

## Supplementary material part 4

Table S4.1: Overview of the deviation of the observed body mass ratio ( $\log_{10}(P/H)$ ) from the implemented optimal body mass ratio ( $\log_{10}(P/H)$ ). Per simulation, the average deviation was calculated. The median of these averages is displayed per scenario and landscape type.

|  | P0.05 H0 | P0.05 H0.5 | P0.05 H1 | P0.20 H0.5 | P0.20 H1 | P0.50 H1 | P0.90 H1 | Mean     | Color legend |
|--|----------|------------|----------|------------|----------|----------|----------|----------|--------------|
| $d_{\text{per}} = 331.104W + 0.00669$    | 0.982    | 0.873      | 0.822    | 0.995      | 0.784    | 0.838    | 0.768    | 0.866    | 0.75 - 1     |
| Carrying capacity resource 1000          | 0.826    | -          | 0.881    | 0.499      | -        | -        | -        | 0.735333 | 0.5 - 0.75   |
| Functional response type I               | 1.058    | -          | -        | -          | -        | 0.356    | -        | 0.707    | 0.25 - 0.5   |
| 50 eggs per clutch                       | 0.789    | 0.337      | 0.949    | 0.539      | 0.698    | 0.548    | -        | 0.643333 | 0 - 0.25     |
| Maximum value $t_m = 1\ 800\ \text{s}$   | 0.719    | 0.505      | 0.429    | 0.667      | 0.375    | 0.519    | 0.59     | 0.543429 | -0.25 - 0    |
| Growth speed resource 0.5                | 1.014    | 0.418      | 0.509    | 0.569      | 0.34     | 0.452    | 0.115    | 0.488143 |              |
| 2 eggs per clutch                        | 0.625    | 0.435      | 0.276    | 0.448      | 0.363    | 0.396    | 0.461    | 0.429143 |              |
| Output default                           | 0.76     | 0.422      | 0.436    | 0.572      | 0.294    | 0.247    | 0.114    | 0.406429 |              |
| Carrying capacity resource 3000          | 0.806    | 0.339      | 0.095    | 0.511      | 0.315    | 0.248    | 0.221    | 0.362143 |              |
| Maximum value $t_f = 36\ 000\ \text{s}$  | 0.778    | 0.161      | 0.423    | 0.448      | 0.283    | 0.209    | 0.129    | 0.347286 |              |
| Herbivore and predator move equally fast | 0.996    | 0.481      | 0.252    | 0.374      | 0.27     | 0.072    | -0.017   | 0.346857 |              |
| Maximum value $t_f = 72\ 000\ \text{s}$  | 0.832    | -          | 0.719    | 0.177      | 0.094    | 0.059    | 0.129    | 0.335    |              |
| Growth speed resource 1.5                | 0.879    | 0.256      | 0.116    | 0.311      | 0.31     | 0.161    | 0.037    | 0.295714 |              |
| $d_{\text{per}} = 133.779W + 0.0987$     | 0.812    | -0.09      | 0.294    | 0.271      | 0.273    | 0.146    | 0.061    | 0.252429 |              |
| Maximum value $t_m = 7\ 200\ \text{s}$   | 0.623    | 0.679      | 0.279    | 0.143      | 0.189    | -0.177   | -0.188   | 0.221143 |              |

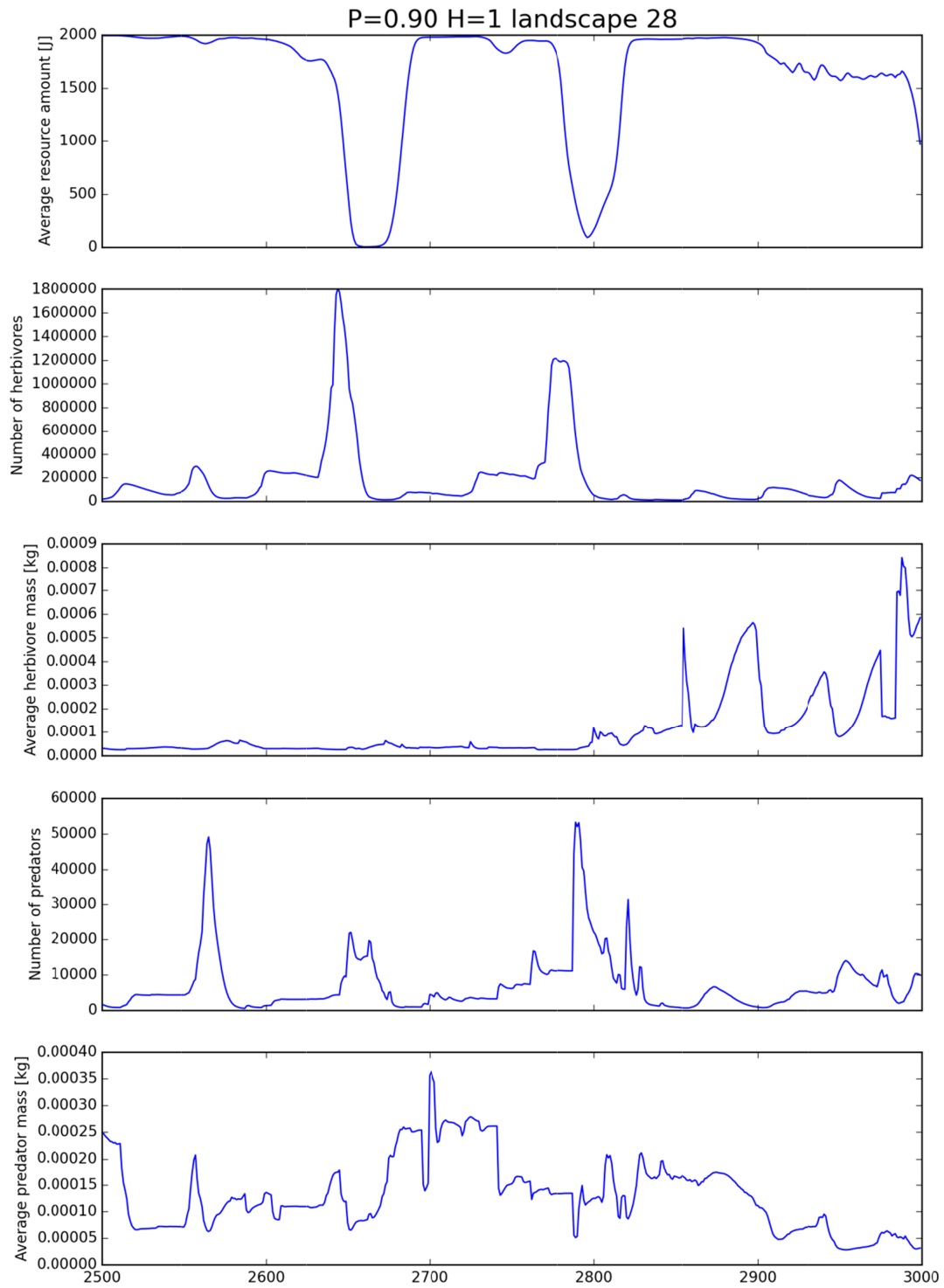


Figure S4.1: An example of temporal dynamics within the predator-herbivore-resource food web.

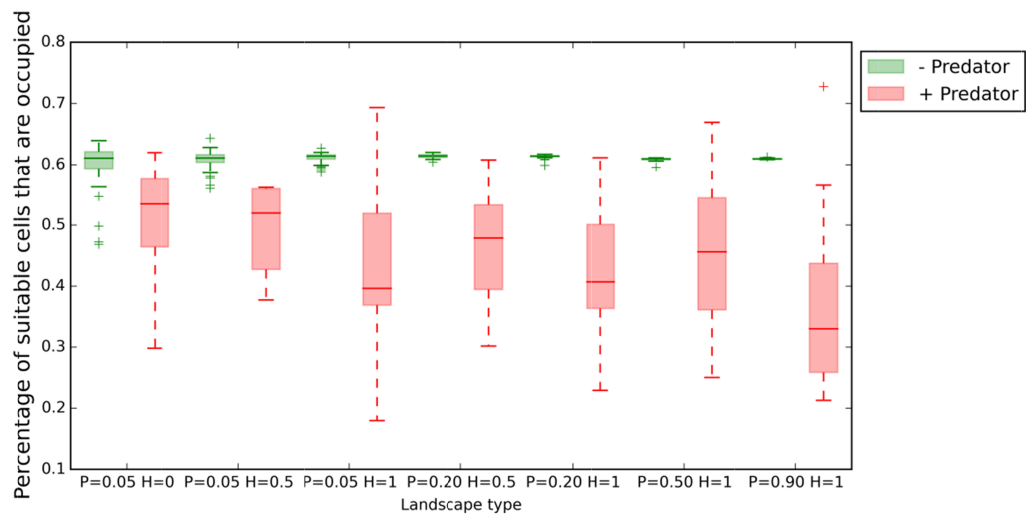


Figure S4.2: The effect of predation on the percentage of suitable cells occupied by the herbivore per landscape type.

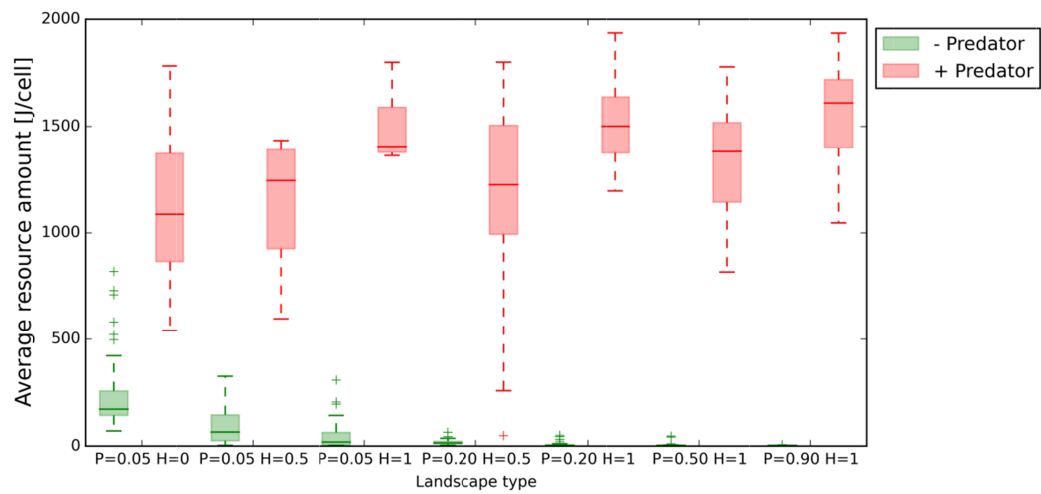


Figure S4.3: The effect of predation on the average amount of resources per cell per landscape type.