

Index

- Action Plan on Conserving Biological Diversity' in Developing Countries, 29, 290-291
- Africa, 2.5, 125, 302
 agricultural development in, 122
 biological diversity in, 39, 41, 49
 diversity loss in, 75, 79
 NGOs in, 14
 threatened species in, 75
- African Development Bank, 294
- Agency for International Development, U.S. (AID), 27, 243-244
 Action Plan on Conserving Biological Diversity in Developing Countries, 29, 290-291
 Biden-Pell grants' use by, 15
 biological diversity funding for, 27, 28-29, 31-32
 breed resource assessment by, 160
 Bureau of Program and Policy Coordination, 29, 292
 Bureau of Science and Technology, 29, 293
 development assistance and, 289-294, 297, 298, 302, 304, 290
 environmental expertise in, 29-31, 293-294
 natural resource assessments development by, 300
 Office of Forestry, Natural Resources, and the Environment of, 292
 preservation approach to conservation and, 122, 129
 resource degradation observations by, 67-68
- Agricultural Marketing Act of 1946, 222, 233
- Agricultural Research Service (ARS), 222, 233, 235, 242
 budget of, 238
 funding by, 16, 195, 196, 236
 germplasm conservation by, 19
 interpretation of Research and Marketing Act by, 10-11
 Plant Protection and Quarantine facilities of, 177
- Agricultural Trade Development and Assistance Act of 1954, proposed amending of, 31-32
- Agriculture
 breeding, 52-53, 138-139, 144, 149-156, 229, 156
 diversity loss caused by, 5, 66, 75-77, 78-79, 82-83, 94
 diversity loss' effect on, 4, 67, 76-78, 94
 diversity maintenance's value to, 4, 37, 47-48, 49-53
 economics of biological diversity to, 49-50, 76
 genetic diversity for, 121-122, 159-161, 305
 micro-organisms' use in, 206
 offsite maintenance programs for, 169-171, 186, 232-241, 174
 preservation approach to conservation in, 123
 research for, 187, 192-195, 196, 305
- agroecosystems, 67, 79
 maintaining, 90, 94
- Alaska, 46, 47
- Amboseli game reserve (Kenya), 297
- American Association of Zoological Parks and Aquariums (AAZPA), 241, 274
- American Minor Breeds Conservancy (AMBC), 143, 239
- American Type Culture Collection (ATCC), 210, 211, 244
- Angola, 80
- Animal and Plant Health Inspection Service (APHIS), 146, 147, 161, 196, 244-245
- Antarctica, 117, 172
- Arctic, 46, 50
- Argentina
 personnel training in, 302
 seed storage in, 172
- Arizona, 46
 agricultural diversity in, 122
 diversity loss in, 66, 67
 protected area in, 115
- Army Corps of Engineers, U. S., 232
 wetlands value estimate by, 5, 40-41
- Arnold Arboretum (Harvard University), 173, *184*, 237
- artificial insemination (A. I.), 152
 organizations, 240
- Asia, 25, 47, 80
 agricultural breeding in, 53, 160
 domestic animal monitoring in, 143
 quarantine facilities in, 147
- Asian Development Bank, 24
 development assistance funding by, 294-295
- Assessing Biological Diversity in the United States: Data Considerations, 127***
- Association Latinoamericana de Producción Animal (Venezuela), 143, 301
- Audubon Society, 119
- Australia, 74, 125
- azonal ecosystems, 103, 111
- Bangladesh, 74
- Battelle-Kettering Laboratory (Ohio), 209, 244
- Belgium, 303
- Biden-Pell matching grants, 15
- biological resources, components of diversity in, 38
- biosphere reserves, cluster concept for, 225-226, 118
- biotechnology, 4
 in developing countries, 305
 micro-organisms' use in, 209, 206
 plant improvement through, 191-194, 196
 seed collection and, 185-187
- Birmingham, University of (UK), 303
- Black Mesa (Arizona), 46
- Bolivia, 301
- Bonn Convention, 256
- Borlaug, Norman, 292
- Botanical Gardens Conservation Coordinating 130dy (BGCCB), 173, 273
- Botanic Garden Conservation Strategy, 273
- Botswana, 50, 51, 54
- Brazil
 conservation education in, 297

NOTE Page numbers appearing in italics are referring to information mentioned in the boxes

- deforestation in, 75, 106
 management technology in, 94
 threatened species list in, 71
- breeding
 funding technologies for, 158, 159, 160-162, 235, 236
 programs for animal diversity, 52-53, 138-139, 144, 149-156, 229, 156
 programs for plants, 191-194, 235, 236, 192
 species criteria for, 241
- breeds, report's definition of, 139
- Brookfield Zoo (Chicago), 129
- Budapest Treaty, 262
- Bureau of Land Management, U.S. (BLM)
 onsite maintenance and, 115, 117-118, 128, 227
 onsite restoration by, 231
 Resource Management Plan of, 114
- Bureau of Program and Policy Coordination, 29, 292
- Bureau of Science and Technology, 293
- Burma, 47
- California, 47
 agricultural breeding in, 53
 biological diversity in, 49, 50
 diversity loss in, 66, 67
 threatened species in, 70
- California at Davis, University of, 45, 175, 236
- California Desert Conservation Area, 117-118
- California Gene Resources Conservation Program, 236
- California, University of, 44
- Canada, 12, 47
 diversity loss in, 5, 81
 diversity management strategy in, 117
 onsite management plans in, 115
- Carolina Bird Club, 231
- Cary Arboretum (New York), 232
- Center for Environmental Education, 14
- Center for Plant Conservation (CPC), 173, 184
 data collection by, 238
 NSSI. and, 19
 offsite maintenance by, 196
 wild plant maintenance by, 237-238
- Center for Restoration Ecology (Wisconsin), 232
- Central African Republic, 80
- Central America, 25
- Central America and Mexico Coniferous Resources Cooperative (CAMCORE), 175, 184
- Centro Agronomic Tropical de Investigaciones y Enseñanza (Costa Rica), 122, 297, 302
- Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), 122
- Centro Internacional de la Papa (CIP), 184, 186, 187, 188
- Chad, 80
- Charles River (Massachusetts), 5, 40-41
- Chesapeake Bay, 64, 71
- Chile, 71
- China, 125
 diversity loss in, 63-64, 156
- College of African Wildlife Management (Tanzania), 302
- Colombia, 75
 conservation education in, 297
 plant collection in, 186
- Colorado, 46
- Commission on Ecology, 122-23
- Committee on International Development Institutions on the Environment (CIDIE), 24, 295, 296
- Commission on Plant Genetic Resources, 25, 26
- Competitive Research Grants Office (CRGO), 17, 195, 196
- Connecticut, University of, 240
- Conservation Biology*, 129
- Conservation Data Centers (CDCS)
 for developing countries, 299
 development assistance projects by, 293
- Conservation Monitoring Center (CMC), 112, 268-69, 273
 data collection by, 124, 125, 127, 293
- Conservation Needs Inventory, 66
- Consultative Group on International Agricultural Research (CGIAR), 270
- Consumers' Association of Penang (Malaysia), 298
- Convention Concerning the Protection of the World Cultural and Natural Heritage, 255, 266-68
- Convention on the Conservation of Migratory Species of Wild Animals, 256
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 22, 23, 255, 296, 286
- Convention on the Law of the Sea, 256
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 255
- conventions
 global, 255-56, 258
 regional, 256, 258
- Cooperative State Research Service (CSRS), 233, 235
- Costa Rica
 conservation education in, 297
 ecosystem restoration in, 120
- Council for Agricultural Science and Technology, 144-45
- Council for Environmental Quality (CEQ), 12
- Coweeta Hydrological Station, 118
- crop advisory committees (CACs), 195, 235-36
- cryogenic storage
 for animal diversity maintenance, 139-42, 144-45, 148-49, 158-59, 274
 of micro-organisms, 210-11
 for plant collections, 171-73, 182-84, 187, 194-95
 of seeds, 169, 171-72, 172-73
- cryopreservation. See cryogenic storage
- data collection
 biogeographic systems of, 103, 104, 111
 for breed assessment, 160
 coordinating, 15, 20-22, 95-96, 126-127
 for diversity maintenance, 124, 268-269, 298-299
 enhancing, 19-22, 95-96

- for microbial diversity, 212-213
- for onsite maintenance programs, 115, 123-127, 130
- for plant collecting, 175
- for plant storage technologies, 180, 189-190
- for policy formation, 95-96
- for population models, 108-109
- for reproductive biology, 158-159
- socioeconomic, 127
- on threatened species, 68-75, 77-78, 83
- for wild plant species, 237-238
- Declaration on the Human Environment, 2,57
- deforestation
 - causes of, **81**
 - of developing countries, 3-5, 27-28, 67, 73-75, 80, 106
 - diversity loss caused by, 73-74
 - historically, 63-64
- Department of Agriculture, [J. S. (USDA), **294, 299**
 - Agricultural Research Service, 10-11, 16, 19, 177, 195, 196, 210, 222, 233, 236, 238, 242
 - Animal and Plant Health Inspection Service of, 146, 147, 161, 196, 244-245
 - bilateral programs and, 305
 - breed resource assessment by, 160
 - Competitive Research Grants Office, 17, 195, 196
 - development assistance and, 303
 - funding plant storage technology by, 194-195
 - germplasm maintenance by, 239
 - germplasm quarantine and, 146, 147
 - germplasm transfer and, 146, 147, 161, 162
 - microbial research by, 239
 - National Plant Germplasm System, 8
 - onsite restoration by, 232
 - plant diversity maintenance by, 191, 232, 233
 - plant importation and, 177, 196
 - RSSA between AID and, 30
 - Soil Conservation Service of, 121, 231, 237
- Department of Commerce, 111
- Department of Education, U. S., 14
- Department of Energy, U.S. (DOE), 213, **118**
- Department of the Interior, 30, 294
- Desert Fishes Council, 231
- desertification, 69
- developing countries, 12
 - agricultural breeding in, 53
 - biotechnology's use in, **305**
 - data collection for biological diversity in, **298-299**
 - deforestation in, **3-5, 27-28, 67, 73-75, 80, 81, 306**
 - diversity loss in, **27-32, 285**
 - economic benefits of wild species in, 303-305
 - genetic resources of, **260-262, 305**
 - MDBs and, 294-296
 - onsite technology for, 129
 - preservation approach to conservation in, 122
 - promotion of biological diversity projects in, 296-305
 - protected areas in, 109
 - U.S. state in maintaining biological diversity in, **286**
- development
 - agricultural, 121-122
 - conservation as, **122-123, 264**
 - effect of, on diversity maintenance systems, 78-79, 102
 - insular ecology and, 106
- development assistance, 31-32
 - diversity maintenance and, **287-289**
 - funding, **291-293, 294-296, 298, 302**
 - genetic conservation and, 78
 - multilateral development banks and, 294-296
 - reports of constraints on, 69
- diversity loss, 67
 - biological concepts involving, 65
 - causes of, 3-5, 63-64, 71, 73-74, 75-82, 127
 - through crossbreeding, 162
 - in domestic animals, 240-241
 - extent of, 3-5, 82-83
 - historically, 63-64, 66, 68, 75
- diversity maintenance, 273-275
 - breed replacement for, 139
 - conserving, 8-22, 221-246, 253-278
 - esthetic and ethical values of, 37, 46-49, 54
 - federal mandates affecting, 222-224
 - funding, 29, 31-32
 - improvements needed for, 245-246, 275-278
 - integration of economic development and, 287-289
 - international initiatives for, **22-26**
 - interventions encouraging, **6-8, 89-96**
 - linkages of management systems for, 8-13, 18-19, 30-32, 92-96
 - management systems for, 6-8, 89-96
 - micro-organism, 205-213
 - patent law and, 260-262, 261
 - personnel training for, 302-303
 - private sector's contribution to, 16, 17, 30-31, 227, 228, 230-232, 236-238, 239-240, 245
 - program coordination for, 8-13, 18-19, 30-32, 89, 92-96, 115, 120, 278
 - promoting planning and management for, 300-302
 - public support for, 13, 54-55, 230, 241, 296-298
 - value of maintaining, 4-5, 37-54
 - for wild plants, 237-238
- Dominican Republic, 79
- Earthwatch, 268
- East Germany, 113, 156
- Ecole de Fauna [Cameroon], 302
- economics
 - of biological diversity, 4-5, 8, 39-41, 48, 49, 50, 53-54
 - data on, 127
 - of diversity loss, 76, 80, 81-82
 - of diversity maintenance systems, 4-5, 102, 105, 111, 114
 - of diversity management systems, 7, 89-90, 90-91, 92
 - of ecosystem restoration, 120, 121
 - of microbial diversity, 208, 210, 211, 212, 244

NOTE Page numbers **appearing** in italics are referring to information mentioned in the boxes

- of offsite animal maintenance, 144
- of offsite plant collection technologies, 172-173, 195
- of offsite seed storage technologies, 183, 195
- of onsite maintenance programs, 229, 232
- of preservation conservation, 123
- of U.S. development assistance, 288, 291-292
- of worldwide network of protected areas, 111
- ecosystem
 - approach for protected areas, 111-112
 - azonal, 103, 111
 - benefits from, diversity, 37, 38, 39-41, 43-44, 46, 48-49, 49-50, 53-54
 - diversity loss, 64-65
 - diversity maintenance, 3, 19, 224-228
 - onsite, maintenance, 89-90
 - restoration, 119-121
 - scales of, diversity, 39
 - status of, diversity, 66-68
- Ecosystem Conservation Group (ECG), 269
- Ecuador, 296
- edge effect, 107
- embryo transfer, 7, 15, 94, 152-155, 153
- Endangered Species Act of 1973, 11, 228-229, 286, 302
 - coordinating onsite maintenance under, 10, 11, 112, 222
 - proposed amending of, 18-19
 - threatened species definition of, 7'o
- Endangered Species Office (ESO), 68, 115, 228-229
- Endangered Species Program, 11, 246
 - funding for, 18
 - habitat protection and, 228-229
- endemism, 104, 112, 299
- England, See United Kingdom
- Environmental Education Act of 1974, 14
- Environmental Law Center, 268
- Environmental Liaison Center (Kenya), 298
- Environmental Protection Agency (EPA), 71
 - microbial research by, 213
 - onsite restoration by, 232
- enzyme-linked immunosorbent assay (E LISA), 146-147
- Ethiopia, 25, 80, 301
- Europe, 151
 - breed resource categorization in, 160
 - captive breeding in, 156
 - diversity loss in, 79
 - threatened species lists in, 70
- Export Administration Act, proposed amending of, 26
- Federal Committee on Ecological Reserves, 226
- Federal Register**, 228, 229
- Federal Threatened and Endangered Species List, 68, 115
- Fish and Wildlife Service, U.S. (FWS), 68, 228-229, 241, 294, 299, 303
 - data collection by, 125, 126
 - diversity management strategy of, 116
 - ecosystem diversity protection by, 227
 - Endangered Species Office, 68, 115, 228-229
 - Endangered Species Program of, 11, 18
 - endangered species protection and, 228-229, 230
 - Foreign Service Currency Program and, 293, 302
 - Habitat Evaluation Procedure of, 114
 - National Fish Hatchery of, 241
 - onsite maintenance technology and, 128
 - onsite restoration by, 232
 - RSSA between AID and, 30
 - species documentation by, 68
 - wetlands inventories by, 66
- Florida, 50, 119-120, 129
- Florida, University of, 129, 303
- Food and Agriculture Organization (FAO), 25, 67-68, 124, 256, 257, 260, 262, 263, 264, 269, 274, 278
 - breed resource assessment by, 160
 - data collection by, 299
 - development assistance and, 303
 - domestic animal breed monitoring by, 143
- Food for Peace Program, 31-32
- Food Security Act of 1985, 232
- Ford Foundation, 270
- Foreign Assistance Act of 1983 (FAA), 27, 222, 289
 - amendment to, 287, 289, 291, 292, 290
 - proposed restructuring of, 28
- Forest and Rangeland Renewable Resources Research Act, 232
- Forest Service, U. S., 117, 222, 302
 - database integration and, 125
 - development assistance and, 303
 - diversity management strategy by, 117, 118
 - ecosystem diversity protection by, 227
 - germplasm maintenance by, 237
 - onsite maintenance technology and, 115, 128
 - onsite restoration by, 231
 - Renewable Resources Evaluation of, 103
 - species protection by, 47
- Frankia** culture collection, 244
- freeze drying. See lyophilization
- Fresh Water Game and Fish Commission (Florida), 230
- Friends of the Earth, 298
- Gaines wheat, 192
- Galapagos Islands, 53
- General Accounting Office (GAO), 32, 233-235
- genetic drift
 - inbreeding and, 150
 - preventing, 150-156
- genetics
 - benefits of diversity in, 37-38, 41, 45, 47-48, 49, 51-54
 - diversity in, for agriculture, 121-122
 - diversity loss and, 65-66
 - diversity of, in protected areas, 108, 112-113
 - ecological-evolutionary, 105
 - evolution and diversity in, 41
 - status of diversity and, 75-78
- Geographic Information Systems (GIS), 125
- germplasm
 - collection programs, 121-122

- constraints on international exchange of, 24-26
international] transfer of, 145-147, 152, 161-162,
177-178, 244-245
storage, 7, 131, 94
- Germplasm Resources Information Network (GRIN),
190, 191
Database Management Unit, 233, 235
- Glacier National Park, 227
- Global Environmental Monitoring System (GEMS),
124, 268
- Global Resource Information Database (GRID), **124,**
125, 127, 268
- Gramm-Rudman-Hollings Balanced Budget and Emer-
gency Deficit Control Act, 23, 292
- Great Smoky Mountains National Park, 118
- Green Revolution, 53, 192
- Guanacaste National Park (Costa Rica), 120
- Guatemala
conservation education in, 297
teosinte habitat in, 122
- Haiti, 79, 80
- Harris Poll, 13, 55
- Hawaii
biological diversity in, 44
Hawaii, University of, 243-244
- H.J. Andrews Experimental Ecological Reserve, 43
- Honduras, 69
conservation education in, 297
teosinte habitat in, 122
- Idaho, 115
- Illinois, 66
- Illinois River, 41
- Imperial Zoological Museum (Soviet Union), 156
- India, 47
deforestation in, 74
in-situ conservation in, 113
protected areas in, 110
resource degradation in, 79, 69
threatened species lists in, 71
- Indiana, 66
- Indonesia, 295
- industry
as constituency for diversity maintenance, 13
diversity loss' effect on, 4
diversity maintenance importance to, 37
germplasm maintenance by, 236-238
micro-organisms' use in, 206
- in-situ* genebanks, 112-113, 301
- Institute of Museum Services (IMS)
diversity maintenance research by, 16-17
funding seed storage facilities by, 195
- institutions
diversity maintenance by, 7-8, 94-96
linkages between, 8-13, 18-19, 30-32, 94-96, 225-226,
293-294, 297-298, 299-300
- insular ecology, 105-106
- Integrated Regional Development Planning (IRPD),
123
- Inter-African Bureau of Animal Resources (Kenya),
143, 301
- Inter-American Development Bank, 24, 294-295
- Inter-American Foundation, 297
- International Agricultural Research Centers (IA RCS),
191, 270, 305
- International Board for Animal Genetic Resources
(IBAGR), proposed establishment of, 19
- International Board on Domestic Animal Resour(ce)s,
proposal for, 162
- International Board for Plant Genetic Resources
(IBPGR), 19, 23, 233, 235, 269-273, 277-278
conservation training program by, 303
crop diversity reports by, 77
data collection by, 299
germplasm exchange and, 25
national genebanks and, 302, 303
plant collection strategies by, 173
U.S. support of, 305
- International Cell Research Organization, 275
- International Center for Genetic Engineering and
Biotechnology, 305
- International Center for Tropical Agriculture (CIAT),
186
- International Council for Bird Preservation (ICBP),
124, 263, 267, 269
- International Council for Research in Agroforestry',
122
- International Council for Scientific Unions, 263, 266
- International Environment Protection Act of 1983,
289
- International Institute for Environment and Develop-
ment, 295
- International Institute for Tropical Agriculture
(IITA), 186
- International Livestock Centre for Africa, 143, 273,
301
- International Maize and Wheat Improvement Center
(CIMMYT), 270
- International Meteorological organization, 256
- International Plant Protection Convention (I PPC), 262
- International Rice Research Institute (I RRI), 270
IR36 development by, 53, 169-171
- International Security and Development Cooperation
Act of 1980, 14-15
- International Sheep and Goat Institute, 240
- International Species Inventory System (ISIS), 140,
151, 241-242, 274
- International Union for the Conservation of Nature
and Natural Resources (I UCN), 257, 263, 264,
267-269, 273-277, 300
Botanic Gardens Conservation Coordinating Body,
173
Commission on Ecology, 122-123
Conservation for Development Center, 268
Conservation Monitoring Center, 112, 268, 293
data collection by, 21, 83, 124, 125, 293
ecosystem conservation by, 129
protected area categorization by, 110-111, 112
Species Conservation Monitoring Unit, 68, 69, 142
threatened species definition of, 70

NOTE: Page numbers appearing in italics are referring to information mentioned in the hexes.

- International Union for the Protection of New Varieties of Plants (IUPOV), 260-262
- in-vitro* culture, 7, 15, 94
- for animal diversity maintenance, 155
 - for offsite plant collections, 172, 172, 177, 186, 192-193, 194
- Iowa, 66
- Ireland, 139
- Izaak Walton League of America, 231
- Japan, 15, 47
- Kafue National Park (Zambia), 44
- Kansas, University of, 242
- Kenya, 46, 49, 301
- diversity project, in, 294
 - protected areas in, 109
- Keystone Center
- germplasm exchange and, 26
- Kingman Resource Area (Arizona), 115
- Kiribati, 109
- Kobuk Valley (Alaska), 46
- Kuna Indian Udirbi Tropical Forest Reserve (Panama), 297
- Lacey Act of 1900, amendments to, 23, 255
- Land and Water Conservation Fund
- data collection and, 21
 - refuges funded by, 230
- Latin America, 22, 25, 302
- biological diversity in, 75
 - breed resource categorization in, 160
 - Conservation Data Centers in, 299
 - quarantine facilities in, 147
- legislation
- diversity maintenance, 7-8, 11-13, 18, 23, 26, 27-28, 31-32, 254-262, 223, 258
 - international, 254-262, 258
 - plant patenting, 25
 - U. S., 222, 228, 230, 233, 223, 261
- Liberia, 301
- Longleaf-Slash Pine Forest, 41
- lyophilization, 210, 212
- Madagascar, 71
- Malayan Nature Society, 71, 298
- Malaysia, 47, 50, 71, 81
- development assistance to, 297, 298
- Man in the Biosphere Program (MAB), 30, 128-129, 225, 264-266
- database of, 21
 - diversity maintenance strategy of, 118
 - onsite maintenance as goal of, 225
 - protected areas and, 107, 112
 - U.S. support for, 22, 23
- Marine Sanctuary Program, 111
- Massachusetts, 5, 40-41
- Mauritania, 69
- Meat Animal Research Center (MARC), 239
- Mesa Verde (Colorado), 46
- Mexican National Research Institute for Biological Resources (INIREB), 298
- Mexico
- bilateral program in, 305
 - diversity loss in, 80
 - diversity management strategy in, 118-119
 - in situ* genebank for, 301
 - teosinte habitat in, 122
- Michigan, University of, 302
- Microbiological Resource Center (Hawaii), 244
- Microbiological Resource Centers, 213, 275, 305
- micro-organisms
- collections of, 242-244
 - cultures of, 211-212, 213
 - diversity maintenance for, 205-213, 275, 206
 - identification of, 209
 - isolation of, 7, 91, 208-209, 213
 - storage methods for, 209-212
- Minnesota, 14, 46, 200, 241
- Minnesota, University of, 242
- modeling
- data collection for, 108-109
 - for plant collecting, 173-175
 - for protected areas, 107, 108-109, 114
 - of species-area relationships, 71-74
- Mongolia, 119, 156
- Montana State University, 129
- Montevideo Botanic Gardens, 273
- Morrocoy National Park (Venezuela), 49
- Moscow Botanic Gardens, 273
- Mount Everest, 46
- Mount Kenya, 46
- Mount Taishan (China), 46
- Mozambique, 80
- multilateral development banks (MDBs), 23-24, 294-296
- National Academy of Sciences (NAS), 26, 160
- National Agricultural Library, 160
- National Audubon Society, 231
- National Biological Diversity Act, proposal for, 11-12
- National Board for Domestic Animal Resources, proposal for, 162
- national clonal repository (Oregon), 235
- National Conservation Education Act, proposal for, 14
- National Conservation Strategy (NCS), 12, 115, 300
- National Environmental Policy Act of 1969, 12, 80-81, 127
- National Forest Management Act of 1976, 11, 222, 226, 231-232
- National Forest System, 225, 231-232
- National Foundation on Arts and Humanities Act of 1965, 17
- National Heritage Data Centers, 21
- National Institutes of Health (NIH), 213
- National Marine Fisheries Service (NMFS), 228-229
- National Microbial Resource Network, proposed creation of, 212-213
- National Natural Landmarks, 227

- National Oceanic and Atmospheric Administration, 111, 294, 302
- National Park Service (NPS), U. S., 30, 302
- Boundary Model of, 114
 - database integration by, 125
 - diversity maintenance as objective in, 226-227
 - diversity management strategy of, 117, 118
 - ecosystem restoration by, 119
 - environmental expertise in, 294
 - onsite maintenance technology by, 128
 - onsite restoration by, 232
 - threats from areas adjacent to, 224
- National Plant Genetic Resources Board, 233, 235
- National Plant Germplasm Committee, 233, 235
- National Plant Germplasm System (NPGS), **8, 18, 19, 222, 232-237, 246, 303**
- clonal repositories, 186, 187, 188
 - diversity assessment by, 188, 189
 - evolution of, 174
 - Germplasm Resources Information Network, 190, 191
 - seed storage by, 180
 - technology development by, 195
- National Sanctuaries Program, 115
- National Science Foundation [NSF], 16
- Division of Biotic Systems and Resources, 16
 - experimental ecological areas and, 226
 - offsite maintenance research and, 159
 - offsite management training by, 158
 - research and, 16, 129-130, 196, 213
- National Seed Storage Laboratory (NSSL), 19, 233, 246
- facilities of, 236
 - funding for, 18
 - storage practices of, 180-181, 183
- National Small Grains collection, U. S., 190, 233
- National Water Commission, 12
- National Wilderness Preservation System, 224
- management strategy for, 117
- National Wildlife Refuge System, 224, 229-230
- National Wildlife Refuges, 226
- National Zoo (Washington, D.C.), 158
- National Zoo Conservation and Research Center [Virginia], 303
- Native Seeds/SEARCH, 122
- Natural History Museum of Lima, 298
- Navaho Nation, 230
- Nebraska, 151
- Neisseria Reference Laboratory, 242
- Nepal, 47, 49
- Department of Medicinal Plants in, 51
 - national conservation strategy for, 300
 - threatened species list in, 71
- Nevada, 66
- New Hampshire, 66
- New Zealand, 287
- nongovernmental organizations (NGOS), 263-264, 267-268
- diversity maintenance programs of, 16, 17, 30-31
 - international conservation operations of, 14-15
 - linkages with AID by, 294, 298
- Nordic Gene Bank (Sweden), 172
- North America, 25, 41, 125, 151
- agricultural breeding in, 52-53
 - captive breeding in, 156
 - data collection in, 124
 - diversity loss in, 63
 - threatened species in, 70
- North American Fruit Explorers, 190
- Northern Regional Research Laboratory (NRRI), 242, 244
- North Yemen, 80
- Oak Ridge National Environmental Research Park, 118
- Oceania
- breed resource categorization in, 160
 - diversity loss in, 80
 - domestic animal monitoring in, 143
 - threatened species lists in, 70
- Office of Endangered Species, 237
- Office of Forestry, Natural Resources, and the Environment (FNR), **292**
- Office of Management and Budget, **267**
- off site diversity maintenance
- animal programs for, 238-242
 - choosing strategies for, **138-142**
 - classification** of plant collections for, 170-171
 - facilities for, **158**
 - funding for, 158, 159, 160-162, 235-238, 242-244, 246
 - improvements needed for, 157-162, 194-196
 - international laws relating to, 259-262
 - international programs for, 259-275
 - micro-organism, 208, 213, 242-244
 - objectives of, 137-138, 169-171
 - plant programs for, 90-91, 173-178, 232-238
 - population sampling strategies for, 142-145
 - storing samples for, 91, 178-190, 194-195
 - technology for, 6-8, 15-16, 90-91, 95, 137-162, 169-196
 - using plants stored for, 190-194
- Oklahoma, 227
- Olympic National Park, 43
- onsite diversity maintenance
- data collection for, 123-127, 130
 - for ecosystems, 89-90, 111-112, 128-129
 - funding programs for, 229
 - improvements needed for, 128-130
 - international laws for, 255-259
 - international programs for, 264-268
 - management, 115-119
 - micro-organism, 207-208, 206
 - personnel development for, 130
 - planning techniques, 113-116
 - restoring, 231-232
 - for species, 90
 - technology for, 6, 15, 89-90, 95, 103-130, 224
 - trade-offs involving, 113
- Oregon, 47

NOTE: Page numbers appearing in italics are referring to information mentioned in the boxes

- Oregon State University, 47
 Organization of American States (OAS), 122, 123, 129, 301
 orthodox seeds, 171, 183
- Pakistan, 71, 69
 Panama, 122
 Paraguay, 300
 Participating Agency Service Agreements (PASAS), 30
 Patuxent Wildlife Research Center (Maryland), 241
 Peace Corps, 30-31, 294, 298
 Pennsylvania State University, 243
 Peru, 47, 298
 plant collection in, 184
 species diversity in, 4, 68
 Peruvian Conservation Foundation, 298
 pharmacology, 4
 diversity maintenance's value to, 37, 44-45
 micro-organisms' use in, 206
- Philippines
 deforestation in, 74
 national conservation strategy for, 300
 Pioneer Hi-Bred International, Inc., 237
 plant breeders' rights (PBR) legislation, 260-262, 261
 plant collection
 definitions relevant to offsite, 170-171
 for diversity maintenance, 7, 90-91
 of endangered wild species, 195-196
 funding, 270
 history of, 174
 importing samples for, 177-178, 196
 international, 270-273
 in *vitro* culture use in, 186, 192-193, 194
 objectives of, 169-171
 quarantine policies for, 175-178, 244-245, 262
 technologies for, 169, 171-173, 178-190, 194-195
- Plant Genetics and Germplasm Institute, 233
 Plant Introduction Office, 233
 Plant Molecular Genetics Laboratory, 233
 Plant Patent Act of 1930, 261
 Plant Variety Protection Act (PVPA), 261
 policy
 bases for forming biological diversity, 55
 data collection for, formation, 20, 95-96
 MDBs' influence on developing countries, 294-295
 options available to Congress, 8-32
 quarantine, 175-178, 244-245, 262
 U. S., for diversity maintenance, 8-13, 222-224
- politics
 effect of, on diversity maintenance systems, 102, 105, 107, 114
 effect of, on diversity management systems, 7, 90, 91-92, 127
- potential natural vegetation (PNV), 66
 programs, diversity maintenance
 animal, 238-242
 coordination for, 8-13, 18-19, 30-32, 89, 92-96
 funding, 229, 263
 international, 262-275
 linkages in, 278
 offsite, 232-245
 onsite, U. S., 224-232
- protected areas
 classifying, 102-105, 111
 for coastal-marine ecosystems, 111, 115, 118-119, 224, 105
 criteria for selection of, 111-113
 designing, 102, 105-109
 "edge effect" on, 107
 establishing, 109-113
 genetic considerations for, 108
 models for, 107, 108-109, 114
 population dynamics in, 108-109
 restoration of, 119-121
- Przewalski, N. M., 156
 Public Health Service, U. S., 242
 Public Land Law Review Commission, 12
 Puerto Rico, 230, 128
- quarantine, of germplasm, 146-147, 152, 244-245
- RAMSAR, 255
 Rare Breeds Survival Trust (United Kingdom), 49
 recalcitrant seeds, 171, 187, 195
 Redwood National Park, 232
 Regional Plant Introduction Stations (RPISS), 233
 research, 4, 305
 biological diversity's benefit to, 43-45
 ecosystem diversity maintenance, 225, 226, 266
 ecosystem restoration, 232
 funding, 16-17
 genetic diversity, 122, 185-187, 191-194, 196
 goal-oriented, 15-16, 95
 micro-organism, 208-209, 213, 242, 206
 multidisciplinary, 129-130
 plant germplasm, 187, 192-195, 196
 in population genetics, 159
 problems impeding, 15-16, 95-96
 on protected area design, 106-107
 resource management, 118
 socioeconomic, 127
- Research and Marketing Act of 1946, 10
 Research Natural Area Program, 224-225
 Research Natural Areas (RNAs), 19
 diversity maintenance coordination by, 226
 size of, 224
- Resource Management Plan, 114
 Resource Services Support Agreements (RSSA), 30
 Rhode Island, 230
 Rhododendron Species Foundation, 237
 Rio de Janeiro Primate Center, 301
 Rockefeller Foundation, 270
 Royal Botanic Gardens (U.K.), 180, 273, 174
 data collection by, 190
 in *vitro* storage by, 187
- St. Helena (island), 94
 St. John (Virgin Islands), 118
 Salonga National Park (Zaire), 117
 San Lorenzo Canyon (Mexico), 118

- Santa Rosa National Park (Costa Rica), 120
- School of Conservation Management (Indonesia), 302
- seed
- collections, 188-189, 190-191
 - storage, 7, 15, 94, 169, 171-172, 173
- Seed Savers Exchange, 190, 236
- Selkirk Mountain Caribou Management Plan/Recovery Plan, 115
- Serengeti national Park (Tanzania), 44
- serological procedures, 146-147, 177-178
- Smithsonian Institution, 302
- Biological Diversity Program of, 30-31
 - data collection by, 125
 - environmental expertise in, 294
 - wild plant maintenance by, 237
- Smithsonian Tropical Research Institute, 297
- Society for the Advancement of Breeding Research in Asia and Oceania (Malaysia), 301
- Society for the Advancement of Breeding Researchers, 143
- Society of American Foresters (SAF), 103
- Society for Conservation Biology, 16, 129
- Society Islands, 44
- Soil Conservation Service (SCS)
- onsite restoration by, 231
 - Plant Material Centers of, 121, 237
- somaclonal variation, 192-193
- Somalia, 80
- somatic hybridization, 193-194
- South America
- data collection in, 123-124
 - in situ genebanks in, 301
 - threatened species in, 75
- South Carolina, 230
- Southern Appalachian Biosphere Reserve, 118
- Soviet Union, 125
- in-situ* conservation in, 113
 - threatened species list in, 70
- Spain, 47, 110
- species
- benefits of, diversity, 37, 38, 41, 44-45, 46-47, 49, 50-51, 53-54
 - definitions of threatened, 70
 - diversity maintenance, 90, 112, 228-231
 - habitat protection, 228-231
 - loss of, diversity, 41, 65
 - oriental treaties, 257, 258
 - status of, diversity, 68-75
- Species Conservation Monitoring Unit (SCMU), 68, 69, 142
- Species Survival Plans (SSPS), 241, 242
- Sri Lanka, 67, 300, 301
- Stanford University, Center for Conservation Biology, 129
- State National Heritage Programs, 299
- data collection by, 125, 228, 230
 - workings of, 230-231
- Stockholm Conference on the Human Environment, 22, 257, 259-260, 264, 299
- Sudan, 80, 69
- Surface Mining Control and Reclamation Act (SMCRA), 120, 231
- Sweden, 125
- Switzerland, 139
- Tanzania, 75
- Technologies To Sustain Tropical Forest Resources*, 102
- technology
- developing, for biological diversity, 5, 15-16, 94-96
 - for microbial diversity maintenance, 208-212
 - off site maintenance, 6-8, 15-16, 90-91, 95, 137-162, 169-196
 - onsite maintenance, 6, 15, 89-90, 95, 101-130, 224
 - plant storage, 189-190
 - recombinant DNA, 195
- Tennessee Valley Authority, 230
- Texas, 227
- Texas Agricultural Experiment Station, 191
- Thai Development Research Institute, 300
- Thailand, 301
- The Nature Conservancy (TNC), 228
- data collection by, 83
 - ecosystem restoration by, 119
 - National Heritage Data Centers, 21, 22, 127
 - objectives of, 228
 - onsite maintenance and, 129
 - species management and, 112
 - State Natural Heritage Programs of, 125, 130, 228, 230
- The Nature Conservancy International (TNC1), 269
- Conservation Data Centers of, 293, 299
 - database of, 21, 124
- Treasury Department, U. S., 295
- Trout Unlimited, 231
- Udvardy biogeographic classification system, 111, 129, 264
- United Brands, 236-237
- United Kingdom, 12, 49, 68
- agricultural breeding in, 53
 - protected areas in, 110
 - restoration project by, 156
- United Nations Conference on the Human Environment. See Stockholm Conference on the Human Environment
- United Nations Development Programme, 67-68
- United Nations Educational, Scientific, and Cultural Organization (UNESCO), 244, 257, 263-270, 275-276
- biosphere reserve program of, 301
 - database of, 124
 - data coordination by, 127
 - Man and the Biosphere Program of, 21, 22, 23, 30, 107, 112, 118, 128-129, 225, 264-266
 - microbial database and, 213
- United Nations Environment Programme (UNEP), 22,

- 23, 24, 143, 244, 256, 257, 263-264, 267-270,
274-275, 295
conservation training by, 303
database of, 124
Global Environment Monitoring System of (GEMS),
124
United Nations Food and Agricultural Organizations
(FAO), 124, 256, 257, 260, 262, 263, 264, 269,
274, 278
germplasm conservation and, 25
resource degradation observations by, 67-68
United Nations Industrial Development Organiza-
tions, 305
United States
agricultural breeding in, 52-53
animal breed monitoring in, 162
assessing plant germplasm in, 191
biological diversity in, 49-51
data collection in, 125, 127
data sharing in, 126, 127
development assistance by, 289-294, 296-298
diversity loss in, 66-67, 79, 94
diversity maintenance in, 8-22, 114, 157, 221-246
diversity management in, 117-118, 125
ecosystem diversity program for, 128-129
embryo transfer in, 153
endangered species protection in, 7, 8, 11
genetic diversity in, 4
germplasm quarantine in, 146-147, 161, 244-245
influence on MDBs, 24, 295-296
National Parks and Forests in, 46, 48
plant breeders' rights legislation in, 260
plant breeding in, 191, 192
plant collections in, 184
plant importation into, 177
protected area design in, 107-108, 109, 110
restoration project by, 156
species diversity in, 68
support for international conservation efforts, 22-24
threatened species lists in, 70
wetlands in, 40
U.S. Army Corps of Engineers. See Army Corps of
Engineers, U.S.
U.S. Geological Survey, 125
U.S. Plant Introduction Stations, 180
U.S. Strategy on the Conservation of Biological
Diversity, 14, 29, 290
University of Veterinary Science (Hungary), 303
Utah, 66, 121
Utah State University, 240
Vavilov, N. I., 174
Venezuela, 46, 49, 81
Virgin Islands, 118
V.I. National Park, 118
Voyageurs Park (Minnesota), 46
Washington State, 115
West Germany, 156
wetlands
restoration of, 232
value of, 4-5, 40
Weyerhaeuser Company, 237
Wildlife Institute of India, 302
Willamette National Forest, 43
Wind Cave National Park (South Dakota), 41, 44
Wisconsin, 14, 20, 232
Wisconsin, University of, 232
Wood Buffalo National Park (Canada), 117
World Bank, 270
development assistance funding by, 294-296
preservation approach to conservation and, 122,
129
resource degradation observations by, 67-68
wildland policy of, 24, 29
Wildlife Management Policy of, 296
World Charter for Nature, 257-259
World Conservation Strategy (WCS), 28, 257, 264, 287
World Health Organization (WHO), 268, 275
World Heritage Convention, 22, 23, 264
World Heritage Program, 22, 255, 266-268, 276
World Meteorological Organization, 268
World Resources Institute, 276
World Wildlife Fund (WWF) /U.S., 30, 257, 264, 267
conservation training by, 303
database of, 124
development assistance projects by, 293, 297-298
ecosystem conservation and, 129
Minimum Critical Size of Ecosystems Project of,
106
World Wildlife Fund/The Conservation Foundation.
See World Wildlife Fund/U.S.
Wyoming, 241
Zaire, 117
Zambezi Teak Forest, 41, 44
Zambia, 41, 44, 51, 81
National Conservation Strategy of, 115, 301
Zimbabwe, 300