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Non-IFD movements: reflections on past work and prospects for future developments

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The paper by Don Hugie and Tamara Grand (2003) confirms the validity of their previous results that had been called into question by us. This new paper reassures us that both parties are still of one mind regarding what we feel is the key message from the original paper of Hugie and Grand (1998): that non-IFD movements are likely to be crucial to our understanding of animal distributions.

The new results presented by Don and Tamara bear strong similarities to those presented previously in both Hugie and Grand (1998) and Ruxton and Humphries (1999). Using an analytic model, Hugie and Grand (1998) predicted a 'single stable distribution' for each competitor type, while Ruxton and Humphries' (admittedly crude) individual-based simulation model predicted a distribution of potential equilibria resulting from shifts from one equilibrium to another over time. Don and Tamara now show that, when their original model is translated more carefully into an individual-based simulation, 'variation in the competitor distribution appears to be centred on the equilibrium distribution of the large population scenario' (Hugie and Grand, 2003: 141). Thus, although a dynamic equilibrium results in the large population model, when a finite population is considered, 'the probabilistic nature of competitor movements causes the flow of individuals moving in either direction to vary, preventing any competitor distribution from persisting indefinitely' (p. 141). The main difference from our results is that we predicted temporal variation with the system moving between a number of possible IFD distributions, whereas Hugie and Grand (2003) predict similar variation centred on a single distribution. Hugie and Grand's (1998) analytic treatment of an infinite population size does not predict temporal variation at all.

It is worth remembering that while Don and Tamara did find errors in our original computer code, they also show that, after removing these errors, 'the basic results of Ruxton and Humphries remain the same' (Hugie and Grand, 2003: 144). However, we certainly do not wish our programming mistakes to detract from our original conclusion that Hugie and Grand (1998) produced an important and interesting result that merits further work to

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