

Habitat Ephemerality and Hatching Fractions of a Diapausing Anostracan (Crustacea: Branchiopoda)¹

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Key words: *Branchinecta sandiegonensis*, diapause, fairy shrimp, San Diego County, vernal pool

Extended Abstract

Diapause allows aquatic organisms to survive periods of drydown in intermittent pools. However, often not all of the individuals hatch in response to a filling event. This prolonged diapause can be a bet-hedging adaptation to unpredictability in the duration of filling events. Under the simplest bet-hedging model of selection on prolonged diapause, the fraction of eggs hatching in any filling event should approximate the fraction of filling events lasting long enough for successful reproduction. We quantified filling durations in seven vernal pools in San Diego County inhabited by the endemic fairy shrimp *Branchinecta sandiegonensis* (Branchiopoda: Anostraca) for all winter and spring events from 1983 to 1996. For any given rainfall event, larger, deeper pools held water longer than smaller, shallower pools. However, the distributions of filling durations did not differ significantly among these pools, so selection should be similar across pools. Approximately 28 percent of the filling events lasted 17 days or longer, the developmental time to first reproduction (under field conditions) in *B. sandiegonensis*. Laboratory hatching experiments determined a maximum hatching rate of 28 percent at 10°C, with lower hatching percentages at higher and lower temperatures. The close fit between the probability of adequate filling duration and the hatching fraction, and the similar distributions of filling durations among these pools, suggests that creating pools with hydrology suitable for *B. sandiegonensis* may require care to match the filling durations to which this species appears adapted.

References

An expanded version of this report was published as Philippi, T.E.; Simovich, M.A.; Bauder, E.T.; Moorad, J.A.; Moorad, J.A. 2001. **Habitat ephemerality and hatching fractions of a diapausing anostracan (Crustacea: Branchiopoda)**. Israel Journal of Zoology 47(4): 387-396.

¹ A poster version of this paper was presented at Planning for Biodiversity: Bringing Research and Management Together, a Symposium for the California South Coast Ecoregion, February 29-March 2, 2000, California State Polytechnic University, Pomona, CA.

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