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Title: Evaluating canopy impacts on water temperatures in coastal streams:
the importance of the air-water temperature relationship.

Co-authors: Kenneth W. Tate and John M. Harper

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Abstract:

Water temperature in streams and rivers is determined by a number of factors: amount of solar radiation striking the water surface, flow rate, ground water inputs, etc. One of the most significant factors, however, is heat gains and losses from the surrounding air. Water and air temperatures typically exhibit a strong linear correlation. In coastal watersheds in California, this presents a particular challenge to assessments of thermal loading and evaluations of the impact of canopy cover on stream temperatures. Inland reaches of a stream and headwater tributaries often exhibit a more pronounced rate of temperature increase over a given distance than do reaches closer to the coast, even when canopy cover is the same or greater. This presentation uses temperature data and canopy measurements from 6 tributary streams in a North Coast drainage to illustrate these patterns, and discusses the implications for stream restoration programs.