CAMOUFLAGED OR TANNED

CONTROL

FISH

UV

FISH+UV

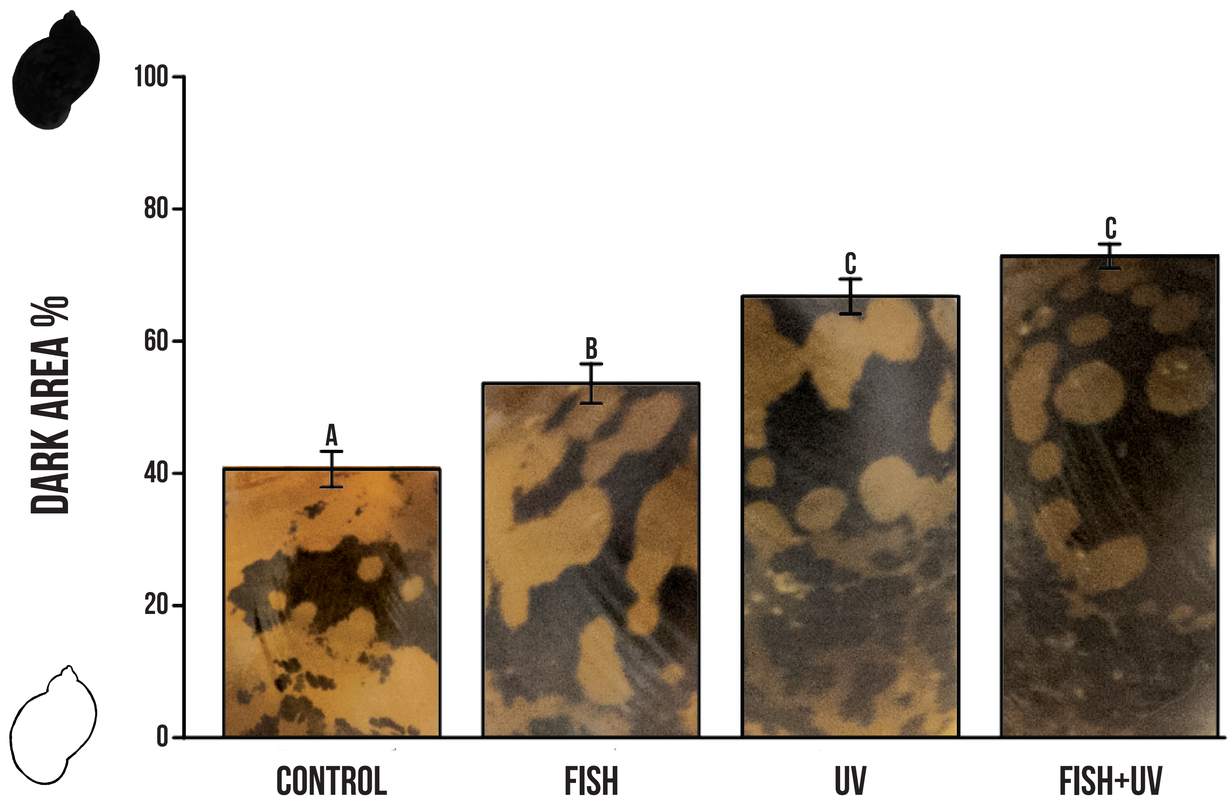

Figure 1. Percent of mantle area covered in dark pigment in the freshwater snail *Radix balthica* exposed to Control, Fish, UV or UV+Fish. Values are means±1 SE and different letters indicate a significant difference between treatments (p<0.001).

Results

- **Fish cue increased pigmentation** (p<0.001, fig.1), but without compromising the complexity of the pigmented spots (p=0.11, fig.2).
- **UV increased** the **pigmentation** even further (p<0.001, fig. 1), but at a cost of **reduced spot complexity** (p<0.001, fig. 2).
- When exposed to **both UV and fish**, snails induced the same amount of dark pigments and **reduced spot complexity** as the UV treatment (p<0.001 and p<0.001 respectively fig.1&2).

Background

By having phenotypically plastic traits such as morphology, behaviour and life history, many organisms optimise their fitness in response to fluctuating threats. Freshwater snails with translucent shells, e.g. snails from the *Radix* genus, differ considerably in their mantle pigmentation patterns, with snails ranging from completely dark-pigmented to having only a few dark spots. These pigmentation differences have previously been suggested to be genetically fixed, but we suggest that this variation is due to phenotypic plasticity in response to a fluctuating environment.

Conclusion

Exposure to fish cue and/or ultraviolet radiation (UV) resulted in a phenotypically plastic change in the freshwater snail *Radix balthica´s* **mantle pigmentation**. When exposed to cues from visually hunting fish, snails increased the proportion of their dark pigmentation, suggesting a crypsis strategy. Snails increased their pigmentation even further in response to UVR, but this also lead to reduced complexity of the patterns. When exposed to both fish and UV, snails responded as they did in response to UV only, which indicates that **snails trade-off** their **camouflage for UV protection**, a trade-off that may **increase predation risk**.

Note! Pigmentation patterns should be used with caution in taxonomy.

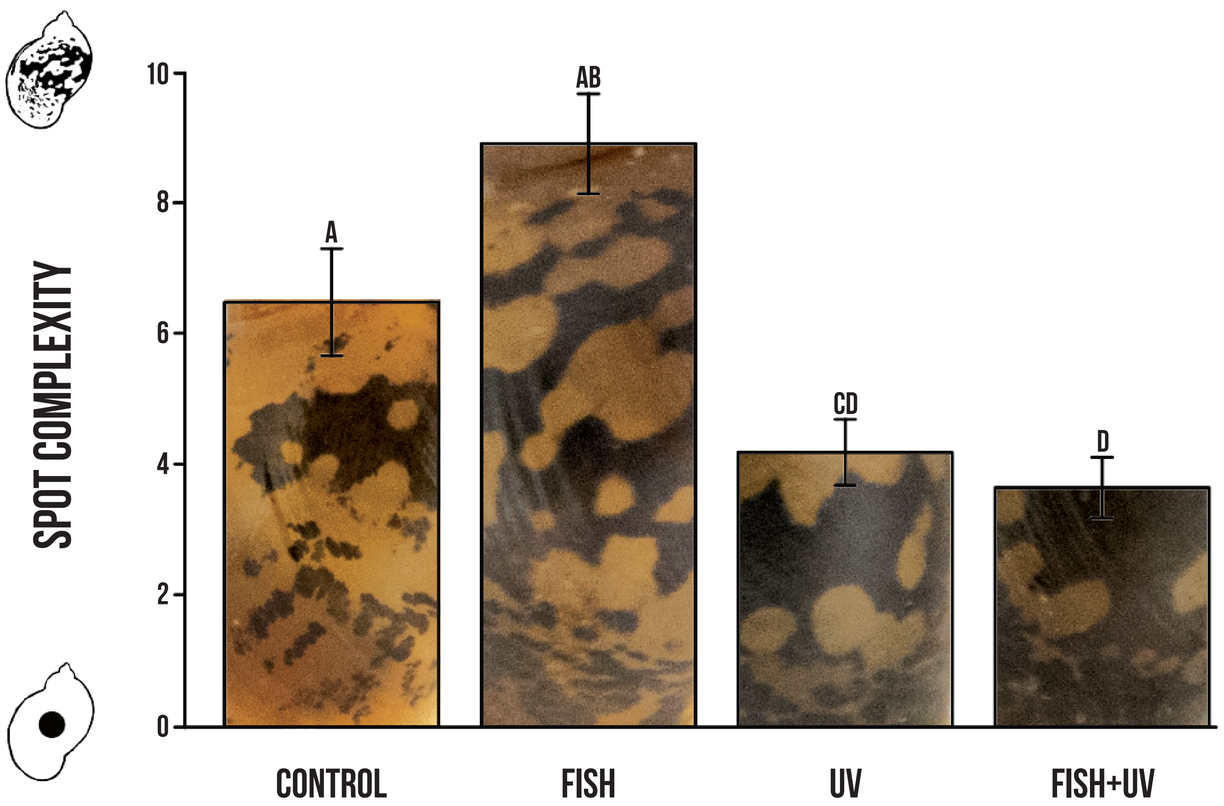

Figure 2. Spot complexity of mantle pigmentation in the freshwater snail *Radix balthica* exposed to Control, Fish, UV or UV+Fish. Values are means±1 SE and different letters indicate a significant difference between treatments (p<0.001).

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