

Impacts of climate change on California coasts

Invest in tomorrow, fund research today

We ask you to support funding for at least **\$10 billion** in the Fiscal Year 2022 budget and **\$11 billion** for the Fiscal Year 2023.

Funding the **National Science Foundation** is key for research, innovation, and training the next generation of skilled workers in STEM

66%

NSF funds 66% of non-medical research

\$1 million

My lab has received over \$1 million for climate research

1,800

NSF funds 1,800 undergraduate summer research experiences

2,500

NSF supports ~2,500 graduate students with 3 yr fellowships

\$1.1 billion

NSF has invested \$1.1 billion in technician training in last 25 years

The requested \$1.5 million increase would help support more projects and bolster the STEM economy.

NSF supports research on the effects of climate change and potential solutions. These advancements will help protect our economy, health, and the environment. However, **NSF's budget has remained stagnant over the years at about \$7-8 billion since 2001.** Currently, only 1 in 3 research proposals can be funded - which is lower than a decade ago. It's projected that an increase in NSF funding will lead to a 11% increase for total employment in science and engineering by 2024.

California relies on its coasts, climate change threatens them

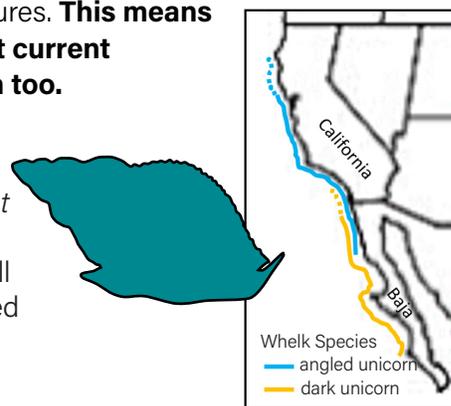
California relies on the ocean for tourism, fisheries, and ecosystem services; but warming and marine heatwaves threaten them. As the frequency and duration of heatwave events increase, species living in the rocky beach zones are under stress and have led to many die offs (e.g., 2021 Vancouver heatwave killed \$1 billion sea creatures).

My PhD research focuses on how ocean invertebrates cope with rising temperatures due to climate



I studied how the **important California mussel** deals with temperature across their lives and generations. Mussels are key because they provide structure and food. Loss of mussels means loss of over 750 linked animals and plants. I found that mussel parents exposed to higher heat stress produced offspring that were more vulnerable to increased temperatures. **This means that heatwaves might not only affect current populations, but the next generation too.**

Species are on the move as climate change accelerates. I study how temperature affects the development of **snails**, using two California species that are moving north due to climate change. These shifting species could have major effects on the areas they move into. With NSF support, my lab and I will be documenting the movement of two predatory snails (dark unicorn & angled unicorn whelk) across California's beaches. **We will test how these species impact the diversity of communities they move into.**



PLEASE CONSIDER:

Increasing funding for the National Science Foundation to \$10 billion in FY 2022 and \$11 billion in FY 2023 to support important research, the STEM economy, and educational programs.

Heidi R. Waite
PhD Candidate

