Problem set 1 Grading

Aarons: A-

1. Verification of Riley's result (Fig. 21)	**Not presented**
Sensitivity for p, R0, r, g, 1-N, ±20%	**Full marks**
Relative sensitivity of various parameters	**A few minor issues in interpretation**
Comparison to Riley's 27% error	**Full marks**

2. Conditions for P to be periodic	**Full marks**
Find a value of g that ensures periodicity	**Full marks**
How does the value vary as other parameters are changed?	**Full marks**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks. Note that in some cases P can show a long-term secular increase. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Abbott: A

1. Verification of Riley's result (Fig. 21)	**Full marks**
Sensitivity for p, R0, r, g, 1-N, ±20%	**Full marks**
Relative sensitivity of various parameters	**Full marks**
Comparison to Riley's 27% error	**Full marks**

2. Conditions for P to be periodic	**Full marks**
Find a value of g that ensures periodicity	**Full marks**
How does the value vary as other parameters are changed?	**Full marks**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks. You solved a slightly different problem than was posed: random perturbations were added to both P and Z rather than just Z. In any case, you did a very thorough job. Your solution does not have a long term trend, whereas the perturbations to Z only can result in long term increases and decreases. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Dotzel: A-

1. Verification of Riley's result (Fig. 21)	**Full marks**
Sensitivity for p, R0, r, g, 1-N, ±20%	**Full marks**
Relative sensitivity of various parameters	**Full marks**
Comparison to Riley's 27% error	**Have you tried interpolating your model solution into the same time grid as the**

observations prior to computing the error?

2. Conditions for P to be periodic **Did not answer**
   Find a value of g that ensures periodicity **Full marks**
   How does the value vary as other parameters are changed? **Did not answer**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks, excellent analysis. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Fachon: A

1. Verification of Riley's result (Fig. 21) **Full marks**
   Sensitivity for p, R0, r, g, 1-N, ±20% **Full marks**
   Relative sensitivity of various parameters **Full marks**
   Comparison to Riley's 27% error **Full marks**

2. Conditions for P to be periodic **Full marks**
   Find a value of g that ensures periodicity **Full marks**
   How does the value vary as other parameters are changed? **Did not answer**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks, excellent analysis. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Honda: A-

1. Verification of Riley's result (Fig. 21) **Full marks**
   Sensitivity for p, R0, r, g, 1-N, ±20% **A few minor issues in interpretation**
   Relative sensitivity of various parameters **Full marks**
   Comparison to Riley's 27% error **Full marks**

2. Conditions for P to be periodic **Peaks approach does not ensure periodicity**
   Find a value of g that ensures periodicity **Full marks**
   How does the value vary as other parameters are changed? **Full marks**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks. Note that in some cases P can show a long-term secular increase. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Schrage: A

1. Verification of Riley's result (Fig. 21) **Full marks**
   Sensitivity for p, R0, r, g, 1-N, ±20% **Full marks**
   Relative sensitivity of various parameters **Full marks**
   Comparison to Riley's 27% error **Have you tried interpolating your model solution into the same time grid as the observations prior to computing the error?**

2. Conditions for P to be periodic **Full marks**
   Find a value of g that ensures periodicity **Full marks**
   How does the value vary as other parameters are changed? **Full marks**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks. Note that in some cases P can show a long-term secular increase. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Weinstock: A

1. Verification of Riley's result (Fig. 21) **Full marks**
   Sensitivity for p, R0, r, g, 1-N, ±20% **Full marks**
   Relative sensitivity of various parameters **Full marks**
   Comparison to Riley's 27% error **Have you tried interpolating your model solution into the same time grid as the observations prior to computing the error?**

2. Conditions for P to be periodic **Did not answer**
   Find a value of g that ensures periodicity **Full marks**
   How does the value vary as other parameters are changed? **Full marks**

3. Perturb the periodic model with 20% random variations in Z and discuss

Full marks. Note that in some cases P can show a long-term secular increase. The random term means that ln P(t+1yr) deviates from ln P(t) by a random number with zero mean. As a result, ln P(n*yr) undergoes a random walk and can reach very high or very low values. This points to the need for nonlinearity in the dynamics.

Template

1. Verification of Riley's result (Fig. 21) **Full marks**
   Sensitivity for p, R0, r, g, 1-N, ±20% **Full marks**

Relative sensitivity of various parameters **Full marks**
Comparison to Riley's 27% error **Full marks**

2. Conditions for P to be periodic **Full marks**
   Find a value of g that ensures periodicity **Full marks**
   How does the value vary as other parameters are changed? **Full marks**

3. Perturb the periodic model with 20% random variations in Z and discuss