THE IMPACT OF CLIMATE CHANGE ON ABALONE: WHAT CAN WE DO?

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BACKGROUND

• Climate change has made ecosystems increasingly uninhabitable for marine animals

• Abalone were integral to their ecosystem and the commercial and recreational fishing industry however due to climate change the population in California has drastically decreased

• In order to conserve abalone, we need to understand the effects of climate change, which is addressed by my research question:

RESEARCH QUESTION

What is the impact of climate change on abalone in California?

RESULTS

Disease and Mortality

• Immune systems are compromised as abalone divert energy to maintain their physiology

• Higher temperatures promote the growth of pathogens and increase susceptibility to diseases such as Withering Syndrome which is fatal for abalone

Decreased Growth and Reproduction

• Loss of kelp reduces the food supply which decreases the number of abalone eggs and sperm, and decreases gonad condition

• Sperm count is more susceptible to higher temperatures than the number of eggs

• Abalone shell sizes are reducing

Resilience to Climate Change

• Red abalone are more vulnerable to temperature change than green abalone

• Age influences an abalone's vulnerability

“Ocean acidification is very subtle it is not really thought to kill adult abalone, but it might cause greater mortality for larvae.” ~Interview with Charles Boch

INTERNSHIP & METHODS

• Internship at NOAA Fisheries on the status of pink and green abalone

• Conducted interviews and literature reviews and analyzed interview data using ATLAS.ti

SIGNIFICANCE

• Education on climate change and its impact on biodiversity will create more awareness and encourage conservation efforts

• Research and monitoring of abalone helps track their status and conditions

• Population restoration efforts:
  ◦ Habitat mapping
  ◦ Marine microclimates
  ◦ Captive breeding

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