

## Index

Page numbers with an *f* refer to a figure or a caption; *n* indicates an endnote.

- Addo Elephant National Park, 3f, 45, 130, 151, 191n82
- African wild asses (*Equus africanus*), 9f, 10
- Agasse, Jacques-Laurent, 4, 32, 33f, 77, 79–80, 82–83
- Albany District  
   quagga extirpation, 86  
   settlement of, 46
- Albany Thicket biome, 41, 41f, 45–46
- Albert, Prince (son of Queen Victoria), 92–93
- alleles, for coat coloration, 131
- American bison (*Bison bison*), extirpation of, 93
- anatomical criteria in species determination  
   cranial dimensions, 119  
   dentition, 119  
   morphology, 118–19
- ancient DNA (aDNA), 123
- Ansell, William F. H., 120
- Antonius, Otto, 107, 157–58
- Aristotle, on heredity/telegony, 80–81
- art and stories, 7, 24–30, 101–5
- asses  
   types of, 9f, 10  
   zebra divergence from, 8, 10
- Baartman, Sara, 178n3
- Bain, Andrew, 22, 92
- Baines, Thomas  
   on abundant quaggas in Orange Free State, 86–87  
   “The Greatest Hunt in History near Bloemfontein 1860,” 92–93  
   observations of quaggas, 37–38, 44, 48, 172n110  
   quagga leather uses, 176n53
- Baldwin, William Charles, 92
- Bantu-speakers, 61
- Bard, Jonathan, 55–56
- Barnaby, David, 110, 186n78
- Barrow, John, 24, 72, 73
- Bartholomeus Klip (guest house), 137, 191n75
- beaver reintroduction into European habitats, 151–52
- Beddard, Frank, 89
- behavior, genetic selection for, 150
- Beringia land bridge, 8
- biomes  
   map, 41f  
   in quagga habitats, 40–47  
   quagga/zebra influence on, 7, 153, 155
- Bleek, Jemima, 101–2
- Bleek, Wilhelm, 101–2
- Boddaert, Pieter  
   on barking cry, 10  
   on coat coloration, 133  
   diagnoses of, 39f  
   locality of quaggas, 40  
   naming of quaggas, 39–40, 123  
   type specimen, 40
- Bontebok National Park, 4
- Bontebok Ridge Reserve, 45, 132, 150, 155, 189n43
- Bonteboks (*Damaliscus pygargus pygargus*), 4, 125
- Boomplaas Cave, fossils of, 46, 62
- Borcherds, Petrus, 63, 175n15
- Boroughs, Don, 153
- Boswell, Rebecca, 169n42
- Boyle, C. L., 98
- breeding  
   conventional vs. cloning/gene editing, 142–45  
   experiments in, 79–83, 126

## 220 · Index

- breeding (cont.)  
 genomic information, 134  
 hybrid offspring, 83–84  
 molecular biology in, 134  
 proxy organisms from, 142  
 selective, 126–34, 140–43
- breeding groups  
 mountain zebras, 12, 14  
 plains zebras, 12  
 quaggas, 1, 47, 162n3  
 survival odds of, 18
- Brownell, Frederick, 124f, 125
- Bryden, Henry Anderson  
 on coat coloration, 35  
 on extinction, 85, 88, 96  
 on horse/quagga speed comparison, 89, 180n20  
 on hunting carnage, 94, 182n62  
 on Karoo fauna, 42
- Burchell, William John  
 on animal herds, 86  
 British Museum skins supplied by, 14  
 on indigenous species names, 20  
 on quagga meat, 68–69  
 revenge against, 164n40  
 on zebras, 7
- Burchell's subspecies (*Equus quagga burchellii*)  
 about, 15  
 cooler habitat of, 57  
 divergence culminating in, 149  
 at Mainz Naturhistorisches Museum, 116, 116f  
 quaggas occurred with, 48  
 sexual dimorphism, 37  
 stripes, 38–39, 56, 57, 57f  
 survival of, 87
- Bushman dioramas (Drury), 113, 123–24, 185n66
- Bushmanland, 101–2
- Bushmen  
 armed for hunting, 64f  
 assimilation in South Africa, 104–5  
 folklore  
 Bleek–Lloyd archive of, 102  
 De Prada–Samper collection of, 105  
 genocidal clearing of, 101–2  
 as hunter-gatherers, 162n6  
 hunting techniques  
 in folklore, 104  
 game pits, 65  
 poisoning water sources, 65–66  
 Somerset's limitations on, 86  
 stalking/stampeding prey, 63–64  
 taking kill from other carnivores, 66  
 as labor for settlers, 62  
 as target of settler commando action, 62  
 weapons, 62–63, 65f, 175n16  
 |Xam classified as, 60, 162n7
- Cabrera, Angel, 15, 164n43, 187n93
- Cape clawed frog (*Xenopus gilli*), preservation of, 113, 155–56
- Cape Colony, quagga habitat proximity, 1, 40–41, 44
- Cape Department of Nature and Environmental Conservation, 129
- Cape mountain zebras (*Equus zebra zebra*)  
 conservation of, 4, 14, 88, 90, 181n37  
 population of, 157, 163n11  
 range of, 13  
 risk to gene pool, 139  
 size of, 13
- Cape Nature Conservation (CapeNature), 128–29, 139
- Cape Town  
 Dutch establishment of, 61, 70  
 as epicenter of quagga extinction, 86  
 global economic connections, 70, 91  
 indigenous people imprisonment in, 101
- Carp, Bernard, 98
- Cary, Elizabeth, 110, 134
- cattle, auroch-like, 127
- cave excavations, zebra and quagga remains in, 62
- CHASA (Confederation of Hunters Associations of South Africa), 141
- Clasquin, Michel, 125
- classification  
 overview, 39–40  
 of plains zebras, 5, 124, 156  
 Quagga Project implications, 123  
 revisions to, 5, 40, 101, 123  
 system by Linnaeus, 8
- cline, definition of, 56
- Cluver, Michael A., 129, 153
- coat coloration  
 humidity correlation with, 56–57  
 range across species (cline), 56, 174n34  
 reasons for, 37  
 selection for, 150–51, 153–54  
 as selective advantage against biting insects, 57

- temperature correlation with, 56  
 variations in, 38, 40, 55, 169n49. *See also*  
 stripes
- Coat of Arms of the Western Cape, 124f, 125
- colonists. *See* settlers
- complementary feeding, 17, 48–49, 165n57
- Confederation of Hunters Associations of  
 South Africa (CHASA), 141
- conservation  
 African sites mapping, 156  
 cost weighing, 5–6, 155, 194n9  
 funding shortages, 154–55  
 Grevy's Zebra Trust, 156–57  
 habitat preservation role in, 4–5  
 Quagga Project as model, 156  
 rebreeding, 147–51. *See also* rebreeding  
 rewilding, 151–53  
 in South Africa, 153–55  
 conservation cloning, 143–45  
 Cornwallis Harris, William. *See* Harris,  
 William Cornwallis
- Correns, Carl, 83
- Crichton, Michael, 110, 123
- Cruz-Uribe, K., 119, 149
- Cuvier, Georges, 35–36
- da Gama, Vasco, 61
- Dailkwain, 60, 102, 174n1
- Daniell, Samuel  
 Harris's painting similarity, 34–35, 167n27  
 other artists contrasted with, 36  
 painting by, 28–29, 29f, 32, 166nn15–18
- Darwin, Charles  
 on hybridization, 186n90  
 influence on, 4  
 letter to, 178n1  
 on pangenesis, 80  
 on quagga stain, 80, 82  
 on selective breeding, 131  
 on species, 118  
 on stripes, 58–59, 133, 189n46  
 on zebra camouflage, 51–52
- De Prada-Samper, Jose Manuel, 105
- de Vries, Hugo, 83
- de-extinction  
 in Australia and New Zealand, 154  
 guidelines for, 142–45, 192n106
- Diamond, Jared, 71
- diamond mining, 94
- Dias, Bartolomeu, 61
- dinosaur DNA, 123
- disease resistance, 4
- diseases  
 African horse sickness, 95, 136–37,  
 177n87, 182n71  
 from biting flies, 53  
 in draft animals, 73  
 from ectoparasites, 18  
 of equines, 177n87  
 of quaggas, 177n87
- Ditsong National Museum of Natural  
 History, Pretoria, 111, 119
- DNA sequencing  
 mitochondrial DNA sequences, 120,  
 187n104  
 organism comparisons with, 8–9  
 of plains zebras, 14–15  
 of quaggas, 5, 14–15, 121, 122
- donkeys (*Equus africanus asinus*), 9f, 10
- Drury, James, 97, 113
- Dutch East India Company  
 Cape Town as provisioning stop, 61  
 genocide supported by, 62
- ectoparasites, 13, 18
- Edwards, George  
 on barking cry, 47  
 classification based on painting by, 39  
 classification errors, 28  
 on coat coloration, 38  
 depictions by, 26–27, 27f  
 on quagga skins, 69
- Eenzaamheid Provincial Nature Reserve,  
 formation of, 195n58
- Elandsberg Reserve  
 conservation of other organisms at, 155  
 plant species at, 194n57  
 Quagga Project zebras resident at, 45, 136,  
 137–38, 190–91n72  
 quaggas as hook for visitors, 153
- Eloff, Gerhardus, 89, 180n23
- endangered species, 5–6
- Endangered Wildlife Trust  
 on color variants, 153–54  
 rebreeding proposal denial, 128
- endling, 4, 88, 162n8
- Enright, D.J., 109
- Equidae, 8, 163n6
- equines  
 overview, 8–10  
 evolutionary relationships of, 9f. *See also*  
*specific equines*

## 222 · Index

- Equus*  
 evolutionary lineages of, 9  
 fossil record of, 8
- Equus quagga*, *Equus zebra* distinguished from, 10
- Etosha National Park, South-West Africa, 127, 129–30
- Eustis, Francis W., 107
- Ewart, James Cossar, 74, 82–83, 126
- Exeter Exchange, London, menagerie at, 76–77, 78
- exotics  
 animals as, 76–78  
 people as, 178n3
- Experientia*, on proteins in quagga/plains zebra tissues, 128
- extinction  
 overview  
 in 1883, 4  
 about, 50  
 blame for, 88–89  
 environmental factors, 89–90  
 false hopes, 95–99  
 identity confusion, 90–91  
 inevitability of, 99–100  
 killing for sport, 91–95  
 profit motive, 91–95. *See also* profit motive  
 progression of, 87f  
 wave of, 85–88  
 animal cultural losses, 152  
 around Cape Colony/Orange Free State  
 African horse sickness risk, 95, 182n71  
 predators numbers, 95  
 diamond mining role in, 94  
 drought of 1877 90, 180n30  
 farming as factor in, 88–89, 91  
 fencing role in, 90  
 habitat changes. *See* habitat  
 legal enforcement challenges, 87–88  
 overhunting, 88–89  
 prevention of, 4–5  
 regret from, 96  
 threats in South Africa, 154  
 as warning, 6  
 in the wild, 88  
 extinction afterlife  
 overview, 101  
 in contemporary South Africa, 123–25  
 fakes, 106–7  
 museum specimens, 111–17  
 name in modern culture, 105–6  
 quaggas in contemporary literature/art, 107–11  
 taxonomy and molecular biology, 117–23  
 |Xam Narratives, 101–5
- Fara, Delia Graff, 135
- fission-fusion social organization, 12
- Fitzsimons, Frederick William, 96–97
- Floreana tortoise (*Chelonoidis elephantopus*), 142
- folklore  
 Bushmen  
 Bleek–Lloyd archive of, 102  
 De Prada–Samper collection of, 105  
 hunting techniques in, 104  
 |Xam, 7, 102–5
- food preferences  
 of equines, 8, 10–11  
 of plains zebras, 17  
 of quaggas, 1–2
- Ford, Walton, 107
- Fritsch, Gustav Theodor, 22
- Frozen Zoo, 144
- Fynbos Biome, 41, 41f, 45, 171n86
- Galapagos tortoise, species of, 142
- Galton, Francis, 76, 82, 178n1
- Game Law Amendment Act (1886), 90, 95, 97
- gastric brooding frog (*Rheobatrachus silus*), 144
- Gaylard, Angela, 139
- Geller-Grimm, Fritz, 117
- gemmules, Darwin on, 80
- gene concentration within a population, 142
- gene editing, for de-extinction, 144
- gene synthesis in vitro, 144
- genes, positive selection for, 149–50
- genetically distinct populations, conservation of, 122
- genetics, birth of, 83
- genome comparisons, 121
- genomics, divergence from common ancestor determined by, 9
- genotype, definition of, 131
- geometric tortoise (*Psammobates geometricus*)  
 at Elandsberg Reserve, 194n57  
 as endangered species, 138  
 preservation of, 155–56  
 reserve for, 113
- Giant Tortoise Restoration Initiative (GTRI), 142

- giraffes, species of, 122
- Gmelin, Johann Friedrich  
 on barking cry, 10  
 on coat coloration, 133  
 naming of quaggas, 39–40, 123
- Gordon, Robert Jacob  
 on barking cry, 47  
 on beginning of loss, 86  
 depictions by, 25, 26f  
 on mountain zebra meat, 68  
 quagga as gift from, 167n19  
 on quagga foals, 25–26  
 on quaggas as draft animals, 72
- Gordon-Cumming, Roualeyn, 92
- Göring, Reichsmarschall Hermann, 127
- Gould, Stephen Jay, 36, 51
- Grant Museum, London, 111
- grassland, 41, 41f, 45, 46
- Gray, John Edward, 14, 118, 123, 148
- Great Limpopo Transfrontier Park, 5
- Green, Tamara, 110
- Gregor, Mike, 137
- Grevy's Zebra Trust, 20, 156–57
- Grévy's zebras (*Equus grévyi*)  
 ancestral divergence, 10  
 appearance of, 18  
 as “Endangered,” 20  
 fission–fusion social organization, 12  
 food preferences, 19  
 gestation period, 20  
 hybridization with plains zebras, 20  
 mating, 20  
 photo of, 19f  
 population of, 20, 157  
 range of, 19  
 size of, 18–19  
 social organization of, 19–20  
 stripes, 10, 55, 56
- Grey, George, 77
- GTRI (Giant Tortoise Restoration Initiative), 142
- Gurdon, John, 143
- habitat  
 changes before settlement, 89–90  
 changes following settlement, 4, 6, 90  
 drought of 1877, 90, 180n30  
 environmental changes since extinction, 151, 152–53  
 genetic selection for *SLC 9A4* gene, 122  
 grazing, 91  
 for plains zebras, 17  
 preservation of, 4–5, 6  
 for quaggas, 40–47  
 vegetation. *See* vegetation  
 water sources, 11, 17, 42, 43, 44, 46, 91
- Haes, Frank, 50, 77, 78f
- Hahn, C. L. H. (Cocky), 97–98, 183n84
- Hamerton, Denise, 117
- Harley, Eric H., 132, 133, 136, 156, 191n77
- Harris, William Cornwallis  
 on animals co-mingling, 48  
 on coat coloration, 133  
 Daniell influence on, 34–35  
 on dimensions. *See* taxidermy specimens  
 erroneous information, 34, 167nn25–26  
 on foraging, 47  
 gun used by, 68  
 painting by, 34f  
 painting shortcomings, 34–35, 167n28  
 plagiarism, 34–35, 167n27  
 on quagga appearance, 32–36, 167n24  
 on quagga meat, 68  
 on quagga nipples, 34, 186n80  
 on quagga speed, 49  
 “shooting madness” of, 92, 181n50  
 on tail morphology, 34–36, 168n33  
 treks led by, 92  
 trophy animals collected by, 92, 181n49  
 on young quaggas, 71  
 on zebras’ response to danger, 18
- Hartmann's mountain zebras (*Equus zebra hartmannae*)  
 mistaken identity, 97–98  
 photo of, 11f  
 range of, 164n31  
 size of, 13  
 as “Vulnerable” species, 14
- Hawarden, Jan van, 70
- Hawkins, Benjamin Waterhouse, 31–32, 32f
- Heck, Heinz, 127
- Heck, Lutz, 74–75, 106, 127, 184n32, 188n4
- Heck cattle, 127, 188n6
- Heck horses, 127, 188n6
- herbivores  
 diet deficiencies, 45, 171n86  
 ice age impact on, 42, 46  
 migrations, 43–44, 47  
 protected status, 90, 181n32  
 sustainability, 43, 44, 170n79, 171n86  
*See also specific herbivores*

## 224 · Index

- heredity  
 concepts of, 79–83  
 inheritance in peas, 83, 131  
 “staining” in, 80, 82
- Hessisches Landesmuseum Darmstadt,  
 115–16
- Higuchi, Russell, 120, 121
- Hippotigris* (zebra species), 10–13, 40
- Home, Everard, 83
- Hopkins, Gerard Manley, 95
- horses  
 ancestors of, 9, 127  
 domestication of, 9–10  
 introduction of, 7
- Hottentot. *See* Khoekhoe
- House of Orange, quagga as gift to, 167n19
- human neighbors of quaggas  
 history of, 60–62  
 as hunters  
 African, 62–66. *See also* Bushmen  
 settlers, 66–69, 67f, 86  
 overhunting. *See* overhunting
- hunting closed seasons, 86
- hunting licenses, 86, 95
- Ice Age conditions, genetic drift from, 58
- imprinting period, 12
- inbreeding, reducing, 5, 132, 136, 189n36
- indigenous people, subjugation of, 93
- International Code of Zoological Nomenclature*,  
 123
- International Union for the Conservation of  
 Nature (IUCN), 5, 14, 18, 20, 142
- ivorybilled woodpeckers (*Campephilus*  
*principalis*), 96
- Iziko South African Museum, Cape Town  
 foal at, 111, 117  
 Quagga Project support, 129  
 Rau as staff at, 112–13  
 renaming itself, 123–24
- Jónsson, H., 121–22, 149
- Karoo  
 disease and drought era, 90, 180n30  
 elevation, 42, 44, 58  
 map of, 41f  
 quagga extirpation, 86  
 as quagga habitat, 1, 40–47
- Karoo National Park, 3f, 130, 151, 153,  
 193n24
- Kehrer, Christian Wilhelm Karl, 116
- Kellert, Stephen, 75
- Kemp, Jan, 90
- Kew Palace, London, 26, 78
- Keynes, Quentin, 98
- Khoekhoe  
 as herders, 60–61, 162n6  
 as labor for settlers, 62  
 naming of animals, 7, 25  
 quagga meat relished by, 68  
 settlers undermining, 61
- Khoe-San  
 extinction of, 113  
 as hunters, 2, 49  
 as non-Bantu-speaking herders/  
 hunter-gatherers, 162n6  
 quagga meat relished by, 66  
 views of, 123–24
- kiangs (*Equus kiang*), 9f, 10
- Kingdon, Jonathan, 52, 173n25
- Kipling, Rudyard, 51, 58
- Kirk, John, 88
- Klein, R. G., 119, 149
- Kloofs (ravines) as shelter, 43
- Kridlo, Susanne, 117
- Kruger National Park, 5
- Larison, B., 56, 57f
- Lazarus species, 96
- Lerp, Hannes, 117
- Lichtenstein, Martin Hinrich Carl, 43,  
 48–49, 62, 71, 74
- Lindsay, Sarah, 108
- Linnaeus, Carl  
 classification system of, 8  
 derogatory names used by, 164n40  
 Sparrman as student of, 25  
 on zebra as species name, 10
- literature  
 children’s books, 110  
 fiction, 108  
 non-fiction, 110  
 poetry, 107, 108–10
- Lloyd, Lucy, 101
- London Zoo, 22, 56, 77, 78f, 84
- Louis XVI, King of France,  
 quagga owned by, 30, 31, 31f,  
 110
- Lowenstein, Jerold M., 120
- Lundholm, Bengt, 119
- Lydekker, Richard, 114, 118–19

- MacClintock, Dorcas, 110, 168n41  
 Macnab, Roy Martin, 108  
 Mainz Naturhistorisches Museum, 116–17, 116f  
 Maréchal, Nicolas, painting by, 4, 30–31, 31f, 32, 167n21  
 Melkplaas Farm, 138–39  
 Mendel, Gregor, inheritance in peas, 83, 131, 189n33  
 Mentzel, Olaf, 71–72  
 mitochondrial DNA  
   mutation rate, 120  
   quaggas and plains zebras conspecific, 128  
   sequencing, 128  
 mitochondrial genome, and species  
   confirmation, 121, 187n103  
 molecular archeology, 123  
 molecular biology and taxonomy, 117–23  
 Morton, George Douglas, Earl of, 79–81, 82–83  
 Mountain Zebra National Park, 4, 5  
 mountain zebras (*Equus zebra*)  
   ancestral divergence, 10  
   appearance of, 11f, 13, 27–28  
   births, 14  
   breeding groups, 12, 14  
   classification of, 28  
   as draft animals, 177n86  
   Edwards on, 27–28  
   influence on biomes, 7  
   nonbreeding groups, 14  
   quaggas, Indigenous distinction between, 7  
   stripes, 10, 13, 55, 56  
   subspecies of, 13  
 museum specimens  
   contemporary preservation techniques, 115  
   fading of, 114–15, 186n78  
   locations of, 111–12  
   preparation of, 185n60  
   remounting/restoration, 113–14  
 Museum Wiesbaden, 117  
 mutual grooming, social bond from, 12  
 Nama Karoo, 41, 41f  
 naming of species  
   derogatory, 14, 164n40  
   *International Code of Zoological Nomenclature*  
   on, 164n41  
   plains zebras, 14  
   quaggas, 1, 7  
 Natal Game Protection Association, as  
   conservation group, 95  
 Natal Parks Board  
   on Quagga Project, 153  
   rebreeding proposal denial, 128  
 National Parks Board expedition, 98–99  
 National Zoological Gardens of South  
   Africa, rebreeding proposal denial,  
   128  
 New South Africa, as Rainbow Nation, 145  
 Novak, Ben, 145  
 nucleotide change in DNA, as molecular  
   clock, 121  
 nutrition  
   of foals, 12, 14, 16  
   mother's feces as, 14, 164n36. *See also*  
   quaggas  
   of plains zebras, 17  
   of zebras, 11  
 Nuwejaars Wetlands Special Management  
   Area, 136, 139, 155, 190–91n72  
 onagers (*Equus hemionus*), 9f, 10  
 Orange Free State  
   as last habitat, 87, 87f  
   as quagga habitat, 1, 39, 40–41  
   vegetation, 44  
 ostriches, as lookouts for other animals,  
   12–13, 17, 48, 49  
 Oswell, William Cotton, 92  
 Ouseley, Gore, 79  
 overhunting, 4, 44, 45, 88–89  
 oxpeckers, warnings from, 13, 163n23  
 Paleo-Agulhas Plain, 46  
 paleogenomics, 123  
 Pampoenvlei (nature reserve), 136,  
   190–91n72  
 pangenesis (inheritance), 80  
 Parkins, Joseph W., 32, 77  
 Pedersen, Casper-Emil, 122, 134, 149  
 Penzhorn, Banie L., 127  
 phenotype, definition of, 131  
 Pienaar, Uys de V. (Tol), 127, 128, 141  
 plains zebras (*Equus quagga*)  
   ancestral divergence, 10  
   breeding experiments with, 127  
   breeding groups, 12  
   communication, 16  
   complementary feeding, 17, 165n57

## 226 · Index

- plains zebras (*Equus quagga*) (cont.)  
 divergence of, 149  
 DNA similarity, 120–21. *See also* DNA sequencing  
 evolutionary history of, 14–15  
 lifespan, 18  
 mating  
   about, 16  
   foaling, 16  
   gestation period, 16  
   hybridization with Grévy's zebras, 20  
 mountain zebras contrasted with, 13–14  
 as “Near Threatened,” 18  
 north–south changes in body size and striping, 169n46  
 photo of, 11f  
 physical characteristics  
   albino, 55  
   coat coloration, 5  
   dimensions of, 37–38  
 population of, 18  
 for Quagga Project, 129–30  
 quaggas as southern population of, 56  
 range of, 14–15  
 Selous on, 38  
 sexual dimorphism, 15–16, 37, 169n46  
 stripes, 10, 15, 55, 56–58  
 subspecies of, 15  
 uses for  
   domestication of, 72–73, 177n85  
   as draft animals, 73f  
   livestock protection, 176n77  
 Pocock, Reginald, 49, 57, 119, 127  
 predators  
   defense against  
     animals co-mingling as, 49  
     coat coloration as, 56–57  
     physical attributes as, 8, 13, 52  
     social organization, 52  
   plains zebras response to, 18  
   rewards for killing, 86  
   stripes  
     as camouflage, 51, 57  
     as defense against biting insects, 56  
   types of  
     biting insects, 53, 56, 73, 173n15  
     carnivores, 2, 50  
     parasites/ectoparasites as, 13, 18, 50  
     warning of, 12–13, 17, 163n23  
 Pringle, Thomas  
   *Afar in the Desert*, 22, 107, 184n34  
   *African Sketches*, 111  
   on barking cry, 47–48  
   *The Desolate Valley*, 107, 184n34  
   on letting quaggas live, 75  
   on overhunting, 45  
   as settler, 46  
 proclamation to guard against destruction of  
   Game (1822), 86, 95  
 profit motive  
   big game hunting, 91, 92  
   hides/leather  
     for boots, 4, 69, 93, 94, 177n101  
     in the international market, 91, 93, 94  
     use in machinery, 181n56  
     for utilitarian purposes, 4, 69, 176n53  
 Przewalski's horse (*Equus ferus przewalskii*)  
   breeding experiments with, 127  
   from cryopreserved cells, 144  
   as endangered species, 9–10  
 Pyrenean ibex (*Capra pyrenaica pyrenaica*), 144  
 “Quagga” as recognized breed, 134  
 Quagga genes, 131  
 Quagga Project  
   auction prices, 134–36  
   capture/relocation challenges, 129–30, 136–37  
   coat coloration, 38, 132–34, 190n47  
   conservation of other organisms, 155  
   Core Herds, 130–31, 136, 137, 147  
   de-extinction, 142–45  
   expenses of, 141, 191nn90–91  
   fatalities, 130–31  
   founder animals/descendants, 5, 131, 189n35, 191n77  
   inbreeding, 132, 136, 189n36  
   mating by choice, 131–32, 138  
   media coverage of, 146  
   as model, 156  
   prestige value of, 141  
   public meanings of, 145–46  
   Quagga Project Management/Action Plan, 131, 189n32  
   Rau quaggas, 132–34  
   selective breeding, 53–54, 126, 131, 134  
   sexual dimorphism absence, 149  
   stripes, 133  
   supporters for, 128–29  
   unrecoverable characteristics, 148–49  
   unsuitable animals, 131, 132, 189n40



- Quagga Project Association, 134
- quaggas (*Equus quagga quagga*)  
 overview  
   about, 22–23  
   classification, 39–40  
   descriptions and depictions, 23–36  
   extinction, 50  
   habitats, 40–47  
   harnessing, 69–74  
   lives of, 47–50  
   taxidermy specimens, 36–39
- ancestral divergence, 10, 58, 121, 122, 149, 187n107
- animals co-mingling with, 2, 42, 48, 49
- breeding. *See* breeding; breeding groups
- in contemporary literature, 107–11
- depictions  
   European paintings, 26–27f, 28–29, 29f, 30–34f, 107, 166nn15–18  
   horse-like portrayals, 23, 28, 29, 30–31, 35–36, 168n33  
   illustrations list, 159  
   indigenous descriptions, 23–24  
   petroglyphs/rock paintings, 24, 24f, 166n5  
   photos, 23f, 78f, 114f, 116f  
   sculptures, 107  
   in woodcuts, 22–23, 23f
- diseases. *See* diseases
- disposition of, 71
- DNA sequencing. *See* DNA sequencing
- extinction of. *See* extinction
- fakes of, 106–7
- foals/fillies/colts, 25–26
- genetics  
   DNA extraction, 120  
   DNA sequencing, 5, 9, 120–23  
   positive selection for genes, 121–22  
   selection and genetic drift, 58
- herds, 1–2, 47, 48
- horse speed compared with, 89
- human neighbors. *See* human neighbors of quaggas
- interbreeding with horses or donkeys, 74
- in modern culture, 105, 125
- names/pronunciation, 20–21, 24–25, 162n2, 166n7
- nutrition  
   diet, 1–2, 41. *See also* vegetation  
   hindgut fermentation, 11, 41  
   water sources, 11, 17, 42, 43, 44, 46, 91
- physical characteristics  
   appearance of, 1, 22–23, 27–28, 166n2  
   barking cry, 7, 10, 47  
   morphological, 148–49  
   nipples, 34, 186n80  
   sexual dimorphism, 36, 37, 149  
   stripes, 38–39, 55, 169n54  
   unstriped hindquarters, 56
- population estimates, 42, 43, 46, 85
- predators. *See* predators
- range of  
   about, 1, 3f, 40–42, 44, 162n5  
   frontier settlement encroachment on, 86  
   limitations, 85  
   progression of extinction, 87f
- spelling/name differences, 40, 169n63
- stamp with image of, 107
- stories and art inspired by, 2, 6
- stripes, 132
- uses for  
   as draft animals, 1, 3, 32, 50, 69–74, 77  
   hides/leather, 66, 69, 176n53  
   indigenous, 7  
   livestock protection, 1, 3, 50, 71  
   valuing, 74–75
- quaggas in Europe  
 overview  
   breeding of, 83–84  
   as exotic, 76–78  
   and heredity, 79–83  
   menageries, 76–77  
   records of, 160–61  
   transport of, 26, 76  
   in zoos. *See* zoos
- Rau, Reinhold  
 background, 112–13  
 on coat coloration  
   as plains zebra variant, 127  
   seasonal/individual variations in, 38  
   as selective advantage, 57  
 conservation work, 113, 155–56  
 Eenzaamheid Provincial Nature Reserve, formation, 195n58  
 on extinction, 90–91  
 on indiscriminate subspecies  
   reintroduction, 152  
 muscle and connective tissue retrieved by, 120  
 on Paris taxidermy specimen, 167n21

## 228 · Index

- Rau, Reinhold (cont.)  
 photo of, 114f  
 on plains zebras subspecies, 15  
 on Quagga Project, 153  
 Quagga Project fundraising, 107  
 specimen remounting/restoration, 113–14  
 on taxidermy specimens, 168n40  
 tissue samples sent for DNA analysis, 5, 120
- Rau Quagga, as “Recognized Breed,” 134
- Rau Quagga Breed Society of South Africa, 134
- Rau quaggas, 132–34  
 rebreeding  
 overview  
 prospects for, 126–29  
 Quagga Project, 129–32, 145–46  
 Rau quaggas, 132–34  
 registration and sales, 134–36  
 restoration to the veld, 136–39  
 alternative terms for, 188n2  
 of cattle, 127  
 costs/trade-offs, 5, 6  
 fundraising appeal, 139, 140f, 141  
 genomic information, 134  
 knowledge gaps, 148  
 molecular biology in, 134  
 opportunity cost of, 5  
 support for, 127–28, 139–41  
 tarpans (ancestors of modern horses), 127
- Red List of Mammals of South Africa, Lesotho, and Swaziland (2016), 154
- red wolves (*Canis rufus*), founder population, 142–43
- Renker, Carsten, 116
- Revive and Restore, de-extinction projects, 145
- Ritvo, Harriet, 110
- Roberts, Austin, 52, 97–98, 182n83
- Roubal, Franz, 107
- Ryder, Oliver, 120
- San. *See* Bushmen
- San Diego Zoo Institute for Conservation Research, 144
- SANParks (South African National Parks), 130, 139, 151, 191n82
- Savanna, 41, 41f
- Schouman, Aert, painting by, 30, 30f, 167n19
- Slater, Philip Lutley, 85, 88
- Selous, Frederick Courteney  
 on extinction, 96  
 hunting expeditions, 92, 95  
 on quagga coloration, 51, 118, 127  
 on quagga mares, 38  
 on young quagga stallions, 71  
 on zebra meat, 175n45
- Selous zebras (*Equus quagga selousi*)  
 population decline, 18, 155, 157  
 stripes, 194n53  
 as subspecies, 165n65
- Senckenberg Museum, 112, 115
- settlers  
 Boors returning from hunting, 67f  
 expansion into Bushmen hunting grounds, 61  
 weapons, 66–68  
 on zebra/quagga distinction, 25  
 zebra/quagga encounters, 25
- sexual dimorphism, 10, 27, 36–37, 38, 149
- Shortridge, Guy, 97, 106
- Silverston, Anthony, 110–11
- Skead, Cuthbert John, 74, 88
- Skinner, John, 85
- slavery in South Africa, 61–62
- Smith, Charles Hamilton, 1, 40, 77
- Smuts, G. L. (Butch), 127
- somatic cell nuclear transfer, 143
- Somerset, Charles, 86
- Somerville, William  
 on coat coloration, 133  
 observations, 29  
 on quaggas as draft animals, 73–74  
 on quaggas as indigenous meat source, 68
- Sotho, 61
- South Africa Nature Foundation, 139
- South African Museum. *See* Iziko South African Museum, Cape Town
- South African National Parks (SANParks), 130, 139, 151, 191n82
- South African Nature Foundation, 129
- Sparman, Anders  
 on mountain zebras as draft animals, 72  
 on quagga flight, 50  
 on quagga leather, 66  
 on quaggas as draft animals, 72  
 on weapons used by Khoe-San, 63, 65f, 175n16  
 on zebra/quagga distinction, 25
- Spreen, Reinier, 89, 110
- Stears, Keenan, 154

- Strindberg, August, 4, 81, 123
- stripes
- overview
    - developmental origins of, 54–56
    - functions of, 51–54
    - loss of, 58–59
    - variation in plains zebras, 56–58
  - absence of as camouflage, 56–57
  - as camouflage, 51–52
  - Darwin on, 51, 58–59
  - as defense against biting insects, 53, 56–57, 173n15
  - embryonic development of, 54–55
  - as grooming target, 54, 173n25
  - on hind legs, 57f
  - human perception of, 52
  - range across species (cline), 56, 174n34
  - as selective advantage against biting insects, 57
  - temperature correlation with, 56
  - thermoregulation with, 52–53, 173n15
  - variations among zebra species, 55
  - viewing challenges, 182n83, 183n84
- subspecies, DNA studies on, 15, 122
- Succulent Karoo, 41, 41f, 44
- Sutherland, C.L., 72
- Swart, Sandra, 110
- Swartz, Katriene, 105
- Swazi, 61
- tail morphology
- Agasse's depiction, 32
  - Cuvier on, 35
  - Daniell's depiction, 29
  - Edwards' depiction, 28
  - Harris's depiction, 34–35, 168n33
  - Hawkins' depiction, 31–32
  - Maréchal's depiction, 30, 31
  - museum specimens, 168n37
  - Somerville on, 29
  - variation in, 36
- taxidermy specimens
- absence of records on origins, 39
  - dimensions of quaggas
    - Boswell on, 169n42
    - MacClintock on, 168n41
    - in museum specimens, 36–37
    - plains zebras contrasted with, 37–38
    - Rau on, 168n40
  - sexual dimorphism, 36–37
- taxonomy and molecular biology, 117–23
- Taylor, Andrew, 154
- teeth
- from cave excavations, 62
  - of plains zebras, 17
  - of quaggas, 41
  - of zebras, 10, 163n18
- Tegetmeier, W. B., 72, 126
- telegony
- discrediting, 80–83, 126
  - and pre-marital chastity, 179n39
  - terminology source, 178n24
- totipotency, Dolly the sheep, 143
- Transvaal Museum. *See* Ditsong National Museum of Natural History, Pretoria
- Triggerfish Animation Studios, 110
- Truter-Somerville expedition (1801–02), 28, 73
- Truth and Reconciliation Commission (TRC), 145
- Tsonga, 61
- Tswana, 61
- Turnbull, March, 135–39, 150, 155–56
- van Riebeeck, Jan
- as Cape Colony founder, 166n8
  - on zebras, 25
- vegetation
- at Elandsberg Reserve, 138, 155
  - endangered species, 138
  - in Karoo, 42–47, 170n78
- Venda, 61
- Vlakkenuhuwel (mixed use farm), 136, 190–91n72
- Vosloo, Dormehl, 141
- Vrolijkheid Nature Reserve, 128–29
- Wallace, Alfred Russel, 51
- Warning, J. F., 128–29
- Wedderwill Game Reserve, 132, 141
- Wedderwill Wine Estate, 141
- Weismann, August, 80, 178n24
- Wende, Hamilton, 110
- white rhinoceros (*Ceratotherium simum*), 156
- wildebeests, complementary feeding, 17, 165n57
- wildlife corridors for migration, 5
- Williamsburg, Richard, 92
- Windsor Royal Park, 77
- wolf reintroduction into Yellowstone National Park, 151

## 230 · Index

- Wonderwerk Cave, long occupation of, 62
- Wooding, Bernard, 133, 135, 137–38
- World War I navy ships, stripes as camouflage, 52
- |Xam  
 assimilation in South Africa, 104–5  
 as hunter-gatherers, 60, 162n7  
 naming of animals, 7  
 narratives, 102–5  
 pronunciation of, 162n7  
 quagga meat relished by, 102  
 stories about quaggas, 2  
 zebra/quagga distinction, 24–25. *See also* Bushmen
- Xhosa language, animal names, 7, 25, 61, 164n31
- York, Frederick, 77
- zebras  
 overview  
 about, 7  
 confusion over, 20–21  
 equines, 8–10, 9f  
 Grévy's zebras, 18–20  
 Hippotigris, 10–13  
 plains zebras, 14–18. *See also* plains zebras  
 ancestral divergence, 10, 163n16  
 appearance of, 7, 10, 12  
 behavioral differences among, 122  
 communication, 11–12  
 disposition of, 71  
 evolutionary relationships of, 9f  
 gestation period, 12, 163n21  
 herds of, 12  
 Indigenous use of, 7  
 interbreeding with horses or donkeys, 74  
 maneless, 163n17  
 mating, 12  
 range of, 10  
 in Southern African history, 20–21  
 spotted, 55–56  
 stripe variations, 10 *See also* quaggas
- Zeedesberg, James, 72–73
- Zola, Émile, 82, 123
- zoos  
 Antwerp Zoo, 84, 100, 180n14  
 London Zoo, 22, 56, 77, 78f, 84  
 treatment of animals, 78, 178n15  
 Windsor Great Park, 84  
 Windsor Royal Park, 77
- Zulu, 61
- Zuurberg vegetation, 45