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Rebecca Everett* (reverett@haverford.edu), Haverford College, 370 Lancaster Avenue, Haverford, PA 19041. *Fronts of locusts: Modeling foraging behavior in the Australian plague locust*. Preliminary report.

Locusts gather in large numbers to feed on crops, destroying agricultural fields. Wingless juveniles marching together through a field demonstrate collective behavior that forms a coherent front of advancing insects. We examine this front through two models: an agent-based model and a set of partial differential equations. We construct the agent-based model using observations of individual behavior from the biological literature. The PDE model yields insight into collective behavior of the front. We find selection principles that determine the speed of the front and the amount of food resources left behind as a function of the initial resources and the number of locusts in the group. (Received January 08, 2019)