

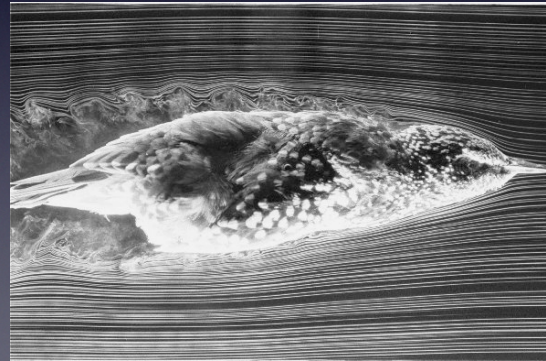
Information, energy, and the evolution of migration

Andrew Hein, Ana Stevko Hocevar, Daniel Jones, Oana Carja,
Kyla Dahlin

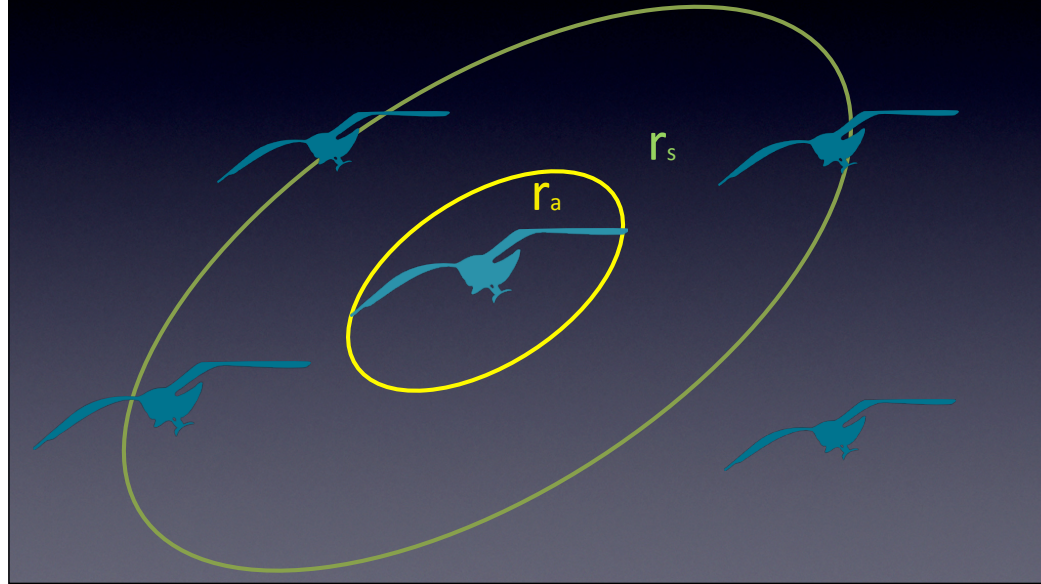


Bar-tailed godwit
migrates ~ 11,680
km from northeast
Asia and Alaska to
New Zealand every
year.

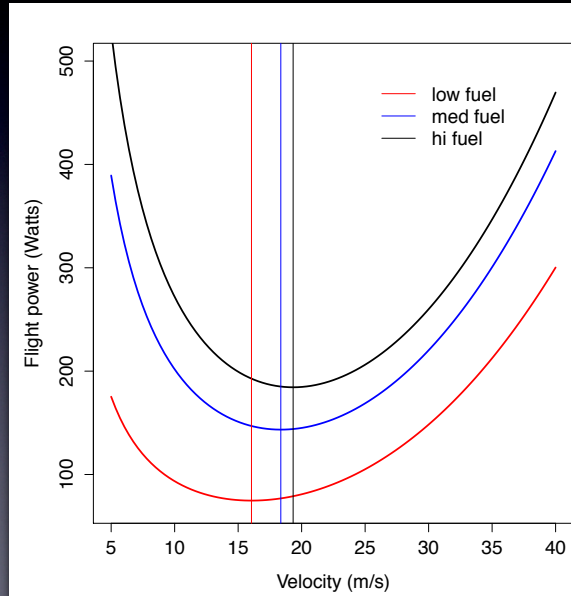
Information and Energetics



Sociality, flocking, and information sharing



Fuel storage and flight power



Evolvable traits

w_i = information coefficient

w_s = sociality coefficient

f = fuel

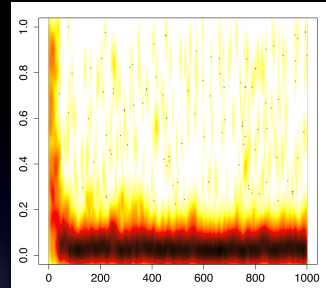
w_v = velocity coefficient

$$F_i = \frac{aE_{it}}{b + E_{it}} + d\left(1 - \frac{t_i}{t_{\max}}\right)$$

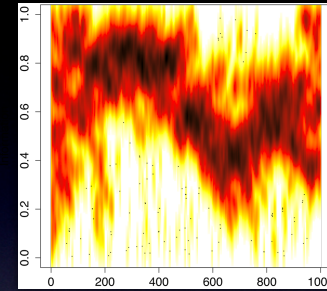
Where E_{it} is fuel remaining at the end of migration and t_i is time

Model Results

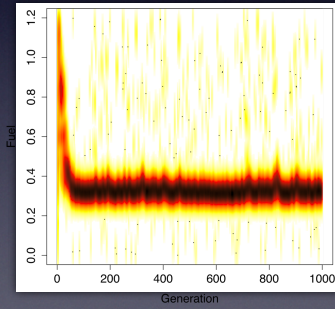
Sociality



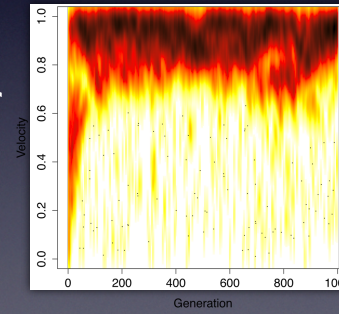
Information



Fuel



Velocity



Generations

bizarre flocking
migration

bizarre flocking migration





Information and call power

