The 2026 Population Growth chapter is extensively revised. Key changes include:

- The logic of the chapter has been improved by switching the order for the fourth and fifth parts. The new structure clarifies relationships between geometric, exponential, and logistic models. It highlights the similarities and differences in both the assumptions and predictions of the different models.
- Two new narrated animations provide students with a clearer understanding of the purpose and value of mathematical population models and how the distinct predictions models generate aid ecologists in their research.
- Four new sets of interactive graphs help students conceptualize population growth rates, visualize qualitative similarities and differences among population models, and understand how key model parameters affect predictions.
- Student task sequences have been extensively revised to (1) provide students with clearer, more effective feedback; (2) reduce make-work; and (3) offer more relevant practice applying key concepts.

Original (2008)

Part 1: Geometric Growth

- The Growth of a Weed
- Modeling Population Growth
  - The Common Waterhemp Challenge
- Describing Population Growth
  - Finite Rate of Increase (λ)
    (With narrated video)
- Geometric Population Growth
- Examples of Geometric Population Growth

Revised (2026)

Part 1: Geometric Growth

- The Growth of a Weed (**Revised**)
- Modeling Population Growth (**Revised**)
  - The Common Waterhemp Challenge
- Describing the Growth of a Population (**Revised**)
- Finite Rate of Increase (λ)
  (With narrated video)
- Geometric Population Growth (**Revised**)
- Predictions of the Geometric Model (**New**)
  - **New narrated video on models**
  - **New interactive graph on model predictions**
- Examples of Geometric Population Growth (**Revised**)

OTHER CHANGES TO PART 1: **Edited text and questions. Improved question feedback, especially relating to calculations. Restructured model presentation to emphasize assumptions and predictions.**

Original (2008)

Part 2: Exponential Growth

- Aphids Wreaking Havoc
- Geometric vs. Exponential Growth
- Exploring Exponential Growth
- Intrinsic Rate of Growth
- Doubling Time
- Examples of Exponential Population Growth
- Human Population Growth

Revised (2026)

Part 2: Exponential Growth

- Aphids Wreaking Havoc (**Revised**)
- Geometric vs. Exponential Growth (**Revised**)
- Exploring Exponential Growth (**Revised**)
- Population Growth Rates (**New**)
  - **Two new interactive graphs to explain instantaneous growth rate**
- Comparing Model Predictions (**New**)
  - **New interactive graphs to compare exponential and geometric models**
- Intrinsic Growth Rate is an Ideal (**Revised**)
- Doubling Time (**Revised**)
- Examples of Exponential Population Growth (**Revised**)
- Human Population Growth (**Updated**)

OTHER CHANGES TO PART 2: **Edited text and questions throughout. Improved question feedback, especially for calculations. Restructured model presentation to emphasize assumptions and predictions.**

Original (2008)

Part 3: Logistic Growth

- The Reality of Limited Resources
- Carrying Capacity
- Examples of Logistic Growth
- Logistic Growth Equation
- The Shape of the Logistic Growth Curve
- Density-Dependent and Density-Independent Factors
- Examples of Density Dependent Factors

Revised (2026)

Part 3: Logistic Growth

- The Reality of Limited Resources (**Revised**)
- Carrying Capacity (**Revised**)
- Examples of Logistic Growth (**Revised**)
- Logistic Growth Model (**Revised**)
  - Fitting The Logistic Growth Curve (**Revised**)
- Comparing Model Predictions (**New**)
  - **New narrated video on the logistic model's unique and useful predictions**
  - **New interactive graphs to compare logistic and exponential models**
  - **New example evaluating the logistic model's predictions**
- Density-Dependent and Density-Independent Factors (**Revised)**
  - The Effect on Carrying Capacity (**Revised example**)
- Density Dependence is Common (**Revised**)
- Examples of Density Independence (**New**)

OTHER CHANGES TO PART 3: **Edited text and questions throughout. Improved question feedback, especially for calculations. Restructured model presentation to emphasize assumptions and predictions. Removed discussion of the Black Death.**

Original (2008)

Part 5: Variability in Populations

- Real Populations Are Noisy
- Environmental Stochasticity
- Demographic Stochasticity
  - Chance Effects Affect Growth Rates
- Allee Effects
- Delayed Density Dependence and Chaos
- Applying Population Models

Revised (2026)

Part 4: Variability in Populations
(Moved forward in chapter)

- Real Populations Are Noisy (**Revised**)
- Environmental Stochasticity (**Revised**)
- Demographic Stochasticity (**Revised**)
  - **New simulation of demographic stochasticity**
  - Chance Effects Affect Growth Rates (**Revised**)
- Allee Effects
- Delayed Density Dependence and Chaos
  - Examples of Delayed Density Dependence (**New)**
- Picking the Right Model (**New**)

OTHER CHANGES TO PART 4: **Edited text and questions throughout. Improved question feedback, especially for calculations. Restructured model presentation to emphasize assumptions and predictions. Refined examples of delayed density dependence.**

Original (2008)

Part 4: Dispersal and Metapopulations

- Beyond a Single Population
- Extinction
- Immigration and Emigration
- Source-Sink Populations
- Examples of Dispersal
- Metapopulations
- Metapopulation Examples

Revised (2026)

Part 5: Dispersal and Metapopulations (Moved backwards)

- Beyond a Single Population (Revised)
- Extinction (Revised)
- Immigration and Emigration (Revised)
- Source-Sink Populations (Revised)
- Examples of Dispersal (Revised)
- Metapopulations (Revised and Restructured)
  - How Metapopulation Dynamics Work (New)
  - Overall Rates of Extinction and Colonization
- Levin's Metapopulation Model (New)
  - Revised interactive graphical metapopulation model
- Metapopulation Examples (Revised)

OTHER CHANGES TO PART 5: Edited text and questions throughout. Restructured the introduction to the metapopulation model, to improve scaffolding. Change in patch occupancy is presented as function of overall colonization and extinction rates, which are driven by patch-specific colonization and extinction probabilities.