To find each species’ growth rate and carrying capacity, we fit a logistic growth model to each species’ monoculture growth data:

|  |  |
| --- | --- |
| , | (1) |

where is the abundance of species *i*, is the growth rate constant of species *i*, and represents is the carrying capacity of species *i*. To find the parameters and , we used L2 regression. Specifically, we find and to minimize the cost function:

|  |  |
| --- | --- |
|  | (2) |

where is the regularization parameter, is the abundance of species *i* measured at time t, is the abundance of species *i* simulated using equation (1) and parameters and , and . To find a suitable regularization parameter , we took values from the set . The figure below shows the cost for each species as a function of . We picked regularization parameter since it is located at the elbow of the curves below.

