

LIGHT AND TEMPERATURE REQUIREMENTS FOR DIAPAUSE
DEVELOPMENT AND RELEASE IN *DAPHNIA*

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Abstract. The light and thermal requirements for diapause development and release in *Daphnia pulex* were determined for the ephippia from a pseudo-sexual strain cultured in the laboratory and from an autumnal diapausing, bisexual strain in Paul Lake, Michigan.

Light was essential for termination of diapause in the laboratory-cultured strain regardless of the temperature or duration of ephippia storage. Ephippia from the lake population were activated by light, but prolonged storage in constant dark eliminated the requirement for light, and thereby implicated photoperiodic control of diapause release.

The laboratory population completed diapause development within a period of 3 to 6 weeks when stored in constant dark at 22°C. Storage at 3.5°C in constant dark prolonged diapause. In the Paul Lake strain, low temperature was a requirement for diapause development, and at 3.5°C the eggs were in diapause for a period of 5 or 6 months.

The contrasting light and thermal requirements are discussed in the context of environments regulating the duration of diapause in summer and winter diapausing populations of *Daphnia*.