“Read Me” file for data presented in:

Context-dependent carryover effects of hypoxia and warming in a coastal ecosystem engineer

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File 1: 1.OysterGrowth.csv

Summary: Data used in analyses of oyster (*Crassostrea virginica*) tissue, shell, and tissue:shell growth.

Column heading	**Description**
Oyster Code	Oysters were tagged individually with a colored bee tag to differentiate among individuals within a replicate.
Phase 1 DO treatment	Experimental treatment with 2 levels. Dissolved oxygen (DO) was cycled from normoxia down to hypoxia (target: 0.5 mg/L) and back up to normoxia each day ("hypoxic" treatment level) or remained at normoxia throughout the day ("normoxic" treatment level). See Methods for specifics about DO manipulations.
Phase 1 Temperature treatment	Experimental treatment with 2 levels: "warm" (target: +2.5°C above ambient) and "ambient" temperatures. See Methods for specifics about temperature manipulations.
Phase 2 DO treatment	Experimental treatment with 2 levels. Dissolved oxygen (DO) was cycled from normoxia down to hypoxia (target: 0.5 mg/L) and back up to normoxia each day ("hypoxic" treatment level) or remained at normoxia throughout the day ("normoxic treatment level). Phase 2 began 60 days after the end of Phase 1. See Methods for specifics about DO manipulations.
Phase 2 Temperature treatment	Experimental treatment with 2 levels: "warm" (target: +2.5°C above ambient) and "ambient" temperatures. Phase 2 began 60 days after the end of Phase 1. See Methods for specifics about temperature manipulations.
Phase 1 Replicate	Code of the experimental tank (N = 24) to which treatments were applied.
Phase 2 Replicate	Code of the experimental tank (N = 24) to which treatments were applied.
Submerged Mass (g)	Mass obtained while an individual oyster was submerged in room temperature Rhode River water, sensu (Palmer 1982). This measurement approximates oyster shell mass. Initial measurements were taken at the start of Phase 2 and final measurements were taken at the end of Phase 2.
Dry Mass (g)	Mass of each entire oyster (shell + tissue) obtained after drying at room temperature for 1 hour. Initial measurements were taken at the start of Phase 2 and final measurements were taken at the end of Phase 2.
Shell Mass (g)	Shell mass calculated using the submerged mass and an equation derived from a destructive regression (see Supporting Information Appendix S1 of this paper). Initial measurements were taken at the start of Phase 2 and final measurements were taken at the end of Phase 2.

Tissue Mass (g)	Calculated as dry mass – shell mass. Initial measurements were taken at the start of Phase 2 and final measurements were taken at the end of Phase 2.
Shell Growth (g)	Calculated as final – initial shell mass.
Shell Growth (mg)	Converting shell growth from grams to milligrams.
Tissue Growth (g)	Calculated as final – initial tissue mass.
Tissue Growth (mg)	Converting tissue growth from grams to milligrams.
Tissue:Shell Growth	Calculated as tissue growth / shell growth
Notes	5 oysters were excluded from the analyses due to death during Phase 2 or measurement error.

File 2: 2.WaterQuality.csv

Summary: Data used in analyses of dissolved oxygen, temperature, and pH. Readings were done three times each day: once during the normoxic plateau and twice during the hypoxic plateau. Any missing values indicate that the reading was not taken due to a problem with the probe.

Column heading	**Description**
Replicate	Code of the experimental tank (N = 24) to which treatments were applied.
DO treatment	Experimental treatment with 2 levels. Dissolved oxygen (DO) was cycled from normoxia down to hypoxia (target: 0.5 mg/L) and back up to normoxia each day ("hypoxic" treatment level) or remained at normoxia throughout the day ("normoxic treatment level). See Methods for specifics about DO manipulations.
Temperature treatment	Experimental treatment with 2 levels: "warm" (target: +2.5°C above ambient) and "ambient" temperatures. See Methods for specifics about temperature manipulations.
Phase of Experiment	The experiment was broken into two phases: Phase 1 (August 2018) that lasted 18 days (13 days of diel-cycling DO, 18 days of temperature treatment) and Phase 2 (October – November 2018) that lasted 18 days (14 days of diel-cycling dissolved oxygen, 18 days of temperature treatment). Phase 2 began 60 days after the end of Phase 1.
Date	Date of the sample reading.
Cycle Phase	Readings were done during either the normoxic plateau (1x) or hypoxic plateau (2x) each day.
Start/End of Hypoxic Cycle	Hypoxia readings were taken once at the start of the hypoxic plateau and once at the end of the hypoxic plateau each day. NA indicates readings taken during the normoxic plateau of a daily cycle.
Dissolved oxygen (mg/L)	Dissolved oxygen concentration (mg/L) in a given tank during a given reading. DO readings recorded during the normoxia phase were used for the normoxia analysis, and DO readings recorded during the hypoxia phase (both beginning and end) were used for the hypoxia analysis.
Temperature (°C)	Temperature (°C) in a given tank during a given reading. Temperature was only recorded during the hypoxia phase of each daily cycle (twice each day). NA indicates that temperature was not recorded during the normoxic reading.
pH	pH in a given tank during a given reading. pH was recorded during all three tank readings each day (once during normoxia, twice during hypoxia), so all three readings were used in the pH analysis.

File 3: 3.AlkalinitypCO2.csv

Summary: Data used in analyses of total alkalinity and pCO2. Alkalinity readings were taken in one normoxic/ambient and one normoxic/warm tank on a given sampling day.

Column heading	**Description**
Replicate	Code of the experimental tank to which treatments were applied.
Temperature treatment	Experimental treatment with 2 levels: "warm" (target: +2.5°C above ambient) and "ambient" temperatures. See Methods for specifics about temperature manipulations.
Phase of Experiment	The experiment was broken into two phases: Phase 1 (August 2018) that lasted 18 days (13 days of diel-cycling DO, 18 days of temperature treatment) and Phase 2 (October – November 2018) that lasted 18 days (14 days of diel-cycling dissolved oxygen, 18 days of temperature treatment). Phase 2 began 60 days after the end of Phase 1.
Sampling date	Date sample was taken.
Dissolved oxygen (mg/L)	Dissolved oxygen concentration (mg/L) in a given tank at the exact time the water sample was taken.
Temperature (°C)	Temperature (°C) in a given tank at the exact time the water sample was taken.
pH	pH in a given tank at the exact time the water sample was taken.
Pressure (mmHg)	Atmospheric pressure (mmHg) at the exact time the water sample was taken.
Salinity (ppt)	Salinity (parts per thousand) at the exact time the water sample was taken.
Average sample weight (g)	Weight of water sample used in alkalinity analysis
Total alkalinity (µmol/kg sw)	Total alkalinity (µmol per kg of seawater) processed according to the methods in (APHA 1992)
pCO2 (µatm)	pCO2 calculated using the R package seacarb (Gattuso et al. 2020) based on pH, alkalinity, salinity, temperature, and pressure.

Literature Cited in “Read Me” File

APHA (1992) *Standard methods for the examination of water and wastewater*. Water Environmental Federation, Washington, D.C.

Gattuso, J.-P., Epitalon, J.-M., Lavigne, H. & Orr, J. (2020) seacarb: Seawater carbonate chemistry.

Palmer, A.R. (1982) Growth in marine gastropods: a non-destructive technique for independently measuring shell and body weight. *Malacologia,* **23,** 63-74.