

21. Sept. 2012

(from 13-15 August 2012  
To find, ...)1/2 Pg 5Dimensional analysisINTRA-ANNUALwhere:  $c_i = 1/\text{day}$  $R = \text{grams of resource}$  $d_i = \frac{(\text{days})(\text{biomass})}{\text{resource}}$ 

$$f_i(R) = \frac{a_i R^{0.5}}{1 + a_i d_i R^{0.5}}$$

$$= \frac{(\text{grams of resource})(1/\text{days})}{(\text{grams of resource})(1/\text{days}) d_i} = \frac{1}{d_i} = \boxed{\frac{\text{grams of resource}}{(\text{days})(\text{biomass})}}$$

$$\frac{dB_i}{dt} = [c_i f_i(R) - m_i] B_i$$

$$c_i = \frac{\text{biomass}}{\text{grams of resource}}$$

$$= \left[ \frac{\text{biomass}}{\text{grams of resource}} \left( \frac{\text{grams of resource}}{(\text{days})(\text{biomass})} \right) - \frac{1}{\text{day}} \right] \text{biomass}$$

$$f_i(R) = \frac{\text{grams of } R}{(\text{day})(\text{biomass})}$$

$$= \left[ \frac{1}{\text{day}} - \frac{1}{\text{day}} \right] \text{biomass} = \boxed{\frac{\text{biomass}}{\text{day}}}$$

$$m_i = 1/\text{day}$$

$$B_i = \text{biomass}$$

$$\frac{dR}{dt} = - \sum_{i=1}^n f_i(R) B_i - \epsilon R$$

$$\epsilon = 1/\text{day}$$

$$= - \frac{\text{grams of resource}}{(\text{days})(\text{biomass})} (\text{biomass}) - \frac{1}{\text{day}} (\text{grams of resource})$$

$$= - \frac{\text{grams of resource}}{\text{days}} - \frac{\text{grams of resource}}{\text{days}} =$$

$$\boxed{\frac{\text{grams of resource}}{\text{days}}}$$

21. Sept. 2012

(from 13-15 Aug 20  
Tofino!)

2/2 pgs

# Dimensional analysis

INTERANNUAL

$$g_i = G_i e^{-h(\tau_p - \tau_i)^2}$$

$$\tau_p = \text{day}$$

$$\tau_i = \text{day}$$

$$h = 1/\text{day}^2$$

$$G = \text{unitless}$$

$$= e^{-1/\text{day}^2 (\text{day} - \text{day})^2} = \boxed{\text{unitless}}$$

$$N_i(t) g_i \phi_i [\text{biomass}]$$

↙ within yr, i.e.  $\int_t^{t+\delta} \dots$

$$(\text{seeds}) \left( \frac{1}{\text{biomass}} \right) (\text{biomass}) = \boxed{\text{seeds}}$$

$$N_i = \text{seeds}$$

$$g_i = \text{unitless}$$

$$\phi_i = 1/\text{biomass}$$

$$N_i(t+1) = s_i(N_i(t)(1-g_i) + N_i(t) g_i \phi_i (\text{biomass}))$$

$$s_i = \text{unitless}$$

$$= \text{seeds} + \text{seeds} \Rightarrow \text{hurrah!}$$