A Manuscript Microscope 'Sentence Audit' of:

Functional diversity alters the effects of a pulse perturbation on the dynamics of tritrophic food webs

What is the Manuscript Microscope Sentence Audit?

The Manuscript Microscope Sentence Audit is a research paper introspection system that parses the text of your manuscript into minimal sentence components for faster, more accurate, enhanced proofreading.

Why use a Sentence Audit to proofread your manuscript?

- Accelerated Proofreading: Examine long technical texts in a fraction of the usual time.
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- Reliable Proofreading: Ensure every single word of your manuscript is correct.
- Easier Proofreading: Take the hardship out of crafting academic papers.

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Manuscript Source: https://www.biorxiv.org/content/10.1101/2021.03.22.436420v1

Manuscript Authors: Ruben Ceulemans, Laurie Anne Wojcik & Ursula Gaedke

Audit Date: 31/03/21 **Audit Identifier:** OV0G2IKJF73D844 **Code Version:** 3.6

Features of the Sentence Audit:

The Sentence Audit combines two complementary proofreading approaches:

1. Each sentence of your text is parsed and displayed in isolation for focused inspection.
2. Each individual sentence is further parsed into Minimal Sentence Components for a deeper review of the clarity, composition and consistency of the language you used.

The Minimal Sentence Components shown are the smallest coherent elements of each sentence of your text as derived from it's conjunctions, prepositions and selected punctuation symbols (i.e. commas, semicolons, round and square brackets).

The combined approaches ensure easier, faster, more effective proofreading.

Comments and Caveats:

• The sentence parsing is achieved using a prototype natural language processing pipeline written in Python and may include occasional errors in sentence segmentation.

• Depending on the source of the input text, the Sentence Audit may contain occasional html artefacts that are parsed as sentences (E.g. "Download figure. Open in new tab").

• Always consult the original research paper as the true reference source for the text.

Contact Information:

To get a Manuscript Microscope Sentence Audit of any other research paper, simply forward any copy of the text to John.James@OxfordResearchServices.com.

All queries, feedback or suggestions are also very welcome.

Research Paper Sections:

The sections of the research paper input text parsed in this audit.

Section No.	Headings	Sentences
Section: 1	Abstract	13
Section: 2	1 Introduction	14
N/A	--- --- --- --- --- --- ---	0
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The Sentence Audit Of The Research Paper

Title **Functional diversity alters the effects of a pulse perturbation on the dynamics of tritrophic food webs**

S1 [001] Abstract

S1 [002] Biodiversity decline causes a loss of functional diversity, which threatens ecosystems through a dangerous feedback loop: this loss may hamper ecosystems' ability to buffer environmental changes, leading to further biodiversity losses.

Biodiversity decline causes a loss ...
... of functional diversity, ...
... which threatens ecosystems ...
... through a dangerous feedback loop: ...
... this loss ...
... may hamper ecosystems' ability ...
... to buffer environmental changes, ...
... leading ...
... to further biodiversity losses.

S1 [003] In this context, the increasing frequency of climate and human-induced excessive loading of nutrients causes major problems in aquatic systems.

In this context, ...
... the increasing frequency ...
... of climate ...
... and human-induced excessive loading ...
... of nutrients causes major problems ...
... in aquatic systems.

S1 [004] Previous studies investigating how functional diversity influences the response of food webs to disturbances have mainly considered systems with at most two functionally diverse trophic levels.

Previous studies investigating how functional diversity influences the response ...
... of food webs ...
... to disturbances have mainly considered systems ...
... with at most two functionally diverse trophic levels.

S1 [005] Here, we investigate the effects of a nutrient pulse on the resistance, resilience and elasticity of a tritrophic—and thus more realistic—plankton food web model depending on its functional diversity.

Here, ...
... we investigate the effects ...
... of a nutrient pulse ...
... on the resistance, ...
... resilience ...
... and elasticity ...
... of a tritrophic—and thus more realistic—plankton food web model depending ...

... on its functional diversity.

S1 [006] We compare a non-adaptive food chain with no diversity to a highly diverse food web with three adaptive trophic levels.

We compare a non-adaptive food chain ...
... with no diversity ...
... to a highly diverse food web ...
... with three adaptive trophic levels.

S1 [007] The species fitness differences are balanced through trade-offs between defense/growth rate for prey and selectivity/half-saturation constant for predators.

The species fitness differences are balanced ...
... through trade-offs ...
... between defense/growth rate ...
... for prey ...
... and selectivity/half-saturation constant ...
... for predators.

S1 [008] We showed that the resistance, resilience and elasticity of tritrophic food webs decreased with larger perturbation sizes and depended on the state of the system when the perturbation occured.

We showed ...
... that the resistance, ...
... resilience ...
... and elasticity ...
... of tritrophic food webs decreased ...
... with larger perturbation sizes ...
... and depended ...
... on the state ...
... of the system ...
... when the perturbation occured.

S1 [009] Importantly, we found that a more diverse food web was generally more resistant, resilient, and elastic.

Importantly, ...
... we found ...
... that a more diverse food web was generally more resistant, ...
... resilient, ...
... and elastic.

S1 [010] Particularly, functional diversity dampened the probability of a regime shift towards a non-desirable alternative state.

Particularly, ...
... functional diversity dampened the probability ...
... of a regime shift towards a non-desirable alternative state.

S1 [011] In addition, despite the complex influence of the shape and type of the dynamical attractors, the basal-intermediate interaction determined the robustness against a nutrient pulse.

In addition, ...
... despite the complex influence ...
... of the shape ...
... and type ...
... of the dynamical attractors, ...
... the basal-intermediate interaction determined the robustness ...
... against a nutrient pulse.

S1 [012] This relationship was strongly influenced by the diversity present and the third trophic level.

This relationship was strongly influenced ...
... by the diversity present ...
... and the third trophic level.

S1 [013] Overall, using a food web model of realistic complexity, this study confirms the destructive potential of the positive feedback loop between biodiversity loss and robustness, by uncovering mechanisms leading to a decrease in resistance, resilience and elasticity as functional diversity declines.

Overall, ...
... using a food web model ...
... of realistic complexity, ...
... this study confirms the destructive potential ...
... of the positive feedback loop ...
... between biodiversity loss ...
... and robustness, ...
... by uncovering mechanisms leading ...
... to a decrease ...
... in resistance, ...
... resilience ...
... and elasticity ...
... as functional diversity declines.

S2 [014] 1 Introduction

S2 [015] Human activities undeniably disrupt ecosystem structure and functioning (Hooper et al., 2005; Worm et al., 2006; Cardinale et al., 2012; Hautier et al., 2015).

Human activities undeniably disrupt ecosystem structure ...
... and functioning ...
... (Hooper et al., 2005; ...
... Worm et al., 2006; ...
... Cardinale et al., 2012; ...
... Hautier et al., 2015).

S2 [016] Direct effects such as habitat loss due to pollution (Dudgeon et al., 2006; Butchart et al., 2010; Hölker et al., 2010) and increased land requirements for agricultural or industrial use (Brooks et al., 2002; Ryser et al., 2019; Horváth et al., 2019) are major causes of the observed losses in biodiversity worldwide.

Direct effects ...
... such as habitat loss ...
... due to pollution ...
... (Dudgeon et al., 2006; ...
... Butchart et al., 2010; ...
... Hölker et al., 2010) ...
... and increased land requirements ...
... for agricultural ...
... or industrial use ...
... (Brooks et al., 2002; ...
... Ryser et al., 2019; ...
... Horváth et al., 2019) ...
... are major causes ...
... of the observed losses ...
... in biodiversity worldwide.

S2 [017] Moreover, climate change effects have a decisive influence on these losses (Bestion et al., 2020): in addition to the global temperature rise (Hansen et al., 2006), the frequency of disruptive extreme weather events has increased steadily (Easterling et al., 2000).

Moreover, ...
... climate change effects have a decisive influence ...
... on these losses ...
... (Bestion et al., 2020): ...
... in addition ...
... to the global temperature rise ...
... (Hansen et al., 2006), ...
... the frequency ...
... of disruptive extreme weather events has increased steadily ...
... (Easterling et al., 2000).

S2 [018] For instance, recurrent storms or heavy rainfalls amplify excessive nutrient loading in rivers, lakes, and coastal areas, causing species losses (Øygarden et al., 2014).

For instance, ...
... recurrent storms ...
... or heavy rainfalls amplify excessive nutrient loading ...
... in rivers, ...
... lakes, ...
... and coastal areas, ...
... causing species losses ...
... (Øygarden et al., 2014).

S2 [019] The combined effect of these processes on biodiversity creates a potentially dangerous feedback loop.

The combined effect ...
... of these processes ...
... on biodiversity creates a potentially dangerous feedback loop.

S2 [020] When biodiversity is lost, the respective decrease in functional diversity may alter the ecosystems ability to buffer perturbations (Cardinale et al., 2012; García-Palacios et al., 2018; Ceulemans et al., 2019).

End of Sample Audit

This is a truncated Manuscript Microscope Sample Audit.

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John.James@OxfordResearchServices.com
