

1. Basic reporting.

The manuscript is well written, the structure conforms to PeerJ's standard, figures and tables are clear and referred to in the text and reference list is complete. I do however have a few suggestions to improve the manuscript.

Line 22. ("resource availability in the alternative patch...." Instead of "resource limitation in the alternative patch...")

Line 23. Our work highlights the ~~very~~ large influence..... Limit the use of adverbs, they generally do not add anything to the findings.

Line 63. ~~Still, broader~~ Ecological and population dynamics may also be ~~powerfully~~ influenced by the relative.....

Line 105. Better use a reference to a published paper instead of an internet reference (e.g. modified as by Ebert 1998 using only 5% of the recommended SeO² concentration")

(reference to AdaM: D. Ebert, C. D. Zschokke-Rohringer, H. J. Carius, 1998. Within-and between-population variation for resistance of *Daphnia magna* to the bacterial endoparasite *Pasteuria ramosa*. ProcB 265: 2127–2134.)

Line 183. "Despite this advantage in".... Replace with "Despite this higher...."

Line 190.may be ~~extremely~~ profound.

Line 197.may have a ~~very~~ large effect....

Lines 263, 271, 293, 303, 320. Capitals mid-sentence in the references.

Line 307. Missing the " : " behind invited review.

Lines 233-347. Carefully check the references for Latin names and ensure they are in *italic*.

Tables. I assume the "†" in the tables is used to denote significance? Potentially include this in the table legends. Or considering that in the figure *** are used be consistent and also use *** in the tables.

Figure 1. The authors could consider a slightly modified version of their figure were graph titles are on the outside (see below). This may make the figure slightly easier to read (although the current version is already good)

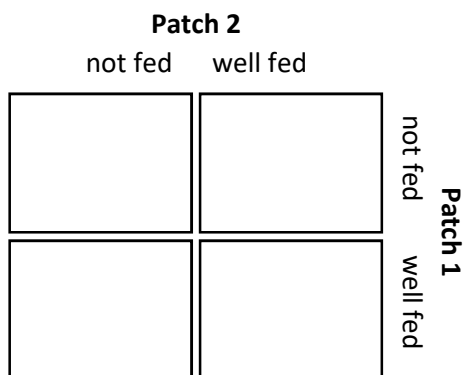


Figure 2 Similar comment as figure 1, the readability of the axis may be slightly improved.

| | | | | |
|----------------|----------|---------|----------|---------|
| Patch 1 | not fed | | well fed | |
| Patch 2 | well fed | not fed | well fed | not fed |

2) Experimental design

The experimental design is rigorous, has sufficient replication and addresses the main question. I just have a few small points that I would like to see clarified.

Could the authors clarify how the standard errors in figure 2 were obtained? I may have missed it but in the material and methods it states that the animals were counted every 24 hours. I suspect the authors did more than one count (and hence were able to provide SE for each replicate population). If this is indeed the case the material and methods should be amended.

As noted in the legend of table 1 standard anova assumptions were not violated. Could the authors amend the material and methods with the methods used to make these assessment and also provide test statistics on homogeneity of variance and normality?

Considering the authors did find clear differences between treatments I assume that the feeding differences between both patches are maintained even after the connection between both patches is opened. It may however help if the authors provided some additional information on how long difference between patches were maintained despite the direct connection between both patches. How long does it take for the algae to disperse (by diffusion) tough the entire system after being fed to patch 1?

3) Validity of the findings

On lines 179 to 188 the author's discuss the evidence for that dispersal was driven by resource shortage rather than density itself. To make their argument the authors compare the densities and number of migrants between the well fed and non-fed patch 1 populations. Although the points the authors make are valid the argument doesn't take into account any interactive effects between density and resource shortage. Potentially density could still play a role in moderating strength of the response e.g. a stronger response at higher population densities. I wonder if the authors can strengthen their argument by correlating the number of migrants within each treatment to density (taking into account the higher baseline of migrants expect at higher densities)?

4) General comments

The authors provide a neat and well-designed experiment to understand how *Daphnia* use information from local and alternative patches to make a decision to stay or move. I found the paper quite interesting but believe it can be further improved by providing a deeper discussion.

I believe the a slight elaboration of the consequences and implications and the addition of a few concrete examples (e.g. in species X migration decisions are based both Y and Z) to support literature statements throughout the manuscript will help drive home the importance of these statements, the author's findings and implications for the field and may make the paper appeal to a wider audience.

Building on my previous point I think that especially line 222-224 “Relaxing that assumption is now well justified on empirical grounds, and the magnitude of shift in dispersal resulting from condition dependence suggests that it will have non-trivial effects when incorporated into mechanistic models of evolution, population dynamics, invasion spread, and so on.” Could use additional explanation and examples. How may our theoretical predictions change, what actual effects?