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TITLE: Extreme warming challenges sentinel status of kelp forests as indicators of climate change

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ABSTRACT:

The desire to use sentinel species as early warning indicators of impending climate change effects on entire ecosystems is attractive, but we need to verify that such approaches have sound biological foundations. A recent large-scale warming event in the North Pacific Ocean of unprecedented magnitude and duration allowed us to evaluate the sentinel status of giant kelp, a coastal foundation species that thrives in cold, nutrient-rich waters and is considered sensitive to warming. Here, we show that giant kelp and the majority of species that associate with it did not presage ecosystem effects of extreme warming off southern California despite giant kelp's expected vulnerability. Our results challenge the general perception that kelp-dominated systems are highly vulnerable to extreme warming events and expose the more general risk of relying on supposed sentinel species that are assumed to be very sensitive to climate change.

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