

## **Flatfish behavioral responses to predation cues under elevated carbon dioxide concentrations**

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The direct and indirect effects of ocean acidification (OA) are a growing concern, particularly in high latitude regions where the levels and rate of increase in oceanic CO<sub>2</sub> are expected to be the highest. Studies with marine fishes suggest that elevated CO<sub>2</sub> levels interfere with an important brain neurotransmitter involved in a variety of fish behaviors. However, to date there have been no studies examining OA behavioral effects in flatfishes. In laboratory experiments, we first examined the effects of multiple predation cues (predator odor, “alarm cues” from injured conspecifics, and sight of a predator) on activity and foraging of speckled sanddab (*Citharichthys stigmaeus*) under ambient CO<sub>2</sub> conditions. Fish were most responsive to alarm cues, exhibiting increased activity and foraging behavior following cue exposure. We then examined the effects of elevated CO<sub>2</sub> levels on sanddab behavior in the presence and absence of alarm cues. CO<sub>2</sub> treatments reflected present-day CO<sub>2</sub> levels (~400µatm) and those predicted to occur over the next 150 years (~1,000µatm and ~1,600µatm). Results will provide better insight into flatfish life history, the range of OA responses in flatfishes, and potential impacts of OA on predator-prey dynamics of marine communities.