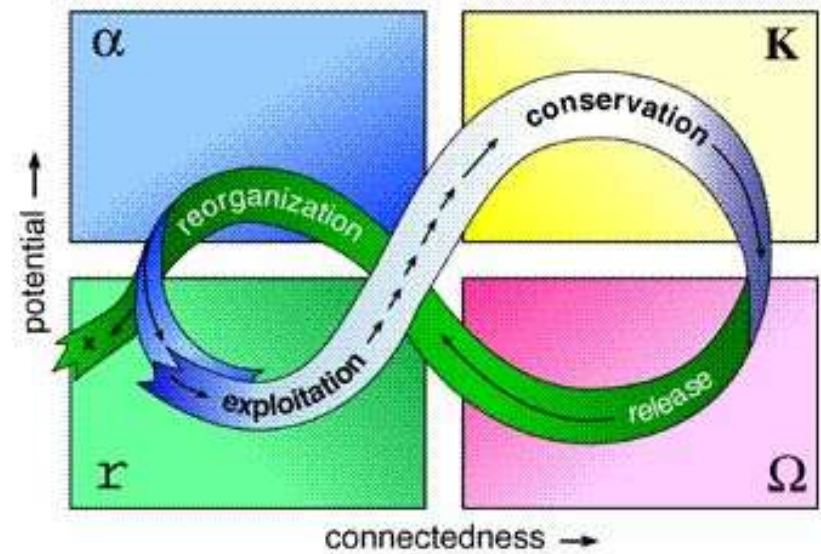


Complejidad

Resilencia



Resilencia



Holling, C. S. 2004. From complex regions to complex worlds. *Ecology and Society* 9(1): 11. [online] URL: <http://www.ecologyandsociety.org/vol9/iss1/art11/>

Capacidad de Carga

Modelo general

$$N_{t+1} = N_t + N_t r_t$$

$$\frac{dN}{dt} = r_t N_t$$

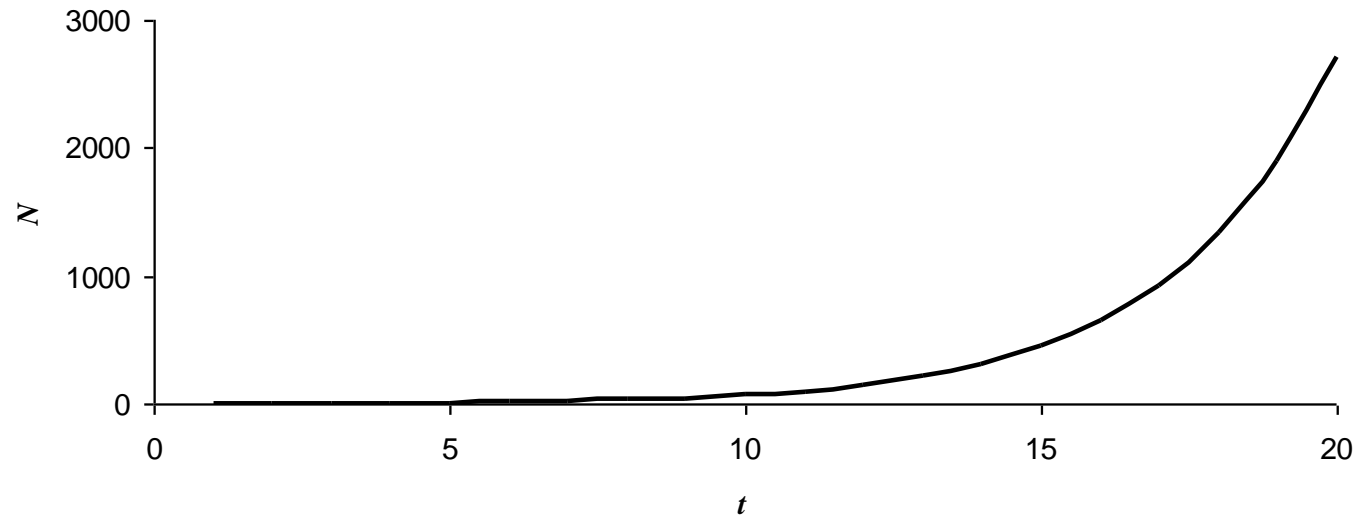
$$N_t = N_0 e^{rt}$$

$$r = b - m$$

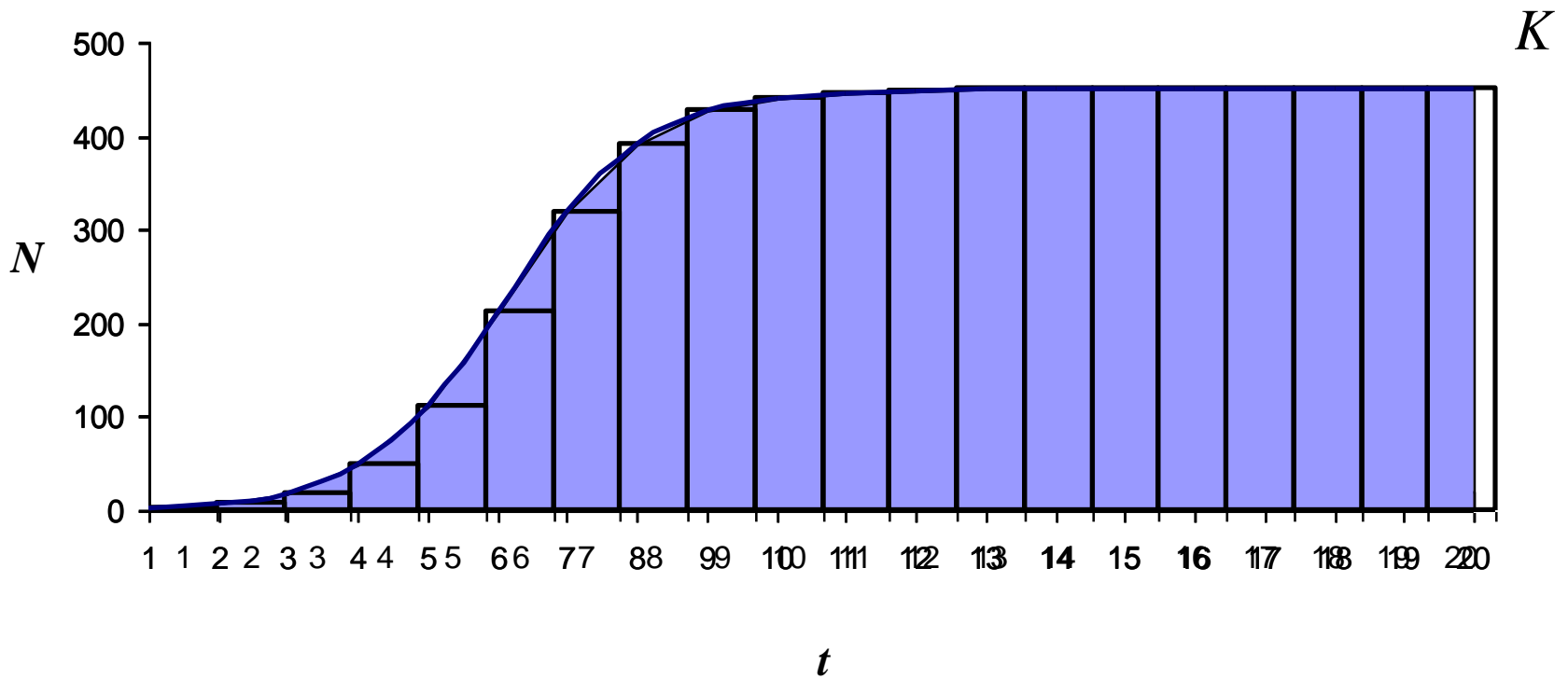
$$b > m \rightarrow r > 0$$

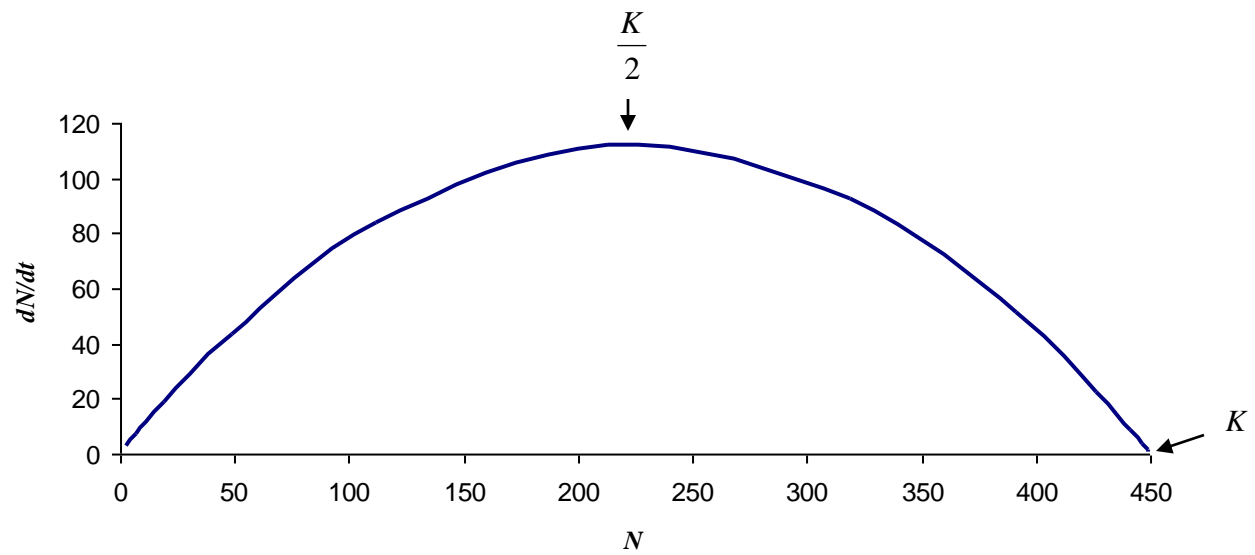
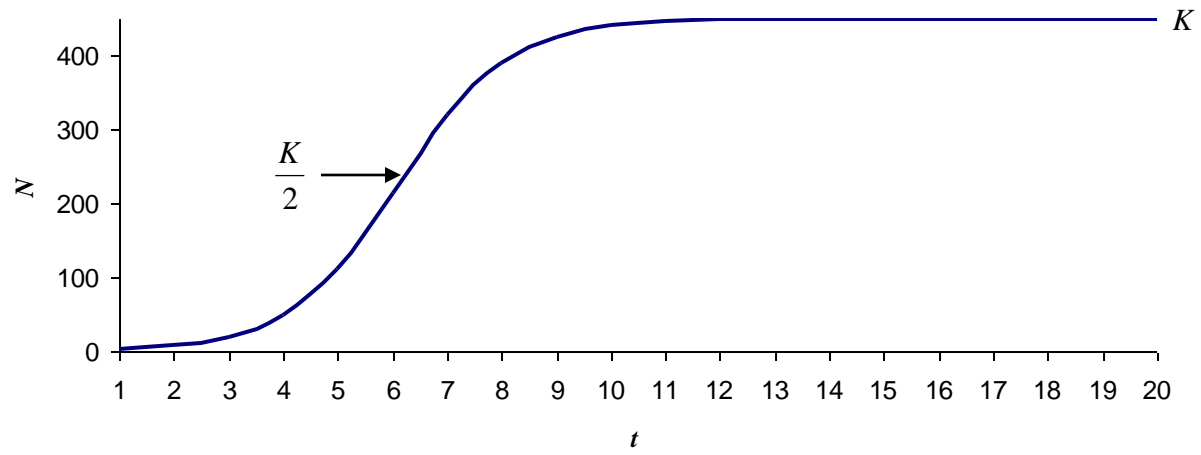
$$b = m \rightarrow r = 0$$

$$b < m \rightarrow r < 0$$



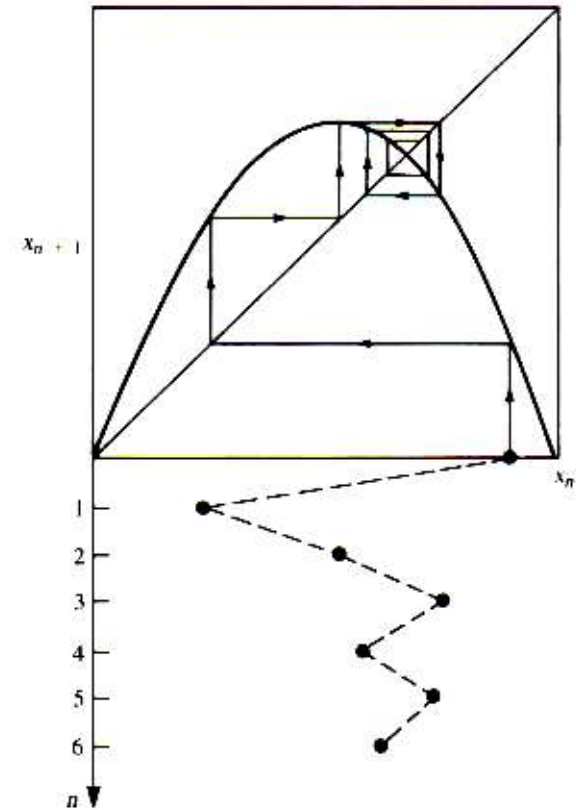
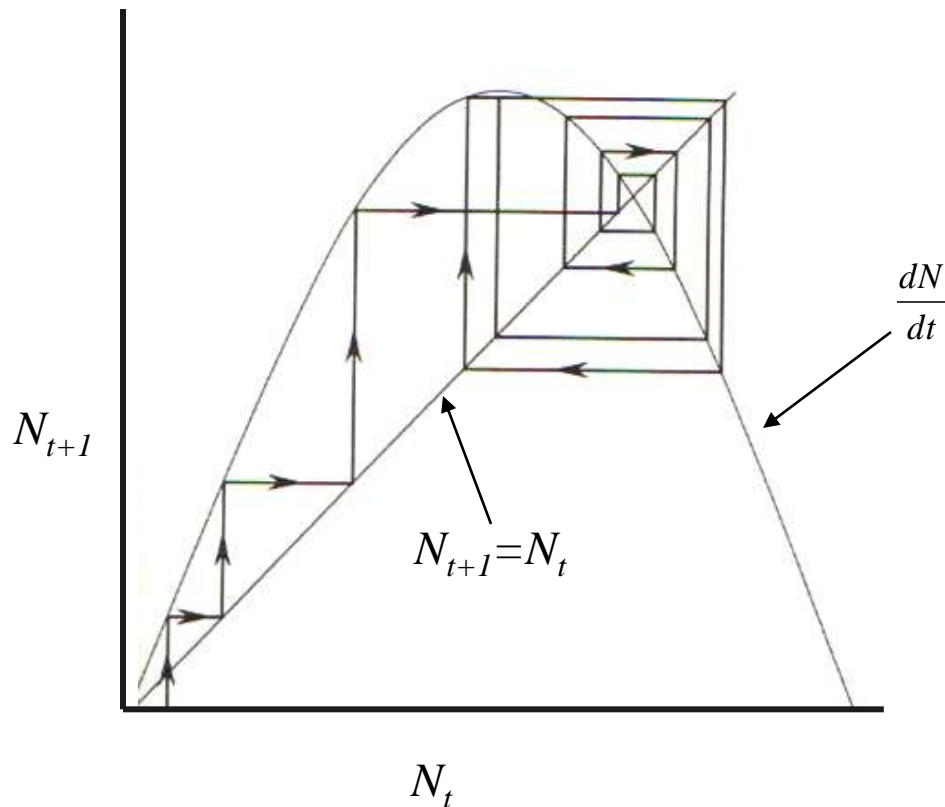
$K = \text{capacidad de carga}$

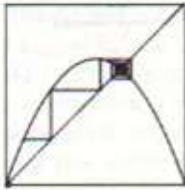




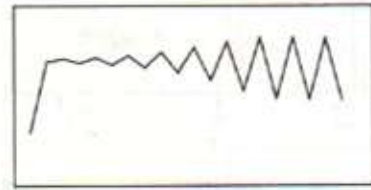
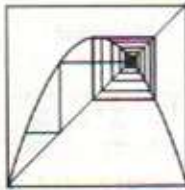
Comportamiento dinámico

Plano fase (phase plane)

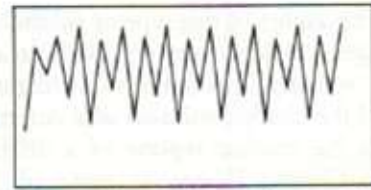
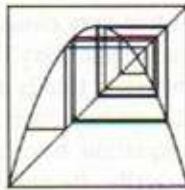




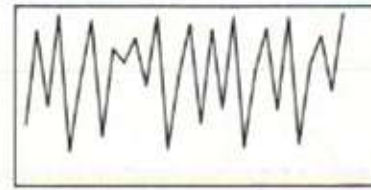
(a)



(b)



(c)

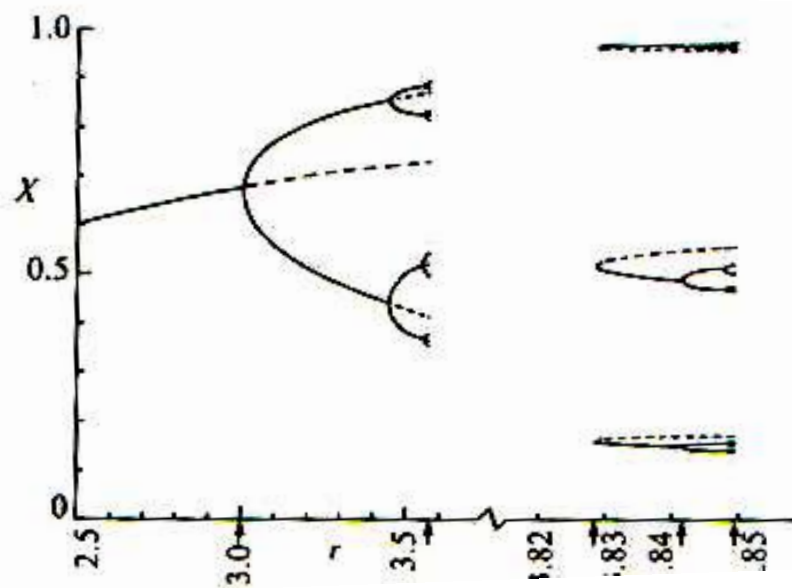
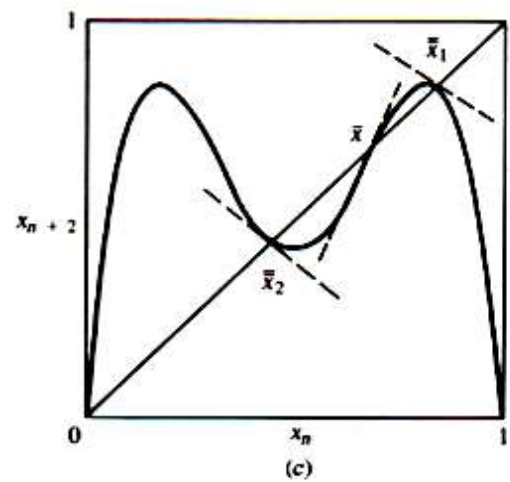
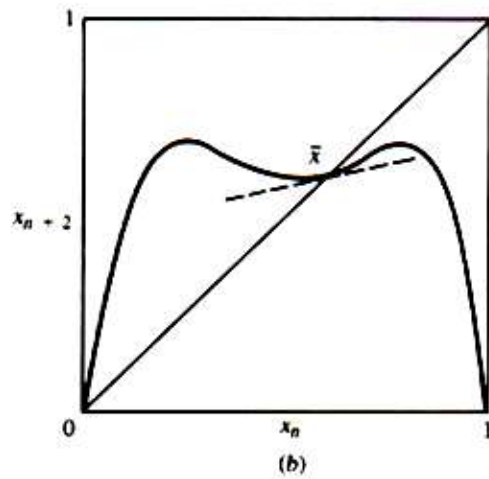
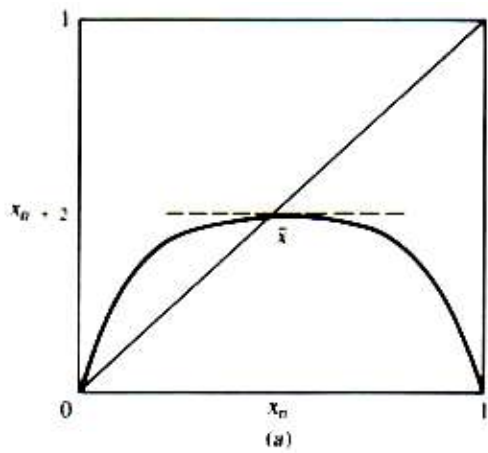


(d)

$$N_{t+dt} = N_t + N_t r_t$$

$$N_{t+dt} = N_t r_{t+dt} + N_t$$

$$N_{t+dt} = N_t + N_t r_t dt$$

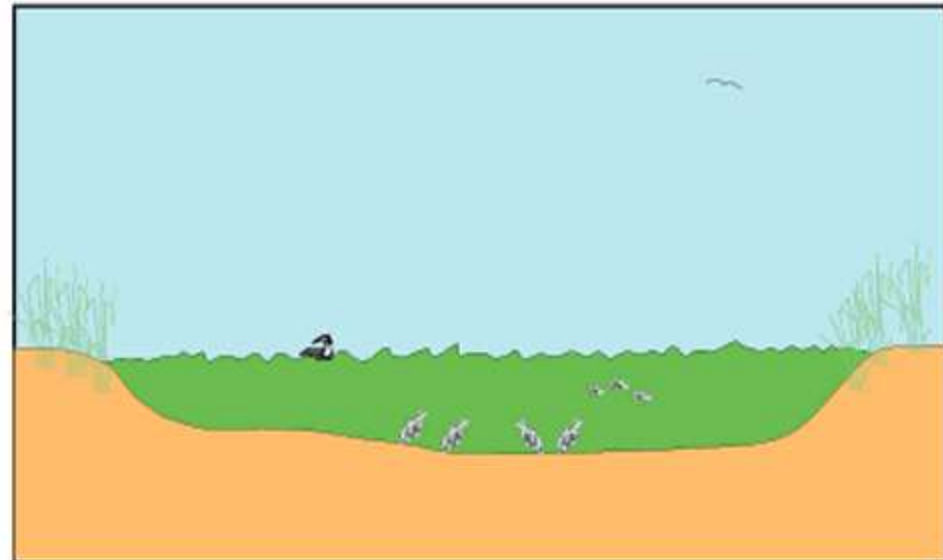
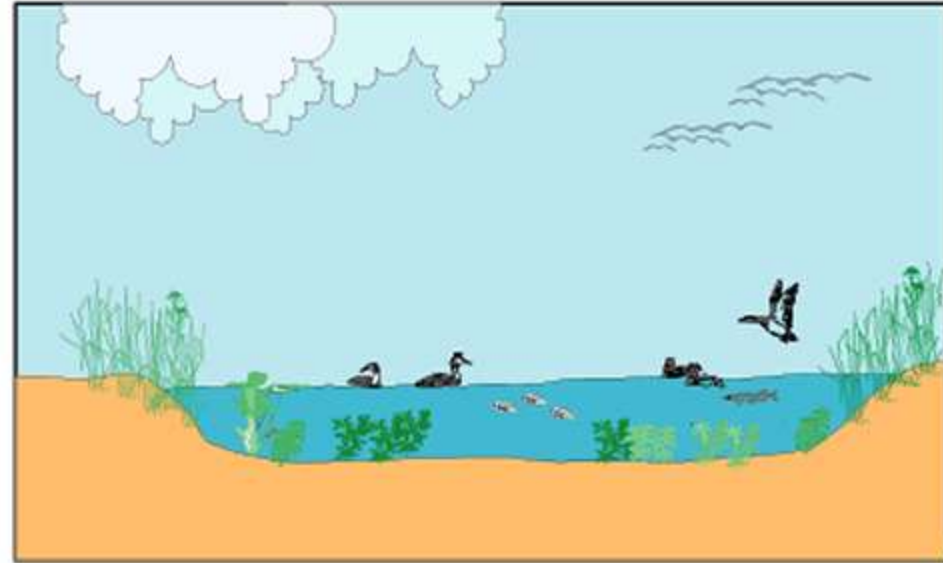


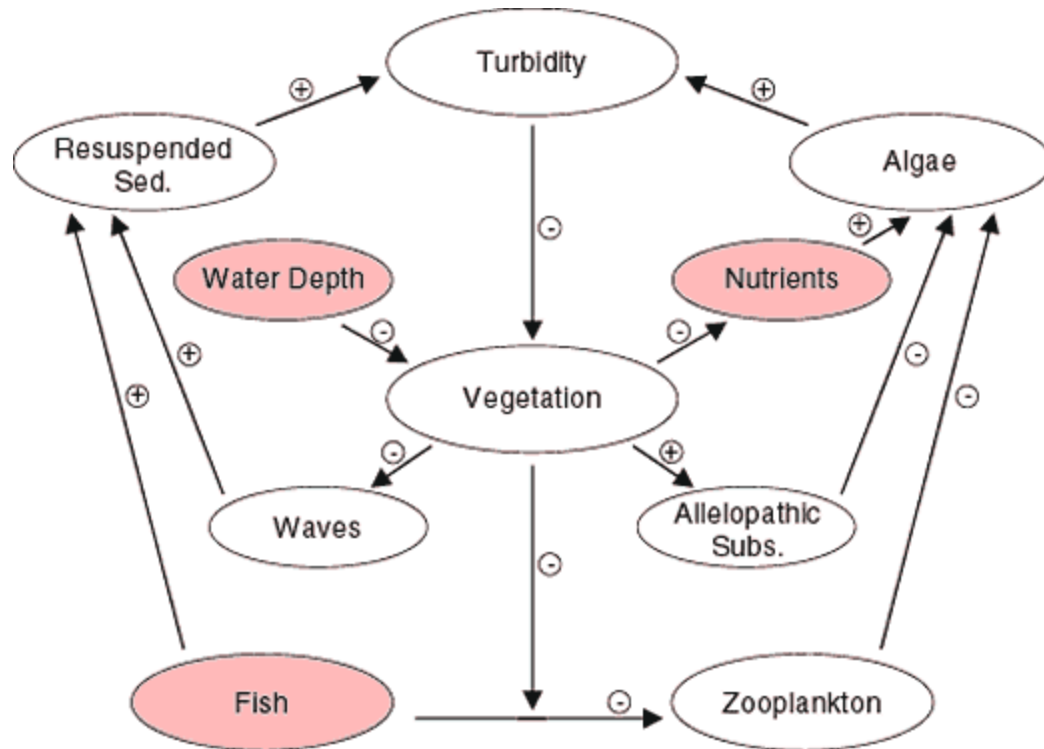


Interacciones Poblacionales

Complejidad

Eutroficación: Impactos acumulativos y súbitos

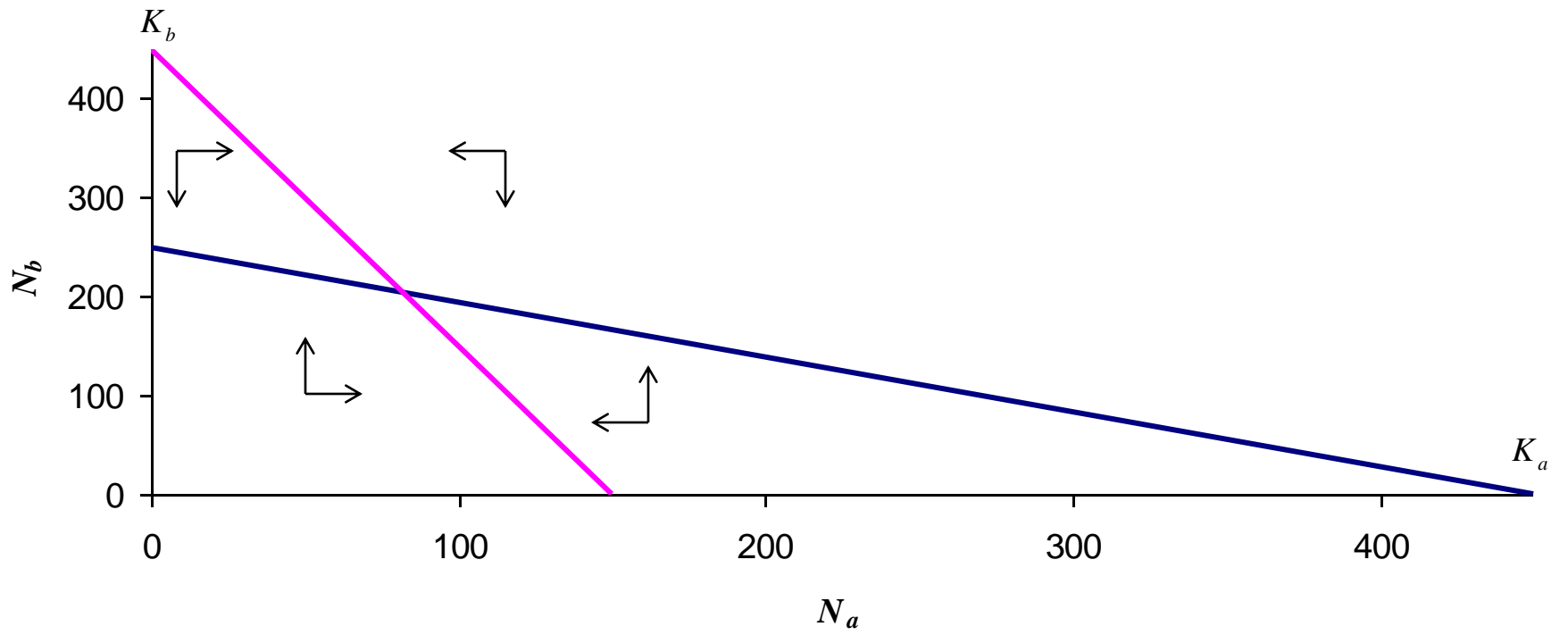




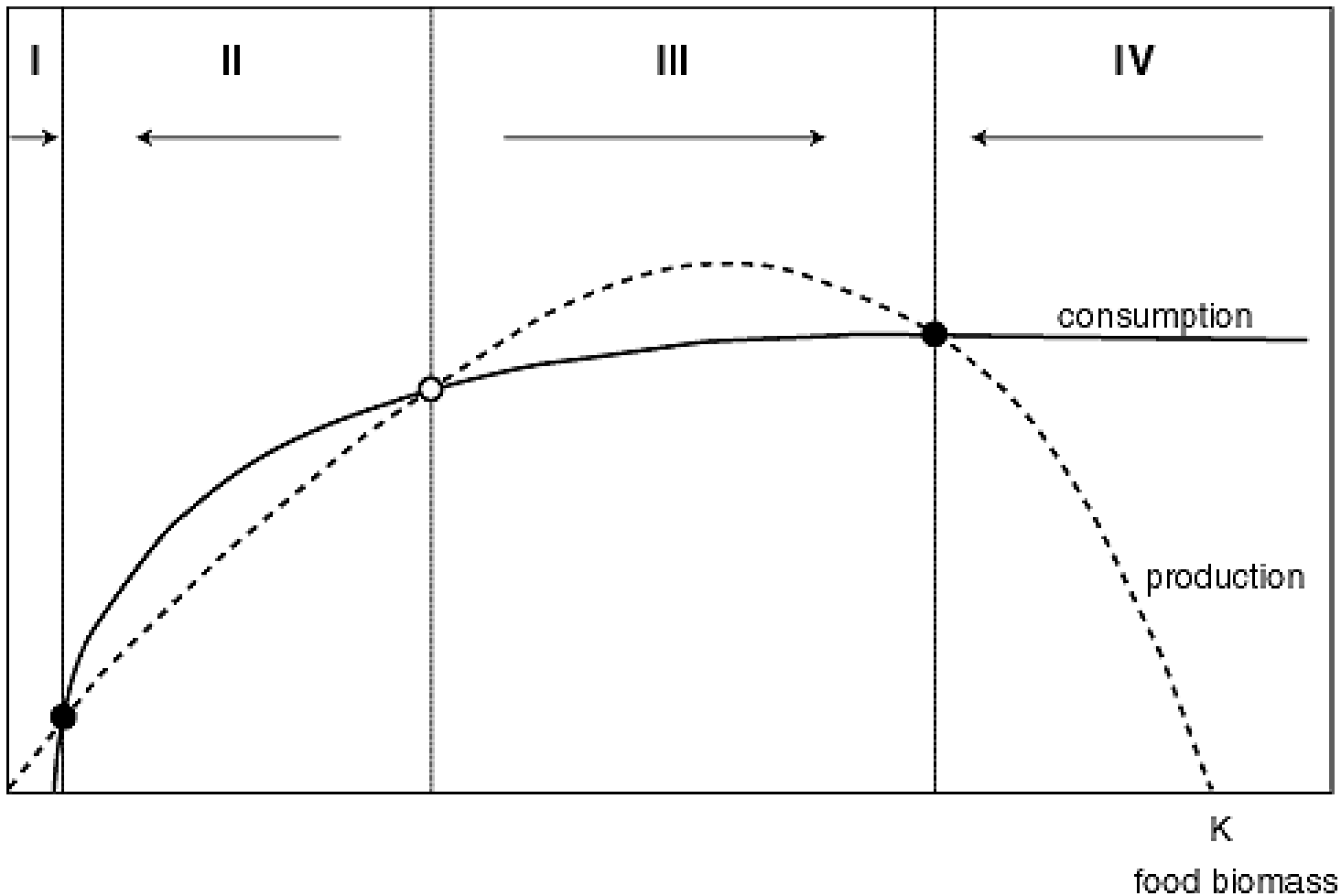
$$\frac{dN}{dt} = N_t r_m \left(\frac{K - N_t}{K} \right)$$

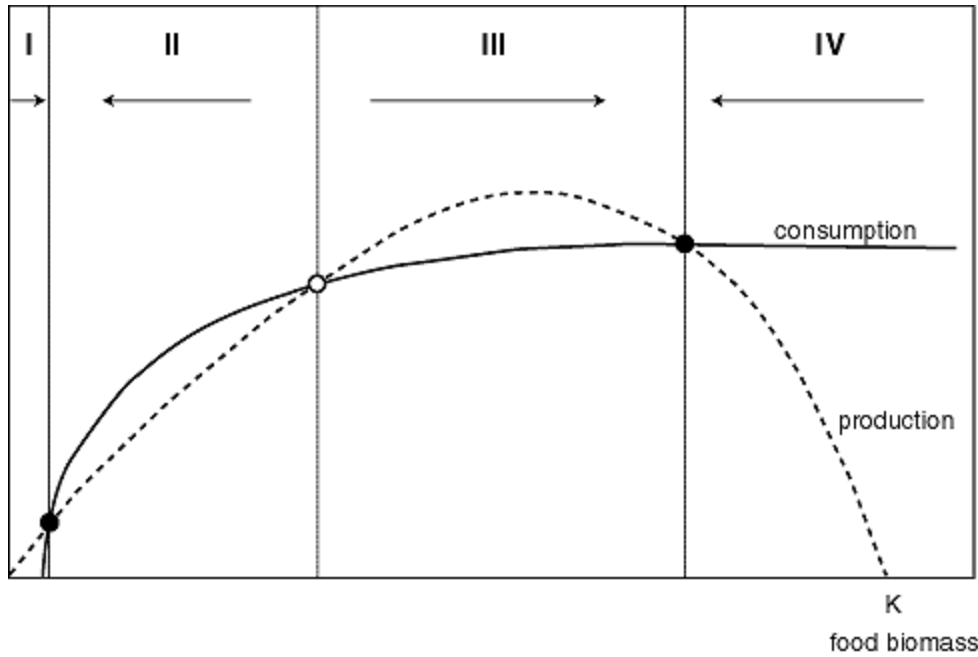
$$\frac{dN_a}{dt} = r_{ma} N_a \left(\frac{K_a - N_a - \alpha N_b}{K_a} \right)$$

$$\frac{dN_b}{dt} = r_{mb} N_b \left(\frac{K_b - N_b - \beta N_a}{K_b} \right)$$

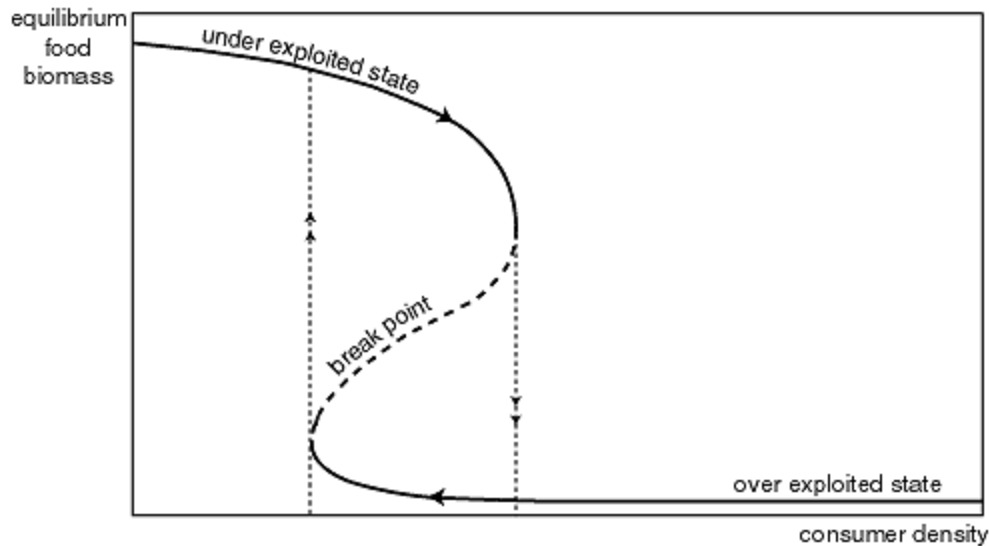


Múltiples puntos de equilibrio





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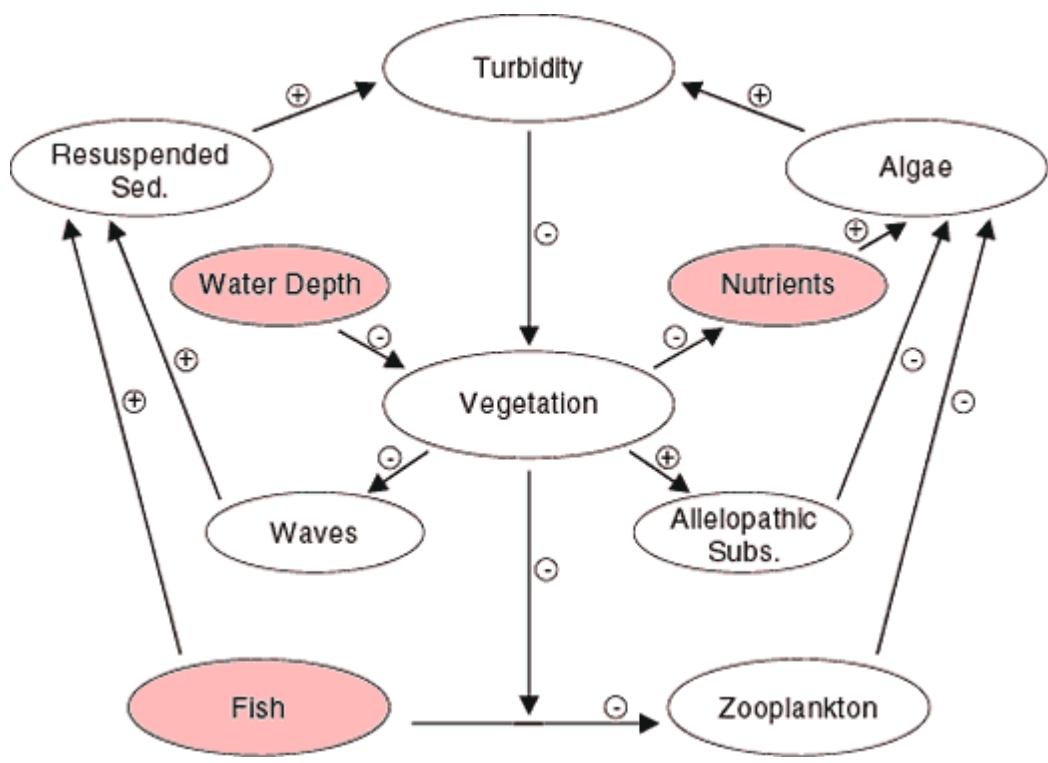
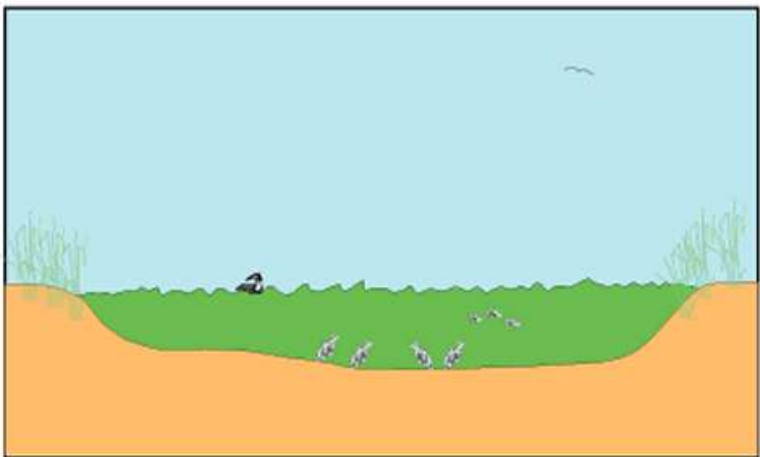
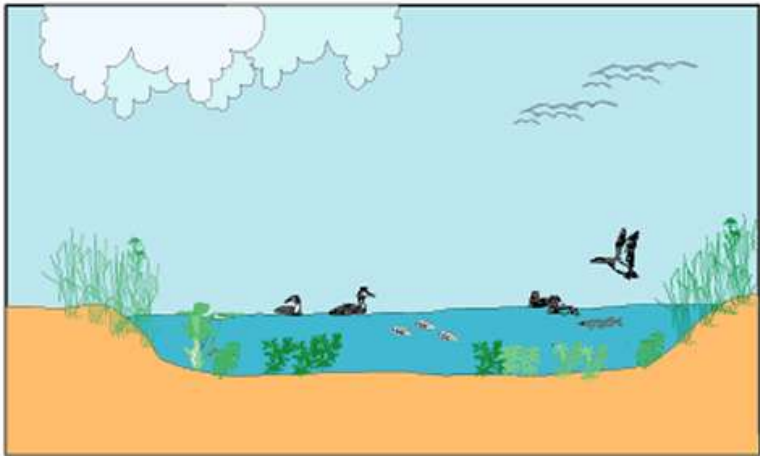


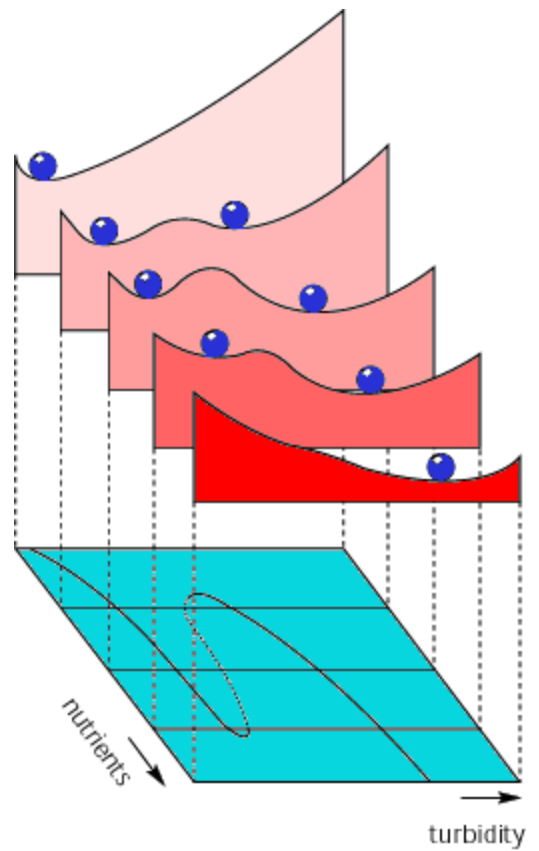
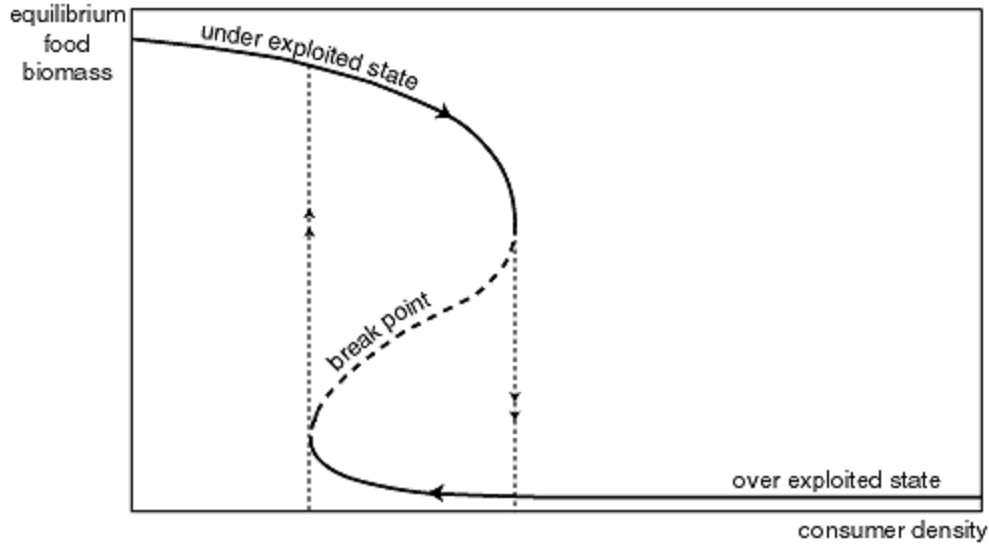
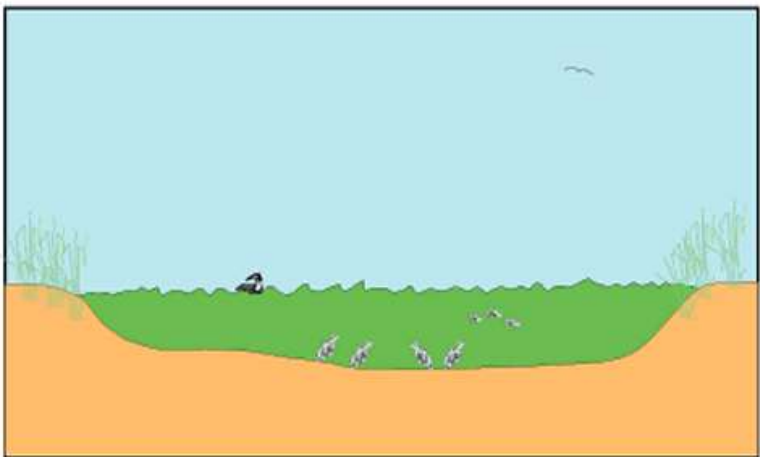
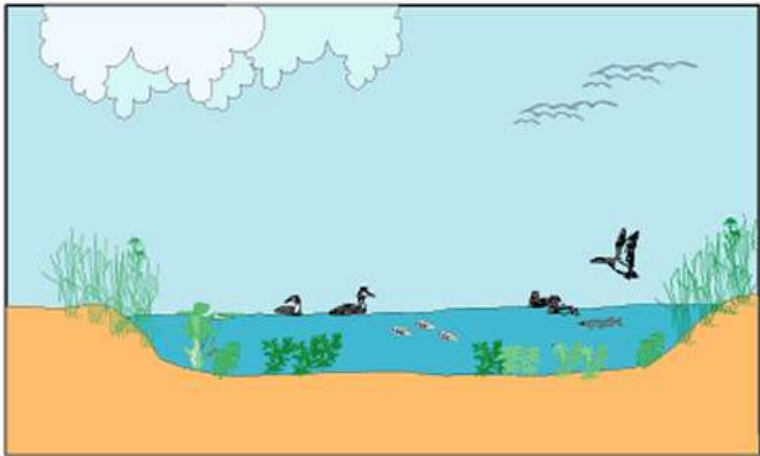
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http://nlvm.usu.edu/en/nav/frames_asid_150_q_3_t_3.html

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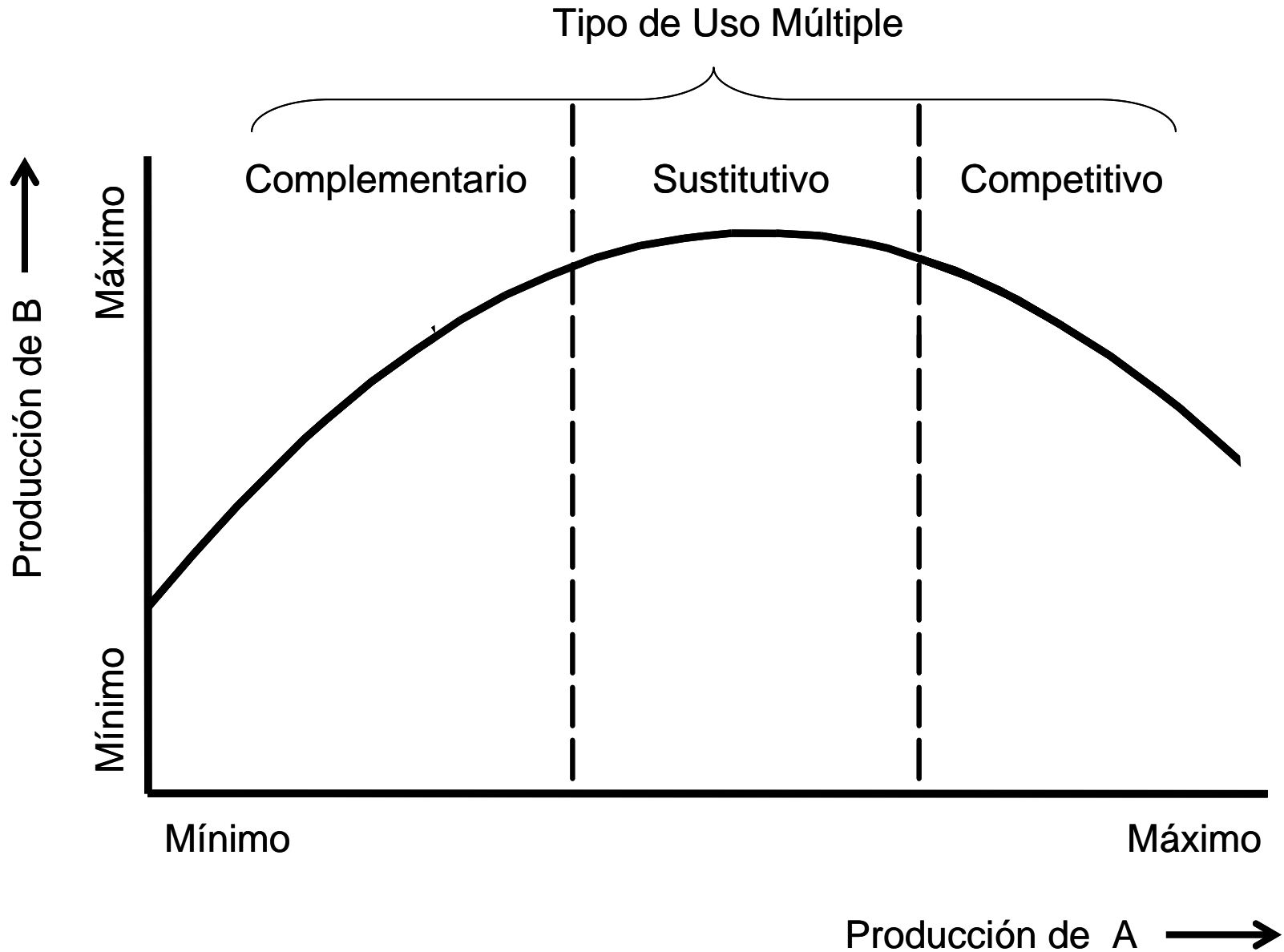
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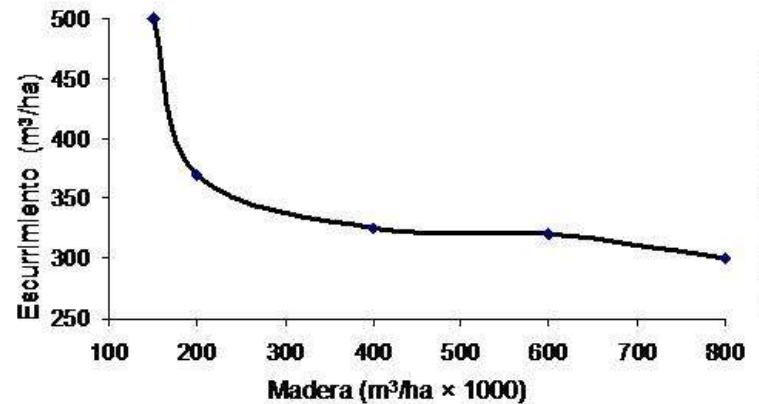
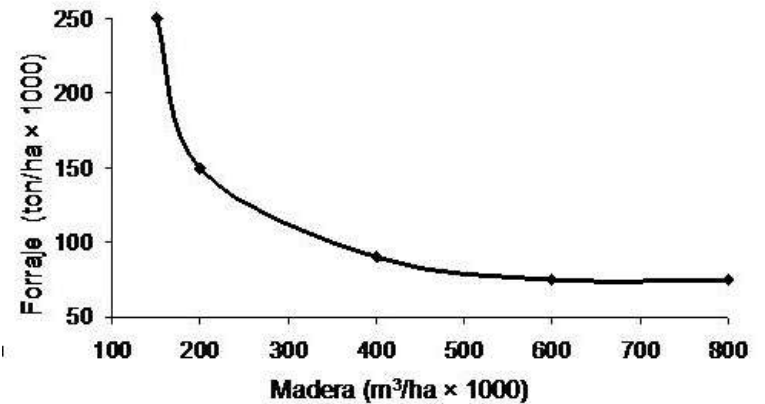
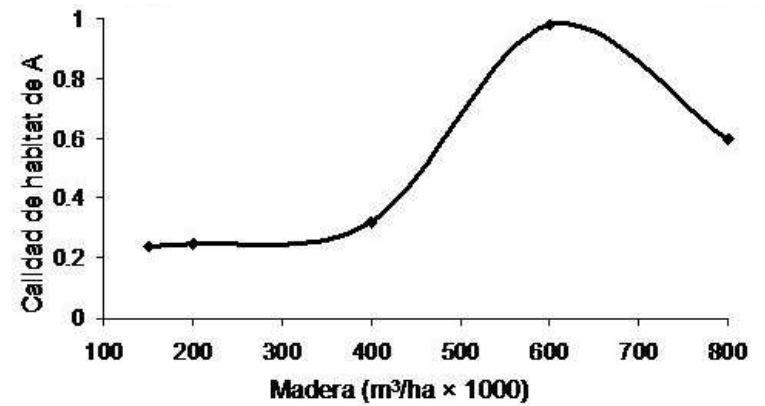
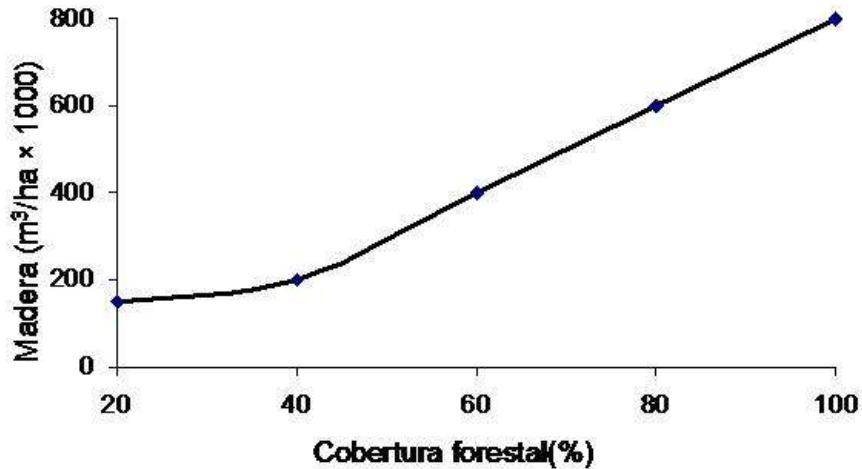
Pronóstico

Teoría de Uso Múltiple



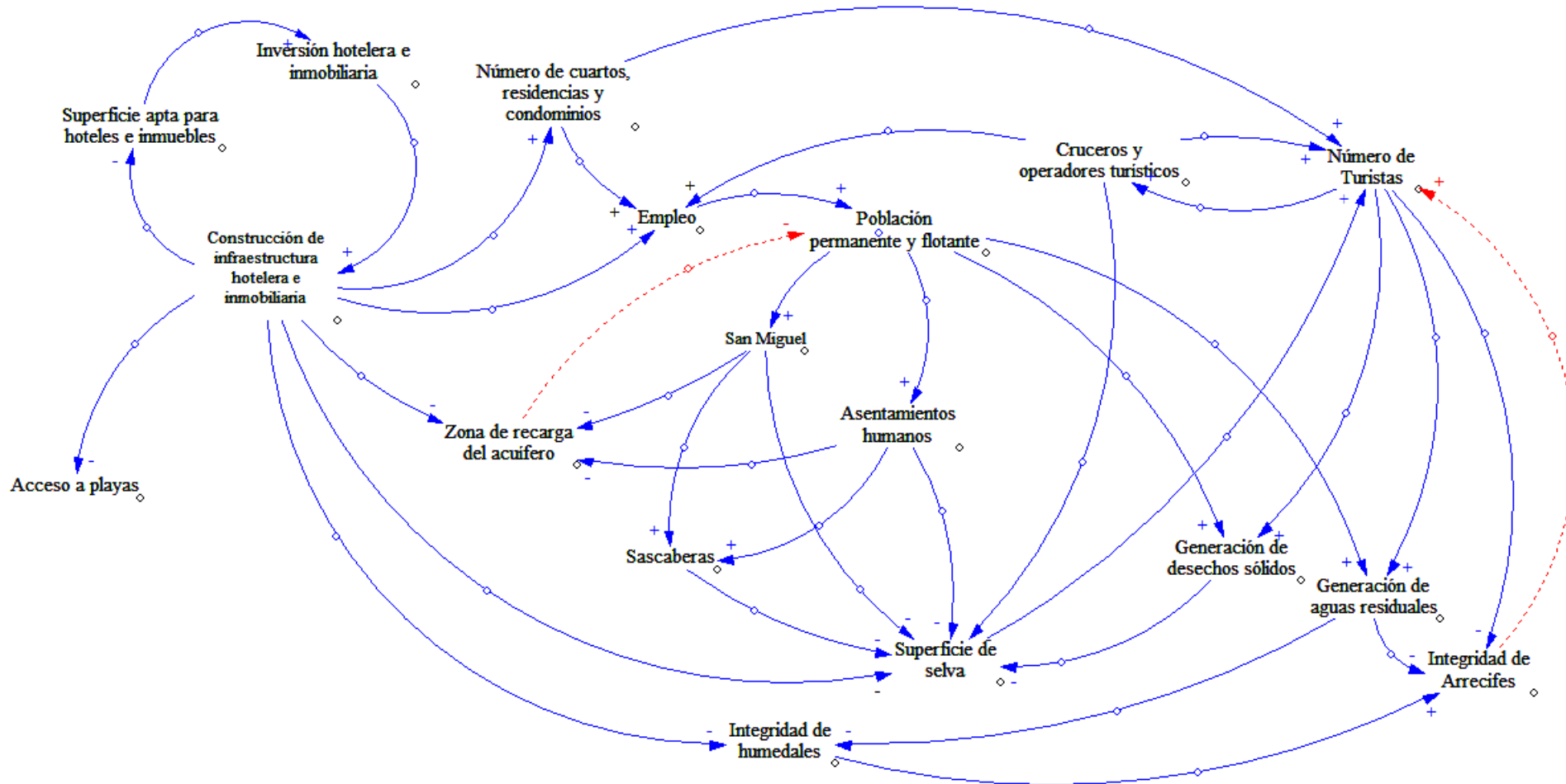
Teoría de Uso Múltiple

Funciones de Producción

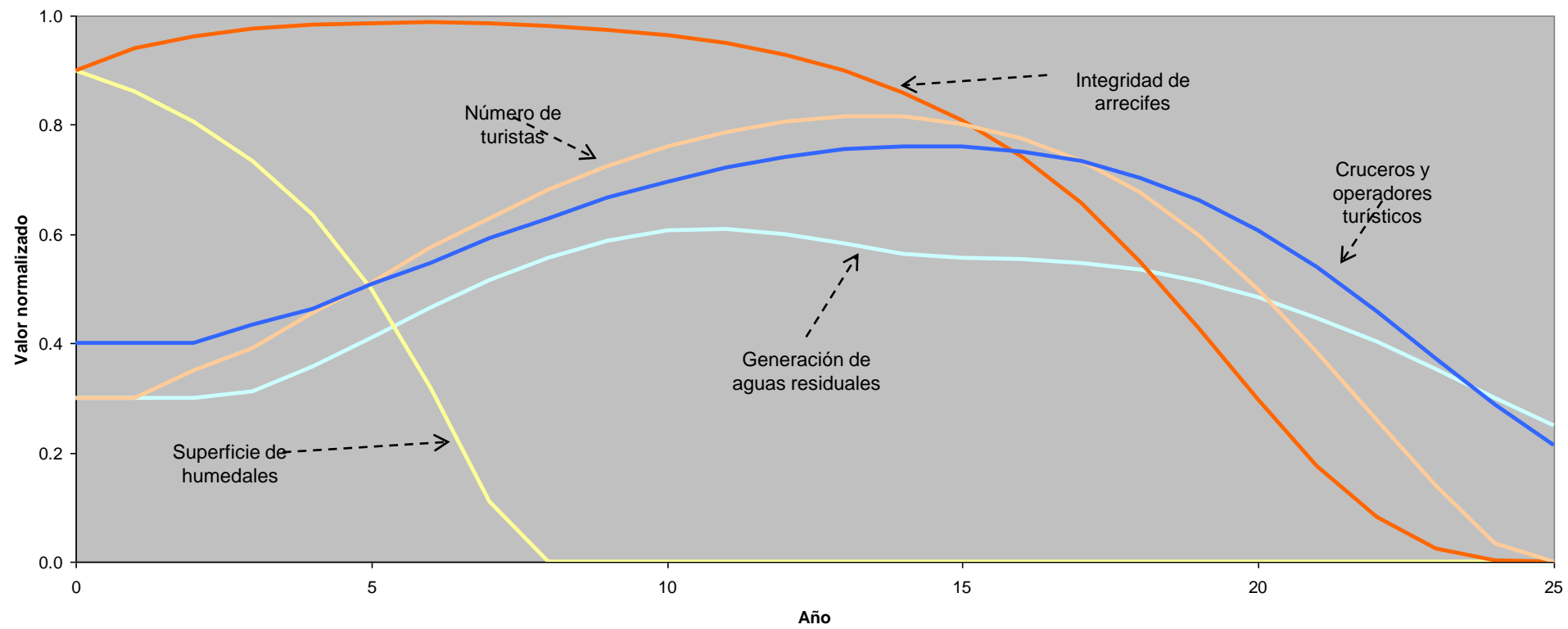


Sistemas Socio-Ecológicos

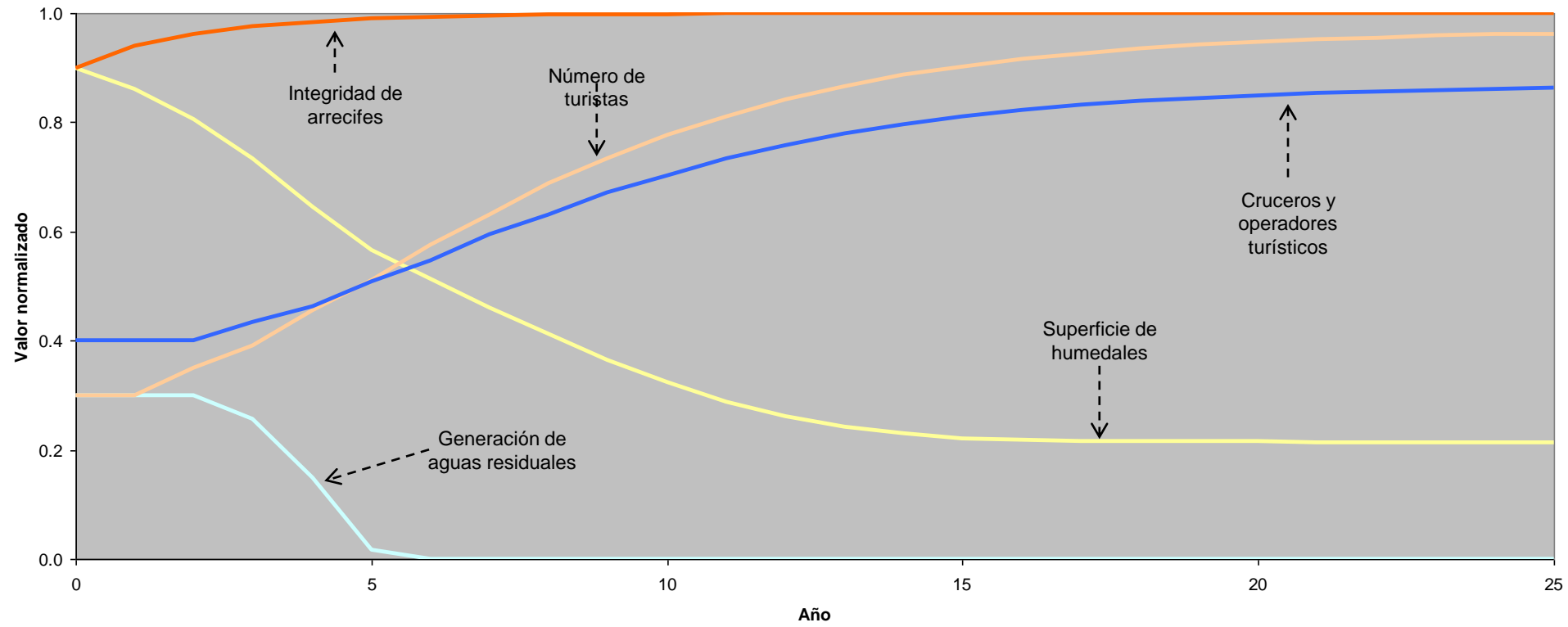
Cozumel



Escenario Tendencial: Subsistema C

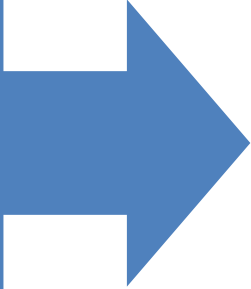


Escenario Estratégico: Subsistema C




Sistemas Socio-Ecológicos

Características

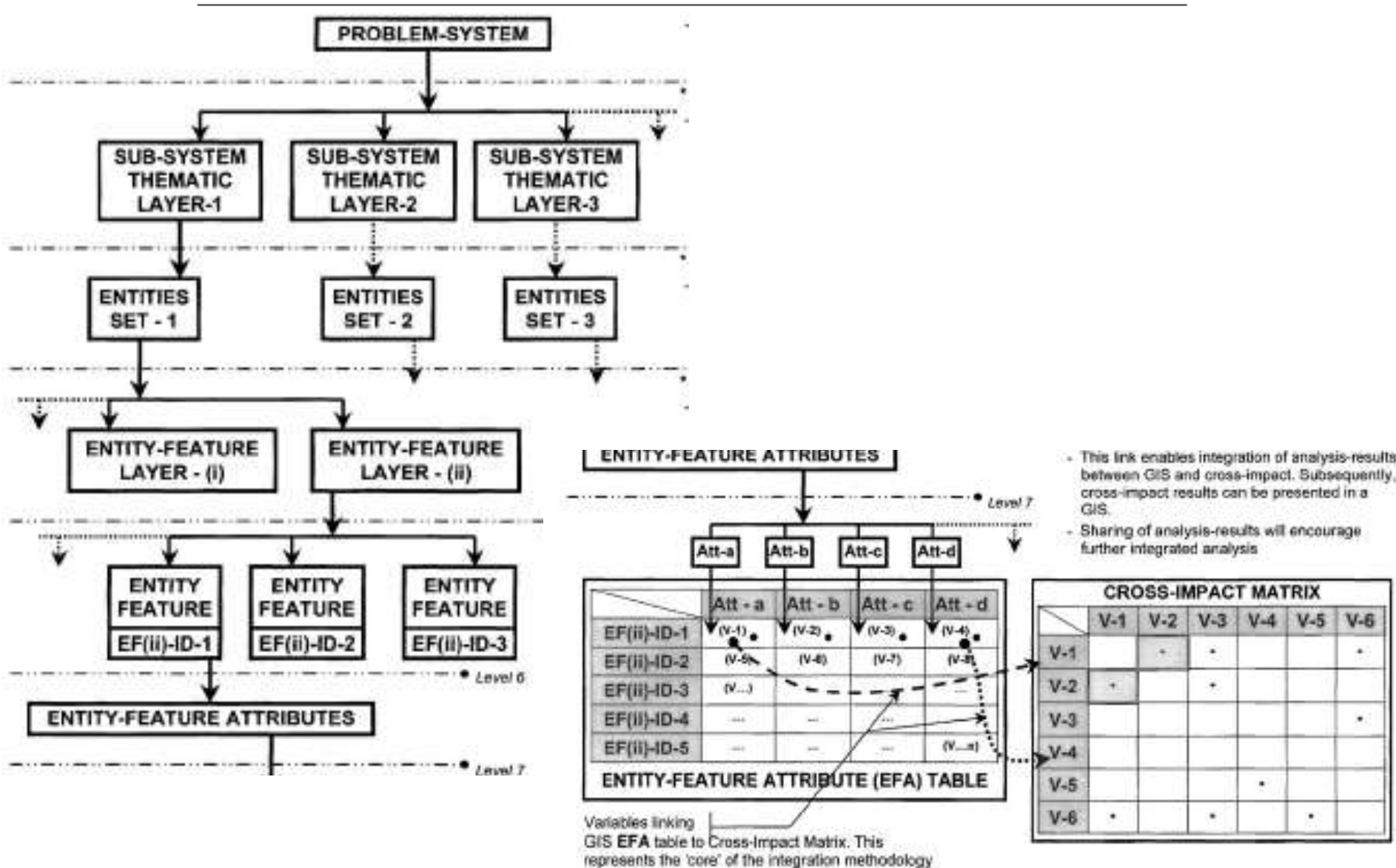
- Función
 - Entorno
 - Composición
 - Estructura
 - Mecanismos
- 

Clasificación

- 
- Deseables: Su alteración modifica la calidad del sistema
 - Necesarios: Su alteración altera el funcionamiento del sistema
 - Vitales: Su alteración conduce al colapso del sistema

Integrated Model Framework to Simulate Sustainability of Human Settlements

Monto Mani¹; Koshy Varghese²; and L. S. Ganesh³



Integrating environmental, social and economic systems: a dynamic model of tourism in Dominica

Trista Patterson^{a,*}, Tim Gulden^b, Ken Cousins^{c,1}, Egor Kraev^b

^a *Institute for Ecological Economics, University of Maryland, 0105 Cole Field House, College Park, MD 20742, USA*

^b *School of Public Affairs, Van Munching Hall, University of Maryland, College Park, MD 20742, USA*

^c *Harrison Program, Department of Government and Politics, University of Maryland, College Park, MD 20742, USA*

Received 11 August 2003; accepted 2 September 2003

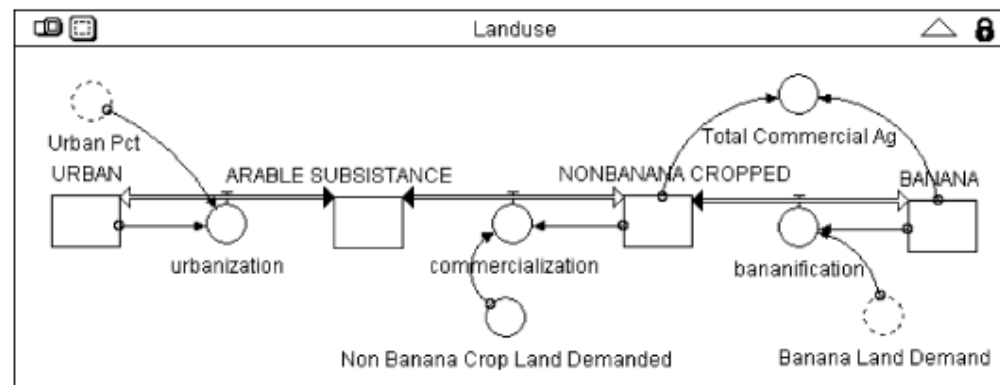


Fig. 4. STELLA diagram of land use sector.

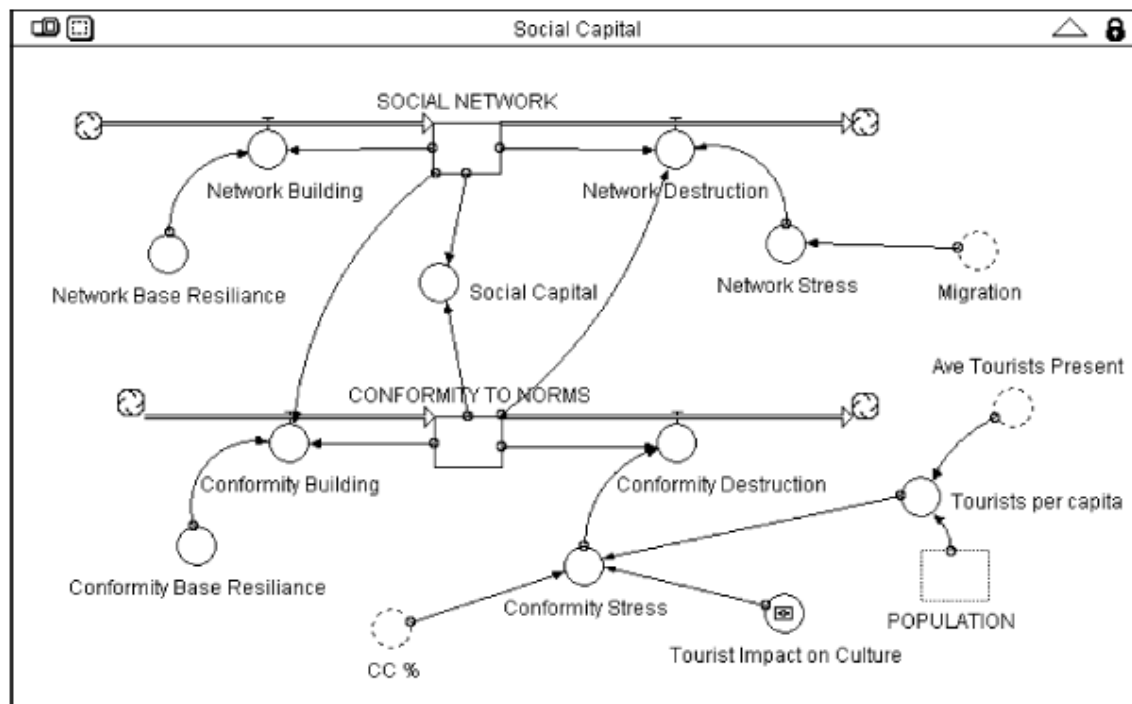


Fig. 3. STELLA diagram of social capital sector.

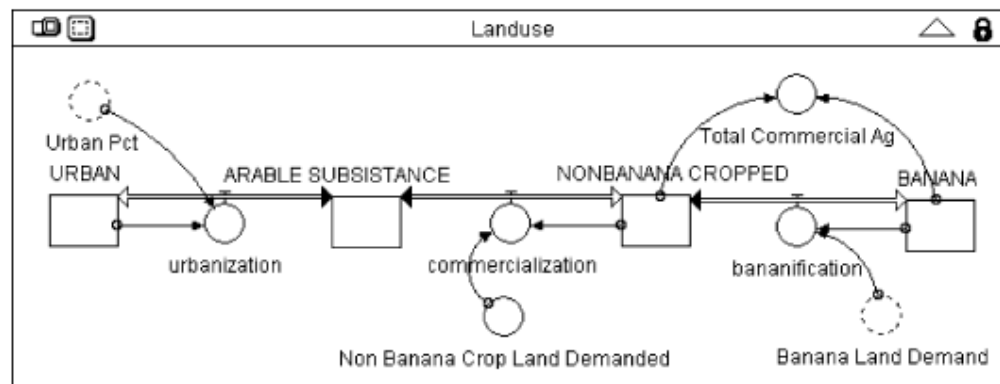


Fig. 4. STELLA diagram of land use sector.

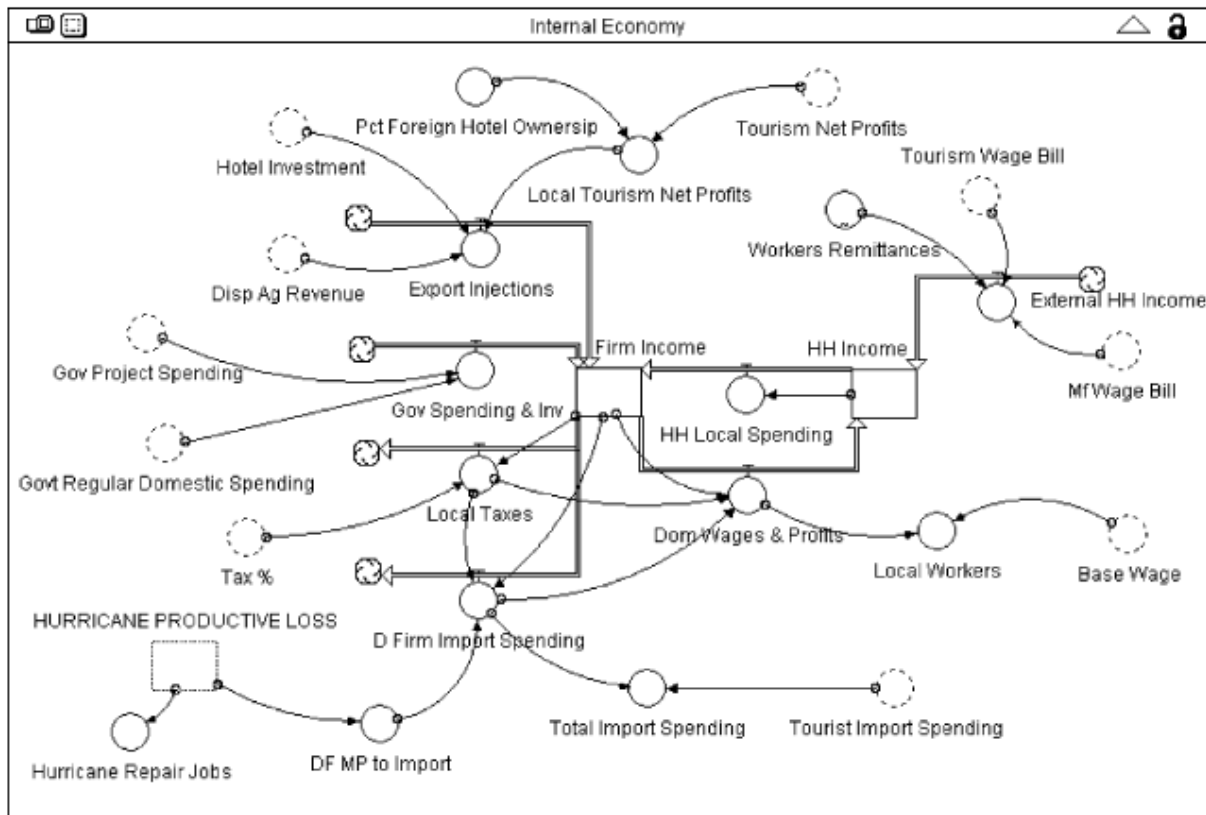


Fig. 10. STELLA diagram of internal economy sector.

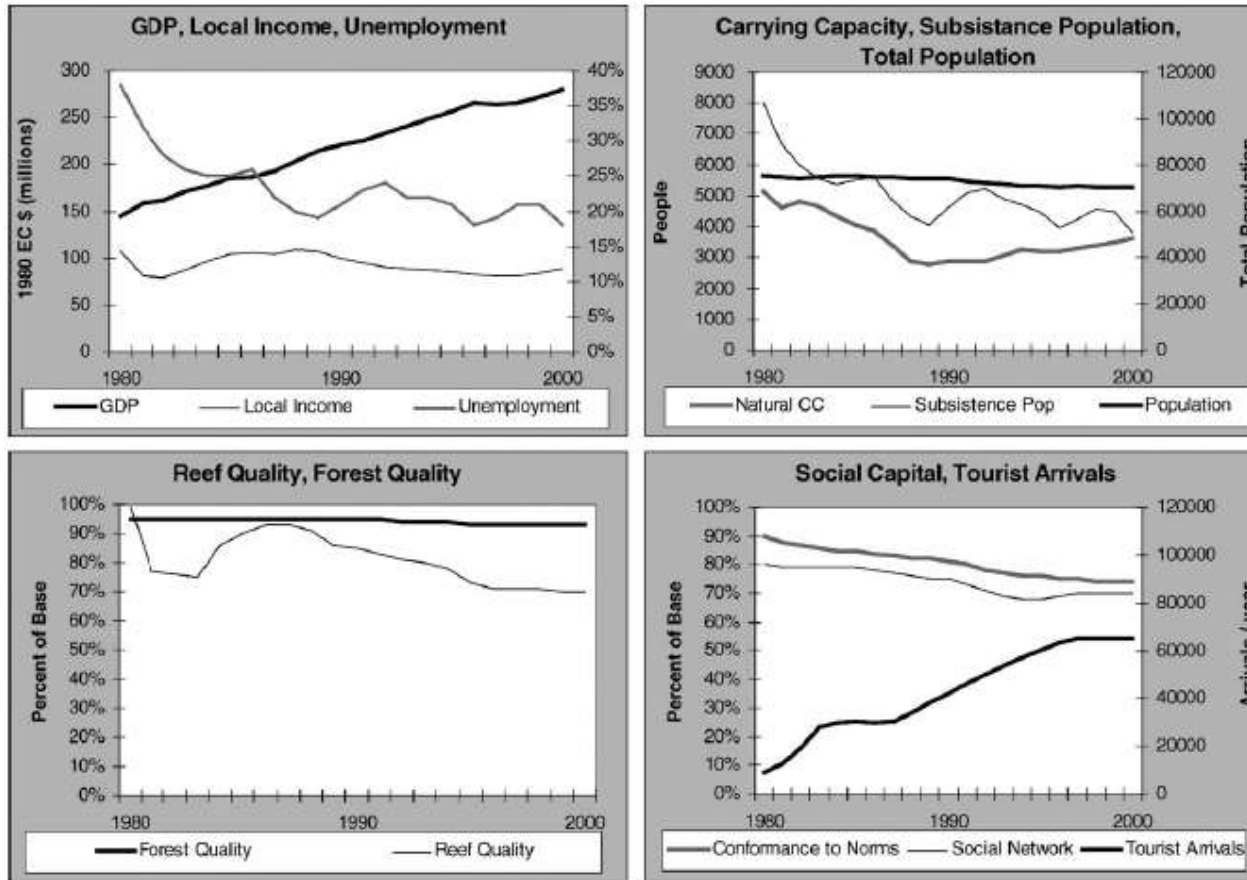
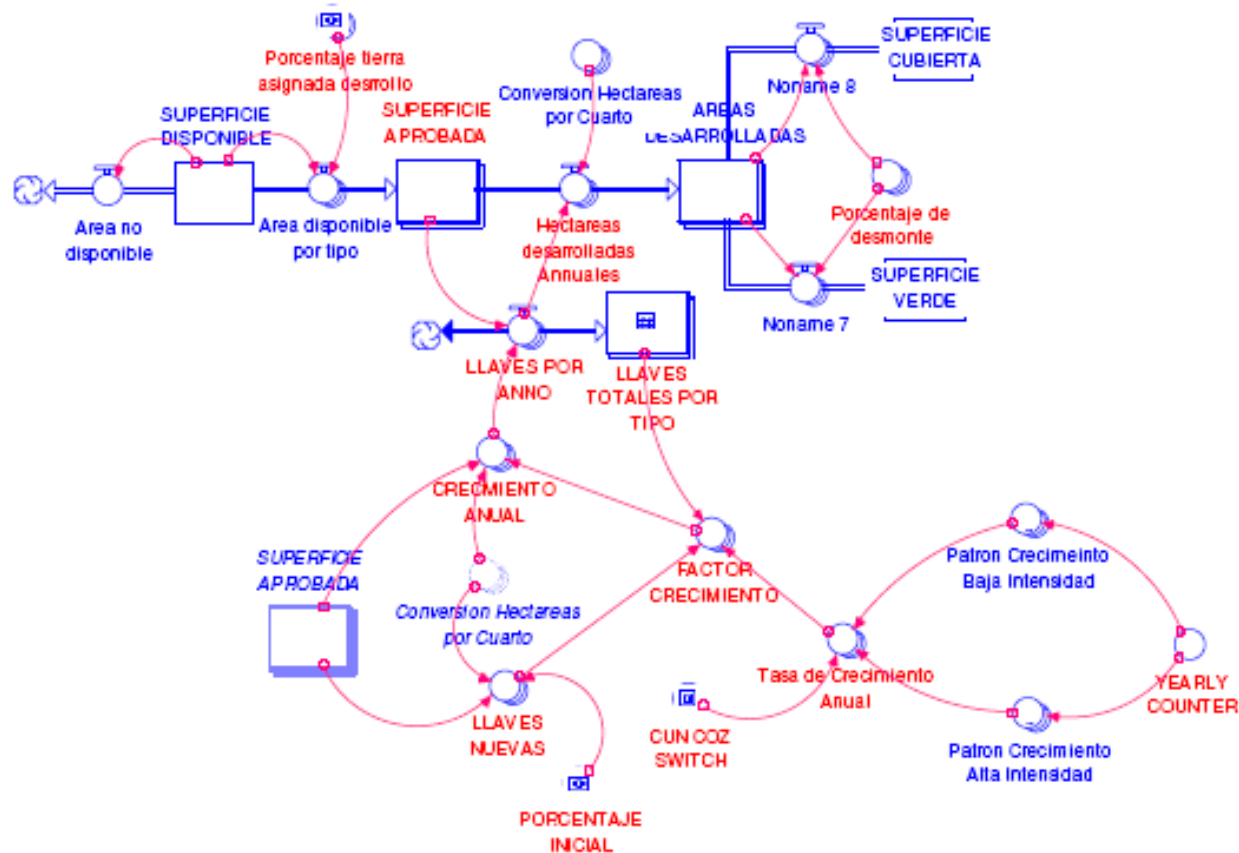
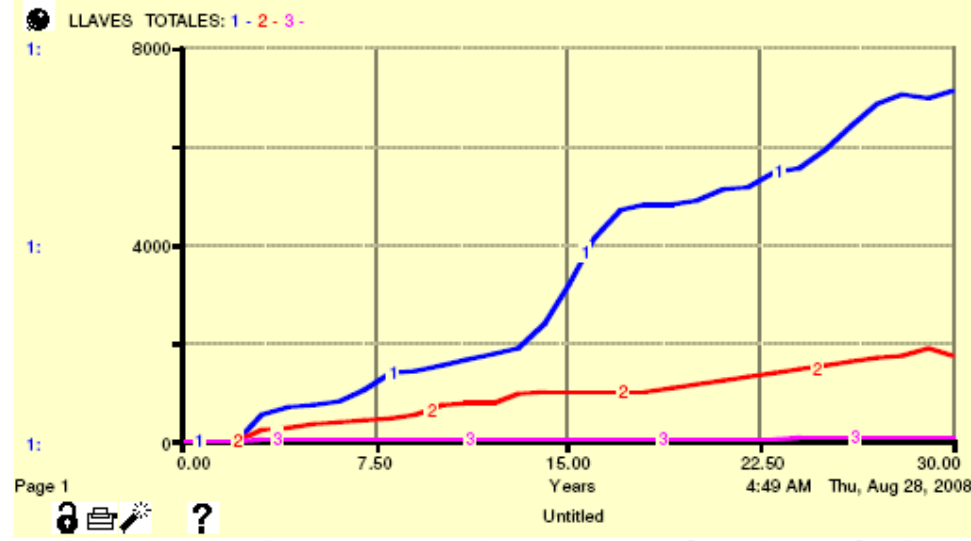


Fig. 11. Model output for the calibration period (1980–2000).

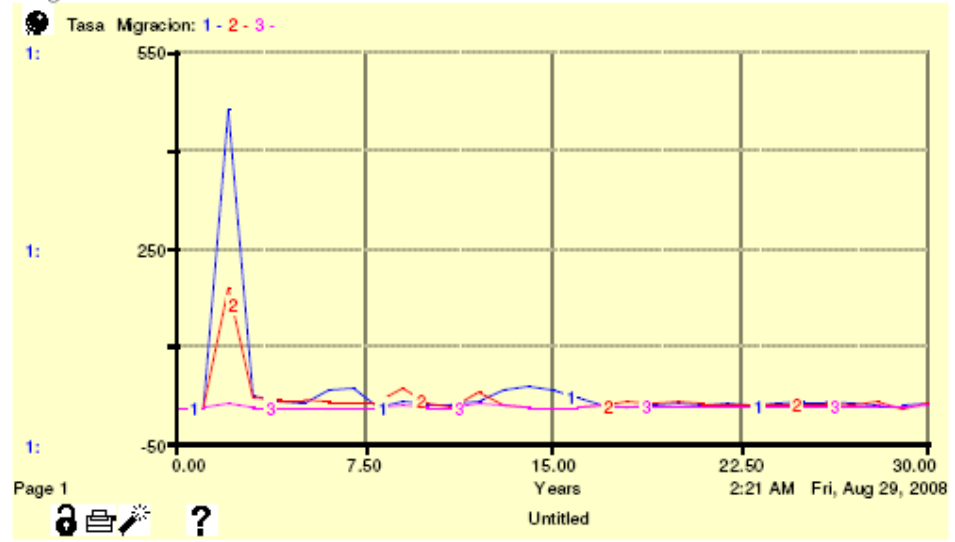
DYNAMIC SIMULATION MODEL FOR TOURISM DEVELOPMENT IN YUM BALAM PROTECTED AREA (First Draft)



Numbers of Rooms

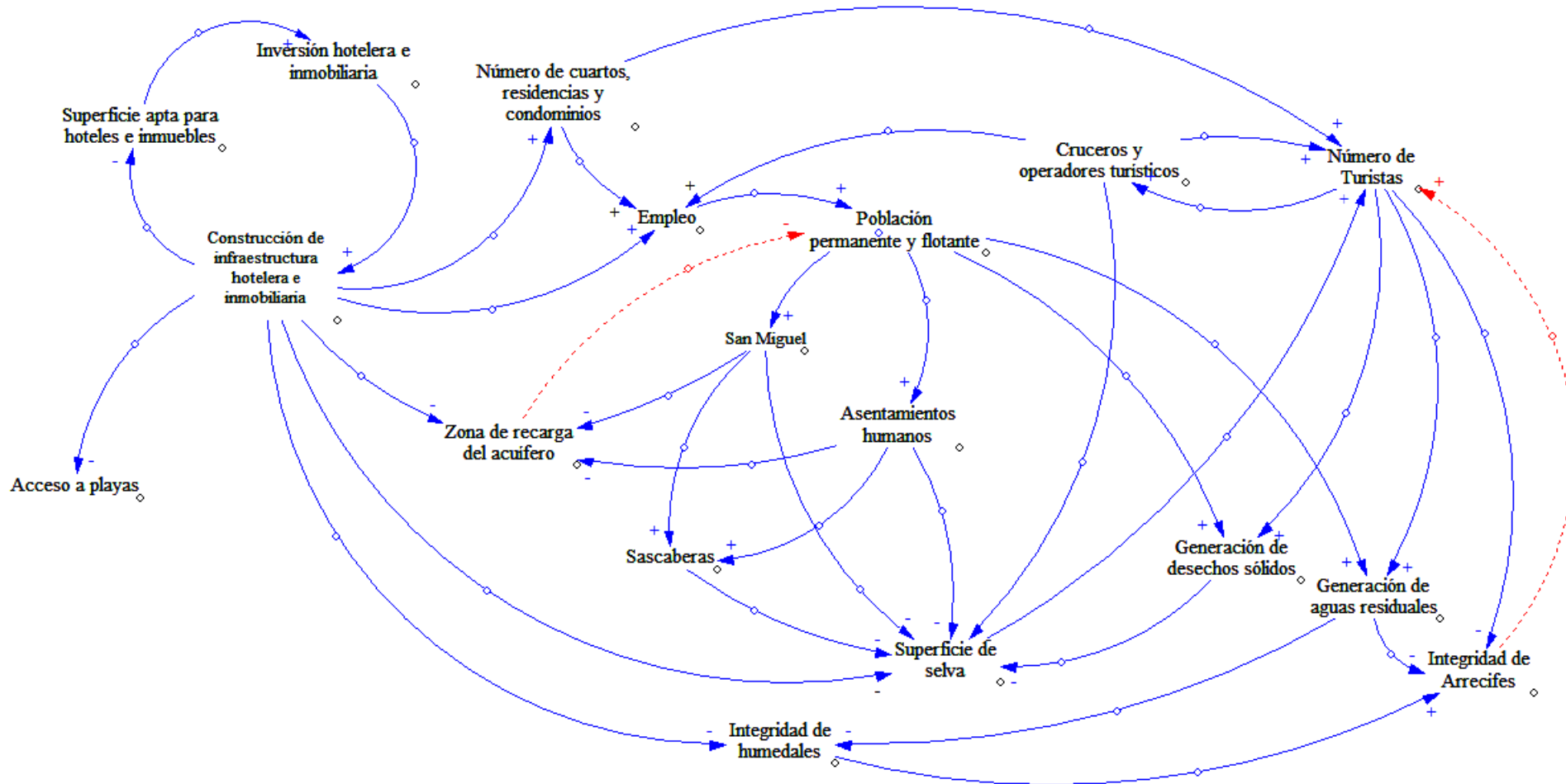


Migration Rate



Sistemas Socio-Ecológicos

Cozumel



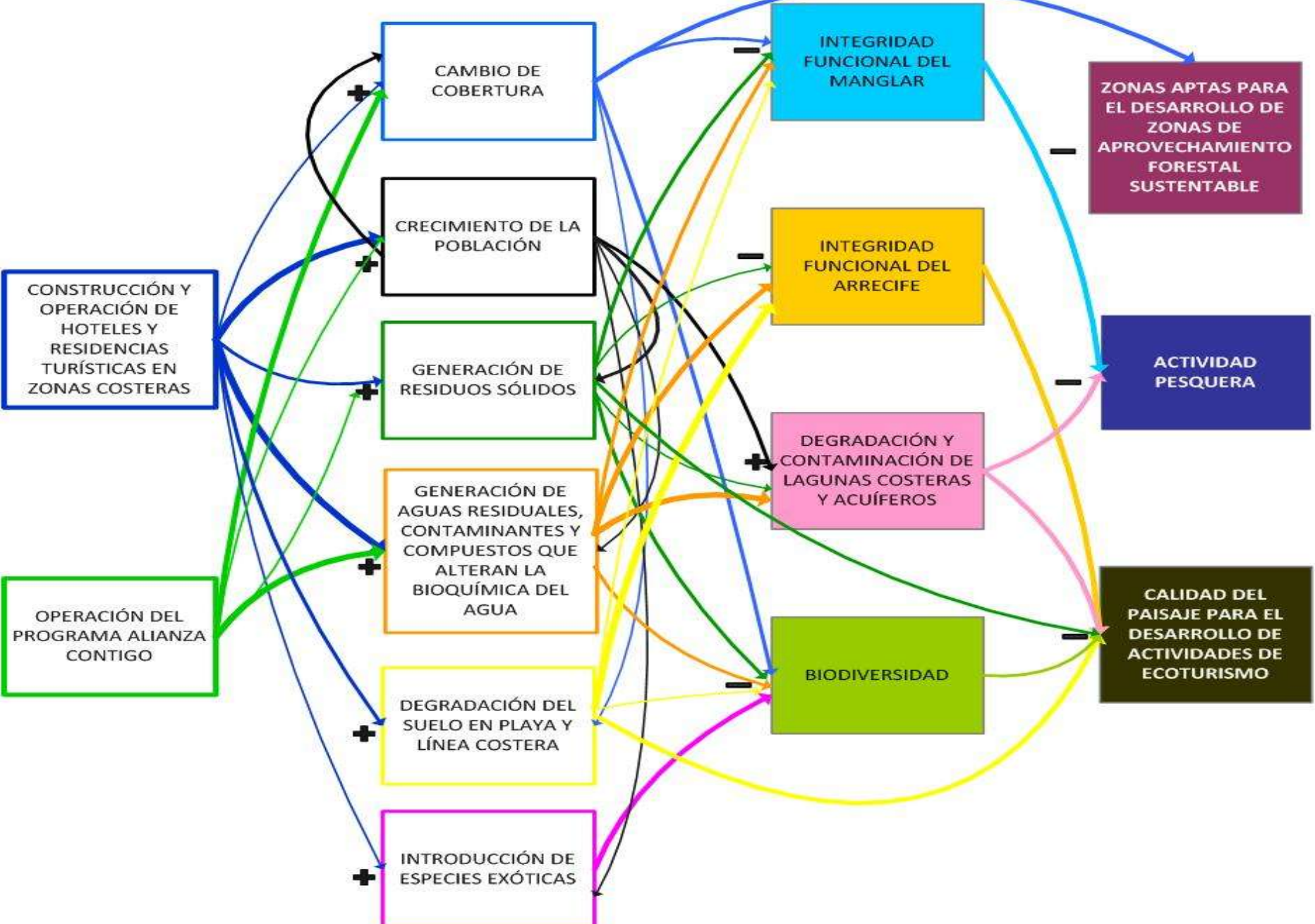
**Pronóstico en
términos
Normativos
Jurídicos**

ACCIONES O PROGRAMAS DE GOBIERNO

PROCESOS

ESTRUCTURAS O COMPONENTES VITALES DEL ECOSISTEMA

CONFLICTOS AMBIENTALES

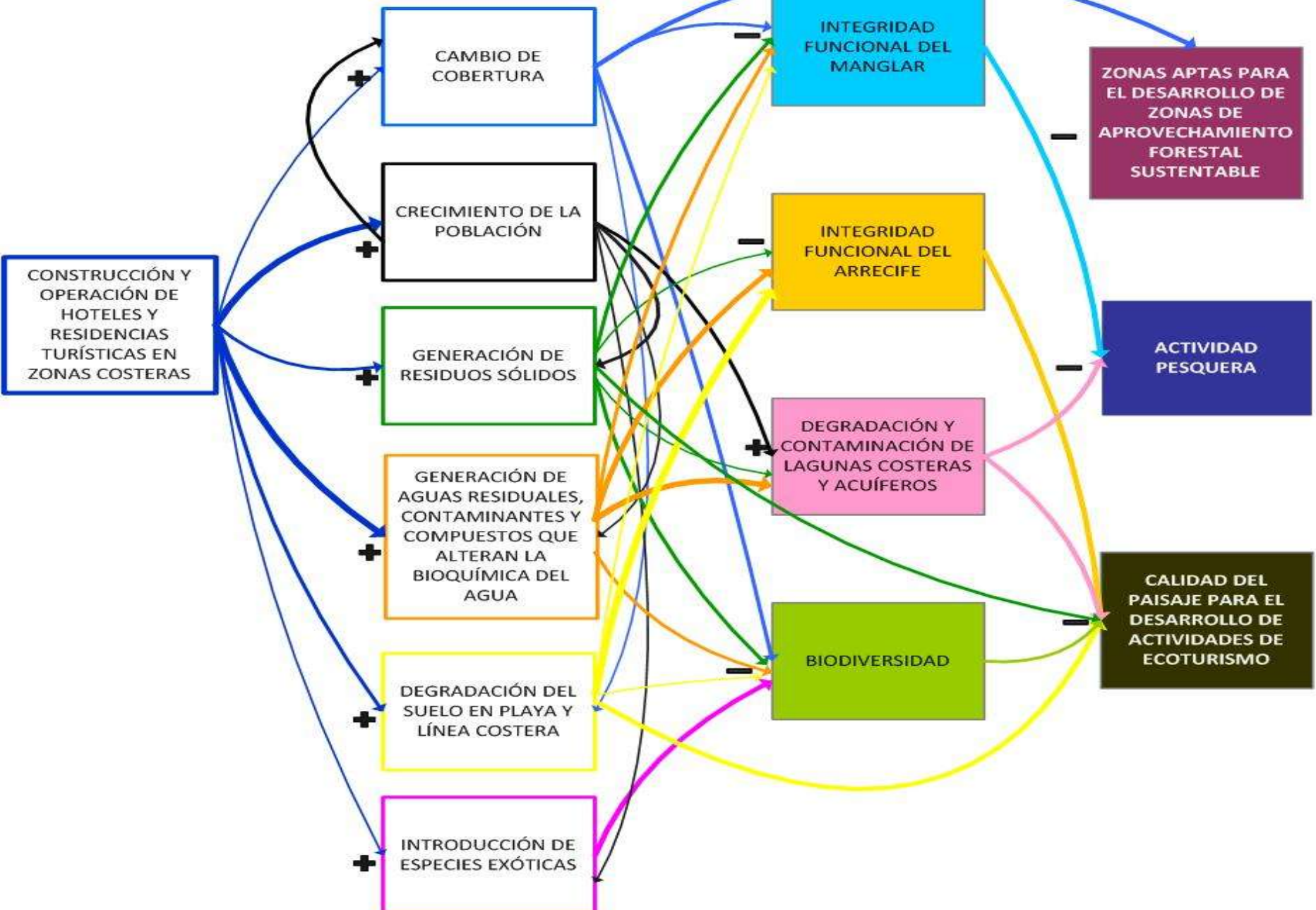


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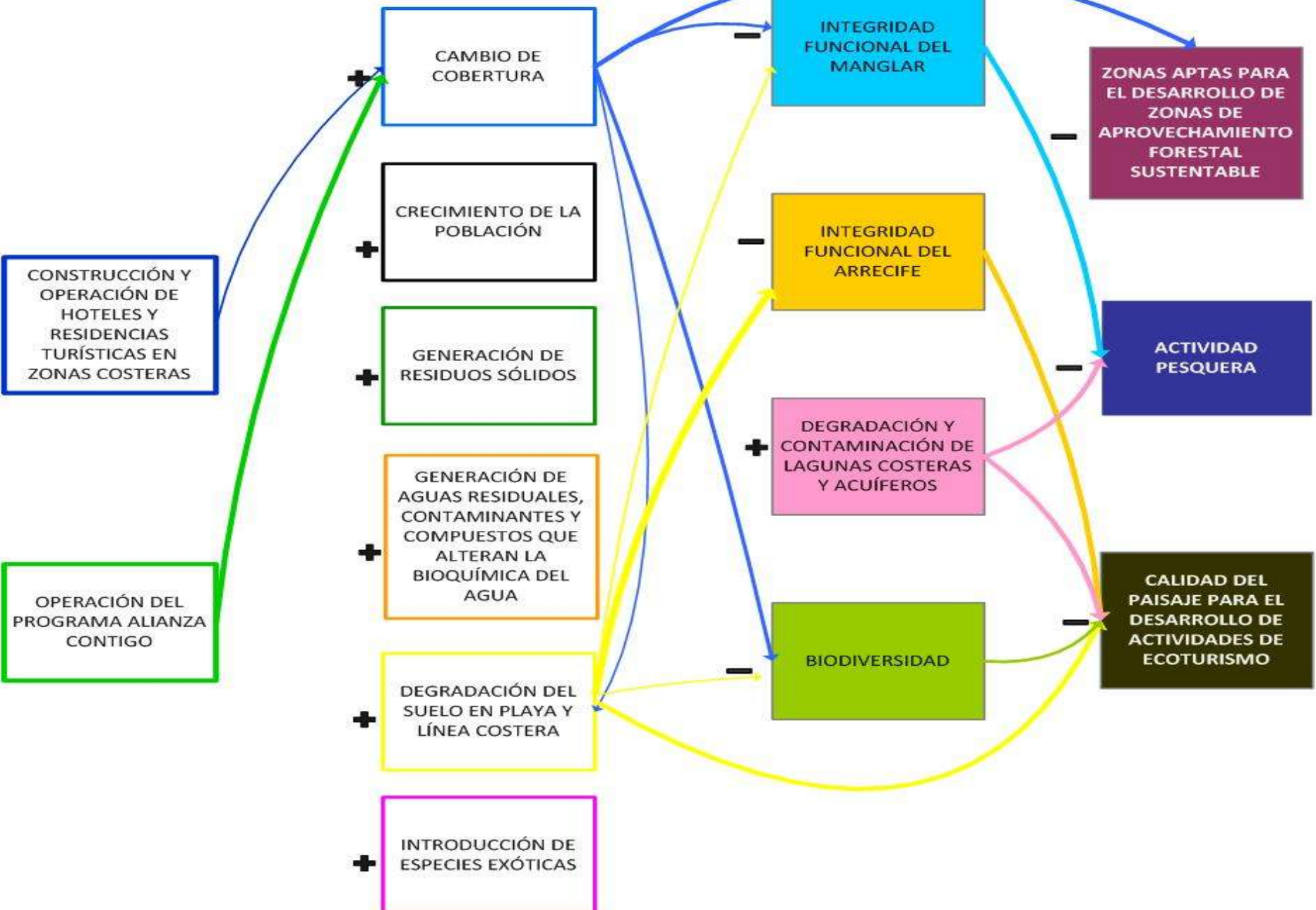


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