CHAPTER ENDNOTES

Preface

- 1 Peck RM & Stroud PT (2012) A Glorious Enterprise: The Academy of Natural Sciences of Philadelphia and the Making of American Science (University of Pennsylvania Press, Philadelphia).
- 2 Meyers ARW ed. (2011) *Knowing Nature: Art and Science in Philadelphia, 1740–1840* (Yale University Press, New Haven, CT).
- 3 http://www.ansp.org/research/systematics-evolution/collections.
- 4 http://phillyhistory.org/PhotoArchive/.

Introduction

- 1 Center City District & Central Philadelphia Development Corporation (2013) State of Center City 2013 (Philadelphia, PA), http://www.centercityphila.org/docs/SOCC2013.pdf.
- 2 United States Census Bureau (2012) Top 20 Cities, 1790–2010, http://www.census.gov/dataviz/visualizations/007/508.php.
- 3 United States Census Bureau (2013) State & County QuickFacts. Philadelphia County, Pennsylvania, http:// quickfacts.census.gov/qfd/states/42/42101.html; United States Census Bureau (2013) State & County QuickFacts. Boston (city), Massachusetts, http://quickfacts.census.gov/qfd/states/25/2507000.html; United States Census Bureau (2013) State & County QuickFacts. New York (city,) New York, http://quickfacts. census.gov/qfd/states/36/3651000.html; United States Census Bureau (2013) State & County QuickFacts. Baltimore City, Maryland, http://quickfacts.census.gov/qfd/states/24/24510.html; United States Census Bureau (2013) State and County QuickFacts. District of Columbia, http://quickfacts.census.gov/qfd/ states/11000.html.
- 4 Forman RTT (2008) Urban Regions: Ecology and Planning beyond the City (Cambridge University Press, Cambridge, UK).
- 5 Clemants SE & Moore G (2003) Patterns of species richness in eight northeastern United States cities. Urban Habitats 1(1):4–16, http://www.urbanhabitats.org/v01n01/speciesdiversity_pdf.pdf.

Front Matter

Illustration on page iv: Philadelphia fleabane

1 Linnæus C (1753) Species Plantarum. Exhibentes Plantas Rite Cognitas, ad Genera Relatas, cum Differentiis Specificis, Nominibus Trivialibus, Synonymis Selectis, Locis Natalibus, Secundum Systema Sexuale Digestas (Laurentii Salvii, Stockholm, Sweden), 863.

From Ecology of Center City, Philadelphia by Kenneth D. Frank. Published in 2015 by Fitler Square Press, Philadelphia, PA. ¹Richards HG (1931) The subway tree—A record of a Pleistocene cypress swamp in Philadelphia. *Bartonia* 13:1–6.

² Ibid.

³ Ibid.

- ⁴ Richards HG (1960) The date of the "subway tree" of Philadelphia. *Proceedings of the Pennsylvania Academy of Science* 34:107–108.
- ⁵ Sevon WD, Fleeger GM, & Shepps VC (1999) *Pennsylvania and the Ice Age*, 2nd ed. Pennsylvania Geological Survey, 4th series, Educational Series 6. (Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Office of Conservation and Engineering Services, Bureau of Topographic and Geologic Survey, Harrisburg, PA).
- ⁶ Richards, The date of the "subway tree" of Philadelphia.
- ⁷ Lewis HC (1880) The surface geology of Philadelphia and vicinity. *Proceedings of the Academy of Natural Sciences of Philadelphia* 32:65.
- ⁸ Lewis HC (1883) Geology of Philadelphia. Journal of the Franklin Institute (May), 359.
- ⁹ Sevon WD & Braun DD (1997) Glacial Deposits of Pennsylvania, 2nd ed. (map). (Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey), http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_016200.pdf.
- ¹⁰ Lewis, Geology of Philadelphia, 366.
- ¹¹ Hopkins TC (1898–99) Clays and clay industries of Pennsylvania: II. Clays of southeastern Pennsylvania (in part), Appendix to the Annual Report of Pennsylvania State College, for 1898–1899, Official Document No. 22 (Pennsylvania State College, Centre County), 1–76.
- ¹² Gillingham HE (1929) Some early brickmakers of Philadelphia. The Pennsylvania Magazine of History and Biography 53(1):1–27.
- ¹³ Hopkins, Clays and clay industries of Pennsylvania.
- ¹⁴ Gillingham, Some early brickmakers of Philadelphia.
- ¹⁵ Weiss JL, Overpeck JT, & Strauss B (2011) Implications of recent sea level rise science for low-elevation areas in coastal cities of the conterminous USA: A letter. *Climatic Change* 105(3–4):635–645.
- ¹⁶ Lambeck K, Esa TM, & Potter E-K (2002) Links between climate and sea levels for the past three million years. *Nature* 419(12):199–206.
- ¹⁷ Schaeffer M, Hare W, Rahmstorf S, & Vermeer M (2012) Long-term sea-level rise implied by 1.5° C and 2° C warming levels. *Nature Climate Change* 2(12):867–870.
- ¹⁸ Rhoads AF & Block TA (2005) Trees of Pennsylvania: A Complete Reference Guide (University of Pennsylvania Press, Philadelphia).

Chapter 2: Eastern Gray Squirrel

- ¹ Kalm P (1771) Travels into North America: Containing Its Natural History, and a Circumstantial Account of Its Plantations and Agriculture in General, with the Civil, Ecclesiastical and Commercial State of the Country, the Manners of the Inhabitants, and Several Curious and Important Remarks on Various Subjects, vol 2. trans. JR Forster (T. Lowndes, London), 243–245.
- ² Ibid., 250.
- ³ Ibid., 246–247.
- ⁴ Ibid., 245–246.
- ⁵ Benson E (2013) The urbanization of the eastern gray squirrel in the United States. *Journal of American History* 100(3):691–710.
- ⁶ Wilson A & Bonaparte CL (1831) Falco borealis, Wilson. Red-tailed hawk. In American Ornithology: Or the Natural History of the Birds of the United States, ed. R Jameson, vol. 1 (Constable & Co and Hurst, Chance & Co., Edinburgh and London), 82.
- ⁷ Warren BH (1888) Report on the Birds of Pennsylvania: With Special Reference to the Food Habits, Based on Over Three Thousand Stomach Examinations (E. K. Meyers, State Printer, Harrisburg, PA).
- ⁸ Pennsylvania Department of Agriculture (1897) Second Annual Report of the Pennsylvania Department of Agriculture, 820.
- ⁹ Warren, Report on the Birds of Pennsylvania, 84.
- ¹⁰ Gillespie JA (1944) Birds of Rittenhouse Square. Cassinia 33:24-26.
- ¹¹ Richards KC (1975) Some declining bird species of southeastern Pennsylvania. Cassinia 55:33-36.
- ¹² Carson R (1962) Silent Spring (Fawcett, New York).
- ¹³ Environmental Protection Agency (1972) Press release. DDT ban takes effect, http://www.epa.gov/history/ topics/ddt/01.html.
- ¹⁴Kosak J (1995) *The Pennsylvania Game Commission 1895–1995* (Pennsylvania Game Commission, Harrisburg, PA).

- ¹⁵Kerlinger P & Brett J (1995) Hawk Mountain Sanctuary: A case study of birder visitation and birding economics. In *Wildlife and Recreationists: Coexistence through Management and Research*, eds. RL Knight & KJ Gutzwiller (Island Press, New York), 271–280.
- ¹⁶ Bildstein K (2001) Raptors as vermin: A history of human attitudes towards Pennsylvania's birds of prey. Endangered Species Update 18(July–August):124–128.
- ¹⁷ Sauer JR, Hines JE, Fallon JE, Pardieck KL, et al. (2011) *The North American Breeding Bird Survey Results and Analysis 1966–2009. Version 3.23.2011* (USGS Patuxent Wildlife Research Center, Laurel, MD), http://www.mbr-pwrc.usgs.gov/bbs/.
- ¹⁸ Saffron I (2011) City's new pastime: Talon shows. *Philadelphia Inquirer*, February 20, 2011, http://www.philly. com/philly/news/20110220_City_s_new_pastime_Talon_shows.html?viewAll=y&c=y.
- ¹⁹Winn M (1998) Red-tails in Love: A Wildlife Drama in Central Park (Pantheon Books, New York).
- ²⁰ The Franklin Institute (2012) The Franklin Institute Hawk Nest, http://www.fi.edu/hawks/.
- ²¹ Micah D (2009–2012) Hawkwatch at the Franklin Institute (blog), http://sunnydixie.blogspot.com/.
- ²² Luttich S, Rusch DH, Meslow EC, & Keith LB (1970) Ecology of red-tailed hawk predation in Alberta. *Ecology* 51(2):190–203.
- ²³ Zanette LY, White AF, Allen MC, & Clinchy M (2011) Perceived predation risk reduces the number of offspring songbirds produced per year. *Science* 334(6061):1398–1401.
- ²⁴ Mosby HS (1969) The influence of hunting on the population dynamics of a woodlot gray squirrel population. *The Journal of Wildlife Management* 33(1):59–73.
- ²⁵ Lawton C & Rochford J (2007) The recovery of grey squirrel (*Sciurus carolinensis*) populations after intensive control programmes. *Biology & Environment: Proceedings of the Royal Irish Academy* 107(1):19–29.
- ²⁶ Barkalow FS Jr. & Soots RF Jr. (1975) Life span and reproductive longevity of the gray squirrel, *Sciurus c. carolinensis* Gmelin. *Journal of Mammalogy* 56(2):522–524.
- ²⁷ Thompson DC (1978) Regulation of a Northern grey squirrel (*Sciurus carolinensis*) population. *Ecology* 59(4):708–715.
- ²⁸ Barkalow & Soots, Life span and reproductive longevity of the gray squirrel.
- ²⁹ Fergus C (2000) Wildlife of Pennsylvania and the Northeast (Stackpole Books, Mechanicsburg, PA).
- ³⁰ Tester J (1987) Changes in daily activity rhythms of some free-ranging animals in Minnesota. *The Canadian Field-Naturalist* 101(1):13–21.
- ³¹ Godman JD (1831) American Natural History, vol. II, pt. I, Mastology. 2nd ed. (Stoddard and Atherton, Philadelphia), 79–82.
- ³² Grant-Hoffman MN & Barboza PS (2010) Herbivory in invasive rats: Criteria for food selection. *Biological Invasions* 4(12):805–825.
- ³³ Koprowski JL (1991) Response of fox squirrels and gray squirrels to a late spring–early summer food shortage. Journal of Mammalogy 72(2):367–372.
- ³⁴ Stone W, Okoniewski J, & Stedelin J (1999) Poisoning of wildlife with anticoagulant rodenticides in New York. *Journal of Wildlife Diseases* 35:187–193.
- ³⁵ Cook HB (July 21–28, 2004) The use of bromethalin in Rittenhouse Square, *The Weekly Press*, http://208.109.172.241/pesticides/bromethalin.rittenhouse.sq.htm.
- ³⁶ Beitler AM (1892) Annual report of the Board of Health for the year ending December 31, 1891. In First Annual Message of Edwin S. Stuart, Mayor of the City of Philadelphia, with Annual Report of Abraham M. Beitler, Director of the Department of Public Safety, and Annual Report of the Board of Health for the Year Ending December 31, 1891, Issued by the City of Philadelphia (Dunlap and Clarke, Philadelphia), 58; Abbott SW (1889) Some historical and statistical facts pertaining to the use of arsenic as a poison. Boston Medical and Surgical Journal 120:477–480.
- ³⁷ Vogleson JA (1913) Annual report of the chief of the Bureau of Health for the year 1912. In Second Annual Message of Rudolph Blankenburg, Mayor of the City of Philadelphia, with the Annual Reports of the Departments of Public Health and Charities, Supplies, Law, City Controller, City Treasurer, Commissioners of the Sinking Funds, Receiver of Taxes, and Board of Revision of Taxes for the Year Ending December 31, 1912, Issued by the City of Philadelphia, vol. III (Dunlap Printing Company, Philadelphia), 67–516.
- ³⁸ Vogel C & Cadwallader C (1935) Rat-flea survey of the port of Philadelphia, Pa. Public Health Reports 50:952–957.
- ³⁹ Dyer R, Rumreich A, & Badger L (1931) Typhus fever: A virus of the typhus type derived from fleas collected from wild rats. *Public Health Reports* 46:334–338.
- ⁴⁰Vogel & Cadwallader, Rat-flea survey of the port of Philadelphia, Pa.
- ⁴¹ Gerhard W (1837) On the typhus fever which occurred at Philadelphia in the spring and summer of 1836. *American Journal of the Medical Sciences* 38:289–322.
- ⁴² Whitmore JT, Cerda JJ, & Offutt RG (1971) Urban leptospirosis presenting as afebrile jaundice. *Digestive Diseases and Sciences* 16(5):455–459.
- ⁴³ Lewis M (1942) The incidence of *Leptospira icterohaemorrhagiae* in trapped rats in Philadelphia. *American Journal* of *Tropical Medicine* 22:571–576.
- ⁴⁴ Hirschhorn RB & Hodge RR (1999) Identification of risk factors in rat bite incidents involving humans. *Pediatrics* 104(3):e35.
- ⁴⁵ Meerburg B, Singleton G, & Kijlstra A (2009) Rodent-borne diseases and their risks for public health. *Critical Reviews in Microbiology* 35(3):221–270.

- ⁴⁶ McDavid CG & Mood EW (1972) Biological aspects of urban rat control. HSMHA Health Reports 87(1):17– 24.
- ⁴⁷ Gates J (1972) Red-tailed hawk populations and ecology in east-central Wisconsin. *The Wilson Bulletin* 84(4):421–433.
- ⁴⁸ Tibbetts J (2005) Combined sewer systems: Down, dirty, and out of date. *Environmental Health Perspectives* 113(7):A464–A467.
- ⁴⁹ Beck JR & Rodeheffer PW (1965) Cause and control of sewer rats. *Public Works* 96(April):116–118.

- ⁵³ Ferritti, Thomas, Telephone conversation with the author, October 17, 2012.
- ⁵⁴ Harris LK (May 5, 2004) Effort launched to end rat poisoning in city park, Animal activists say that squirrels and other life are being harmed in the effort to control pests, http://articles.philly.com/2004-05-05/ news/25381809_1_rat-population-rat-poisoning-animal-advocacy-group.
- ⁵⁵ Gómez A, Kramer LD, Dupuis AP II, Kilpatrick AM, et al. (2008) Experimental infection of eastern gray squirrels (*Sciurus carolinensis*) with West Nile virus. *American Journal of Tropical Medicine and Hygiene* 79:447– 451.
- ⁵⁶ Rushton SP, Lurz PW, Gurnell J, Nettleton P, et al. (2006) Disease threats posed by alien species: The role of a poxvirus in the decline of the native red squirrel in Britain. *Epidemiology & Infection* 134(3):521–533.
- ⁵⁷ Don BAC (1983) Home range characteristics and correlates in tree squirrels. Mammal Review 13(2-4):123-132.
- ⁵⁸ Hadidian J, Manski D, Flyger V, Cox C, et al. (1987) Urban gray squirrel damage and population management: A case history. *Proceedings of the Eastern Wildlife Damage Control Conference* (1987), Paper 19, http://digitalcommons.unl.edu/ewdcc3/19.
- ⁵⁹ Durden LA, Ellis BA, Banks CW, Crowe JD, et al. (2004) Ectoparasites of gray squirrels in two different habitats and screening of selected ectoparasites for Bartonellae. *Journal of Parasitology* 90(3):485–489.

Chapter 3: House sparrow

- ¹ Leidy J (1862) Report to the Councils of Philadelphia on Some of the Insects Injurious to Our Shade Trees (s.n., Philadelphia).
- ² Harris TW (1862) Treatise on Some of the Insects Injurious to Vegetation (Crosby and Nichols, Boston).
- ³ Anderson TR (2006) The Biology of the Ubiquitous House Sparrow. From Genes to Populations (Oxford University Press, Oxford, UK).
- ⁴ Barrows WB (1889) The English Sparrow (Passer domesticus) in North America: Especially in Its Relations to Agriculture (U.S. Government Printing Office, Washington, DC).
- ⁵ Gentry TG (1878) The House Sparrow at Home and Abroad, with Some Concluding Remarks upon Its Usefulness, and Copious References to the Literature of the Subject (Claxton, Remsen, and Haffelfinger, Philadelphia).
- ⁶ The Evening Telegraph, An ordinance, May 18, 1869, 4th ed., 6.
- ⁷ Barrows, *The English sparrow in North America*.
- ⁸ Gentry TG (1874) English sparrows. The American Naturalist 8(11):667-672.
- ⁹ Brewer TM (1874) The European house sparrow. The American Naturalist 8(9):556-557.
- ¹⁰ Coues E (1878) The ineligibility of the European house sparrow in America. *The American Naturalist* 12(8):499–505.
- ¹¹ Gentry, The House Sparrow at Home and Abroad, 100–101.
- ¹² Ibid., 98.
- ¹³ Coates P (2006) American Perceptions of Immigrant and Invasive Species—Strangers on the Land (University of California Press, Berkeley).
- ¹⁴ Brodhead MJ (1971) Elliott Coues and the sparrow war. The New England Quarterly 44(3):420-432.
- ¹⁵ Fine GA & Christoforides L (1991) Dirty birds, filthy immigrants, and the English sparrow war: Metaphorical linkage in constructing social problems. *Symbolic Interaction* 14(4):375–393.
- ¹⁶ McCook H (1889) Tenants of an Old Farm. Leaves from the Note Book of a Naturalist. Illustrations from Nature. (Fords, Howard and Hulbert, New York), 109.
- ¹⁷ Folsom E (1983) The mystical ornithologist and the Iowa tufthunter: Two unpublished Whitman letters and some identifications. *Walt Whitman Quarterly Review* 1(1):18–29.
- ¹⁸ Barrows, The English Sparrow in North America, 164.
- ¹⁹ Ibid., 150.
- ²⁰ Forbush EH & May JB (1955) A Natural History of American Birds of Eastern and Central North America (Bramhall House, New York).
- ²¹ Sauer JR, Hines JE, Fallon JE, Pardieck KL, et al. (2011) The North American Breeding Bird Survey Results and Analysis 1966–2009. Version 3.23.2011 (USGS Patuxent Wildlife Research Center, Laurel, MD), http:// www.mbr-pwrc.usgs.gov/bbs/.

⁵⁰ Clinton JM (1969) Rats in urban America. Public Health Reports 84(1):1-7.

⁵¹ Ibid.

⁵² Ibid.

- ²² Erskine AJ (2006) Recent declines of house sparrows, Passer domesticus, in Canada's Maritime Provinces. The Canadian Field-Naturalist 120(1):43–49.
- ²³ De Laet J & Summers-Smith JD (2007) The status of the urban house sparrow Passer domesticus in north-western Europe: A review. Journal of Ornithology 148(Supplement 2):S275–S278.
- ²⁴ Dandapat A, Banerjee D, & Chakraborty D (2010) The case of the disappearing house sparrow (*Passer domesticus indicus*). Veterinary World 3(2):97–100.
- ²⁵ De Laet & Summers-Smith, The status of the urban house sparrow *Passer domesticus* in north-western Europe; Anderson, *The Biology of the Ubiquitous House Sparrow*; Balmori A & Hallberg Ö (2007) The urban decline of the house sparrow (*Passer domesticus*): A possible link with electromagnetic radiation. *Electromagnetic Biology and Medicine* 26(2):141–151; Beckerman AP, Boots M, & Gaston KJ (2007) Urban bird declines and the fear of cats. *Animal Conservation* 10(3):320–325; Bell CP, Baker SW, Parkes NG, Brooke MDL, et al. (2010) The role of the Eurasian sparrowhawk (*Accipiter nisus*) in the decline of the house sparrow (*Passer domesticus*) in Britain. *Auk* 127:411–420; Cooper CB, Hochachka WM, & Dhondt AA (2007) Contrasting natural experiments confirm competition between house finches and house sparrows. *Ecology* 88(4):864–870; Erskine, Recent declines of house sparrows in Canada's Maritime Provinces; Everaert J & Bauwens D (2007) A possible effect of electromagnetic radiation from mobile phone base stations on the number of breeding house sparrows (*Passer domesticus*). *Electromagnetic Biology and Medicine* 26(1):63–72; Summers-Smith J (2003) The decline of the house sparrow: A review. *British Birds* 96(9):439–446; Summers-Smith JD (2005) Changes in the house sparrow population in Britain. *International Studies on Sparrows* 30:23–37; Zanette LY, White AF; Allen MC, & Clinchy M (2011) Perceived predation risk reduces the number of offspring songbirds produce per year. *Science* 334(6061):1398–1401.
- ²⁶ Tinbergen JM (1981) Foraging decisions in starlings (*Sturnus vulgaris*). Ardea 69:1–67; Feare C (1984) The Starling (Oxford University Press, Oxford, UK).
- ²⁷ European Bird Census Council (2010) Trends in common birds in Europe, 2010 update, http://www.ebcc. info/index.php?ID=387.
- ²⁸ Sauer et al., The North American Breeding Bird Survey.
- ²⁹ Downes C, Blancher P, & Collins B (2011) Landbird Trends in Canada, 1968–2006. Canadian Biodiversity: Ecosystem Status and Trends 2010, Technical Thematic Report No. 12. (Canadian Councils of Resource Ministers, Ottawa, ON).
- ³⁰ Gentry, The House Sparrow at Home and Abroad.
- ³¹ Port A, Hein J, Wolff A, & Bielory L (2006) Aeroallergen prevalence in the northern New Jersey–New York City metropolitan area: A 15-year summary. *Annals of Allergy, Asthma and Immunology* 96(5):687–691.
- ³² Peach WJ, Vincent KE, Fowler JA, & Grice PV (2008) Reproductive success of house sparrows along an urban gradient. *Animal Conservation* 11(6):493–503.
- ³³ Barrows, The English Sparrow in North America.
- ³⁴ Tallamy DW (2009) Bringing Nature Home: How You Can Sustain Wildlife with Native Plants (Updated and Expanded) (Timber Press, Portland, OR).
- ³⁵ Morris Arboretum (2011) The Pennsylvania Flora Project. Philadelphia County Species, http://www.paflora. org/. (This database presents Pennsylvania's flora according to county, species, and nativity.)
- ³⁶ Rhoads AF & Klein WM (1983) *The Vascular Flora of Pennsylvania: Annotated Checklist and Atlas* (American Philosophical Society, Philadelphia).
- ³⁷ Schuyler AE (2011) Trees of Center City, Philadelphia (Wagner Free Institute of Science, Philadelphia).
- ³⁸ Downing AJ (1841) A Treatise on the Theory and Practice of Landscape Gardening, Adapted to North America; with a View to the Improvement of Country Residences. Comprising Historical Notices and General Principles of the Art, Directions for Laying Out Grounds and Arranging Plantations, the Description and Cultivation of Hardy Trees, Decorative Accompaniments to the House and Grounds, the Formation of Pieces of Artificial Water, Flower Gardens, etc.; with Remarks on Rural Architecture (Wiley and Putnam, Boston).
- ³⁹ Wheeler A Jr. (1975) Insect associates of Ginkgo biloba. Entomological News 86:37-44.
- ⁴⁰ Shapiro AM (2002) The Californian urban butterfly fauna is dependent on alien plants. *Diversity and Distributions* 8:31–40.
- ⁴¹ Matteson KC & Langellotto GA (2011) Small scale additions of native plants fail to increase beneficial insect richness in urban gardens. *Insect Conservation and Diversity* 4(2):89–98.

Chapter 4: Bagworm

- ¹ Leidy J (1862) Report to the Councils of Philadelphia on Some of the Insects Injurious to Our Shade Trees (s.n., Philadelphia), 9–10.
- ² Davis DR (1964) Bagworm moths of the Western Hemisphere (Lepidoptera: Psychidae). In Smithsonian Institution, United States National Museum Bulletin 244 (U.S. Government Printing Office, Washington, DC).
- ³ Rhainds M, Davis DR, & Price PW (2009) Bionomics of bagworms (Lepidoptera: Psychidae). Annual Review of Entomology 54:209–226.
- ⁴ Covell CV Jr. (1984) A Field Guide to the Moths of Eastern North America (Houghton Mifflin, Boston).
- ⁵ Jones FM (1927) The mating of Psychidae. *Transactions of the American Entomological Society* 53(4):293–312, 314; Haseman L (1912) The evergreen bagworm. In *Bulletin 104* (University of Missouri Agricultural Experiment Station, Columbia, MO), 308–330.
- ⁶ Jones, The mating of Psychidae; Kaufmann T (1968) Observations on the biology and behavior of the evergreen bagworm moth, *Thyridopteryx ephemeraeformis* (Lepidoptera: Psychidae). *Annals of the Entomological Society of America*. 61(1):38–44.
- ⁷ Haseman L (1920) Bagworms destructive in Missouri. In *Circular 92* (University of Missouri Agricultural Experiment Station, Columbia, MO).

⁸ Ibid.

- ⁹ Moore R G & Hanks LM (2004) Aerial dispersal and host plant selection by neonate Thyridopteryx ephemeraeformis (Lepidoptera: Psychidae). Ecological Entomology 29:327–335.
- ¹⁰ Davis, Bagworm moths of the Western Hemisphere.
- ¹¹ Horticultural Society of Pennsylvania (1831) Report of the Committee Appointed by the Horticultural Society of Pennsylvania for Visiting the Nurseries and Gardens in the Vicinity of Philadelphia, July 13, 1830 (Wm. F. Geddes, printer, Philadelphia).
- ¹² Barrows E (1974) Some factors affecting population size of the bagworm, Thyridopteryx ephemeraeformis (Lepidoptera: Psychidae). *Environmental Entomolology* 3(6):929–932.
- ¹³ Leidy, Report to the Councils of Philadelphia.
- ¹⁴ Riley CV (1887) Our shade trees and their insect defoliators, being a consideration of the four most injurious species which affect the trees of the capital; with means of destroying them. In United States Department of Agriculture, Division of Entomology, Bulletin Number 10 (U.S. Government Printing Office, Washington, DC); Howard L & Chittenden F (1916) The bagworm, an injurious shade-tree insect. In Farmer's Bulletin 701 (U.S. Department of Agriculture, Washington, DC).
- ¹⁵ Menke W & Kelly S, Historic Restoration: Fairmount Water Works, Philadelphia, http://www.landscapeonline.com/research/article/11737 (accessed April 10, 2013).
- ¹⁶ Kemble FA (1891) Letter from 1812 Rittenhouse Square, Thursday, February 5, 1874. In Further Records, 1848–1883: A Series of Letters by Frances Ann Kemble Forming a Sequel to Records of a Girlhood and Records of Later Life (Henry Holt and Company, Philadelphia), 6–7.
- ¹⁷ Ellis JA, Walker AD, Tooker JF, et al. (2005) Conservation biological control in urban landscapes: Manipulating parasitoids of bagworm (Lepidoptera: Psychidae) with flowering forbs. *Biological Control* 34:99–107.
- ¹⁸ Tallamy DW, Ballard M, & D'Amico V (2010) Can alien plants support generalist insect herbivores? *Biological Invasions* 12:2285–2292.
- ¹⁹ Barrows, Some factors affecting population size of the bagworm.
- ²⁰ Frost SW (1964) Insects taken in light traps at the Archbold Biological Station, Highlands County, Florida. *The Florida Entomologist* 47(2):129–161.
- ²¹ Jones, The mating of Psychidae.
- ²² Frank KD (1988) Impact of outdoor lighting on moths: An assessment. Journal of the Lepidopterists' Society 42(2):63–93.
- ²³ Jones, The mating of Psychidae.
- ²⁴ Frank, Impact of outdoor lighting on moths.
- ²⁵ Schaefer PW, Fuester RW, Chianese RJ, Rhoads LD, & Tichenor RB (1989) Introduction and North American establishment of *Coccygomimus disparis* (Hymenoptera: Ichneumonidae), a polyphagous pupal parasite of Lepidoptera, including gypsy moth. *Environmental Entomology* 18(6):1117–1125.
- ²⁶ Ellis et al., Conservation biological control in urban landscapes.
- ²⁷ Berisford YC & Tsao CH (1975) Distribution and pathogenicity of fungi associated with the bagworm, *Thyridopteryx ephemeraeformis* (Haworth). *Environmental Entomology* 4(2):257–261; Berisford & Tsao (1975) Parasitism, predation and disease in the bagworm. *Environ Entomol* 4(4)549–554; Ellis et al., Conservation biological control in urban landscapes; Lackey JA, Huckaby DG, & Ormiston BG (1985) *Peromyscus leucopus*. Mammalian Species (247):1–10; Lord RD, Lord VR, Humphreys JG, & McLean RG (1994) Distribution of *Borrelia burgdorferi* in host mice in Pennsylvania. *Journal of Clinical Microbiology* 32(10):2501–2504; Moore RG & Hanks LM (2000) Avian predation of the evergreen bagworm (Lepidoptera: Psychidae). *Proceedings of the Entomological Society of Washington* 102(2):350–352.

Chapter 5: Cynthia Moth

- ¹ Leidy J (1862) Report to the Councils of Philadelphia on Some of the Insects Injurious to Our Shade Trees (s.n., Philadelphia).
- ² Downing AJ (1847) Trees in towns and villages. *The Horticulturist and Journal of Rural Art and Rural Taste* 1(9):393–397.
- ³ Downing AJ (1852) Shade trees in cities. The Horticulturist and Journal of Rural Art and Rural Taste 7(8):345-349.
- ⁴ Stewardson T (1861) Remarks by Dr. Stewardson, on the ailanthus silk worm. Proceedings of the Academy of Natural Sciences of Philadelphia 13:525.
- ⁵ Covell CV Jr. (1984) A Field Guide to the Moths of Eastern North America (Houghton Mifflin, Boston).
- ⁶ Stewardson, Remarks by Dr. Stewardson, on the ailanthus silk worm.
- ⁷ Tuskes PM, Tuttle JP, & Collins MM (1996) *The Wild Silk Moths of North America: A Natural History of the Saturniidae of the United States and Canada* (Cornell University Press, Ithaca, NY).
- ⁸ Clarke J (1839) A Treatise on the Mulberry Tree and Silkworm. And on the Production and Manufacture of Silk, 2nd ed. (Thomas, Cowperthwait, Philadelphia).
- ⁹ d'Homergue J (1839) The Silk Culturist's Manual: Or a Popular Treatise on the Planting and Cultivation of Mulberry Trees, the Rearing and Propagating of Silk Worms, and the Preparation of the Raw Material for Exportation: Addressed to the Farmers and Planters of the United States (Hogan & Thompson, Philadelphia).
- ¹⁰ Barbour IR & Blydenburgh S (1844) The Silk Culture in the United States: Embracing Complete Accounts of the Latest and Most Approved Modes of Hatching, Rearing, Feeding the Silk-Worm, Managing a Cocoonery, Reeling, Spinning, and Manufacturing the Silk, &c. &c. With Brief Historical Sketches of the Silk Business, Natural History of the Silk-Worm, the Mulberry, &c. Compiled from the Most Approved and Reliable Works, Illustrated by Numerous Engravings of Machinery and Processes. To Which Is Added Blydenburgh's Manual of the Silk Culture; Statistics of Silk Imports, &c. &c. (Greeley & McElrath, New York). [Note: Authorship is ambiguous, as this work is a compilation with sparse attribution.]
- ¹¹ Morris JG (1963) Additional observations on the ailanthus silkworm of China. In Report of the Commissioner of Agriculture for the Year 1862 (U.S. Government Printing Office, Washington, DC), 390–394.
- ¹² Holland WJ (1905) The Moth Book: A Popular Guide to a Knowledge of the Moths of North America (Doubleday, Page & Company, New York).
- ¹³ Nolan EJ (1892) Introduction of the ailanthus silk worm moth. Entomological News 3(8):193-195.
- ¹⁴ Hu SY (1979) Ailanthus. Arnoldia 39:29–50.
- ¹⁵ Ibid; Pyle RM (1975) Silk moth of the railroad yards. Natural History 84:45-51.
- ¹⁶ Ferguson DC (1972) Bombycoidea: Saturniidae, Comprising Subfamilies Hemileucinae (Conclusion) Saturniinae. The Moths of America North of Mexico. Fascicle 20.2B (E.W. Classey Ltd and R. B. D. Publications Inc., London).
- ¹⁷ Packard AS (1914) Monograph of the Bombycine Moths of North America, Including Their Transformations and Origin of the Larval Markings and Armature, pt. III, Families Ceratocampidae (Exclusive of Ceratocampinae), Saturniidae, Hemileucidae and Brahmaeidae. Memoirs of the National Academy of Sciences, vol. XII, pt. I, First Memoir, ed. TDA Cockerell (U.S. Government Printing Office, Washington, DC).
- ¹⁸ Denton SF (1900) As Nature Shows Them. Moths and Butterflies of the United States East of the Rocky Mountains, vol. 1: Moths (J. B. Millet Company, Boston), 105.
- ¹⁹ Shapiro A (1986) Quotation on page 44 in Frank KD (1986) History of the ailanthus silk moth (Lepidoptera: Saturniidae) in Philadelphia: A case study in urban ecology. *Entomological News* 97:41–51.
- ²⁰ Weast RD (1989) Saturniidae. Ecological and Behavioral Observations of Select Attacini (Self-published, Johnston, IA).
- ²¹ Pyle, Silk moth of the railroad yards.
- ²²Weast, Saturniidae.
- ²³ Ferguson, Bombycoidea Saturniidae, Comprising Subfamilies Hemileucinae (Conclusion) Saturniinae.
- ²⁴ Weast, Saturniidae.
- ²⁵ Frank KD (1986) History of the ailanthus silkmoth (Lepidoptera: Saturniidae) in Philadelphia: A case study in urban ecology. *Entomological News* 97:41–51.
- ²⁶ Howard LO (1885) U.S. Department of Agriculture, Bureau of Entomology, Bulletin No. 5. Descriptions of North American Chalcididae from the Collections of the U.S. Department of Agriculture and of Dr. C. V. Riley: with Biological Notes. First paper (U.S. Government Printing Office, Washington, DC).
- ²⁷ Weast, Saturniidae; Schaffner JV & Griswold CL (1934) U.S. Department of Agriculture Miscellaneous Publication No. 188. Macrolepidoptera and Their Parasites Reared from Field Collections in the Northeastern Part of the United States. (U.S. Government Printing Office, Washington, DC).
- ²⁸ Schaffner & Griswold, U.S. Department of Agriculture Miscellaneous Publication No. 188.
- ²⁹ Arnaud PH (1978) A Host-Parasite Catalog of North American Tachinidae (Diptera) (U.S. Department of Agriculture, Science and Education Administration, Washington, DC).
- ³⁰ Shapiro AM (1966) Butterflies of the Delaware Valley. Special Publications of the American Entomological Society, Philadelphia).
- ³¹ Scudder SH (1887) The introduction and spread of *Pieris rapae* in North America 1860–1885. *Memoirs of the Boston Society of Natural History* 4(3):53–69.
- ³² Paxon OS (1908) Numerical distribution of some insects. Entomological News 9:324–337.

- ³³ Tietz HM (1952) The Lepidoptera of Pennsylvania: A Manual (Pennsylvania State College, School of Agriculture, Agricultural Experiment Station, State College).
- ³⁴ Parry D (2009) Beyond Pandora's box: Quantitatively evaluating nontarget effects of parasitoids in classical biological control. *Biological Invasions* 11:47–58.
- ³⁵ Elkinton JS & Boettner GH (2004) The effects of *Compsilura concinnata*, an introduced generalist tachinid, on non-target species in North America. In *Assessing Host Ranges for Parasitoids and Predators Used for Classical Biological Control: A Guide to Best Practice*, eds. RGVan Driesche & R Reardon (U.S. Department of Agriculture, United States Forest Service, Morgantown, WV), 4–14.
- ³⁶ Kellogg SK, Fink LS, & Brower LP (2003) Parasitism of native luna moths, *Actias luna* (L.) (Lepidoptera: Saturniidae), by the introduced *Compsilura concinnata* (Meigen) (Diptera: Tachinidae) in central Virginia, and their hyperparasitism by trigonalid wasps (Hymenoptera: Trigonalidae). *Environmental Entomology* 32(5):1019–1027.
- ³⁷ Kellogg S (2002) Parasitism of Silk Moths at Sweet Briar College (honors thesis, Sweetbriar College), http:// www2.sbc.edu/honors/HJ_2002/kellogg.htm.

Chapter 6: Ailanthus Webworm Moth

- ¹ Ilg C (1911) The life history of Atteva aurea Fitch. Entomological News, and Proceedings of the Entomological Section of the Academy of Natural Sciences of Philadelphia 22(5):229.
- ² Fitch A (1857) Third report on the noxious and other insects of the state of New York. *Transactions of the New York State Agricultural Society* 16:315–490.
- ³ Wilson JJ, Landry JF, Janzen DH, Hallwachs W, et al. (2010) Identity of the ailanthus webworm moth (Lepidoptera, Yponomeutidae), a complex of two species: Evidence from DNA barcoding, morphology and ecology. *ZooKeys* 46:41–60.

⁴ Ibid.

- ⁵ Dyar HG (1897) Oeta floridana Neumoegen. Journal of the New York Entomological Society 5:48.
- ⁶ Wilson et al., Identity of the ailanthus webworm moth.
- ⁷ Becker VO (2009) A review of the New World Atteva Walker moths (Yponomeutidae: Attevinae). Revista Brasileira de Entomologia 53(3):349–355.
- ⁸ Powell J, Comestock J, & Harbison C (1973) Biology, geographical distribution and status of *Atteva exquisita* (Lepidoptera:Yponomeutidae). *Transactions of the San Diego Society of Natural History* 17:175–186.
- ⁹ Peigler RS & Naumann S (2003) *A Revision of the Silkmoth Genus* Samia (University of the Incarnate World, San Antonio, TX).
- ¹⁰ Duffey S & Scudder GGE (1972) Cardiac glycosides in North American Asclepiadaceae, a basis for unpalatability in brightly coloured Hemiptera and Coleoptera. *Journal of Insect Physiology* 18:63–78; Malcolm SB, Cockrell BJ, & Brower LP (1989) Cardenolide fingerprint of monarch butterflies reared on common milkweed, *Asclepias syriaca L. Journal of Chemical Ecology* 15(3):819–853.
- ¹¹ Brower LP, Brower JVZ, & Corvino JM (1967) Plant poisons in a terrestrial food chain. Proceedings of the National Academy of Science 57:893–898.
- ¹² Kundu P & Laskar S (2010) A brief resume on the genus Ailanthus: Chemical and pharmacological aspects. Phytochemistry Reviews 9(3):379–412; De Feo V, De Martino LD, Quaranta E, & Pizza C (2003) Isolation of phytotoxic compounds from tree-of-heaven (Ailanthus altissima Swingle). Journal of Agricultural and Food Chemistry 51(5):1177–1180; De Feo V, De Martino L, Santoro A, Leone A, et al. (2005) Antiproliferative effects of tree-of-heaven (Ailanthus altissima Swingle). Phytotherapy Research 19(3):226–230.
- ¹³ Jones FM (1932) Insect coloration and the selective acceptability of insects to birds. *Thansactions of the Royal Entomological Society of London* 80:345–385; Evans DL (1983) Relative defensive behavior of some moths and the implications to predator-prey interactions. *Entomologia Experimentalis et Applicata* 33(1):103–111.
- ¹⁴ Peigler R, Personal communication by email, March 2, 2012.
- ¹⁵ Marples NM, Kelly DJ, & Thomas RJ (2005) Perspective: The evolution of warning coloration is not paradoxical. *Evolutionary Biology* 59(5):933–940.
- ¹⁶ Coppinger RP (1970) The effect of experience and novelty on avian feeding behavior with reference to the evolution of warning coloration in butterflies. II. Reactions of naive birds to novel insects. *The American Naturalist* 104(938):323–335.
- ¹⁷ Prysby MD (2004) Natural enemies and survival of monarch eggs and larvae. In *The Monarch Butterfly: Biology and Conservation*, eds. KS Oberhauser & MJ Solensky (Cornell University Press, Ithaca, NY), 27-37; Rayor LS (2004) Effects of monarch larval host plant chemistry and body size on *Polistes* wasp predation. In *The Monarch Butterfly: Biology and Conservation*, eds. KS Oberhauser & KS Solensky MJ (Cornell University Press, Ithaca, NY), 39-46.
- ¹⁸ Ilg, The life history of *Atteva aurea* Fitch.
- ¹⁹ Schall MJ (2008) Verticillium Wilt of Ailanthus altissima (dissertation in plant pathology submitted in partial fulfillment of the requirements for the degree of doctor of philosophy, The Pennsylvania State University, University Park).
- ²⁰ Ibid.

- ²¹ Davis DD, Kasson M, & Schall M (2010) Potential for using Verticillium albo-atrum as a biocontrol agent for tree-of-heaven (Ailanthus altissima). In Proceedings. 21st U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2010, eds. KA McManus & KW Gottschalk (U.S. Department of Agriculture, Forest Service, Northern Research Station, Newtown Square, PA), 11.
- ²² Schall, Verticillium wilt of Ailanthus altissima.
- ²³ Inderbitzin P, Bostock RM, Davis RM, Usami T, et al. (2011) Phylogenetics and taxonomy of the fungal vascular wilt pathogen *Verticillium*, with the descriptions of five new species. *PLoS ONE* 6(12):e28341.
- ²⁴ Radišek S, Jakše J, & Javornik B (2006) Genetic variability and virulence among Verticillium albo-atrum isolates from hop. European Journal of Plant Pathology 116(4):301–314.
- ²⁵ Fradin EF & Thomma BPHJ (2006) Physiology and molecular aspects of verticillium wilt diseases caused by *V. dahliae* and *V. albo-atrum. Molecular Plant Pathology* 7(2):71–86.
- ²⁶ Davis et al., Potential for using *Verticillium albo-atrum* as a biocontrol agent for tree-of-heaven.
- ²⁷ Kasson MT, Davis MD, & Davis DD (2013) The invasive Ailanthus altissima in Pennsylvania: A case study elucidating species introduction, migration, invasion, and growth patterns in the northeastern U.S. Northeastern Naturalist 20(10):1–60.
- ²⁸ These plants include maple, hackberry, hawthorn, beech, hazel, walnut, ash, magnolia, mock orange, sumac, willow, linden, cypress, and viburnum, as reported by Corbett SL & Manchester SR (2004) Phytogeography and fossil history of *Ailanthus* (Simaroubaceae). *International Journal of Plant Sciences* 165(4):671–690.
- ²⁹ Clayton JW (2008) Evolutionary History of Simaroubaceae (Sapindales): Systematics, Biogeography and Diversification (dissertation submitted in partial fulfillment of the requirements for the degree of doctor of philosophy, University of Florida, Gainesville).
- ³⁰ Sohn J & Wu C (2013) A taxonomic review of Attevidae (Lepidoptera:Yponomeutoidea) from China with descriptions of two new species and a revised identity of the ailanthus webworm moth, *Atteva fabriciella*, from the Asian tropics. *Journal of Insect Science (Madison)* 13:66, http://www.insectscience.org/13.66/i1536-2442-13-66.pdf.

Chapter 7: Northern Parula

- ¹ Culver DE (1916) Mortality among birds at Philadelphia, May 21–22, 1915. Cassinia 19:33–36.
- ² Wilson A (1828) Species 29, Sylvia pusilla, blue yellow-back warbler. In American Ornithology; or The Natural History of the Birds of the United States, vol. 2 (Collins & Co. and Harrison Hall, New York and Philadelphia), 381–382.
- ³ City of Philadelphia (1901) Official Handbook, City Hall, Philadelphia (City Publishing Company, Philadelphia).
- ⁴ Ibid., 11.
- ⁵ Ibid.
- ⁶ Baily WL (1900) Migration data on City Hall Tower. Cassinia 3:15.
- ⁷ Ibid., 15–19.
- ⁸ Cooke WW (1904) Distribution and Migration of North American Warblers. United States Department of Agriculture, Division of Biological Survey Bulletin No. 18 (U.S. Government Printing Office, Washington, DC), 17–18.
- 9 Ibid., 49.
- ¹⁰ Sauer EGF & Sauer EM (1960) Star navigation of nocturnal migrating birds. The 1958 planetarium experiments. *Cold Spring Harbor Symposia on Quantitative Biology* 25:463–473; Moore FR & Phillips JB (1988) Sunset, skylight polarization and the migratory orientation of yellow-rumped warblers, *Dendroica coronata. Animal Behaviour* 36:1770–1778; Moore FR (1986) Sunrise, skylight polarization, and the early morning orientation of night-migrating warblers. *The Condor* 88(4):493–498; Mettke-Hofmann C & Gwinner E (2003) Long-term memory for a life on the move. *Proceedings of the National Academy of Sciences* 100(10):5863–5866; Wiltschko W & Gwinner E (1974) Evidence for an innate magnetic compass in garden warblers. *Naturwissenschaften* 61(9):406–406.
- ¹¹ Wiltschko R, Stapput K, Bischof H-J, & Wiltschko W (2007) Light-dependent magnetoreception in birds: Increasing intensity of monochromatic light changes the nature of the response. *Frontiers in Zoology* 4:5. doi:10.1186/1742-9994-4-5, http://www.frontiersinzoology.com/content/pdf/1742-9994-4-5.pdf; Gauthreaux Jr S & Belse C (2006) Effects of artificial night lighting on migrating birds. In *Ecological Consequences of Artificial Night Lighting*, eds. C Rich & T Longcore (Island Press, Covelo, CA), 67–93; Wiltschko R, Stapput K, Thalau P, & Wiltschko W (2010) Directional orientation of birds by the magnetic field under different light conditions. *Journal of the Royal Society Interface* 7(Suppl 2):S163–S177; Poot H, Ens BJ, de Vries H, Donners MAH, et al. (2008) Green light for nocturnally migrating birds. *Ecology and Society* 13(2):47, http:// www.ecologyandsociety.org/vol13/iss2/art47/.
- ¹² Emporis Data Committee (2012) Philadelphia's Tallest Buildings—Top 20. (Emporis), http://www.emporis. com/statistics/tallest-buildings-philadelphia-pa-usa.
- ¹³ Klem D Jr. (2009) Preventing bird-window collisions. The Wilson Journal of Ornithology 121(2):314–321.
- ¹⁴ Klem D Jr. (1989) Bird-window collisions. The Wilson Bulletin 101(4):606-620.

- ¹⁵ Dunn EH (1993) Bird mortality from striking residential windows in winter. Journal of Field Ornithology 64(3):302–309.
- ¹⁶ Klem D Jr., Farmer CJ, Delacretaz N, Gelb Y, et al. (2009) Architectural and landscape risk factors associated with bird–glass collisions in an urban environment *The Wilson Journal of Ornithology* 121(1):126–134.
- ¹⁷ Evans Ogden LJ (2002) Effect of light reduction on collision of migratory birds. Special Report of the Fatal Light Awareness Program (FLAP), Paper 5, http://digitalcommons.unl.edu/flap/5.
- ¹⁸ Kousky C (2004) A building less bright. Chicago skyscrapers go dark for migratory birds. *Terrain.org: A Journal of the Built and Natural Environments* No. 15 (Fall/Winter), http://www.terrain.org/articles/15/kousky.htm.
- ¹⁹ Hertzler L (2011) Bird deaths on campus prompt window-design project, art exhibit. (*The Temple News*), http://temple-news.com/news/2011/11/14/bird-deaths-on-campus-prompt-window-design-project-artexhibit/; Johnson K (2012) Winning design would save birds through music. (*The Temple News*), http://temple-news.com/tag/keith-russell/.
- ²⁰ Bauers S (2012) Birds blinded by the light of Philly's glass-clad buildings. Philly.com. http://www.philly.com/philly/news/science/152412745.html?page=3&c=y.
- ²¹ Drewitt AL & Langston RHW (2008) Collision effects of wind-power generators and other obstacles on birds. Annals of the New York Academy of Sciences 1134:233–266.
- ²² Longcore T, Rich C, Mineau P, MacDonald B, et al. (2012) An estimate of avian mortality at communication towers in the United States and Canada. *PLoS ONE* 7(4):e34025. doi:34010.31371/journal.pone.0034025.
- ²³ Johnston DW & Haines TP (1957) Analysis of mass bird mortality in October 1954. The Auk 74(4):447–458; Johnston DW (1955) Mass bird mortality in Georgia, October 1954. Oriole 20:17–26.
- ²⁴ Larkin RP & Frase BA (1988) Circular paths of birds flying near a broadcasting tower in cloud. *Journal of Comparative Psychology* 102(1):90–93.
- ²⁵ Kriska G, Malik P, Szivák I, & Horváth G (2008) Glass buildings on river banks as "polarized light traps" for mass-swarming polarotactic caddis flies. *Naturwissenschaften* 95(5):461–467.
- ²⁶ Málnás K, Polyák L, Prill E, Hegedüs R, et al. (2011) Bridges as optical barriers and population disruptors for the mayfly *Palingenia longicauda*: An overlooked threat to freshwater biodiversity? *Journal of Insect Conservation* 15:823–832.
- ²⁷ Horváth G, Blahó M, Egri A, et al. (2010) Reducing the maladaptive attractiveness of solar panels to polarotactic insects. *Conservation Biology* 24(6):1644–1653.
- ²⁸ Kriska G, Horváth G, & Andrikovics S (1998) Why do mayflies lay their eggs en masse on dry asphalt roads? Water-imitating polarized light reflected from asphalt attracts Ephemeroptera. *Journal of Experimental Biology* 201(15):2273–2286.
- ²⁹ Horváth G, Kriska G, Malik P, & Robertson B (2009) Polarized light pollution: A new kind of ecological photopollution. *Frontiers in Ecology and the Environment* 7(6):317–325.
- ³⁰ Ibid.
- ³¹ Moldenhauer RR & Regelski DJ (2012) Northern parula (Setophaga americana). In The Birds of North America Online, ed. A Poole (Cornell Lab of Ornithology, Ithaca, NY), http://bna.birds.cornell.edu/bna/species/215.
- ³² Schwalbe PW (1992) Northern parula, Parula americana. In Atlas of Breeding Birds in Pennsylvania, ed. DW Brauning (University of Pittsburgh Press, Pittsburgh, PA), 306–307.
- ³³ Devlin J (1954) Effects of weather on nocturnal migration as seen from one observation point at Philadelphia. *The Wilson Bulletin* 6(2):93–101.
- ³⁴ Sauer JR, Hines JE, Fallon JE, Pardieck KL, et al. (2011) The North American Breeding Bird Survey, Results and Analysis 1966–2010. Version 12.07.2011 (USGS Patuxent Wildlife Research Center, Laurel, MD), http:// www.mbr-pwrc.usgs.gov/cgi-bin/atlasa10.pl?06480&1&10.
- ³⁵ Moldenhauer & Regelski, Northern parula.
- ³⁶ Robbins CS, Sauer JR, Greenberg RS, & Droege S (1989) Population declines in North American birds that migrate to the neotropics. *Proceedings of the National Academy of Sciences* 86(19):7658–7662.
- ³⁷ Graveland J (1990) Effects of acid precipitation on reproduction in birds. *Cellular and Molecular Life Sciences* 46(9):962–970.
- ³⁸ Böhning Gaese K, Taper M, & Brown J (2002) Are declines in North American insectivorous songbirds due to causes on the breeding range? *Conservation Biology* 7(1):76–86.
- ³⁹ Nebel S, Mills A, McCracken JD, & Taylor PD (2010) Declines of aerial insectivores in North America follow a geographic gradient. Avian Conservation and Ecology 5(2):1, http://www.ace-eco.org/vol5/iss2/art1/.
- ⁴⁰ Both C, Van Turnhout CAM, Bijlsma RG, Siepel H, et al. (2010) Avian population consequences of climate change are most severe for long-distance migrants in seasonal habitats. *Proceedings of the Royal Society B* 277:1259–1266.
- ⁴¹ Faaborg J, Holmes RT, Anders AD, Bildstein KL, et al. (2010) Recent advances in understanding migration systems of New World land birds. *Ecological Monographs* 80(1):3–48.
- ⁴² Bent AC (1963) Life Histories of North American Wood Warblers. Part one of two parts. [Reprint of Smithsonian Institution, United States National Museum Bulletin 203, published in 1953 by the U.S. Government Printing Office, Washington, DC] (Dover Publications, New York).
- ⁴³ Böhning Gaese, Taper, & Brown, Are declines in North American insectivorous songbirds due to causes on the breeding range?
- ⁴⁴ Arnold T & Zink R (2011) Collision mortality has no discernible effect on population trends of North American birds. *PLoS ONE* 6(9): e24708. doi:10.1371/journal.pone.0024708.

- ⁴⁵ Loss SR, Will T, & Marra PP (2012) Direct human-caused mortality of birds: Improving quantification of magnitude and assessment of population impact. *Frontiers in Ecology and the Environment* 10:357–364.
- ⁴⁶ Bauers S (2012) Concerns over bird migration provokes change in Philadelphia light show. (Philly.com). http://articles.philly.com/2012-09-09/news/33697443_1_bird-migration-birds-use-stars-dead-birds.
- ⁴⁷ Wilson E O (1984) Biophilia: The Human Bond with Other Species (Harvard University Press, Cambridge, MA).

Chapter 8: Polyphemus Moth

- ¹ Peale TR (1833) The Titian Peale Butterfly and Moth Collection in the Academy of Natural Sciences. Box 7, cork 5 and 6, curated by Jason Weintraub, http://clade.ansp.org/entomology/collections/peale/peale.php?mode=specimen&box=7.
- ² Tuskes PM, Tuttle JP, & Collins MM (1996) *The Wild Silk Moths of North America. A Natural History of the Saturniidae of the United States and Canada* (Cornell University Press, Ithaca, NY).
- ³ Cotter JL, Roberts DG, & Parrington M (1992) The Buried Past. An Archeological History of Philadelphia (University of Pennsylvania Press. Philadelphia), 524.
- ⁴ Frost CA (1915) Remarks on collecting at light, with a list of the Coleoptera taken. *Psyche* 22:207–210.
- ⁵ Engraving by anonymous artist in Bowen D (1839) A History of Philadelphia, with a Notice of Villages in the Vicinity Embellished with Engravings Designed as a Guide to Citizens and Strangers, Containing a Correct Account of City Improvements, up to the Year 1839; Also, the State of Society, in Relation to Science, Religion and Morals; with an Historical Account of the Military Operations of the Late War, Including the Names of Over Two Thousand Patriotic Officers, and Citizen Soldiers, Who Volunteered Their Services in Defence of This City, When Threatened by an Hostile Army in 1812–13 & 14 (Daniel Bowen, Philadelphia), 116.
- ⁶ Strickland W, Gill EH, & Campbell HR, eds. (1841) The Philadelphia Gas Works (J. Weale, London).
- ⁷ Huston RM (1839) Third Annual Report Made to the Select and Common Councils of the City of Philadelphia, In Behalf of the Trustees of the Philadelphia Gas Works. Reports, Specifications, and Estimates of Public Works in the United States of America: Comprising the Philadelphia Gas Works; Reservoir Dam across the Swatara; Tivin Locks on the Schuylkill Canal; Delaware Breakwater; Philadelphia Water Works; Dam and Lock on the Sandy and Beaver Canal; Dam on the James River and Kanawha Canal, Virginia; Locks of Eight Feet Lift, On the Same; Aqueducts across Rivanna River and Byrd Creek, On the Same; Superstructure, Etc., of Farm Bridges, On the Same; Lock Gates and Mitre Sills, eds. W Strickland, EH Gill, & HR Campbell (J.Weale, London), 15–27.
- ⁸ Bowen D (1839) A History of Philadelphia, with Notice of Villages, in the Vicinity, Embellished with Engravings, Designed as a Guide to Citizens and Strangers, Containing a Correct Account of the City Improvements up to the Year 1839... (Daniel Bowen, Philadelphia), 116–117.
- ⁹ Wainwright NB (1961) History of the Philadelphia Electric Company 1881–1961 (Philadelphia Electric Company, Philadelphia).
- ¹⁰ Riley CV (1892) Directions for Collecting and Preserving Insects. Part F of Bulletin of the United States National Museum No. 39. Smithsonian Institution, United States National Museum (U.S. Government Printing Office, Washington, DC), 51.
- ¹¹ Denton SF (1900) As Nature Shows Them. Moths and Butterflies of the United States East of the Rocky Mountains, vol 1: Moths (J. B. Millet Company, Boston), 35.
- ¹² Frank KD (1988) Impact of outdoor lighting on moths: An assessment. Journal of the Lepidopterists' Society 42(2):63–93.

- ¹⁴ Langevelde Fv, Ettema JA, Donners M, Wallis de Vries MF, et al. (2011) Effect of spectral composition of artificial light on the attraction of moths. *Biological Conservation* 144:2274–2281.
- ¹⁵ Eisenbeis G (2006) Artificial night lighting and insects: Attraction of insects to streetlamps in a rural setting in Germany. In *Ecological Consequences of Artificial Night Lighting*, eds. C Rich & T Longcore (Island Press, Washington, DC), 281–304.
- ¹⁶ Frank, Impact of outdoor lighting on moths.
- ¹⁷Yela JL & Holyoak M (1997) Effects of moonlight and meteorological factors on light and bait trap catches of noctuid moths (Lepidoptera: Noctuidae). *Environmental Entomology* 26(6):1283–1290.
- ¹⁸ Robinson HS & Robinson PJM (1950) Some notes on the observed behavior of Lepidoptera in flight in the vicinity of light sources together with a description of a light trap designed to take entomological samples. *Entomologists' Gazette* 1:3–20.
- ¹⁹Yela & Holyoak, Effects of moonlight and meteorological factors on light and bait trap catches of noctuid moths.
- ²⁰ Kyba C, Ruhtz T, Fische J, & Hölker F (2011) Cloud coverage acts as an amplifier for ecological light pollution in urban ecosystems. *PLoS ONE* 6(3):e17307. doi: 10.1371/journal.pone.0017307
- ²¹ Tietz HM (1952) *The Lepidoptera of Pennsylvania: A Manual* (Pennsylvania State College, School of Agriculture, Agricultural Experiment Station, State College, PA).
- ²² Capinera JL (2001) Handbook of Vegetable Pests (Academic Press, San Diego, CA).

¹³ Ibid.

²³ Covell CV Jr. (1984) A Field Guide to the Moths of Eastern North America (Houghton Mifflin, Boston).

- ²⁵ Covell Jr., A Field Guide to the Moths of Eastern North America.
- ²⁶ Adamski D, Hevel GF, & Pultyniewicz A (2009) Redescription and immature stages of *Promalactis suzukiella* (Matsumura) (Gelechioidea: Oecophoridae), a new introduction into the United States. *Proceedings of the Entomological Society of Washington* 111(1):204–214.
- ²⁷ Covell Jr., A Field Guide to the Moths of Eastern North America.
- ²⁸ Tietz, The Lepidoptera of Pennsylvania: A Manual.

- ³⁰ Tuskes et al., The Wild Silk Moths of North America.
- ³¹ Forstner M, Breer H, & Krieger J (2009) A receptor and binding protein interplay in the detection of a distinct pheromone component in the silkmoth *Antheraea polyphemus*. *International Journal of Biological Sciences* 5(7):745–757.
- ³² Vickers NJ (2006) Winging it: Moth flight behavior and responses of olfactory neurons are shaped by pheromone plume dynamics. *Chemical Senses* 31:155–166.
- ³³ Kochansky JP, Cardé RT, Taschenberg EF, & Roelofs WL (1977) Rhythms of male Antheraea polyphemus attraction and female attractiveness, and an improved pheromone synthesis. Journal of Chemical Ecology 3(4):419–427.
- ³⁴ Janzen DH (1983) Introduction [Insects]. In Costa Rican Natural History, ed. DH Janzen (University of Chicago Press, Chicago), 619–645.
- ³⁵ Kolankiewicz L & Beck R (2001) Weighing Sprawl Factors in Large U.S. Cities. A Report on the Nearly Equal Roles Played by Population Growth and Land Use Choices in the Loss of Farmland and Natural Habitat to Urbanization. Analysis of the Census Data on the 100 Largest Urbanized Areas of the United States (NumbersUSA, Arlington, VA).
- ³⁶ Wagner WH & Mayfield MR (1980) Foodplants and cocoon construction in *Antheraea polyphemus* (Lepidoptera: Saturniidae) in southern Michigan. *Great Lakes Entomologist* 13:131–138.
- ³⁷ Young A (1982) Predation on the pupae of Saturniidae (Lepidoptera) by gray squirrels in Wisconsin. *The Great Lakes Entomologist* 15(2):145.
- ³⁸ Tan M (2009) The Effect of Alien Plants on the Survival of Larval Lepidoptera (honors thesis submitted in partial fulfillment of the requirements for the degree of bachelor of science, University of Delaware, Newark), http://dspace.udel.edu:8080/dspace/bitstream/handle/19716/4438/Tan,%20 Milton.pdf?sequence=1;Tietz, The Lepidoptera of Pennsylvania: A Manual.
- ³⁹ Wagner D (2012) Moth decline in the northeastern United States. News of the Lepidopterists' Society 54(2):52– 56.
- ⁴⁰ Frick T & Tallamy D (1996) Density and diversity of nontarget insects killed by suburban electric insect traps. *Entomological News* 107(2):77–82; Frick WF, Pollock JF, Hicks AC, Langwig KE, et al. (2010) An emerging disease causes regional population collapse of a common North American bat species. *Science* 329(5992):679–682.

Chapter 9: Bridge Spider

¹ McCook HC (1890) American Spiders and Their Spinning Work, vol. 2 (self-published, Philadelphia), 265.

- ⁴ Dale WE & Axtell RC (1975) Flight of the salt marsh Tabanidae (Diptera), *Tabanus nigrovittatus, Chrysops atlanticus* and *C. fuliginosus*: Correlation with temperature, light, moisture and wind velocity. *Journal of Medical Entomology* 12(5):551–557.
- ⁵ Heiling A (1999) Why do nocturnal orb-web spiders (Araneidae) search for light? *Behavioral Ecology and Sociobiology* 46(11):43–49.
- ⁶ Heiling AM & Herberstein ME (1998) Activity patterns in different developmental stages and sexes of Larinioides sclopetarius (Clerck) (Araneae, Araneidae). In Proceedings of the 17th European Colloquium of Arachnology, Edinburgh, 1997, ed. PA Selden (British Arachnological Society, UK), 211–214.
- ⁷ Frank KD (2009) Exploitation of artificial light by a jumping spider. *Peckhamia* 78(1):1–3.
- ⁸ McCook, American Spiders and Their Spinning Work, vol. 2.
- ⁹ Chuang C-Y,Yang E-C, & Tso I-M (2008) Deceptive color signaling in the night: A nocturnal predator attracts prey with visual lures. *Behavioral Ecology and Sociobiology* 19(2):237–244.
- ¹⁰ Chuang C-Y, Yang E-C, & Tso I-M (2007) Diurnal and nocturnal prey luring of a colorful predator. *Journal of Experimental Biology* 210:3830–3837.
- ¹¹ McCook HC (1893) American Spiders and Their Spinning Work, vol. 3 (self-published, Philadelphia).
- ¹² Kleinteich A & Schneider JM (2011) Developmental strategies in an invasive spider: Constraints and plasticity. *Ecological Entomology* 36(1):82–93.

²⁴ Capinera, Handbook of Vegetable Pests.

²⁹ Ibid.

² Ibid., 294.

³ Ibid., 289.

- ¹³ Burgess JW & Uetz GW (1982) Social spacing strategies in spiders. In Spider Communication, Mechanisms and Ecological Significance, eds. PN Witt & JS Rovner (Princeton University Press, Princeton, NJ), 317–351.
- ¹⁴ Kralj-Fišer S & Schneider JM (2012) Individual behavioural consistency and plasticity in an urban spider. *Animal Behaviour* 84(1):197–204.
- ¹⁵ Frank KD (1988) Impact of outdoor lighting on moths: An assessment. *Journal of the Lepidopterists' Society* 42(2):63–93.
- ¹⁶ Kleinteich A (2009) *Life History of the Bridge Spider*, Larinioides sclopetarius *(Clerck, 1757)* (doctoral dissertation, University of Hamburg, Germany).
- ¹⁷ Levi HW (1974) The orb-weaver genera Araniella and Nuctenea (Araneae: Araneidae). Bulletin of the Museum of Comparative Zoology 146(6):291–316.
- ¹⁸ Hentz NM (1847) Descriptions and figures of the araneides of the United States. Boston Journal of Natural History Containing Papers and Communications Read to the Boston Society of Natural History, 1845–1847 5:443– 478.

19 Ibid.

- ²⁰ Uma DB (2010) Behavioral Ecology of Wasp-Spider Interactions: The Role of Webs, Chemicals, and Deception (PhD dissertation, Georgetown University, Washington, DC).
- ²¹ Rau P (1935) The spider prey of the mud wasp, *Sceliphron caementarium* (Araneae, Hymen: Sphegidae). *Ent News* 46(10):268–270; Rau P & Rau NL (1916) The sleep of insects: An ecological study. *Annals of the Entomological Society of America* 9(3):227–274.

Chapter 10: Black and Yellow Mud Dauber

- ¹ Bartram J & Collinson P (1745) An account of some very curious wasp nests made of clay in Pennsylvania; by Mr. John Bartram: Communicated by Mr. Peter Collinson, F.R.S. *Philosophical Transactions* 43:363–366.
- ² Redlich F (1945) The Philadelphia Water Works in relation to the Industrial Revolution in the United States. *The Pennsylvania Magazine of History and Biography* 69(3):243–256.
- ³ Carter EC II (1971/1972) Benjamin Henry Latrobe and the growth and development of Washington, 1798–1818. In *Records of the Columbia Historical Society, Washington, DC*, vol. 71/72, 128–149.
- ⁴ Latrobe BH (1806) On two species of the sphex or wasp, found in Virginia and Pennsylvania, and probably existing through all the United States. *The Philosophical Magazine* 25(99):236–241.
- ⁵ Ibid., 240.
- ⁶ Ibid., 240–241.
- 7 Ibid., 241.
- ⁸ McCook HC (1890) American Spiders and Their Spinning Work, vol. 2 (self-published, Philadelphia), 381–382.
- ⁹ Hentz NM (1847) Descriptions and figures of the araneides of the United States. Boston Journal of Natural History Containing Papers and Communications Read to the Boston Society of Natural History 5:443–478.
- ¹⁰ Eberhard W (1970) The predatory behavior of two wasps, *Agenoideus humilis* (Pompilidae) and *Sceliphron caementarium* (Sphecidae), on the orb weaving spider, *Araneus cornutus* (Araneidae). *Psyche* 77:243–251.
- ¹¹ Ibid.
- ¹² Obin MS (1982) Spiders living at wasp nesting sites: What constrains predation by mud-daubers? *Psyche* 89:321–335.
- ¹³ Bohart RM & Menke AS (1976) Sphecid Wasps of the World: A Generic Revision (University of California Press, Berkeley).
- ¹⁴ Fowler HG (1983) Human effects on nest survivorship of urban synanthropic wasps. Urban Ecology 7(2):137– 143.
- ¹⁵ Krakker JJ (2012) Mud wasp nests as markers of Middle Holocene house structures in the Central Mississippi Valley. *Journal of American Antiquity* 77(4):800–807.

Chapter 11:Yellowjackets

- ¹ Cresson ET (1887) Supplementary volume: Synopsis of the families and genera of the Hymenoptera of America, north of Mexico together with a catalogue of the described species and bibliography. *Transactions* of the American Entomological Society and Proceedings of the Entomological Section of the Academy of Natural Sciences (American Entomological Society, Philadelphia), 123.
- ² Morse RA, Eikwort GC, & Jacobson RS (1977) The economic status of an immigrant yellowjacket, Vespula germanica (Hymenoptera:Vespidae), in northeastern United States. Environmental Entomology 6(1):109–110.
- ³ Lord WD (1977) The occurrence of pestiferous Vespula spp. in northern Delaware (Hymenoptera:Vespidae). Entomological News 88:193–196.
- ⁴ Parrish HD & Roberts RB (1982) Successful establishment of the German yellowjacket in urban New Jersey indicated by relative abundance of *Vespula germanica* and *V. maculifrons* (Hymenoptera:Vespidae). *Journal of the Kansas Entomological Society* 55(2):272–276.

- ⁵ MacDonald JF & Akre RD (1984) Range extension and emergence of subterranean nesting by the German yellowjacket, *Vespula germanica*, in North America (Hymenoptera:Vespidae). *Entomological News* 95(1):5–8.
- ⁶ Stein KJ & Wrensch DL (1988) The pest status of yellowjackets in Ohio (Hymenoptera:Vespidae). The Great Lakes Entomologist 21(2):83–90.
- ⁷ Duncan CD (1939) A Contribution to the Biology of North American Vespine Wasps (Stanford University Press, Redwood City, CA).
- ⁸ Wood G, Hopkins D, & Schellhorn N (2006) Preference by *Vespula germanica* (Hymenoptera:Vespidae) for processed meats: Implications for toxic baiting. *Journal of Economic Entomology* 99(2):263–267.
- ⁹ Reid BL, MacDonald JF, & Ross DR (1995) Foraging and spatial dispersion in protein-scavenging workers of *Vespula germanica* and *V. maculifrons* (Hymenoptera:Vespidae). *Journal of Insect Behavior* 8(3):315–330; Richter MR & Tisch VL (1999) Resource choice of social wasps: Influence of presence, size and species of resident wasps. *Insectes Sociaux* 46(2):131–136.
- ¹⁰ Taylor B, Schalk D, & Jeanne R (2010) Yellowjackets use nest-based cues to differentially exploit higher-quality resources. *Naturwissenschaften* 97(12):1041–1046.
- ¹¹ Cameron SA, Lozier JD, Strange JP, Koch JB, et al. (2011) Patterns of widespread decline in North American bumble bees. *Proceedings of the National Academy of Sciences* 108(2):662–667.
- ¹² Bischof RO (1996) Seasonal incidence of insect stings: Autumn "yellow jacket delirium." Journal of Family Practice 43:271–273.
- ¹³ Lynch JP & Rothstein RD (1997) A gastric "bee-zoar." New England Journal of Medicine 336:1763–1764; Sobonya R & Schmidt J (1997) Not a "bee-zoar," but a wasp. New England Journal of Medicine 337:575.
- ¹⁴ Dibs SD & Baker MD (1997) Anaphylaxis in children: A 5-year experience. *Pediatrics* 99(1):E7.
- ¹⁵ Waddell LS & Drobatz KJ (1999) Massive envenomation by Vespula spp. in two dogs. Journal of Veterinary Emergency and Critical Care 9(2):67–71.
- ¹⁶ Davis HG (1978) Yellowjacket wasps in urban environments. In *Perspectives in Urban Entomology*, eds. GW Frankie & CS Koehler (Academic Press, New York), 163–185.
- ¹⁷ West PL, McKeown NJ, & Hendrickson RG (2011) Massive hymenoptera envenomation in a 3-year-old. *Pediatric Emergency Care* 27(1):46–48.
- ¹⁸ Landolt PJ, Heath RR, Reed HC, & Manning K (1995) Pheromonal mediation of alarm in the eastern yellowjacket (Hymenoptera:Vespidae). *The Florida Entomologist* 78(1):101–108.
- ¹⁹ Simon RP & Benton AW (1968) Winter activities of Vespula maculifrons. Annals of the Entomological Society of America 61(2):542–543.
- ²⁰ Davis, Yellowjacket wasps in urban environments.
- ²¹ Langley RL & Morrow WE (1997) Deaths resulting from animal attacks in the United States. Wilderness and Environmental Medicine 8:8–16.
- ²² Greene A, Breisch NL, Golden DBK, Kelly D, et al. (2012) Sting embedment and avulsion in yellowjackets (Hymenoptera:Vespidae): A functional equivalent to autotomy. *American Entomologist* 58(1):50–57.
- ²³ Shorter JR & Rueppell O (2012) A review on self-destructive defense behaviors in social insects. *Insectes Sociaux* 59(1):1–10.
- ²⁴ Friedman LS, Modi P, Liang S, & Hryhorczuk D (2010) Analysis of Hymenoptera stings reported to the Illinois Poison Center. *Journal of Medical Entomology* 47(5):907–912.
- ²⁵ Cervo R, Zacchi F, & Turillazzi S (2000) *Polistes dominulus* (Hymenoptera, Vespidae) invading North America: Some hypotheses for its rapid spread. *Insectes Sociaux* 47(2):155–157.
- ²⁶ MacDonald JF, Akre RD, & Keyel RE (1980) The German yellowjacket (*Vespula germanica*) problem in the United States (Hymenoptera:Vespidae). Bulletin of the Entomological Society of America 26(4):436–444.
- ²⁷ Hopwood JM, Vaughan M, Shepherd M, Biddinger D, et al. (2012) Are Neonicotinoids Killing Bees? A Review of Research into the Effects of Neonicotinoid Insecticides on Bees, with Recommendations for Action (The Xerces Society for Invertebrate Conservation, Portland, OR).
- ²⁸ Jacobson RS (1991) Polistes dominulus spreading in USA. Sphecos 21:14.
- ²⁹ Wilson-Rich N (2010) The Polistes war: Weak immune function in the invasive P. dominulus relative to the native P. fuscatus. Insectes Sociaux 57:47–52.
- ³⁰ Fox-Wilson G (1946) Factors affecting populations of social wasps, *Vespula* species, in England (Hymenoptera). *Proceedings of the Royal Entomological Society of London. Series A, General Entomology* 21(4-6):17–27; Archer ME (2001) Changes in abundance of *Vespula germanica* and *V. vulgaris* in England. *Ecological Entomology* 26(1):1–7; Akre RD & Reed HC (1981) Population cycles of yellowjackets (Hymenoptera:Vespinae) in the northwest Pacific. *Environmental Entomology* 10(3):267–274.
- ³¹ Archer ME (2012) Vespine Wasps of the World: Behavior, Ecology & Taxonomy of the Vespinae (Siri Scientific Press, Manchester, UK).

Chapter 12: Common Eastern Firefly

- ¹ De Geer C (1774) Second Memoire: Des lampyres, des thelephores, et des colliures. In Mémoires pour servir à l'histoire des insectes, Tome IV (Pierre Hesselberg, Stockholm), 52–53; pl. 17, fig. 28; Jones FM (1930) Dynastes tityus in Pennsylvania and Delaware (Coleop: Scarabaeidae). Entomological News 41:305–306.
- ² Leconte JL (1851) Synopsis of the Lampyrides of temperate North America. Proceedings of the Academy of Natural Sciences of Philadelphia 5:331–356.
- ³ General Assembly of the Commonwealth of Pennsylvania. *Firefly—Official Insect of Pennsylvania*. Act of April 10, 1974, Public Law 247, No. 59, CI 71; as amended December 5, 1988, Public Law 1101, No. 130.
- ⁴ McDermott FA (1911) Some further observations on the light-emission of American Lampyridae: The photogenic function as a mating adaptation in the Photinini. *Canadian Entomologist* 43:399–406.

⁵ Ibid., 401.

⁶ Ibid.

⁷ Ibid., 403.

⁸ Williams FX (1917) Notes on the life-history of some North American Lampyridæ. Journal of the New York Entomological Society 25(1):11–33.

¹⁰ Lloyd JE (1965) Aggressive mimicry in *Photuris*: Firefly femmes fatales. *Science* 149(3684):653–654.

¹¹ Ibid.

- ¹² Lloyd JE (1975) Aggressive mimicry in *Photuris* fireflies: Signal repertoires by femmes fatales. *Science* 187(4175):452–453.
- ¹³ Lloyd JE (1980) Male Photuris fireflies mimic sexual signals of their females' prey. Science 210(4470):669-671.
- ¹⁴ Lloyd JE & Wing SR (1983) Nocturnal aerial predation of fireflies by light-seeking fireflies. *Science* 222(4624):634–635.
- ¹⁵ El-Hani CN, Queiroz J, & Stjernfelt F (2010) Firefly femmes fatales: A case study in the semiotics of deception. *Biosemiotics* 3(1):33–55.
- ¹⁶ Eisner T, Goetz MA, Hill DE, Smedley SR, et al. (1997) Firefly "femmes fatales" acquire defensive steroids (Lucibufagins) from their firefly prey. *Proceedings of the National Academy of Sciences of the United States of America* 94(18):9723–9728.
- ¹⁷ González A, Hare JF, & Eisner T (1999) Chemical egg defense in *Photuris* firefly "femmes fatales." *Chemoecology* 9(4):177–185.
- ¹⁸ Gronquist M, Schroeder FC, Ghiradella H, Hill D, et al. (2006) Shunning the night to elude the hunter: Diurnal fireflies and the "femmes fatales." *Chemoecology* 16:39–43.
- ¹⁹ Nelson S, Carlson AD, & Copeland J (1975) Mating-induced behavioural switch in female fireflies. *Nature* 255:628–629.
- ²⁰ Barber HS (1951) North American fireflies of the genus Photuris. Smithsonian Miscellaneous Collections vol. 117, no. 1 (Smithsonian publication number 4051). With preface and notes by Frank A. McDermott. (Smithsonian Institution, Washington, DC); McDermott FA (1967) The North American fireflies of the genus Photuris Dejean: A modification of Barber's key (Coleoptera; Lampyridae). The Coleopterists Bulletin 21(4):106–116.
- ²¹ McDermott FA (1958) *The Fireflies of Delaware*, 2nd ed. (Society of Natural History of Delaware, Wilmington).
- ²² Heckscher CM (2010) Delaware *Photuris* fireflies (Coleoptera: Lampyridae): New state records, conservation status, and habitat associations. *Entomological News* 121(5):498–505.
- ²³ De Geer, Second memoire, 53.
- ²⁴ McDermott, *The Fireflies of Delaware.*
- ²⁵ Glassman S; Bolger B, ed. (2002) National Historic Landmark Nomination. The College of Physicians of Philadelphia Building (National Register of Historic Places Registration Form of United States Department of Interior, National Park Service), 21, http://www.nps.gov/nhl/designations/samples/pa/CollegeofPhysicians.pdf.
- ²⁶ Lloyd JE (1973) Firefly parasites and predators. The Coleopterists Bulletin 27(2):91–106.
- ²⁷ Walsh BD & Riley CV (1868) Fire-flies. American Entomologist 1(1):19.
- ²⁸ McDermott, *The Fireflies of Delaware*.
- ²⁹ Steinberg DA, Pouyat RV, Parmelee RW, & Groffman PM (1997) Earthworm abundance and nitrogen mineralization rates along an urban-rural land use gradient. *Soil Biology and Biochemistry* 29(3–4):427–430.
- ³⁰ Smetak KM, Johnson-Maynard JL, & Lloyd JE (2007) Earthworm population density and diversity in different-aged urban systems. *Applied Soil Ecology* 37(1–2):161–168.
- ³¹ Reid BJ & Watson R (2005) Lead tolerance in *Aporrectodea rosea* earthworms from a clay pigeon shooting site. Soil Biology and Biochemistry 37(3):609–612.
- ³² Spurgeon DJ & Hopkin SP (1996) The effects of metal contamination on earthworm populations around a smelting works: Quantifying species effects. *Applied Soil Ecology* 4(2):147–160.
- ³³ Buschman LL (1984) Larval biology and ecology of *Photuris* fireflies (Lampyridae: Coleoptera) in northcentral Florida. *Journal of the Kansas Entomological Society* 57(1):7–16.
- ³⁴ Lewis SM, Personal communication, March 24, 2010.
- ³⁵ Lloyd JE (2006) Stray light, fireflies, and fireflyers. In *Ecoloagical Consequences of Artificial Night Lighting*, eds. C Rich & T Longcore (Island Press, Washington, DC), 345–364.

⁹ Ibid., 24.

- ³⁶ Museum of Science, Boston (2012) Firefly Watch, https://www.mos.org/fireflywatch/.
- ³⁷ Kipling R (1911) Philadelphia. In *Rewards and Fairies* (Doubleday, Page & Company, New York), 344.
- ³⁸ Reynolds JW (2008) The earthworms (Oligochaeta: Acanthodrilidae, Lumbricidae, Megascolecidae, and Sparganophilidae) of Pennsylvania, USA. *Megadrilogica* 11(March):131–146.

Chapter 13: Land Planarian

- ¹ Ogren RE & Sheldon JK (1991) Ecological observations on the land planarian *Bipalium pennsylvanicum* Ogren, with references to phenology, reproduction, growth tale and food niche. *Journal of the Pennsylvania Academy of Science* 65(3–9); Ogren RE (1987) Description of a new three-lined land planarian of the genus *Bipalium* (Turbellaria: Tricladida) from Pennsylvania, USA. *Transactions of the American Microscopical Society* 106(1):21–30.
- ² Ogren, Description of a new three-lined land planarian.
- ³ Ibid.
- ⁴ Ducey PK, West L-J, Shaw G, & Lisle JD (2005) Reproductive ecology and evolution in the invasive terrestrial planarian *Bipalium adventitium* across North America. *Pedobiologia* 49(4):367–377.
- ⁵ Ducey PK & Noce S (1998) Successful invasion of New York State by the terrestrial flatworm, *Bipalium adventitium*. Northeastern Naturalist 5(3):199–206.
- ⁶ Klots AB (1960) A terrestrial flatworm well established outdoors in the northeastern United States. Systematic Zoology 9(1):33–34.
- ⁷ Fiore C, Tull JL, Zehner S, & Ducey PK (2004) Tracking and predation on earthworms by the invasive terrestrial planarian *Bipalium adventitium* (Tricladida, Platyhelminthes). *Behavioural Processes* 67(3):327–334.
- ⁸ Dindal DL (1970) Feeding behavior of a terrestrial turbellarian *Bipalium adventitium*. *American Midland Naturalist* 83(2):635–637.
- ⁹ Watermolen DJ & Fojut P (2008) An Introduced Flatworm, Bipalium adventitium (Tricladida: Terricola), in Wisconsin and Its Potential Impacts. Miscellaneous Publication PUB-SS-1041 2008 (Bureau of Science Services, Department of Natural Resources, Madison, WI).
- ¹⁰ Zaborski ER (2002) Observations on feeding behavior by the terrestrial flatworm *Bipalium adventitium* (Platyhelminthes: Tricladida: Terricola) from Illinois. *American Midland Naturalist* 148(2):401–408.
- ¹¹ Ogren & Sheldon, Ecological observations on the land planarian *Bipalium pennsylvanicum* Ogren.
- ¹² Christensen OM & Mather JG (1998) The "New Zealand flatworm," Artioposthia triangulata, in Europe: The Faroese situation. Pedobiologia 42(5/6):532–540; Blackshaw RP & Stewart VI (1992) Artioposthia triangulata (Dendy, 1894), a predatory terrestrial planarian and its potential impact on lumbricid earthworms. Agricultural Zoology Reviews 5:201–219.
- ¹³ Boag B & Yeates GW (2001) The potential impact of the New Zealand flatworm, a predator of earthworms, in western Europe. *Ecological Applications* 11(5):1276–1286; Watermolen DJ & Fojut P (2008) An Introduced Flatworm, Bipalium adventitium.
- ¹⁴ Ogren RE (1985) The human factor in the spread of an exotic land planarian in Pennsylvania. Proceedings of the Pennsylvania Academy of Science 59:117–118.
- ¹⁵ Ducey PK, Email correspondence, April 29, 2012.
- ¹⁶ Leidy J (1862) Report to the Councils of Philadelphia on Some of the Insects Injurious to Our Shade Trees (s.n., Philadelphia), 1–11. (Leidy's home address is recorded on the last page of this document.)
- ¹⁷ Leidy J (1851 [1852]) Helminthological contributions Nr. 3. Proceedings of the Academy of Natural Sciences of Philadelphia 5:239–244; Leidy J (1851 [1852]) Contributions to helminthology. Proceedings of the Academy of Natural Sciences of Philadelphia 5:349–351.
- ¹⁸ Ogren RE (1981) Land planarians in Pennsylvania. Proceedings of the Pennsylvania Academy of Science 55:52–56.
- ¹⁹ Ogren RE (1989) Identification features of the two-lined land planarian *Rhynchodemus sylvaticus*, with evidence that *Rhynchodemus americanus* is conspecific. *Transactions of the American Microscopical Society* 108(1):40–44.
- ²⁰ Ogren RE (1995) Predation behaviour of land planarians. *Hydrobiologia* 305(1-3):105-111.
- ²¹ Ogren R (1955) Ecological observations on the occurrence of *Rhynchodemus*, a terrestrial turbellarian. *Transactions of the American Microscopical Society* 74(54–60).
- ²² Ogren & Sheldon, Ecological observations on the land planarian *Bipalium pennsylvanicum* Ogren.

Chapter 14: American Robin

- ¹ Catesby M (1731) The Natural History of Carolina, Florida and the Bahama Islands: Containing the Figures of Birds, Beasts, Fishes, Serpents, Insects and Plants: Particularly, the Forest—Trees, Shrubs, and Other Plants, not Hitherto Described, or Very Incorrectly Figured by Authors. Together with Their Descriptions in English and French. To Which Are Added Observations on the Air, Soil, and Waters: With Remarks upon Agriculture, Grain, Pulse Roots &C. To the Whole Is Prefixed a New and Correct Map of the Countries Treated of. vol. I (printed at the expence of the author, and sold by W. Innys and R. Manby, at the West End of St. Paul's, by Mr. Hauksbee, at the Royal Society House, and by the author, at Mr. Bacon's in Hoxton, London).
- ² Wilson A (1808) Robin. Turdus migratorius. In American Ornithology; Or the Natural History of the Birds of the United States, vol. I (Bradford and Inskeep, Philadelphia), 35–39.
- ³ Ibid., 36–37.
- ⁴ Morris GS (1907) William Bartram. Cassinia 10:1-9.
- ⁵ Wilson A, Robin. *Turdus migratorius*, 36–37.
- ⁶ Shultz B (1795) An Inaugural Botanico-Medical Dissertation, on the Phytolacca decandra of Linnaeus (submitted to the examination of the Rev. John Ewing, S.T.P. provost; the trustees and medical faculty of the University of Pennsylvania, for the degree of doctor of medicine, on the twenty-first day of May 1795, University of Pennsylvania, Philadelphia), 22.
- ⁷ Audubon JJ (1834) Ornithological Biography, Or an Account of the Habits of the Birds of the United States of America: Accompanied by Descriptions of the Objects Represented in the Work Entitled The Birds of America, and Interspersed with Delineations of American Scenery and Manners, vol. 3 (Adam and Charles Black, Edinburgh), 191.
- ⁸ Kalm P (1771) Travels into North America; Containing Its Natural History, and a Circumstantial Account of Its Plantations and Agriculture in General, with the Civil, Ecclesiastical and Commercial State of the Country, the Manners of the Inhabitants, and Several Curious and Important Remarks on Various Subjects, vol. 2. trans. JR Forster (T. Lowndes, London), 90.
- ⁹ Stone W (1937) *Bird Studies at Old Cape May*, vol. II (Delaware Valley Ornithological Club and the Academy of Natural Sciences of Philadelphia, Philadelphia), 768.
- ¹⁰ Bent AC (1964) Life histories of North American thrushes, kinglets and their allies. In reprint of *Smithsonian Institution, United States National Museum Bulletin 196*, 1949, U.S. Government Printing Office (Dover, New York).
- ¹¹ Sauer JR, Hines JE, Fallon JE, Pardieck KL, et al. (2012) *The North American Breeding Bird Survey Results and Analysis, 1966–2011. Version 7.03.2013* (USGS Patuxent Wildlife Research Center, Laurel, MD), http://www.mbr-pwrc.usgs.gov/bbs/.
- ¹² McWilliam GM & Brauning DW (2000) The Birds of Pennsylvania (Cornell University Press, Ithaca, NY).
- ¹³ Sauer et al., The North American Breeding Bird Survey Results and Analysis, 1966–2011.
- ¹⁴ Anderson TR (2006) *The Biology of the Ubiquitous House Sparrow: From Genes to Populations* (Oxford University Press, Oxford, UK).
- ¹⁵ Johnston RF & Janiga M (1995) Feral Pigeons (Oxford University Press, New York).
- ¹⁶ Eiserer LA (1980) Effects of grass length and mowing on foraging behavior of the American robin (*Turdus migratorius*). *The Auk* 97:576–580.
- ¹⁷ Todd TC, James SW, & Seastedt TR (1992) Soil invertebrate and plant responses to mowing and carbofuran application in a North American tallgrass prairie. *Plant and Soil* 144(1):117–124; Baker SW, Firth SJ, & Binns DJ (2000) The effect of mowing regime and the use of acidifying fertiliser on rates of earthworm casting on golf fairways. *Journal of Turfgrass Science* 76:2–11; Byrne LB, Bruns MA, & Kim KC (2008) Ecosystem properties of urban land covers at the aboveground–belowground interface. *Ecosystems* 11:1065–1077.
- ¹⁸ Edwards C & Lofty J (1972) *Biology of Earthworms* (Chapman and Hall, London).
- ¹⁹ Lutz FE (1941) A Lot of Insects: Entomology in a Suburban Garden (G. P. Putnam and Sons, New York); Owen J (2010) Wildlife of a Garden: A Thirty-Year Study (Royal Horticultural Society, Peterborough, UK); Smith R, Warren P, Thompson K, & Gaston K (2006) Urban domestic gardens (VI): Environmental correlates of invertebrate species richness. Biodiversity and Conservation 15(8):2415–2438; Smith RM, Gaston KJ, Warren PH, & Thompson K (2006) Urban domestic gardens (VIII): Environmental correlates of invertebrate abundance. Biodiversity and Conservation 15(8):2515–2545.
- ²⁰ Wheelwright NT (1986) The diet of American robins: An analysis of U.S. Biological Survey records. *The Auk* 103(4):710–725.
- ²¹ Peters HS (1936) A list of external parasites from birds of the eastern part of the United States. *Bird-Banding* 7(1):9–27.
- ²² Stafford KC, Bladen VC, & Magnarelli LA (1995) Ticks (Acari: Ixodidae) infesting wild birds (Aves) and white-footed mice in Lyme, CT. *Journal of Medical Entomology* 32(4):453–466.
- ²³ Ginsberg HS, Buckley PA, Balmforth MG, Zhioua E., et al. (2005) Reservoir competence of native North American birds for the Lyme disease spirochete, *Borrelia burgdorferi. Journal of Medical Entomology* 42(3):445– 449.
- ²⁴ Peters R (2009) Avian Tick Burdens across an Urban to Forest Land-Use Gradient (master of science thesis, George Mason University, Fairfax, VA).

- ²⁵ Emslie SD (1981) Birds and prehistoric agriculture: The New Mexican pueblos. *Human Ecology* 9(3):305–329.
- ²⁶ McConaughy MA (2008) Current issues in paleoethnobotanical research from Pennsylvania and vicinity. In *Current Northeast Paleoethnobotany II*. New York State Museum Bulletin Series 512, ed. JP Hart (The New York State Education Department, Albany, NY), 9–27.
- ²⁷ Delcourt PA & Delcourt HR (2004) Prehistoric Native Americans and Ecological Change: Human Ecosystems in Eastern North America since the Pleistocene (Cambridge University Press, Cambridge, UK).
- ²⁸ Emslie, Birds and prehistoric agriculture; Hargrave LL (1939) Bird bones from abandoned Indian dwellings in Arizona and Utah. *Condor* 41:206–210.
- ²⁹ Voelker G, Rohwer S, Bowie R, & Outlaw D (2007) Molecular systematics of a speciose, cosmopolitan songbird genus: Defining the limits of, and relationships among, the *Turdus* thrushes. *Molecular Phylogenetics and Evolution* 42(2):422–434; Nylander JAA, Olsson U, Alstrom P, & Sanmartin I (2008) Accounting for phylogenetic uncertainty in biogeography: A Bayesian approach to dispersal-vicariance analysis of the thrushes (Aves: *Turdus*). *Systematic Biology* 57(2):257–268.
- ³⁰ Gleditsch JM & Carlo TA (2011) Fruit quantity of invasive shrubs predicts the abundance of common native avian frugivores in central Pennsylvania. *Diversity and Distributions* 17(2):244–253; Greenberg CH & Walter ST (2010) Fleshy fruit removal and nutritional composition of winter-fruiting plants: A comparison of non-native invasive and native species. *Natural Areas Journal* 30(3):312–321; Suthers HB, Bickal JM, & Rodewald PG (2000) Use of successional habitat and fruit resources by songbirds during autumn migration in central New Jersey. *The Wilson Bulletin* 112(2):249–260.
- ³¹ Wheelwright, The diet of American robins.
- ³² Morneau F, Lépine C, Décarie R, Villard M-A, et al. (1995) Reproduction of American robin (*Turdus migratorius*) in a suburban environment. *Landscape and Urban Planning* 32(1):55–62.
- ³³ Barton WPC (1818) Compendium Florae Philadelphicae Containing a Description of the Indigenous and Naturalized Plants Found within a Circuit of Ten Miles around Philadelphia, vol. 1 (M. Carey and Son, Philadelphia), 128.
- ³⁴ Gleditsch & Carlo, Fruit quantity of invasive shrubs predicts the abundance of common native avian frugivores in central Pennsylvania.
- ³⁵ Barton, Compendium Florae Philadelphicae, 154.
- ³⁶ Sauer et al., The North American Breeding Bird Survey Results and Analysis, 1966–2011.
- ³⁷ Wauer RH (1999) The American Robin (University of Texas Press, Austin).
- ³⁸ Bird J, Alcock J, & Erckmann WJ (1973) Starlings stealing worms from robins. *The Wilson Bulletin* 85(4):480–482.
- ³⁹ Sauer et al., The North American Breeding Bird Survey Results and Analysis, 1966–2011.
- ⁴⁰ LaDeau SL, Kilpatrick AM, & Marra PP (2007) West Nile virus emergence and large-scale declines of North American bird populations. *Nature* 447:710–713; Rahbek C (2007) The silence of the robins. *Nature* 447:652–653.
- ⁴¹ Philadelphia Department of Public Health, Division of Disease Control (2010) Annual Report, https://hip.phila.gov/xv/Portals/0/HIP/Annual_Reports/DDC_Annual_Report_%202010_revised.pdf
- ⁴² Wertheimer AM (2012) West Nile virus: An update on recent developments. *Clinical Microbiology Newsletter* 34(9):67–71.
- ⁴³ Loss SR, Will T, & Marra PP (2013) The impact of free-ranging domestic cats on wildlife of the United States. *Nature Communications* 4:1396. http://dx.doi.org/10.1038/ncomms2380.
- ⁴⁴ Wauer, *The American Robin*.
- ⁴⁵ Wilson A (1810) Cow bunting. Emberiza pecoris. In American Ornithology; Or the Natural History of the Birds of the United States: Illustrated with Plates Engraved and Colored from Original Drawings Taken from Nature, vol. 2 (Bradford and Inskeep, Philadelphia), 145–146.
- ⁴⁶ Rothstein SI (1975) An experimental and teleonomic investigation of avian brood parasitism. *Condor* 77:250–271.
- ⁴⁷ Rothstein SI (1982) Mechanisms of avian egg recognition: Which egg parameters elicit responses by rejecter species? *Behavioral Ecology and Sociobiology* 11(4):229–239.
- ⁴⁸ Smith JNM, Taitt MJ, & Zanette L (2002) Removing brown-headed cowbirds increases seasonal fecundity and population growth in song sparrows. *Ecology* 83:3037–3047.
- ⁴⁹ Wauer, *The American Robin*; Friedmann H (1929) *The Cowbirds. A Study of the Biology of Social Parasitism* (Charles C. Thomas, Baltimore, MD).
- ⁵⁰ Rothstein SI & Peer BD (2005) Conservation solutions for threatened and endangered cowbird (*Molothrus* spp.) hosts: Separating fact from fiction. *Ornithological Monographs* 57:98–114.
- ⁵¹ Barton BS (1779) *Fragments of a Natural History of Pennsylvania* (Way & Groff, Philadelphia) [Willughby Society reprint, edited by Osbert Salvin and published in 1883 by Taylor and Francis, London], 16.
- ⁵² Burhans DE & Thompson FR (2006) Songbird abundance and parasitism differ between urban and rural shrublands. *Ecological Applications* 16:394–405.
- ⁵³ Briskie JV, Sealy SG, & Hobson KA (1992) Behavioral defenses against avian brood parasitism in sympatric and allopatric host populations. *Evolutionary Biology* 46(2):334–340.
- ⁵⁴ Avilés JM, Stokke BG, & Parejo D (2006) Relationship between nest predation suffered by hosts and brown-headed cowbird parasitism: A comparative study. *Evolutionary Ecology* 20(2):97–111.

- ⁵⁵ Kilner RM (2006) The evolution of egg colour and patterning in birds. *Biological Reviews* 81(3):383-406.
- ⁵⁶ Brittingham MC & Temple SA (1983) Have cowbirds caused forest songbirds to decline? *BioScience* 33(1):31–35; Rodewald AD (2009) Urban-associated habitat alteration promotes brood parasitism of Acadian Flycatchers. *Journal of Field Ornithology* 80(3):234–241.
- ⁵⁷ Stone W (1913) Bird migration records of William Bartram 1802–22. The Auk 30:325–358.
- ⁵⁸ Sallabanks R & Courtney SP (1992) Frugivory, seed predation, and insect-vertebrate interactions. Annual Review of Entomology 37:377–400.
- ⁵⁹ Wilson A, Robin. *Turdus migratorius*, 35–36.
- ⁶⁰ Environment Canada (2012) Canadian Atlas of Bird Banding. Encounter Map Data Table. American Robin (*Turdus migratorius*) 761.0, http://www.ec.gc.ca/aobc-cabb/index.aspx?lang=en&nav=encounter-Map&aou=761&map=3.
- ⁶¹ Nese J & Schwartz G (2002) The Philadelphia Area Weather Book (Temple University Press, Philadelphia).
- ⁶² Zhang X, Friedl MA, Schaaf CB, Strahler AH, et al. (2004) The footprint of urban climates on vegetation phenology. *Geophysical Research Letters* 31:L12209. doi:10.1029/2004GL020137.
- ⁶³ Oka M (2011) The Influence of urban street characteristics on pedestrian heat comfort levels in Philadelphia. *Transactions in GIS* 15(1):109–123.
- ⁶⁴ Fan H & Sailor DJ (2005) Modeling the impacts of anthropogenic heating on the urban climate of Philadelphia: A comparison of implementations in two PBL schemes. *Atmospheric Environment* 39(1):73–84.
- ⁶⁵ Shustack D (2008) *Reproductive Timing of Passerines in Urbanizing Landscapes* (dissertation presented in partial fulfillment of the requirements for the degree of doctor of philosophy, Ohio State University, Columbus).
- ⁶⁶ Inouye DW, Barr B, Armitage KB, & Inouye BD (2000) Climate change is affecting altitudinal migrants and hibernating species. *Proceedings of the National Academy of Science* 97(4):1630–1633.
- ⁶⁷ Wilson WH Jr. (2007) Spring arrival dates of migratory breeding birds in Maine: Sensitivity to climate change. *The Wilson Journal of Ornithology* 119(4):665–677.
- ⁶⁸ Miller MW (2006) Apparent effects of light pollution on singing behavior of American robins. *Condor* 108(1):130–139.
- ⁶⁹ Kempenaers B, Borgström P, Loës P, Schlicht E, et al. (2010) Artificial night lighting affects dawn song, extra-pair siring success, and lay date in songbirds. *Current Biology* 20(19):1735–1739.
- ⁷⁰ Fuller RA, Warren PH, & Gaston KJ (2007) Daytime noise predicts nocturnal singing in urban robins. *Biology Letters* 3(4):368–370.
- ⁷¹ Seger KD (2007) Avian Bioacoustics in Urbanizing Landscapes: Relationships between Urban Noise and Avian Singing Behavior (honors thesis presented in partial fulfillment of the requirements for graduation with research distinction in the undergraduate colleges of Ohio State University, Columbus); Seger-Fullam KD, Rodewald AD, & Soha JA (2011) Urban noise predicts song frequency in northern cardinals and American robins. Bioacoustics 20(3):267–276.
- ⁷² Dowling JL, Luther DA, & Marra PP (2012) Comparative effects of urban development and anthropogenic noise on bird songs. *Behavioral Ecology* 23(1):201–209.
- ⁷³ Wilson A, Robin. *Turdus migratorius*, 37–38.
- ⁷⁴ Eason PK, Sherman PT, Rankin O, & Coleman B (2006) Factors affecting flight initiation distance in American robins. *The Journal of Wildlife Management* 70(6):1796–1800.
- ⁷⁵ Clucas B & Marzluff JM (2012) Attitudes and actions toward birds in urban areas: Human cultural differences influence bird behavior. *The Auk* 129(1):8–16.

Chapter 15: Chinese Mantid

¹ Laurent P (1898) A species of Orthoptera. Entomological News 9:144–145.

- ³ Jacobs E (1898) Tenodera sinensis. Entomological News 9:170.
- ⁴ Meehan T (1858) How to Plant Trees, Including a Catalogue of the Ornamental and Fruit Trees, Shrubs, etc. Cultivated and for Sale at the Germantown Nurseries near Philadelphia, PA (A. Ketterlinus, Philadelphia).
- ⁵ Thierolf WR (1928) The economic importance of *Paratenodera sinensis*. *Entomological News* 39:112–116, 140–145.
- ⁶ Gurney AB (1950) Praying mantids of the United States, native and introduced. In Annual Report of the Board of Regents of the Smithsonian Institution (Smithsonian Institution, Washington, DC), 339–362.
- ⁷ BugGuide (2012) Subspecies *Tenodera sinensis sinensis* —Chinese Mantid, http://bugguide.net/node/ view/10098/data.
- ⁸ Bartley JA (1982) Movement patterns in adult male and female mantids, *Tenodera aridifolia sinensis* Saussure (Orthoptera: Mantodea). *Environmental Entomology* 11(5):1108–1111.
- ⁹ Hurd LE (1999) Ecology of praying mantids. In *The Praying Mantids*, eds. FR Prete, H Wells, PH Wells, & LE Hurd, vol. 3 (Johns Hopkins University Press, Baltimore, MD), 43–60.
- ¹⁰ Jensen D, Svenson GJ, Song H, & Whiting MF (2010) Phylogeny and evolution of male genitalia within the praying mantis genus *Tenodera* (Mantodea: Mantidae). *Invertebrate Systematics* 23(5):409–421.
- ¹¹ Gurney, Praying mantids of the United States, native and introduced.

² Ibid., 144.

- ¹² Rehn JAG (1935) The Orthoptera of Costa Rica, part I: Mantidae. Proceedings of the Academy of Natural Sciences of Philadelphia 87:167–272.
- ¹³ Hebard M (1937) Where and when to find the Orthoptera of Pennsylvania, with notes on the species which in distribution reach nearest this state. *Entomological News* 48(8):219–226.
- ¹⁴ Eisenberg RM, Hurd LE, Fagan WF, Tilmon KJ, et al. (1992) Adult dispersal of *Tenodera aridifolia sinensis* (Mantodea: Mantidae). *Environmental Entomology* 21(2):350–353.
- ¹⁵ Grimaldi DA (2003) A revision of Cretaceous mantises and their relationships, including new taxa (Insecta: Dictyoptera: Mantodea). In *American Museum novitates*; no. 3412 (American Museum of Natural History, New York).
- ¹⁶ Gurney, Praying mantids of the United States, native and introduced.

¹⁷ Ibid.

- ¹⁸ Rau P & Rau N (1913) Biology of Stagmomantis carolina. Transactions of the Academy of Science of St. Louis 22(1):1–58; pl. 1–18.
- ¹⁹ Skinner H (1899) Minutes of the meeting of the American Entomological Society, Academy of Natural Sciences of Philadelphia. Entomological Section. *Entomological News* 10(March):79–80.
- ²⁰ Hurd, Ecology of praying mantids.
- ²¹ Breed GA, Stichter S, & Crone EE (2012) Climate-driven changes in northeastern US butterfly communities. *Nature Climate Change* 3:142–145.
- ²² Colinvaux P (1978) Why Big Fierce Animals Are Rare: An Ecologist's Perspective (Princeton University Press, Princeton, NJ).

Chapter 16: Pillbugs

- ¹ Smigel JT & Gibbs AG (2008) Conglobation in the pill bug, *Armadillidium vulgare*, as a water conservation mechanism. *Journal of Insect Science* 44:1–9.
- ² Say T (1818) An account of the Crustacea of the United States (concluded). Journal of the Academy of Natural Sciences of Philadelphia 1(2):423–458.
- ³ Garthwaite R, Lawson R, & Sassaman C (1995) Population genetics of *Armadillidium vulgare* in Europe and North America. *Crustacean Issues* 9:145–199.
- ⁴ Jass J & Klausmeier B (2000) Endemics and immigrants: North American terrestrial isopods (Isopoda, Oniscidea) north of Mexico. *Crustaceana* 73(7):771–799.
- ⁵ French H, Demitroff M, & Newell WL (2009) Past permafrost on the mid-Atlantic Coastal Plain, eastern United States. *Permafrost and Periglacial Processes* 20(3):285–294.
- ⁶ Fowler HW (1911) Crustacea of New Jersey. In *Annual Report of the New Jersey State Museum* (New Jersey State Museum, Trenton), 29–650; pl. 1–150.
- ⁷ Ganter PF & Hanton WK (1984) A note on the cause of skewed sex ratios in populations of terrestrial isopods in North Carolina. *Crustaceana* 46(2):154–159.
- ⁸ Rigaud T, Soutygrosset C, Raimond R, Mocquard JP, & Juchault P (1991) Feminizing endocytobiosis in the terrestrial crustacean *Armadillidium vulgare* Latr. (Isopoda) – recent acquisitions. *Endocytobiosis and Cell Research* 7(3):259 – 273.
- ⁹ Hertig M & Wolbach SB (1924) Studies on Rickettsia-like micro-organisms in insects. *The Journal of Medical Research* 44:329–374, pl. XXVII–XXX.
- ¹⁰ Stouthamer R, Breeuwer J, & Hurst G (1999) Wolbachia pipientis: Microbial manipulator of arthropod reproduction. Annual Review of Microbiology 53:71–102.
- ¹¹ Bouchon D, Rigaud T, & Juchault P (1998) Evidence for widespread Wolbachia infection in isopod crustaceans: Molecular identification and host feminization. Proceedings of the Royal Society of London B 265(1401):1081–1090.
- ¹² Jiggins FM & Hurst GDD (2011) Rapid insect evolution by symbiont transfer. *Science* 332(6026):185–186.
- ¹³ Hilgenboecker K, Hammerstein P, Schlattmann P, Telschow A, et al. (2008) How many species are infected with *Wolbachia*? A statistical analysis of current data. *FEMS Microbiology Letters* 281:215–220.
- ¹⁴ Werren JH, Baldo L, & Clark ME (2008) Wolbachia: Master manipulators of invertebrate biology. Nature Reviews Microbiology 6(10):741–751.

- ¹⁶ Stouthamer R, Luck R, & Hamilton W (1990) Antibiotics cause parthenogenetic *Trichogramma* (Hymenoptera/Trichogrammatidae) to revert to sex. *Proceedings of the National Academy of Sciences of the United States of America* 87(7):2424–2427.
- ¹⁷ Himler AG, Adachi-Hagimori T, Bergen JE, Kozuch A, et al. (2011) Rapid spread of a bacterial symbiont in an invasive whitefly is driven by fitness benefits and female bias. *Science* 332(6026):254–256.
- ¹⁸ Hosokawa T, Koga R, Kikuchi Y, Meng X-Y, et al. (2010) Wolbachia as a bacteriocyte-associated nutritional mutualist. Proceedings of the National Academy of Science 107(2):769–774.
- ¹⁹ Paris OH (1965) The vagility of P32-labeled isopods in grassland. *Ecology* 46:635–648.
- ²⁰ Kight SL (2009) Reproductive ecology of terrestrial isopods (Crustacea: Oniscidea). Terrestrial Arthropod Reviews 1(2):95–110.

¹⁵ Ibid.

- ²¹ Moreau J, Bertin A, Caubet Y, & Rigaud T (2001) Sexual selection in an isopod with *Wolbachia*-induced sex reversal: Males prefer real females. *Journal of Evolutionary Biology* 14(3):388–394.
- ²² Rigaud T & Moreau J (2004) A cost of *Wolbachia*-induced sex reversal and female-biased sex ratios: Decrease in female fertility after sperm depletion in a terrestrial isopod. *Proceedings of the Royal Society of London B* 271:1941–1946.
- ²³ Gavotte L, Mercer DR, Stoeckle JJ, & Dobson SL (2010) Costs and benefits of Wolbachia infection in immature Aedes albopictus depend upon sex and competition level. Journal of Invertebrate Pathology 105:341–346.
- ²⁴ Rigaud T, Mocquard J, & Juchault P (1992) The spread of parasitic sex factors in populations of Armadillidium vulgare Latr (Crustacea, Oniscidea): Effects on sex ratio. Genetics Selection Evolution 24(1):3–18.
- ²⁵ Koehncke A, Telschow A, Werren JH, & Hammerstein P (2009) Life and death of an influential passenger: *Wolbachia* and the evolution of CI-modifiers by their hosts. *PLoS ONE* 4(2):e4425. doi:10.1371/journal. pone.0004425.
- ²⁶ Cooper CL & Crites JL (1976) Community ecology of helminth parasitism in an insular passerine avifauna. *The Journal of Parasitology* 62(1):105–110.
- ²⁷ Van Cleave HJ (1918) The Acanthocephala of North American birds. *Transactions of the American Microscopical Society* 37(1):19–48.
- ²⁸ Van Cleave HJ (1924) A critical study of the Acanthocephala described and identified by Joseph Leidy. Proceedings of the Academy of Natural Sciences of Philadelphia 76:279–334.
- ²⁹ Van Cleave HJ (1942) A reconsideration of *Plagiorhynchus formosus* and observations on Acanthocephala with atypical lemnisci. *Transactions of the American Microscopical Society* 61(2):206–210.
- ³⁰ Bush AO (2001) Parasitism: The Diversity and Ecology of Animal Parasites (Cambridge University Press, Cambridge, UK).
- ³¹ Sinitsin DT (1929) Journal of Parasitology 15(4):287. This is a report recorded in the minutes of the Proceedings of the Helminthological Society of Washington. It designates Plagiorhynchus cylindraceus as Plagiorhynchus formosus, a synonym. See Schmidt GD (1981) Plagiorhynchus formosus Van Cleave, 1918, a synonym of Plagiorhynchus cylindraceus (Goeze, 1782) Schmidt and Kuntz, 1966. The Journal of Parasitology 67(4):597–598.
- ³² Schmidt GD & Olsen OW (1964) Life cycle and development of *Prosthorhynchus formosus* (Van Cleave, 1918) Travassos, 1926, an Acanthocephalan parasite of birds. *The Journal of Parasitology* 50(6):721–730.
- ³³ Connors VA & Nickol BB (1991) Effects of *Plagiorhynchus cylindraceus* (Acanthocephala) on the energy metabolism of adult starlings, *Sturnus vulgaris. Parasitology Research* 103:395–402.
- ³⁴ Schmidt & Olsen, Life cycle and development of *Prosthorhynchus formosus*.
- ³⁵ Nickol BB & Dappen GE (1982) *Armadillidium vulgare* (Isopoda) as an intermediate host of *Plagiorhynchus cylindraceus* (Acanthocephala) and isopod response to infection. *The Journal of Parasitology* 68(4):570–575.
- ³⁶ Moore J (1983) Responses of an avian predator and its isopod prey to an Acanthocephalan parasite. *Ecology* 64(5):1000–1015.
- ³⁷ Bouchon, Rigaud, & Juchault, Evidence for widespread Wolbachia infection in isopod crustaceans.
- ³⁸ Cooper & Crites, Community ecology of helminth parasitism in an insular passerine avifauna.
- ³⁹ Williams T (2008) Natural invertebrate hosts of iridoviruses (Iridoviridae). Neotropical Entomology 37(6):615– 632.
- ⁴⁰ Schultz GA (1961) Distribution and establishment of a land isopod in North America. Systematic Zoology 10(4):193–196.
- ⁴¹ Adamkewicz S (1969) Colour polymorphism in the land isopod *Armadillidium nasatum*. *Heredity (Edinb)* 24(2):249–264.
- ⁴² Pollard SD, Jackson RR, Olphen AV, & Robertson MW (1995) Does *Dysdera crocata* (Araneae, Dysderidae) prefer woodlice as prey? *Ethology Ecology & Evolution* 7(3):271–275; Rezác M & Pekár S (2007) Evidence for woodlice-specialization in *Dysdera* spiders: Behavioural versus developmental approaches. *Physiological Entomology* 32(4):367–371; Rezác M, Král J, & Pekár S (2007) The spider genus *Dysdera* (Araneae, Dysderidae) in central Europe: Revision and natural history. *Journal of Arachnology* 35:432–462.
- ⁴³ Pollard SD (1986) Prey capture in *Dysdera crocata* (Araneae: Dysderidae), a long fanged spider. *New Zealand Journal of Zoology* 13(149–150); Rezác M, Pekár S, & Lubin Y (2008) How oniscophagous spiders overcome woodlouse armour. *Journal of Zoology* 275(1):64–71.
- ⁴⁴ Sutton SL (1972) Invertebrate Types: Woodlice (Ginn & Company Limited, London).
- ⁴⁵ Kaston BJ (1981) Spiders of Connecticut, rev. ed. State Geological and Natural History Survey of Connecticut (Department of Environmental Protection. Bulletin 70, Hartford).
- ⁴⁶ Allee W (1926) Studies in animal aggregations: Causes and effects of bunching in land isopods. *Journal of Experimental Zoology* 45(1):255–277.
- ⁴⁷ Allee WC (1931) Animal Aggregations: A Study in General Sociology (University of Chicago Press, Chicago), 43–44.
- ⁴⁸ Takeda N (1983) The aggregation phenomenon in terrestrial isopods. Symposia of the Zoological Society of London 53: 381–404.
- ⁴⁹ Hassall M, Edwards DP, Carmenta R, Derhé MA, et al. (2010) Predicting the effect of climate change on aggregation behaviour in four species of terrestrial isopods. *Behaviour* 147(2):151–164.
- ⁵⁰ Devigne C, Broly P, & J-L D (2011) Individual preferences and social interactions determine the aggregation of woodlice. *PLoS ONE* 6(2):e17389. doi:10.1371/journal.pone.0017389.

- ⁵¹ Hamilton WD (1971) Geometry of the selfish herd. Journal of Theoretical Biology 31:295–311.
- ⁵² Wise DH (1995) Spiders in Ecological Webs (Cambridge University Press, Cambridge, UK).
- ⁵³ Cook A (1981) Huddling and the control of water loss by the slug *Limax pseudoflavus* Evans. Animal Behaviour 29(1):289–298.
- ⁵⁴ Welsford IG, Banta PA, & Prior DJ (1990) Size-dependent responses to dehydration in the terrestrial slug, *Limax maximus* L.: Locomotor activity and huddling behavior. *Journal of Experimental Zoology* 253(2):229–234; South A (1992) *Terrestrial Slugs: Biology, Ecology and Control* (Chapman & Hall, London); Waite TA (1988) Huddling and postural adjustments in response to desiccating conditions in *Deroceras reticulatum. Journal of Molluscan Studies* 54(2):249–250.
- ⁵⁵ Lehmannia valentiana is also known as Ambigolimax valentianus. Common names include threeband gardenslug, greenhouse slug, and Valencia slug. See ME Paustian, Ambigolimax valentianus, at Terrestrial Slugs Web, http:// terrslugs.lifedesks.org/pages/31328, accessed November 24, 2013.
- ⁵⁶ Simberloff D & Holle BV (1999) Positive interactions of nonindigenous species: Invasional meltdown? *Biological Invasions* 1(1):21–32.

Chapter 17: Common Milkweed

- ¹ Barton BS (1804) Memorandum concerning a new vegetable muscipula. Transactions of the American Philosophical Society 6(1):79–82. Quote is from pp. 79–80.
- ² Morse DH (1981) Modification of bumblebee foraging: The effect of milkweed pollinia. *Ecology* 62(1):89–97.
- ³ Corry TH (1883) On the structure and development of the gynostegium and the mode of fertilization of Asclepias Cornuti, Decaisne (A. syriaca, L.). Transactions of the Linnean Society of London, 2nd Series: Botany. 2(8):173–207.
- ⁴ Barton WPC (1818) Compendium Florae Philadelphicae Containing a Description of the Indigenous and Naturalized Plants Found within a Circuit of Ten Miles around Philadelphia, vol. 1 (M. Carey and Son, Philadelphia), 131.
- ⁵ Bhowmik P & Bandeen J (1976) The biology of Canadian weeds: 19. Asclepias syriaca L. Canadian Journal of Plant Science 56(3):579–589.
- ⁶ Baker HG (1955) Self-compatibility and establishment after "long-distance" dispersal. Evolution 9(3):347–349.
- ⁷ Stebbins GL (1957) Self-fertilization and population variability in the higher plants. *American Naturalist* 91(337–354).
- ⁸ Sparrow FK & Pearson NL (1948) Pollen compatibility in Asclepias syriaca. Journal of Agricultural Research 77:187–199.
- ⁹ Evetts LL & Burnside OC (1974) Root distribution and vegetative propagation of Asclepias syriaca L. Weed Research 14(5):283–288.
- ¹⁰ Kephart SR (1981) Breeding systems in Asclepias incarnata L., A. syriaca L., and A. verticillata L. American Journal of Botany 68(2):226–232.
- ¹¹ Gascoigne J, Berec L, Gregory S, & Courchamp F (2009) Dangerously few liaisons: A review of mate-finding Allee effects. *Population Ecology* 51(3):355–372.
- ¹² Livshultz T, Mead JV, Goyder DJ, & Brannin M (2011) Climate niches of milkweeds with plesiomorphic traits (Secamonoideae; Apocynaceae) and the milkweed sister group link ancient African climates and floral evolution. *American Journal of Botany* 98(12):1966–1977.
- ¹³ Harder LD & Johnson SD (2008) Function and evolution of aggregated pollen in angiosperms. *International Journal of Plant Sciences* 169:59–78.
- ¹⁴ Wyatt R, Broyles SB, & Lipow SR (2000) Pollen-ovule ratios in milkweeds (Asclepiadaceae): An exception that probes the rule. Systematic Botany 25(2):171–180.
- ¹⁵ Frost SW (1958) Halysidota tessellaris S & A and pollenia. Entomological News 69(5):137–138.
- ¹⁶ Frost SW (1965) Insects and pollinia. *Ecology* 46(4):556–558.
- ¹⁷ The Academy of Natural Sciences, Philadelphia (2004) The Titian Peale Butterfly and Moth Collection, http://clade.ansp.org/entomology/collections/peale/index.html.
- ¹⁸ Tietz HM (1952) The Lepidoptera of Pennsylvania: A Manual (Pennsylvania State College, School of Agriculture, Agricultural Experiment Station, State College, PA).
- ¹⁹ Morse DH & Fritz RS (1983) Contributions of diurnal and nocturnal insects to the pollination of common milkweed (Asclepias syriaca L.) in a pollen-limited system. Oecologia 60(2):190–197.
- ²⁰ Jennersten O & Morse DH (1991) The quality of pollination by diurnal and nocturnal insects visiting common milkweed, Asclepias syriaca. American Midland Naturalist 125(1):18–28.
- ²¹ Morse & Fritz, Contributions of diurnal and nocturnal insects to the pollination of common milkweed.
- ²² Jennersten & Morse, The quality of pollination by diurnal and nocturnal insects visiting common milkweed.
- ²³ McFrederick QS, Kathilankal JC, & Fuentes JD (2008) Air pollution modifies floral scent trails. *Atmospheric Environment* 42(10):2336–2348.
- ²⁴ Duchelle SF & Skelly JM (1981) Response of common milkweed to oxidant air pollution in the Shenandoah National Park in Virginia. *Plant Diseases* 65(8):661–663; City of Philadelphia Department of Public Health Air Management Services (2010) Philadelphia's Air Quality Report, http://www.phila.gov/health/ pdfs/airmanagement/AQR_210_Final.pdf.

- ²⁵ Gregg JW, Jones CG, & Dawson TE (2003) Urbanization effects on tree growth in the vicinity of New York City. *Nature* 424:183–187.
- ²⁶ Mulligan GA & Findlay JN (1970) Reproductive systems and colonization in Canadian weeds. *Canadian Journal of Botany* 48:859–860.
- ²⁷ Lyman JC & Ellstrand NC (1984) Clonal diversity in *Taraxacum officinale* (Compositae), an apomict. *Heredity* 53:1–10.
- ²⁸ Stephenson AG & Thomas WW (1977) Diurnal and nocturnal pollination of *Catalpa speciosa* (Bignoniaceae). *Systematic Botany* 2(3):191-198.
- ²⁹ Aldrich PR, Brusa A, Heinz CA, Greer GK, et al. (2008) Floral visitation of the invasive stinking ash in western suburban Chicago. *Transactions of the Illinois State Academy of Science* 101(1&2):1–12.
- ³⁰ Kowarik I & Säumel I (2007) Biological flora of Central Europe: Ailanthus altissima (Mill.) Swingle. Perspectives in Plant Ecology, Evolution and Systematics 8(4):207–237.
- ³¹ Aldrich et al. Floral visitation of the invasive stinking ash in western suburban Chicago
- ³² Thompson JS (2008) Pollination Biology of Ailanthus altissima (Mill.) Swingle (Tree-of-Heaven) in the Mid-Atlantic United States (master's thesis, Department of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, VA).
- ³³ Turkington R & Burdon JJ (1983) The biology of Canadian weeds: 57. Trifolium repens L. Canadian Journal of Plant Science 63(1):243–266.
- ³⁴ Bhowmik & Bandeen, The biology of Canadian weeds: 19. Asclepias syriaca L.

35 Ibid.

- ³⁶ Hartzler RG (2010) Reduction in common milkweed (Asclepias syriaca) occurrence in Iowa cropland from 1999 to 2009. Crop Protection 29(12):1542–1544.
- ³⁷ Pleasants JM & Oberhauser KS (2013) Milkweed loss in agricultural fields because of herbicide use: Effect on the monarch butterfly population. *Insect Conservation and Diversity* 6(2):135–144. doi: 10.1111/j.1752-4598.2012.00196.x.
- ³⁸ Fry JT (1996) An international catalogue of North American trees and shrubs: The Bartram Broadside, 1783. Bartram's garden catalogue of North American plants. *Journal of Garden History* 16(1):1–66.

Chapter 18: Purple-stemmed cliffbrake

- ¹ Gardner ATE (1955) A Philadelphia masterpiece: Haviland's prison. *The Metropolitan Museum of Art Bulletin,* New Series, 14(4):103–108; Dolan FX (2007) *Eastern State Penitentiary* (Arcadia Publishing, Mount Pleasant, SC); Eastern State Penitentiary, http://www.easternstate.org/learn/timeline.
- ² Tryon AF (1957) A revision of the fern genus *Pellaea* section *Pellaea*. *Annals of the Missouri Botanical Garden* 44(2):125–193.
- ³ Muhlenberg H (1793) Index florae Lancastriensis. *Transactions of the American Philosophical Society of Philadelphia* 3:157–184.
- ⁴ Darlington W (1837) Flora Cestrica: An Attempt to Enumerate and Describe the Flowering and Filicoid Plants of Chester County in the State of Pennsylvania. With Brief Notices of Their Properties, and Uses, in Medicine, Domestic and Rural Economy, and the Arts (self-published, Westchester, PA).
- ⁵ Barton WPC (1818) Compendium Florae Philadelphicae Containing a Description of the Indigenous and Naturalized Plants Found within a Circuit of Ten Miles around Philadelphia, 2 vols. (M. Carey and Son, Philadelphia).
- ⁶ Keller I & Brown S (1905) *Handbook of the Flora of Philadelphia and Vicinity* (Philadelphia Botanical Club, Philadelphia).
- ⁷ Steil WN (1911) Apogamy in Pellaea atropurpurea. Botanical Gazette 52(5):400-401.
- ⁸ Wagner WH Jr., Farrar DR, & Chen KL (1965) A new sexual form of *Pellaea glabella* var. glabella from Missouri. American Fern Journal 55(4):171–178.
- ⁹ Steil WN. Apogamy in *Pellaea atropurpurea*.
- ¹⁰ Pickett F (1931) Notes on xerophytic ferns. American Fern Journal 21(2):49–57.
- ¹¹ Jenks MA & Wood AJ (2007) Plant desiccation tolerance: Diversity, distribution, and real world applications. In *Plant Desiccation Tolerance*, eds. MA Jenks & AJ Wood (Blackwell, Ames, Iowa), 3–10.
- ¹² Pickett, Notes on xerophytic ferns.
- ¹³ Wherry ET (1920) The soil reactions of certain rock ferns: I. American Fern Journal 10(1):15-22.
- ¹⁴ Wild M & Gagnon D (2005) Does lack of available suitable habitat explain the patchy distributions of rare calcicole fern species? *Ecography* 28(2):191–196.
- ¹⁵ Moran RC (2008) Diversity, biogeography, and floristics. In *Biology and Evolution of Ferns and Lycophytes*, eds. TA Ranker & CH Haufler (Cambridge University Press, NY), 367–394.
- ¹⁶ McVaugh R (1935) Studies on the spores of some northeastern ferns. American Fern Journal 25(3):73-85.
- ¹⁷ LaTorre C & Bhushan B (2005) Nanotribological characterization of human hair and skin using atomic force microscopy. Ultranicroscopy 105:155–175.
- ¹⁸ Moran, Diversity, biogeography, and floristics.

- ¹⁹ Thorsteinson A (1988) Urban airflow dynamics and mosquito infestations. *Bulletin of the Society of Vector Ecologists* 13(1):97–101.
- ²⁰ Hendrix SD (1980) An evolutionary and ecological perspective of the insect fauna of ferns. American Naturalist 115:171–196.
- ²¹ Wherry ET (1969) Growing ferns in rocks. In *Handbook on Ferns: A Special Printing of Plants & Gardens*, vol.25, no.1, eds. HS Hull & MJ Dietz (Brooklyn Botanic Garden, Brooklyn, NY), 34.
- ²² Foster FG (1999) Ferns to Know and Grow (Timber Press, Portland, OR).
- ²³ Peattie DC (1925) The flora of an historic wall. American Midland Naturalist 9(9):381-383.
- ²⁴ Benedict R (1952) Ferns on a prison wall. American Fern Journal 42(1):19–20.
- ²⁵ Strong MT, Strong JL, & Kelloff CL (2009) *Pellaea atropururea* (L.) Link growing in the mortar of the historical brick kiln here (Smithsonian Institution, Washington, DC), http://collections.si.edu/search/results. htm?q=record_ID:nmnhbotany_2866430.
- ²⁶ Hill EJ (1899) The habitats of the Pellaeas. Bulletin of the Torrey Botanical Club 26(11):596–598.
- ²⁷ Gorbushina AA & Broughton WJ (2009) Microbiology of the atmosphere-rock interface: How biological interactions and physical stresses modulate a sophisticated microbial ecosystem. *Annual Review of Microbiology* 63:431–450.
- ²⁸ Dyer AF & Lindsay S (1992) Soil spore banks of temperate ferns. American Fern Journal 82(3):89–123.
- ²⁹ Gilbert OL (1992) Rooted in Stone: The Natural Flora of Urban Walls (English Nature, Peterborough, UK).
- ³⁰ McKee HJ (1973) *Introduction to Early American Masonry: Stone, Brick, Mortar and Plaster.* (National Trust for Historic Preservation, and Columbia University, Washington, DC).
- ³¹ Pickett FL & Manuel ME (1926) An ecological study of certain ferns: *Pellaea atropurpurea* (L.) Link and *Pellaea glabella* Mettenius. *Bulletin of the Torrey Botanical Club* 53(1):1–5.

Chapter 19: Mugwort

- ¹ Barton WPC (1818) Compendium Florae Philadelphicae Containing a Description of the Indigenous and Naturalized Plants Found within a Circuit of Ten Miles around Philadelphia, 2 vols. (M. Carey and Son, Philadelphia).
- ² Tatnall RR (1938–1939) Nuttall's plant collections in southern Delaware. *Bartonia* 20:1–6; Barney JN (2006) North American history of two invasive plant species: Phytogeographic distribution, dispersal vectors, and multiple introductions. *Biological Invasions* 8(4):703–717.
- ³ Cutler M (1785 [1903]) An account of some of the vegetable productions, naturally growing in this part of America, botanically arranged by the Rev. Manasseh Cutler, F.A.A. and M.S., and Member of the Philosophical Society of Philadelphia [Facsimile edition published in 1903]. *Bulletin of the Lloyd Library of Botany, Pharmacy and Materia Medica. Bulletin #7*. Reproduction Series No. 4 (JU Lloyd & CG Lloyd, Cincinnati, OH).
- ⁴ Fernald ML (1900) Some Jesuit influences upon our northeastern flora. *Rhodora* 2(19):133–142.
- ⁵ Salmon W (1710) *Botanologia, the English Herbal, or, History of Plants* (Dawks, Rhodes, and Taylor, London), 740.
- ⁶ Miller J (1722) Botanicum Officinale; Or a Compendious Herbal: Giving an Account of All Such Plants as Are Now Used in the Practice of Physick. With Their Descriptions and Virtues (E. Bell, J. Senex, W. Taylor, and J. Osborn, London), 52.
- ⁷ Barney, North American history of two invasive plant species.
- ⁸ Barney JN, Whitlow TH, & DiTommaso A (2009) Evolution of an invasive phenotype: Shift to belowground dominance and enhanced competitive ability in the introduced range. *Plant Ecology* 202(2):275–284.
- ⁹ Stebbins G (1970) Adaptive radiation of reproductive characteristics in angiosperms, I: Pollination mechanisms. *Annual Review of Ecology and Systematics* 1:307–326.
- ¹⁰ Torrey J & Gray A (1841) A Flora of North America: Containing Abridged Descriptions of All Known Indigenous and Naturalized Plants Growing North of Mexico, vol. 1 (Wiley and Putnam, New York), 421.
- ¹¹ Barney, North American history of two invasive plant species.
- ¹² Burk I (1877) List of plants recently collected on ships' ballast in the neighborhood of Philadelphia. *Proceedings of the Academy of Natural Sciences of Philadelphia* 29(1877):105–109.
- ¹³ Barney JN & DiTommaso A (2003) The biology of Canadian weeds. 118. Artemisia vulgaris L. Canadian Journal of Plant Science 83:205–215.
- ¹⁴ Barney, North American history of two invasive plant species.
- ¹⁵ Darlington W (1837) Flora Cestrica: An Attempt to Enumerate and Describe the Flowering and Filicoid Plants of Chester County in the State of Pennsylvania. With Brief Notices of Their Properties, and Uses, in Medicine, Domestic and Rural Economy, and the Arts (self-published, Westchester, PA), 491.
- ¹⁶ Stone HE (1945) A Flora of Chester County, Pennsylvania: With Especial Reference to the Flora Cestrica of Dr. William Darlington, 2 vols. (Academy of Natural Sciences of Pennsylvania, Philadelphia); Stone HE (1929) A centennial survey of the Chester County flora. Bartonia 11:36–48.
- ¹⁷ Holm L, Doll J, Holm E, Pancho J, et al. (1997) *World Weeds: Natural History and Distribution* (John Wiley and Sons, New York).
- ¹⁸ Rhoads AF & Klein WM, Jr. (1993) *The Vascular Flora of Pennsylvania: Annotated Checklist and Atlas* (American Philosophical Society, Philadelphia).

- ¹⁹ Beck LC (1833) Botany of the Northern and Middle States; or a Description of the Plants Found in the United States, North of Virginia, Arranged According to the Natural System. With a Synopsis of the Genera According to the Linnaean System—a Sketch of the Rudiments of Botany, and a Glossary of Terms (Webster and Skinners, Albany, NY).
- ²⁰ Kosisky SE, Marks MS, & Nelson MR (2010) Pollen aeroallergens in the Washington, DC, metropolitan area: A 10-year volumetric survey (1998–2007). *Annals of Allergy, Asthma and Immunology* 104:223–235.
- ²¹ Holm L et al., *World Weeds*.
- ²² Barney et al., The biology of Canadian weeds. 118. Artemisia vulgaris L.

Chapter 20: Freshwater sponge

- ¹ Leidy J (1851 [1852]) Spongilla fragilis. Proceedings of the Academy of Natural Sciences of Philadelphia 5:277–278.
- ² Leidy J (1870) Further observations on Urnatella. Proceedings of the Academy of Natural Sciences of Philadelphia 22:100.
- ³ Potts E (1887) *Fresh Water Sponges: A Monograph*. Including "Diagnosis of European Spongillidae" by Franz Vejdovsky (Academy of Natural Sciences of Philadelphia, Philadelphia).
- ⁴ Ibid., 200.
- ⁵ Leidy J (1876) Bituminous sediment of the Schuylkill River. In Proceedings of the Academy of Natural Sciences of Philadelphia, ed. EJ Nolan (Academy of Natural Sciences, Philadelphia), 193.
- ⁶ Roberts WM, et al. (1875) Report on the Water Supply for the City of Philadelphia: Made by the Commission of Engineers Appointed by the Mayor under the Ordinance of Councils, Approved June 5th (Commission on Water-Supply, Philadelphia), 7.
- ⁷ Ibid., 66.
- ⁸ McCaffery TF III (1980–1982) Hazardous waste regulation: An evaluation from an historical perspective. *Columbia Journal of Environmental Law* 7:251–288.
- ⁹ Smith RA (1852) Philadelphia as It Is in 1852: Being a Correct Guide to All the Public Buildings; Literary, Scientific, and Benevolent Institutions; and Places of Amusement; Remarkable Objects; Manufacturies; Commercial Warehouses; and Wholesale and Retail Stores in Philadelphia and Its Vicinity (Lindsay and Blakiston, Philadelphia).
- ¹⁰ Romig CL (1980) Schuylkill River desilting project. In *The Schuylkill River Symposium*, ed. LF Berseth (The Academy of Natural Sciences of Philadelphia, Philadelphia), 18–21.
- ¹¹ Strickland W, Gill EH, & Campbell HR, eds. (1841) The Philadelphia Gas Works (J. Weale, London).
- ¹² Patrick R (1980) The Schuylkill River in changing times. In *The Schuylkill River Symposium*, ed. LF Berseth (The Academy of Natural Sciences of Philadelphia, Philadelphia), 9–12.
- ¹³ Thorp JH & Rogers DC (2011) Field Guide to Freshwater Invertebrates of North America (Academic Press, Burlington, MA).
- ¹⁴ Schuylkill River Project Engineers, Pennsylvania Water and Power Resources Board (1951) The Schuylkill River Desilting Project: Final Report of the Schuylkill River Project Engineers 1 July 1951 (Commonwealth of Pennsylvania, Dept. of Forests and Waters, Harrisburg, PA).
- ¹⁵ Romig, Schuylkill River desilting project.
- ¹⁶ Patrick, The Schuylkill River in changing times, 10.
- ¹⁷ Schuylkill River Project Engineers, The Schuylkill River Desilting Project, pl. 12.
- ¹⁸ Kramek N & Loh L (2007) The History of Philadelphia's Water Supply and Sanitation System: Lessons in Sustainability for Developing Urban Water Systems. (Philadelphia Global Water Initiative, Philadelphia), http://esa. un.org/iys/docs/san_lib_docs/Philalessonsinsustainability%5B1%5D.pdf.
- ¹⁹ Baker A (2002) The Schuylkill River Park Public Art Process: An Ethnographic Focus on a Philadelphia Urban Park's Development (dissertation submitted to the Temple University Graduate Board in partial fulfillment of the requirements for the degree of doctor of philosophy, Temple University, Philadelphia, PA).
- ²⁰ Perillo JA & Butler LH (2009) Evaluating the use of Fairmount Dam fish passage facility with application to anadromous fish restoration in the Schuylkill River, Pennsylvania. *Journal of the Pennsylvania Academy of Science* 83(1):24–33.
- ²¹ Romig, Schuylkill River desilting project.
- ²² Raymond PA & Oh N-H (2009) Long term changes of chemical weathering products in rivers heavily impacted from acid mine drainage: Insights on the impact of coal mining on regional and global carbon and sulfur budgets. *Earth and Planetary Science Letters* 284:50–55.
- ²³ Holst A (2007) The Philadelphia Water Department and the burden of history. *Public Works Management Policy* 11(3):233–238.
- ²⁴ Delaware Riverkeeper Network (2007) Protecting streams in Pennsylvania: A resource for municipal officials, http://www.delawareriverkeeper.org/pdf/Protecting%20Streams%20in%20PA.pdf.
- ²⁵ Kauffman GJ, Homsey AR, Belden AC, & Sanchez JR (2011) Water quality trends in the Delaware River basin (USA) from 1980 to 2005. *Environmental Monitoring and Assessment* 177(1–4):193–225.
- ²⁶ Interlandi SJ & Crockett CS (2003) Recent water quality trends in the Schuylkill River, Pennsylvania, USA: A preliminary assessment of the relative influences of climate, river discharge and suburban development. *Water Research* 37(8):1737–1748.

- ²⁷ Raymond & Oh, Long term changes of chemical weathering products in rivers heavily impacted from acid mine drainage.
- ²⁸ Perillo & Butler, Evaluating the use of Fairmount Dam fish passage facility.
- ²⁹ Ettinger WS (1982) Macrobenthos of the freshwater tidal Schuylkill River at Philadelphia, Pennsylvania. *Journal of Freshwater Ecology* 1(6):599–606.
- ³⁰ Leidy, Spongilla fragilis.
- ³¹ Potts E (1884 [1885]) On the wide distribution of some American sponges. *Proceedings of the Academy of Natural Sciences of Philadelphia* 36:215–217.
- ³² Penney JT & Racek AA (1968) Comprehensive revision of a worldwide collection of freshwater sponges (Porifera: Spongillidae). In United States National Museum Bulletin 272 (Smithsonian Institution Press, Washington, DC).
- ³³ Smith DG (2001) *Pennak's Freshwater Invertebrates of the United States: Porifera to Crustacea*, 4th ed. (John Wiley and Sons, New York).
- ³⁴ Fell PE & Fell AE (1987) Cold hardiness of the gemmules of *Eunapius fragilis* (Porifera: Spongillidae). *Transactions of the American Microscopical Society* 106(2):187–189; Fell PE (1990) Environmental factors affecting dormancy in the freshwater sponge *Eunapius fragilis* (Leidy). *Invertebrate Reproduction & Development* 18(3):213–219; Fell PE (1992) Salinity tolerance of the gemmules of *Eunapius fragilis* (Leidy) and the inhibition of germination by various salts. *Hydrobiologia* 242(1):33–39; Loomis SH, Hand SC, & Fell PE (1996) Metabolism of gemmules from the freshwater sponge *Eunapius fragilis* during diapause and post-diapause states. *Biological Bulletin* 191(3):385–392.
- ³⁵ Fell, Environmental factors affecting dormancy in the freshwater sponge *Eunapius fragilis* (Leidy).
- ³⁶ Kipp R, Bailey SA, MacIsaac HJ, & Ricciardi A (2010) Transoceanic ships as vectors for nonindigenous freshwater bryozoans. *Diversity and Distributions* 16(1):77–83.
- ³⁷ Smith, Pennak's Freshwater Invertebrates of the United States.
- ³⁸ Leidy J (1851 [1852]) Cristatella (Pectinatella) magnifica. Proceedings of the Academy of Natural Sciences of Philadelphia 5:265–266.
- ³⁹ Wood TS (2010) Bryozoans. In *Ecology and Classification of North American Freshwater Invertebrates*, 3rd ed., eds. JH Thorp & AP Covich (Elsevier, New York), 437–454.
- ⁴⁰ Brown HP (1952) The life history of *Climacia areolaris* (Hagen), a neuropterous "parasite" of fresh water sponges. *American Midland Naturalist* 47(1):130–160.
- ⁴¹ Ibid.
- ⁴² Bilger MD, Riva-Murray K, & Wall GL (2005) A Checklist of the Aquatic Invertebrates of the Delaware River Basin, 1990–2000. U.S. Geological Survey Data Series 116. (U.S. Department of the Interior, U.S. Geological Survey, Reston, VA).
- ⁴³ Roberts et al., Report on the Water Supply for the City of Philadelphia.
- ⁴⁴ Carson R (1962) Silent Spring (Houghton Mifflin, Boston).
- ⁴⁵ Potts, Fresh Water Sponges: A Monograph.
- ⁴⁶ Leidy, Bituminous sediment of the Schuylkill River.
- ⁴⁷ Roberts et al., Report on the Water Supply for the City of Philadelphia.
- ⁴⁸ Potts E (1884 [1885]) Freshwater sponges as improbable causes of the pollution of river-water. *Proceedings of the Academy of Natural Sciences of Philadelphia* 36:28–30.
- ⁴⁹ Harrison E (1974) Sponges (Porifera: Spongillidae). In *Pollution Ecology of Freshwater Invertebrates*, eds. CW Hart Jr & SLH Fuller (Academic Press, New York), 29–66.
- ⁵⁰ Roback SS (1974) Insects (Arthropoda: Insecta). In Pollution Ecology of Freshwater Invertebrates, eds. CW Hart Jr & SLH Fuller (Academic Press, New York), 314–376.
- ⁵¹ Reiswig HM, Frost TM, & Ricciardi A (2010) Porifera. In Ecology and Classification of North American Freshwater Invertebrates, 3rd ed., eds. JH Thorp & AP Covich (Elsevier, New York), 91–123.

Chapter 21: Brown bullhead

- ¹ Lesueur CA (1819) Notice de quelques poissons découverts dans les lacs du Haut-Canada, durant l'été de 1816. Mémoires du Muséum d'Histoire Naturelle 5:148–161.
- ² Norris T (1808) American Fish-Culture: Embracing All the Details of Artificial Breeding and Rearing of Trout; the Culture of Salmon, Shad, and Other Fishes (Porter & Coates, Philadelphia).

⁴ Fowler HW (1914) Fishes in polluted waters. Copeia 5:4.

- ⁶ Jordan DS & Evermann BW (1905) *American Food and Game Fishes: A Popular Account of All the Species Found in America North of the Equator, with Keys for Ready Identification, Life Histories and Methods of Capture* (Doubleday, Page & Co, New York).
- ⁷ Ibid., 27.
- ⁸ DeWalt RE, Rash VH, & Hilsenhoff WL (2010) Diversity and classification of insects and Collembola. In *Ecology and Classification of North American Freshwater Invertebrates*, 3rd ed., eds. JH Thorp & AP Covich (Academic Press, New York), 587-657.
- ⁹ Carr J & Hiltunen J (1965) Changes in the bottom fauna of western Lake Erie from 1930 to 1961. *Limnology and Oceanography* 10(4):551–569.
- ¹⁰ Doherty MSE, Hudson PL, Ciborowski JJH, & Schloesser DW (1999) Morphological deformities in larval Chironomidae (Diptera) from the western basin of Lake Erie: A historical comparison. In *Proceedings of the* 25th Annual Aquatic Toxicity Workshop: October 18–21, 1998, Quebec City, eds. RV Collie, R Chasse, L Hare, C Julien, et al. Canadian Technical Report of Fisheries and Aquatic Sciences, No. 2269:134.
- ¹¹ Lesko LT, Smith SB, & Blouin MA (1996) The effect of contaminated sediments on fecundity of the brown bullhead in three Lake Erie tributaries. *Journal of Great Lakes Research* 22(4):830–837.
- ¹² Johnson MS & Munger F (1930) Observations on excessive abundance of the midge *Chironomus plumosus* at Lake Pepin. *Ecology* 11(1):110–126.
- ¹³ Ali A (1995) A concise review of chironomid midges (Diptera: Chironomidae) as pests and their management. *Journal of Vector Ecology* 21(2):105–121.
- ¹⁴ Bilger MD, Riva-Murray K, & Wall GL (2005) A Checklist of the Aquatic Invertebrates of the Delaware River Basin, 1990–2000, U.S. Geological Survey Data Series 116 (U.S. Department of the Interior, USGS, Reston, VA).
- ¹⁵ Carr & Hiltunen, Changes in the bottom fauna of western Lake Erie from 1930 to 1961.
- ¹⁶ Govedich FR, Bain BA, Moser WE, Gelder SR, et al. (2010) Annelida (Clitellata): Oligochaeta, Branchiobdellida, Hirundinida, Acanthobdellida. In *Ecology and Classification of North American Freshwater Invertebrates*, 3rd ed., eds. JH Thorp & AP Covich (Academic Press, New York), 385–436.
- ¹⁷ Klarberg DP & Benson A (1975) Food habits of *Ictalurus nebulosus* in acid polluted water of northern West Virginia. *Transactions of the American Fisheries Society* 104(3):541–547.
- ¹⁸ Ettinger WS (1982) Macrobenthos of the freshwater tidal Schuylkill River at Philadelphia, Pennsylvania. *Journal of Freshwater Ecology* 1(6):599–606.
- ¹⁹ Leidy J (1876) Bituminous sediment of the Schuylkill River. In *Proceedings of the Academy of Natural Sciences of Philadelphia*, ed. EJ Nolan (Academy of Natural Sciences, Philadelphia), 193.
- ²⁰ Beddard FE (1895) A Monograph of the Order of Oligochaeta (Clarendon Press, Oxford).
- ²¹ Ettinger, Macrobenthos of the freshwater tidal Schuylkill River.
- ²² Klarberg & Benson, Food habits of Ictalurus nebulosus in acid polluted water of northern West Virginia.

23 Ibid.

- ²⁴ Marvin DE & Heath AG (1968) Cardiac and respiratory responses to gradual hypoxia in three ecologically distinct species of fresh-water fish. *Comparative Biochemistry and Physiology* 27(1):349–355.
- ²⁵ Wismer DA & Christie AE (1987) Relationships of Great Lakes Fishes: A Data Compilation. Great Lakes Fisheries Commission Special Publication 87-3 (Great Lakes Fisheries Commission, Ann Arbor, MI).
- ²⁶ Reisinger HJ II (1981) Trace metals in a conceptualized Schuylkill River food chain. In *Proceedings of the Schuylkill River Symposium*, ed. LF Berseth (Samuel S. Fels Fund and the Academy of Natural Sciences of Philadelphia, Philadelphia), 53–65.
- ²⁷ Hightower JE, Fleming WJ, & Hayman MA (1999) Effects of contaminated sediments on brown bullhead age structure, growth, and condition in a North Carolina tidal creek. In *American Fisheries Society Symposium 24*. *Catfish 2000: Proceedings of the International Ictalurid Symposium, held at Davenport, Iowa, June 23–25, 1998*, eds. E Irwin, W Hubert, C Rabeni, H Schramm Jr, et al. (American Fisheries Society, Bethesda, MD), 161–172.
- ²⁸ Blumer LS (1986) The function of parental care in the brown bullhead *Ictalurus nebulosus. American Midland Naturalist* 115(2):234–238.
- ²⁹ Grabarkiewicz JD & Davis WS (2008) An Introduction to Freshwater Fishes as Biological Indicators. EPA-260-R-08-016 (U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC).

³⁰ Fowler, Fishes in polluted waters.

³ Ibid., 214.

⁵ Ibid.

- ³¹ Steyermark AC, Spotila JR, Gillette D, & Isseroff H (1999) Biomarkers indicate health problems in brown bullheads from the industrialized Schuylkill River, Philadelphia. *Transactions of the American Fisheries Society* 128(2):328–338.
- ³² Pennsylvania Department of Environmental Protection (2012) Commonwealth of Pennsylvania Fish Consumption Advisory Listing for 2012, by River Basin. Revised September 23, 2011, http://files.dep.state.pa.us/ Water/Drinking%20Water%20and%20Facility%20Regulation/WaterQualityPortalFiles/FishConsumption/ FishAdvisory/FishConsAdvTables2012-Rev092311-Final.pdf.
- ³³ Weintraub M & Birnbaum LS (2008) Catfish consumption as a contributor to elevated PCB levels in a non-Hispanic black subpopulation. *Environmental Research* 107(3):412–417.
- ³⁴ Grasman KA, Scanlon PF, & Fox GA (1998) Reproductive and physiological effects of environmental contaminants in fish-eating birds of the Great Lakes: A review of historical trends. *Environmental Monitoring and Assessment* 53(1):117–145.
- ³⁵ Matz AC & Parsons KC (2004) Organochlorines in black-crowned night heron (*Nycticorax nycticorax*) eggs reflect persistent contamination in Northeastern U.S. estuaries. *Archives of Environmental Contamination and Toxicology* 46(2):270–274.
- ³⁶ Larson JM, Karasov WH, Sileo L, Stromborg KL, et al. (1996) Reproductive success, developmental anomalies, and environmental contaminants in double-crested cormorants (*Phalacrocorax auritus*). *Environmental Toxicology and Chemistry* 15(4):553–559.
- ³⁷ Toschik PC, Rattner BA, McGowan PC, Christman MC, et al. (2005) Effects of contaminant exposure on reproductive success of ospreys (*Pandion haliaetus*) nesting in Delaware River and Bay, USA. *Environmental Toxicology and Chemistry* 24(3):617–628.
- ³⁸ Barker JL (1984) Organochlorine and polychlorinated biphenyl residues at four trophic levels in the Schuylkill River, Pennsylvania. Paper 2262. In *Selected Papers in the Hydrologic Sciences 1984: U.S. Geological Survey Water-Supply*, ed. EL Meyer (Superintendent of Documents, U.S. Government Printing Office, Washington, DC), 25–31.
- ³⁹ Zaranko DT, Griffiths RW, & Kaushik NK (1997) Biomagnification of polychlorinated biphenyls through a riverine food web. *Environmental Toxicology and Chemistry* 16(7):1463–1471.
- ⁴⁰ Lucké B & Schlumberger HG (1941) Transplantable epitheliomas of the lip and mouth of catfish: I. Pathology. Transplantation to anterior chamber of eye and into cornea. *Journal of Experimental Medicine* 74(5):397–408.
- ⁴¹ Pinkney AE, Harshbarger JC, Karouna-Renier NK, Jenko K, et al. (2011) Tumor prevalence and biomarkers of genotoxicity in brown bullhead (*Ameiurus nebulosus*) in Chesapeake Bay tributaries. *Science of the Total Environment* 410–411:248–257.
- ⁴² Pinkney A, Harshbarger J, & Roberts M (2004) *Tumor prevalence in brown bullheads* (Ameiurus nebulosus) *from Darby Creek, John Heinz National Wildlife Refuge at Tinicum, Philadelphia, PA* (U.S. Fish and Wildlife Service, Annapolis, MD, and State College, PA).
- ⁴³ Delaware River Basin Commission (1988) Fish Health and Contamination Study (Superintendent of Documents, U.S. Government Printing Office, Washington, DC), http://www.gpo.gov/fdsys/pkg/CZICsh174-f57-1988/html/CZIC-sh174-f57-1988.htm.
- ⁴⁴ Sindermann CJ (1979) Pollution-associated diseases and abnormalities of fish and shellfish: A review. *Fishery Bulletin* 76(4):717–749.

45 Ibid.

- ⁴⁶ Baumann PC (1998) Epizootics of cancer in fish associated with genotoxins in sediment and water. *Mutation Research/Reviews in Mutation Research* 411(3):227–233.
- ⁴⁷ Baumann PC & Harshbarger JC (1995) Decline in liver neoplasms in wild brown bullhead catfish after coking plant closes and environmental PAHs plummet. *Environmental Health Perspectives* 103(2):168–170.
- ⁴⁸ Spitsbergen JM & Wolf MJ (1995) The riddle of hepatic neoplasia in brown bullheads from relatively unpolluted waters in New York State. *Toxicologic Pathology* 23(6):716–725.
- ⁴⁹ Pinkney et al., Tumor prevalence and biomarkers of genotoxicity in brown bullhead (*Ameiurus nebulosus*) in Chesapeake Bay tributaries.
- ⁵⁰ Boyer MR (1995) Catfish. In *Living Resources of the Delaware Estuary*, eds. LE Dove & RM Nyman (The Delaware Estuary Program, Wilmington), 157–166.
- ⁵¹ Brown J, Perillo J, Kwak T, & Horwitz R (2005) Implications of *Pylodictis olivaris* (flathead catfish) introduction into the Delaware and Susquehanna drainages. *Northeastern Naturalist* 12(4):473–484; Perillo JA & Butler LH (2009) Evaluating the use of Fairmount Dam fish passage facility with application to anadromous fish restoration in the Schuylkill River, Pennsylvania. *Journal of the Pennsylvania Academy of Science* 83(1):24–33.
- ⁵² Harmon PL (1980) Abundance of distribution of fishes in the Schuylkill River. In *Proceedings of the Schuylkill River Symposium, September 24–25, 1980, ed.* LF Berseth (Samuel S. Fels Fund and the Academy of Natural Sciences of Philadelphia), 85–100.
- ⁵³ Mulfinger RM & Kaufman M (1980) Fish passage at the Fairmount Fishway in 1979 and 1980 with implications for the Schuylkill River fisheries through future fishway construction. In *Proceedings of the Schuylkill River Symposium, September 24–25, 1980*, ed. LF Berseth (Samuel S. Fels Fund and the Academy of Natural Sciences of Philadelphia), 101–124.

- ⁵⁴ Leo Sheng, Conversation with the author, September 8, 2012.
- 55 Boyer, Catfish.
- ⁵⁶ U.S. Environmental Protection Agency (2012) Polychlorinated Biphenyls (PCBs), http://www.epa.gov/epawaste/hazard/tsd/pcbs/index.htm.
- ⁵⁷ Brown et al., Implications of *Pylodictis olivaris* (flathead catfish) introduction into the Delaware and Susquehanna drainages.

- ⁵⁹ Perillo J, Conversation with the author, September 7, 2013.
- ⁶⁰ Saylor RK, Lapointe NWR, & Angermeier PL (2012) Diet of non-native northern snakehead (*Channa argus*) compared to three co-occurring predators in the lower Potomac River, USA. *Ecology of Freshwater Fish* 21(3):443–452.
- ⁶¹ Ettinger, Macrobenthos of the freshwater tidal Schuylkill River.
- ⁶² Exelon Generation Company (2008) *Biological Source Water Characterization for Schuylkill Generating Station*. Prepared for Exelon Generation Company, LLC, 300 Exelon Way, Kennett Square, PA 19348 by GB Waterfield, BW Lees, & RW Blye Jr. of Normandeau Associates, Inc., 400 Old Reading Pike, Building A, Suite 101, Stowe, PA 19464 (Exelon Generation Company, Kennett Square, PA).
- ⁶³ Delaware River Basin Commission (2012) Notice of Commission Meeting and Public Hearing [FR Doc No: 2012-15398]. Federal Register 77(122):37887–37890, http://www.gpo.gov/fdsys/pkg/FR-2012-06-25/ html/2012-15398.htm; Exelon Corporation (2012) Schuylkill Generating Station, http://www.exeloncorp. com/PowerPlants/schuylkill/Pages/profile.aspx;Veolia Energy (2011) Veolia Energy, Philadelphia, PA, http:// www.veoliaenergyna.com/veolia-energy-north-america/locations/philadelphia.htm.
- ⁶⁴ U.S. Energy Information Administration (2012) Pennsylvania Nuclear Power Plants 2010, http://www.eia.gov/ nuclear/state/pennsylvania/.
- ⁶⁵ Exelon Generation Company (2008) Design and Construction Technology Plan, Schuylkill Generating Station, Philadelphia, December 2008. Technical Consultants: ARCADIS; Veritas Economic Consulting; Normandeau Associates, Inc. (Exelon Generation Company, Kennett Square, PA); Exelon Generation Company (2008) Impingement Mortality and Entrainment Characterization Study, Schuylkill Generating Station, Philadelphia, December 2008. Technical Consultants: Normandeau Associates, Inc; Veritas Economic Consulting; ARCADIS (Exelon Generation Company, Kennett Square, PA).
- ⁶⁶ Exelon Generation Company, Design and Construction Technology Plan, Schuylkill Generating Station, Philadelphia, December 2008.
- ⁶⁷ Exelon Generation Company (2008) Historical Impingement and Entrainment Comparisons for Schuylkill Generating Station. Prepared for Exelon Generation Company, LLC, 300 Exelon Way, Kennett Square, PA 19348 by GB Waterfield, BW Lees, & RW Blye Jr. of Normandeau Associates, Inc., 400 Old Reading Pike, Building A, Suite 101, Stowe, PA 19464. # 20645.005 (Exelon Generation Company, Kennett Square, PA).
- ⁶⁸ Lane JA, Portt CB, & Minns CK (1996) Spawning Habitat Characteristics of Great Lakes Fishes. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2368 (Department of Fisheries and Oceans, ONT, Canada).
- ⁶⁹ Massengill RR (1973) Change in feeding and body condition of brown bullheads overwintering in the heated effluent of a power plant. *Chesapeake Science* 14(2):138–141.
- ⁷⁰ U.S. Geological Survey (2012) USGS 01474500, Schuylkill River at Philadelphia, PA, http://waterdata. usgs.gov/pa/nwis/uv?cb_00060=on&cb_00065=on&cb_00010=on&format=gif_stats&period=&begin_ date=2012-08-01&end_date=2012-08-01&site_no=01474500.
- ⁷¹ Exelon Generation Company, Design and Construction Technology Plan, Schuylkill Generating Station, Philadelphia, December 2008.
- ⁷² U.S. Environmental Protection Agency (2012) *Cooling Water Intake Structures—CWA §316(b)*, http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/index.cfm.
- ⁷³ Exelon Generation Company, Design and Construction Technology Plan, Schuylkill Generating Station, Philadelphia, December 2008.

- ⁷⁵ Foster JR & Wheaton TJ (1981) Losses of juvenile and adult fishes at the Nanticoke Thermal Generating Station due to entrapment, impingement, and entrainment. *Journal of Great Lakes Research* 7(2):162–170.
- ⁷⁶ Bauers S (2012) Single parenthood at the Franklin hawk nest? (blog), http://www.philly.com/philly/blogs/ greenliving/Single-parenthood-at-the-Franklin-hawk-nest.html.

- ⁷⁸ Peck GW (1880) A plea for the bullhead. In Peck's Fun: Being Extracts from the "La Crosse Sun" and "Peck's Sun," Milwaukee, Carefully Selected with the Object of Affording the Public in One Volume the Cream of Mr. Peck's Writings of the Past Ten Years, ed.VW Richardson (Belford, Clarke & Co, Chicago), 134–135.
- ⁷⁹ Bauers S (2012) Bald eagle chick hatches in Tinicum nest (blog), http://www.philly.com/philly/blogs/ greenliving/Chick-.html.
- ⁸⁰Viverette CB, Garman GC, McIninch SP, Markham AC, et al. (2007) Finfish-waterbird trophic interactions in tidal freshwater tributaries of the Chesapeake Bay. *Waterbirds* 30(sp1):50–62.

⁵⁸ Boyer, Catfish.

⁷⁴ Ibid.

⁷⁷ Norris, American Fish-Culture.

⁸¹ Ibid.

Chapter 22: Red Back Salamander

- ¹ Green J (1818) Descriptions of several species of North American Amphibia, accompanied with observations. *Journal of the Academy of Natural Sciences of Philadelphia* 1(1):348–359.
- ² Kurtz DW (1991) Jacob Green's chemical philosophy: Insights on the teaching of American college chemistry 160 years ago. *Journal of Chemical Education* 68(3):186–189.
- ³ Reed CF (1960) Plethodon erythronotus (Raf.), the red-backed salamander. Herpetologica 16(3):207–213.
- ⁴ Stuckey RL (1986) Opinions of Rafinesque expressed by his American botanical contemporaries. *Bartonia* 52:26–41. (Rafinesque's disreputable status may explain why people chose to ignore his naming of the red back salamander.)
- ⁵ Rafinesque CS (1818 [March]) Description of a new American salamander—the red back salamander from the Highlands. *The Scientific Journal of New York* 1(2):25–26. (I accessed a photoreproduction of this publication in: Goodwin GH Jr. (1960) Unrecorded papers of Rafinesque and Jacob Green. *Systematic Biology* 9(1):35–36.)
- ⁶ Green, Descriptions of several species of North American Amphibia.
- ⁷ Rafinesque, Description of a new American salamander.
- ⁸ Holbrook JE (1842) North American Herpetology Or, a Description of the Reptiles Inhabiting the United States, vol. 5 (J. Dobson, Philadelphia).
- ⁹ Hallowell E (1856 [1857]) Urodeles most abundant in the neighborhood of Philadelphia. Proceedings of the Academy of Natural Sciences of Philadelphia 8:101; Stone W (1906) Notes on reptiles and batrachians of Pennsylvania, New Jersey and Delaware. The American Naturalist 40(471):159–170; Hulse AC, McCoy CJ, & Censky EJ (2001) Amphibians and Reptiles of Pennsylvania and the Northeast (Cornell University Press, Ithaca, NY).
- ¹⁰ Burger JW (1935) Plethodon cinereus (Green) in eastern Pennsylvania and New Jersey. The American Naturalist 69(725):578–586; Reams RD, Searcy R, Wyatt JE III, & Gehrmann WH (2008) Habitat utilization by reptiles and amphibians at an urban state park in Indiana. Bulletin of the Chicago Herpetological Society 43(2):17–20; Noël S & Lapointe F-J (2010) Urban conservation genetics: Study of a terrestrial salamander in the city. Biological Conservation 143(11):2823–2831; Walton BM & Canterbury R (1999) Amphibian and avian fauna of an urban riparian woodland in northeast Ohio. International Association for Great Lakes Research: Great Lakes, Great Science, Great Cities. Program and Abstracts, A-114.
- ¹¹ Fowler HW & Dunn ER (1917) Notes on salamanders. *Proceedings of the Academy of Natural Sciences of Philadelphia* 69:7–28.
- ¹² Walton BM, Tsatiris D, & Rivera-Sostre M (2006) Salamanders in forest-floor food webs: Invertebrate species composition influences top-down effects. *Pedobiologia* 50(4):313–321.
- ¹³ Maerz J, Karuzas J, Madison D, & Blossey B (2005) Introduced invertebrates are important prey for a generalist predator. *Diversity and Distributions* 11:83–90.
- ¹⁴ Ransom TS (2012) Behavioral responses of a native salamander to native and invasive earthworms. *Biological Invasions* 14(12):2601–2616.
- ¹⁵ Hulse, McCoy, & Censky, Amphibians and Reptiles of Pennsylvania and the Northeast.
- ¹⁶ Wake DB & Hanken J (1996) Direct development in the lungless salamanders: What are the consequences for developmental biology, evolution and phylogenesis? *International Journal of Developmental Biology* 40:859–869.
- ¹⁷ Cochran ME (1911) The biology of the red-backed salamander (*Plethodon cinereus erythronotus* Green). *Biological Bulletin* 20(6):332–349.
- ¹⁸ Taub FB (1961) The distribution of the red-backed salamander, *Plethodon c. cinereus*, within the soil. *Ecology* 42(4):681–698.
- ¹⁹ Heatwole H (1960) Burrowing ability and behavioral responses to desiccation of the salamander, *Plethodon cinereus. Ecology* 41(4):661–668.
- ²⁰ Test FH (1946) Relations of the red-backed salamander (*Plethodon cinereus*) to light and contact. *Ecology* 27(3):246–254.
- ²¹ Hood HH (1934) A note on the red-backed salamander at Rochester, New York. Copeia 1934(3):141–142.
- ²² Jaeger R, Kalvarsky D, & Shimizu N (1982) Territorial behaviour of the red-backed salamander: Expulsion of intruders. *Animal Behaviour* 30:490–496.
- ²³ Marsh DM, Thakur KA, Bulka KC, & Clarke LB (2004) Dispersal and colonization through open fields by a terrestrial, woodland salamander. *Ecology* 85:3396–3405.
- ²⁴ Wind E (2000) Effects of habitat fragmentation on amphibians: What do we know and where do we go from here? In *Proceedings of a Conference on the Biology and Management of Species and Habitats at Risk, Kamloops, BC, February 15–19, 1999,* vol. 2, ed. LM Darling (Ministry of Environment, Lands and Parks, Victoria, BC, and University College of the Cariboo, Kamloops, BC), 885–890.
- ²⁵ Bishop SC (1941) The Salamanders of New York. New York State Museum Bulletin No. 324 (University of the State of New York, Albany).
- ²⁶ Gibbs JP (1998) Amphibian movements in response to forest edges, roads, and streambeds in southern New England. *The Journal of Wildlife Management* 62(2):584–589.

- ²⁷ Kleeberger SR & Werner JK (1982) Home range and homing behavior of *Plethodon cinereus* in northern Michigan. *Copeia* 1982(2):409–415.
- ²⁸ Ousterhout BH & Liebgold EB (2010) Dispersal versus site tenacity of adult and juvenile red-backed salamanders (*Plethodon cinereus*). *Herpetologica* 66(3):269–275.
- ²⁹ Cheptou P-O, Carrue O, Rouifed S, & Cantarel A (2008) Rapid evolution of seed dispersal in an urban environment in the weed *Crepis sancta*. *Proceedings of the National Academy of Sciences* 105(10):3796–3799.
- ³⁰ Hanson HC (1997) *The Giant Canada Goose,* rev. ed. (Southern Illinois University Press, Carbondale and Edwardsville).
- ³¹ Conover MR (2011) Population growth and movements of Canada geese in New Haven County, Connecticut, during a 25-year period. *Waterbirds 30 (Special Publication 1)* 34(4):412–421.
- ³² Gosser AL, Conover MR, & Messmer TA (1997) *Managing Problems Caused by Urban Canada Geese. Berryman Institute Publication 13* (Utah State University, Logan).
- ³³ Stephenson T & Van Ballenberghe V (1995) Wolf, Canis lupus, predation on dusky Canada geese, Branta canadensis occidentalis. Canadian Field-Naturalist 109(2):253–255.
- ³⁴ Roff DA (1990) The evolution of flightlessness in insects. *Ecological Monographs* 60(4):389-421.
- ³⁵ Usinger RL (1966) *Monograph of the Cimicidae (Hemiptera–Heteroptera)* (Entomological Society of America, Lanham, MD).
- ³⁶ Piersol WH (1908–9) The habits and larval state of *Plethodon cinereus erythronotus*. *Transactions of the Canadian Institute* 8:469–493.
- ³⁷ Highton R & Savage T (1961) Functions of the brooding behavior in the female red-backed salamander, *Plethodon cinereus. Copeia* 1961(1):95–98.
- ³⁸ Sayler A (1966) The reproductive ecology of the red-backed salamander, *Plethodon cinereus*, in Maryland. *Copeia* 1966(2):183–193.
- ³⁹ Wake & Hanken, Direct development in the lungless salamanders.
- ⁴⁰ Vieites DR, Min M-S, & Wake DB (2007) Rapid diversification and dispersal during periods of global warming by plethodontid salamanders. *Proceedings of the National Academy of Sciences* 104(50):19903–19907; Wake DB & Marks SB (1993) Development and evolution of plethodontid salamanders: A review of prior studies and a prospectus for future research. *Herpetologica* 49(2):194–203.
- ⁴¹ Saylor, The reproductive ecology of the red-backed salamander; Hood, A note on the red-backed salamander at Rochester, New York.
- ⁴² Jameson EW Jr. (1944) Food of the red-backed salamander. *Copeia* 1944(3):145–147.
- ⁴³ Ibid; Cochran, The biology of the red-backed salamander.
- ⁴⁴ Highton & Savage, Functions of the brooding behavior in the female red-backed salamander.
- ⁴⁵ Piersol, The habits and larval state of *Plethodon cinereus erythronotus*.
- ⁴⁶ Edwards CA & Lofty JR (1972) *Biology of Earthworms* (Chapman and Hall, London).
- ⁴⁷ Saylor, The reproductive ecology of the red-backed salamander.

Chapter 23: Liverwort

- ¹ Muhlenberg H (1799) Supplementum indicis florae Lancastriensis. *Transactions of the American Philosophical* Society 4:235–242.
- ² Vanderpoorten A & Goffinet B (2009) *Introduction to Bryophytes* (Cambridge University Press, Cambridge, UK).
- ³ Schuster RM (1992) The Hepaticae and Anthocerotae of North America East of the Hundredth Meridian, vol.VI (Field Museum of Natural History, Chicago).
- ⁴ Konrat MV, Söderström L, Renner MAM, Hagborg A, et al. (2010) Early land plants today (ELPT): How many liverwort species are there? *Phytotaxa* 9:22–40.
- ⁵ Evert RF & Eichhorn SE (2012) Raven Biology of Plants (W. H. Freeman, New York).
- ⁶ Hicks ML (2004) Aytoniacea Reboulia. *Bryophyte Flora of North America, Provisional Publication*, (Missouri Botanical Garden), http://www.mobot.org/plantscience/bfna/V3/AytoReboulia.htm.
- ⁷ Manville GC (1994) *Hepatics of Pennsylvania. Final Report: 1994* (self-published); Porter TC (1904) *Catalogue of the Bryophyta (Hepatics, Anthocerotes and Mosses) and Pteridophyta (Ferns and Fern-Allies) Found in Pennsylvania* (Gin & Company, Boston).
- ⁸ Boisselier-DuBayle MC, Lambourdiere J, & Bischler H (1998) Taxa delimitation in *Reboulia* investigated with morphological, cytological, and isozyme markers. *Bryologist* 101(1):61–69.
- ⁹ Schuster, The Hepaticae and Anthocerotae of North America East of the Hundredth Meridian, 159.
- ¹⁰ Olmsted FL, Kelsey HP, & Officers of the American Civic Association (1908) The Smoke Nuisance (American Civic Association, Department of Nuisances, Philadelphia), 4.
- ¹¹ Gilbert OL (1968) Bryophytes as indicators of air pollution in the Tyne Valley. New Phytologist 67(1):15–30.

¹² Ibid.

- ¹³ Bates JW (2000) Mineral nutrition, substratum ecology and pollution. In *Bryophyte Biology*, eds. AJ Shaw & B Goffinet (Cambridge University Press, Cambridge, UK), 248–311.
- ¹⁴ Gilbert, Bryophytes as indicators of air pollution in the Tyne Valley.
- ¹⁵ Zvereva EL & Kozlov MV (2011) Impacts of industrial polluters on bryophytes: A meta-analysis of observational studies. *Water, Air, Soil Pollution* 218:573–586.
- ¹⁶ City of Philadelphia Department of Public Health Air Management Services. History of Air Pollution Control in Philadelphia, http://www.phila.gov/health/pdfs/air/History.pdf.
- ¹⁷ Bates, Mineral nutrition, substratum ecology and pollution; City of Philadelphia Department of Public Health Air Management Services. 2012–2013 Air Monitoring Network Plan, http://www.phila.gov/health/ pdfs/airmanagement/2012-13%20AMNP%20-%20FINAL.pdf.
- ¹⁸ Ibid.
- ¹⁹ Tutt JW (1896) British Moths (George Routledge and Sons, Ltd, Manchester), 305.
- ²⁰ Laxen DPH & Thompson MA (1987) Sulphur dioxide in Greater London, 1931–1985. *Environmental Pollution* 43(2):103–114.
- ²¹ Rose CI & Hawksworth DL (1981) Lichen recolonization in London's cleaner air. Nature 289:289–292.
- ²² Majerus MEN (1998) Melanism: Evolution in Action (Oxford University Press, Oxford, UK).
- ²³ Sargent T, Millar C, & Lambert D (1998) The "classical" explanation of industrial melanism: Assessing the evidence. *Evolutionary Biology*, vol. 30, eds. MK Hecht, RJ MacIntyre, & MT Clegg (Plenum Press, New York), 299–322; Cook LM (2000) Changing views on melanic moths. *Biological Journal of the Linnean Society* 69(3):431–441; Rudge D (2006) Myths about moths: A study in contrasts. *Endeavour* 30(1):19–23.
- ²⁴ Van't Hof A & Saccheri I (2010) Industrial melanism in the peppered moth is not associated with genetic variation in canonical melanisation gene candidates. *PLoS ONE* 5(5):e10889; Jiggins CD (2011) A Peppered icon enters the genomic era. *Bioscience* 61(9):655–656; Cook LM, Grant BS, Saccheri IJ, & Mallet J (2012) Selective bird predation on the peppered moth: The last experiment of Michael Majerus. *Biology Letters*. doi:10.1098/rsbl.2011.1136.
- ²⁵ Majerus MEN (2009) Industrial melanism in the peppered moth, *Biston betularia*: An excellent teaching example of Darwinian evolution in action. *Evolution Education Outreach* 2:63–74.
- ²⁶ Owen DF (1961) Industrial melanism in North American moths. American Naturalist 95:227–233.
- ²⁷ U.S. Environmental Protection Agency (2012). Clean Air Act Requirements and History, http://epa.gov/air/ caa/caa_history.html.
- ²⁸ Grant BS & Wiseman LL (2002) Recent history of melanism in American peppered moths. *The Journal of Heredity* 93(2):86–90.
- ²⁹ Rao DN (1982) Responses of bryophytes to air pollution. In *Bryophyte Ecology*, ed. AJE Smith (Chapman and Hall, London), 445–471.
- ³⁰ Grout AJ (1916) The Moss Flora of New York City and Vicinity (self-published, New Dorp, NY), 5.
- ³¹ Tees GM (1933) An Annotated Check List of the Mosses of Philadelphia and Vicinity (master of science thesis, Graduate School of Arts and Sciences, University of Pennsylvania, Philadelphia).
- ³² Atwood JJ, Allen B, & Pursell RA (2009) Checklist of Pennsylvania Mosses. Final Report to the Pennsylvania Department of Conservation and Natural Resources/Wild Resource Conservation Program: 22 September 2009 (published by the authors, St. Louis, MO); Porter, Catalogue of the Bryophyta . . . and Pteridophyta . . . Found in Pennsylvania.
- ³³ Sayre G (1984) Thomas Potts James: a bio-bibliography. Cryptogamie: Bryologie, Lichenologie. 5(1-2):51-62.
- ³⁴ Larsen RS, Bell JN, James PW, Chimonides PG, et al. (2007) Lichen and bryophyte distribution on oak in London in relation to air pollution and bark acidity. *Environmental Pollution* 146(2):332–340.
- ³⁵ Stevenson R & Hill M (2008) Urban myths exploded: Results of a bryological survey of King's Lynn (Norfolk, UK). *Journal of Bryology* 30(1):12–22; Sabovljevic M & Sabovljevic A (2009) Biodiversity within urban areas: A case study on bryophytes of the city of Cologne (NRW, Germany). *Plant Biosystems* 143(3):473–481; Sabovljevic M & Grdovic Z (2009) Bryophyte diversity within urban areas: Case study of the city of Belgrade (Serbia). *International Journal of Botany* 5(1):85–92.
- ³⁶ Miller NG & McDaniel SF (2004) Bryophyte dispersal inferred from colonization of an introduced substratum on Whiteface Mountain, New York. *American Journal of Botany* 91(8):1173–1182.
- ³⁷ Davies L (2007) Diversity and sensitivity of epiphytes to oxides of nitrogen in London. *Environmental Pollution* 146(2):299–310.
- ³⁸ Academy of Natural Sciences of Philadelphia (1952) Specimen of *Reboulia hemisphaerica* collected May 15, 1952, by E. W. Johnson. Specimen (barcode 45311) in Hepatics of Pennsylvania in the general collection of the herbarium of the Academy of Natural Sciences of Drexel University.
- ³⁹ Gilbert, Bryophytes as indicators of air pollution in the Tyne Valley.
- ⁴⁰ Manville, Hepatics of Pennsylvania. Final Report: 1994.
- ⁴¹ Uva RH, Neal JC, & Ditomaso JM (1997) Weeds of the Northeast (Comstock Publishing Company/Cornell University Press, Ithaca, NY), 397.
- ⁴² During HJ (1979) Life strategies of bryophytes: A preliminary review. *Lindbergia* 5(1):2–18.
- ⁴³ Clare D & Terry T (1960) Dispersal of *Bryum argenteum. Transactions of the British Bryological Society* 3:748.
 ⁴⁴ Greenslade P & Convey P (2012) Exotic Collembola on subantarctic islands: Pathways, origins and biology. *Biological Invasions* 14(2):405–417.

- ⁴⁵ Marino P, Raguso R, & Goffinet B (2009) The ecology and evolution of fly dispersed dung mosses (Family Splachnaceae): Manipulating insect behaviour through odour and visual cues. *Symbiosis* 47:61–76.
- ⁴⁶ Rudolphi J (2009) Ant-mediated dispersal of asexual moss propagules. The Bryologist 112(1):73-79.
- ⁴⁷ Johnson SD & Jürgens A (2010) Convergent evolution of carrion and faecal scent mimicry in fly-pollinated angiosperm flowers and a stinkhorn fungus. *South African Journal of Botany* 76(4):796–807.
- ⁴⁸ Boisselier-DuBayle, Lambourdiere, & Bischler, Taxa delimitation in *Reboulia* investigated with morphological, cytological, and isozyme markers.
- ⁴⁹ Vanderpoorten A, Gradstein SR, Carine MA, & Devos N (2010) The ghosts of Gondwana and Laurasia in modern liverwort distributions. *Biological Reviews* 85(3):471–487.
- ⁵⁰ Boisselier-DuBayle, Lambourdiere, & Bischler, Taxa delimitation in *Rebouli*a investigated with morphological, cytological, and isozyme markers.
- ⁵¹ O'Hanlon ME (1930) Gametophyte development in *Reboulia hemisphaerica*. American Journal of Botany 17(8):765–769.
- ⁵² Akers TG, Edmonds RL, Kramer CL, Lighthart B, et al. (1979) Sources and characteristics of airborne materials. In *Aerobiology: The Ecological Systems Approach*, ed. RL Edmonds (Dowden, Hutchinson and Ross, Inc., Stroudsburg, PA), 11–84.
- ⁵³ Lewis WH, Vinay P, & Zenger VE (1983) Airborne and Allergenic Pollen of North America (Johns Hopkins University Press, Baltimore).
- ⁵⁴ Akers et al., Sources and characteristics of airborne materials.
- ⁵⁵ O'Hanlon, Gametophyte development in Reboulia hemisphaerica.
- ⁵⁶Vanderpoorten et al., The ghosts of Gondwana and Laurasia in modern liverwort distributions.
- ⁵⁷ Studlar SM, Eddy C, & Spencer J (2007) Survival of four mosses from WestVirginia after two hours in the stratosphere. *Evansia* 24(1):17–21.

Chapter 24: Silver-Haired Bat

- ¹ Palisot de Beauvois A-M-F-J (Undated) Catalogue raisonné du museum, de Mr. C. W. Peale, membre de la société philosophique de Pensylvanie. Rédigé par A. M. F. J. Beauvois, membre de la société des sciences et arts du Cap français, île et côte Saint-Domingue (De L'Imprimerie de Parent, Philadelphia) Gale Reprint: ECCO ed.
- ² Peale CW & Palisot de Beauvois A-M-F-J (1796) A Scientific and Descriptive Catalogue of Peale's Museum by C. W. Peale, Member of the American Philosophical Society, and A. M. F. J. Beauvois, Member of the Society of Arts and Sciences of St. Domingo, of the American Philosophical Society, and Correspondent to the Museum of Natural History at Paris (Samuel H. Smith, Philadelphia) Reprint: ECCO print ed.
- ^{3.} Allen H (1864) *Monograph of the Bats of North America*. Smithsonian Miscellaneous Collections vol. 165 (Smithsonian Institution, Washington, DC).
- ^{4.} Merritt JF (1987) Guide to the Mammals of Pennsylvania (University of Pittsburgh Press, Pittsburgh, PA).
 ^{5.} Ibid.
- ⁶. As quoted in: Godman JD (1826) American Natural History, vol. I, pt. I. Mastology, (H. C. Carey and I. Lea, Philadelphia), 56–57.
- ^{7.} Merritt, Guide to the Mammals of Pennsylvania; Harlan R (1825) A Fauna Americana; Being a Description of the Mammiferous Animals Inhabiting North America (Anthony Finley, Philadelphia).
- ^{8.} Allen, *Monograph of the Bats of North America;* Kirkland J, Gordon L. & Hart JA (1999) Recent distributional records for ten species of small mammals in Pennsylvania. *Northeastern Naturalist* 6(1):1–18.
- ^{9.} Allen, Monograph of the Bats of North America.
- ¹⁰ Kunz TH (1982) Lasionycteris noctivagans. Mammalian Species 172:1–5.
- ¹¹ Parsons HJ, Smith DA, & Whittam RF (1986) Maternity colonies of silver-haired bats, *Lasionycteris noctivagans*, in Ontario and Saskatchewan. *Journal of Mammalogy* 67(3):598–600.
- ¹² Perry RW, Saugey DA, & Crump BG (2010) Winter roosting ecology of silver-haired bats in an Arkansas forest. *Southeastern Naturalist* 9(3):563–572; Barclay RMR, Faure PA, & Farr DR (1988) Roosting behavior and roost selection by migrating silver-haired bats (*Lasionycteris noctivagans*). *Journal of Mammalogy* 69(4):821– 825.
- ¹³ Parsons, Smith, & Whittam, Maternity colonies of silver-haired bats; Kurta A (2010) Reproductive timing, distribution, and sex ratios of tree bats in Lower Michigan. *Journal of Mammalogy* 91(3):586–592; McGuire LP, Guglielmo CG, Mackenzie SA, & Taylor PD (2011) Migratory stopover in the long distance migrant silver haired bat, *Lasionycteris noctivagans. Journal of Animal Ecology* 81(2):377–385.
- ¹⁴ Hamilton WJ & Whitaker JO Jr. (1979) *Mammals of the Eastern United States* (Comstock Publishing Associates, Ithaca, NY).
- ¹⁵ Nese J & Schwartz G (2002) The Philadelphia Area Weather Book (Temple University Press, Philadelphia).
- ¹⁶ Hamilton & Whitaker, Mammals of the Eastern United States.
- ¹⁷ Krutzsch PH (1966) Remarks on silver-haired and Leib's bats in eastern United States. *Journal of Mammalogy* 47(1):121.
- ¹⁸ Perry, Saugey, & Crump, Winter roosting ecology of silver-haired bats in an Arkansas forest.

- ¹⁹ Speakman JR & Thomas DW (2005) Physiological ecology and energetics of bats. In *Bat Ecology*, eds. TH Kunz & MB Fenton (University of Chicago Press, Chicago), 430–490.
- ²⁰ Barclay, Faure & Farr, Roosting behavior and roost selection by migrating silver-haired bats (*Lasionycteris noctivagans*).
- ²¹ Dunbar MB (2007) Thermal energetics of torpid silver-haired bats, *Lasionycteris noctivagans. Acta Theriologica* 52(1):65–68.
- ²² Seibert HC (1949) Differences between migrant and non-migrant birds in food and water intake at various temperatures and photoperiods. *The Auk* 66(2):128–153.
- ²³ Barbour RW & Davis WH (1969) Bats of America (University of Kentucky Press, Lexington).
- ²⁴ Barclay, Faure, & Farr, Roosting behavior and roost selection by migrating silver-haired bats (*Lasionycteris noctivagans*).
- ²⁵ Ibid.
- ²⁶ Perry, Saugey, & Crump, Winter roosting ecology of silver-haired bats in an Arkansas forest.
- ²⁷ Messenger SL, Rupprecht CE, & Smith JS (2003) Bats, emerging virus infections, and the rabies paradigm. In Bat Ecology, eds. TH Kunz & MB Fenton (University of Chicago Press, Chicago), 622–679.
- ²⁸ Frick WF, Pollock JF, Hicks AC, Langwig KE, et al. (2010) An emerging disease causes regional population collapse of a common North American bat species. *Science* 329(5992):679–682; Reeder D, Frank CL, Turner GG, Meteyer CU, et al. (2012) Frequent arousal from hibernation linked to severity of infection and mortality in bats with white-nose syndrome. *PLoS ONE* 7(6):e38920. doi:38910.31371/journal. pone.0038920.
- ²⁹ Merritt, Guide to the Mammals of Pennsylvania.
- ³⁰ Frick et al., An emerging disease causes regional population collapse of a common North American bat species.
- ³¹ Warnecke L, Turner JM, Bollinger TK, Lorch JM, et al. (2012) Inoculation of bats with European *Geomyces destructans* supports the novel pathogen hypothesis for the origin of white-nose syndrome. *Proceedings of the National Academy of Sciences* 109:6999–7003.
- ³² Reeder et al., Frequent arousal from hibernation linked to severity of infection and mortality in bats with white-nose syndrome.
- ³³ Verant M, Boyles J, Waldrep W Jr, Wibbelt G, et al. (2012) Temperature-dependent growth of *Geomyces destructans*, the fungus that causes bat white-nose syndrome. *PLoS ONE* 7(9):e46280. doi:46210.41371/journal.pone.0046280; Hallam TG & Federico P (2012) The panzootic white-nose syndrome: An environmentally constrained disease? *Transboundary and Emerging Diseases* 59(3):269–278.
- ³⁴ Messenger SL, Smith JS, Orciari LA, Yager PA, et al. (2003) Emerging pattern of rabies deaths and increased viral infectivity. *Emerging Infectious Diseases* 9(2):151–154.
- ³⁵ Messenger SL, Smith JS, & Rupprecht CE (2002) Emerging epidemiology of bat-associated cryptic cases of rabies in humans in the United States. *Clinical Infectious Disease* 35(6):738–747.
- ³⁶ Feder HM Jr., Petersen BW, Robertson KL, & Rupprecht CE (2012) Rabies: Still a uniformly fatal disease? Historical occurrence, epidemiological trends, and paradigm shifts. *Current Infectious Disease Reports* 14(4):408–422.
- ³⁷ Messenger, Smith, & Rupprecht, Emerging epidemiology of bat-associated cryptic cases of rabies in humans in the United States.
- ³⁸ Blanton JD, Dyer J, McBrayer J, & Rupprecht CE (2012) Rabies surveillance in the United States during 2011. *Journal of the American Veterinary Medical Association* 241(6):712–722.
- ³⁹ Klug BJ, Turmelle AS, Ellison JA, Baerwald EF, et al. (2011) Rabies prevalence in migratory tree-bats in Alberta and the influence of roosting ecology and sampling method on reported prevalence of rabies in bats. *Journal of Wildlife Diseases* 47(1):64–77.
- ⁴⁰ Serres GD, Dallaire F, Côte M, & Skowronski DM (2008) Bat rabies in the United States and Canada from 1950 through 2007: Human cases with and without bat contact. *Clinical Infectious Diseases* 46:1329–1337.
- ⁴¹ Pennsylvania Department of Agriculture Veterinary Lab (2012) Rabies Map. Pennsylvania positive Animal Rabies for 2011. http://www.agriculture.state.pa.us/portal/server.pt/gateway/ PTARGS_0_2_24476_10297_0_43/agwebsite/Files/Publications/RABIES%20MAP%202011.pdf.
- ⁴² Serres GD, Dallaire F, Côte M, & Skowronski DM (2008)
- ⁴³ Curran EB, Holle RL, & López RE (2000) Lightning casualties and damages in the United States from 1959 to 1994. *Journal of Climate* 13(19):3448–3464.
- ⁴⁴ Serres GD, Dallaire F, Côte M, & Skowronski DM (2008)
- ⁴⁵ Mader EC Jr, Maury JS, Santana-Gould L, Craver RD, et al. (2012) Human rabies with initial manifestations that mimic acute brachial neuritis and Guillain-Barré syndrome. *Clinical Medicine Insights: Case Reports* 5:49–55; Petersen BW & Rupprecht CE (2011) Human rabies epidemiology and diagnosis. In *Non-Flavivirus Encephalitis*, ed. S Tkachev (InTech, Rijeka, Croatia), 247–278.
- ⁴⁶ Ford WM, Britzke ER, Dobony CA, Rodrigue JL, et al. (2011) Patterns of acoustical activity of bats prior to and following white-nose syndrome occurrence. *Journal of Fish and Wildlife Management* 2(2):125–134.
- ⁴⁷ Feder et al., Rabies: Still a uniformly fatal disease?
- ⁴⁸ Ibid.; Foley J, Clifford D, Castle K, Cryan P, et al. (2011) Investigating and managing the rapid emergence of white-nose syndrome, a novel, fatal, infectious disease of hibernating bats. *Conservation Biology* 25:223–231.

- ⁴⁹ Langwig KE, Frick WF, Bried JT, Hicks AC, et al. (2012) Sociality, density-dependence and microclimates determine the persistence of populations suffering from a novel fungal disease, white-nose syndrome. *Ecology Letters* 15:1050–1057.
- ⁵⁰ Feder et al., Rabies: Still a uniformly fatal disease?
- ⁵¹ Racey PA & Entwistle AC (2003) Conservation ecology of bats. In *Bat Ecology*, eds. TH Kunz & MB Fenton (University of Chicago Press, Chicago), 680–743.
- ⁵² Mackiewicz J & Backus RH (1956) Oceanic records of Lasionycteris noctivagans and Lasiurus borealis. Journal of Mammalogy 37(3):442–443; Miller GS (1897) Migration of bats on Cape Cod, Massachusetts. Science 5(118):541–543; Johnson JB, Gates JE, & Zegre NP (2011) Monitoring seasonal bat activity on a coastal barrier island in Maryland, USA. Environmental Monitoring and Assessment 173(1-4):685–699.
- ⁵³ Dvorak MJ, Corcoran BA, Ten Hoeve JE, McIntyre NG, et al. (2012) US East Coast offshore wind energy resources and their relationship to peak-time electricity demand. *Wind Energy* 16(7):977–997. doi:10.1002/we.1524.
- ⁵⁴ Arnett EB, Brown WK, Erickson WP, Fiedler JK, et al. (2008) Patterns of bat fatalities at wind energy facilities in North America. *Journal of Wildlife Management* 72(1):61–78.
- ⁵⁵ Rollins KE, Meyerholz DK, Johnson GD, Capparella AP, et al. (2012) A forensic investigation into the etiology of bat mortality at a wind farm: Barotrauma or traumatic injury? *Veterinary Pathology* 49(2):362–371.
- ⁵⁶ Kunz TH, Arnett EB, Erickson WP, Hoar AR, et al. (2007) Ecological impacts of wind energy development on bats: Questions, research needs, and hypotheses. *Frontiers in Ecology and the Environment* 5(6):315–324.
- ⁵⁷ Dunbar MB & Brigham RM (2010) Thermoregulatory variation among populations of bats along a latitudinal gradient. *Journal of Comparative Physiology B* 180:885–893.
- ⁵⁸ Speakman JR & Thomas DW (2005) Physiological ecology and energetics of bats. In *Bat Ecology*, eds. TH Kunz & MB Fenton (University of Chicago Press, Chicago), 430–490.
- ⁵⁹ Dunbar MB, Whitaker JO Jr., & Robbins LW (2007) Winter feeding by bats in Missouri. *Acta Chiropterologica* 9(1):305–310.
- ⁶⁰ Cryan PM & Veilleux JP (2007) Migration and use of autumn, winter and spring roosts by tree bats. In *Bats in Forests: Conservation and Management*, eds. MJ Lacki, JP Hayes, & A Kurta (Johns Hopkins University Press, Baltimore, MD), 153–175.

Chapter 25: Canada Goose

- ¹ Barton BS (1799) *Fragments of a Natural History of Pennsylvania* (Willughby Society reprint, ed. Osbert Salvin, Taylor and Francis, London, 1883).
- ² Wilson A (1814) Canada goose. In American Ornithology, or, The Natural History of the Birds of the United States, Illustrated with Plates, Engraved and Colored from Original Drawings Taken from Nature, vol. 8 (Bradford and Inskeep, Philadelphia), 53–59.
- ^{3.} Ibid., 57.
- ^{4.} Ibid., 56–57.
- ^{5.} Ibid., 55.
- ⁶. Bryant HC, et al. (1936) Report of the Committee on Bird Protection, American Ornithologists' Union. *The Auk* 53(1):70–73.
- ^{7.} Nelson HK (1963) Restoration of breeding Canada goose flocks in the North Central States. In *Transactions of the Twenty-eighth North American Wildlife and Natural Resources Conference*, ed. JB Trefethen (Wildlife Management Institute, Detroit, MI), 133–150.
- ^{8.} Trimble R (1940) Changes in the bird life at Pymatuning Lake, Pennsylvania. *Annals of the Carnegie Museum* 28:83–132.
- ^{9.} Hartman FE (1992) Canada goose (*Branta canadensis*). In *Atlas of Breeding Birds in Pennsylvania*, ed. DW Brauning (University of Pittsburgh Press, Pittsburgh, PA), 66–67.
- ¹⁰ Kallman H, Agee CP, Goforth WR, & Linduska JP, eds. (1987) *Restoring America's Wildlife 1937–1987. The First 50 Years of the Federal Aid in Wildlife Restoration (Pittman-Robertson) Act* (U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC).

- ¹² U.S. Fish and Wildlife Service (2012) Migratory bird program—Geese management, http://www.fws.gov/ migratorybirds/RegulationsPolicies/geese.html; Kosack J (1995) *The Pennsylvania Game Commission 1895– 1995* (Pennsylvania Game Commission, Harrisburg).
- ¹³ Hartman, Canada goose (*Branta canadensis*); Jacobs KJ (2002) *Project Annual Job Report: Canada Goose Nest Ecology and Gosling Survival at Pymatuning Wildlife Management Area* (Pennsylvania Game Commission, Bureau of Wildlife Management, Research Division, Harrisburg, PA).
- ¹⁴ Kosack, The Pennsylvania Game Commission 1895–1995.
- ¹⁵ Canada Goose Committee of the Atlantic Flyway Technical Section (1999) Atlantic Flyway Resident Canada Goose Management Plan, http://www.mdwfa.org/flyway/CAGO_RPManagementPlan.pdf.
- ¹⁶ Hartman, Canada goose (*Branta canadensis*).

¹¹ Ibid.

- ¹⁷ Sheaffer SE & Malecki RA (1998) Status of Atlantic Flyway resident nesting Canada geese. In *Biology and Management of Canada Geese: Proceedings of the International Canada Goose Symposium*, eds. DH Rusch et al. (Milwaukee, WI), 29–34.
- ¹⁸ Surrendi DC (1970) The mortality, behavior, and homing of transplanted juvenile Canada geese. *The Journal* of *Wildlife Management* 34(4):719–733.
- ¹⁹ Lee FB, Sherwood GA, & Schoonover LJ (1970) The free-flying flock. In *Home Grown Honkers*, eds. HH Dill & FB Lee (reprint, International Wildfowl Association, Jamestown, ND), 52–54.
- ²⁰ McWilliams GM & Brauning DW (2000) The Birds of Pennsylvania (Cornell University Press, Ithaca, NY).
- ²¹ Hanson HC (1997) *The Giant Canada Goose*, rev. ed. (Southern Illinois University Press, Carbondale and Edwardsville).
- ²² Nelson HK & Oetting R (1998) Giant Canada goose flocks in the United States. In *Biology and Management of Canada Geese: Proceedings of the International Canada Goose Symposium*, eds. DH Rusch et al. (Milwaukee, WI), 483–495.
- ²³ Hanson, *The Giant Canada Goose*.
- ²⁴ Lefebvre EA & Raveling DG (1967) Distribution of Canada geese in winter as related to heat loss at varying environmental temperatures. *Journal of Wildlife Management* 31(3):538–546.
- ²⁵ Delacour J (1954) Waterfowl of the World, vol. 1 (Country Life Ltd., London).
- ²⁶ Nelson, Restoration of breeding Canada goose flocks in the North Central States; Trimble, Changes in the bird life at Pymatuning Lake, Pennsylvania.
- ²⁷ Hanson, The Giant Canada Goose.
- ²⁸ Wilson, Canada goose.
- ²⁹ Conover MR (1992) Ecological approach to managing problems caused by urban Canada geese. Proceedings of the Fifteenth Vertebrate Pest Conference 1992, http://digitalcommons.unl.edu/vpc15/19.
- ³⁰ Sheaffer & Malecki, Status of Atlantic Flyway resident nesting Canada geese; Lyngs P (2003) *Migration and Winter Ranges of Birds in Greenland: An Analysis of Ringing Recoveries* (Danish Ornithological Society, Copenhagen).
- ³¹ Hestbeck J & Nichols J (1991) Estimates of movement and site fidelity using mark-resight data of wintering Canada geese. *Ecology* 72(2):523–533; Hartman FE & Dunn JP (1998) The Canada goose in Pennsylvania: From none to too many (abstract). In *Biology and Management of Canada Geese: Proceedings of the International Canada Goose Symposium*, eds. DH Rusch et al. (Milwaukee, WI), 477.
- ³² Thompson JE, Hill MRJ, Merendino MT, & Ankney CD (1999) Improving use of morphometric discrimination to identify Canada goose subspecies. *Wildlife Society Bulletin* 27(2):274–280; Wagner CEV & Baker AJ (1990) Association between mitochondrial DNA and morphological evolution in Canada geese. *Journal of Molecular Evolution* 31(5):373–382; Scribner KT, et al. (2003) Genetic methods for determining racial composition of Canada goose harvests. *The Journal of Wildlife Management* 67(1):122–135.
- ³³ Malecki RA & Trost RE (1998) Status of breeding Canada geese in North America. In *Biology and Management of Canada Geese: Proceedings of the International Canada Goose Symposium*, eds. DH Rusch et al. (Milwaukee, WI), 3–8.
- ³⁴ Kallman et al., Restoring America's Wildlife 1937–1987.
- ³⁵ Hartman & Dunn, The Canada goose in Pennsylvania: From none to too many (abstract); Frye B (2006) *Deer Wars: Science, Tradition, and the Battle over Managing Whitetails in Pennsylvania* (Penn State University Press, University Park).

Chapter 26: Stink Bug Hunter

- ¹ Hoebeke ER & Carter ME (2003) Halyomorpha halys (Stål) (Heteroptera: Pentatomidae): A polyphagous plant pest from Asia newly detected in North America. Proceedings of the Entomological Society of Washington 105(1):225–237.
- ² Ibid., 225–226.
- ³ Ibid.
- ⁴ Seise A (October 27, 2007) One thing's for sure: You don't want to squash 'em. Invasion of the stink bugs. *Philadelphia Inquirer*, http://articles.philly.com/2007-10-27/news/25232839_1_stink-bugs-marmorated-gypsy-moth.
- ⁵ Jacobs S (2012) Brown marmorated stink bug, *Halyomorpha halys*. In *Entomological Notes* (Department of Entomology, College of Agricultural Sciences, Cooperative Extension, Penn State, University Park), http://ento.psu.edu/extension/factsheets/brown-marmorated-stink-bug.
- ⁶ Wermelinger B, Wyniger D, & Forster B (2008) First records of an invasive bug in Europe: Halyomorpha halys Stål (Heteroptera: Pentatomidae), a new pest on woody ornamentals and fruit trees? Mitteilungen der Schweizerischen Entomologischen Gesellschaft (Bulletin de la Société Entomologique Suisse) 81:1–8.
- ⁷ Harris AC (2010) Halyomorpha halys (Hemiptera: Pentatomidae) and Protaetia brevitarsis (Coleoptera: Scarabaeidae: Cetoniinae) intercepted in Dunedin. The Weta 40:42–44.

- ⁸ Leskey TC, Short BD, Butler BR, & Wright SE (2012) Impact of the invasive brown marmorated stink bug, *Halyomorpha halys* (Stål), in mid-Atlantic tree fruit orchards in the United States: Case studies of commercial management. *Psyche* 2012: Article ID 535062, http://dx.doi.org/10.1155/2012/535062.
- ⁹ Nielsen AL & Hamilton GC (2009) Life history of the invasive species *Halyomorpha halys* (Hemiptera: Pentatomidae) in northeastern United States. *Annals of the Entomological Society of America* 102(4):608–616.
- ¹⁰ Leskey et al., Impact of the invasive brown marmorated stink bug, *Halyomorpha halys* (Stål), in mid-Atlantic tree fruit orchards in the United States.
- ¹¹ Funayama K (2012) Control effect on the brown-marmorated stink bug, *Halyomorpha halys* (Hemiptera: Pentatomidae), by combined spraying of pyrethroid and neonicotinoid insecticides in apple orchards in northern Japan. *Applied Entomology and Zoology* 47(1):75–78.
- ¹² Hopwood J, Vaughan M, Shepherd M, Biddinger D, et al. (2012) *Are Neonicotinoids Killing Bees? A Review of Research into the Effects of Neonicotinoid Insecticides on Bees, with Recommendations for Action* (The Xerces Society for Invertebrate Conservation, Portland, OR).
- ¹³ Gouli V, Gouli S, Skinner M, Hamilton G, et al. (2012) Virulence of select entomopathogenic fungi to the brown marmorated stink bug, *Halyomorpha halys* (Stål) (Heteroptera: Pentatomidae). *Pest Management Science* 68(2):155–157.
- ¹⁴ Arakawa R & Namura Y (2002) Effects of temperature on development of three *Trissolcus* spp. (Hymenoptera: Scelionidae), egg parasitoids of the brown marmorated stink bug, *Halyomorpha halys* (Hemiptera: Pentatomidae). *Entomological Science* 5(2):215–218;Yang Z-Q,Yao Y-X, Qiu L-F, & Li Z-X (2009) A new species of *Trissolcus* (Hymenoptera: Scelionidae) parasitizing eggs of *Halyomorpha halys* (Heteroptera: Pentatomidae) in China with comments on its biology. *Annals of the Entomological Society of America* 102(1):39–47.
- ¹⁵ Biddinger DJ, Hull L, & Krawczyk G (2011) Effects of pesticides controlling brown marmorated stink bug on apple IPM in Pennsylvania and the potential of biological control. In *Great Lakes Fruit, Vegetable & Farm Market EXPO* (DeVos Place Convention Center, Grand Rapids, MI), http://www.glexpo.com/ summaries/2011summaries/webApple_II.pdf.
- ¹⁶ Aldrich JR, Khrimian A, Zhang A, & Shearer PW (2006) Bug pheromones (Hemiptera, Heteroptera) and tachinid fly host-finding. *Denisia* 19:1015–1031, http://naldc.nal.usda.gov/download/17381/PDF.
- ¹⁷ Pickett CH *Trichopoda pennipes* (Diptera: Tachinidae). Biological Control: A Guide to Natural Enemies in North America, ed. A Shelton (Cornell University College of Agriculture and Life Sciences, Department of Entomology, Ithaca, NY), accessed September 21, 2013, at http://www.biocontrol.entomology.cornell.edu/ parasitoids/trichopoda.html.
- ¹⁸ Biddinger, Hull, & Krawczyk, Effects of pesticides controlling brown marmorated stink bug on apple IPM in Pennsylvania and the potential of biological control.
- ¹⁹ Gentry TG (1878) The House Sparrow at Home and Abroad, with Some Concluding Remarks upon Its Usefulness, and Copious References to the Literature of the Subject (Claxton, Remsen, and Haffelfinger, Philadelphia).
- ²⁰ Sanderson C & Cathcart RLW (1919) Analyses of materials sold as insecticides and fungicides during 1919. Bulletin 339 of the New Jersey Agricultural Experiment Station (New Jersey Agricultural Experiment Station, New Brunswick); Riley CV (1887) Our shade trees and their insect defoliators, being a consideration of the four most injurious species which affect the trees of the capital; with means of destroying them. U.S. Department of Agriculture, Division of Entomology, Bulletin Number 10 (U.S. Government Printing Office, Washington, DC).
- ²¹ Biddinger, Hull, & Krawczyk, Effects of pesticides controlling brown marmorated stink bug on apple IPM in Pennsylvania and the potential of biological control.
- ²² Harris VE & Todd JW (1982) Longevity and reproduction of the southern green stink bug, *Nezara viridula*, as affected by parasitization by *Trichopoda pennipes*. *Entomologia Experimentalis et Applicata* 31(4):409–412.
- ²³ Aldrich et al., Bug pheromones (Hemiptera, Heteroptera) and tachinid fly host-finding.
- ²⁴ Say T (1824) Appendix, pt. I. Natural History, Zoology, pt. E, Class Insecta, Order Hymenoptera, Monedula. In Narrative of an Expedition to the Source of St. Peter's River, Lake Winnepeck, Lake of the Woods, &c. &c: Performed in the Year 1823, by Order of the Hon. J. C. Calhoun, Secretary of War, under the Command of Stephen H. Long, Major U.S. T.E., vol. 2, ed. WH Keating (H. C. Carey & I. Lea, Philadelphia), 336.
- ²⁵ Evans HE (1966) The Comparative Ethology and Evolution of the Sand Wasps (Harvard University Press, Cambridge, MA), 144–175.

- ²⁸ Biddinger, Hull, & Krawczyk, Effects of pesticides controlling brown marmorated stink bug on apple IPM in Pennsylvania and the potential of biological control.
- ²⁹ Gall WK (1992) Further eastern range extension and host records for *Leptoglossus occidentalis* (Heteroptera: Coreidae): Well-documented dispersal of a household nuisance. *Great Lakes Entomologist* 25(3):159–171.
- ³⁰ Biddinger, Hull, & Krawczyk, Effects of pesticides controlling brown marmorated stink bug on apple IPM in Pennsylvania and the potential of biological control.
- ³¹ Evans, The Comparative Ethology and Evolution of the Sand Wasps, 144–175.
- 32 Ibid.

²⁶ Ibid.

²⁷ Ibid.

Chapter 27: Multicolored Asian lady beetle

- ¹ Melsheimer FV (1806) *A Catalogue of Insects of Pennsylvania Part First* (W.D. Lepper, Hanover, York County, PA) [Note: This publication is limited to beetles. Planned supplements never appeared.]
- ² Anon. (1975) Entomological Society of Pennsylvania rededication of the F.V. Melsheimer Memorial, New Holland, PA Sept 26, 1974. *Bulletin of the Entomological Society of Pennsylvania* 21(1):17.
- ³ Schwarz EA (1995) Some notes on Melsheimer's catalogue of the Coleoptera of Pennsylvania. *Proceedings of the Entomological Society of Washington* 3(3):134-138.
- ⁴ Mallis A (1971) *American Entomologists* (Rutgers University Press, New Brunswick, NJ); Prowell GR (1903) Frederick Valentine Melsheimer. A pioneer entomologist and a noted clergyman and author. A paper read before the Historical Society of York County, April 8, 1897 by George R. Prowell. *Proceedings of the Historical Society of York County* 1(2):17-26.
- ⁵ Say T (1823 (1824)) Descriptions of coleopterous insects collected in the late Expedition to the Rocky Mountains, performed by order of Mr. Calhoun, Secretary of War, under the command of Major Long. *Journal of the Academy of Natural Sciences of Philadelphia* 4(1):83–99.
- ⁶ Calvert PP (1942) Entomology, scientific and human aspects. *Proceedings of the American Philosophical Society* 86(1, Symposium on the Early History of Science and Learning in America):123-129.
- ⁷ Hagen HA (1884) The Melsheimer family and Melscheimer collection. *Canadian Entomologist* 16:191-197.
- ⁸ Riley CV (1893) Parasitic and Predaceous Insects in Applied Entomology Read at the fifth annual meeting of the Association of Economic Entomologists, Madison, Wisconsin, August 15, 1893, and reprinted from Insect Life 6(2):130-141. (United States Government Printing Office, Washington, D.C.).
- ⁹ Hoebeke ER & Wheeler Jr. AG (1980) New distribution records of *Coccinella septempunctata* L. in the eastern United States (Coleoptera: Coccinellidae). *The Coleopterists Bulletin* 34(2):209-212.
- ¹⁰ Schaefer PW, Dysart RJ, & Specht HB (1987) North American distribution of *Coccinella septempunctata* (Coleoptera: Coccinellidae) and its mass appearance in coastal Delaware. *Environmental Entomology* 16:368– 373.
- ¹¹ Wheeler AG, Jr. & Hoebeke ER (1995) *Coccinella novemnotata* in northeastern North America: historical occurrence and current status (Coleoptera: Coccinellidae). *Proceedings of the Entomolological Society of Washington* 97:701-716.
- ¹² Reitz SR & Trumble JT (2002) Competitive displacement among insects and arachnids. Annual Review of Entomology 47:435-465.
- ¹³ Harmon JP, Stephens E, & Losey J (2007) The decline of native coccinellids (Coleoptera: Coccinellidae) in the United States and Canada. *Journal of Insect Conservation* 11(1):85–94.
- ¹⁴ Hodek I & Mkchaud JP (2008) Why is Coccinella septempunctata so successful? (A point-of-view) European Journal of Entomology 105:1-12.
- ¹⁵ A. G. Wheeler J & Stoops CA (1996) Status and spread of the Palearctic lady beetles *Hippodamia Variegata* and *Propylea quatuordecimpunctata* (Coleoptera: Coccinellidae) in Pennsylvania, 1993–1995. *Entomological News* 107(5):291–298.
- ¹⁶ Brown PM, *et al.* (2011) The global spread of *Harmonia axyridis* (Coleoptera: Coccinellidae): distribution, dispersal and routes of invasion. *BioControl* 56(4):623-641.
- ¹⁷ Hodek & Mkchaud, Why is *Coccinella septempunctata* so successful? (A point-of-view).
- ¹⁸ Pell JK, Baverstock J, Roy HE, Ware RL, & Majerus MEN (2008) Intraguild predation involving *Harmonia axyridis:* a review of current knowledge and future perspectives *BioControl* 53(1).
- ¹⁹ Sato S, Kushibuchi K, & Yasuda H (2009) Effect of reflex bleeding of a predatory ladybird beetle, *Harmonia axyridis* (Pallas) (Coleoptera: Coccinellidae), as a means of avoiding intraguild predation and its cost. *Applied Entomology and Zoology* Vol. 44(2):203-206.
- ²⁰ Snyder WE, Joseph SB, Preziosi RF, & Moore AJ (2000) Nutritional benefits of cannibalism for the lady beetle *Harmonia axyridis* (Coleoptera: Coccinellidae) when prey quality is poor. *Environmental Entomology* 29(6):1173-1179.
- ²¹ Joseph SB, Snyder WE, & Moore AJ (1999) Cannibalizing Harmonia axyridis (Coleoptera: Coccinellidae) larvae use endogenous cues to avoid eating relatives. Journal of Evolutionary Biology 12(4):792-797.
- ²² Koch RL (2003) The multicolored Asian lady beetle, *Harmonia axyridis*: A review of its biology, uses in biological control, and non-target impacts. *Journal of Insect Science* 3(32): http://www.ncbi.nlm.nih.gov/pmc/ articles/PMC524671/.
- ²³ Vilcinskas A, Stoecker K, Schmidtberg H, Röhrich CR, & Vogel H (2013) Invasive harlequin ladybird carries biological weapons against native competitors. *Science* 340(6134):862–863.
- ²⁴ Vilcinskas A, Mukherjee K, & Vogel H (2013) Expansion of the antimicrobial peptide repertoire in the invasive ladybird *Harmonia axyridis*. Proceedings of the Royal Society B: Biological Sciences 280(1750):2012-2113.
- ²⁵ Vilcinskas A, *et al.* (2014) Evolutionary ecology of microsporidia associated with the invasive ladybird *Harmonia axyridis. Insect Science* 21 (4): doi: 10.1111/1744-7917.12159.
- ²⁶ Sloggett JJ, et al. (2011) The chemical ecology of Harmonia axyridis. BioControl 56(4):643-661.
- ²⁷ Sloggett JJ, Haynes KF, & Obrycki JJ (2009) Hidden costs to an invasive intraguild predator from chemically defended native prey. Oikos 118::1396-1404.

- ²⁸ Roy HE, et al. (2011) Living with the enemy: parasites and pathogens of the ladybird Harmonia axyridis. BioControl, (4), 663-679. 56(4):663-679.
- ²⁹ Comont RF, et al. (2014) Escape from parasitism by the invasive alien ladybird, Harmonia axyridis. Insect Conservation and Diversity 7(4):334–342.
- ³⁰ Riddick EW & Schaefer PW (2005) Occurrence, Density, and Distribution of Parasitic Fungus Hesperomyces virescens (Laboulbeniales: Laboulbeniaceae) on Multicolored Asian Lady Beetle (Coleoptera: Coccinellidae) Annals of the Entomological Society of America 98(4):615–624.
- ³¹ Riddick EW (2010) Ectoparasitic mite and fungus on an invasive lady beetle: parasite coexistence and influence on host survival. *Bulletin of Insectology* 63(1):13–20.
- ³² Cottrell TE & Riddick EW (2012) Limited transmission of the ectoparasitic fungus *Hesperomyces virescens* between lady beetles. *Psyche* 2012:Article ID 814378. doi:10.1155/2012/814378.
- ³³ Sutherland AM & Parrella MP (2009) Biology and co-occurrence of *Psyllobora vigintimaculata taedata* (Coleoptera: Coccinellidae) and powdery mildews in an urban landscape of California. *Annals of the Entomological Society of America* 102(3):484-491.
- ³⁴ Day WH, Prokrym DR, Ellis DR, & Chianese RJ (1994) The known distribution of the predator *Propylea quatuordecimpunctata* (Coleoptera: Coccinellidae) in the United States, and thoughts on the origin of this species and five other exotic lady beetles in eastern North America. *Entomological. News* 105 105:244–256.
- ³⁵ Brown PM, et al. (2011) The global spread of Harmonia axyridis (Coleoptera: Coccinellidae): distribution, dispersal and routes of invasion. BioControl 56(4):623-641.
- ³⁶ Miller GL & Cave RD (1987) Bionomics of Micromus posticus (Walker) (Neuroptera: Hemerobiidae) with descriptions of immature stages. Proceedings of the Entomological Society of Washington 89(4):776-789.
- ³⁷ Cutright CR (1923) Life history of Micromus posticus Walker. Journal of Economic Entomology. 16(5):448-456.
- ³⁸ Carpenter FM (1940) A Revision of the Nearctic Hemerobiidae, Berothidae, Sisyridae, Polystoechotidae and Dilaridae (Neuroptera). Proceedings of the American Academy of Arts and Sciences 74(7):193–280.

Chapter 28: Overview

- ¹ Levi HW (1957) The spider genera *Crustulina* and *Steatoda* in North America, Central America, and the West Indies (Araneae, Theridiidae). *Bulletin of the Museum of Comparative Zoology* 117(3):367–424; Chapin JB & Brou VA (1991) *Harmonia axyridis* (Pallas), the third species of the genus to be found in the United States (Coleoptera: Coccinellidae). *Proceedings of the Entomological Society of Washington* 93(3):630–635.)
- ² Crutzen PJ (2002) Geology of mankind. Nature 415:23.
- ³ Gozzaldi MIJ (1903) Thomas Potts James. Bryologist 6(5):71-74.
- ⁴ Atwood JJ, Allen B, & Pursell RA (2009) Checklist of Pennsylvania Mosses. Final Report to the Pennsylvania Department of Conservation and Natural Resources/Wild Resource Conservation Program: 22 September 2009 (selfpublished, St. Louis, MO); Porter TC (1904) Catalogue of the Bryophyta (Hepatics, Anthocerotes and Mosses) and Pteridophyta (Ferns and Fern-Allies) Found in Pennsylvania (Gin & Company, Boston).
- ⁵ Brimblecombe P, ed. (2003) *The Effects of Air Pollution on the Built Environment* (Imperial College Press, London).
- ⁶ Fowler HW (1914) Fishes in polluted waters. *Copeia* 5:4; Hardy C III (1999) Fish or foul: A history of the Delaware River Basin through the perspective of the American shad, 1682 to the present. *Pennsylvania History* 66(4):506–534; Perillo JA & Butler LH (2009) Evaluating the use of Fairmount Dam fish passage facility with application to anadromous fish restoration in the Schuylkill River, Pennsylvania. *Journal of the Pennsylvania Academy of Science* 83(1):24–33.
- ⁷ Nese J & Schwartz G (2002) The Philadelphia Area Weather Book (Temple University Press, Philadelphia).
- ⁸ Fan H & Sailor DJ (2005) Modeling the impacts of anthropogenic heating on the urban climate of Philadelphia: A comparison of implementations in two PBL schemes. *Atmospheric Environment* 39(1):73–84.
- ⁹ Zhang X, Friedl MA, Schaaf CB, Strahler AH, et al. (2004) The footprint of urban climates on vegetation phenology. *Geophysical Research Letters* 31(L12209). doi:10.1029/2004GL020137.
- ¹⁰ Oka M (2011) The influence of urban street characteristics on pedestrian heat comfort levels in Philadelphia. *Transactions in GIS* 15(1):109–123.
- ¹¹ Meineke EK, Dunn RR, Sexton JO, & Frank SD (2013) Urban warming drives insect pest abundance on street trees. *PLoS ONE* 8(3):e59687. doi:59610.51371/journal.pone.0059687.
- ¹² Wood AJ (2007) The nature and distribution of vegetative desiccation-tolerance in hornworts, liverworts and mosses. *The Bryologist* 110(2):163–177.
- ¹³ Arnold GE (1962) Thermal pollution of surface supplies. *Journal of the American Water Works Association* 54(11):1332–1346.
- ¹⁴ Ibid., 1333–1334.
- ¹⁵ Rupple F (2002) Steaming ahead: The Grays Ferry Cogeneration Project. District Energy 88(2):1-4.

- ¹⁶ Council of the City of Philadelphia (2006) An ordinance on noise (Bill no. 050749), http://www.phila.gov/ health/pdfs/air/Noise_Bill_050749.pdf.
- ¹⁷ Francis CD, Ortega CP, & Cruz A (2009) Noise pollution changes avian communities and species interactions. *Current Biology* 19:1415–1419.
- ¹⁸ Bermúdez-Cuamatzin E, Ríos-Chelén AA, Gil D, & Garcia CM (2011) Experimental evidence for real-time song frequency shift in response to urban noise in a passerine bird. *Biology Letters* 1:36–38.
- ¹⁹ Bermúdez-Cuamatzin E, Ríos-Chelén AA, Gil D, & Garcia CM (2009) Strategies of song adaptation to urban noise in the house finch: Syllable pitch plasticity or differential syllable use? *Behaviour* 146(9):1269– 1286.
- ²⁰ Seger-Fullam KD, Rodewald AD, & Soha JA (2011) Urban noise predicts song frequency in Northern cardinals and American robins. *Bioacoustics: The International Journal of Animal Sound and Its Recording* 20(3):267–276.
- ²¹ Francis, Ortega, & Cruz, Noise pollution changes avian communities and species interactions.
- ²² Lampe U, Schmoll T, Franzke A, & Reinhold K (2012) Staying tuned: Grasshoppers from noisy roadside habitats produce courtship signals with elevated frequency components. *Functional Ecology* 26(6):1348–1354.
- ²³ Schaub A, Ostwald J, & Siemers BM (2008) Foraging bats avoid noise. *Journal of Experimental Biology* 211:3174–3180.
- ²⁴ Foster KR, Jenkins MF, & Toogood AC (1998) The Philadelphia yellow fever epidemic of 1793. Scientific American 279:88–93.
- ²⁵ Holick J, Kyle A, Ferraro W, Delaney R, et al. (2002) Discovery of *Aedes albopictus* infected with West Nile virus in southeastern Pennsylvania. *Journal of the American Mosquito Control Association* 18(2):131.
- ²⁶ Lambrechts L, Scott T, & Gubler D (2010) Consequences of the expanding global distribution of *Aedes albopictus* for dengue virus transmission. *PLoS Negl Trop Dis* 4(5):e646; Bonizzoni M, Gasperi G, Chen X, & James AA (2013) The invasive mosquito species *Aedes albopictus*: Current knowledge and future perspectives. *Trends in Parasitology* 29(9):460–468.
- ²⁷ Holick et al., Discovery of *Aedes albopictus* infected with West Nile virus in southeastern Pennsylvania; Hawley W, Reiter P, Copeland R, Pumpuni C, et al. (1987) *Aedes albopictus* in North America: Probable introduction in used tires from northern Asia. *Science* 236(4805):1114–1116.
- ²⁸ Pennsylvania's West Nile Virus Control Program (2013) Surveillance Data and Maps, http://www.westnile. state.pa.us/surv.htm.
- ²⁹ ArboNET, Arboviral Diseases Branch, Centers for Disease Control and Prevention (2013) West Nile Virus Disease Cases Reported to CDC by State, 1999–2012, http://www.cdc.gov/westnile/resources/pdfs/ cummulative/99_2012_cummulativeHumanCases.pdf
- ³⁰ ArboNET, Arboviral Diseases Branch, Centers for Disease Control and Prevention (2013) West Nile Virus Disease Cases and Deaths Reported to CDC by Year and Clinical Presentation, 1999–2012, http://www.cdc. gov/westnile/resources/pdfs/cummulative/99_2012_CasesAndDeathsClinicalPresentationHumanCases.pdf.
- ³¹ Pennsylvania's West Nile Virus Control Program (2013) Mosquito Adulticiding Events in Pennsylvania in 2013, http://www.westnile.state.pa.us/events.htm#P.
- ³² Holm LG, Plucknett DL, Pancho JV, & Herberger JP (1991) *The World's Worst Weeds: Distribution and Biology* (Krieger Publishing Company, Malabar, FL).
- ³³ Pennsylvania Department of Agriculture. Purple loosestrife. Accessed April 18, 2013, at http://www. agriculture.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_75292_10297_0_43/AgWebsite/Files/ Publications/Purple_Loosestrife.pdf.
- ³⁴ Taylor FH (1894) The City of Philadelphia as It Appears in the Year 1894: A Compilation of Facts Supplied by Distinguished Citizens for the Information of Business Men, Travelers, and the World at Large (G. S. Harris & Sons, Philadelphia).
- ³⁵ Wilson E (1984) Biophilia: The Human Bond with Other Species (Harvard University Press, Cambridge, MA).

Chapter 29: Conclusion

- ¹ McKibben B (1989) The End of Nature (Random House, New York).
- ² Philadelphia (PA) (2011) Title 14, Zoning and Planning. The Philadelphia Code, 10th ed. (American Legal Publishing Corporation, Cincinnati, OH), http://www.amlegal.com/nxt/gateway.dll/Pennsylvania/philadelphia_pa/thephiladelphiacode?f=templates\$fn=default.htm\$3.0\$vid=amlegal:philadelphia_pa.
- ³ McKinney ML (2006) Urbanization as a major cause of biotic homogenization. *Biological Conservation* 127(3):247–260.
- ⁴ Hansen AA (1921) Lawn Pennywort: A New Weed. Department Circular 165 (U.S. Department of Agriculture, Bureau of Plant Industry, U.S. Government Printing Office, Washington, DC); Anon. (1909) Abstract of the proceedings of the Philadelphia Botanical Club for 1909. Bartonia (2):28–31. [Refers to H. sibthorpioides as H. rotundifolia, a synonym.]
- ⁵ Schumpeter JA (1950) Capitalism, Socialism and Democracy, 3rd ed. (reprint, Harper Perennial, New York, 1976).
- ⁶ Holling CS (2001) Understanding the complexity of economic, ecological, and social systems. *Ecosystems* 4(5):390–405.
- ⁷ Beatley T (2010) *Biophilic Cities: Integrating Nature into Urban Design and Planning* (Island Press, Washington, DC).