

1 SSWD-EvoEpi: A Coupled Eco-Evolutionary  
2 Epidemiological Model  
3 for Sea Star Wasting Disease in *Pycnopodia*  
4 *helianthoides*

5 Technical Report — Model Development and Sensitivity Analysis

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8 **Abstract**

9 Sea star wasting disease (SSWD) has caused unprecedented mass mortality in  
10 *Pycnopodia helianthoides* across the northeastern Pacific since 2013. We present  
11 SSWD-EvoEpi, an individual-based, spatially explicit eco-evolutionary epidemio-  
12 logical model coupling *V. pectenocida* disease dynamics with polygenic host resis-  
13 tance, tolerance, and recovery evolution under sweepstake reproductive success. [To  
14 be completed in Phase 1.]

