Ocean Acidification Adaptation and Remediation Strategies

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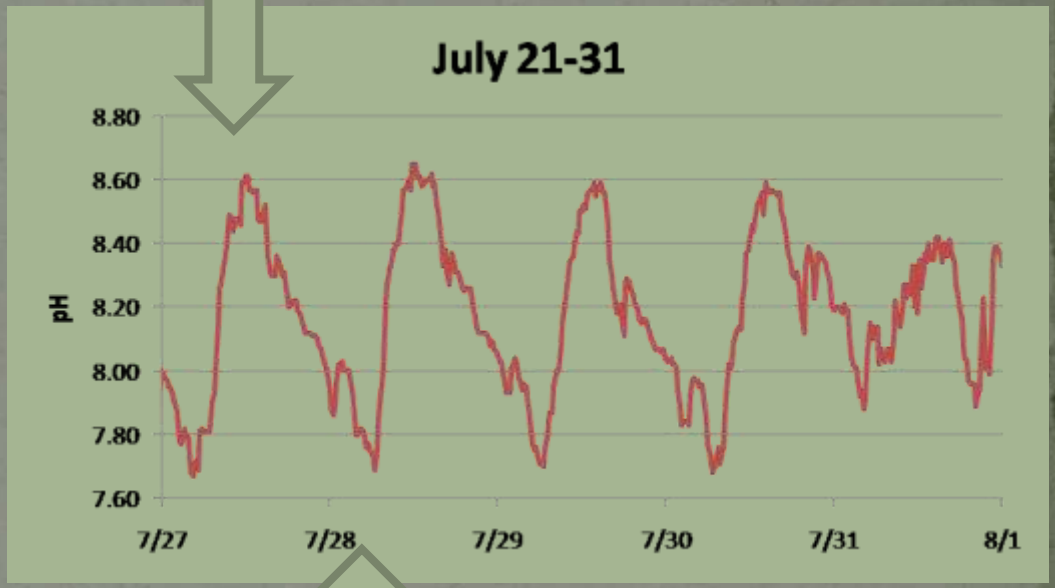
Taylor Shellfish Panic/Adaptation

- Ramped up research and monitoring at Dabob Bay Hatchery
- Expanded larvae production capacity at Kona, Hawaii hatchery to offset Dabob Bay production set backs

Monitoring has allowed hatcheries to adapt by managing around the problem

- Put small larvae into tanks filled in the afternoon or overnight
  - Works if the sun is out
- 24 hour notice- Upwelling takes a day or two to start up, so when winds from the North, fill tanks late in the day and spawn like crazy

SPAWN!

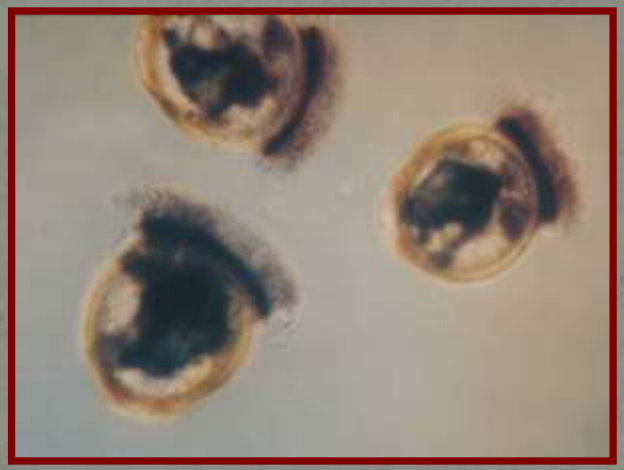


DON'T SPAWN!

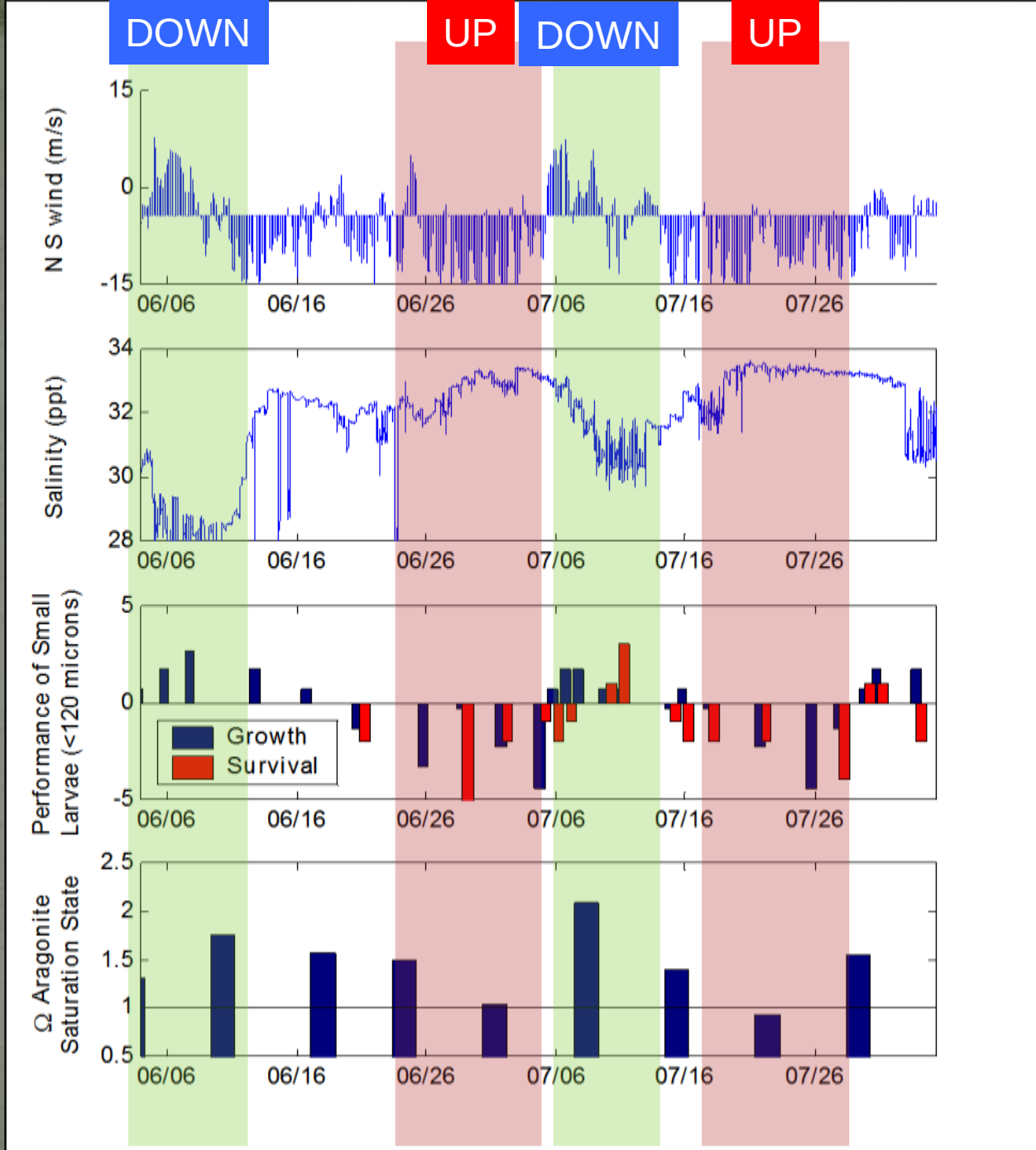
Slide: Alan Barton

Early life stages most vulnerable

Amorphous calcium carbonate > Aragonite > Calcite



Effect of upwelling on growth and survival of oyster larvae at the Whiskey Creek hatchery, Netarts Bay, Oregon



Source: Alan Barton

Remediate seawater chemistry

- Implement a suite of plant-based systems of remediation (phytoremediation) to mitigate the impacts of ocean acidification in targeted areas

Remediate seawater chemistry

- Expand use of shells in targeted areas to remediate impacts of local acidification on shellfish

The more we know the more we don't

- What characteristics of upwelled water are harmful?
  e.g. pH, PCO2, DIC, DOM, reduced compounds or a combination of these factors
- How does upwelling affect *vibrio tubiashii*?
- How can hatcheries best address the long-term problems

Questions?