SUMMARY:

Simulation results evaluating the channel performance where M = 5, S = 100.0 time units, and Y = 10.0 time units (and 1,000,000.0 simulated time units).

Total time observing channel: 1000000.000
Total silent time = 620165.127023
Total melodious time = 311056.721411
Total screechy time = 68839.634109
SILENT time on the channel = 62.013%
MELODIOUS time on the channel = 31.104%
SCREECHY time on the channel = 6.884%
Attempted yodel time = 45361.00
Perfect yodel percentage = 95.571%

Simulation results to determine the optimal colony size M when S = 100.0 and Y = 10.0. Using my program, it was determined that the maximum "melodious" percentage that can be achieved, as a function of M is 38.826% where M is 10. After that, as M increased the "melodious" percentage starts decreasing.

Simulation experiments to assess the scalability of Bozon colonies **when S = 200.0 time units, and Y = 10.0 time units (and 1,000,000.0 simulated time units)**. Producing a graph or table (or both) that clearly shows the percentages achieved.

M	Total silent time	Total melodious time	Total screechy time	Total silent percentage	Total melodious percentage	Total screechy percentage	Attempted yodel	Perfect yodel percentage
1	953914.70	46606.29	0.00	95.342%	4.658%	0.000%	4683.00	99.979%
2	906394.93	91593.41	2012.29	90.639%	9.159%	0.201%	9475.00	99.989%
4	820180.28	166890.17	13284.95	81.989%	16.683%	1.328%	19218.00	99.292%
8	676064.96	271445.62	52524.73	67.604%	27.144%	5.252%	38085.00	95.731%
16	456325.61	365742.73	177943.15	45.632%	36.574%	17.794%	76265.00	83.873%
32	212676.72	334083.31	453468.37	21.263%	33.401%	45.336%	151540.00	56.340%
64	43433.33	139106.84	817509.23	4.343%	13.910%	81.747%	305400.00	18.998%
128	1797.83	12029.50	986172.94	0.180%	1.203%	98.617%	610085.00	1.441%

According to the data in the table, the highest “melodious” value achieved is 365742.73, where is 36.574% and the value of M at which it occurs is 16.

RESULTS AND OBSERVATIONS (about the Bozon protocol):

Assuming the simulation time unit was constant throughout the input of 1,000,000.0, once you increase the number of Bozons, there is more screechy percentage when there is more yodeling time and there is more melodious percentage when there is more sleep time until it reaches its best “melodious” percent then the percentage slowly decreases. Also, when the number of bozons increase, the number of attempted yodels also increase and the percent of perfect yodel starts decreasing.