**Definitions of variables**

Composite - solid circles and lines, Averaged open and dashed

CCV - calculating the CV of total zooplankton.

How was this calculated? Each tank, and then averaged, or over all tanks?

Each tank then averaged

* Notes: 4 outliers, which treatments are these? (CCV > 2.0), do results change if we drop these? (probably not …)

Weighted average PCV – by tank: sum of stdev / sum of mean; then averaged

Mean PCV – add all population CVs and then divide by number of species and number of tanks

**1. The relationship between theoretical and empirical stability.**

No strong relationships between pcv, ccv and theoretical measures of stability (stochastic invariability, max eigenvalue (asymp resilience), and reactivity).

**Weighted PCV of all species** **vs Reactivity**

Composite P Value: **{0.039131}** Averaged P Value: {0.110054}

Composite Correlation: 0.536711 Averaged Correlation: 0.429554

Composite R-Squared: 0.288059 Averaged R-Squared: 0.184517

**Mean PCV No algae vs Resilience**

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Composite P Value: **{0.0504609}** Averaged P Value: {0.72241}

Composite Correlation: 0.513098 Averaged Correlation: 0.100183

Composite R-Squared: 0.263269 Averaged R-Squared: 0.0100365



**Mean PCV No algae vs Reactivity**

Composite P Value: **{0.0519523}** Averaged P Value: {0.211206}

Composite Correlation: 0.510291 Averaged Correlation: 0.342659

Composite R-Squared: 0.260397 Averaged R-Squared: 0.117415

**Mean PCV No algae vs Intrinsic invariability**

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Composite P Value: **{0.0449433**} Averaged P Value: {0.734378}

Composite Correlation: -0.524045 Averaged Correlation: -0.0957109

Composite R-Squared: 0.274623 Averaged R-Squared: 0.00916057

**2. The relationship between empirical stability and interaction strength.**

Mostly NOT significant, but all significant results are shown below. This is the only marginally significant relationship. Outliers: treats 21 and 23, Dap & Sca

**CCV vs mean off-diagonal interaction strength**



**Composite P Value: {0.0426156}** Averaged P Value: {0.261897}

Composite Correlation: 0.528962 Averaged Correlation: 0.309337

Composite R-Squared: 0.279801 Averaged R-Squared: 0.0956893

**CCV vs top-down interaction strength**



Composite P Value: {**0.00261374}** Averaged P Value: {0.113921}

Composite Correlation: 0.71724 Averaged Correlation: 0.425398

Composite R-Squared: 0.514434 Averaged R-Squared: 0.180963

**Weighted avg. PCV vs top down interaction strength**

Composite P Value: {**0.0154502}** Averaged P Value: {**0.0966721}**

Composite Correlation: 0.611375 Averaged Correlation: 0.444778

Composite R-Squared: 0.373779 Averaged R-Squared: 0.197827

**Mean PCV vs top down interaction strength**

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Composite P Value: {0.138341} Averaged P Value: **{0.0497639}**

Composite Correlation: 0.401163 Averaged Correlation: 0.51443

Composite R-Squared: 0.160932 Averaged R-Squared: 0.264639

**Mean PCV vs bottom-up interaction strength**

****

Composite P Value: {0.581239} Averaged P Value: **{0.00505083}**

Composite Correlation: -0.154997 Averaged Correlation: -0.682538

Composite R-Squared: 0.0240242 Averaged R-Squared: 0.465858

**3. Is there a relationship between interaction strength and theoretical stability?**

**RESILIENCE:**

**Mean interaction strength vs resilience**

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Composite P Value: {0.551629} Averaged P Value: **{0.013579}**

Composite Correlation: 0.167122 Averaged Correlation: 0.620515

Composite R-Squared: 0.0279298 Averaged R-Squared: 0.385038

**Mean off-diagonal interaction strength vs resilience**

Composite P Value: {0.206652} Averaged P Value: **{0.0126837}**

Composite Correlation: 0.345888 Averaged Correlation: 0.625237

Composite R-Squared: 0.119639 Averaged R-Squared: 0.390921

**Top down edible intx strength vs Resilience**



Composite P Value: **{0.0261}** Averaged P Value: **{0.0825173}**

Composite Correlation: -0.571314 Averaged Correlation: -0.462589

Composite R-Squared: 0.326399 Averaged R-Squared: 0.213989

**Bottom up edible intx strength vs Resilience**



Composite P Value: {0.376884} Averaged P Value: **{0.022246}**

Composite Correlation: 0.245962 Averaged Correlation: 0.58405

Composite R-Squared: 0.0604973 Averaged R-Squared: 0.341115

**REACTIVITY**

**Mean interaction strength vs reactivity**

Composite P Value: {0.134672} Averaged P Value**: {0.0457377}**

Composite Correlation: 0.404607 Averaged Correlation: 0.52241

Composite R-Squared: 0.163707 Averaged R-Squared: 0.272912

**Mean off-diagonal interaction strength vs reactivity**



Composite P Value: {**0.00190954}** Averaged P Value: **{0.00138126}**

Composite Correlation: 0.732226 Averaged Correlation: 0.746747

Composite R-Squared: 0.536155 Averaged R-Squared: 0.557631

**Bottom up intx strength vs Reactivity**



Composite P Value: **{0.0445016}** Averaged P Value: {0.258564}

Composite Correlation: 0.524963 Averaged Correlation: 0.311399

Composite R-Squared: 0.275586 Averaged R-Squared: 0.0969691

**Bottom up edible vs Reactivity**

Composite P Value: **{0.0316702}** Averaged P Value: {0.16496}

Composite Correlation: 0.555219 Averaged Correlation: 0.377852

Composite R-Squared: 0.308268 Averaged R-Squared: 0.142772

**Top down inedible intx strength vs Reactivity**



Composite P Value: **{0.0478381}** Averaged P Value: **{0.0557785}**

Composite Correlation: 0.518185 Averaged Correlation: 0.503352

Composite R-Squared: 0.268516 Averaged R-Squared: 0.253363

**Competition vs reactivity**



Composite P Value: **{0.0327626}** Averaged P Value**: {0.00915535}**

Composite Correlation: 0.6165 Averaged Correlation: 0.713611

Composite R-Squared: 0.380073 Averaged R-Squared: 0.509241

**Intrinsic Stochastic Invariability**

**Mean interaction strength vs intrinsic stochastic invariability**



Composite P Value: {0.232735} **Averaged P Value: {0.0328897}**

Composite Correlation: -0.327957 Averaged Correlation: -0.551985

Composite R-Squared: 0.107556 Averaged R-Squared: 0.304687

**Mean off-diagonal intx strength vs Invariability**

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Composite P Value: **{0.041243}** Averaged P Value: **{0.0391255}**

Composite Correlation: -0.531956 Averaged Correlation: -0.536724

Composite R-Squared: 0.282977 Averaged R-Squared: 0.288073

**Top down edible intx strength vs Invariability**



Composite P Value: **{0.0190414}** Averaged P Value: **{0.0212399**}

Composite Correlation: 0.595994 Averaged Correlation: 0.58765

Composite R-Squared: 0.355209 Averaged R-Squared: 0.345332

**Bottom up edible intx strength vs Invariability**



Composite P Value: {0.177561} Averaged P Value: **{0.0268568}**

Composite Correlation: -0.367684 Averaged Correlation: -0.568983

Composite R-Squared: 0.135192 Averaged R-Squared: 0.323742

**Competition vs Invariability**



Composite P Value: {0.158595} Averaged P Value: **{0.0469126}**

Composite Correlation: -0.434045 Averaged Correlation: -0.582416

Composite R-Squared: 0.188395 Averaged R-Squared: 0.339208

**4. What factors influence interaction strength?**

**Richness vs Mean interaction strength (intx strength declines with richness)**

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Composite P Value: **{0.00139243}** Averaged P Value: {0.209696}

Composite Correlation: -0.746397 Averaged Correlation: -0.343724

Composite R-Squared: 0.557108 Averaged R-Squared: 0.118147

**Daphnia vs top down intx (top down intx increases w/ Daphnia)**



Composite P Value: {**0.0518279}** Averaged P Value: **{0.0134164}**

Composite Correlation: 0.510523 Averaged Correlation: 0.621354

Composite R-Squared: 0.260634 Averaged R-Squared: 0.38608

**Daphnia vs top down inedible (top down inedible increases w/ Daphnia)**

Composite P Value: {0.0866176} Averaged P Value: **{0.0187182}**

Composite Correlation: 0.457221 Averaged Correlation: 0.597282

Composite R-Squared: 0.209051 Averaged R-Squared: 0.356746