

# Temperature-driven flower longevity in a high-alpine species of *Oxalis* influences reproductive assurance

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How high-alpine plants confront stochastic conditions for animal pollination is a critical question. We investigated the effect of temperature on potential flower longevity (FL) measured in pollinator-excluded flowers and actual FL measured in pollinated flowers in self-incompatible *Oxalis compacta* and evaluated if plastically prolonged potential FL can ameliorate slow pollination under cool conditions. Pollinator-excluded and hand-pollinated flowers were experimentally warmed with open-top chambers (OTCs) on a site at 3470 m above sea level (asl). Flower-specific temperatures, and pollinator-excluded and open-pollination flower life-spans were measured at six alpine sites between 3100 and 3470 m asl. Fruit set was analyzed in relation to inferred pollination time. Warming reduced potential FL. Variable thermal conditions across the alpine landscape predicted potential and actual FL; flower senescence was pollination-regulated. Actual FL and potential FL were coupled. Prolonged potenti