

# Ecosystem Species Population Sheet

Data Produced using the OO-Ecosystem Model

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Summer 2020

Funded by the RAISE program at Pomona College

Each data set is given a code- the number of species involved in the model along with a letter. These codes connect the raw data to their graphical representations. Each data point represents the populations of each species at the beginning of a seven day interval. The length of each list represents the number of weeks for which the model was simulated.

2a

plants overall [600, 242, 243, 242, 242, 242, 241, 241, 243, 242, 242, 243, 243, 242, 242, 243,  
243, 242, 246, 243, 243, 243, 243, 243, 243, 243, 243, 243, 245, 243, 245, 243, 243, 243,  
244, 245, 245, 245, 249, 245, 246, 245, 245, 244, 244, 244, 245, 248, 245, 245, 245, 245, 244,  
245, 244, 244, 248, 245, 245, 245, 246, 245, 246, 244, 244, 244, 246, 246, 247, 247, 245, 245,  
247, 245, 246, 246, 251, 246, 254, 254, 248, 248, 254, 255, 251, 249, 249, 251, 248, 252, 252,  
252, 252, 252, 252, 256, 252, 252, 252, 256, 250, 252, 252, 250, 252, 252, 251, 252, 252, 249,  
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254, 252, 255, 254, 252, 252, 252, 256, 253, 253, 254, 252, 260, 254, 252, 255, 251, 257, 251,  
251, 252, 254, 250, 252, 252, 252, 253, 251, 253, 253, 253, 253, 253, 254, 254, 254, 255, 255,  
255, 255, 255, 255, 255, 255, 256, 255, 255, 255, 256, 256, 256, 256]

[illegible]

Parameters:

Runtime = 200 days

```
my_creatures.append(species(map,80,10,150,20,2,27,3,[],
["P"],5,100,100,100,100,100,100,100,10, True, False, name, 8, False))
yes = habitat(1000,10,20, [True,50,10], 100,100,80,40,20,10)
my_plants.append(plant(6,10,2,6,90,0.5,12,30,8,True))
weather1 = weather(80, 4, 90)
```

2b

plants overall [600, 225, 225, 228, 229, 225, 228, 228, 225, 226, 228, 228, 228, 228, 228, 225, 224, 228, 228, 225, 226, 229, 225, 226, 226, 224, 224, 228, 228, 228, 224, 228, 228, 225, 229, 226, 228, 228, 225, 226, 225, 228, 224, 228, 228, 228, 228, 226, 227, 226, 229, 229, 226, 227,

230, 230, 229, 232, 230, 230, 234, 236, 238, 237, 244, 257, 275, 290, 306, 322, 335, 349, 364,  
375, 388, 397, 409, 416, 427, 434, 447, 454, 464, 472, 480, 486, 494, 499, 507, 512, 520, 526,  
532, 538, 545, 551, 559, 564, 570, 575, 579, 583, 587, 590, 593, 596, 599, 602, 604, 607, 608,  
610, 611, 613, 615, 617, 619, 621, 622, 623, 624, 626, 627, 628, 628, 629, 629, 629, 629, 629,  
630, 630, 631, 631, 632, 632, 633, 634, 635, 635, 636, 637, 638, 639, 640, 640, 641, 642, 642,  
642, 642, 642, 642, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643,  
643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643, 643,  
643, 643, 643, 643, 643, 643, 644, 644, 645, 646, 647, 648, 649, 650]

[illegible]

2c

plants overall [600, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 228, 226, 226, 226, 226,  
226, 226, 226, 226, 226, 226, 226, 226, 225, 226, 226, 226, 226, 226, 228, 226, 226, 226, 226,  
226, 226, 228, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226, 226,  
226, 226, 227, 229, 225, 228, 229, 227, 231, 231, 229, 234, 231, 239, 247, 256, 263, 270, 276,  
281, 287, 293, 300, 307, 314, 321, 327, 335, 340, 346, 352, 358, 365, 370, 377, 381, 386, 390,  
394, 397, 401, 403, 406, 407, 411, 413, 416, 417, 419, 419, 420, 421, 423, 424, 426, 426, 427,  
428, 430, 431, 433, 433, 435, 436, 438, 440, 441, 443, 445, 446, 447, 449, 450, 452, 452, 454,  
456, 457, 459, 461, 463, 464, 466, 466, 467, 469, 471, 472, 474, 475, 476, 476, 477, 478, 479,  
480, 481, 481, 481, 482, 482, 483, 483, 483, 484, 485, 485, 485, 485, 485, 485, 485, 485, 485,  
485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485, 485,  
486, 486, 486, 486, 486, 486, 486, 487, 487, 488, 488, 489, 489, 490]

[illegible]

```
my_creatures.append(species(map,90,0.5,5,2,2,27,3,[], ["P"],5,300,100,100,100,100,100,10,
True, False, name, 8, False))
```

```
yes = habitat(1000,10,20, [True,50,10], 100,100,80,40,20,10)
```

```
weather1 = weather(80, 4, 90)
```

```
my_plants.append(plant(6,10,2,6,90,0.5,12,30,8,True))
```

2d

Same as above

plants overall [600, 395, 409, 424, 435, 446, 454, 465, 472, 481, 488, 497, 503, 510, 516, 524,  
529, 535, 538, 544, 547, 553, 556, 560, 563, 566, 569, 571, 573, 574, 576, 578, 580, 582, 584,  
585, 587, 587, 588, 590, 590, 591, 592, 593, 595, 596, 598, 598, 600, 602, 603, 605, 606, 608,  
610, 611, 612, 613, 613, 614, 615, 615, 616, 616, 616, 617, 618, 618, 619, 620, 620, 621, 621,  
621, 621, 622, 622, 622, 623, 623, 623, 623, 623, 623, 623, 623, 624, 624, 624, 625, 626, 627,  
628, 629, 629, 629, 629, 630, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631,  
631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631,  
631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631, 631,  
632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632,  
632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 632, 633, 633,  
634, 634, 635, 636, 637, 638, 639, 640, 640, 641, 642, 643, 644, 645, 646, 647, 647, 647, 647,  
647, 647, 647, 647, 647, 648, 648, 649, 649, 649, 650, 651, 651, 651, 651]

[illegible] $2e$ 

Changed: `height_eaten = random.randint(plant1.height/5, int(plant1.height))/plant1.height`

### Same parameters

[illegible][illegible]

[illegible]

2f

plants overall [600, 214, 216, 216, 216, 214, 216, 215, 216, 216, 214, 216, 214, 214, 215, 215,  
216, 217, 217, 215, 215, 215, 215, 216, 215, 215, 216, 216, 215, 215, 216, 215, 215, 215, 215,  
216, 215, 215, 215, 216, 215, 216, 217, 215, 215, 217, 215, 217, 217, 215, 217, 215, 215, 215,  
218, 219, 221, 221, 221, 216, 222, 225, 223, 224, 236, 249, 258, 271, 281, 295, 306, 318, 328,  
342, 351, 364, 372, 384, 391, 403, 410, 421, 429, 440, 447, 455, 462, 470, 477, 483, 489, 496,  
501, 506, 510, 514, 518, 523, 527, 532, 537, 543, 547, 552, 556, 560, 564, 567, 571, 573, 576,  
577, 579, 581, 583, 584, 585, 585, 586, 587, 587, 588, 589, 590, 591, 591, 592, 593, 594, 594,  
594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 594, 595,  
595, 596, 597, 598, 599, 600, 600, 601, 602, 602, 602, 603, 603, 604, 605, 605, 605, 605, 606,  
606, 607, 607, 608, 609, 609, 609, 609, 610, 610, 610, 610, 610, 610, 610, 610, 610, 611, 611,  
611, 611, 611, 611, 611, 611, 611, 611, 611, 611, 611, 611, 612, 612, 612]

[illegible] $2g$ 

plants overall [600, 266, 266, 264, 265, 267, 266, 266, 265, 266, 266, 266, 266, 266, 266, 266,  
267, 266, 266, 267, 264, 266, 266, 266, 266, 266, 266, 267, 267, 267, 267, 267, 263, 264, 266,  
266, 267, 263, 266, 267, 266, 266, 266, 266, 264, 264, 267, 266, 265, 266, 268, 266, 267, 266,  
267, 267, 266, 267, 263, 266, 266, 267, 266, 266, 268, 266, 267, 268, 278, 287, 297, 304, 314,  
321, 330, 338, 347, 353, 361, 367, 375, 381, 390, 395, 402, 406, 413, 417, 423, 426, 432, 435,  
441, 444, 450, 453, 458, 460, 464, 468, 472, 476, 480, 484, 488, 491, 495, 498, 502, 504, 508,  
510, 513, 517, 520, 524, 526, 530, 531, 532, 533, 536, 537, 540, 541, 544, 547, 549, 552, 554,  
557, 559, 562, 563, 566, 566, 568, 570, 571, 572, 574, 574, 576, 578, 580, 581, 583, 583, 585,  
587, 587, 588, 589, 589, 589, 589, 589, 589, 589, 589, 590, 592, 592, 592, 594, 596, 597, 598, 600,  
600, 602, 604, 606, 607, 608, 609, 610, 611, 612, 612, 612, 613, 613, 614, 615, 615, 615, 615,  
615, 615, 615, 615, 615, 616, 616, 616, 616, 616, 616, 616, 616, 617]

[illegible]

[illegible]

2h

Range increased to 600. Food needs only 1

plants overall [600, 226, 227, 227, 227, 227, 224, 226, 226, 226, 226, 224, 227, 227, 227, 226, 227, 226, 227, 227, 226, 227, 227, 226, 226, 227, 227, 227, 226, 227, 227, 227, 227, 227, 227, 227, 226, 226, 227, 227, 227, 224, 227, 226, 226, 227, 224, 226, 227, 227, 227, 224, 224, 227, 224, 227, 226, 224, 227, 227, 225, 227, 226, 227, 226, 227, 227, 226, 227, 227, 226, 224, 224, 226, 226, 227, 225, 231, 231, 231, 228, 228, 231, 227, 231, 227, 228, 228, 231, 227, 231, 228, 231, 231, 228, 231, 228, 225, 228, 228, 228, 228, 229, 231, 231, 230, 234, 234, 230, 230, 230, 228, 241, 252, 262, 272, 283, 293, 305, 316, 328, 338, 352, 359, 369, 376, 387, 395, 405, 414, 424, 432, 442, 449, 458, 463, 469, 474, 479, 483, 487, 490, 494, 497, 500, 502, 505, 506, 509, 509, 510, 512, 513, 515, 515, 517, 519, 521, 522, 523, 524, 525, 526, 527, 527, 528, 528, 529, 530, 531, 532, 532, 532, 532, 532, 532, 532, 533, 533, 534, 534, 534, 535, 535, 535, 535, 536, 536, 537, 538, 539, 540, 541, 541, 542, 543, 544, 545, 545, 545, 546, 547, 547]

[illegible]

2i

plants overall [600, 217, 218, 220, 217, 220, 220, 217, 217, 217, 217, 217, 217, 217, 217, 217,  
220, 217, 217, 218, 219, 218, 219, 220, 218, 220, 220, 220, 219, 217, 219, 219, 217, 220, 219,  
216, 217, 217, 220, 220, 219, 216, 216, 220, 217, 217, 218, 219, 217, 217, 217, 220, 219, 217,  
217, 220, 217, 217, 219, 217, 217, 217, 217, 218, 217, 217, 217, 219, 217, 217, 217, 220, 219,  
217, 220, 220, 218, 217, 217, 220, 218, 217, 217, 220, 217, 217, 217, 219, 217, 220, 219, 217,  
217, 217, 217, 216, 218, 221, 218, 217, 218, 218, 218, 218, 219, 228, 235, 242, 250, 258, 267,  
275, 285, 292, 301, 309, 316, 323, 330, 336, 344, 348, 355, 358, 365, 367, 374, 381, 388, 393,  
399, 403, 409, 412, 419, 421, 427, 433, 439, 445, 449, 454, 457, 462, 464, 469, 470, 474, 478,  
481, 484, 487, 489, 491, 492, 494, 495, 495, 496, 497, 498, 498, 498, 498, 499, 499, 499, 500,  
500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500,  
500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500, 500]

animals [60, 58, 31, 30, 283, 30, 30, 30, 30, 29, 29, 29, 29, 29, 29, 27, 26, 26, 26, 26, 26, 26, 26,  
26, 25, 25, 24, 24, 24, 24, 23, 22, 22, 22, 21, 21, 20, 20, 20, 20, 20, 20, 20, 20, 19, 19, 19, 18, 18,  
18, 16, 15, 15, 15, 14, 14, 14, 14, 13, 13, 12, 12, 12, 12, 12, 11, 11, 11, 11, 11, 10, 10, 10, 10, 9,  
9, 9, 9, 8, 8, 8, 8, 7, 6, 6, 6, 5, 4, 4, 3, 3, 2, 2, 2, 2, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,









animals [20, 19, 19, 91, 24, 90, 18, 34, 18, 18, 18, 18, 18, 18, 17, 17, 17, 17, 17, 17, 17,  
17, 17, 17, 17, 17, 17, 17, 17, 17, 17, 17, 17, 16, 16, 16, 16, 16, 16, 16, 16, 16, 16, 15,  
14, 14]

 $2q$ 

plants overall [600, 314, 314, 314, 314, 314, 311, 314, 312, 314, 314, 314, 314, 314, 314, 312, 314, 314, 314, 311, 314, 314, 314, 311, 312, 314, 314, 314, 314, 314, 314, 314, 314, 314, 314, 314, 314, 314, 314, 315, 314, 314, 314, 312, 314, 314, 314, 314, 314, 314, 314, 314, 312, 314, 314, 314, 315, 313, 313, 315, 312, 313, 313, 314, 314, 311, 311, 312, 313, 313, 313, 313, 313, 313, 313, 313, 312, 312, 312, 314, 314, 314, 313, 314, 315, 316, 317, 317, 318, 320, 320, 324, 323, 326, 325, 325, 327, 328, 330, 329, 329, 331, 333, 334, 338, 339, 341, 345, 349, 353, 357, 360, 363, 366, 369, 371, 374, 376, 379, 381, 383, 384, 386, 388, 390, 391, 393, 394, 396, 397, 397, 398, 399, 399, 400, 400, 401, 401, 401, 401, 401]

[illegible] $2r$ 

plants overall [600, 277, 277, 277, 273, 273, 273, 273, 277, 274, 277, 276, 273, 273, 276, 276, 277, 277, 273, 277, 276, 277, 275, 276, 276, 278, 275, 277, 277, 279, 279, 277, 278, 279, 280, 280, 280, 280, 280, 279, 279, 280, 279, 279, 279, 281, 279, 278, 281, 280, 279, 281, 279, 281, 281, 280, 281, 280, 280, 280, 282, 280, 282, 282, 282, 284, 281, 283, 282, 284, 282, 288, 288, 282, 290, 291, 292, 284, 290, 290, 286, 291, 287, 287, 287, 289, 290, 291, 292, 292, 292, 293, 295, 293, 295, 295, 295, 298, 297, 298, 301, 301, 302, 303, 303, 303, 304, 304, 304, 303, 305, 305, 307, 308, 309, 310, 311, 311, 312, 312, 313, 314, 315, 316, 317, 317, 317, 317, 318, 319, 320, 321, 322, 323, 324, 324, 325, 325, 326, 327, 328, 328, 328, 328, 328, 328, 328, 328, 328, 328, 328, 328]

animals [20, 17, 16, 103, 39, 42, 14, 14, 14, 14, 14, 13, 13, 13, 13, 13, 13, 12, 12, 12, 12, 12, 12,  
12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 11, 11, 11, 11, 11, 11, 11, 11, 11, 10, 10, 10,  
10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 9, 9, 9, 9, 9, 9, 9, 8, 8, 8, 8, 8, 8, 7, 7, 7, 7, 6, 5, 4, 4,  
4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 3, 3, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,  
0, 0]

2s

plants overall [600, 255, 256, 255, 255, 255, 255, 254, 255, 255, 258, 255, 256, 255, 255, 255, 258, 255, 254, 254, 254, 255, 256, 255, 255, 258, 255, 254, 255, 254, 257, 255, 257, 255, 256,











200, 201, 202, 202, 200, 202, 200, 200, 202, 200, 200, 202, 200, 200, 200, 202, 200, 202, 200,  
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 203, 204, 203, 201, 201, 204, 204, 206, 205, 207, 208, 208, 205, 205, 206, 206, 207, 208, 205,  
 209, 209, 204, 204, 204, 206, 206, 204, 209, 209, 206, 204, 204, 207, 204, 204, 204, 208, 207,  
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 208, 205, 207, 208, 208, 208, 205, 205, 205, 208, 208, 205, 208, 208, 208, 208, 210, 208, 208,  
 205, 207, 208, 209, 209, 205, 208, 205, 205, 208, 206, 209, 207, 207]

animals [50, 49, 47, 268, 21, 24, 29, 28, 39, 30, 52, 31, 61, 34, 58, 41, 33, 64, 50, 35, 37, 72, 27,  
 35, 31, 69, 22, 58, 28, 42, 25, 52, 33, 29, 60, 43, 46, 50, 29, 47, 45, 53, 47, 57, 39, 91, 62, 30, 50,  
 28, 30, 30, 91, 47, 24, 32, 34, 59, 70, 59, 30, 41, 42, 68, 53, 25, 39, 37, 37, 48, 54, 57, 29, 48, 33,  
 75, 37, 44, 40, 83, 43, 26, 51, 29, 71, 30, 50, 35, 64, 50, 33, 44, 44, 32, 72, 37, 30, 69, 32, 36, 34,  
 81, 36, 44, 34, 56, 44, 49, 41, 101, 44, 37, 29, 86, 28, 27, 25, 25, 27, 38, 44, 81, 68, 26, 48, 45,  
 41, 39, 78, 29, 47, 66, 68, 47, 28, 55, 46, 51, 60, 67, 30, 36, 87, 43, 54, 44, 59, 45, 50, 47, 50, 33,  
 60, 65, 52, 54, 36, 45, 44, 44, 50, 51, 44, 54, 44, 52, 26, 42, 41, 42, 32, 57, 44, 41, 69, 26, 40, 36,  
 67, 62, 52, 37, 27, 31, 55, 43, 48, 44, 61, 61, 68, 27, 50, 66, 47, 29, 29, 47, 31, 67, 46]

Plant seeds 10 not 30

2oo

plants overall [200, 196, 196, 196, 196, 198, 198, 204, 202, 209, 206, 212, 212, 216, 220, 224,  
 223, 229, 232, 234, 236]

animals [50, 49, 49, 351, 16, 16, 16, 16, 16, 16, 16, 16, 16, 16, 16, 16, 15, 15, 15, 15, 13]

2pp

plants overall [200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 200, 201, 200, 204,  
 203, 204, 210, 206, 205]

animals [50, 46, 46, 278, 20, 22, 32, 23, 20, 31, 22, 28, 18, 18, 17, 17, 17, 17, 17, 17, 17]

Fix ^^^

Nvm that was seed distribution

2qq

plants overall [200, 185, 168, 48, 42, 42, 42, 42, 42, 42, 42, 43, 44, 44, 44, 45, 45, 46, 46, 47, 47]

animals [50, 47, 47, 267, 198, 1032, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

No plant replication ^

All the same

2rr

plants overall [200, 187, 175, 47, 46, 46, 46, 47, 47, 48, 49, 50, 51, 51, 51, 51, 52, 52, 52, 52, 52]



plants overall [200, 208, 207, 208, 207, 208, 208, 209, 208, 208, 208, 208, 208, 208, 207, 208, 209, 210, 210, 209, 211, 209, 211, 209, 210, 210, 210, 212, 210, 212, 214, 216, 217, 222, 219, 221, 224, 220, 220, 223, 220, 221, 221, 223, 226, 227, 229, 229, 231, 233, 231, 233, 234, 236, 237, 240, 240, 241, 242, 243, 243, 244, 245, 247, 247, 247, 247, 247, 249, 248, 248, 249, 251, 250, 252, 251, 252, 253, 253, 254, 255, 255, 256, 258, 259, 259, 259, 259, 260, 261, 262, 262, 262, 262, 263, 264, 264, 264, 265, 266, 266, 266, 266, 266, 266, 266, 266, 266, 266, 267, 266, 266,



688, 688, 690, 689, 690, 691, 692, 692, 692, 692, 692, 693, 693, 694, 695, 695, 695, 696, 696, 697,  
698, 699, 700, 701, 701, 702, 702, 702, 703, 704, 704, 704, 705, 705, 705, 705, 705, 705, 705,  
705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705,  
705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705, 705,  
705, 705, 705, 705, 705, 705, 705, 706, 706, 707, 707, 707, 708, 709, 709, 709, 710, 711, 711,  
712, 713, 713, 713, 713, 714, 714, 714, 714, 714, 714, 714, 714, 714]  
animals [10, 10, 10, 53, 31, 70, 75, 14, 35, 23, 28, 23, 53, 19, 23, 22, 34, 22, 35, 20, 19, 19, 19,  
18, 18, 18, 18, 18, 18, 18, 18, 18, 18, 18, 18, 18, 18, 18, 17, 17, 17, 17, 17, 17, 17, 17, 17, 17,  
17, 17, 16, 16, 16, 16, 16, 15, 15, 15, 14, 14, 14, 13, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12,  
12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 11, 11, 11, 10, 9, 9, 8, 8, 8, 8,  
8, 8, 8, 8, 8, 7, 7, 6, 6, 4, 4, 4, 4, 4, 4, 3, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,  
0,  
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

## 2xx

[illegible]

## Range 300

 $2yy$ 

plants overall [600, 598, 598, 598, 597, 598, 596, 597, 596, 597, 596, 598, 596, 597, 597, 598, 599, 599, 602, 600, 598, 602, 602, 600, 600, 601, 603, 603, 603, 607, 605, 609, 608, 611, 611,









rabbits [20, 20, 20, 149, 168, 276, 265, 150, 161, 143, 117, 93, 81, 85, 112, 92, 66, 66, 94, 90, 101]

wolves [10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 26, 42, 42, 41, 40, 40, 40, 40]

### 3B

Fixed bug

plants overall [600, 600, 608, 617, 626, 633, 640, 645, 651, 656, 662, 667, 674, 678, 683, 689, 694, 701, 708, 713, 719]

rabbits [20, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [10, 10, 9, 9, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

### 3C

plants overall [600, 558, 559, 559, 558, 563, 563, 559, 563, 558, 563, 561, 563, 558, 563, 559, 568, 574, 582, 587, 593]

rabbits [100, 96, 44, 427, 394, 70, 63, 57, 50, 57, 50, 74, 63, 43, 21, 5, 0, 0, 0, 0, 0]

wolves [2, 2, 2, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0]

### 3D

plants overall [600, 580, 585, 584, 598, 604, 614, 620, 630, 635, 646, 649, 660, 663, 672, 675, 682, 685, 691, 693, 699]

rabbits [100, 93, 4, 14, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [4, 4, 4, 4, 4, 4, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

### 3E

plants overall [600, 585, 587, 594, 601, 609, 617, 625, 632, 640, 648, 655, 661, 667, 674, 679, 686, 690, 698, 702, 711]

rabbits [100, 84, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [8, 8, 8, 8, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

### 3F

plants overall [600, 581, 582, 585, 585, 581, 581, 584, 585, 585, 582, 586, 586, 591, 605, 619, 631, 642, 654, 667, 677]

rabbits [100, 94, 27, 215, 198, 112, 90, 152, 129, 76, 37, 64, 13, 8, 0, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 8, 21, 19, 0, 0, 0, 0, 0]

### 3G

plants overall [800, 775, 772, 779, 776, 777, 790, 792, 793, 792, 777, 774, 779, 779, 787, 794, 802, 808, 815, 830, 836]

rabbits [100, 94, 21, 182, 163, 203, 187, 79, 55, 112, 95, 70, 50, 57, 41, 34, 46, 47, 41, 42, 36]



wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 14, 14, 10, 6, 8, 10, 12]

#### PARAMETERS

```
rabbits = create_creatures(100, map, 90, 0.5, 5, 2, 2, 15, 3, [],
[["P", 0]], 37, 100, 100, 100, 100, 100, 100, 100, 3, True, False, "rabbit", 8, False) # making 20
creatures using the map #FIXME make this easier to set up different creatures
wolves = create_creatures(3, map, 70, 2, 100, 8, 2, 90, 90, [], [["rabbit", 30]],
34, 500, 100, 100, 100, 0, 90, 10, 5, False, True, "wolf", 5, False)
```

#### 3H

plants overall [600, 580, 580, 580, 581, 580, 581, 581, 581, 581, 581, 580, 579, 580, 581, 581, 581, 582, 584, 592, 600, 606]

rabbits [100, 95, 26, 145, 132, 167, 152, 79, 45, 169, 151, 100, 79, 148, 117, 98, 15, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 8, 8, 18, 18, 18, 14, 0]

#### 3I

plants overall [600, 578, 580, 580, 580, 580, 577, 580, 577, 577, 583, 592, 605, 614, 624, 634, 643, 653, 662, 672, 680]

rabbits [100, 94, 18, 174, 151, 148, 129, 153, 137, 35, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 0, 0, 0, 0, 0, 0, 0, 0]

#### 3J

plants overall [600, 579, 580, 579, 579, 579, 579, 580, 579, 580, 580, 579, 578, 579, 589, 598, 607, 614, 624, 632, 642]

rabbits [100, 94, 18, 108, 90, 115, 102, 71, 34, 103, 73, 76, 28, 0, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 20, 19, 7, 0, 0, 0, 0]

#### 3K

plants overall [600, 582, 582, 582, 582, 582, 582, 582, 583, 586, 582, 582, 586, 587, 594, 600, 607, 611, 618, 621, 627]

rabbits [100, 92, 14, 81, 72, 90, 69, 171, 158, 65, 39, 50, 3, 5, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 6, 11, 8, 0, 0, 0, 0]

#### 3K

plants overall [800, 772, 772, 777, 776, 777, 777, 772, 773, 772, 777, 774, 779, 779, 787, 794, 802, 808, 815, 820, 826]

rabbits [100, 93, 21, 186, 169, 203, 187, 70, 50, 112, 95, 54, 17, 16, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 14, 14, 0, 0, 0, 0]

## 3L

plants overall [800, 784, 786, 786, 786, 786, 786, 786, 786, 786, 784, 786, 786, 786, 795, 803, 813, 819, 829, 836, 847]

rabbits [100, 95, 39, 312, 297, 119, 109, 100, 83, 81, 70, 106, 85, 16, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 8, 7, 6, 0, 0, 0, 0]

## 3M

plants overall [800, 781, 781, 779, 782, 779, 781, 779, 781, 781, 779, 779, 781, 781, 779, 781, 781, 779, 781, 780, 787]

rabbits [100, 92, 38, 357, 338, 126, 114, 139, 130, 85, 73, 149, 140, 127, 97, 87, 64, 183, 163, 6, 0]

wolves [3, 3, 2, 2, 2, 2, 2, 2, 2, 2, 1, 1, 1, 1, 4, 4, 4, 4, 4, 4]

## 3N

plants overall [800, 781, 781, 781, 783, 780, 781, 781, 782, 781, 781, 784, 782, 781, 783, 788, 795, 800, 807, 811, 817]

rabbits [100, 95, 28, 242, 231, 126, 115, 71, 43, 122, 100, 156, 147, 57, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 13, 17, 17, 7, 0, 0, 0]

## 3O

plants overall [800, 769, 769, 769, 773, 769, 769, 769, 770, 771, 776, 782, 789, 796, 802, 809, 814, 820, 824, 828, 832]

rabbits [100, 96, 35, 299, 278, 147, 132, 63, 36, 16, 1, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 0, 0, 0, 0, 0, 0, 0]

## 3P

Survival rate rabbits 70

plants overall [800, 780, 783, 779, 780, 780, 782, 780, 780, 780, 780, 780, 780, 780, 784, 790, 799, 803, 812, 815, 823]

rabbits [100, 94, 32, 279, 265, 115, 99, 137, 119, 128, 111, 149, 136, 58, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 14, 14, 11, 5, 0, 0, 0]

## 3Q

plants overall [800, 771, 771, 771, 771, 769, 771, 769, 771, 769, 769, 769, 769, 768, 772, 777, 785, 791, 797, 803, 808]

rabbits [100, 96, 35, 249, 234, 127, 113, 103, 92, 124, 112, 113, 98, 59, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 5, 5, 4, 1, 0, 0, 0]

## 3R

Range is the same = 200

plants overall [800, 775, 775, 775, 775, 777, 775, 775, 775, 775, 777, 775, 775, 775, 785, 794, 805, 811, 821, 825, 833]

rabbits [100, 96, 35, 290, 271, 262, 253, 121, 103, 104, 84, 165, 138, 10, 0, 0, 0, 0, 0, 0]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 12, 16, 7, 0, 0, 0, 0, 0]

3S

plants overall [800, 776, 776, 776, 776, 776, 776, 777, 776, 776, 780, 777, 777, 776, 776, 778, 781, 781, 782, 785, 780]

rabbits [100, 96, 61, 537, 505, 107, 95, 54, 29, 42, 26, 108, 74, 223, 178, 54, 28, 31, 18, 75, 73]

wolves [3, 3, 2, 2, 2, 2, 2, 2, 2, 2, 1, 1, 1, 1, 3, 3, 3, 2, 1, 0, 0]

3T

plants overall [800, 773, 773, 774, 773, 775, 774, 775, 774, 774, 775, 774, 774, 774, 774, 774, 774, 775, 773, 780]

rabbits [100, 96, 39, 288, 258, 237, 226, 112, 89, 141, 125, 135, 116, 140, 117, 113, 72, 70, 21, 43, 25]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 4, 4, 4, 4, 4, 3, 2]

3U

plants overall [800, 785, 784, 784, 784, 786, 784, 782, 784, 785, 784, 784, 785, 783, 786, 784, 785, 784, 784, 784, 785, 785, 788, 788, 793, 791, 788, 791, 792, 788, 791, 788, 789, 792, 792, 792, 789, 792, 789, 791, 789]

rabbits [100, 95, 63, 545, 506, 103, 86, 107, 80, 120, 93, 138, 122, 63, 32, 54, 18, 67, 30, 106, 54, 37, 16, 46, 45, 222, 217, 181, 169, 123, 116, 67, 67, 67, 66, 65, 63, 63, 62, 61, 59]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 6, 6, 6, 6, 6, 6, 4, 1, 0]

3V

plants overall [800, 776, 779, 776, 779, 779, 776, 776, 777, 779, 776, 779, 776, 776, 776, 779, 786, 790, 790, 791, 791, 792, 796, 791, 792, 791, 796, 796, 792, 796, 797, 796, 791, 792, 792, 793, 792, 797, 792, 793, 794]

rabbits [100, 94, 58, 521, 487, 124, 101, 52, 31, 59, 48, 114, 89, 67, 23, 21, 11, 27, 25, 76, 74, 218, 207, 73, 70, 101, 101, 65, 65, 63, 60, 60, 58, 58, 56, 55, 54, 54, 54, 54, 54]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 2, 2, 2, 2, 2, 12, 9, 4, 3, 0]

3W

plants overall [800, 776, 778, 778, 778, 778, 778, 778, 782, 778, 778, 778, 778, 780, 778, 780, 779, 778, 779, 779, 778, 778, 778, 778, 779, 778, 778, 779, 780, 779, 778, 778, 779, 779, 778, 778, 780, 781, 781, 781, 781]

rabbits [100, 95, 50, 438, 416, 103, 95, 59, 37, 105, 81, 140, 116, 93, 52, 93, 92, 163, 154, 108, 105, 74, 73, 106, 101, 133, 130, 77, 74, 122, 120, 68, 65, 64, 64, 63, 63, 62, 60, 60, 58]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 2, 2, 2, 2, 2, 2, 0]

### 3X

plants overall [800, 782, 778, 778, 778, 779, 778, 780, 778, 778, 778, 783, 782, 783, 778, 782, 787, 790, 793, 793, 793, 793, 794, 793, 793, 793, 794, 793, 793, 793, 794, 793, 794, 793, 795, 793, 793, 793, 796, 793, 793]

rabbits [100, 96, 62, 548, 523, 101, 82, 75, 61, 158, 143, 154, 124, 96, 13, 7, 7, 34, 34, 151, 148, 241, 232, 102, 95, 91, 88, 102, 99, 69, 69, 68, 68, 67, 66, 66, 66, 66, 65, 64, 63]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 13, 13, 2, 0]

### 3Y

plants overall [800, 775, 775, 775, 775, 775, 775, 778, 775, 775, 778, 779, 779, 776, 776, 779, 776, 776, 779, 777, 779, 776, 778, 778, 776, 776, 776, 777, 776, 776, 777, 776, 776, 776, 778, 776, 777, 776, 776, 779, 779]

rabbits [100, 96, 61, 587, 559, 143, 127, 86, 55, 43, 36, 101, 99, 241, 235, 104, 99, 73, 73, 82, 81, 76, 73, 81, 81, 83, 80, 90, 89, 77, 76, 86, 85, 93, 89, 83, 80, 96, 92, 87, 82]

wolves [3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 2, 0]

### 3Z

plants overall [800, 781, 783, 782, 781, 781, 781, 782, 781, 781, 781, 781, 781, 781, 782, 783, 784, 795, 805, 819, 830, 847, 856, 870, 877, 892, 898, 913, 920, 931, 939, 951, 957, 971, 977, 992, 998, 1012, 1017, 1034, 1039, 1052]

rabbits [100, 91, 46, 423, 393, 87, 71, 156, 131, 140, 125, 76, 47, 59, 12, 2, 0]

wolves [4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 14, 14, 21, 17, 4, 0]

### 3AA







plants overall [900, 801, 799, 801, 806, 814, 816, 823, 823, 826, 830, 832, 834, 836, 835, 839, 839, 844, 840, 840, 840]

rabbits [130, 109, 10, 5, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [15, 15, 15, 15, 13, 5, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

mouse [100, 78, 15, 4, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

deer [25, 25, 12, 7, 5, 5, 5, 5, 5, 14, 14, 14, 14, 14, 14, 14, 14, 23, 28, 28, 27]

## 5B

plants overall [900, 818, 817, 818, 826, 832, 845, 853, 864, 869, 883, 889, 903, 910, 923, 928, 940, 943, 957, 960, 971]

rabbits [130, 112, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [15, 15, 15, 15, 9, 6, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

mouse [100, 81, 5, 6, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1]

deer [25, 23, 15, 7, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2]

## 5C

plants overall [900, 813, 812, 812, 816, 825, 831, 837, 841, 846, 850, 856, 855, 859, 860, 867, 868, 876, 872, 874, 873]

rabbits [130, 112, 7, 2, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [15, 15, 15, 15, 11, 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

mouse [100, 89, 6, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

deer [25, 24, 13, 7, 4, 4, 4, 4, 4, 11, 11, 11, 11, 11, 11, 11, 11, 17, 26, 26, 26]

## 5D

plants overall [1000, 816, 816, 819, 820, 827, 835, 845, 851, 862, 867, 877, 880, 888, 891, 900, 902, 910, 918, 926, 932]

rabbits [190, 168, 36, 85, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [15, 15, 15, 15, 15, 12, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

mouse [150, 132, 32, 26, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

deer [50, 50, 35, 21, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

## 5E

plants overall [1000, 822, 820, 820, 820, 828, 835, 843, 848, 854, 857, 863, 865, 869, 874, 878, 882, 886, 890, 894, 898]

rabbits [190, 174, 47, 227, 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

wolves [15, 15, 14, 14, 14, 13, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

mouse [150, 134, 41, 95, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 4, 6, 19, 19]

deer [50, 48, 33, 20, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]



5F

plants [1500, 1334, 1334, 1333, 1329, 1334, 1334, 1333, 1321, 1311, 1311, 1311, 780, 618, 598, 625, 624, 679, 416, 397, 418, 810, 997, 1120, 1124, 1376, 1475, 1497, 1870, 1909, 2102, 2186, 2198, 2309, 2309, 2307, 2311, 2311, 2312, 2311, 2290, 2206, 2198, 2180, 2143, 2068, 1780, 1792, 1839, 1853]

rabbits [190, 183, 134, 1050, 203, 219, 208, 997, 827, 834, 854, 820, 809, 768, 762, 601, 578, 528, 527, 320, 310, 318, 330, 339, 409, 398, 387, 367, 369, 365, 354, 359, 357, 351, 349, 351, 351, 427, 439, 439, 508, 508, 508, 587, 601, 629, 678, 587, 520 ]

wolves [6, 6, 5, 5, 5, 5, 8, 8, 6, 5, 5, 5, 9, 12, 12, 12, 11, 10, 14, 19, 22, 8, 7, 6, 6, 6, 12, 13, 12, 10, 14, 14, 14, 14, 12, 12, 12, 12, 12, 15, 18, 22, 26, 24, 20, 20, 20, 16, 10, 8,]

mouse [150, 146, 110, 946, 180, 379, 336, 3422, 3428, 2879, 2688, 1860, 1276, 1349, 1318, 1298, 1286, 1065, 986, 759, 756, 712, 870, 945, 963, 972, 1031, 801, 789, 713, 735, 809, 834, 845, 846, 849, 908, 918, 932, 983, 1013, 1298, 1650, 1428, 1098, 998, 719, 989, 1235, 1298]

deer [50, 50, 43, 38, 12, 9, 9, 12, 14, 14, 14, 12, 11, 7, 13, 11, 8, 7, 6, 6, 6, 6, 8, 8, 7, 7, 6, 14, 16, 12, 14, 26, 28, 30, 30, 29, 32, 34, 31, 42, 43, 42, 42, 30, 24, 12, 3, 3, 3, 4]