**Intensive grazing as a threat in protected areas: the need for adaptive management to protect the Critically Endangered Crau plain grasshopper *Prionotropis rhodanica***

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Supplementary Table 1Results of ANOVAs on differences in microhabitat variables between sexes.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Calissane |  | Peau de Meau |  | BMW |  |  |
|  | λ\* | F1,80 | P | λ\* | F1,80 | P | λ\* | F1,80 | P |
| Stones | 0.41 | 1.26 | 0.246 | 0.60 | 1.74 | 0.198 | 0.54 | 1.63 | 0.208 |
| Bare ground | 0.51 | 0.24 | 0.623 | 0.66 | 0.08 | 0.774 | 0.20 | 2.11 | 0.154 |
| Vegetation | 1.79 | 2.23 | 0.138 | 0.85 | 2.40 | 0.132 | 1.04 | 3.13 | 0.084 |
|  Green vegetation | 1.45 | 1.99 | 0.160 |  |  |  | 0.65 | 3.22 | 0.080 |
|  Dry vegetation | 0.75 | 0.02 | 0.900 |  |  |  | 0.08 | 0.13 | 0.720 |
| Max. vegetation height | 0.89 | 0.03 | 0.873 | 1.47 | 1.46 | 0.237 | 0.01 | 0.90 | 0.348 |
| Mean vegetation height | 0.15 | 0.52 | 0.474 |  |  |  | 0.18 | 0.80 | 0.376 |
| Substrate temperature | 1.15 | 0.90 | 0.343 | −0.04 | 0.91 | 0.348 | 0.10 | 5.41 | 0.025 |

\*Transformation exponent.

Supplementary Table 2 Results of the paired t tests on differences in microhabitat variables between the location of the insect and the control sample, for the populations Calissane and BMW (Calissane: df = 176; except for substrate temperature df = 174; BMW: df = 39).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Calissane | BMW |  |
|  | t value | P value | t value | P value |
| Stones | 0.71 | 0.478 | 1.04 | 0.306 |
| Bare ground | 0.20 | 0.846 | −0.12 | 0.907 |
| Vegetation | 0.25 | 0.801 | −0.71 | 0.480 |
|  Green vegetation | 0.25 | 0.803 | −0.66 | 0.516 |
|  Dried vegetation | 0.00 | 1.000 | 0.22 | 0.831 |
| Maximum vegetation height | 0.82 | 0.414 | 0.06 | 0.957 |
| Mean vegetation height | −1.45 | 0.150 | 0.34 | 0.735 |
| Substrate temperature | −0.83 | 0.409 | 0.54 | 0.592 |

Supplementary Table 3 Results of Tukey test. Only significant differences with P < 0.05 are listed.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | Stones | Bare ground | Vegetation | Green vegetation | Dried vegetation | Maximum vegetation height | Mean vegetation height | Substrate temperature |
| Populated sites | BMW | Calissane  |  |  | 0.040 | < 0.001 |  |  | < 0.001 |  |
| BMW | Peau de Meau  | < 0.001 |  | < 0.001 | < 0.001 |  |  | 0.009 |  |
| Calissane | Peau de Meau  |  |  |  |  |  |  |   |  |
| Former habitat | EX-Couloubris | EX-Grosse du Levant  |  |  |  |   |  | < 0.001 | < 0.001 |  |
|  | EX-Couloubris | EX-Peau de Meau  |  |  |  | < 0.001 |  | < 0.001 | < 0.001 |  |
|  | EX-Grosse du Levant | EX-Peau de Meau  |  |  |  |   |  |  |  |  |
| Populated sites vs former habitat | Calissane | EX-Grosse du Levant  | 0.017 |  | 0.016 |  |  | < 0.001 |  |  |
| Calissane | EX-Couloubris  |  |  |  |  | 0.027 |   |  |  |
| Calissane | EX-Peau de Meau  |  |  | < 0.001 | < 0.001 |  | < 0.001 | < 0.001 |  |
| BMW | EX-Grosse du Levant  | < 0.001 |  | < 0.001 | < 0.001 |  | < 0.001 | < 0.001 |  |
| BMW | EX-Couloubris  | < 0.001 |  | < 0.001 | 0.002 |  |   | 0.015 |  |
| BMW | EX-Peau de Meau | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  | < 0.001 | < 0.001 |  |
| Peau de Meau  | EX-Grosse du Levant |  |  |  |  |  | < 0.001 | 0.001 |  |
| Peau de Meau  | EX-Couloubris |  |  |  |  |  |  |  |  |
| Peau de Meau  | EX-Peau de Meau |   | 0.018 |   | 0.005 |  | < 0.001 | < 0.001 |  |

Supplementary Fig. 1

Means ± SE of the microhabitat variables measured at the exact locality of grasshopper indi-viduals in the three populations. Peau de Meau had the highest stone and lowest vegetation cover, whereas BMW had the lowest bare ground cover.