Name: Kennex Lam

Oxyrrhis Marina
Dunaliella Tertiolecta

Purpose: The reason a predator/prey model for Oxyrrhis marina and Dunaliella tertiolecta is being viewed in ASP-8A rather than F2 media (the media GSU iGEM decided to grow O. marina in) is because the team noticed than D. tertiolecta will begin to overgrow in ASP-8A media alongside the O. marina and eventually outcompete O. marina in the culture. This observation was made from June through August when the different types of media were being tested. The goal is to examine how much to feed the predator (O. marina) until the prey (D. tertiolecta) begins to overgrow.

Methods: Five 75 mL Oxyrrhis marina cultures were prepared in order to view the predator-prey relationship between Oxyrrhis marina and Dunaliella tertiolecta. Each culture was grown in ASP-8A media including the stock for D. tertiolecta. The 5 O. marina cultures varied based on the amount of D. tertiolecta they were fed. (The numbers above each box represent the amount of tertiolecta that was added into a culture in milliliters.)

These cultures were started on 9/6 and the stock concentration is provided. Moving forward, the stock concentrations recorded will be the concentrations on the specific day the entry was made.

Date: 9/10/19

0.25

0		0
	0	
0		0

0.50

0 1		0 3
	0 7	

The O. marina were fed today.

No algae was seen when examining culture 0.25. Based on the concentrations of both algae, it appears that if O. marina is fed more D. tertiolecta, its population increases.

Average # of cells per square = 0/5 = 0

Concentration of cells per mL = 0(10^4) = 0

Average # of O.M. cells per square = 5/5 = 1

Concentration of O.M. cells per mL = 1(10^4) = 10,000

Average # of D.T. cells per square = 21/5 = 4.2

Concentration of D.T. cells per mL = 4.2(10^4) = 42,000

2 6		3 4

1.0

1 11		2 26
	2 10	
0 30		1 22

Average # of O.M. cells per square = 6/5 = 1.2

Concentration of O.M. cells per mL = 1.2(10^4) = 12,000

Average # of D.T. cells per square = 99/5 = 19.8

Concentration of D.T. cells per mL = 19.8(10^4) = 198,000

1.5

0 13		1 4
	4 0	
3 11		2 9

Average # of O.M. cells per square = 10/5 = 2

Concentration of O.M. cells per mL = 2(10^4) = 20,000

Average # of D.T. cells per square = 37/5 = 7.4

Concentration of D.T. cells per mL = 7.4(10^4) = 74,000

2.0

1 9		5 18
	7 17	
5 18		8 22

Average # of O.M. cells per square = 26/5 = 5.2

Concentration of O.M. cells per mL = 5.2(10^4) = 52,000

Average # of D.T. cells per square = 84/5 = 16.8

Concentration of D.T. cells per mL = 16.8(10^4) = 168,000

Stock O. Marina

1		1
	3	
2		2

Average # of O.M. cells per square = 11/5 = 2.2

Concentration of O.M. cells per mL = 2.2(10^4) = 22,000

Stock D. Tertiolecta

68		80

Average # of D.T. cells per square = 396/5 = 79.2

	91	
56		101

Concentration of D.T. cells per mL = 79.2(10^4) = 792,000

Date: 9/13/19

0.25

1		0
	0	
0		0

Algae were fed.

Average # of O.M. cells per square = ⅕ = 0.2

Concentration of O.M. cells per mL = 0.2(10^4) = 2000

Average # of D.T. cells per square = 0

Concentration of D.T. cells per mL = 0

0.50

0 11		0 10
	0 8	
2 9		2 5

Average # of O.M. cells per square = ⅘ =0.8

Concentration of O.M. cells per mL = 0.8(10^4) = 8000

Average # of D.T. cells per square = 43/5 = 8.6

Concentration of D.T. cells per mL = 8.6(10^4) = 86,000

1.0

0 30		6 6
	2 27	
3 36		0 24

Average # of O.M. cells per square = 11/5 = 2.2

Concentration of O.M. cells per mL = 2.2(10^4) = 22,000

Average # of D.T. cells per square = 123/5 = 24.6

Concentration of D.T. cells per mL = 24.6(10^4) = 246,000

1.5

1 28		2 42
	7	

Average # of O.M. cells per square = 11/5 = 2.2

Concentration of O.M. cells per mL = 2.2(10^4) = 22,000

Average # of D.T. cells per square = 113/5 = 22.6

	8	
0 14		2 21

Concentration of D.T. cells per mL = 22.6(10^4) = 226,000

Average # of O.M. cells per square = 21/5 = 4.2

Concentration of O.M. cells per mL = 4.2(10^4) = 42,000

Average # of D.T. cells per square = 283/5 = 56.6

Concentration of D.T. cells per mL = 56.6(10^4) = 566,000

2.0

8 58		4 73
	5 29	
4 33		0 90

Stock O. marina

5		3
	1	
3		0

Average # of O.M. cells per square = 11/5 = 2.2

Concentration of O.M. cells per mL = 2.2(10^4) = 22,000

Stock D. tertiolecta

122		120
	96	
71		104

Average # of D.T. cells per square = 513/5 = 102.6

Concentration of D.T. cells per mL = 102.6(10^4) = 1,026,000

Date: 9/18/19

Algae was fed. After today, the algae will not longer be fed Dunaliella tertiolecta because there has already been overgrowth and of Dunaliella since 9/13.

0.25

1 1		0 0
	2 0	

Average # of O.M. cells per square = 5/5=1

Concentration of O.M. cells per mL = 1(10^4)=10,000

Average # of D.T. cells per square = 2/5=0.4

Concentration of D.T. cells per mL = 0.4(10^4)=4,000

0 0		2 1

0.50

0 33		4 36
	4 38	
1 30		2 29

Average # of O.M. cells per square = 11/5 = 2.2

Concentration of O.M. cells per mL = 2.2(10^4) = 22,000

Average # of D.T. cells per square = 166/5 = 33.2

Concentration of D.T. cells per mL = 33.2(10^4) = 332,000

1.0

4 27		1 32
	3 41	
2 43		0 44

Average # of O.M. cells per square = 16/5 = 3.2

Concentration of O.M. cells per mL = 3.2(10^4) = 32,000

Average # of D.T. cells per square = 187/5 = 37.4

Concentration of D.T. cells per mL = 37.4(10^4) = 374,000

1.5

3 177		8 162
	4 111	
2 202		6 303

Average # of O.M. cells per square = 23/5 = 4.6

Concentration of O.M. cells per mL = 4.6(10^4) = 46,000

Average # of D.T. cells per square = 955/5 = 191

Concentration of D.T. cells per mL = 191(10^4) = 1,910,000

2.0

4 314		8 213
	6 429	
7 176		4 197

Average # of O.M. cells per square = 29/5 = 5.8

Concentration of O.M. cells per mL = 5.8(10^4) = 58,000

Average # of D.T. cells per square = 1329/5 = 265.8

Concentration of D.T. cells per mL = 2,658,000

Stock O. marina

Average # of O.M. cells per square = 13/5 = 2.6

3		2
	4	
0		4

Concentration of O.M. cells per mL = 2.6(10^4) = 26,000

Stock D. tertiolecta

105		172
	113	
233		378

Average # of D.T. cells per square = 1001/5 = 200.2

Concentration of D.T. cells per mL = 200.2(10^4) = 2,002,000

9/20/19

0.25

0 8		1 11
	0 26	
3 15		2 15

Average # of O.M. cells per square = 6/5 = 1.2

Concentration of O.M. cells per mL = 1.2(10^4) = 12,000

Average # of D.T. cells per square = 75/5 = 15

Concentration of D.T. cells per mL = 150,000

0.5

0 11		1 14
	0 7	
2 23		2 20

Average # of O.M. cells per square = 5/5 = 1

Concentration of O.M. cells per mL = 1(10^4) = 10,000

Average # of D.T. cells per square = 75/5 = 15

Concentration of D.T. cells per mL = 150,000

1.0

2 97		3 78
	3 58	

Average # of O.M. cells per square = 9/5 = 1.8

Concentration of O.M. cells per mL = 18,000

Average # of D.T. cells per square = 370/5 = 74

1 73		0 64

Concentration of D.T. cells per mL = 740,000

1.5

0 132		2 240
	2 212	
5 193		2 245

Average # of O.M. cells per square = 11/5 = 2.2

Concentration of O.M. cells per mL = 2.2(10^4) = 22,000

Average # of D.T. cells per square = 1022/5 = 204.4

Concentration of D.T. cells per mL = 204.4(10^4) = 2,044,000

2.0

3 422		6 257
	7 379	
4 303		9 402

Average # of O.M. cells per square = 29/5 = 5.8

Concentration of O.M. cells per mL = 58,000

Average # of D.T. cells per square = 1763/5 = 352.6

Concentration of D.T. cells per mL = 352.6(10^4) = 3,526,000

Stock O. marina

3		5
	6	
3		1

Average # of O.M. cells per square = 18/5 = 3.6

Concentration of O.M. cells per mL = 3.6(10^4) = 36,000

Average # of D.T. cells per square = 1295/5 = 259

Concentration of D.T. cells per mL = 259(10^4) = 2,590,000

Stock D.tertiolecta

277		302
	513	
162		187

Date: 9/25/19

0.25

2 143		1 87
	2 93	
1 221		1 166

Average # of O.M. cells per square = 7/5 = 1.4

Concentration of O.M. cells per mL = 1.4(10^4) = 14,000

Average # of D.T. cells per square = 710/5 = 142

Concentration of D.T. cells per mL = 142(10^4) = 1,420,000

0.5

3 35		4 57
	1 32	
0 48		1 25

Average # of O.M. cells per square = 9/5 = 1.8

Concentration of O.M. cells per mL = 1.8(10^4) = 18,000

Average # of D.T. cells per square = 197/5 = 39.4

Concentration of D.T. cells per mL = 39.4(10^4) = 394,000

1.0

6 48		8 80
	11 52	
8 57		11 103

Average # of O.M. cells per square = 34/5 = 6.8

Concentration of O.M. cells per mL = 6.8(10^4) = 68,000

Average # of D.T. cells per square = 304/5 = 68

Concentration of D.T. cells per mL = 68(10^4) = 680,000

1.5

3 702		3 681
	7 950	
8 713		2 602

Average # of O.M. cells per square = 23/5 = 4.6

Concentration of O.M. cells per mL = 4.6(10^4) = 46,000

Average # of D.T. cells per square = 3648/5 = 729.6

Concentration of D.T. cells per mL = 729.6(10^4) = 7,296,000

2.0

12 676		6 492
	4 1018	
9 711		8 684

Stock O. marina

3		2
	2	
1		2

Stock D. tertiolecta

939		875
	834	
617		934

Average # of O.M. cells per square = 39/5 = 7.8

Concentration of O.M. cells per mL = 78,000

Average # of D.T. cells per square = 3581/5 = 716.2

Concentration of D.T. cells per mL = 716.2(10^4) = 7,162,000

Average # of O.M. cells per square = 10/5 = 2

Concentration of O.M. cells per mL = 2(10^4) = 20,000

Average # of D.T. cells per square = 4199/5 = 839.8

Concentration of D.T. cells per mL = 839.8(10^4) = 8,398,000

Date: 9/26/19

0.25

0 8		2 6
	1 5	
0 15		2 7

0.50

2 59		2 73

Average # of O.M. cells per square = 5/5 = 1

Concentration of O.M. cells per mL = 1(10^4) = 10,000

Average # of D.T. cells per square = 41/5 = 8.2

Concentration of D.T. cells per mL = 8.2(10^4) = 82,000

Average # of O.M. cells per square = 7/5 = 1.4

Concentration of O.M. cells per mL = 1.4(10^4) = 14,000

	1 78	
2 58		0 61

Average # of D.T. cells per square = 329/5 = 65.8

Concentration of D.T. cells per mL = 65.8(10^4) = 658,000

1.0

1 57		6 54
	5 40	
6 81		1 52

Average # of O.M. cells per square = 19/5 = 3.8

Concentration of O.M. cells per mL = 3.8(10^4) = 38,000

Average # of D.T. cells per square = 284/5 = 56.8

Concentration of D.T. cells per mL = 56.8(10^4) = 568,000

1.5

3 652		3 309
	2 1467	
1 682		1 702

Average # of O.M. cells per square = 10/5 = 2

Concentration of O.M. cells per mL = 2(10^4) = 20,000

Average # of D.T. cells per square = 3812/5 = 762.4

Concentration of D.T. cells per mL = 762.4(10^4) = 7,624,000

2.0

3 773		5 736
	5 1095	
4 824		7 118 1

Average # of O.M. cells per square = 24/5 = 4.8

Concentration of O.M. cells per mL = 4.8(10^4) = 48,000

Average # of D.T. cells per square = 4609/5 = 921.8

Concentration of D.T. cells per mL = 921.8(10^4) = 9,218,000

Stock O. marina

3		3
	2	
0		5

Average # of O.M. cells per square = 13/5 = 2.6

Concentration of O.M. cells per mL = 2.6(10^4) = 26,000

Stock D. tertiolecta

869		840
	957	
1091		1003

Average # of D.T. cells per square = 4760/5 = 952

Concentration of D.T. cells per mL = 952(10^4) = 9,520,000

Date: 10/4/19

0.25

0 92		0 182
	1 101	
1 97		2 122

Average # of O.M. cells per square = ⅘ = 0.8

Concentration of O.M. cells per mL = .8(10^4) = 8000

Average # of D.T. cells per square = 594/5 = 118.8

Concentration of D.T. cells per mL = 118.8(10^4) = 1,180,000

0.50

1 262		3 371
	1 366	
2 175		3 356

Average # of O.M. cells per square = 10/5 = 2

Concentration of O.M. cells per mL = 2(10^4) = 20,000

Average # of D.T. cells per square = 1530/5 = 306

Concentration of D.T. cells per mL = 306(10^4) = 3,060,000

1.0

5 1408		1 1497
	4 1308	
8 1053		1 1210

Average # of O.M. cells per square = 19/5 = 3.8

Concentration of O.M. cells per mL = 3.8(10^4) = 38,000

Average # of D.T. cells per square = 6,476/5 = 1,295.2

Concentration of D.T. cells per mL = 1,295.2(10^4) = 12,952,000

1.5

3 1343		4 1462
	5 1422	
4 989		8 938

Average # of O.M. cells per square = 24/5 = 4.8

Concentration of O.M. cells per mL = 4.8(10^4) = 48,000

Average # of D.T. cells per square = 6154/5 = 1230.8

Concentration of D.T. cells per mL = 12,308,000

2.0

6 1006		4 1271
	3 1352	
7 1185		4 1439

Average # of O.M. cells per square = 24/5 = 4.8

Concentration of O.M. cells per mL = 4.8(10^4) = 48,000

Average # of D.T. cells per square = 6253/5 = 1250.6

Concentration of D.T. cells per mL = 1250.6(10^4) = 12,506,000

Stock O. marina

6		2
	4	
2		1

Average # of O.M. cells per square = 15/5 = 3

Concentration of O.M. cells per mL = 3(10^4) = 30,000

Stock D. tertiolecta

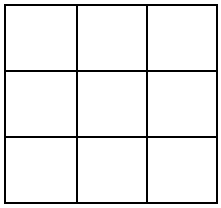
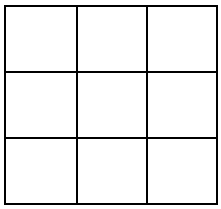
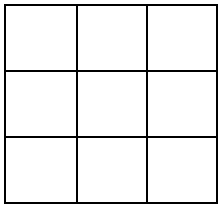
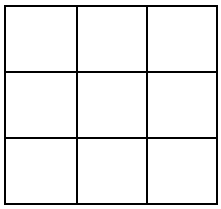
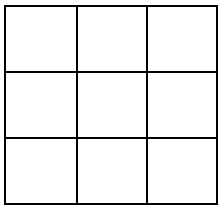
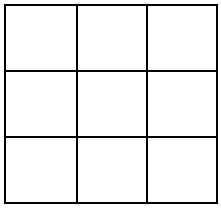
1537		1223
	1046	
1188		1350

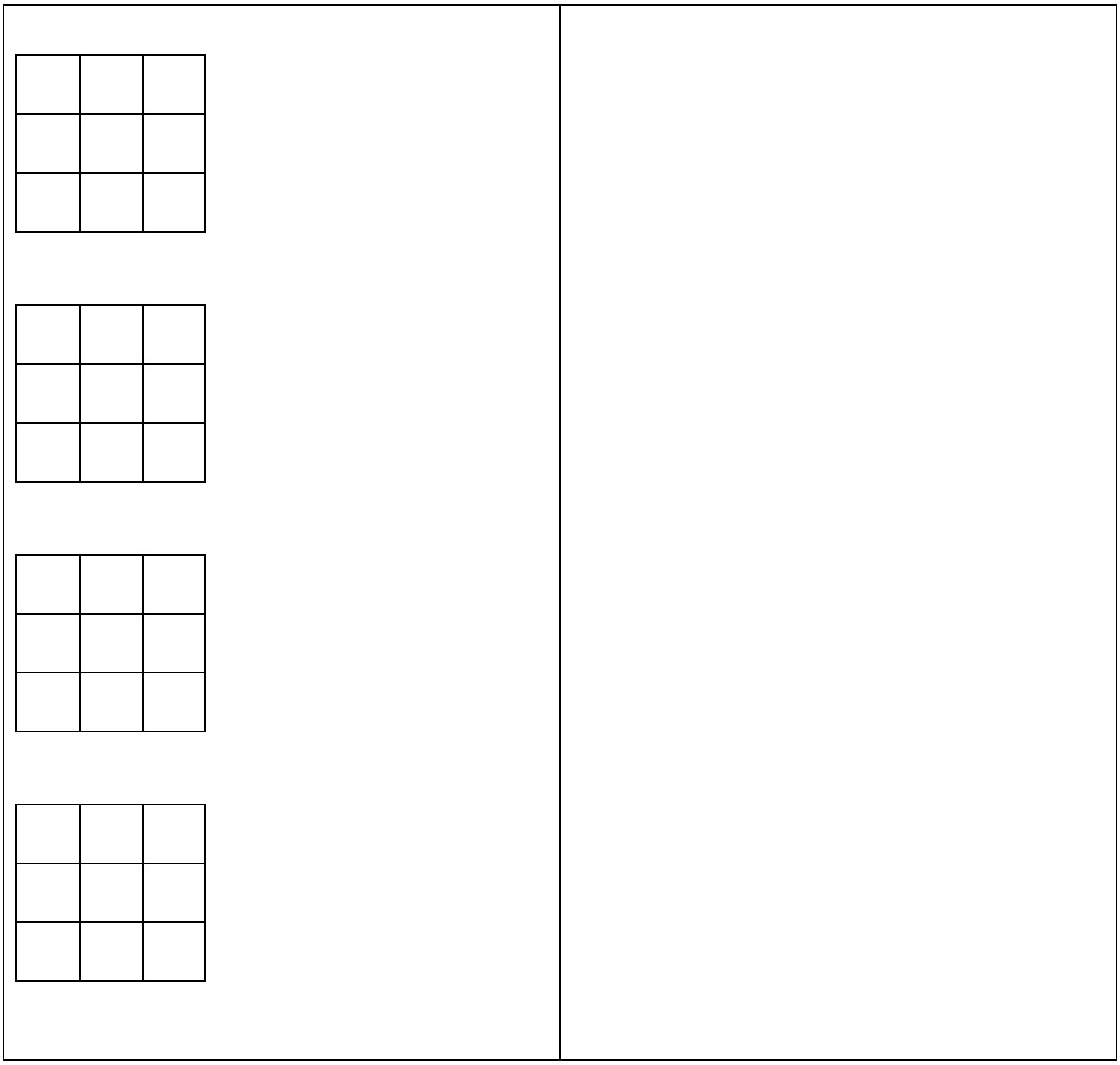
Average # of D.T. cells per square = 6344/5 = 1268.8

Concentration of D.T. cells per mL = 1268.8(10^4) = 12,688,000

Extra

	Average # of O.M. cells per square = Concentration of O.M. cells per mL = Average # of D.T. cells per square = Concentration of D.T. cells per mL = Average # of O.M. cells per square = Concentration of O.M. cells per mL = Average # of D.T. cells per square = Concentration of D.T. cells per mL = Average # of O.M. cells per square = Concentration of O.M. cells per mL = Average # of D.T. cells per square = Concentration of D.T. cells per mL = Average # of O.M. cells per square = Concentration of O.M. cells per mL = Average # of D.T. cells per square = Concentration of D.T. cells per mL =

	Average # of O.M. cells per square = Concentration of O.M. cells per mL = Average # of D.T. cells per square = Concentration of D.T. cells per mL =
	Average # of O.M. cells per square = Concentration of O.M. cells per mL =
	Average # of D.T. cells per square = Concentration of D.T. cells per mL =
	
	
	



Average # of O.M. cells per square =

Concentration of O.M. cells per mL =

Average # of D.T. cells per square =

Concentration of D.T. cells per mL =