Optimal Foraging by Zooplankton RICARDO GARCIA, FRANK
MOSS, University of Missouri at St. Louis — We describe experiments with several species of the zooplankton, *Daphnia,* while foraging for food. They move in
sequences: *hop-pause-turn-hop* etc. While we have recorded hop lengths, hop times,
pause times and turning angles, our focus is on histograms representing the distributions of the turning angles. We find that different species, including adults and
juveniles, move with similar turning angle distributions described by exponential
functions. Random walk simulations and a theory based on active Brownian particles indicate a maximum in food gathering efficiency at an optimal width of the
turning angle distribution. Foraging takes place within a fixed size food patch during a fixed time. We hypothesize that the exponential distributions were selected
for survival over evolutionary time scales.

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Date submitted: 01 Nov 2006   Electronic form version 1.4