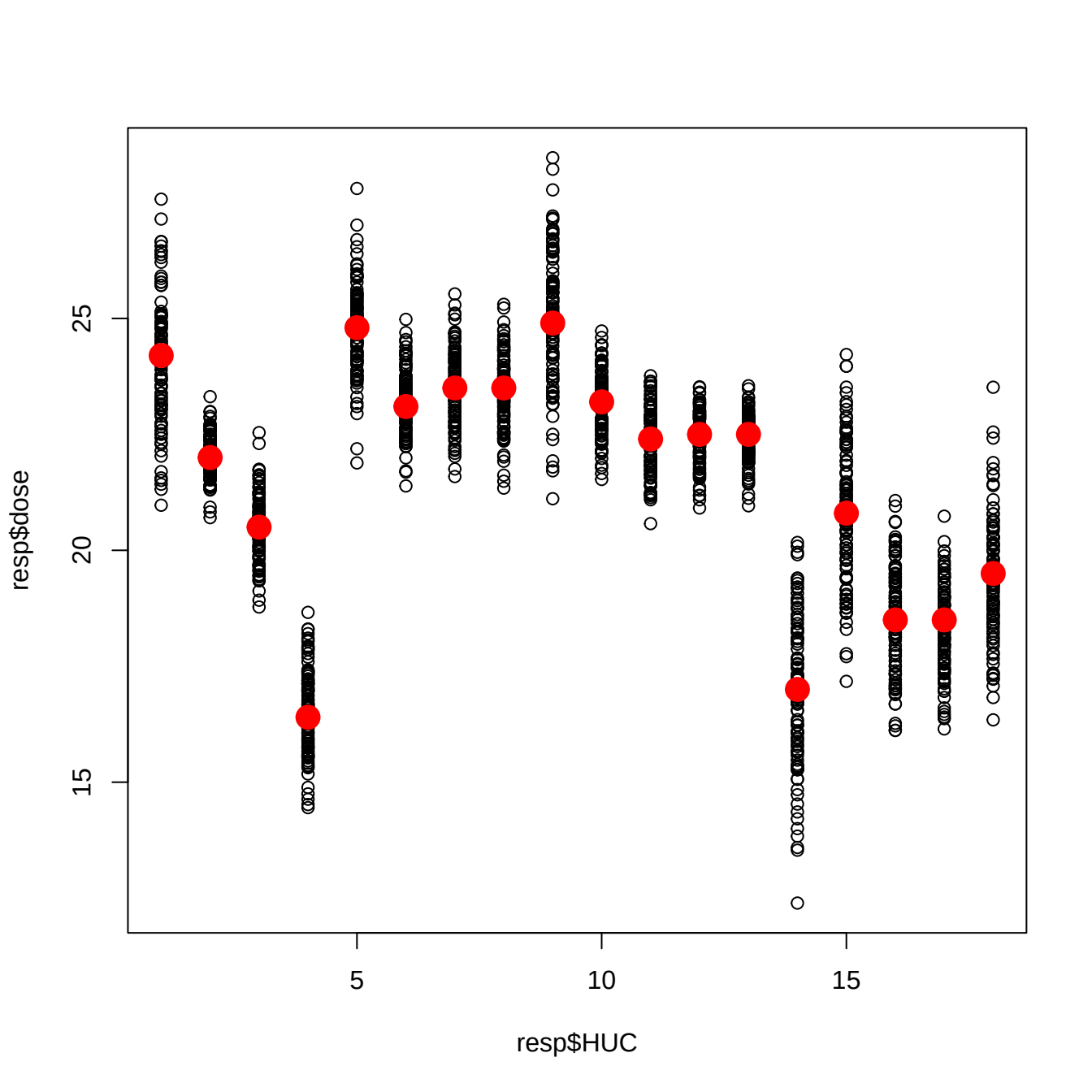
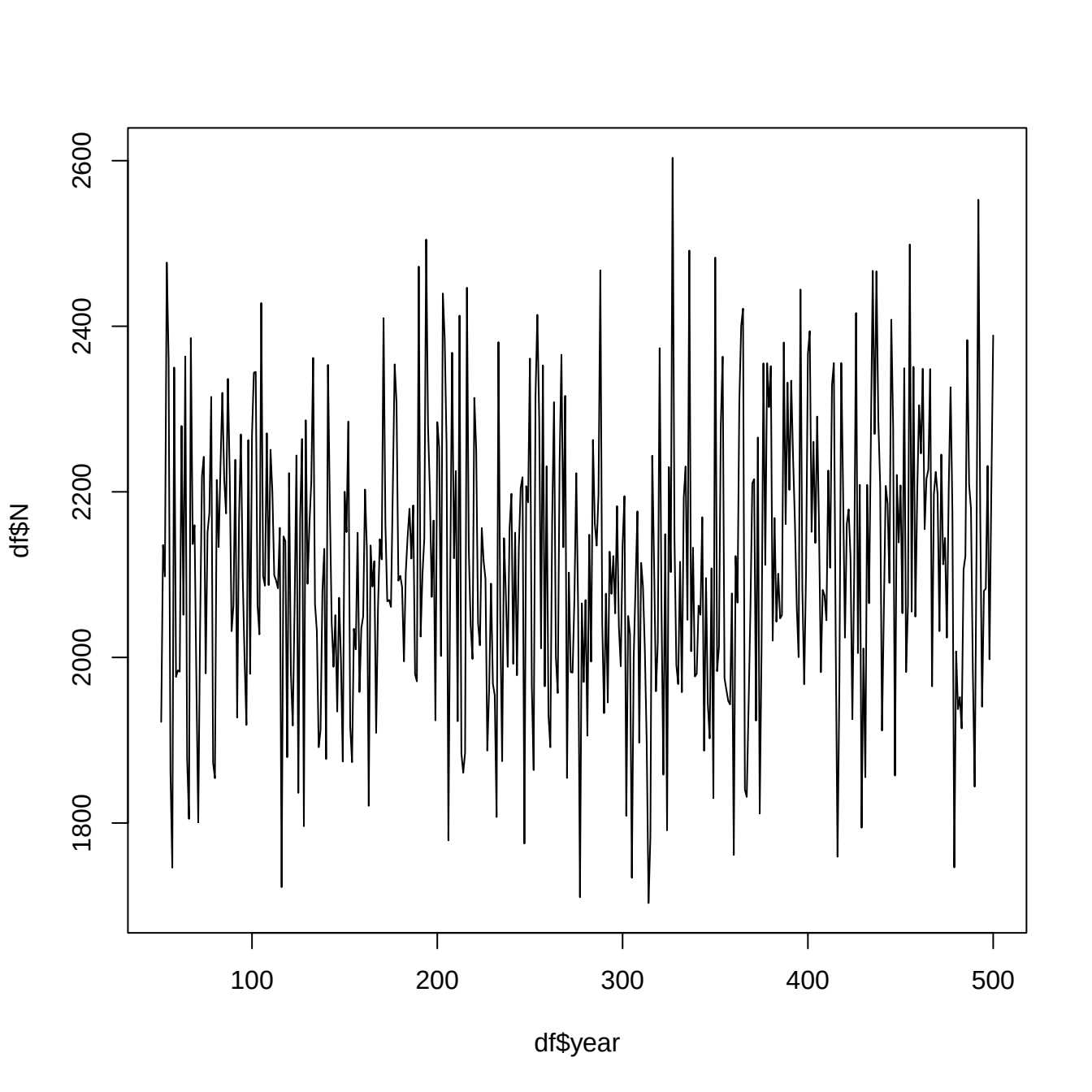
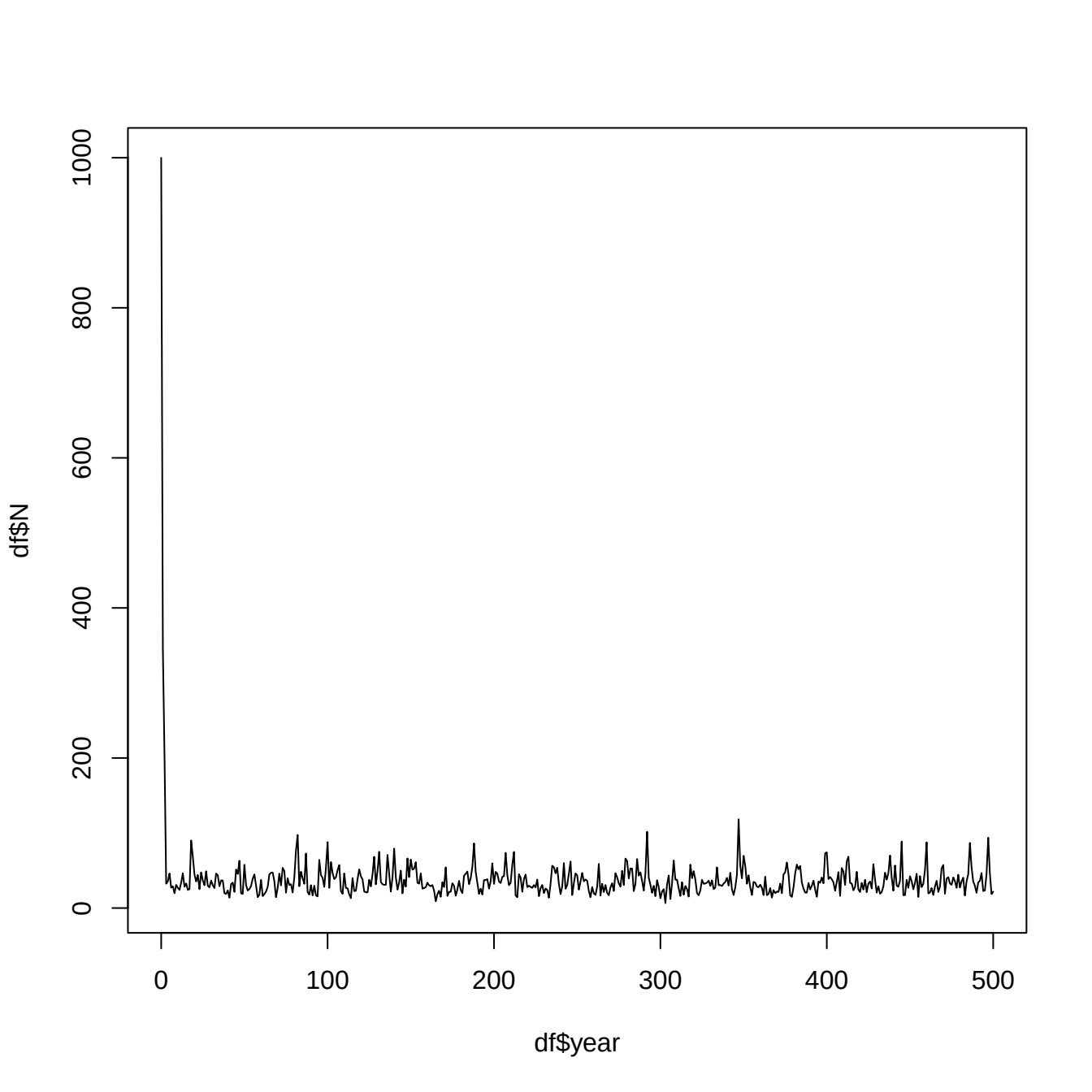
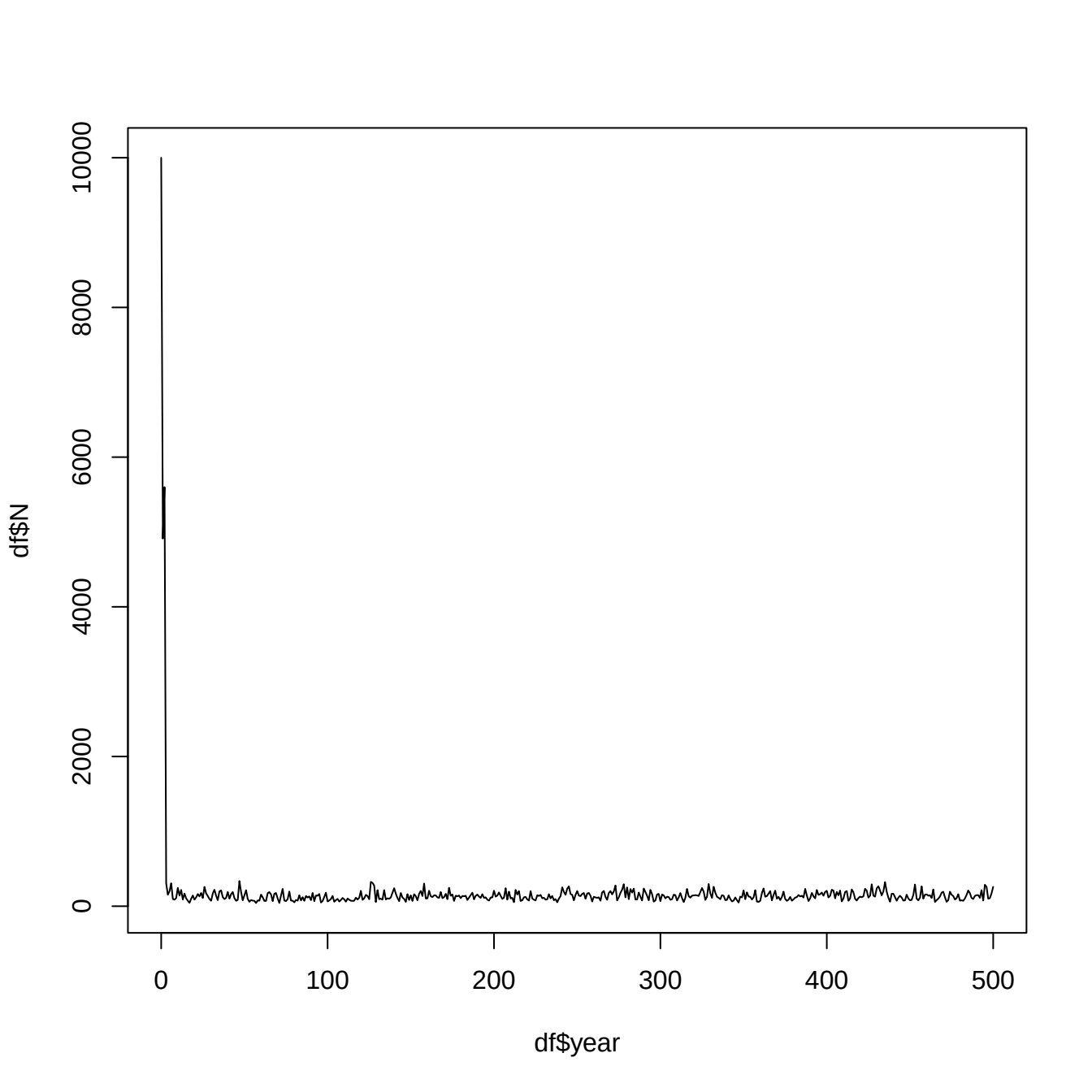
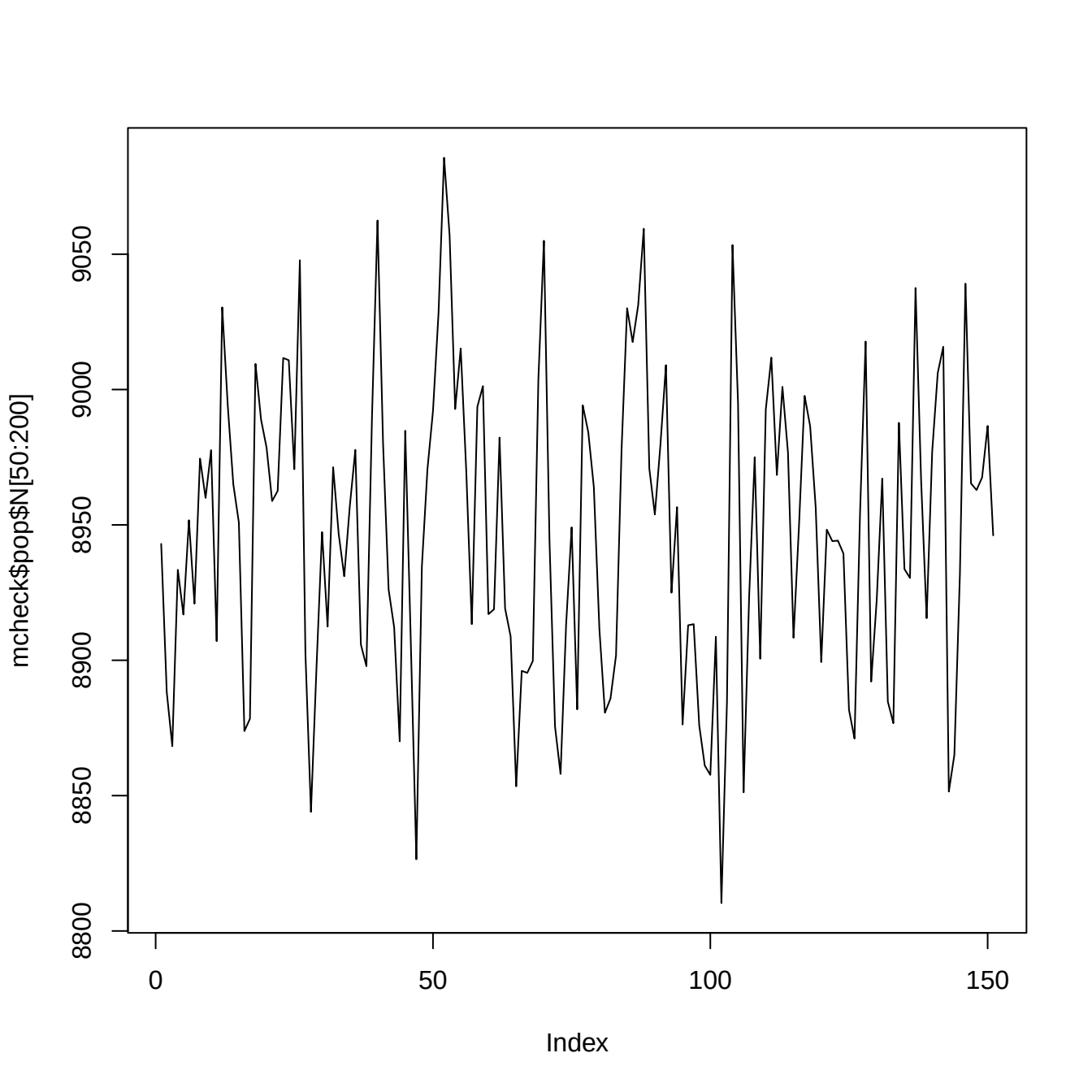
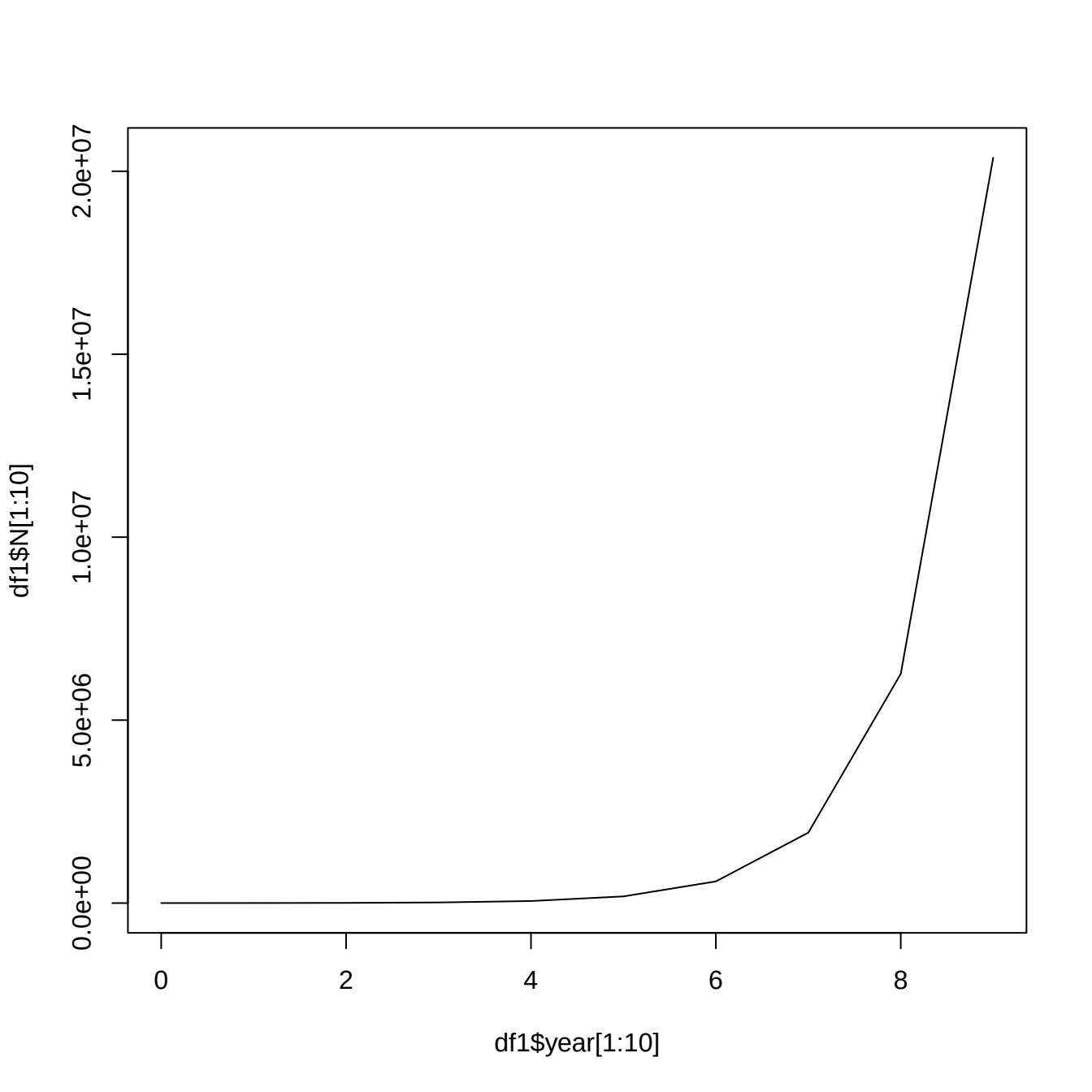

resp$dose
15
20
25
5
10
15
resp$HUC

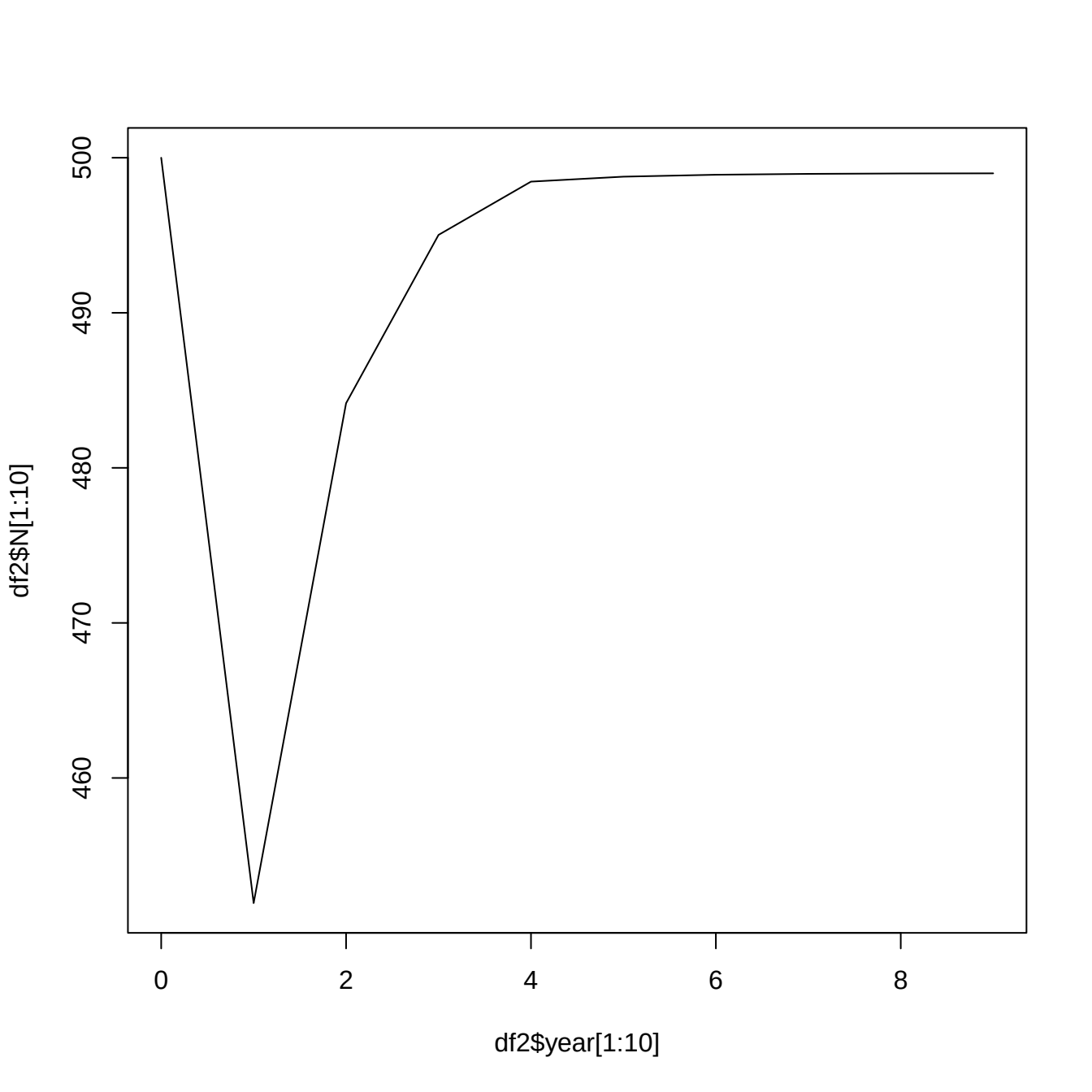

df$N
2600
2400
2200
2000
1800
100
200
300
400
500
df$year

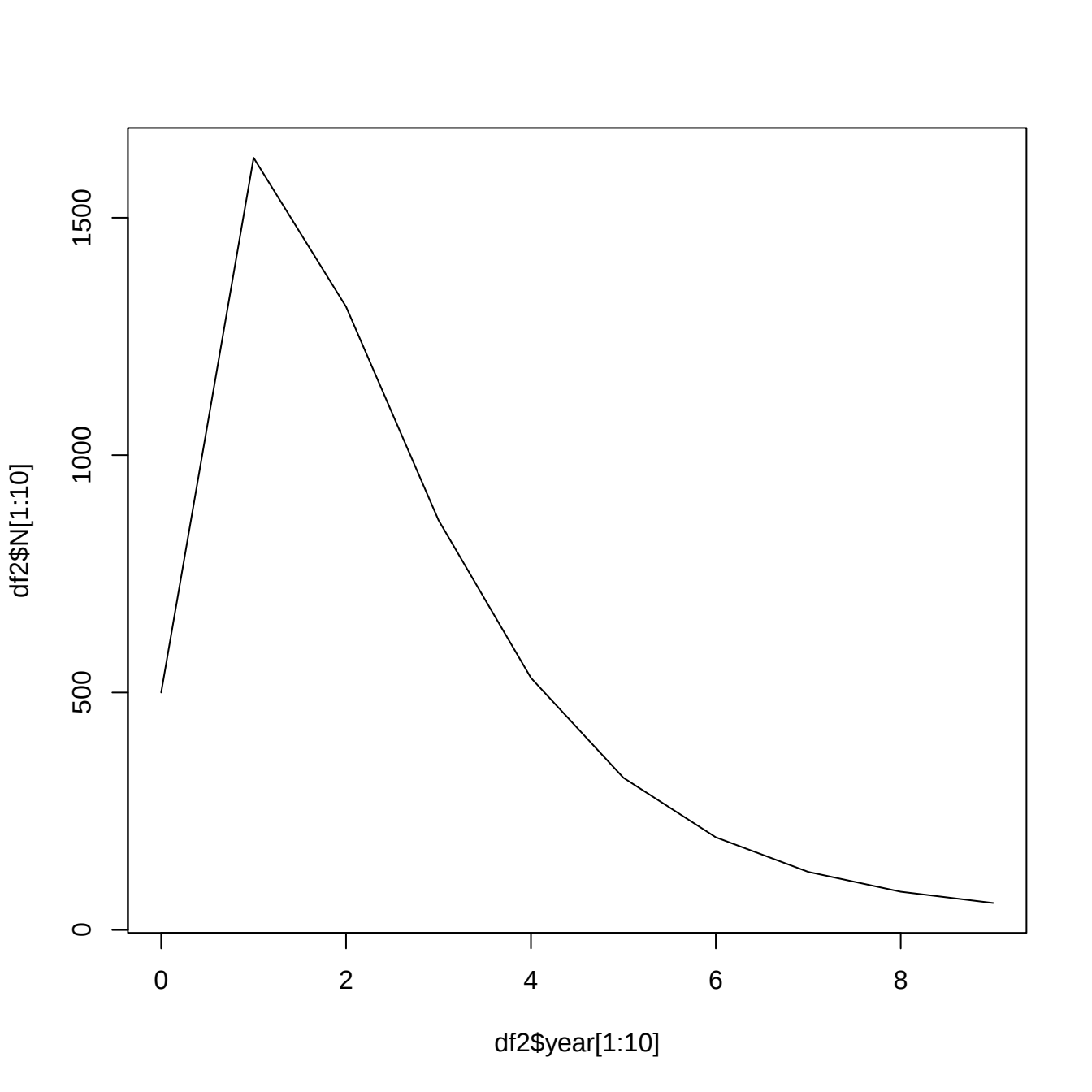

df$N
0
200
400
600
800
1000
0
100
200
300
400
500
df$year

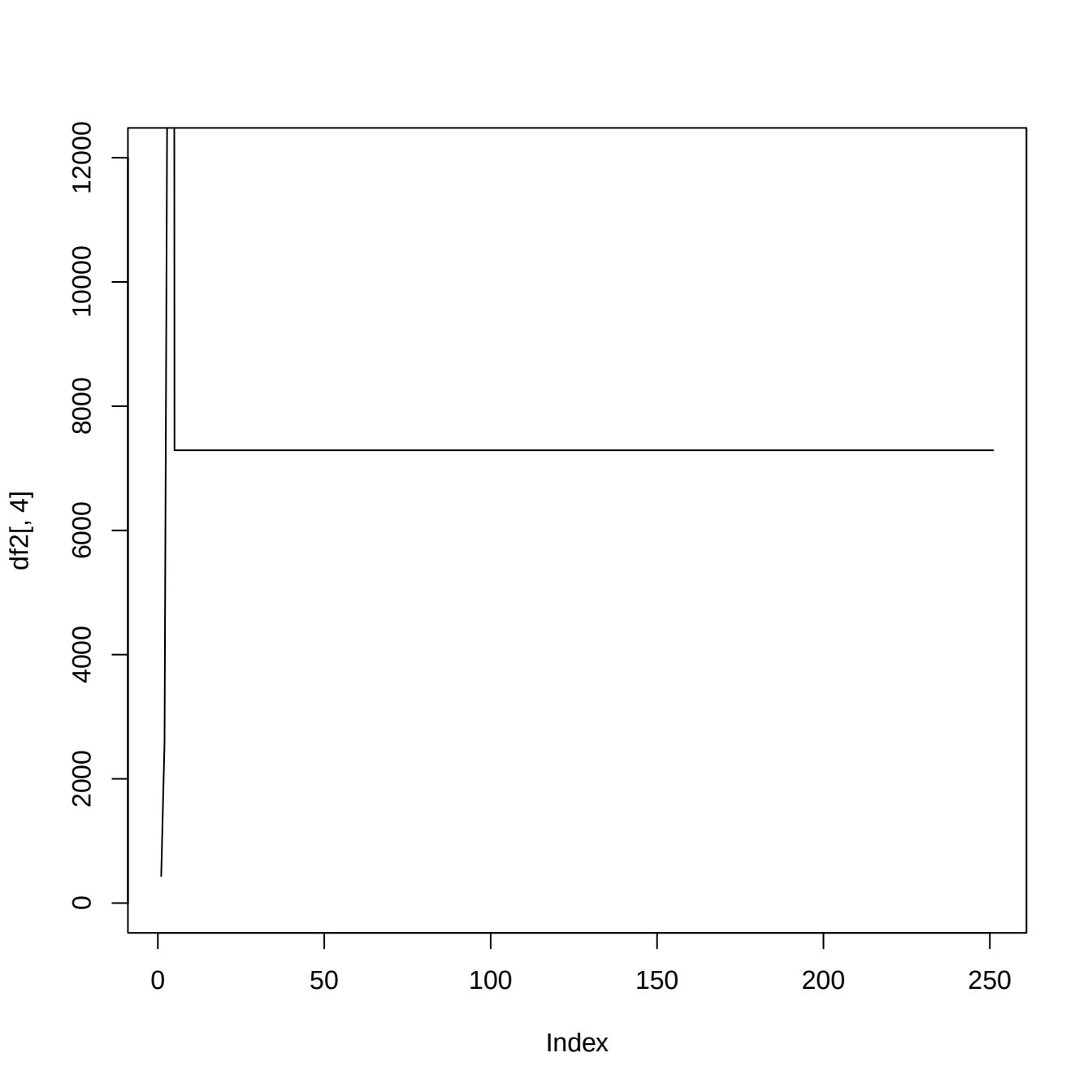

df$N
0
2000
4000
6000
8000
10000
0
100
200
300
400
500
df$year

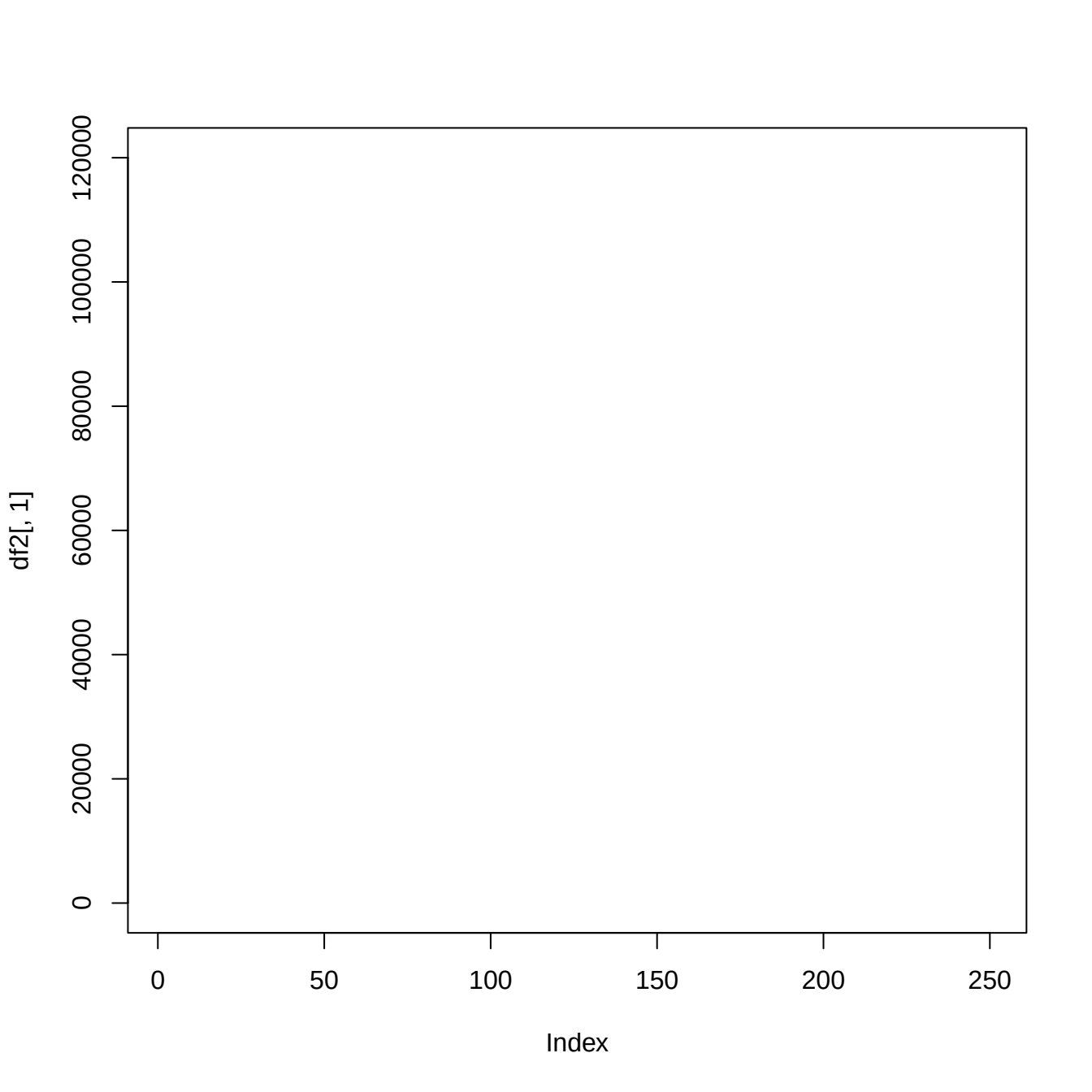

mcheck$pop$N[50:200]
8800
8850
8900
8950
9000
9050
0
50
100
150
Index

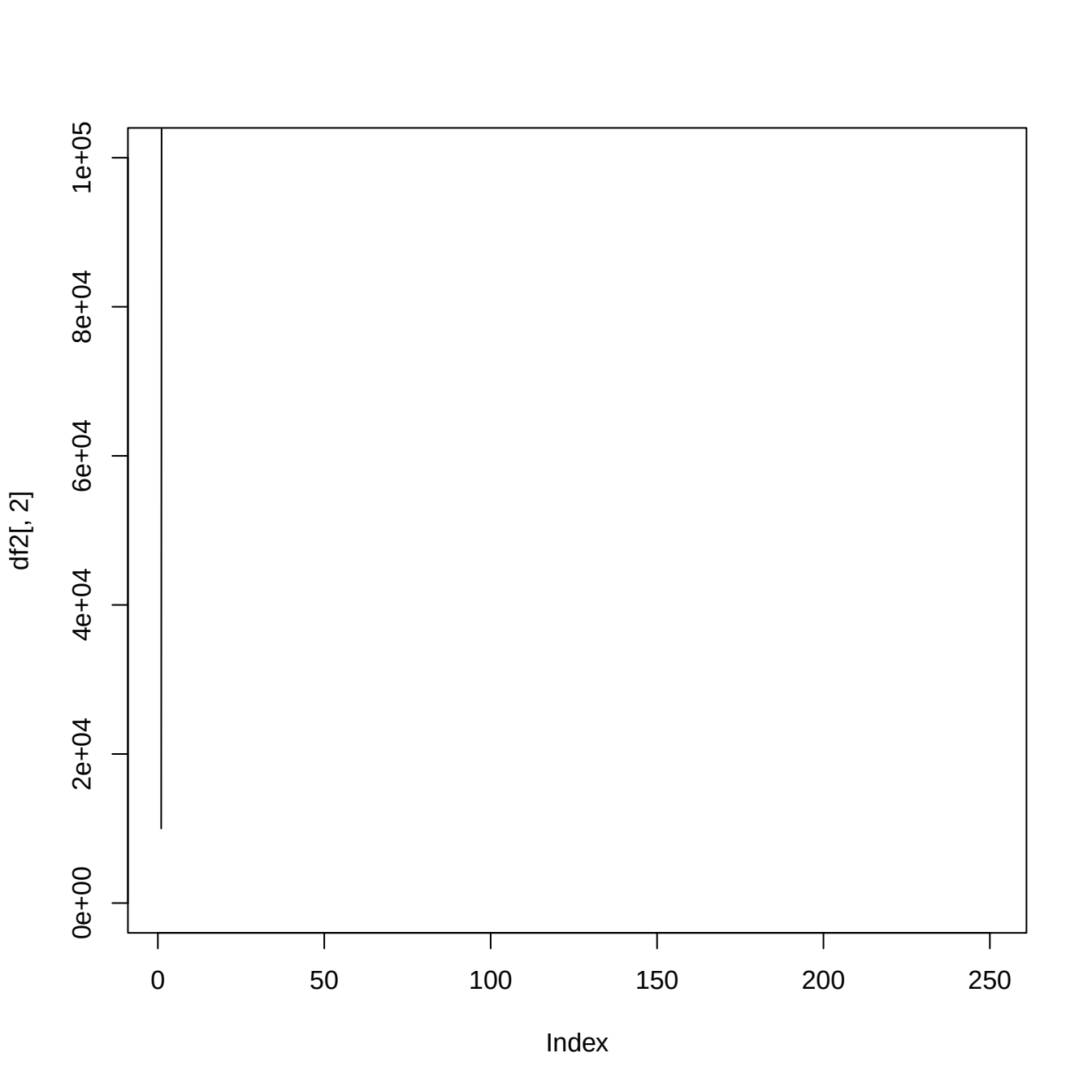

df1$N[1:10]
0.0e+00
5.0e+06
1.0e+07
1.5e+07
2.0e+07
0
2
4
6
8
df1$year[1:10]

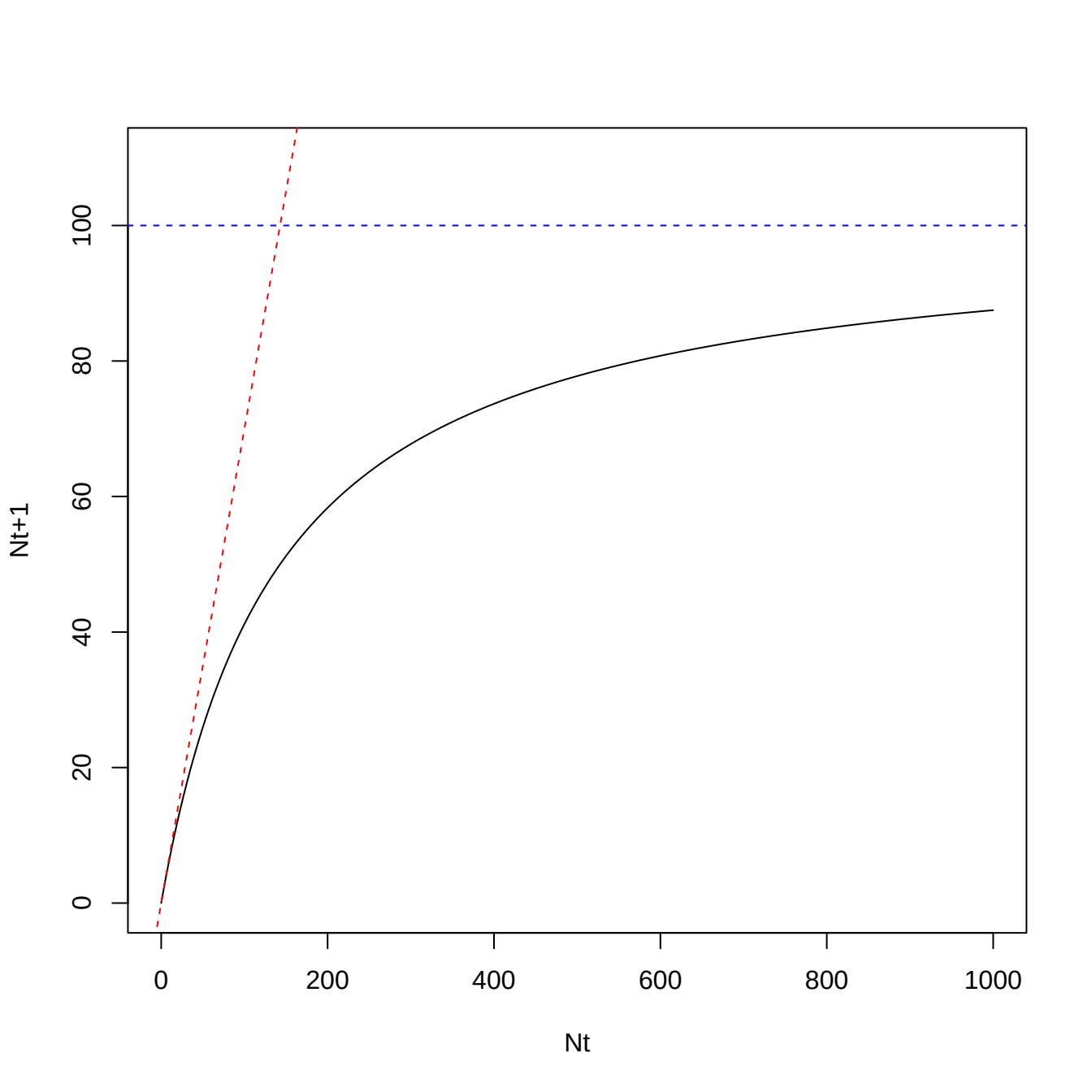

df2$N[1:10]
500
490
480
470
460
0
2
4
6
8
df2$year[1:10]

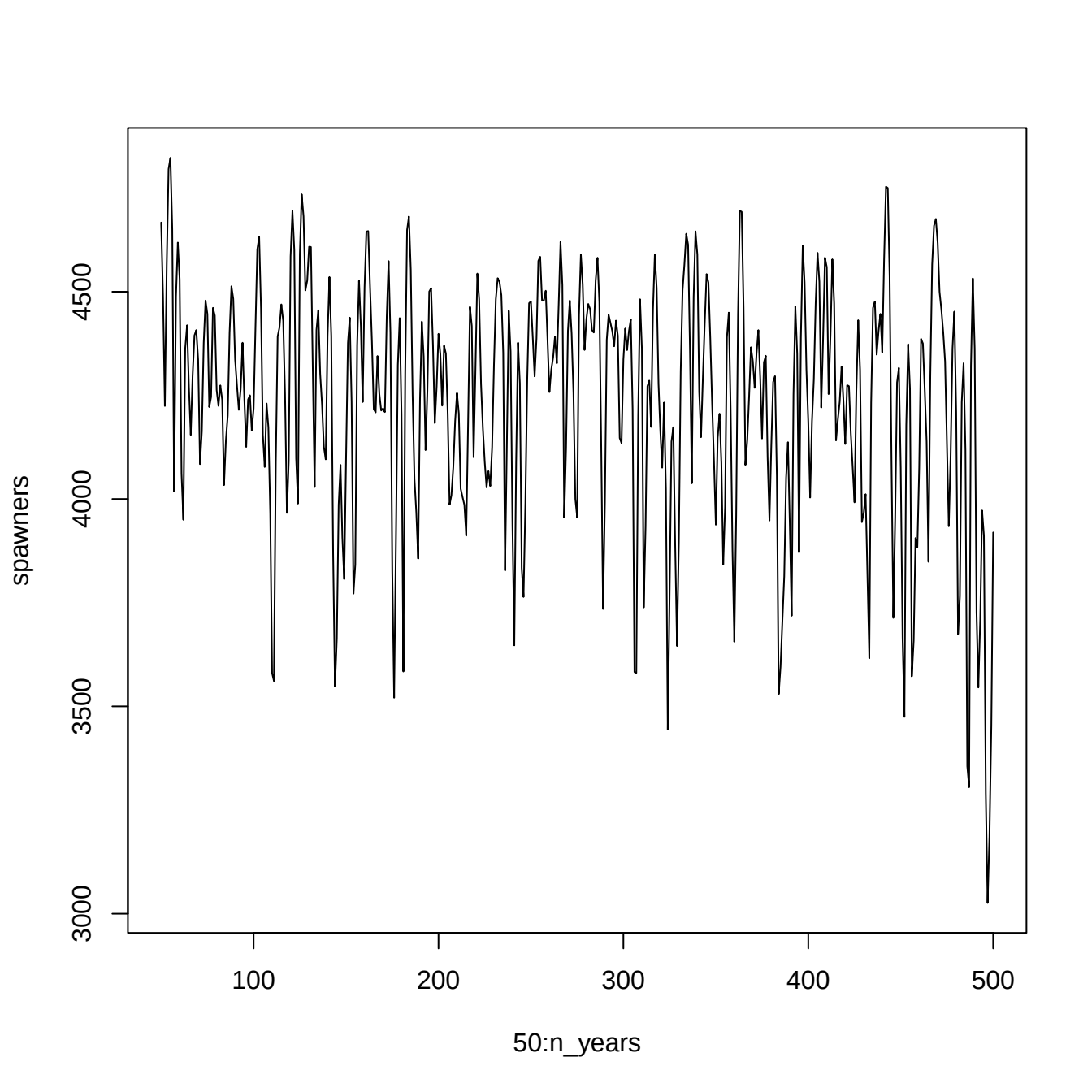

df2$N[1:10]
0
500
1000
1500
0
2
4
6
8
df2$year[1:10]

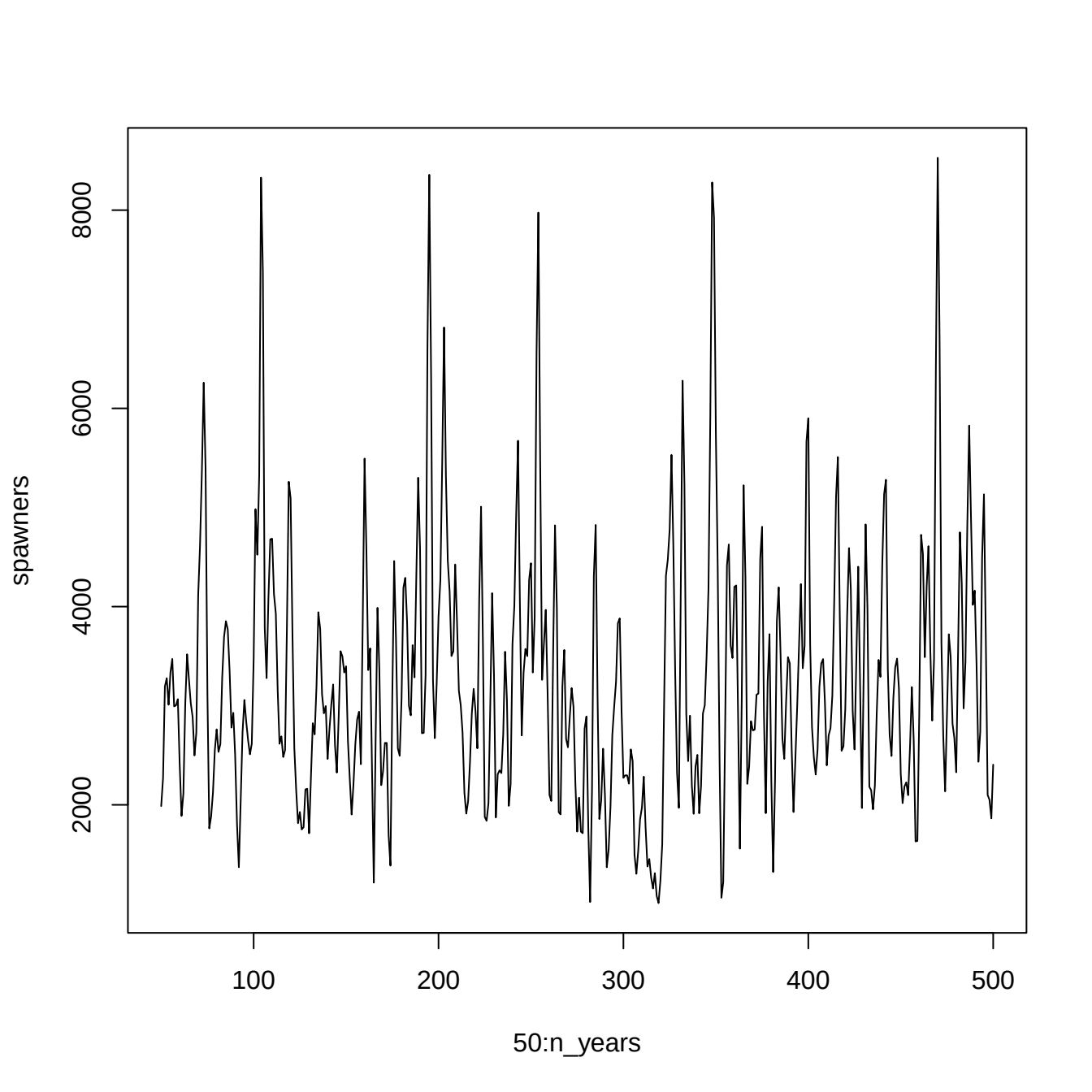

df2[, 4]
0
2000
4000
6000
8000
10000
12000
0
50
100
150
200
250
Index

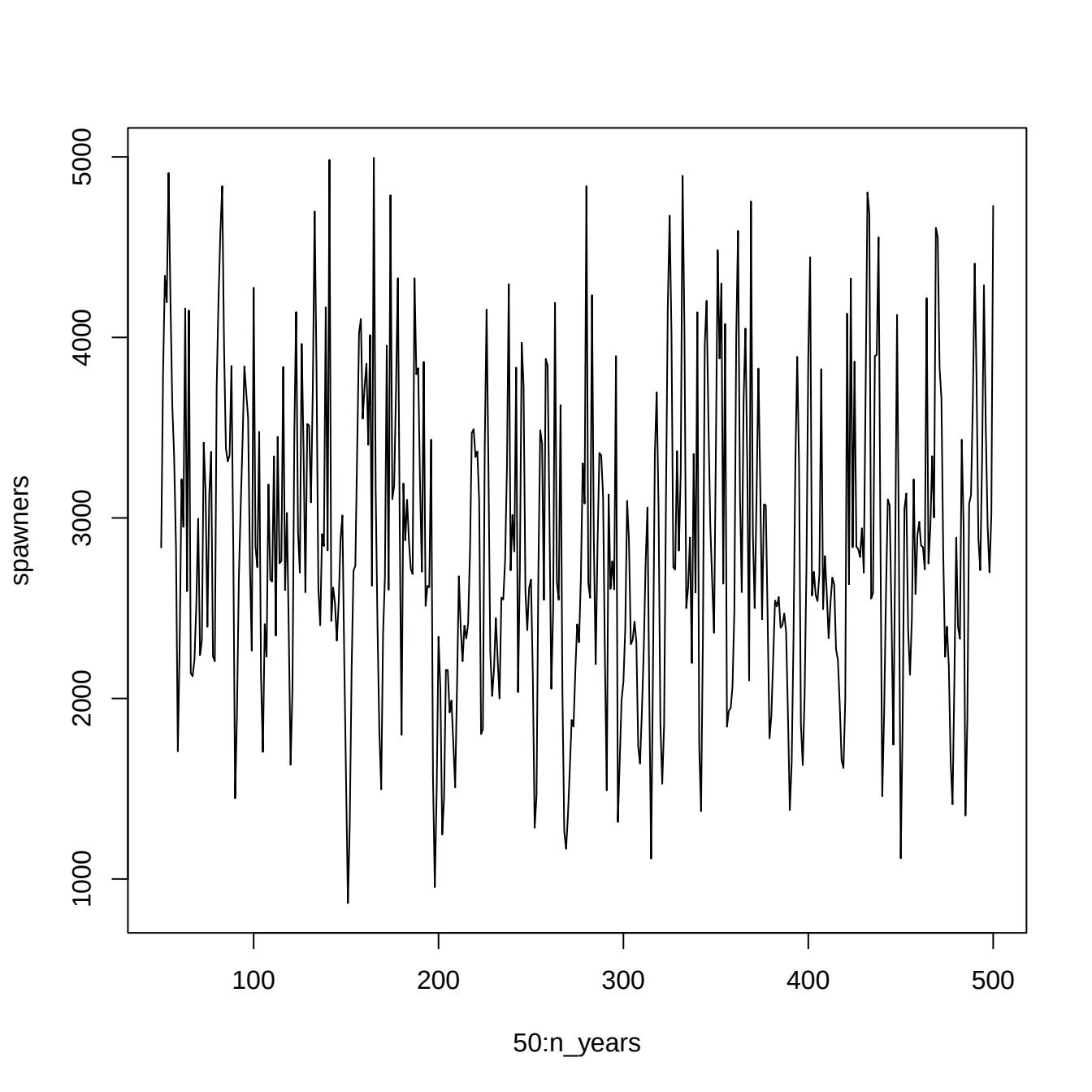

df2[, 1]
0
20000
40000
60000
80000
100000
120000
0
50
100
150
200
250
Index

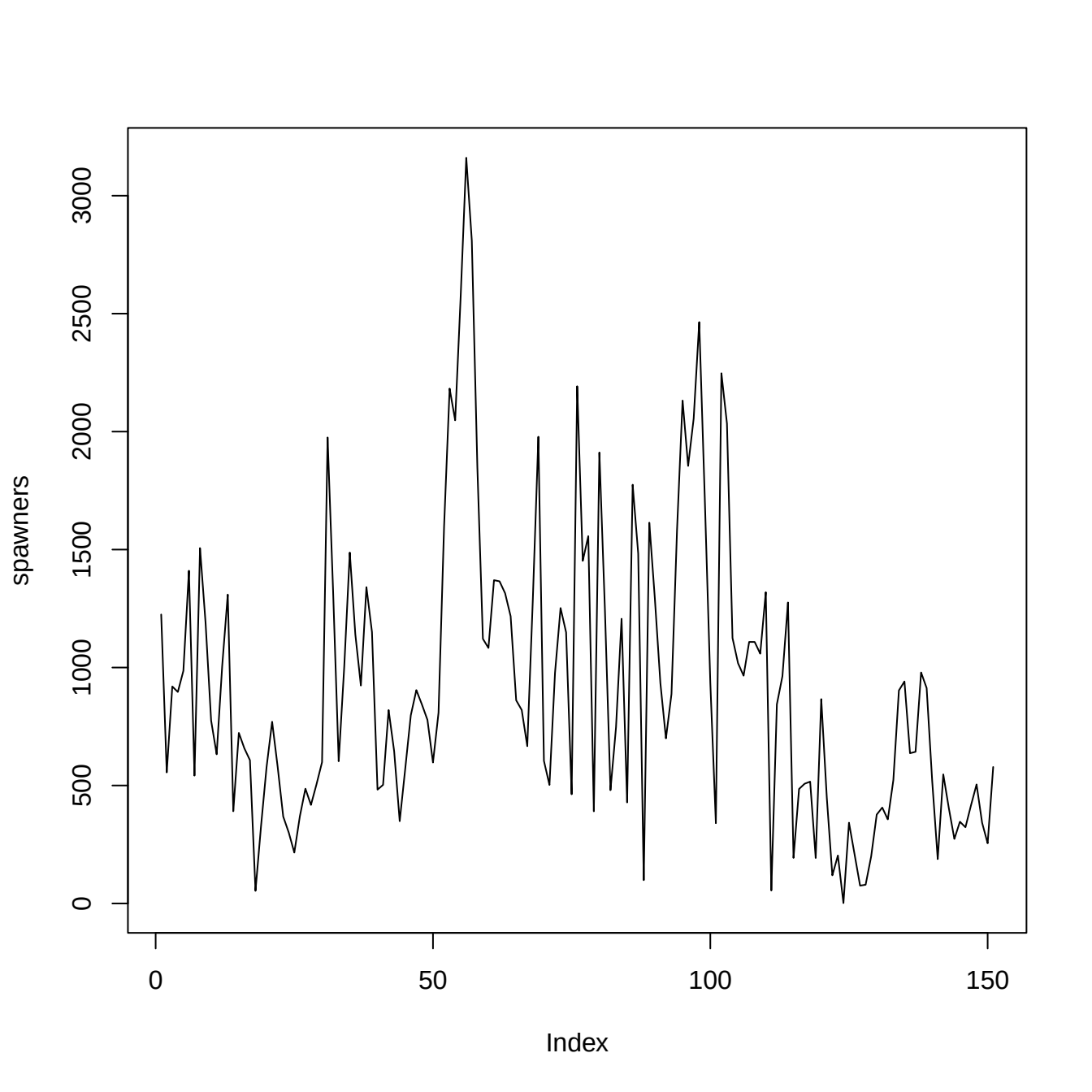

df2[, 2]
0e+00
2e+04
4e+04
6e+04
8e+04
1e+05
0
50
100
150
200
250
Index

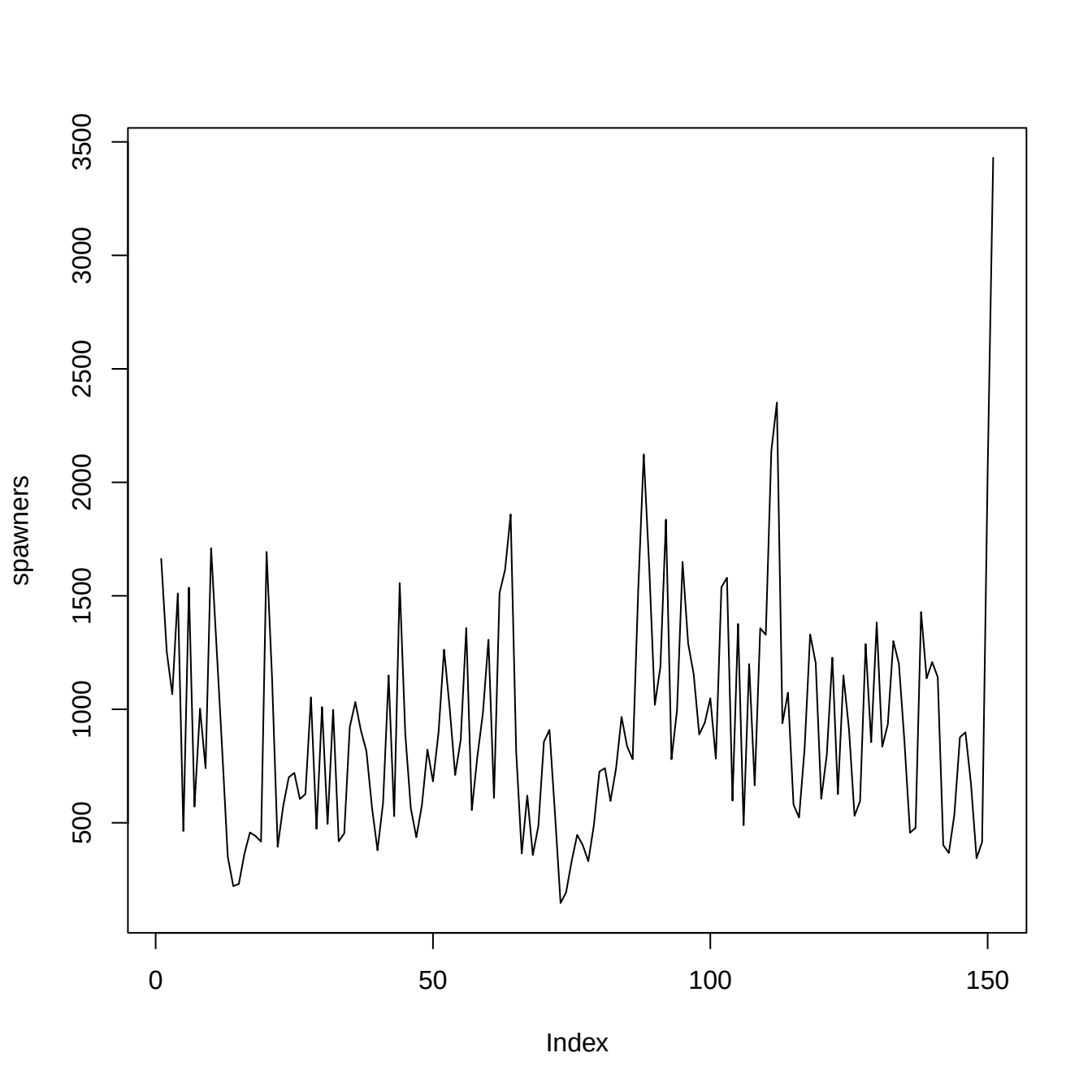

Nt+1
0
20
40
60
80
100
0
200
400
600
800
1000
Nt

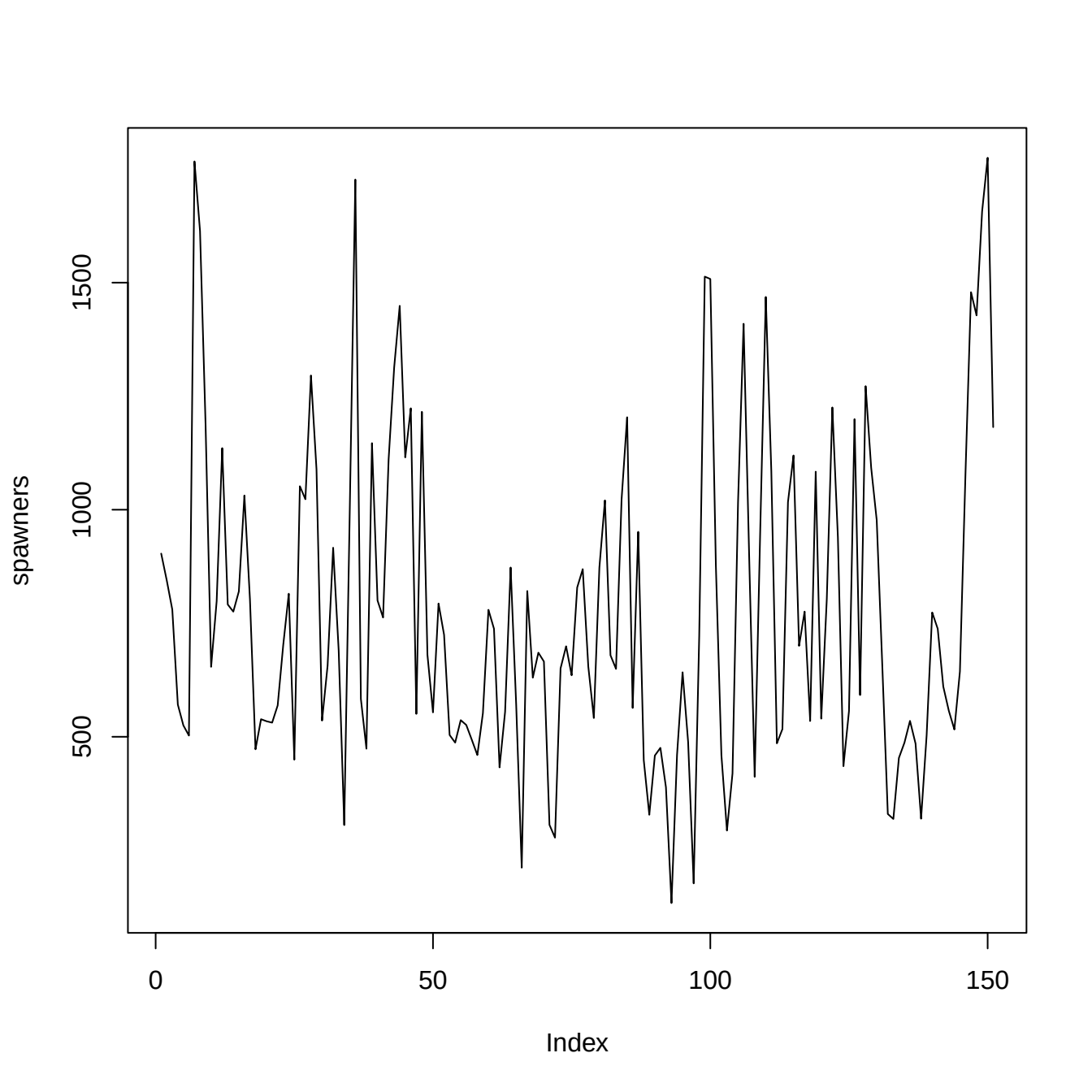

spawners
3000
3500
4000
4500
100
200
300
400
500
50:n_years

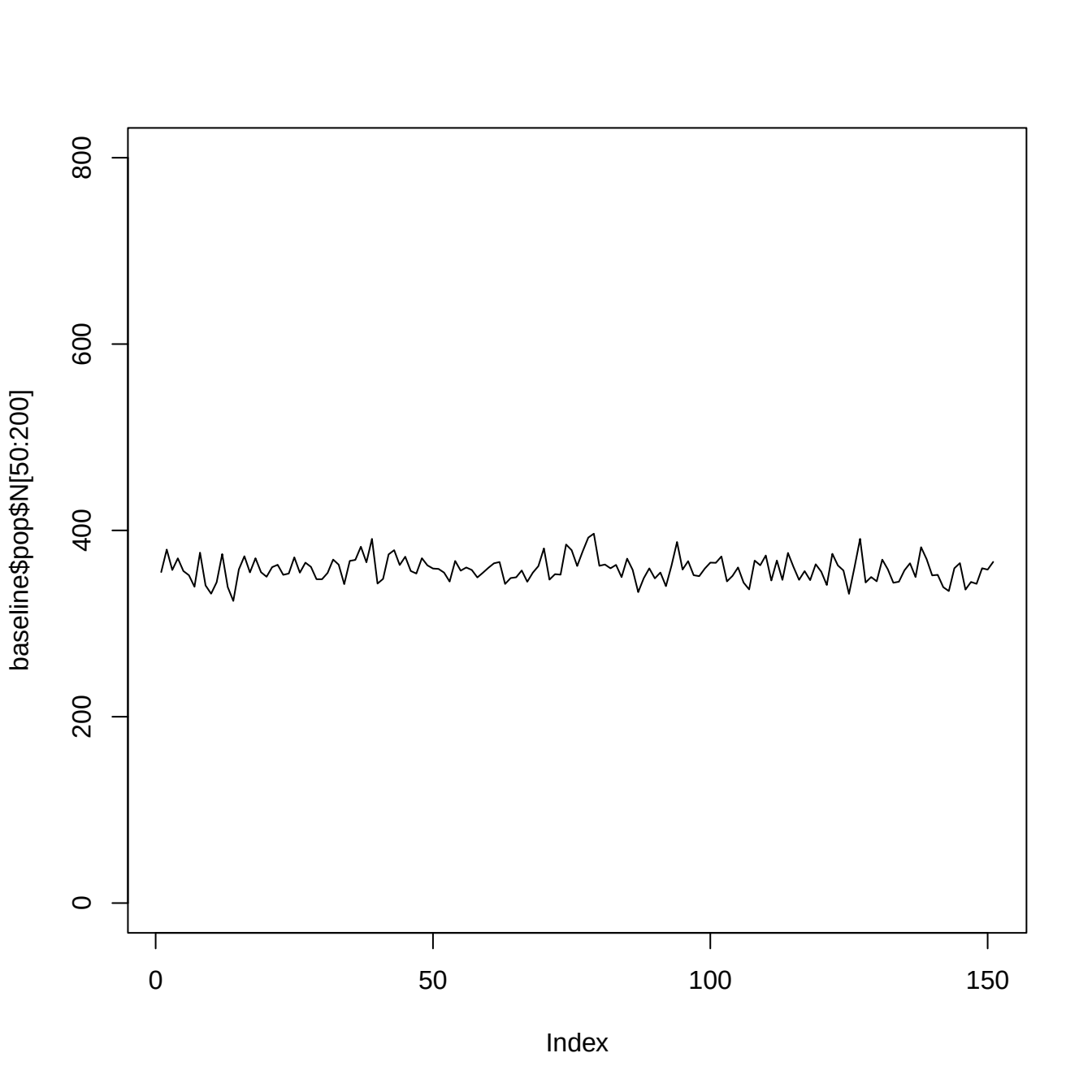

spawners
2000
4000
6000
8000
100
200
300
400
500
50:n_years

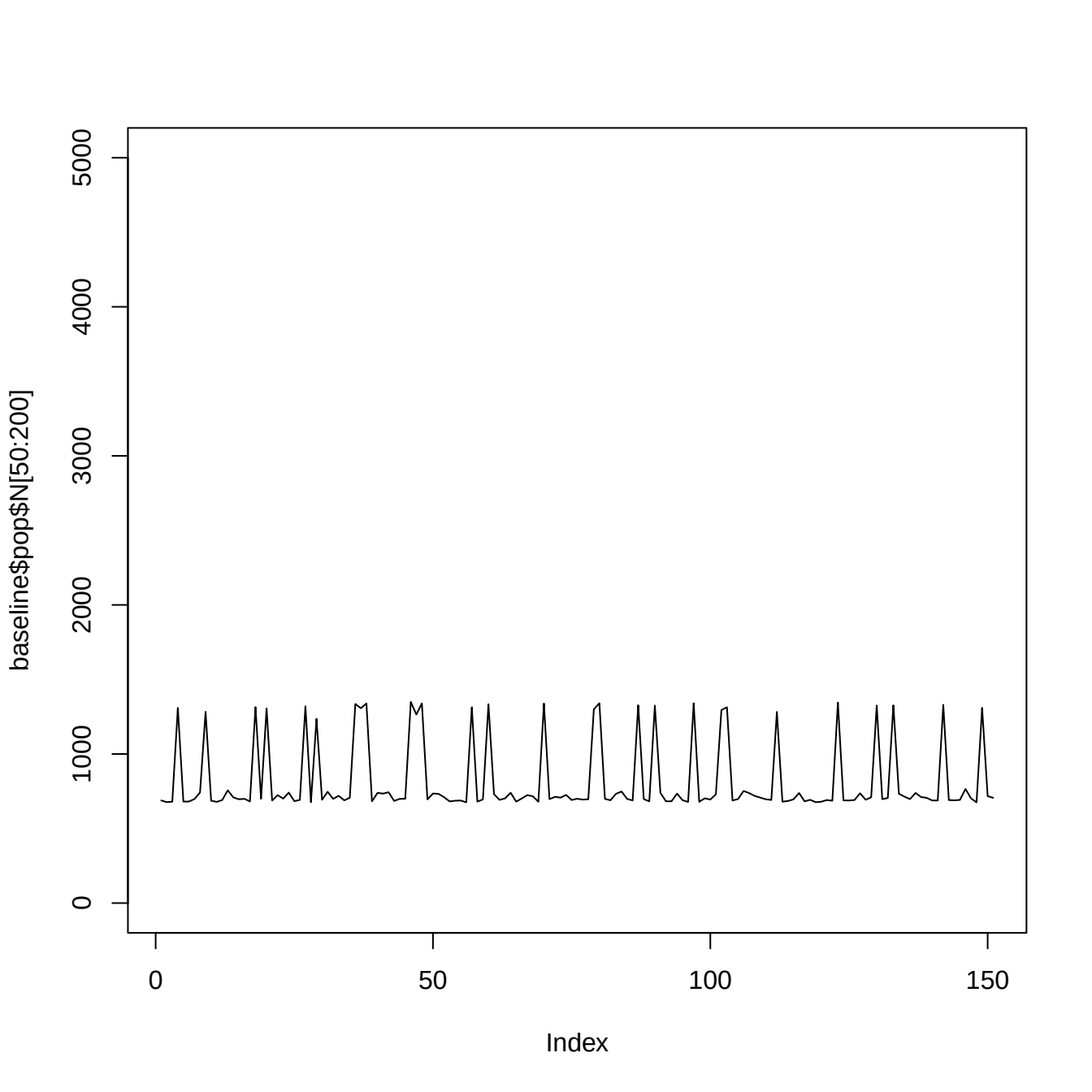

spawners
1000
2000
3000
4000
5000
100
200
300
400
500
50:n_years

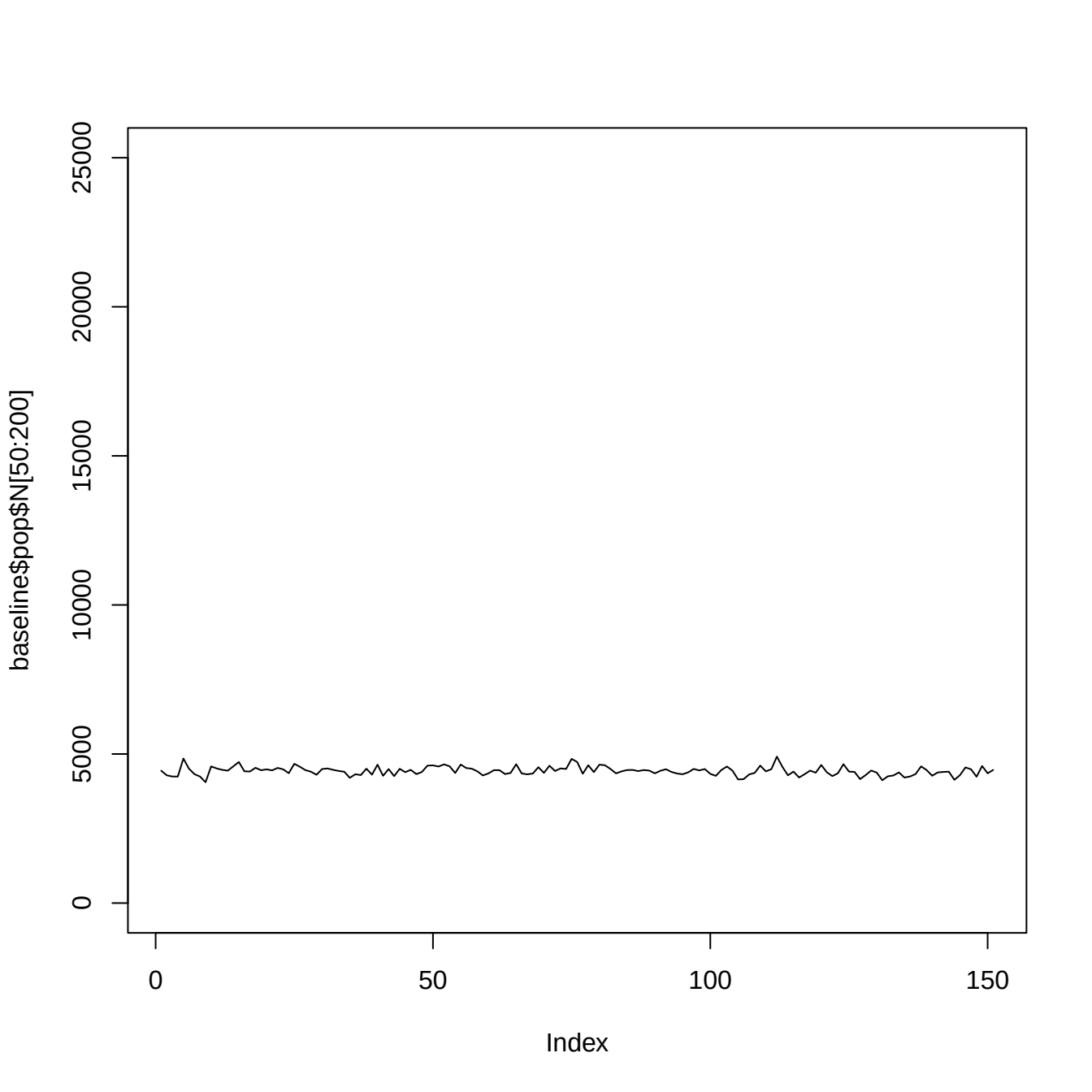

spawners
0
500
1000
1500
2000
2500
3000
0
50
100
150
Index

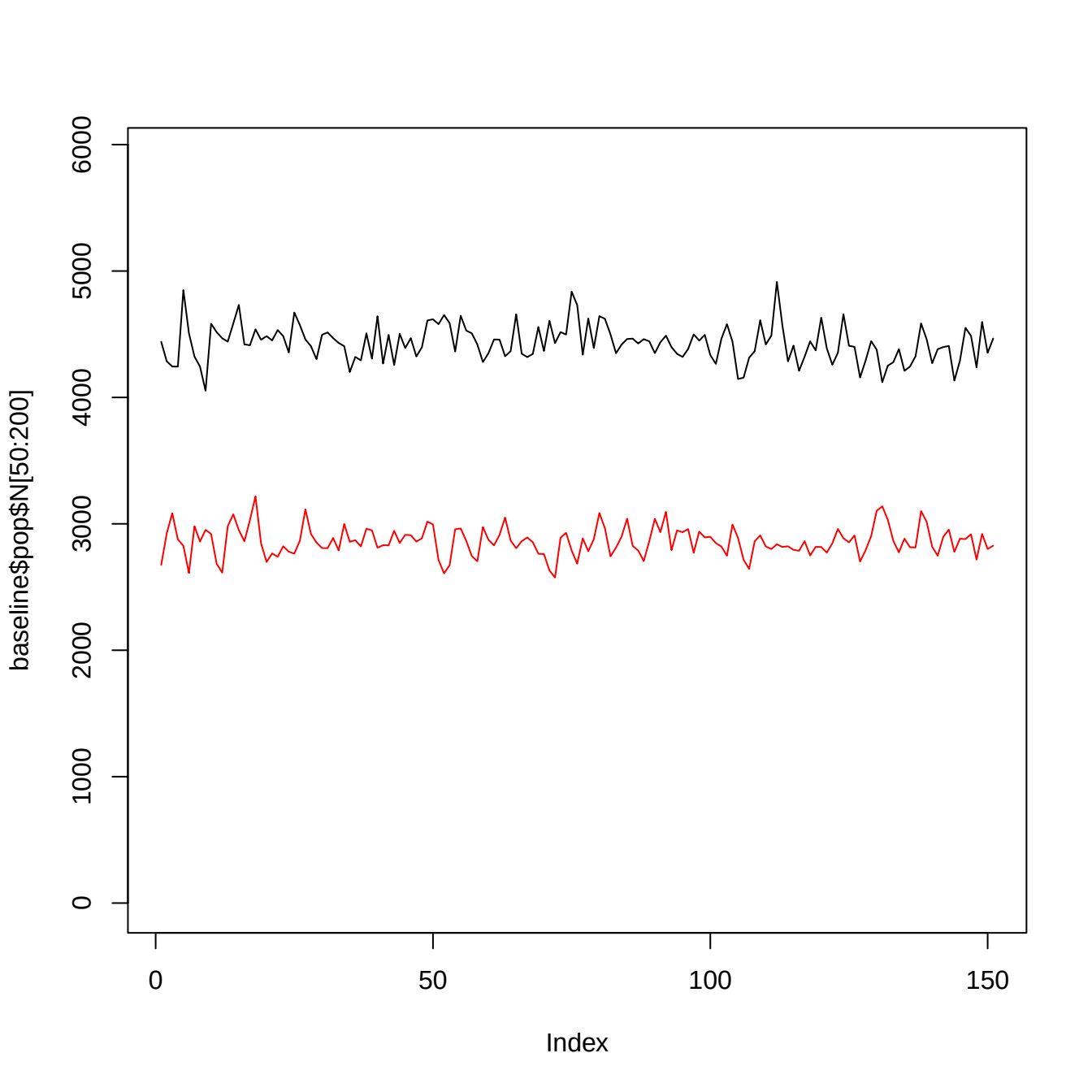

spawners
500
1000
1500
2000
2500
3000
3500
0
50
100
150
Index

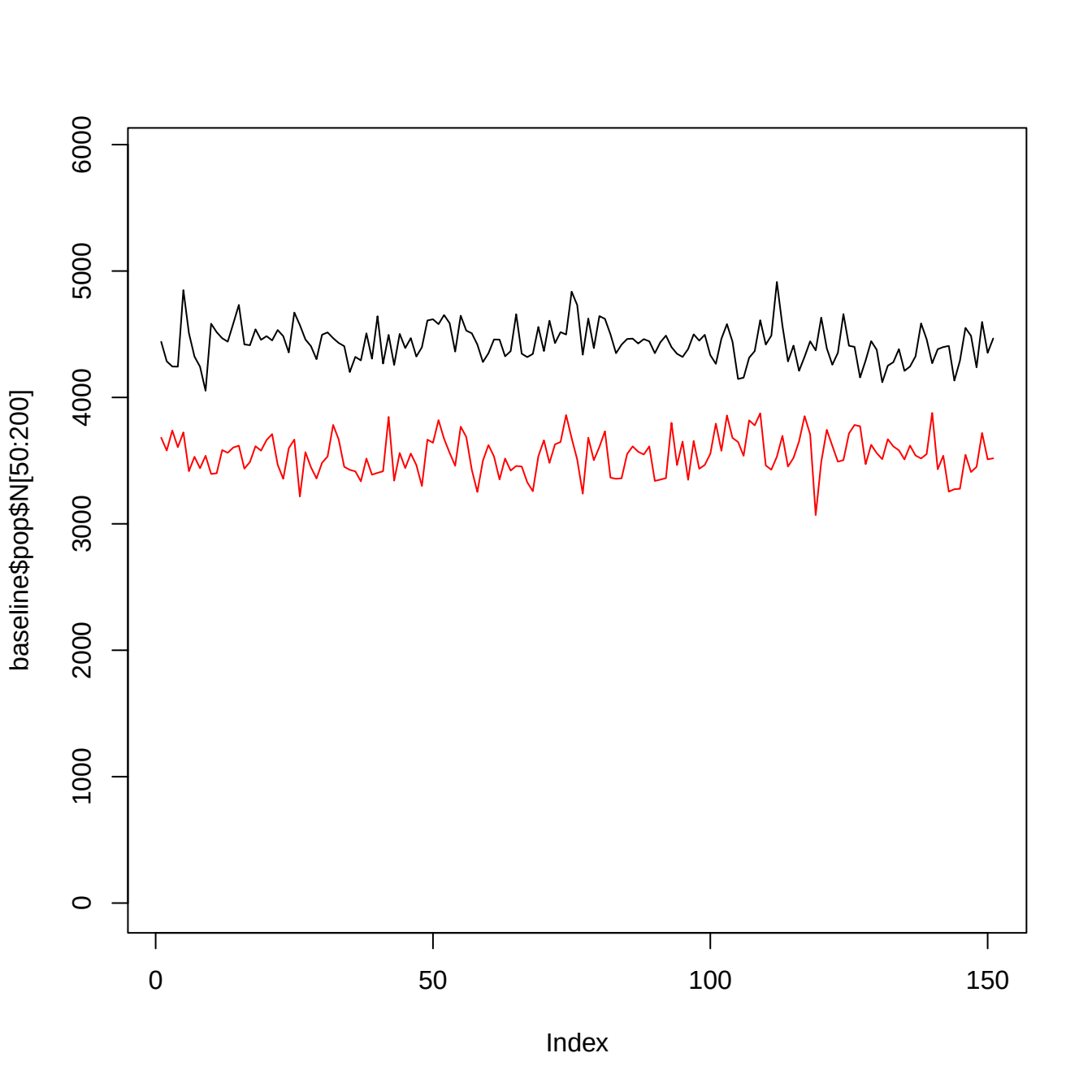

spawners
500
1000
1500
0
50
100
150
Index

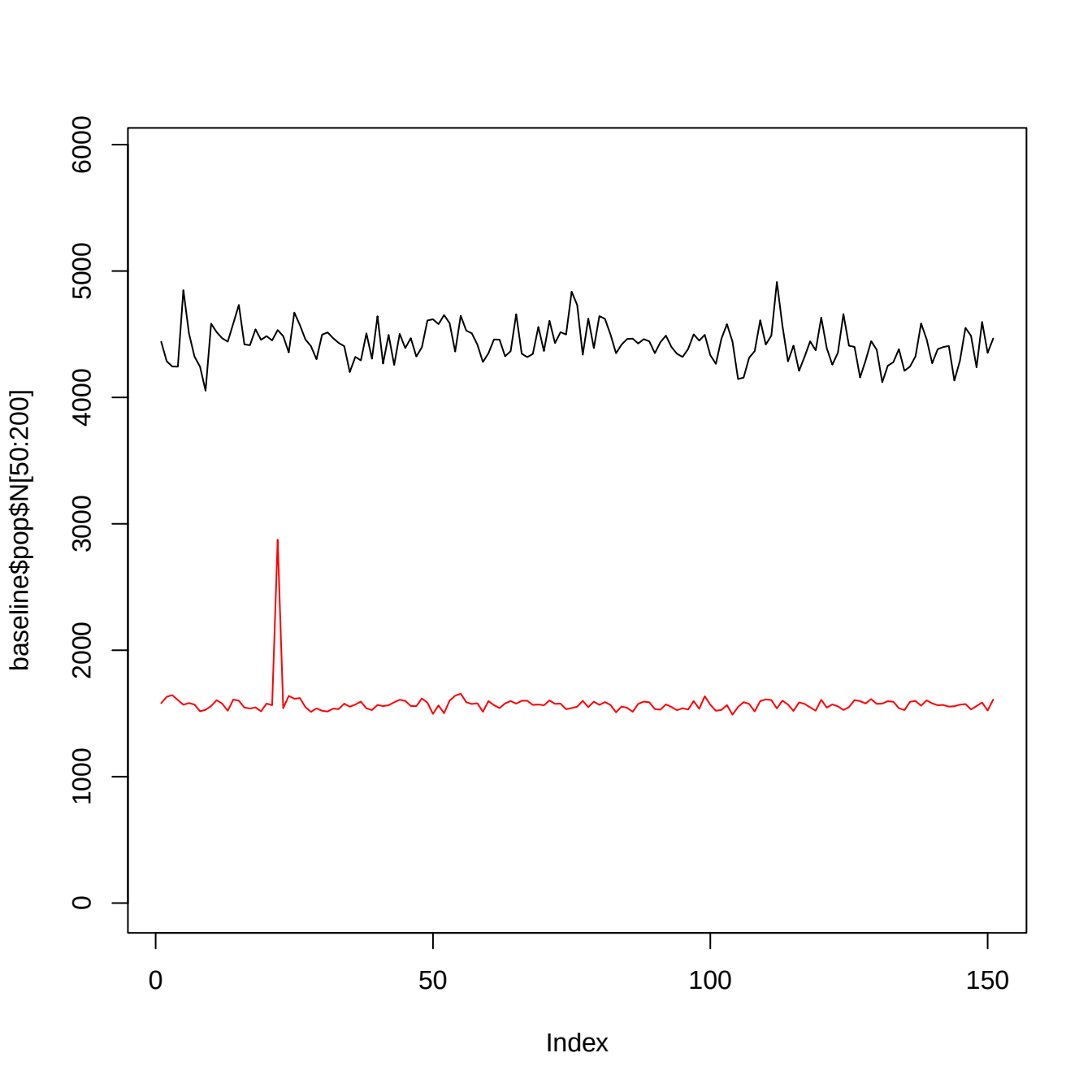

baseline$pop$N[50:200]
0
200
400
600
800
0
50
100
150
Index

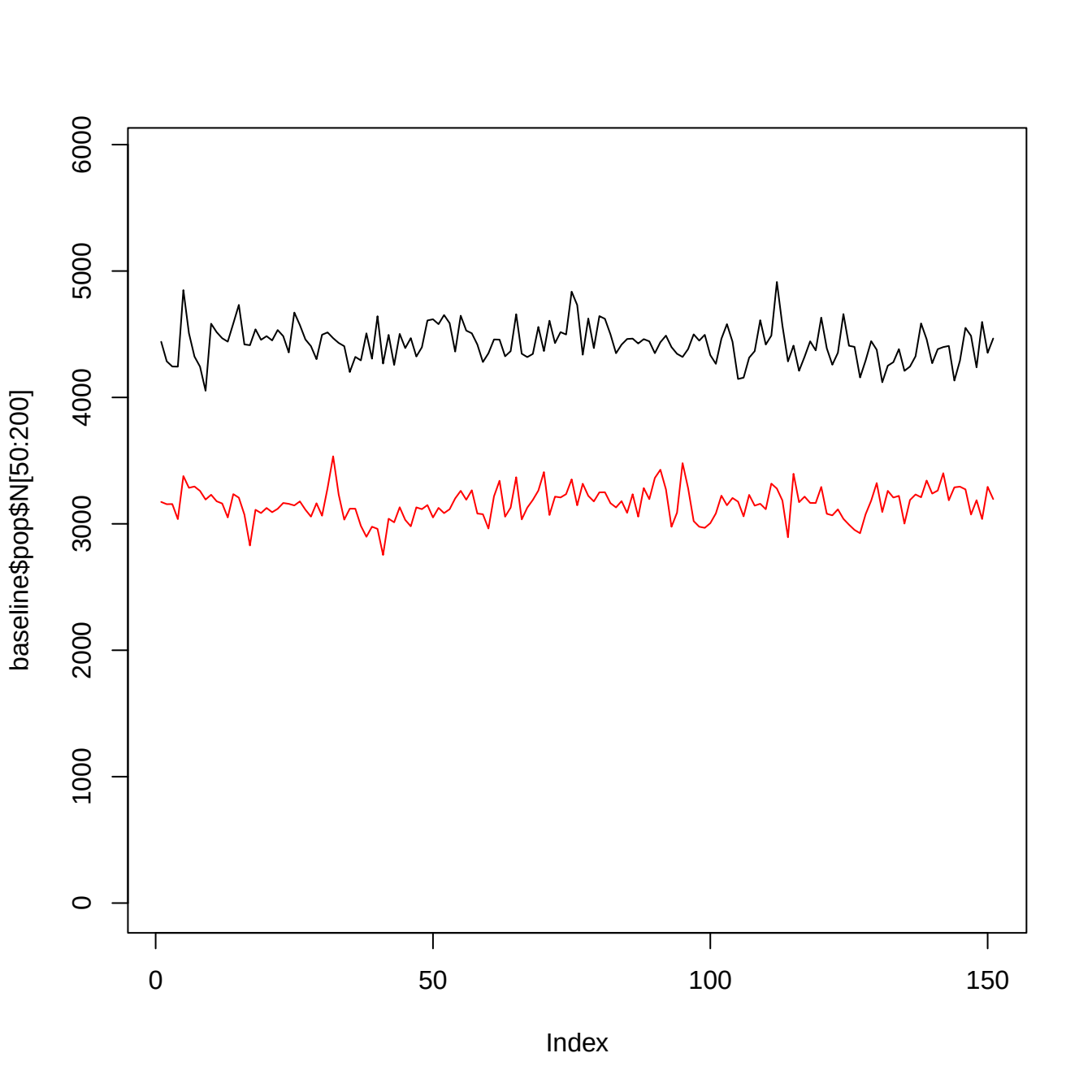

baseline$pop$N[50:200]
0
1000
2000
3000
4000
5000
0
50
100
150
Index

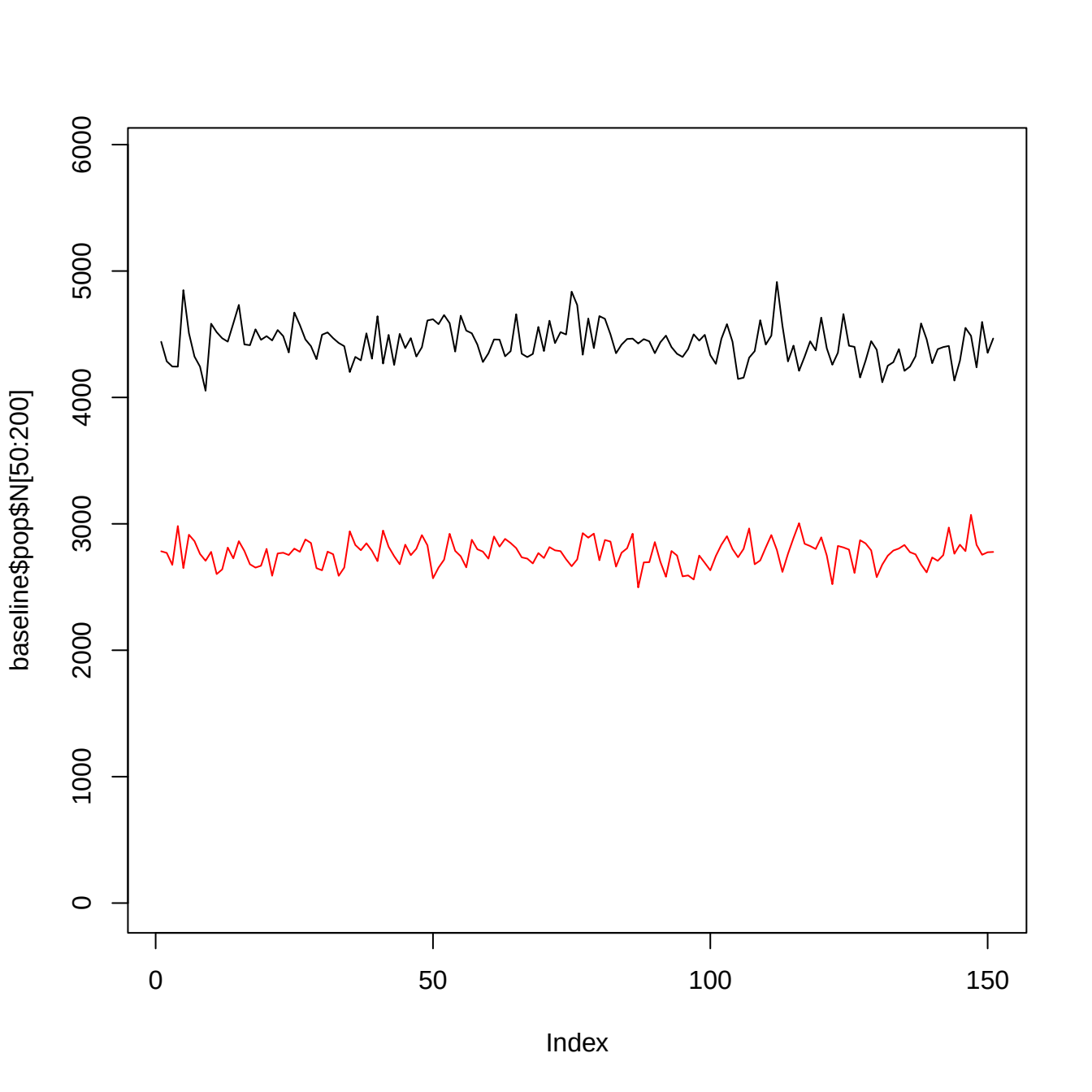

baseline$pop$N[50:200]
0
5000
10000
15000
20000
25000
0
50
100
150
Index

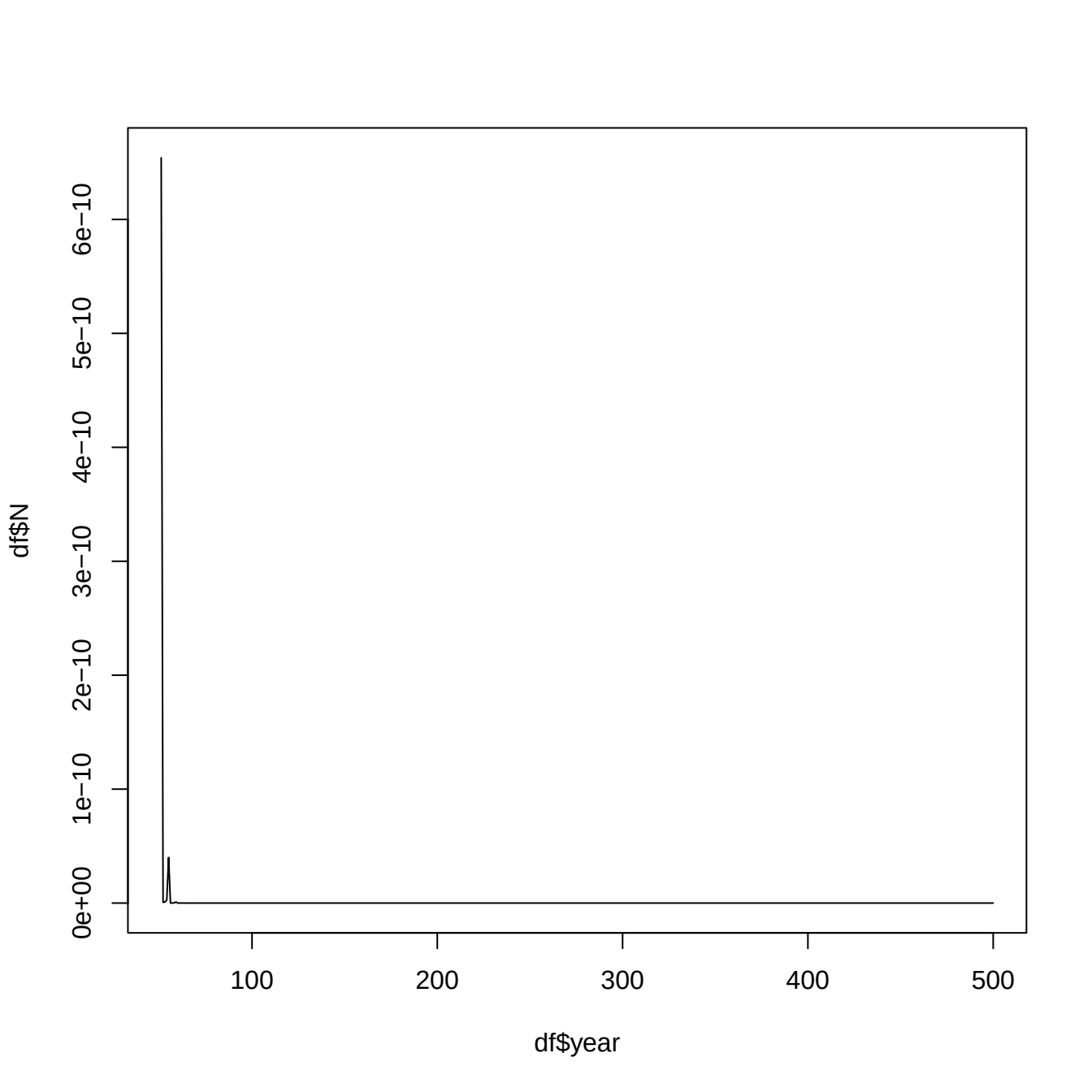

baseline$pop$N[50:200]
0
1000
2000
3000
4000
5000
6000
0
50
100
150
Index

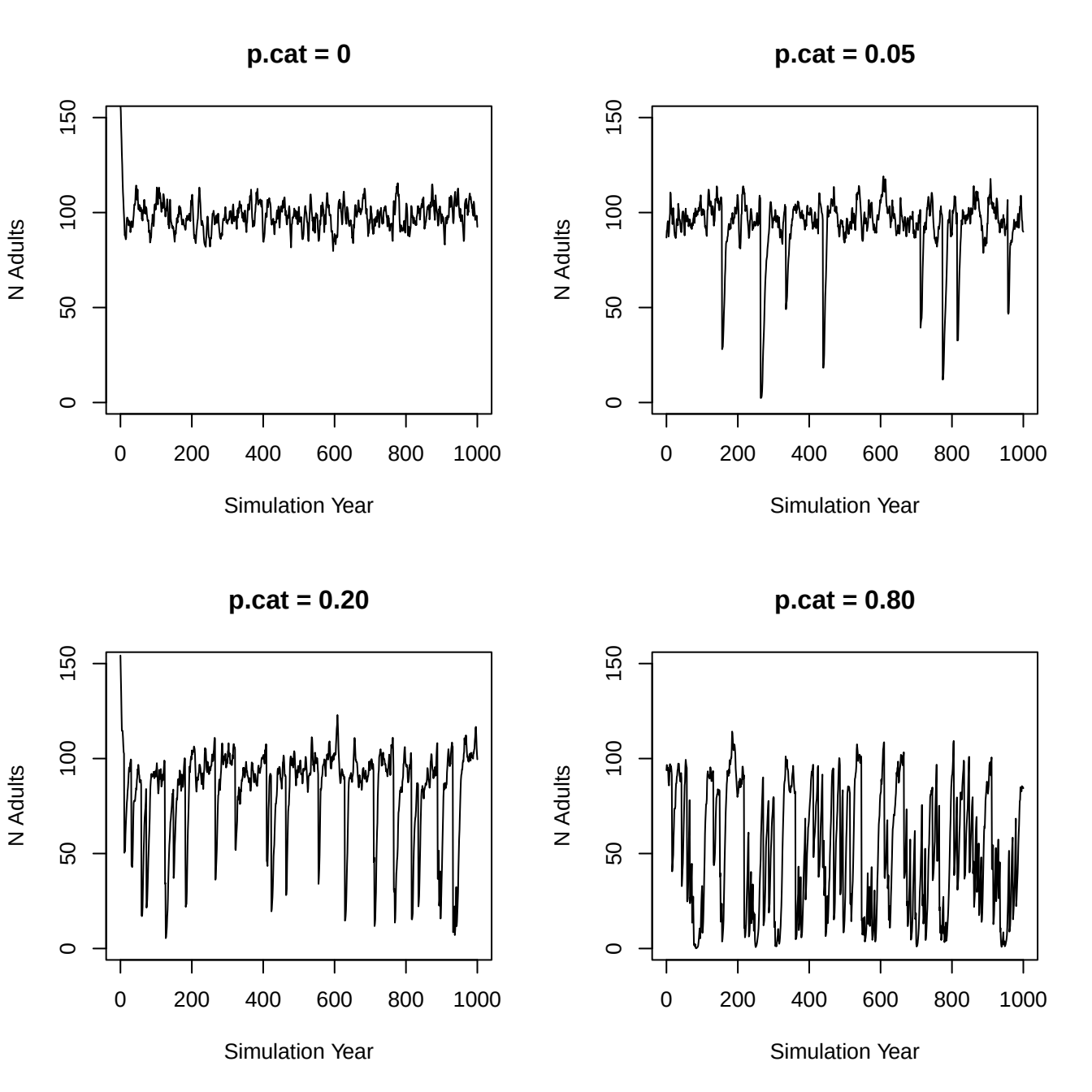

baseline$pop$N[50:200]
0
1000
2000
3000
4000
5000
6000
0
50
100
150
Index

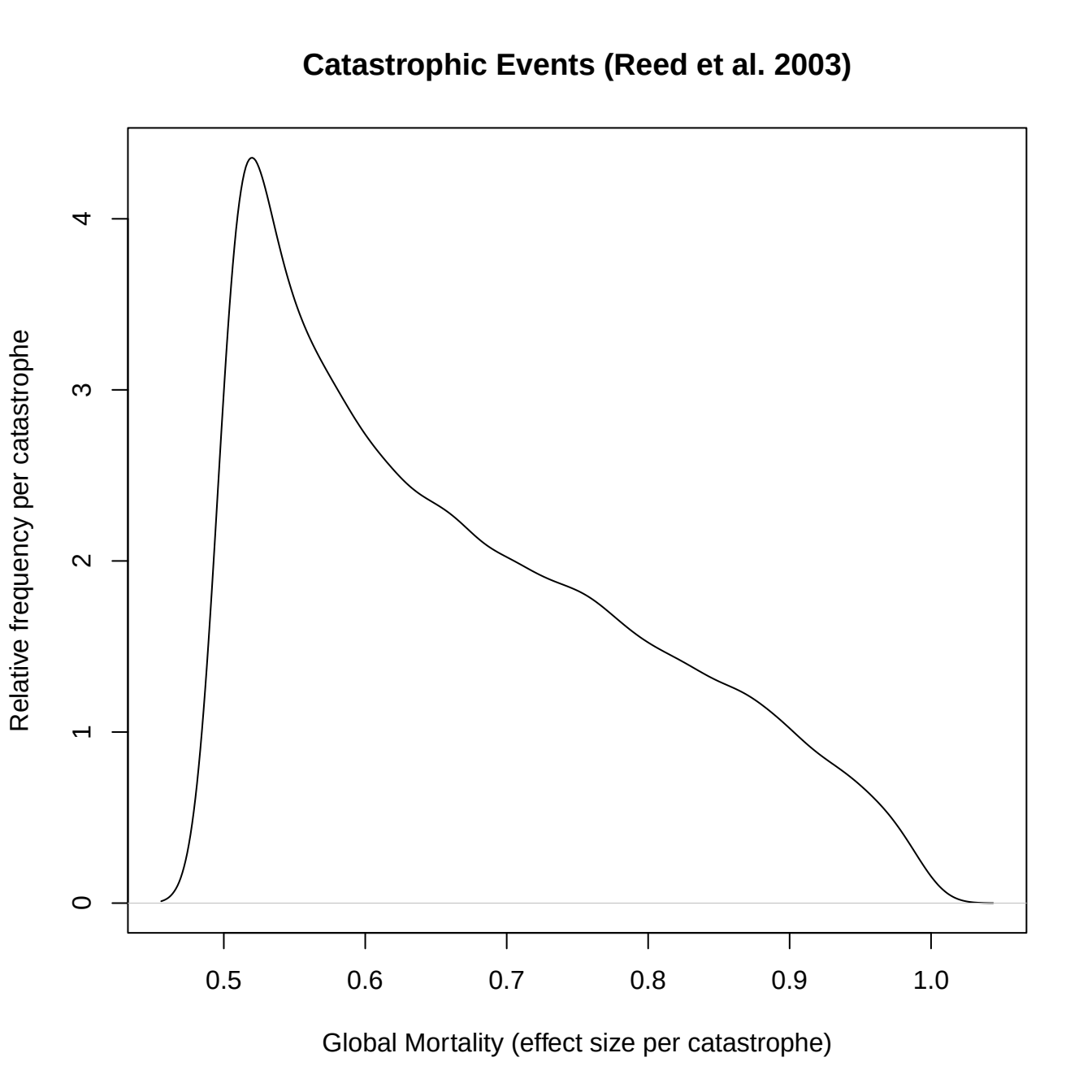

baseline$pop$N[50:200]
0
1000
2000
3000
4000
5000
6000
0
50
100
150
Index

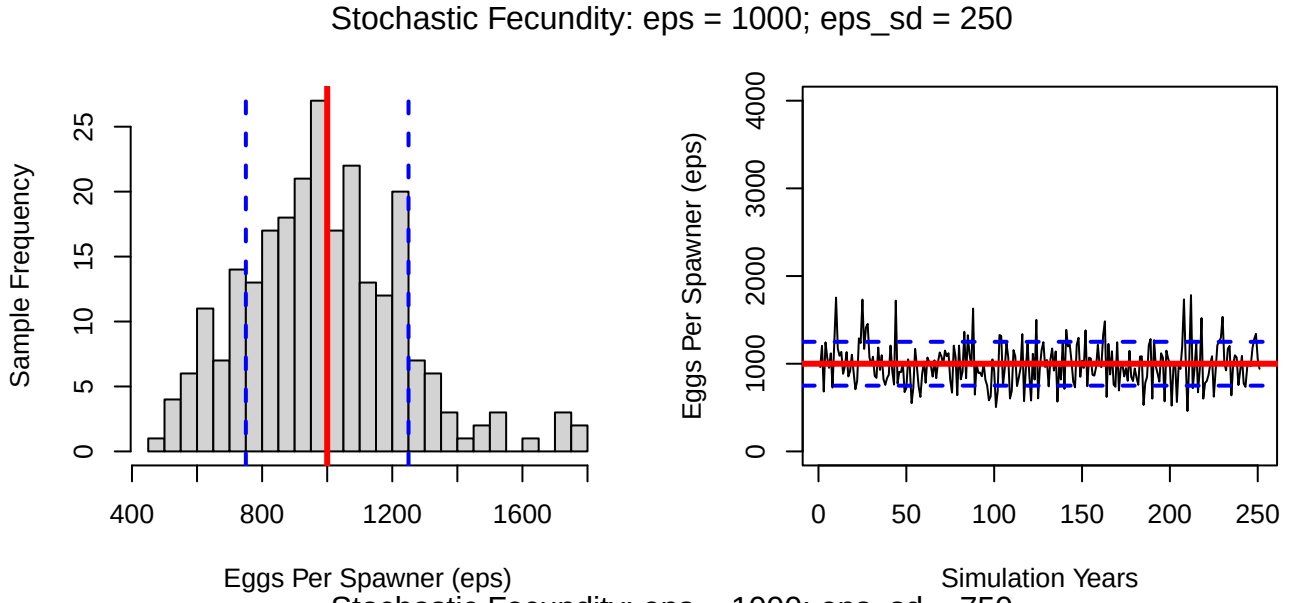

baseline$pop$N[50:200]
0
1000
2000
3000
4000
5000
6000
0
50
100
150
Index

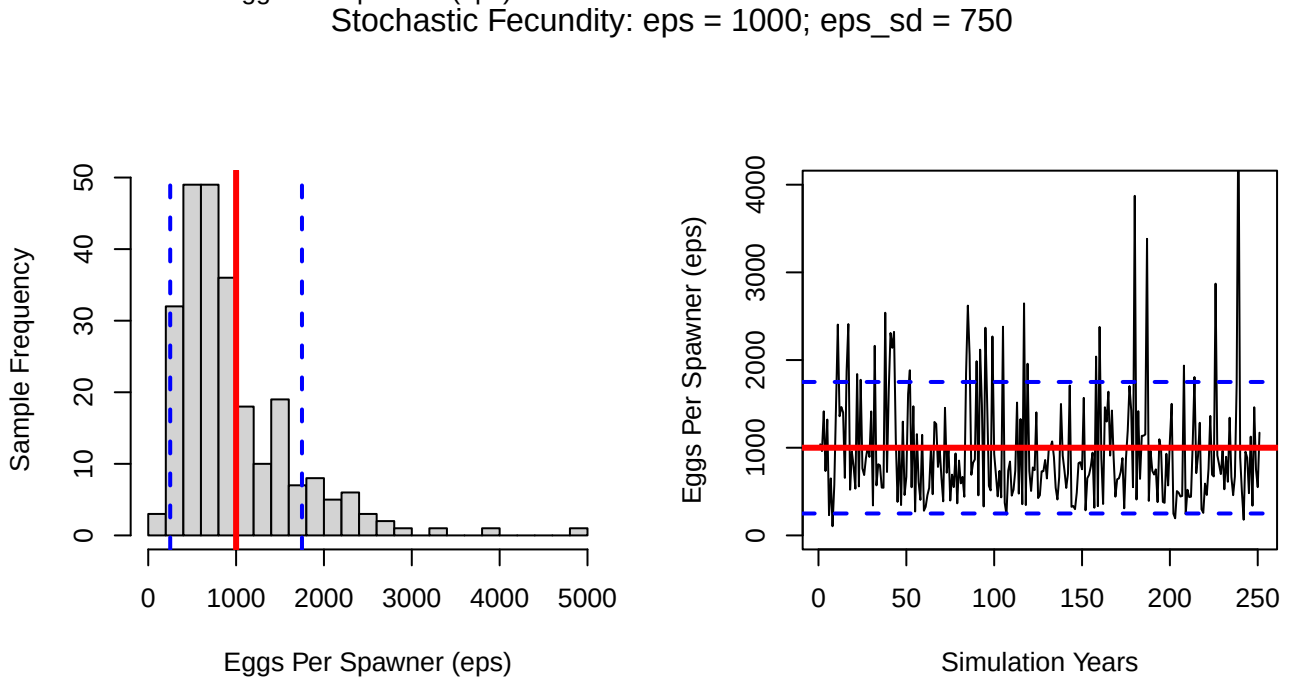

baseline$pop$N[50:200]
0
1000
2000
3000
4000
5000
6000
0
50
100
150
Index

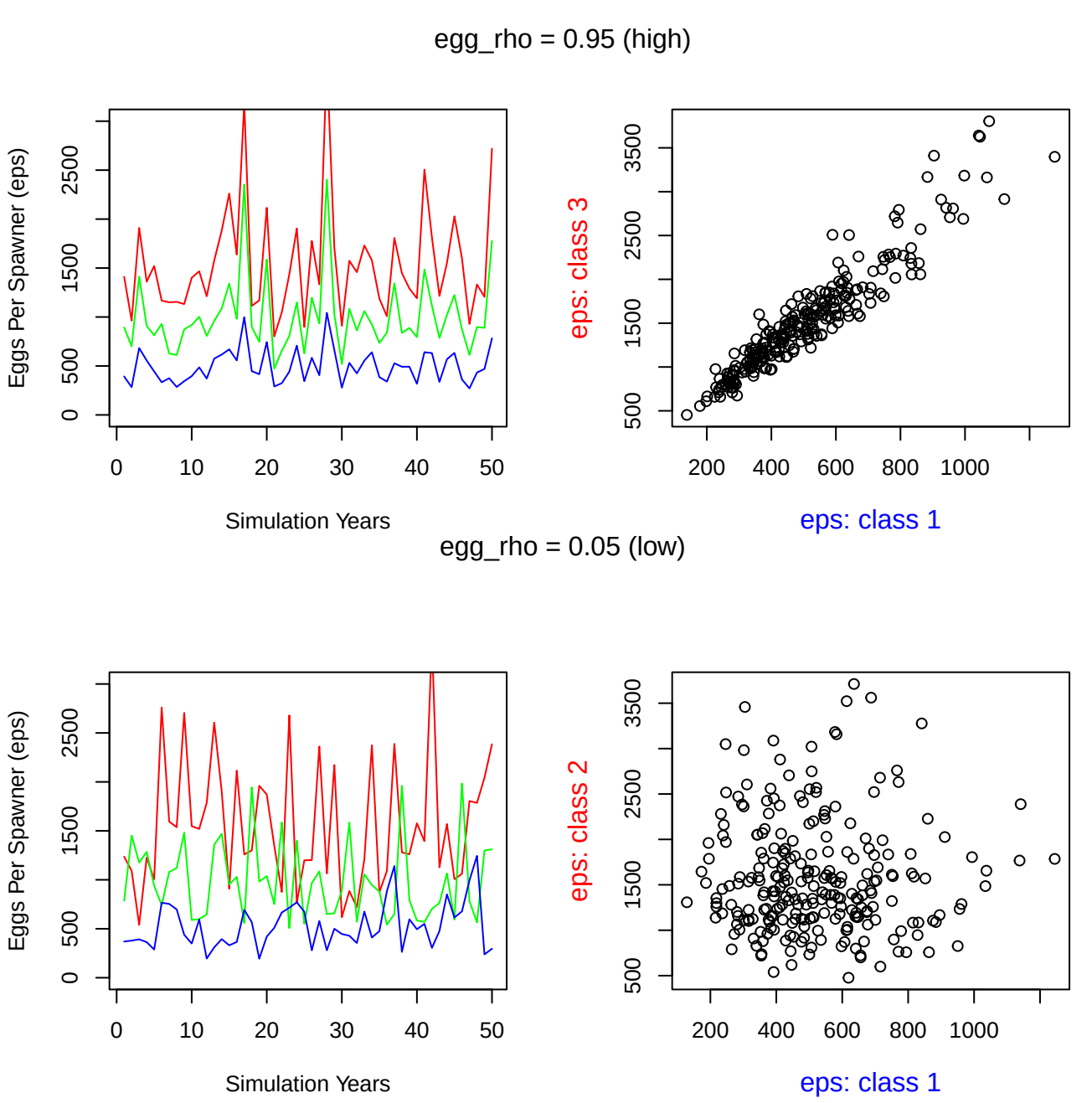

df$N
0e+00
1e−10
2e−10
3e−10
4e−10
5e−10
6e−10
100
200
300
400
500
df$year


p.cat = 0
p.cat = 0.05
p.cat = 0.20
p.cat = 0.80
N Adults
Simulation Year
0
50
100
150
0
200
400
600
800
1000

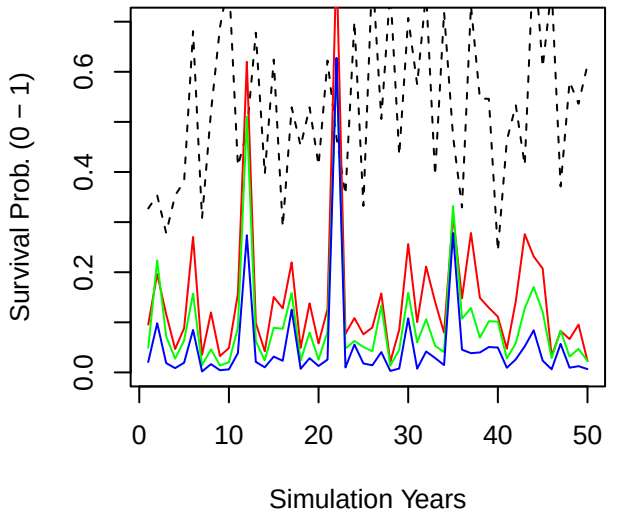

Catastrophic Events (Reed et al. 2003)
Relative frequency per catastrophe
0
1
2
3
4
0.5
0.6
0.7
0.8
0.9
1.0
Global Mortality (effect size per catastrophe)

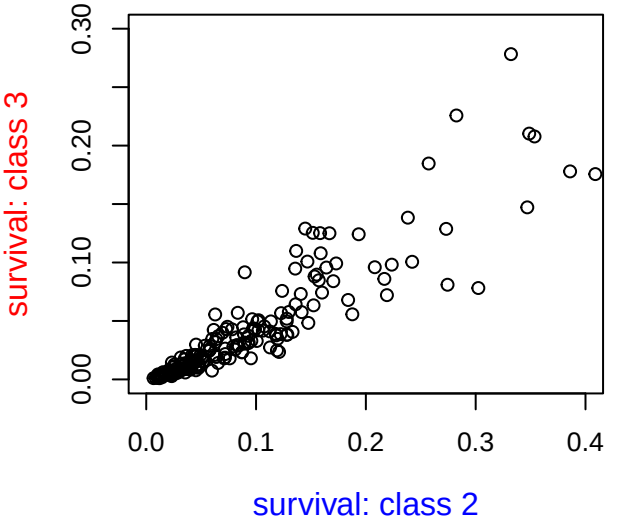

Stochastic Fecundity: eps = 1000; eps_sd = 250
Sample Frequency
0
5
10
15
20
25
400
800
1200
1600
Eggs Per Spawner (eps)
Eggs Per Spawner (eps)
0
1000
2000
3000
4000
0
50
100
150
200
250
Simulation Years


Stochastic Fecundity: eps = 1000; eps_sd = 750
Sample Frequency
0
10
20
30
40
50
0
1000
2000
3000
4000
5000
Eggs Per Spawner (eps)
Eggs Per Spawner (eps)
0
1000
2000
3000
4000
0
50
100
150
200
250
Simulation Years

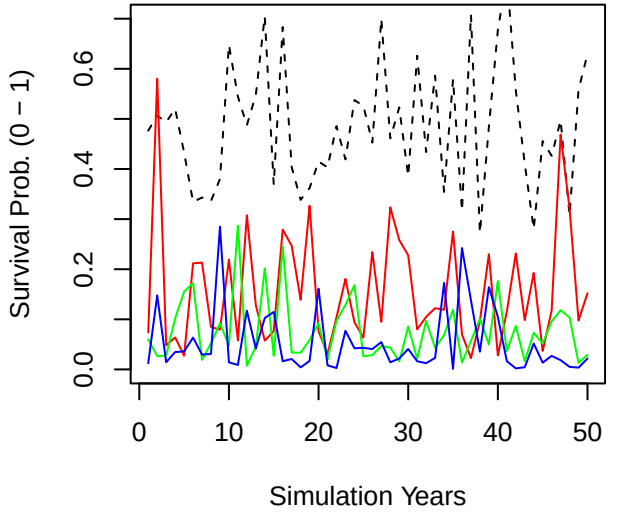

egg_rho = 0.95 (high)
Eggs Per Spawner (eps)
0
500
1500
2500
0
10
20
30
40
50
Simulation Years
eps: class 3
500
1500
2500
3500
200
400
600
800
1000
eps: class 1
egg_rho = 0.05 (low)
Eggs Per Spawner (eps)
0
500
1500
2500
0
10
20
30
40
50
Simulation Years
eps: class 2
500
1500
2500
3500
200
400
600
800
1000
eps: class 1

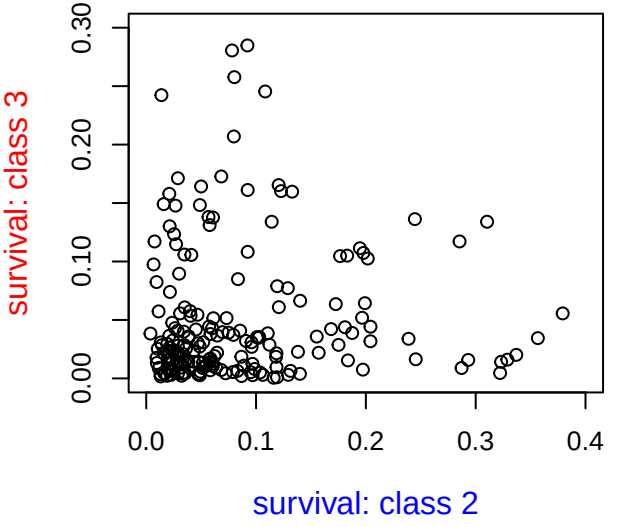
M.rho = 0.95 (high)

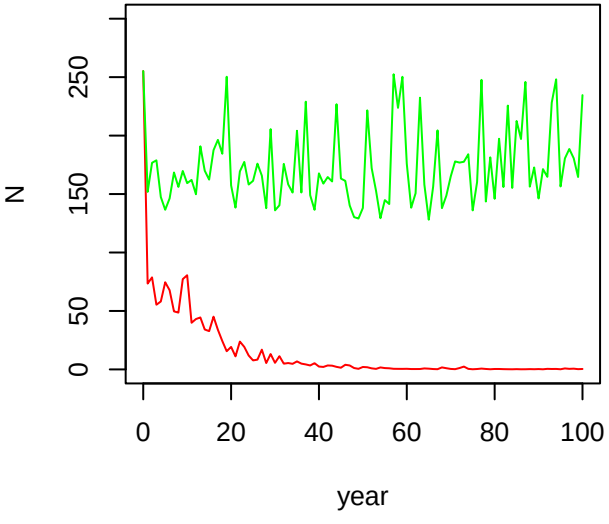


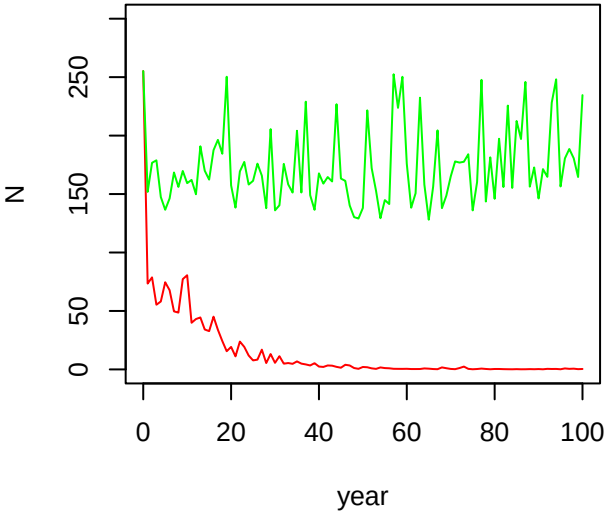




M.rho = 0.05 (low)




N
0
50
150
250
0
20
40
60
80
100
year


N
0
50
150
250
0
20
40
60
80
100
year