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| **PARAMETERS** |
| Parameter | Notation | Description | Value |
| Environment Size |  | The size of the environment measured in cells. | 64x64 |
| Maximum food respawn time |  | The maximum time it takes for a given cell to respawn after its abundance has been brought to zero. There is a uniform chance it will respawn at any time between 0 and the maximum time. | 1000 |
| Food abundance |  | The amount of food in a cell. This is the initial value of all food cells and the value it is set to when it respawns. | 2000 |
| Age of maturity | *maturity* | The age at which agents may reproduce and can senesce. | 4000 |
| Juvenile extrinsic mortality | $$p\_{J}$$ | The extrinsic mortality for agents with an age < maturity, this represents predation and any other causes of death not linked to the nutritional state of the individual. | 10-4 |
| Adult extrinsic mortality | $$p\_{A}$$ | The extrinsic mortality for agents with an age ≥ maturity, this represents predation and any other causes of death not linked to the nutritional state of the individual. | no $p\_{A}= 0$low $p\_{A}=5×10^{-5}$medium$ p\_{A}=10^{-4}$ high $p\_{A}=2×10^{-4}$ |
| Speed | $$s$$ | The distance an agent moves in a single time step in units of cell size. | 0.04 |
| Maximum turning angle | θ | The maximum angle an agent can turn towards its desired food cell. | 0.2 radians |

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| **PARAMETERS (cont.)** |
| Parameter | Notation | Description | Value |
| Noise minimum | $$η\_{min}$$ | The minimum proportion of an agent’s direction which is attributed to noise. This occurs when the agent is far from its intake target. | 0.01 |
| Noise maximum | $$η\_{max}$$ | The maximum proportion of an agent’s direction which is attributed to noise. This occurs when the agent is close to its intake target. | 0.5 |
| Noise distance weighting | $$Κ$$ | The proportionality constant for the relationship between distance from intake target and noise. | 0.25 |
| Nutritional accuracy | $$β$$ | A representation of the accuracy of the agents nutritional decision making | 10 |
| Bite size | $$b$$ | How much of the food an agent eats every eat step should it choose to eat. | 10-3 |
| Metabolic cost | $$\overbar{m}$$ | The amount each agent’s nutritional state decreases by on every iteration. This represents the cost of living. It has a separate value for each nutrient. | (10-4,10-4) |
| Intake target mutability | (X,Y) | The adjustment to intake target between parent and offspring. This is a pair of normally distributed random variables with a mean of 0 and σ of 0.01 |  |
| Longevity trait landscape | $$L\left(\overbar{N}\_{a}\right)$$ | The expected number of iterations before dying with a nutritional state of $\overbar{N}\_{a}$. Equivalent to average reproductive lifespan. Differs between the simple trait landscape and the empirical trait landscape. | Simple: $10^{4}e^{\left(-\left(\frac{\left(x-0\right)^{2}}{2(0.5)^{2}}+\frac{\left(y-1\right)^{2}}{2(0.5)^{2}}\right)\right)}$ Empirical: $10^{4}e^{\left(-\left(\frac{\left(x-0.1\right)^{2}}{2(0.4)^{2}}+\frac{\left(y-1.2\right)^{2}}{2(1)^{2}}\right)\right)}$ |
| Fecundity trait landscape | $$F\left(\overbar{N}\_{a}\right)$$ | The probability of having an offspring at a given time step with a nutritional state of $\overbar{N}\_{a}$. Differs between the simple trait landscape and the empirical trait landscape. | Simple: $10^{-2}e^{\left(-\left(\frac{\left(x-1\right)^{2}}{2\left(0.5\right)^{2}}+\frac{\left(y-0\right)^{2}}{2\left(0.5\right)^{2}}\right)\right)}$Empirical: $5×10^{-3}e^{\left(-\left(\frac{\left(x-1.5\right)^{2}}{2(0.8)^{2}}+\frac{\left(y-1.5\right)^{2}}{2(0.8)^{2}}\right)\right)}$ |