

TOO HOT? TOO
COLD? GET IT
JUST RIGHT

LEARNING OBJECTIVES

By the end of this module, students should be able to:

1. Understand the importance of water temperature in crab aquaculture.
2. Identify the optimum temperature range for *Portunus trituberculatus*.
3. Recognize the effects of temperature fluctuations on crab health and growth.
4. Learn how temperature sensors function and how to apply them in the field.

WHY TEMPERATURE MATTERS in AQUACULTURE

- Water temperature affects the metabolism, immune system, molting cycle, and oxygen levels in water.
- Crabs are ectothermic – meaning their body temperature and physiological processes depend on environmental temperatures.

OPTIMUM TEMPERATURE RANGE FOR Swimming CRABS

- Ideal range: 24°C – 30°C
- Below 20°C: Slow growth, reduced activity
- Above 32°C: Heat stress, reduced oxygen availability, potential mortality

EFFECTS OF TEMPERATURE FLUCTUATION ON CRABS

Temperature Issue	Effects
Sudden drop in temperature	Stress, suppressed immune response, poor feeding
Excessive heat	Oxygen depletion, increased ammonia toxicity, heat shock
Long-term suboptimal range	Poor growth performance, delayed molting, high disease susceptibility



TEMPERATURE SENSORS: How THEY work

Types of sensors:

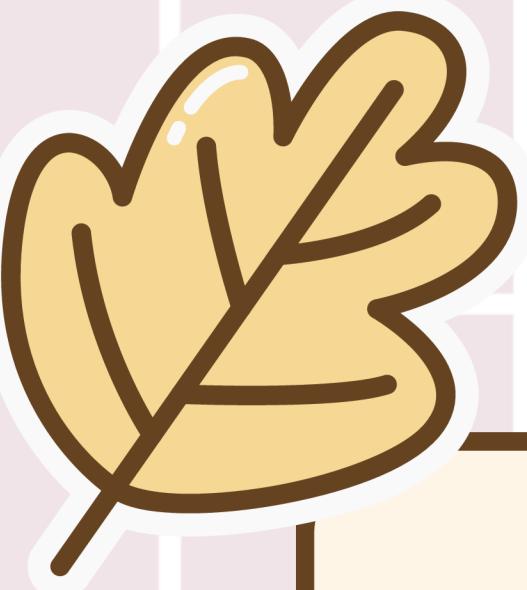
- Digital temperature probes (e.g., DS18B20)
- Thermocouples
- Infrared temperature sensors (less common in aquaculture)

How they work:

- Detect temperature changes via electrical resistance or thermal voltage
- Provide real-time readings for water temperature monitoring systems

Often integrated with IoT systems for remote access and automated alerts





USING TEMPERATURE DATA TO MAKE DECISIONS

- Automated feeder adjustments based on temperature
- Early warning system for potential heat or cold stress events
- Helps plan water exchange and aeration operations
- Critical during transportation, acclimation, and larval rearing



THANK
YOU

