

Subject Index

- 1986 Chernobyl nuclear accident 416
2,4 db amine 824
3 year grazing experiment: applied and field techniques 372
abandoned arable field community changes related to grazing 210
abandoned arable fields 210
abandoned cropland 784
abandoned grasslands 843
abandoned land 517, 865, 933, 1258
abandoned mountain meadows 1197
abandoned orchard 1145
abandonment 1162
abiotic factors 224, 297, 410, 612, 699, 770, 781, 886, 897, 1246, 1255
above ground biomass 909
above ground nesting behavior 181
above ground plant biomass 1069
aboveground biomass 930
aboveground net primary production 1286
aboveground phytomass 999
abstracts 551
abundance 175, 192, 248, 414, 671, 687, 737, 757, 777, 938, 1115, 1163, 1251, 1257
Acacia sieberiana 871
Acari 667, 704, 917
Acari: farming and agriculture 667, 917
Accipitridae 760
Acer pseudoplatanus 1303
Achnatherum 638
Achnatherum hymenoides 638
Achnatherum spinosa 638
acid detergent fiber 648
acid detergent lignin 648
acid phosphatase 80
acid soil 399
Acrididae 776
Acrididae (Saltatoria): farming and agriculture 589
activity pattern 659
Aculeata 612, 718
adaptations 844
adaptive management: management method 1196
adaptive management strategies 1247
adaptive plasticity 930
additive and compensatory effects 300
adenosine triphosphate 125
Adephaga 197, 221
Aeromonas hydrophila 512
Africa 797, 934, 1187
Africa, East 1001
afromontane grasslands: habitat 872
Afrotropical Region 934
age 45, 136
age structure 1237
Agelaius phoeniceus 676
agenda laden literature reviews 1131
aggregate stability 483, 489, 498, 514, 523, 537
aggression 173
agri environmental schemes 186
agri environmental schemes 1152
agribusiness 38
agricultural disturbance 1271
agricultural entomology 206, 697, 702, 1242
agricultural grassland 232
agricultural land 61, 432, 474
agricultural land use intensification 4
agricultural lands 756
agricultural landscape 222
agricultural landscapes 181
agricultural management models 93
agricultural pollution 3, 54, 109, 121, 449, 1173, 1225
agricultural practice 101
agricultural practices 3, 55, 141, 157, 211, 630
agricultural production 83
agricultural productivity
greenhouse gas reduction conflict 849
agricultural quality 281
agricultural regions 1254
agricultural research 234
agricultural run off 83
agricultural runoff 19, 25, 42, 54, 55, 60, 61, 63, 109, 118, 128, 141, 149, 449, 547, 1173
agricultural soils 113, 136
agricultural watersheds 53, 122
agriculture 2, 10, 38, 43, 44, 51, 61, 63, 65, 69, 111, 128, 147, 150, 153, 157, 175, 187, 195, 205, 219, 265, 267, 268, 291, 306, 327, 328, 387, 427, 436, 494, 515, 546, 562, 577, 647, 652, 660, 688, 737, 755, 824, 928, 1001, 1038, 1115, 1175, 1238, 1257, 1276, 1284
agro pastoral management 1152
agroecosystems 403
agroforestry 395, 1288, 1291
agroforestry systems 395, 431
agronomic benefit 114
agronomy 29, 258, 259, 286, 287, 328, 341, 363, 367, 376, 426, 443, 824, 1276
agropastoral landscape 845
agropastoral system 1133
agropastoral systems 1082
agropastoralism 845
Agropyron cristatum 237, 776
Agropyron desertorum 838, 1174, 1175
Agropyron smithii 730
Agropyron spicatum 608, 988
Agropyron spp. 1126
Agrostis capillaris 360, 1170
agrostis festuca grassland: acid grassland, habitat 890
Agrostis nebulosa 1049
Aimophila cassinii 559
air-earth interfaces 1226
air permeability 40
air pollution 291, 381
air temperature 247, 912
airborne hyperspectral remote sensing: applied and field techniques 822
Akaiki's information criteria: mathematical and computer techniques 690
Alaska 807
Alberta 339, 456, 476, 478, 479, 865, 963, 972, 973, 1016, 1114, 1213
alder 1303
alfalfa cultivar *Alfagraze* 155
alfalfa cultivar *Apollo* 155
alfalfa grass pasture 347
Alfisols 76, 123, 482
algae 449
algae and seaweeds 713
alien grass 796
alkali steppe 180
alkaline phosphatase 80
alkaline soils 76
Alnus glutinosa 317, 1303
Alnus incana 556
Alnus rubra 1292
alpaca 1020
alpine grasslands 250, 907, 924, 978
alpine grasslands: habitat 1101
alpine habitat 1089
alpine heaths: habitat 1101
alpine meadows 530
alpine pasture 29
alpine wetland 1096
alternate grazing management: applied and field techniques 137
alternative fen management 235
alternative livestock grazing strategies 785
alternative management practices 115
altitude 214, 713, 773, 1003, 1219
altitude zones 954
aluminum sensitive species 2
Ambystoma californiense 814
amensalism 608
America 1017, 1129

- amino acids** 113
Ammodramus maritimus nigrescens 162
Ammodramus savannarum 559
Ammodramus savannarum 701
ammonia 236, 409, 512, 900, 1226
ammonia emission model: mathematical and computer techniques 68
ammonia exchange, air-soil 1226
ammonium 19, 20, 71, 89, 99
ammonium compounds 1226
ammonium nitrite 512
ammonium nitrogen 13, 491
ammonium phosphate 147
Amphibia 175, 635
amphibian predators 635
amphibians 175, 595, 635, 1232
amphibiotic species 814
Anabasis articulata 570
anahuac 735
analysis of variance: mathematical and computer techniques 690
analytical techniques 794
Anas 732
Anas acuta 157
Anas clypeata 730
Anas discors 730
Anas platyrhynchos 730
Anas strepera 157, 730
Anatidae 157, 732
Anderson Mesa 783
andosol 901
Andropogon gerardii 419
Andropogon sp. 170
animal (Animalia): aquatic, terrestrial 1131
animal behavior 79
animal behaviour 389
animal biodiversity 530
animal communities 1239
animal ecology 1239
animal enterprises 110
animal excreta 78, 380
animal foodstuffs 141
animal grazing 151, 515
animal housing 381
animal husbandry 7, 8, 29, 31, 32, 106, 110, 199, 239, 328, 358, 391, 426, 427, 457, 486, 521, 529, 604, 724, 868, 1230
animal nutrition 437
animal operated pasture pump 110
animal performance 347
animal populations 175
animal preferences 812
animal production 183, 298, 299, 316, 402, 945
animal science - animal ecology and behavior 1257
animal science - animal nutrition 162
animal urine patches 380
animal wastes 19, 20, 54, 109, 128, 141
Animals 1129, 1131, 1284
animals and man 120, 159, 176, 182, 197, 210, 213, 217, 223, 224, 225, 263, 297, 314, 410, 565, 571, 579, 582, 589, 612, 618, 635, 645, 664, 667, 681, 696, 699, 703, 711, 714, 716, 717, 718, 723, 732, 748, 770, 781, 783, 785, 897, 917, 927, 1128, 1234, 1246, 1251, 1255
animals, non-game 1241
Animas Valley 897
annelids 410
annual burning: management method 693
annual early fire 923
annual grassland 804
annual grasslands 830, 1017
annual pasture dry matter yields 372
annual plant biomass 796
annual rainfall 1015
annual rangeland 455
annual rangelands 501
annual vegetation 935
annual wool production 298, 299
annuals 356, 850, 940, 951, 972, 979
Anseriformes 732, 780
Anthoxanthum odoratum 360
anthropogenic 1236
anthropogenic activities 430
anthropogenic disturbance 968
anthropogenic factors 794
anthropogenic savanna grasslands 1094
Anthus pratensis (Motacillidae): farming and agriculture 717
Anthus trivialis 556
Antilocapra americana 563, 574
Antilocapra americana (Bovidae): farming and agriculture 783
Antilocapridae 574
Anura 635, 660
aphid management 156
Apocrita 612, 718
application methods 11
application rate 13, 25, 45, 98, 166, 236, 257, 271, 320, 409, 479
application rates 34
application timing 75
aquatic birds 157, 184, 647, 688, 1205
aquatic insects 205, 725, 737, 833, 1243
aquatic organisms 61
aquatic plants 61, 205, 509, 713, 882, 886, 904, 1038, 1205
aquifers 153
arable soils 95, 113
Arachnida 667, 917
arachnids 667, 917
Arapaho National Wildlife Refuge 676
arctic ecosystems 1074
Ardeidae 780
Argentina 76, 77, 491, 546, 557, 696, 703, 855
arid ecosystems 885
arid environment 847
arid environments 1115, 1173
arid grassland 897, 927
arid grassland faunal response to vegetation changes due to cattle grazing 927
arid grasslands 868
arid lands 444, 1046, 1073, 1146, 1173
arid rangelands 931
arid regions 1044, 1173
arid shrub grassland 696
arid zone 1077
arid zone grazing lands 1108
arid zones 513, 525, 854, 975
Aridisols 123
aridity 781
Aristida browniana 846
Aristida junciformis 1090
Aristida purpurea 1211
Aristida purpurea var. longiseta 1211
Aristida stricta 1159, 1285
Arizona 466, 579, 631, 657, 729, 783, 915, 927, 944, 1112, 1121, 1198, 1235
Arkansas 58, 1238
Arkansas: Howard County 590
Arkansas: Pike County 590
Arrenatheretum elatioris alopecuretosum 438
Artemisia 1126
Artemisia frigida 247
Artemisia tridentata 838, 1014, 1174
Artemisia tridentata ssp. tridentata 1190
Artemisia tridentata wyomingensis 988
arthropod communities 1242
Arthropoda: community structure 1187
Arthropoda: farming and agriculture 297
arthropods 159, 179, 182, 197, 210, 217, 221, 224, 263, 297, 314, 571, 589, 612, 667, 704, 718, 770, 917, 1187
artificial drainage system 1194
artificial regeneration 1279
Artiodactyla 574, 579, 645, 699, 711, 735, 783, 841, 934, 1128, 1129, 1264
Arundinaria 1100
arylsulfatase 80
ascending hierarchic classification 570
ash 1303
Asia 314
aspect 251, 759, 1049
aspect slope 361
Asphodelus aestivus 1125

Subject Index

- assemblage composition** 750, 1247
assemblage distribution 1247
assemblage diversity 584
assemblage structure 1245
assessments 444
associations 1234
atmosphere 533
atmospheric chemistry 291, 1226
atmospheric gases 1226
Atriplex 957
Atriplex canescens 475
Australasia 297, 410, 612, 667, 1065, 1246, 1255
Australasian Region 297, 410, 612, 667, 917, 1246, 1255
Australia 2, 99, 290, 297, 333, 433, 612, 660, 667, 917, 1065, 1227, 1228, 1246, 1255
Australia, Murrumbidgee R. 660
Australia, New South Wales, Llangothlin Lagoon 902
Australia, Queensland, Burdekin R. 515
Australia, Queensland, Charters Towers 515
Australia, Queensland, Great Barrier Reef 515
Australian Capital Territory 289
Austria 675
autumn 93, 290, 386, 419, 972, 1098, 1104
available forage 390
Avena barbata 947
Avena fatua 947
Avena sterilis 869
Aves 176, 213, 565, 574, 575, 582, 630, 664, 696, 717, 723, 732, 781, 785, 786, 813, 905, 1115, 1205, 1234, 1251, 1257
Aves: farming and agriculture 176, 213, 582, 1251
avian abundance 215
avian communities: bird counts, nest density, nest monitoring, reproductive success, riparian area livestock grazing impacts, species richness 215
avian diversity 1236
avian malaria 212
avifaunal composition 677
avifaunal recovery 677
Axonopus purpusii 941
aymara 1020
Aythya (Anatidae) 732
Baccharis pteranioides 1146
back barrier salt marshes 1060
bacteria 3, 39, 56, 116, 794
bacteria (Enterobacteriaceae) (Escherichia) 53, 56, 109
bacterial analysis 53
bacterial contamination 4, 412
bacterial transport 150
bahiagrass hay: animal feed 379
Baiomys taylori 758
Baja California Sur 714
Ballantrae 410
bank erosion 51, 63, 91, 144, 1168
bank structure 773
bankside management: applied and field techniques 177
bankside vegetation types 177
bare ground gradients 753
bare soil 926
bare soil frequency 826
barley 119
barrier reefs 515
basal area 1084
basal cover 1118
basal soil respiration [bsr] 534
basalt 30
baseline studies 44
basins 153, 726, 794, 833
Bauple State Forest 612
bays 1142
beech 1300
beef cattle 79, 105, 234, 242, 247, 339, 343, 344, 419, 478, 479, 522, 657, 851, 944, 952, 987, 1056, 1207, 1211
beef cows 237, 991
beef grazing 424
beef management program 62
beef: meat product 379
beef production 352
beetles 197
behavior 558, 595, 607, 640, 651, 665, 668, 701, 760, 1042, 1257
behavioral pattern 173
behaviour 579, 645, 917
behavioural sex differences 645
below ground biomass 795
below ground net plant productivity [bnpp] 795
benefit analysis 5
benefit of alternative livestock grazing strategies 785
benmore range 41
benthos 187, 436
best management practices 39, 103, 105, 144, 153, 1063, 1225
best management practices (bmpps) 452
best management practices grazing: methane production effects 379
between year correspondence analysis: analytical method 1152
between year variation 194
bibliographies 551
bibliography 551
bioaccumulation 291
bioassays 794
biobusiness 31, 110, 155, 286, 287, 328, 376, 443, 542, 824
biochem.] 665
biodegradation 113, 794
biodiversity 113, 168, 208, 219, 241, 250, 273, 281, 316, 325, 407, 437, 450, 585, 737, 794, 833, 878, 879, 882, 924, 978, 995, 998, 1017, 1040, 1055, 1062, 1065
biodiversity conservation 261, 315, 1110
biodiversity induction 974
biodiversity loss 955
biodiversity restoration 793
biogeochemical cycles 236, 247, 336, 339, 402, 808, 836, 900, 977
biogeochemistry 23, 464, 1226
biogeography 219, 581, 1239, 1242
biogeophysical properties 822
bioindicators 205, 794
biological activity in soil 15
biological control 242, 1292
biological diversity 61, 1093
biological effects 681
biological effects of livestock grazing 681
biological indicators 998
biological invasions 968
biological pollutants 69, 109
biological production 1007
biological value 800
biology 206, 702, 1242
biomass 15, 80, 125, 136, 175, 228, 277, 302, 343, 351, 395, 418, 422, 449, 481, 492, 508, 571, 573, 584, 596, 618, 628, 629, 655, 664, 719, 726, 776, 807, 838, 840, 855, 862, 867, 912, 924, 941, 991, 1001, 1016, 1028, 1055, 1098, 1108, 1114, 1117, 1125, 1158, 1166, 1202, 1205, 1211, 1218, 1219, 1220
biomass and community structure 635
biomass and foetal number 618
biomass growth 1079
biomass production 405, 429, 470, 924, 1007, 1135
biomass productivity 872
biomass reduction 953
biomass simulation 1005
biomass turnover rate 1015
biomass variation 853
biomass yield 1206
biometrics 714, 717
biophysical model: mathematical and computer techniques 299
biotic factors 205, 725, 1142
biotop 1257
bioturbation 539
birch 1300
birch forest area 1259
bird 566, 733, 1240
bird abundance 613
birds 176, 213, 374, 555, 558, 565, 575, 582, 605, 607, 609, 619, 630, 662, 664, 696, 701, 717, 723, 727, 732, 760, 781, 785, 813, 960, 1042, 1115, 1205, 1232, 1234, 1241, 1251, 1253, 1257
birds, passerine 1241, 1257
birds, shore 675
birds, water 780
bison 662, 879
Bison bison 662
black cottonwood 1220

- black grouse** 558
black-tailed godwit 675
blackbirds and cowbirds 1241, 1257
Blackfoot Clearwater Wildlife Management Area 654
Blarina hylophaga 767
blood 1238
Blue Mountains 1264
blueberry barrens 1248
BMP 14, 143, 357
body mass 194
body size 214, 492, 757
body weight 257, 966
bogs 291, 558, 1122
Bolivian Altiplano 1020
book chapter 24, 198, 573, 856, 891, 1002, 1272
Boolethana Station 667
Bos 1129, 1226
Bos bison (Bovidae): food plants 699
Bos indicus and B. taurus (Mammalia) grazing resources 735
Bos taurus 38, 141, 574, 575, 651, 665, 668, 755, 780, 834, 928, 1257
botanical composition 136, 166, 237, 245, 246, 247, 250, 257, 271, 275, 290, 294, 296, 302, 317, 319, 321, 322, 323, 325, 333, 346, 366, 368, 377, 384, 386, 388, 394, 395, 396, 406, 407, 415, 418, 419, 428, 430, 435, 437, 478, 528, 532, 573, 610, 655, 744, 808, 818, 821, 825, 830, 855, 860, 865, 866, 872, 876, 879, 888, 892, 909, 932, 933, 939, 940, 951, 963, 966, 970, 975, 976, 979, 983, 985, 998, 1007, 1016, 1040, 1055, 1056, 1075, 1081, 1087, 1091, 1098, 1112, 1114, 1140, 1144, 1157, 1159, 1165, 1166, 1167, 1177, 1178, 1191, 1203, 1204, 1206, 1207, 1209, 1210, 1211, 1213, 1218, 1219
botanical richness 281
Bothriochloa 481, 1211
Bothriochloa caucasica 1024
Bothriochloa edwardsiana 1210
Botswana 1019
Bou Hedma National Park 1187
Bouteloua 475
Bouteloua curtipendula 1211
Bouteloua gracilis 456, 528, 865, 985, 1016, 1107, 1218
Bouteloua spp. 1121
Bovidae 699, 783, 934, 1129
bowen ratio energy balance method: mathematical and computer techniques 470
boxironbark woodlands 1247
Brahman 799
breed differences 183, 316
breeding 675, 701
breeding activity 172
breeding areas 172
breeding bird communities 613
breeding community structure and populations in relation to sheep grazing 664
breeding habitat 212
breeding habitats 596
breeding places 202
breeding population density 763
breeding populations 664
breeding populations and community structure 664
breeding site 582
breeding sites 157, 688
breeding success 186, 688, 1115, 1257
breeding wader 222
breeding wader population 568
British Columbia 1299
British Isles 896
British Isles, England, Pennine Chain 291
British Isles, England, Pennine Mts. 291
broadleaf weeds 303
broadleaves 1270
broken leg model 1131
Bromus inermis 237, 319, 419, 478, 479, 972, 1126
Bromus mollis 947
Bromus rigidus 947
Bromus riparius 339, 478, 479, 972
Bromus tectorum 1099, 1190
brood 577, 1257
brood parasite livestock grazing associations 1234
brood parasitism 172, 576
Brooks County 645
brown-headed cowbird 577, 1257
browse nutritive quality 648
browse--Oregon 1124
browsing 887, 1104, 1182, 1264, 1267, 1291
browsing damage 1270
browsing effect on food plant growth 1264
browsing effect on plant growth 1264
browsing severity 1259
browsing timing 1259
brush burning: applied and field techniques 908, 1149
brush control 302, 1032, 1052, 1140, 1291
brush invasion [brush encroachment] 679
Bryopsida 317
Buck Island Ranch 225
Budapest 571
bulk density 6, 17, 33, 38, 58, 129, 346, 355, 472, 474, 483, 510, 520, 523, 526, 536, 537, 540, 1154, 1265
bulldozing 768
bunch grass 650
burning 246, 373, 435, 438, 639, 663, 684, 707, 873, 1080, 1086, 1097, 1120, 1136, 1159, 1285
burning effects 292
burning effects on terrestrial communities and conservation implications 1246
burning history 243
burning management 244, 805
burning practices: changes 849
burning regime 1255
burns 162, 551, 611, 640, 652, 662, 767
burrow patterns 636
bush clearing effects 860
bush encroachment response 860
Buskerud County 223, 224
Buteo lagopus 760
butterflies 183
C storage 1025
C4 plants 979
cadastral maps 382
Calamagrostis 919
Calamagrostis canadensis 807
calcareous fen characteristics 235
calcareous grassland 196, 440, 709
calcareous grassland habitat 1036
calcareous grasslands 366
calcareous grasslands: conservation, dry 1152
calcareous grasslands: diverse habitat, species rich habitat 261
calcareous springs 315
calcium 41, 71, 84, 185, 193, 428, 861, 1080, 1136
calcium ammonium nitrate 13, 236
calf 523, 1170
California 149, 468, 501, 659, 698, 724, 785, 830, 881, 919, 966, 1053, 1061, 1222, 1261, 1268, 1279, 1301
California grasslands 636
California: Sierra Nevada 668
California tiger salamander 814
Callipepla squamata 574, 669
Calluna vulgaris 420, 961
calves 237
calving rate 991
calving season 445
Canada 157, 237
Canada, Alberta 449, 547, 737
Canada, Alberta, Cypress Hills 449
Canada, Quebec 157
Canada, Quebec, St. Lawrence R., Varenne I. 184
Canada, St. Lawrence R. 157
Canis latrans 789
CANOCO 4.0: computer software 214
canonical correlation analysis 1170
canonical correspondence analysis: cca, mathematical and computer techniques 1110
canonical correspondence analysis: mathematical and computer techniques 614, 1155
canonical correspondence analysis: statistical method 214

Subject Index

- canopy** 161, 344, 434, 474, 475, 508, 610, 719, 764, 776, 838, 855, 888, 907, 932, 944, 1167
canopy cover 74, 679, 751
canopy coverage 1217
canopy growth 596
canopy height 782
canopy loss 1269
canopy shading 720
canopy structure 470, 819
canopy tree density 926
Capra hircus 673
Carabidae 166, 197, 221
Carabidae: community structure 221
Carabidae: farming and agriculture 197
Caraboidea 197, 221
carbofuran 155
carbohydrates 807, 1097
carbon 41, 45, 80, 86, 135, 136, 291, 405, 475, 478, 481, 513, 528, 532, 536, 540, 547, 808, 861, 972, 1025, 1114, 1277
carbon cycle 291
carbon dioxide 247, 291, 808
carbon dynamics 385
carbon nitrogen ratio 45, 540
carbon sequestration 86, 914
carbon sink 516
carbon storage 291
carcass weight 279, 1238
Carduus 396
Carex 247, 719, 886, 919, 1166
Carex aquatilis 816
Carex nigra 1170
Carex panicea 1170
Carex rostrata 919
carrying capacity 407, 451, 892, 946
Carthamus lanatus 375
case studies 1290
Cassia nemophila 839
catchment area 63, 515
catchment areas 53, 56, 63, 153, 515
catchment basins 153
catchment management 83
catchment soils 4
catchments 56, 153, 515
caterpillar 658
cation exchange capacity 16, 409
cattails 1205
cattle 3, 9, 10, 11, 40, 53, 54, 55, 56, 64, 65, 66, 76, 77, 84, 86, 87, 97, 106, 109, 118, 128, 132, 141, 144, 153, 154, 162, 163, 185, 189, 195, 199, 205, 264, 269, 275, 303, 356, 357, 359, 360, 361, 362, 375, 409, 415, 418, 432, 434, 442, 454, 462, 465, 468, 472, 476, 487, 493, 512, 514, 515, 525, 540, 541, 546, 564, 575, 599, 605, 609, 651, 655, 665, 668, 700, 713, 725, 729, 755, 779, 780, 789, 791, 807, 813, 816, 834, 854, 866, 869, 874, 881, 887, 900, 916, 928, 933, 949, 965, 966, 973, 975, 979, 983, 1021, 1053, 1068, 1087, 1097, 1098, 1104, 1129, 1157, 1167, 1168, 1175, 1189, 1209, 1213, 1217, 1218, 1222, 1235, 1238, 1257, 1279, 1287
cattle and sheep 858
cattle dung 12, 389, 867
cattle effects 1226
cattle exclusion 783, 1143
cattle feeding 403
cattle fever 765
cattle fever tick 765
cattle grazing 157, 218, 225, 263, 539, 582, 612, 625, 626, 629, 636, 671, 682, 696, 733, 883, 885, 1110, 1206, 1231, 1235, 1237, 1246, 1260
cattle grazing and associated burning 1255
cattle grazing and burning effects 1255
cattle grazing effects 589, 696, 917
cattle grazing effects on community structure 589
cattle grazing effects on habitat use within home ranges 579
cattle grazing effects on hill grassland soil communities 120
cattle grazing effects on soil fauna 917
cattle grazing: exclusion 1078
cattle grazing impacts 682
cattle grazing intensity 748
cattle grazing intensity effects 748
cattle grazing relationship 579
cattle grazing season 68
cattle grazing sequences 335
cattle husbandry 1267
cattle industry 150, 249, 306, 1240
cattle livestock 1029
cattle management 608
cattle management strategies 565
cattle management strategies applications 565
cattle manure 93, 96, 128, 236, 320
cattle performance 876
cattle production 610, 1160
cattle ranch 751
cattle removal 1115
cattle resource management 548
cattle (see also livestock) 141
cattle selectivity groups 1084
cattle stock intensity 996
cattle stocking 205, 1238
cattle stocking rate 172
cattle treading 12
Caudata 814
cell respiration 514
Cenchrus 983
census 558
census-survey methods 631
central colombian cordillera 891
Central Region 729
Centrocercus urophasianus 563
Centrocercus urophasianus (Phasianidae): farming and agriculture 723
Cerastium fontanum 416
Cervidae 579, 645, 711, 735, 841, 1128, 1264
Cervus 913
Cervus canadensis 651, 652, 665, 1097
Cervus canadensis (Cervidae): farming and agriculture 1128
Cervus elaphus 355, 563, 591, 640, 651, 655, 719, 841, 932, 1264
Cervus elaphus canadensis 741, 944
Cervus elaphus nelsoni 563, 608, 652, 665
Chaetodipus hispidus 758
chalk 174
chalk grassland 1171
chalk grasslands 759
chalk heath vegetation 581
chalk stream invertebrate communities 177
chalk streams 177
change 474
change in vegetation 577, 928
changes detrimental to wildlife 631
channel morphology 506, 1168, 1173
channel storage 452
channel types 773
channelisation 43
channelization 187, 569
channels 18, 43, 506
charters towers 917
chelicerates 667, 917
chemical analysis 1097
chemical composition 425, 513, 972, 1016
chemical constituents of plants 386, 807
chemical factors 297, 410
chemical limnology 61
chenopod shrubland 667
chenopod shrublands 667, 935
Cheyenne Bottoms Wildlife Area 1205
chi square 628
Chihuahuan desert grasslands: habitat 898
Chihuahuan semi desert grassland 1221
China 818, 848
chinook salmon 504
chironomidae 725, 726
chlorides 19, 20
Chondestes grammacus 559
Chordata 1129
chordates 176, 213, 223, 565, 579, 582, 618, 635, 645, 664, 696, 699, 703, 711, 714, 717, 723, 732, 735, 748, 781, 783, 785, 841, 897, 927, 934, 1128, 1187, 1234, 1251, 1255, 1256, 1264, 1284
Chrysothamnus nauseosus 1014
Chrysothamnus viscidiflorus 838

- Cichlasoma** 683
Cichlasoma nigrofasciatum 683
Cichlidae 683
Ciconiiformes 760, 780
Cirsium 396
Cirsium arvense 1021
Cladonia chlorophaea 1170
classification and regression tree analysis: mathematical and computer techniques 1164
classification model 145
clay 47
clay soils 502, 609
Clethrionomys glareolus 223
climate 128, 398, 431, 512, 604, 797, 1077, 1164, 1270, 1275
climate and weather 770
climate change 229, 385, 568, 849, 1284
climate tropics 1022
climates 128, 795, 1237
climatic changes 814
climatic condition 1024
climatic conditions 1193, 1208
climatic effects 372
climatic factors 50, 799, 854, 1006, 1116, 1207
climatic influence 441
climatic variation 1120
climatology 363
clipping impact 1151
clonal growth 235
clonal reproduction 864
clonality 819
closed canopy riparian woodlands 1143
closure 461
coarse particulate organic matter 926
coast range grassland: California annual grassland subtype 1164
coastal areas 231
coastal bend of Texas 653
coastal dune forest ground vegetation 1294
coastal dunes 585
coastal grassland 880
coastal meadow 748
coastal prairie 1164
coastal prairie community 811
coastal prairie plant community 1151
coastal sand dune system 1200
coastal sandplain 370
cocksfoot 341
Coconino County, Kaibab National Forest 1235
Coleogyne ramosissima 915
Coleoptera 159, 166, 197, 217, 221, 263
Coleoptera: farming and agriculture 263
coleopterans beetles 159, 217, 221, 263
Colfax County 1234, 1241, 1257
coliform bacteria 126
coliforms 3, 54, 55, 153
Colinus virginianus 160, 560, 609, 644, 669, 752
Collembola 210, 571, 704
Collembola: farming and agriculture 210, 571
colonization 1089
colonizing ability 1021
Colorado 520, 522, 527, 589, 733, 778, 808, 813, 1098, 1144, 1256
Colorado: Northcentral 1042
Colorado, USA 676
Columbia Basin 602
Columbia Basin pygmy rabbit 602
Columbiformes 574
combustion 291
commercial activities 120, 159, 176, 182, 197, 210, 213, 217, 223, 224, 225, 263, 297, 314, 410, 565, 571, 579, 582, 589, 612, 618, 635, 645, 667, 681, 696, 699, 703, 711, 714, 716, 717, 718, 723, 732, 748, 770, 781, 783, 785, 897, 917, 927, 1128, 1234, 1246, 1251, 1255
commercial enterprises 557, 602, 1235, 1238
commercial livestock ranching: applied and field techniques 826
common cuckoo 558
common gallinule 558
common garter snake 175
common lands 800
common moorhen 558
common nighthawk 630
common redshank 558, 675
common snipe 558
common teal 558
Commonwealth of Nations 1065
communal grazing area 860
communal grazing lands: grazing pressure, resilience 1111
communal livestock ranching: applied and field techniques 826
communal rangeland 451
communities 449, 557, 607, 630, 662, 1097, 1257
community 465, 1256
community change 942
community comparisons 1256
community composition 61, 175, 181, 187, 205, 660, 725, 786, 822, 833, 843, 1110, 1142, 1208, 1237, 1243, 1254
community composition and densities 410
community diversity 337, 414, 796
community dynamics 1118
community ecology 15, 596, 679, 829, 951, 1098
community function restoration 955
community impact 214
community response 1092
community structure 15, 113, 120, 159, 182, 197, 205, 210, 213, 217, 224, 225, 263, 297, 314, 410, 450, 571, 573, 589, 612, 629, 635, 664, 667, 676, 696, 718, 748, 831, 897, 917, 927, 1150, 1208, 1246, 1255, 1262, 1285
community structure development 955
community structure effects 748
community structure in intensively grazed pasture 221
community variability 194
commute distance 172
compaction 40, 129, 455, 971, 1226
comparative studies 794
comparison 1256
comparison of grazed and ungrazed grassland 1256
comparisons 1256, 1258
comparisons of grazed and ungrazed grassland 1256
compensation 844
compensatory growth 1015
competition 223, 404, 604, 651, 668, 680, 735, 844, 962, 1117, 1238, 1302
competition sensitive groups 382
competitive exclusion 993
complementary grazing 511
comprehensive zoology 785
comprehensive zoology: farming and agriculture 565, 681, 716
compression 658
computer software 550
concentrated defoliation 1015
concentration 449
condition 1238
conductivity 512
conifer oak forest 233
coniferous forests 1051, 1224, 1291
conifers 358
Connochaetes taurinus (Bovidae): food plants 934
consequences for migrants 1251
conservation 41, 159, 167, 168, 213, 233, 263, 345, 370, 373, 438, 499, 542, 552, 565, 602, 612, 634, 660, 711, 716, 723, 732, 754, 763, 781, 785, 814, 833, 834, 856, 882, 891, 918, 958, 1093, 1115, 1128, 1163, 1171, 1185, 1186, 1220, 1234, 1246, 1251, 1255, 1273
conservation area restoration 1034
conservation areas 1021, 1091
conservation aspects 711, 781
conservation benefit of alternative livestock grazing strategies 785
conservation biology 186, 204, 614, 679, 946, 1237
conservation buffers 149, 468
conservation concern 568
conservation guidelines
[conservation regulations] 835
conservation implications 213, 263, 693, 1234, 1255

Subject Index

- conservation land licensed** 996
conservation management 258, 259, 408, 710, 1179
conservation management: applied and field techniques 218
conservation measures 159, 213, 263, 565, 612, 711, 716, 723, 732, 781, 785, 1128, 1234, 1246, 1251, 1255
conservation practices 179, 1013
Conservation Reserve Program 179, 632, 756
conservation role of livestock grazing 711
conservation status 773, 1071
conservation strategies 835
conservation strategy 1250
conservation tillage 38
conservation value 953
contaminants 126
contamination 56, 65, 116
contamination level 416
continuous 460
continuous cropping 419
continuous grazed pastures 587
continuous grazing 272, 294, 425, 429, 519, 653, 859, 949, 1177, 1289
continuous grazing: applied and field techniques 262, 753, 847, 1083
continuous grazing: methane production effects 379
continuous grazing system 347
continuous resting 753
continuous stocking system: applied and field techniques 423
continuously grazed 1120
continuously grazed sites 753
contrasting management systems 140
control 246, 435, 757
control measures 381
controlled burning 358, 663, 684, 825
controlled grazing 21, 254, 352, 535, 890, 1141
conventional watering systems 110
conversion 1040
copper 71
coppice growth 923
correspondence analysis 570
correspondence analysis: statistical method 214
Coshocton wheel 62
cost 5, 1240
costs and returns 25, 1291
cottonseed meal and corn: animal feed 379
cottonwood trees 1274
cover 575, 631, 668, 798, 813
cover production 1126
cover types 614
coverage 474
cow 421, 523
cow weight gain 1005
cowbird management 576
cowbird removal programs 172
cows 130, 161, 250, 992
coyote 729
Crataegus douglasii 922
Crataegus monogyna 1303
creeks 773
Crenichthys baileyi baileyi 683
Crenichthys baileyi baileyi 512
Cricetidae 758
cricket 658
critical reviews 1131
critically endangered grassland habitats 804
crop damage 881
crop establishment 405
crop industry 2, 38, 188, 195, 286, 287, 305, 311, 327, 376, 387, 390, 443, 824, 901
crop intensity 267
crop production 256, 836, 919, 1100, 1183
crop quality 406
crop residue management 11
crop residues 11
crop rotation 311, 433
crop rotation: agronomic method 330
crop-weed competition 1026
crop yield 272, 1213
cropland landscapes 626
cropped land 845
cross-sections 506
crown 1104
crown volume 1220
crude protein 185, 312, 351, 388, 391, 415, 421, 425, 427, 432, 653, 719, 874, 1136, 1289
cryptogamic crust 1250
cryptogamic soil crust: community, condition 450
Cryptosporidium 547
Cryptosporidium parvum 468
cuckoo 558
Culicidae 205
cultivars 289, 442, 792
cultivated land habitat 176, 182, 197, 735, 1251
cultivated paddocks 12
cultivated soil 12
cultivated soils 534
cultivation 253, 1271, 1296
cultivation pressure 845
cultural control 209, 246
cultural measures 835
Cumberland Plain woodland: endangered ecological community, eucalypt regeneration, shrub regeneration 1095
curlew 558
current grazing 920
cutthroat trout 504
cutting 97, 100, 190, 245, 271, 366, 385, 418, 663
cutting date 258, 259
cutting effect 295
cutting impacts 78
cutting intensity 414
cutting management: applied and field techniques 241
cutting treatment: applied and field techniques 942
cyclical successional competition 1293
cycling 532, 1003
cycling nutrients 88
Cynodon dactylon 67, 86, 141
Cyprinidae 683
Cyrtonyx montezumae mearnsi 631
Dactylis glomerata 62, 152, 1287
Dactylis glomerata 128
daily volumetric soil water content 108
dairies 99, 128, 153
dairy cattle 276
dairy cow treading 12
dairy cows 25, 93, 271, 290, 396, 428
dairy farm management 25
dairy farming 8, 72, 96, 103, 250
dairy farms 146
dairy pasture 328
dairy pastures 411
dairy slurry: feces, urine 151
damage 672, 834
damage [forest] 928
damming 544
damselflies 737
dark-eyed junco 1235
data collections 53, 1226
dataset: spatially replicated, temporally replicated 1164
DCA 1282
death 1274
deciduous forests: habitat 1237
decomposition 1072
deer 1261
deer, mule 599, 603, 729, 798
deferred-grazing 284
deferred rotation 460, 523, 608
deferred-rotation-grazing 276, 986
defoliation 265, 313, 353, 405, 817, 985, 1117, 1166
defoliation regime 1015
defoliation regime: animal grazing 240
deforestation 71, 803
deformation 47
degradation 720, 794, 797, 888, 929, 977, 1019
degraded grassland ecosystem 534
degraded sandy grassland 1030
degraded woodland: regeneration 1105
dehesa grassland 864
demographic parameters 1237
demography 622
Dendroica petechia 676, 790
denitrification 50, 100, 147
Denmark 63, 210, 618, 748

- Denmark, Skallingen 858
dense nesting cover 157
density 65, 559, 577, 687, 1205, 1267
depleted range 1024
deposition 817
depth 364, 713
Deschampsia cespitosa 919
desert cienaga 634
desert ecosystem 796
desert grassland 768, 1057
desert grasslands 1193
desert habitat 664, 718
desert tortoise research natural area 796
desert xperimental range 664
desertification 505, 531, 534, 637, 768, 840, 931, 955, 1030, 1133, 1215
desertification--control--congresses 943
desertification reversal due to livestock watering 781
desertified arid grasslands 1181
deserts 623, 638, 729, 850, 903, 1006, 1017, 1198
design 1131, 1290
deterioration 1019
detrended correspondence analysis 1170
detrended correspondence analysis: mathematical and computer techniques 864
detrended correspondence analysis: statistical method 1200
detritivore 570
Developed Countries 1017, 1065, 1129
development 635
diameter 1104, 1299
Diantho-Armerietum 1123
diaspore inoculation: applied and field techniques 1127
dicotyledon 332
Dicotyledon propagule 1118
dicyandiamide 89
diet 176, 223, 224, 635, 699, 703, 711, 735, 783, 841, 934, 1187, 1264
diet composition 594
diet quality 193
diet related habitat use 176
dietary composition and sympatric species overlap 735
dietary fiber 391, 415
dietary mineral supplements 79, 428
dietary structure and selectivity implications 735
dietary supplements 992
difference equation: mathematical and computer techniques 596
differential grazing effects 844
diffusive conductivity 1096
digesta 344
digestibility 351, 388, 406, 421, 591, 653, 807, 874, 1278
Digitaria cognata 1210
Diplachne serotina 1023
Dipodomys merriami 758
Dipodomys spectabilis 623
Diptera 224, 833
Diptera: farming and agriculture 159
dipterans true flies 159
direct drilling 254
direct gradient analysis 216
direct impacts of cattle grazing 582
direct impacts on nesting success 582
directed succession 1127
direction manipulation 1190
disappearing species 891
discing: tillage method 330
discrete time stochastic compartment model: mathematical and computer techniques 596
disease transmission 268
dispersal 190
dispersion 668
dissolved organic carbon 23
dissolved organic matter 23
dissolved oxygen 713
dissolved oxygen content 512
distance statistics 229
distribution 845, 994, 1064, 1219
distribution within habitat 197, 314, 770
distributional communities 314
disturbance 212, 652, 962, 1039, 1274
disturbance by man 120, 159, 176, 182, 197, 210, 213, 217, 223, 224, 225, 263, 297, 314, 410, 565, 571, 579, 582, 589, 612, 618, 635, 645, 667, 681, 696, 699, 703, 711, 714, 716, 717, 718, 723, 732, 748, 770, 781, 783, 785, 897, 917, 927, 1128, 1234, 1246, 1251, 1255
disturbance dependent ecosystem 1151
disturbance factors: fire, grazing 1263
disturbance history 253
disturbance rate 784
disturbance regime 811
disturbance regimes 584
disturbance responses 382
disturbance severity 567
disturbance tolerance 622, 1093
disturbances 557, 602, 1235, 1238
disturbed land 164, 1296
disturbed soils 26, 540
diurnal variation 257, 810
diversity 687, 754, 817, 834, 859, 1015, 1028
diversity mapping 420
documentation 681, 723
Dolly Varden trout 504
dolomite 147
domestic goat 673
domestic herbivore browsing 1259
domestic livestock 216
domestic sheep 558, 896, 928
domestic stock removal 1034
dominance 1050
dominant species 157, 205, 1202
douglas fir 1261
douglass fir 1300
downward movement 26
dragonflies 737
drainage 23, 93, 99, 153, 407, 485, 568, 1194, 1216
drainage lysimeter: equipment 151
drainage water 23, 67, 81, 126
drainage water: nitrate concentration 146
drinking 105
drinking water 66, 468, 975
drinking water standard 151
drought 469, 552, 751, 819, 847, 903, 946, 1006, 1007, 1056
drought conditions 898
drought resistance 819
droughts 941
dry dune grassland 958
dry environmental conditions 77
dry eucalypt forests 1245, 1246
dry eucalypt forests management 1246
dry grasslands: habitat 214
dry matter 312, 405
dry matter accumulation 75, 321, 939
dry matter digestibility 1136
dry season 983, 1069
dry weight biomass 773
dryland river 926
dual porosity contaminant transport model macro: mathematical and computer techniques 92
ducks 157, 647
dung 420
dung density 450
dung patches 35
dung unit density 490
dunging 1015
duplex soils 457
dupuyer 841
duration 343, 991
dusky seaside sparrow 162
dynamic models 848
dynamic simulation model: mathematical and computer techniques 424
early postfire regeneration 883
early succession 784
earthworm 658
earthworm number 328
earthworm species composition 328
earthworms 9
east central 703
Eastern Cape, South Africa 875
easy access 1283
ecological 715

Subject Index

- ecological adaptations** 710
ecological balance 854
ecological benefit 852
ecological compensation measures 281
ecological competition 1291
ecological condition 960
ecological conditions 1109
ecological differentiation 686
ecological diversity 211
ecological effects 720
ecological energetics 318
ecological function 402
ecological heterogeneity 853
Ecological implications of livestock herbivory in the west 1017
ecological invasion 1041
ecological measures 835
ecological niche 703
ecological potential 920
ecological restoration 403, 1046, 1109
ecological stability 908
ecological succession 858, 932, 933, 939, 997, 1021, 1087, 1158, 1172, 1198, 1202, 1203, 1204, 1211
ecology 120, 159, 175, 176, 182, 197, 206, 210, 211, 213, 217, 221, 223, 224, 225, 263, 297, 314, 358, 363, 410, 451, 569, 571, 579, 582, 589, 600, 604, 612, 618, 635, 652, 664, 667, 696, 699, 702, 703, 714, 718, 732, 735, 748, 770, 781, 783, 841, 897, 917, 927, 934, 1044, 1173, 1185, 1186, 1187, 1223, 1242, 1246, 1251, 1255, 1256, 1264
economic analysis 396
economic aspects 88
economic conditions 946
economic entomology 155
economic impact 402, 848
economic measures 835
economics 315, 1240, 1259
ecophysiology 29
ecosystem 665
ecosystem changes 822
ecosystem disturbance 51, 61, 175, 725, 737, 886, 1243
ecosystem function 1045
ecosystem integrity 885
ecosystem level model 1005
ecosystem management 175, 402, 1205
ecosystem productivity 853
ecosystem recovery: mechanisms, scales 1131
ecosystem resilience 797
ecosystem restoration 1197, 1220
ecosystem stability 243, 819
ecosystems 199, 430, 557, 575, 602, 607, 630, 662, 675, 767, 780, 794, 803, 834, 854, 907, 925, 1008, 1010, 1042, 1053, 1112, 1122, 1134, 1238, 1257
ecotones 907
ecotoxicology 4, 83, 1002
edaphic characteristics 920
edaphic feature 353
effect of cattle grazing 589
effect of livestock grazing 703, 718, 1251
effect of trampling by cattle 159
effect on river bank species diversity 159
effects 431, 697, 1239, 1242, 1270
effects of agricultural management 176
effects of cattle grazing 120
effects of fertiliser and grazing 297
effects of fertiliser and grazing on community structure 297
effects of fertiliser and grazing on native grassland community structure 297
effects of grazing and landscape 571
effects of grazing and vegetation 770
effects of grazing intensity 618
effects of large scale cattle grazing 314
effects of livestock grazing 217
effects of livestock grazing systems 732
effects of sheep grazing 664
effects of sheep grazing pressure and landscape 571
effects of sheep grazing pressure on egg size and reproductive productivity 717
effects on 121, 757, 786, 858, 904
effects on egg size and reproductive productivity 717
effects on habitat use 176
effects on native grassland community structure 297
effects on population dynamics 618
effects on small taxa community structure 1255
effects on terrestrial communities and conservation implications 1246
efficient beef production strategies 379
egg 577, 717, 1257
egg deposition 209
egg size 717
egg survival 195
Eire, Connaught, Mayo 833
electric fishing 757
electrical conductivity 71, 471, 478
elemental sulfur 135
Eleocharis 919
Eleocharis acuta 902
elevation 894
elk 599, 651, 665, 1097
elkhorn 608
elm 1005
Elymus hystrix 1190
Elymus lanceolatus 1016
Elymus trachycaulus 1166
Elytrigia intermedia 1190
Elytrigia smithii 1190
Elytrigia spicata 1190
Emberiza citrinella 556
Emberizidae 696
Emberizidae: farming and agriculture 696
embryo number 618
emergent vegetation 737
Emigration Canyon 798
emission 49
Empidonax traillii 676, 790
Empidonax traillii (Tyrannidae) 785
enclosures 1202
enclosures and exclosures 603
endangered 602
endangered fish 512
endangered plant 412
endangered species 162, 621, 639
endangered status 159
endemic species 882, 979, 1075
endemism 835
energy budget 470
energy content 388, 415
energy intake 991
England 113, 159, 176, 217, 829, 900
Enneapogon 983
Enterococcus 54
Entisols 47
environment management 69, 157, 671, 1115, 1142, 1205, 1228, 1243
environmental assessment 525
environmental condition 477, 559
environmental conditions 398, 666, 947
environmental conservation 534
environmental degradation 83, 352, 663, 722, 774, 809, 925, 961, 978, 982, 983, 1023, 1086, 1134
environmental disturbance 1237
environmental effects 109, 205, 436, 449, 720, 786, 814, 1001, 1168, 1173
environmental factors 389, 660
environmental factors: fire, grazing 1095
environmental fate 149
environmental fluctuation 968
environmental gradients 1199
environmental heterogeneity 968
environmental impact 8, 10, 47, 51, 61, 72, 90, 114, 129, 142, 154, 402, 449, 493, 547, 666, 671, 688, 814, 858, 882, 885, 886, 887, 904, 945, 1001, 1006, 1007, 1038, 1041, 1044, 1063, 1066, 1098, 1102, 1133, 1168, 1173, 1253, 1275
environmental indicator significance 718
environmental indicators 718
environmental law 1240
environmental management 728, 835, 836, 1062

- environmental pollution** 92
environmental protection 187, 494, 835, 1006, 1240, 1270
environmental quality 56, 81, 153, 449, 542, 1066
environmental restoration 506, 1038
environmental stress indicators 768
environmental sustainability 1133
environmental transport 131
environmental variables 614, 753
environmental indicator significance 718
enzyme activity 80
Ephemeroptera 725
Epilobium angustifolium 807, 1299
equations 848
equilibrium and non equilibrium theory 451
equilibrium dynamics 946
equilibrium ecosystem 1077
equilibrium grazing model: mathematical and computer techniques 1135
equilibrium theory 1078
Equus caballus 780, 928
Eragrostis 812
Eragrostis eriopoda 846
Eragrostis intermedia 1121
Eremophila 610
Eremophila alpestris 559
Erica tetralix 420
Eriophorum angustifolium 1170
Erodium botrys 947
Erodium cicutarium 947
erosion 22, 43, 87, 112, 118, 119, 412, 453, 454, 465, 469, 485, 486, 493, 506, 519, 521, 531, 539, 722, 867, 1003, 1129, 1229
erosion control 11, 105, 144, 666
erosion rates 444, 1228
Escherichia coli 53, 56, 69, 109, 117, 126
establishment 1296
estimation 15
Ethiopia 487, 1001
Ethiopian highlands 499
ethology 652
eucalypt forests 1255
eucalypt woodlands: habitat 1110
Eucalyptus populnea 1227
Eurasia 176, 182, 197, 210, 223, 224, 314, 618, 717
Eurasian cuckoo 558
Eurasian curlew 558
Eurasian oystercatcher 558
Europe 120, 159, 176, 182, 197, 210, 217, 223, 224, 263, 558, 571, 618, 675, 717, 748, 1055, 1066, 1122
European cuckoo 558
European curlew 558
European golden-plover 558
European grey cuckoo 558
European oystercatcher 558
European rabbit 896
European Union 1062
European wheatear 558
European whinchat 558
eutrophication 87, 205
evaluation criteria 800
evaporation 17, 138
evapotranspiration 470, 476
evapotranspiration rates 108
evenness 832
ewes 939, 1301
exchangeable calcium 71
exchangeable cations 58
exchangeable magnesium 71
exchangeable potassium 71
exchangeable sodium 71
exclosure 506, 870, 1030, 1189, 1193, 1216
exclosure experiments 492, 968
exclosure plot method: applied and field techniques 1095
exclosures 1058, 1217
exclusion regime 584
excreta 66, 409, 900
excretion 8, 56, 128, 353
excretory products 128
exotic species 404
exotic species richness 993
exotic species spread 956
experiment 673
experimental data 53, 1168
experimental design 1055
extensification 371
extensive farming 166, 1055
extensive management 371
extinction 687
Fabaceae 396, 415, 1100
facilitative ecosystem interactions 883
faecal analysis 735
faeces 817
fall 1097
fall burning 880
fall grazed areas 1070
fall grazing management: agronomic method 334
fallow 251
farm management 19, 20, 199, 353, 1066
farm planning 1033
farm profitability 511
farm size 25
farm wastes 19, 20
farming and agriculture 557, 602, 1235, 1238
farming industry 353
farming practices 190
farming systems 206, 836, 1082, 1258
farmland 558, 1024, 1248
farmland bird communities 194
farmlands 200
farms 44, 128
fat 1238
fate of pollutants 19, 20, 141
fauna 183, 998
fauna change 750
fawn 698
fawn hiding cover and forb availability on rangeland in response to cattle exclusion 783
FC 54
faecal coliform 14
faecal coliforms 3, 53, 54, 55, 153, 544
faecal contamination 468
faecal cuticle analysis: analytical method 594
faecal flora 154
faecal microflora 54, 55
faecal nitrogen 350
faecal streptococci 544
feces 3, 54, 56, 126, 468
federal programs 474
feed industry 1240
feed intake 991, 1068
feed quality 340
feed scarcity 399
feed supplements 296, 991
feeding 62, 173, 575, 651, 665, 673, 1121
feeding behavior 590
feeding behaviour 176, 223, 250, 579, 703, 735, 814, 882, 934, 1168, 1234, 1264
feeding efficiency 193
feeding habits 250
feeding method 599
feeding preference 170
feeding preferences 351, 961, 1140, 1165, 1299
feedlots 343
female 328, 729, 778
femur 1238
fen meadow 235
fen meadows: habitat 208
fenceline contrasts 750
fences 122, 144, 599
fencing 377, 392, 638, 757
fencing: applied and field techniques 204
fencing effect 1288
fermentation: methane production 379
ferrallitic soils 228
fertility 332, 577, 928, 1257
fertilization 41, 141, 318, 652, 873
fertilization: applied and field techniques 73, 204, 240, 241, 288, 408, 1093
fertilization regime 240
fertilizer 27, 28, 100, 135, 258, 259, 387, 652, 1295
fertilizer application 25, 42, 95, 113, 279, 332, 704, 1055
fertilizer application and grazing 297
fertilizer application: field method, pasture management method 393
fertilizer applications: restoration strategy 862
fertilizer management 57
fertilizer rates 1055

Subject Index

- fertilizers** 11, 23, 96, 99, 123, 125, 132, 141, 251, 407, 1202
fertilizers and pesticides 297
fescue 1097
fescue prairie grazing regimes 567
Festuca 234, 973, 1213
Festuca altaica 655
Festuca arundinacea 62, 141, 234, 442
Festuca campestris 963
Festuca dertonensis 947
Festuca idahoensis 608, 719, 937, 988
Festuca megalura 947
Festuca rubra 319, 416
Festuca scabrella 608
Festuco-Brometea 1127
fiber content 388, 428
fibre 312
field experiment: applied and field techniques 36
field experiment: experimental method 567
field experimentation 113, 434
field method 427, 621, 958
field scale effects 190
field studies 822
field survey: applied and field techniques 1069
filter strips 149, 522
financial variable 424
fine particle suspension 114
finishing 343
Finland 325, 763
fire 291, 552, 612, 652, 853, 897, 1037, 1179, 1205, 1236, 1246, 1247, 1255
fire and livestock grazing effects 897
fire and livestock grazing effects on abundance and diversity 897
fire causes 1134
fire danger 1134
fire dominated rangeland system 981
fire driven rangeland system 981
fire ecology 1099
fire exclusion 1247
fire fighting 1140
fire frequency 596, 1236
fire intensity 1236
fire management and cattle grazing effects 612
fire management and cattle grazing effects on communities 612
fire: prescribed burn 863
fire regimes 923
fire response 1071
fire suppression 1236, 1275
fires 162, 373, 551, 611, 640, 652, 662, 663, 767, 879, 1146
firewood extraction 1237
fish 512, 569, 713, 1043
Fish and Wildlife Service 1240
fish habitat 504
fisheries 504, 722, 774, 1290
fishery management 666, 720
fishes 715
Flint Hills 699
flood flow 53
flood histories 899
flood irrigation: applied and field techniques 78
flood plains 660
flooded conditions 76, 77
flooding 546, 660, 684, 833, 899, 904, 968
Flooding Pampa 546
floodplain grasslands: habitat 492
floodplain habitat 899
floodplain habitats 899
floodplain rivers 1109
floodplain woodlands: habitat 1254
floodplains 663, 850, 1098
floodplains grazing systems 198
floods 53
floods and flooding 53
flora 317
Florida 162, 225, 305, 874, 1159
floristic composition 1118, 1262
floristic gradients 1108
floristic variation 1110
floristics 277, 870, 956, 1179, 1282
flowering 242
flowing waters 569
fluorescing bacteria 544
fluvial 1274
fluvial morphology 488, 494, 720
focal animal sampling: sampling method 173
fodder plants 119, 206, 246, 294, 702
foliar cover 880
food 265, 611, 668, 673, 726, 896, 928, 1238
food abundance 211
food availability 176, 223, 633, 703, 783, 946
food competition 1238
food habits 599, 603, 729
food item 427
food plants 223, 224, 703, 711, 783
food preferences 703, 735
food resources 211
food selectivity 238
food supply 590, 599, 631, 701, 752, 994, 1097, 1238
food web 1050
food webs 61
foods 575, 651, 665, 673
forage 119, 185, 242, 256, 271, 279, 290, 339, 343, 391, 396, 402, 409, 415, 442, 563, 719, 799, 855, 874, 912, 919, 939, 985, 992, 1098, 1159, 1165, 1207, 1209, 1213, 1277, 1278
forage availability 315, 1069
forage availability time 845
forage crop 286, 287, 341
forage crops 289, 952, 965
forage cutting: harvesting method 349
forage deficit 1029
forage grasses 275, 375, 1277
forage growth models 1107
forage intake 390
forage legumes 274, 289, 375
forage management 608
forage production 402, 921, 1190, 1265
forage production management 470
forage productivity 1052
forage quality 245, 249, 351, 976, 1166
forage resource availability 784
forage resources 999
forage systems 108
forage yield 857
forages 141, 153
foraging 176, 202, 207, 223, 351, 389, 579, 604, 703, 934, 1060, 1233, 1264, 1267
foraging activity 172
foraging behavior 232
foraging behaviour 300
foraging habitat use 176
foraging height data 740
foraging selectivity 193
forb biomass 796
forb density 863
forbs 9, 147, 319, 434, 533, 655, 979, 1167, 1211
forest 922, 1235, 1257
forest and woodland 612, 1246, 1251, 1255
forest composition 1262
forest ecology 722
forest fires 1134, 1146, 1275
forest fragment 552
forest fragmentation 1239, 1242
forest grazing 220
forest grazing land 928
forest habitats 1272
forest health 1275
forest industry 142
forest litter 1239, 1242
forest management 613, 722, 1238, 1296
forest plant community 1271
forest plantations 591, 1275, 1287, 1301
forest regeneration 248, 1061
forest soil 1231
forest soils 136, 1223
forest structure 1262
forest trees 1242, 1270
forest type 1260
forest watersheds 1228
forested floodplain 899
forested watersheds 504
forestry 83, 1276
forestry practices 358
forests 69, 1062, 1160, 1238, 1239, 1242, 1299
former agricultural land 942

- former uranium mill site** 906
Formicidae 612, 718
Formicidae: farming and agriculture 612, 718
Formicoidea 612, 718
fragmentation 1239, 1242
framework ordination: analytical method 1194
France 182, 351, 933, 1202
France, St-Malo Gulf, Mont-St-Michel Bay 1142
Fraxinus excelsior 317, 1303
free draining lismore stony silt loam: udic haplustept loamy skeletal 146, 380
free-living nematodes 9
frequency 815, 817, 859, 879, 938, 970
freshwater crustaceans 205
freshwater ecology 83, 542
freshwater environment 454
freshwater environments 69, 187, 205
freshwater fish 720
freshwater habitat 635
freshwater pollution 10
Fringillidae 162, 1257
frogs 660, 960
fruit production 820
FS 54
fuel reduction 1247
fulvic acids 533
functional analysis: applied and field techniques 440
functional trait 864
functional types 1208
functional vegetative traits 806
fungal communities 894
Fussing Manor 618
gadwall 157
Galliformes 565, 574, 575, 723, 775
Gallus gallus domesticus 141
gambel oak 1186
Gambusia 683
Gambusia affinis 683
game, big 599
game ranching: applied and field techniques 826
gap replacement 1303
gas exchange 247, 808, 1226
generalist 676
generative regeneration 1123
genetic analysis 794
genetic diversity 794, 1040
genetics 794
genotype 1117
geobotany 896
geographical distribution 702, 1066
geographical information systems 550
geography 18
geology 515
geomorphology 43, 51, 541, 1131, 1274
Georgia 136, 160
Georgia (Asia) 314
geostatistical analysis: mathematical and computer techniques 822
geostatistics 139, 491
Geothlypis trichas 1233
Geranium 829
Germany 182, 197, 263, 997
germination 1175
germination rate 331
germplasm 792
Giardia 547
glazed grassland 23
Glen Finglas 717
gleyed brunisolic gray luvisol loam 33
global warming 380
global warming potential 1096
globulin 1238
Glomus ambisporum 873
Glossata 182
glucose 1238
Glyceria maxima 886
glyphosate 396
gnatcatchers 1241
goat 1125
goats 434, 465, 514, 949
golden plover 558
goose dropping density 782
government agency 499, 1240
GPS 357
grain protein 254
grain size 61
graminoids 147
GRASP: dynamic tree growth population inclusion, gas emission component inclusion, modeling method, pasture production model 849
grass 333, 359, 579, 669, 1240
grass basal area 394
grass buffers 74
grass competition 923
grass composition 954, 1071
grass cover 1054
grass cutting 280
grass density 1212, 1288
grass dynamics 1057
grass encroachment 958
grass growth model: mathematical and computer techniques 92
grass pastures 483
grass productivity 427
grass quality 427
grass reseeding 1024
grass sward 295, 368, 405, 437
grass swards 350
grasses 44, 99, 317, 322, 396, 603, 764, 850, 855, 912, 977, 1097, 1154, 1167, 1211, 1299, 1301
GrassGro model: mathematical and computer techniques 511
grasshopper sparrow 630
grasshoppers 183
grassland 120, 164, 176, 182, 189, 210, 213, 217, 221, 223, 224, 225, 263, 297, 314, 410, 473, 559, 571, 577, 579, 582, 589, 631, 649, 696, 699, 711, 723, 735, 748, 770, 781, 805, 841, 897, 927, 934, 974, 1018, 1251, 1256, 1295
grassland birds 1248
grassland colonization 252
grassland community responses to livestock grazing 217
grassland community structure 589
grassland diversity 853, 1071
grassland ecology--congresses 943
grassland ecosystems 682
grassland habitat 835, 956
grassland habitat restoration 414, 942
grassland herbage yield 892
grassland hydrology 1001
grassland improvement 251
grassland invertebrate assemblage 581
grassland management 123, 192, 238, 250, 269, 295, 296, 352, 366, 368, 405, 407, 425, 429, 469, 474, 568, 614, 615, 639, 663, 672, 684, 692, 697, 722, 759, 825, 982, 998, 1023, 1065, 1067, 1129, 1219
grassland management regime 245
grassland management treatment effect on orchard community structure 197
grassland oak savanna 751
grassland pattern effects 382
grassland plant community 841
grassland productivity 567
grassland recovery 955
grassland restoration 1151
grassland size effects 382
grassland soil community structure 120
grassland soil habitat 120
grassland soils 13, 15, 26, 42, 45, 47, 49, 58, 66, 113, 125, 136, 228, 236, 395, 409, 456, 481, 513, 534, 682, 704, 929
grassland vegetation recovery 534
grasslands 23, 32, 42, 49, 58, 61, 75, 88, 95, 112, 119, 120, 122, 123, 129, 132, 166, 191, 201, 206, 231, 246, 250, 251, 260, 272, 275, 294, 296, 336, 346, 352, 366, 368, 402, 403, 405, 407, 408, 425, 435, 449, 468, 469, 475, 485, 491, 496, 507, 513, 519, 529, 531, 532, 533, 546, 550, 557, 575, 602, 615, 619, 623, 626, 638, 639, 662, 663, 672, 684, 692, 697, 702, 710, 722, 727, 759, 767, 803, 809, 825, 831, 859, 868, 869, 903, 907, 924, 929, 945, 970, 978, 982, 986, 998, 1007, 1017, 1023, 1025, 1049, 1055, 1062, 1065,

Subject Index

- grasslands (contd.)** 1066, 1067, 1082, 1086, 1100, 1119, 1129, 1134, 1164, 1177, 1198, 1203, 1210, 1219, 1229, 1258, 1289
grasslands--congresses 943
grasslands: habitat 315, 693
grasslands--management--congresses 943
grasslands species diversity 1042
grassy semi arid shrubland 1015
grassy woodland 910
grassy woodland remnants 1250
gravimetric soil moisture 38
grazed and ungrazed grassland 1256
grazed and ungrazed grassland communities 1256
grazed cropland 12
grazed dairy pasture 50
grazed dairy pasture systems 146
grazed dairy pastures 372
grazed farmland: habitat 212
grazed grassland 81, 94, 1284
grazed grasslands 843
grazed landscape 168
grazed mixed grass prairie 470
grazed paddock 146
grazed pasture 114
grazed pasture systems 380
grazed permanent pasture 329
grazed semiarid rangeland:
greenhouse gas source 849
grazed western wheatgrass stand 470
grazed woodlands: dynamics, greenhouse gas emissions 849
grazer 265, 345, 1220
grazing 1, 6, 7, 8, 10, 11, 13, 15, 16, 17, 18, 19, 20, 22, 23, 25, 26, 27, 28, 29, 31, 32, 34, 36, 41, 42, 43, 44, 45, 47, 49, 51, 52, 55, 56, 58, 62, 66, 70, 75, 76, 77, 85, 88, 89, 93, 95, 96, 100, 102, 103, 106, 109, 111, 113, 117, 118, 119, 121, 122, 123, 125, 128, 129, 132, 136, 140, 141, 144, 149, 153, 155, 157, 160, 162, 177, 179, 185, 187, 189, 190, 192, 201, 202, 205, 206, 208, 210, 211, 222, 231, 232, 234, 239, 241, 242, 245, 246, 248, 250, 252, 253, 256, 257, 258, 259, 260, 266, 268, 272, 273, 274, 275, 276, 277, 289, 290, 291, 294, 296, 302, 312, 316, 320, 321, 322, 323, 328, 336, 345, 346, 352, 356, 357, 358, 366, 368, 371, 373, 377, 383, 385, 386, 389, 391, 392, 394, 395, 396, 402, 403, 405, 406, 407, 408, 414, 422, 432, 435, 437, 442, 444, 446, 448, 449, 453, 454, 456, 457, 461, 462, 464, 468, 474, 475, 476, 481, 482, 486, 487, 488, 494, 495, 496, 502, 506, 507, 510, 513, 515, 519, 520, 521, 522, 524, 525, 526, 528, 529, 531, 532, 533, 538, 541, 542, 546, 550, 551, 552, 555, 558, 560, 563, 564, 569, 572, 573, 576, 577, 585, 590, 591, 595, 599, 600, 603, 604, 605, 606, 607, 609, 611, 615, 619, 623, 627, 630, 631, 638, 639, 640, 642, 643, 647, 651, 652, 657, 662, 663, 665, 666, 668, 671, 672, 673, 675, 683, 684, 688, 689, 690, 692, 697, 700, 701, 702, 704, 707, 713, 719, 720, 722, 724, 725, 727, 729, 737, 741, 744, 751, 757, 760, 764, 766, 767, 768, 769, 771, 774, 777, 779, 780, 786, 792, 794, 797, 798, 799, 801, 803, 804, 807, 808, 813, 814, 817, 819, 825, 827, 828, 829, 830, 833, 834, 835, 836, 840, 843, 845, 848, 849, 850, 851, 853, 854, 858, 859, 861, 866, 867, 868, 871, 873, 874, 879, 881, 882, 886, 887, 888, 893, 898, 899, 900, 902, 903, 904, 907, 911, 915, 924, 925, 929, 932, 933, 936, 937, 939, 941, 944, 945, 950, 951, 952, 955, 956, 957, 958, 961, 963, 965, 966, 970, 973, 978, 981, 982, 985, 986, 987, 990, 991, 992, 994, 996, 998, 1000, 1001, 1003, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1017, 1018, 1019, 1021, 1023, 1025, 1026, 1027, 1029, 1030, 1032, 1033, 1038, 1039, 1040, 1043, 1044, 1047, 1048, 1049, 1053, 1055, 1058, 1060, 1061, 1062, 1065, 1067, 1068, 1077, 1080, 1081, 1082, 1086, 1087, 1089, 1091, 1092, 1093, 1097, 1098, 1099, 1100, 1104, 1112, 1113, 1117, 1119, 1120, 1121, 1122, 1129, 1133, 1134, 1136, 1137, 1140, 1142, 1143, 1144, 1146, 1151, 1152, 1154, 1157, 1158, 1159, 1160, 1161, 1162, 1165, 1168, 1172, 1173, 1174, 1177, 1182, 1193, 1194, 1198, 1200, 1202, 1204, 1205, 1209, 1210, 1213, 1214, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1230, 1235, 1239, 1241, 1242, 1243, 1250, 1253, 1254, 1257, 1258, 1266, 1267, 1269, 1270, 1271, 1274, 1275, 1276, 1277, 1278, 1279, 1287, 1289, 1290, 1291, 1294, 1296, 1299, 1301
grazing abandonment 864
grazing and burning effects and conservation implications 1246
grazing and burning effects on terrestrial communities implications 1246
grazing and burning effects on terrestrial taxa and conservation implications 1246
grazing animal 1079
grazing: applied and field techniques 864
grazing behavior 204, 283, 492, 968, 1245
grazing behaviour 550, 638, 705
grazing capacity 875
grazing cessation 404, 439, 1156, 1195
grazing conditions 92
grazing control 1215
grazing dairy cow excreted nitrogen deposition: environmental impacts 92
grazing date 284
grazing density 131
grazing disturbance 280
grazing dominated rangeland system 981
grazing duration 465
grazing: economics, management method, practicability, regulations 261
grazing effect 235, 295, 400, 1288
grazing effects 194, 292, 298, 299, 367, 501, 596, 622, 876, 1001, 1007, 1141, 1208
grazing effects: microclimate, plant cover, soil 964
grazing effects on grassland communities 217
grazing enclosures 993
grazing--environmental aspects--Oregon 543
grazing---environmental aspects---United States 980
grazing exclosure 920
grazing exclusion 878, 880, 908, 967, 1153
grazing exclusion effect 906
grazing exclusion: plant community structure 935
grazing exclusion: restoration strategy 862
grazing frequency effects 382
grazing gradients 820
grazing habitat deterioration 698
grazing herbage mass 372
grazing heterogeneity: vegetation response 1147
grazing history 1085
grazing---Idaho---management 484
grazing impact 83, 181, 238, 451, 489, 490, 795, 931, 1069, 1109
grazing impact on grassland plant community 841
grazing impact on plant community 841
grazing impact on small mammalian population size 699
grazing impacts 78, 633, 686, 811
grazing impacts: indirect 1074
grazing intensities 1084
grazing intensity 52, 79, 86, 97, 98, 112, 161, 163, 166, 180, 186, 194, 226, 228, 229, 237, 247, 256, 276, 279, 281, 288, 302, 317, 321, 322, 333, 339, 351, 388, 405, 415, 447, 469, 476, 478, 479, 481, 502, 504, 508, 509, 514, 519, 533, 540, 609, 610, 614, 618, 633, 655, 657, 672, 693, 702, 710, 722, 750, 799, 812, 816, 821, 826, 831, 851, 854, 855,

- grazing intensity (contd.)** 881, 892, 903, 912, 919, 939, 940, 945, 951, 963, 970, 972, 973, 974, 977, 979, 983, 985, 987, 997, 1002,
grazing intensity (contd.) 1005, 1006, 1008, 1009, 1010, 1016, 1023, 1056, 1057, 1087, 1102, 1104, 1112, 1114, 1116, 1132, 1139, 1141, 1150, 1158, 1164, 1167, 1174, 1183, 1191, 1210, 1218, 1219, 1222, 1258, 1275, 1291
grazing intensity: conservation implications 708
grazing intensity effects 382
grazing intensity effects and conservation implications 263
grazing intensity effects on community ecology 263
grazing intensity effects on community ecology and conservation implications 263
grazing intensity influences and conservation implications 263
grazing lands 756, 872
grazing livestock breed and stocking rate 182
grazing livestock breed and stocking rate relationship 182
grazing management 30, 60, 64, 91, 107, 124, 139, 166, 188, 207, 229, 243, 244, 249, 266, 275, 289, 293, 296, 300, 315, 340, 341, 351, 363, 387, 398, 423, 439, 516, 549, 562, 633, 646, 678, 789, 797, 805, 812, 981, 999, 1004, 1036, 1040, 1046, 1061, 1063, 1071, 1075, 1106, 1150, 1176, 1178, 1208, 1277
grazing management: applied and field techniques 196, 313, 365, 811, 844, 847, 910, 1035, 1045, 1184
grazing management: botanical composition effects, management method 304
grazing management effects 372
grazing management: management method 273, 308, 804
grazing management prescriptions 1164
grazing management strategies 379, 504
grazing management systems 108
grazing--Oregon 1124
grazing pasture 473
grazing pastures 679
grazing patch dynamics 847
grazing period 331, 845
grazing period length 134
grazing pressure 172, 194, 214, 354, 393, 471, 530, 613, 678, 872, 909, 954, 1135
grazing pressure influence 499
grazing pressure management 730
grazing recovery exclosure 567
grazing reduction: applied and field techniques 167
grazing regime 440, 568, 584, 674, 784, 1208
grazing regimes 382, 1034, 1247
grazing relationships 1216
grazing removal 1179
grazing resilience 981
grazing response 1145
grazing responses 773, 806
grazing rotation method: applied and field techniques 35
grazing season 1092
grazing season extension model: mathematical and computer techniques 68
grazing seasons 38
grazing: soil nitrogen relations 311
grazing strategies 1015, 1084
grazing strategy 1045
grazing system 101, 754, 1031
grazing system interaction: concentrate level, milk yield, sward height 262
grazing system: rotational, season long 731
grazing systems 52, 71, 108, 130, 228, 251, 272, 276, 284, 294, 312, 346, 395, 429, 437, 443, 485, 519, 533, 672, 705, 759, 809, 859, 868, 903, 945, 970, 978, 982, 986, 1007, 1023, 1040, 1044, 1086, 1129, 1177, 1210, 1275
grazing systems: dairy farms, economic aspects, environmental aspects 5
grazing time 1275
grazing timing 1037, 1070
grazing tolerance 155, 1117
grazing treatment: applied and field techniques 942
grazing treatments: rotational grazed, ungrazed 108
Great Basin 542
Great Plains 552, 1025
Great Plains, USA 38
greater golden-plover 558
green 213
greenhouse gas emissions 411
greenhouse gas inventory 380
grey cuckoo 558
grey partridge 558
grid based model: life history, plant biomass production, resource competition 1147
ground 216
ground active taxa 1246
ground cover 281, 394, 483, 523, 638, 639, 750, 840, 908, 921, 1003, 1192, 1229
ground disturbance 784
ground foraging birds 1250
ground-nesting birds 577
ground vegetation 149, 226, 375, 468
ground water 3, 54
groundwater 8, 115, 152, 320
groundwater contamination 95, 152
groundwater level 198
groundwater levels 94
groundwater pollution 3, 54
groundwater pollution: non point source 151
groundwater recharge 30, 476
growing point density 287
growing points 267
growing season 318, 791, 1069
growth 44, 359, 622, 805, 844, 947, 989, 1267
growth damage 467
growth disturbance 1285
growth form 235
growth forms 1074
growth rate 265, 405, 1298
growth rates 44
Grus americana 601
Grus canadensis 601
Grus canadensis tabida 625
guidelines 341, 352, 997
guild composition 404
guild recovery 408
guild structure 584
gymnosperms 1273
gypsum 234
H flume 62
habitat 120, 159, 176, 182, 189, 197, 210, 213, 217, 221, 223, 224, 225, 263, 297, 314, 370, 410, 559, 565, 571, 577, 579, 582, 588, 589, 603, 612, 618, 625, 628, 631, 635, 652, 660, 664, 667, 668, 671, 676, 681, 696, 699, 706, 711, 718, 723, 735, 748, 768, 770, 778, 781, 783, 785, 833, 841, 897, 917, 927, 934, 958, 1128, 1241, 1246, 1251, 1255, 1256, 1257, 1264
habitat alterations 162, 551, 558, 569, 572, 590, 595, 603, 607, 611, 630, 640, 652, 656, 662, 673, 675, 683, 701, 760, 767, 780, 936, 1122, 1257
habitat change 577, 679
habitat changes 701
habitat characteristics 633
habitat colonization 197
habitat composition 194
habitat conservation benefit 785
habitat conservation benefit of alternative livestock grazing strategies 785
habitat creation 414
habitat degradation 490, 876, 1106, 1220, 1250
habitat: description 675
habitat destruction 160, 754, 774, 925, 1235
habitat deterioration: nesting, wintering 211
habitat disturbance 644, 701, 752
habitat disturbance [fire] 601
habitat diversification 252
habitat exploitation 1256

Subject Index

- habitat fragmentation** 831
habitat improvement 157, 488, 506, 1038
habitat improvement (biological) 666, 1205
habitat management 159, 181, 213, 222, 263, 565, 612, 642, 651, 678, 679, 711, 716, 723, 732, 755, 771, 781, 785, 1097, 1128, 1246, 1251, 1255
habitat management and nutrient availability relationships 410
habitat management aspects 781
habitat management by short duration grazing 781
habitat modification 664
habitat mosaics 266, 596
habitat occupancy 614
habitat preference 198, 314
habitat preferences 207, 686
habitat profiles 773
habitat protection 790
habitat quality 585, 633, 646, 678
habitat quality: degradation 1254
habitat reconstruction 856
habitat recovery 677
habitat rehabilitation 1106
habitat relationships 214, 575, 665, 675, 1042
habitat requirements 773
habitat restoration 220, 1106
habitat restoration: applied and field techniques 942
habitat selection 202, 233, 614, 679, 757
habitat structure 614, 740
habitat suitability 576
habitat transformation 211
habitat type 192
habitat use 174, 557, 558, 575, 595, 602, 603, 607, 626, 652, 668, 673, 701, 730, 760, 782, 1042, 1238, 1257
habitat use in relation to cattle grazing 579
habitat utilization 176, 197, 314, 579, 783
habitat variability 1245
habitat variables 686
habitat variegation 1033
habitats 161, 199, 231, 364, 509, 555, 560, 605, 609, 692, 702, 713, 741, 744, 764, 766, 779, 990, 1043, 1091, 1194, 1205, 1239, 1242
Hagerstown silt loam soil: fine, mesic typic hapludalf, mixed 36
Halimione portulacoides 1202
halophytes 957, 997, 1142, 1202
Hampshire 159
Haplopappus tenuisectus 1146
hardsetting 21
hawthorn 1303
hay 62, 211
hay cutting: management method 252
hay meadows: habitat 208
haymaking: applied and field techniques 115
haymaking: management method 710
haymaking 474
hazard assessment 54
head 726
health hazards 66
health risk 4
heat 1005
heat sums 428, 776
heather moorland: habitat 594
heather moorlands: habitat 204
heathland 711
heathland management 995
heathland vegetation 345
heathlands 202, 697
heavily grazed areas 633
heavy grazing regime 567
heavy rotational grazing 1120
heifers 388, 437, 939
height 166, 226, 351, 531, 610, 952
helminths 120, 225
Hemarthria altissima 305
hemicellulose 388
Hemiptera: farming and agriculture 217, 224
hemipterans true bugs 217, 263
herb layer production 1094
herbaceous canopy cover 863
herbaceous community 1033
herbaceous plants 1132
herbaceous production 876, 916
herbage 425, 437
herbage accumulation 286, 361, 362
herbage consumption 305
herbage content 416
herbage dry matter production 27
herbage growth 421
herbage mass 298, 299
herbage production 146
herbage quality 331, 904
herbage yield 295
herbicide 327, 824
herbicides 289
herbivore 367, 570, 1220
herbivore conservation 1300
herbivore grassland dynamics
interaction: dung deposition, herbage removal, trampling 417
herbivore grazing 1259
herbivore species 300
herbivores 157, 725, 871, 902, 1141, 1142
herbivory 492, 844, 889, 894, 968, 1004, 1074, 1077, 1108, 1179, 1295
herd composition 445
herding 845
herds 1018
herpetofauna 175
Hesperostipa comata 247, 456, 865, 1016
Heterogamia syriaca 570
Heteromyidae 714, 758
Heteroneura 182
Heteropogon contortus 481
Hidalgo County 897
high altitude 978
high country 127, 277
high fertility high stocking density grazing systems 115
high flow 56
high intensity grazing 1015
highlands 16, 98, 125, 239, 406, 850, 872, 966, 1102
Highlands County 225
hill grasslands 251
hill land 64
historic livestock grazing 920
historical environmental conditions 596
historical records 773
history 599, 798, 813, 1275
Hol Municipality 223, 224
holly 1300
home-range 579, 645, 652, 668
home range size 606, 645, 659
home range size relationships 645
hoof action 462, 815
hoof impact 450
hoof print 815
Hordeum hystrix 947
Hordeum leporinum 947
Hordeum spontaneum 869
Hordeum vulgare 478
A horizons 77, 1114
horned lark 630
horse 780, 928, 1170
horses 317, 807, 933, 1014, 1021, 1102
host 155
host parasite interaction 172
Howard & Pike Counties 1238
human activity 790, 1002
human disturbance 796, 1269
human impact 931, 1179, 1269
human relationships 557, 602, 1235, 1238
humic acids 533
humic substances 533
humid tropical environments 83
humid zones 234
hump backed models 1108
Humpty Dumpty model 1131
Hungary 571
hunting 599
hunting lease 588
hydraulic conductivity 6, 33, 40, 70
hydraulic properties 1001
hydraulics 47, 1225
Hydrochaeridae 703
Hydrochaeris hydrochaeris (Hydrochaeridae): farming and agriculture 703
hydroelectric development 147
hydrologic models 63, 93
hydrological transport 4
hydrology 447, 464, 472, 487, 502, 520, 524, 726, 814, 867, 1001, 1067
Hymenoclea 638
Hymenoclea salsola 638
Hymenoptera 612, 718

- hymenopterans** 263, 612, 718
Iceland 279
Icteria virens 1233
Idaho 555, 572, 635, 640, 749, 770, 851, 884, 937, 1010, 1138, 1167, 1201, 1244, 1281
image analysis: imaging and microscopy techniques, laboratory techniques 137
imaging spectroscopy: laboratory techniques, spectrum analysis techniques 822
immigration 1050
immobilization 1072
impact of agriculture 454
impact of forestry or agriculture 454
impact of grazing 841
impact of sheep grazing 667
impact of sheep grazing on soil fauna 667
impact on habitat 699, 841, 934, 1264
Imperial Valley 824
impermeable 537
implications for fawn hiding cover and forb availability on rangeland 783
implications of ecology and reproduction 213
important species changes 711
improved exclosure placement 1131
in vitro digestibility 271, 303, 339, 344, 415, 425, 719, 816
inceptisols 47, 1296
incineration 1205
increaser decreaser species 875
India 803, 1006
indicator bacteria 454
indicator species 205, 702, 737, 794, 818, 855
indicators 127, 153, 689
Indigofera 888
indirect competition 608
indirect effects 204
individual species cover 909
infestation level variation 378
infiltration 44, 47, 65, 485, 486, 487, 867, 1003, 1216, 1223, 1230
infiltration (hydrology) 514
infiltration rate 44, 133
infiltration rates 499
initial composition 890
injuries 1267
input data errors 108
insect 709
insect control 776
insect pests 702
insect responses 710
Insecta 159, 182, 197, 210, 217, 221, 224, 263, 314, 571, 589, 612, 718, 770, 917, 1243
insecticide 155
insecticide application 190
insects 159, 182, 197, 210, 217, 221, 224, 263, 314, 571, 589, 612, 718, 770, 917, 1243
insulation 1074
intake 272
integrated pest management 155, 156
integrated pest management strategies 1148
integrated rural policies 835
intensification 407
intensified grassland 241
intensive grazing systems 390
intensive livestock farming 152, 199
intensive livestock grazing 1117
intensively grazed dairy pastures 221
intensively grazed dairy pastures: subsurface drainage 148
intensively grazed meadow 530
intensively grazed pastures 221
inter seasonal rainfall variation 1208
interactions 600
interactions with man: conservation measures 675
intercropping 419
intermediate disturbance 993
intermittent cattle grazing 1262
international livestock research institute 499, 872
interrill erosion 496, 502, 1224
intersite differences 1237
interspecies relations 558, 575, 665
interspecies relationships 640, 662, 729, 798, 1238, 1241, 1257
interspecies relationships or intraspecies relationships 1238
interspecific competition 223, 735
interspecific relations 590, 752, 1097
interspecific relationships 886
interspecific variation 846
intestinal microorganisms 468
introduced grasses 517
introduced plants 1075
introduced species 882, 983, 1172
introduced species sowing: field method, pasture management method 393
introduced species systems 443
inundation frequency 1060
invasive species 375
inverse power models 252
Invertebrata 61, 187, 205, 217, 436
Invertebrata: biomass 635
Invertebrata: farming and agriculture 1246
invertebrate conservation 573
invertebrates 120, 159, 164, 182, 189, 197, 205, 210, 217, 221, 224, 225, 263, 297, 314, 410, 571, 589, 612, 635, 667, 718, 770, 917, 1050, 1187, 1246
Iowa 419
Iowa and Lafayette Counties 213
Irish Republic 42
iron 71
irrigated conditions 290, 405
irrigated pastures 130
irrigation 52, 149, 933
irrigation: applied and field techniques 313, 408
irrigation regime 784
islands 157, 161
isolation 1242
Israel 991, 992, 1150
Italy 182, 239
Italy and United Kingdom 182
itinerary 845
IVDOM 653
Jackson County 778
junco 1235
Junco hyemalis 1235
Juncus effusus 205, 420
june bug 658
juniper 1257
Juniperus virginiana 950
Jutland 210
juvenile development 686
kangaroo 846
Kansas 699, 879, 979
Kansas Army Ammunition Plant 1143
Kansas: Geary County 767
Kansas: Riley County 767
Karoo Basin 797
Karoo veld: moribund, productivity 1015
karst 3, 54, 153
karstic environments 3
Kendall's coefficient of concordance 194
Kentucky 144
Kentucky bluegrass 303
Kenya 888
Kern County 796
keystone herbivore removal 1193
kidneys 1238
kikuyugrass paddock rotational stocking 134
killdeer 630
King Ranch 645
Klydeso Bird Reserve 748
Kobresia pygmaea 978
Koeleria pyramidata 1107
Koeleria-Corynephoratea 1127
Konza Prairie Biological Station 699
labor investment 845
laboratory conditions 492
lack of management 382
lactation 293
Lagomorpha 574
lagoons 515
lamb growth 1027
lamb: meat product 261
lambs 279
LAMOS: landscape modelling shell, computer software 382

Subject Index

- land 23
land abandonment 214, 793
land and freshwater zones 120, 159, 213, 217, 221, 225, 263, 571, 579, 589, 645, 664, 681, 696, 699, 703, 711, 714, 716, 732, 735, 748, 770, 785, 841, 897, 917, 1234, 1251, 1256, 1264
land clearance 71, 212, 395
land clearing 1254
land degradation 793, 797
land deterioration: uneven animal impact 847
land diversion 1258
land (grass and pasture) 23, 111, 141
land management 173, 474, 515, 848, 888, 909, 933, 967, 1001, 1027, 1110, 1151, 1181
land management: applied and field techniques 73, 280, 819
land management practices 1254
land productivity 71, 1006
land resources 588
land restoration 1014
land suitability 1133
land types 486
land unit 845
land use 61, 69, 136, 194, 205, 264, 432, 436, 474, 477, 488, 515, 539, 616, 623, 640, 644, 679, 693, 720, 752, 757, 822, 835, 918, 951, 1109, 1257, 1271
land use change 382, 451, 626
land use changes 229
land use effects 82, 83
land use: low intensity 281
land use planning 499
land use practice 198
land zones 176, 182, 197, 210, 223, 224, 297, 314, 410, 557, 565, 582, 602, 612, 618, 635, 667, 717, 718, 783, 927, 934, 1128, 1187, 1235, 1238, 1246, 1255
landbirds 1115
landform management 229
Landsat imagery 500
Landsat TM imagery data 626
landscape 1040
landscape ecology 835, 853, 968, 1003
landscape management 822
landscape model: mathematical and computer techniques 382
landscape modelling: mathematical and computer techniques 382
landscape pattern effects 382
landscape position: backslope, summit, toeslope 423
landscape scale 266, 693
landscape scale experiment 223
landscape scale habitat diversity 266
landscape scale modeling: mathematical and computer techniques 1035
landscape structure 1036
landscape time layers: historical, pre modern, present day 382
landscape types 626
landscapes 1019, 1066
lapwing 558
large drainage lysimeter: field equipment 36
large scale cattle grazing 314
large scale cattle grazing effects on habitats and distributional communities 314
large stock unit grazing days 1015
larva 155, 209
larval density 155
late season grazing: avian response 554
leachates 8
leaching 8, 66, 88, 95, 96, 97, 98, 99, 128, 151, 152, 318, 336, 1003
leaf area 405, 429, 442
leaf area index 339, 808, 1024
leaf growth 930
leaf percentage 427
leaf presence 819
leaves 442, 1098, 1144
Leersia hexandra 941
legume based pasture 353
legume production 353
legumes 322, 360, 387, 405
lentic environment 737
lentic water 635
Lepidomeda mollispinis pratensis 512
Lepidoptera 182
lepidopterans 182
Leporidae 574
Lepus californicus 574
lichen 500
life cycle 776, 882
life cycle and development 635
life form 1282
life forms 974
life history 805
life history guild 811
life history traits 806, 843, 1092
light 1162
light effects 886
light grazing regime 567
light requirements 382
light rotational grazing 1120
lignin 533
Limburg Nature Reserve 197
lime 303, 360, 361, 362
limestone karst system 4
limestone pavement 400
liming 15, 113, 125
limited fertilization 1033
limited ryegrass grazing 379
limnic habitat 198
Limosa limosa 675
Linn County 189
linyphiid spider 190
Linyphiidae 164
liquid waste manuring: applied and field techniques 417
Lissamphibia 635
list and effect of trampling by cattle 159
literature review 681, 723
literature reviews 402, 836, 990, 1055, 1066, 1099, 1139, 1141, 1291, 1299
lithology 1110
litter 141, 1015, 1058, 1143
litter accumulation 492, 1151
litter biomass 885, 1079
litter cover 315
litter decomposition 901
litter depth 811
litter extraction: applied and field techniques 1245
litter quality 29
litter removal 971, 1151
little bluestem 1058
littoral zone 786
live mass gain 1027
live trapping: monitoring method 606
live-weight 437
live weight gain 876
livestock 18, 19, 20, 26, 51, 53, 54, 56, 65, 99, 111, 121, 122, 133, 153, 183, 189, 203, 205, 316, 317, 337, 444, 449, 464, 467, 469, 480, 487, 493, 496, 502, 506, 515, 531, 537, 544, 563, 575, 590, 600, 601, 631, 643, 644, 647, 688, 701, 720, 741, 752, 774, 777, 827, 846, 848, 899, 913, 915, 925, 982, 1001, 1003, 1026, 1038, 1040, 1041, 1043, 1048, 1061, 1067, 1068, 1073, 1091, 1097, 1137, 1146, 1154, 1158, 1168, 1173, 1182, 1198, 1225, 1241, 1257, 1270, 1274, 1275
livestock biometeorology 1226
livestock distribution 116
livestock effects 1292
livestock enclosure 751
livestock exclusion 14, 102, 505
livestock fanning system 674
livestock farming 1044
livestock farming: applied and field techniques 1031
livestock feeding 1006
livestock grazing 110, 175, 215, 449, 586, 629, 633, 634, 637, 661, 677, 681, 688, 703, 706, 711, 718, 740, 770, 782, 796, 857, 863, 897, 908, 923, 926, 1149, 1173, 1178, 1232, 1236, 1251, 1252, 1257, 1273
livestock grazing control related to brood parasite associations 1234
livestock grazing: disturbance factor 1105
livestock grazing effect 718
livestock grazing effect on foraging 703
livestock grazing effects 635, 728, 1272
livestock grazing effects on amphibian predator prey base 635

- livestock grazing effects on prey base** 635
livestock grazing exclusion 714
livestock grazing exclusion effects 714
livestock grazing impact 1096
livestock grazing intensity 660
livestock grazing: plant community structure influence, soil health influence, soil quality influence 567
livestock grazing regime 553
livestock grazing removal 1181
livestock grazing system recommendations for increasing nesting success 732
livestock grazing systems effects on nesting success 732
livestock grazing use 716
livestock grazing use to improve wildlife habitat 716
livestock impacts on herbaceous components of sagebrush habitat 723
livestock industry 31, 70, 188, 267, 387, 443
livestock (Mammalia): grazer 1284
livestock management 576, 1037, 1069, 1109
livestock management histories 899
livestock management long term influences 1057
livestock management regimes 899
livestock production 72, 340, 836, 1027, 1047, 1066
livestock raising 253
livestock relationships 558, 575, 590, 603, 630, 640, 651, 652, 668, 673, 675, 760, 767, 994, 1042, 1257
livestock (see also individual animals) 53, 111, 1173, 1274
livestock stocking rate 999
livestock systems 211
livestock trampling: grazing, soil resistance 458
liveweight 352, 371
liveweight gain 237, 279, 343, 388, 419, 432, 828, 983, 987, 992, 1068, 1165, 1291
llama 1020
loam soils 540
local dispersal 382
local extinction 194
local extinctions 1110
local grazing disturbance 382
local succession 382
localized stocking rate 92
locational effects 1259
lodgepole pine 1231
loess grassland 571
loess grassland soil 571
Logan County 1256
logging 1247, 1275
logging effects 1296
Lolio-Cynosuretum
plantagnetosum media 438
Lolium multiflorum 86
Lolium perenne 13, 84, 125, 256, 271, 306, 326, 360, 416, 420, 428
long term changes 589
long term conservation 1272
long term enclosure: applied and field techniques 795
long term experiment 1092
long term experiments 1214
long term grazing management: applied and field techniques 753
long term grazing [overgrazing] 822
long term grazing study 1070
long term protection 920
long term research programs: development 1131
long term study 210
long term trends 596
long term vegetation changes 1060
losses from soil 42, 66, 93, 97, 98, 112, 149, 236, 409, 474, 900, 1224
Lostwood National Wildlife Refuge 616
lotic water 635
Lotus corniculatus 396, 419
Lotus pedunculatus 362
Louisiana 170, 185, 1224
low density populations 770
low intensity cattle pasture 198
low intensity farming systems 1152
low shrub 664
lowland areas 998
lowland grassland 176, 910
lowland grassland agricultural management 176
lowland grassland agricultural management effects on habitat use 176
lowland grassland habitat use 176
lowland grassland under agricultural management 176
lowland grassland use 176
lowland grasslands 684
lowland heath 345
lowland neutral grasslands: habitat 211
lowland rivers 1254
lowland tussock grassland 953
lowland wet grassland 568
lowlands 1013
lucerne 405
lumber harvesting 1237
Lupinus albicaulis 1296
lying 173
lysimeter: field equipment 146
lysimeters 128, 132
macrofauna 725
macroinvertebrates 205
macropore flow 76, 93
macropores 6, 40, 47
madrean evergreen woodland 1221
magellanic steppe 1035
magnesium 41, 71, 428, 513, 1080, 1136
magnetite 513
Maireana 957
(malaria, avian (mesh)), parasitic disease 212
mallard 558
mallard duck 558
mammal 628, 754
Mammalia 223, 574, 579, 618, 645, 699, 703, 711, 714, 735, 748, 783, 841, 897, 927, 934, 1128, 1187, 1255, 1256, 1264
Mammalia: community structure 1256
Mammalia: farming and agriculture 618, 748, 781, 785, 1255
mammalian grazing regimes comparison 1187
mammals 223, 555, 565, 579, 618, 640, 645, 651, 662, 665, 668, 699, 703, 711, 714, 735, 748, 766, 781, 783, 785, 834, 841, 897, 927, 934, 994, 1042, 1128, 1129, 1187, 1255, 1256, 1264, 1284
man-induced effects 61, 157, 175, 291, 449, 546, 660, 794
man made habitat 176, 182, 197, 735, 1251
man made salt marsh 1194
managed grasslands 385
managed succession 1260
management 143, 193, 366, 454, 551, 569, 572, 651, 656, 660, 672, 683, 722, 759, 780, 845, 889, 936, 1067, 1119, 1129
management effects 298, 299
management history 1199
management implications 204, 573, 820
management intensity 220, 1033
management intensive grazing 379
management intensive versus extensive grazing 82
management objectives 345
management options 94, 385
management planning 88
management practices 585
management regime 1036, 1089
management responses 252
management strategies 880, 1245
management strategy 94, 916, 1031, 1149
management systems 350
management type 843
manganese 71, 513
Manitoba 80
manure 19, 20, 55, 88, 128, 141, 381, 454, 872
manure management 110
manure management practices 974

Subject Index

- manure nitrogen evaluation routine
 model: manner model,
 mathematical and computer
 techniques 68
 mapping 813
 marginal uplands 186
 marine pollution 515
 marking 778
 marsh flies 833
 marshes 291, 688, 794, 886
 marshland management 621
 Maryland 103
 mass 952
 mass transfer 1226
 maternal provisioning 804
 mathematical model 369, 381, 981,
 1022, 1192
 mathematical modeling:
 mathematical and computer
 techniques 280
 mathematical models 56, 1183
 mathematics and statistics 409
 matorral 817
 matorral [shrubland] 883
 maturity stage 351, 428
 mayflies 725
 McCurtain County 1238
 meadow 180, 258, 259, 698, 922
 meadow fescue 303
 meadow pipit 558
 meadows 366, 675, 924, 1038
 mean percentage cover: structural
 changes 1078
 mean percentage height: structural
 changes 1078
 mechanical brush treatment:
 applied and field techniques 908
 mechanical disturbance 956
 Medicago 792
 Medicago sativa 152, 274, 289,
 319, 343, 344, 396, 419
 Mediterranean climate 991, 1150
 mediterranean ecosystems 835
 mediterranean grasslands 1117,
 1134, 1219
 mediterranean herbaceous
 community 1208
 Mediterranean plant community
 784
 Mediterranean region 990, 992
 Mediterranean sheep 962
 mediterranean uplands 214
 medium term changes 1071
 meeting paper 198, 573, 856, 891
 meeting poster 24
 Melanoplus sanguinipes 776
 Melanoplus sanguinipes
 (Saltatoria): farming and
 agriculture 770
 Meleagris gallopavo 789
 Meleagris gallopavo intermedia
 644, 646
 Melospiza lincolni 676
 Melospiza melodia 676
 meltwater 112, 119
 Mendoza 696
- Merriami's kangaroo rat 796
 mesa rangelands 822
 mesic grassland community
 disturbances 1151
 mesic grasslands 811
 mesophytic calcareous dune
 grassland 686
 mesotrophic grassland 258, 259,
 1092
 Messor spp. 570
 meta analyses 1131
 meta analysis: analytical method
 885
 metabolizable energy 415
 meteorological parameters 409
 methane 257, 320
 methane production 320
 method 796
 methodology 15, 437
 methods 150
 methods and techniques 219
 Mexico 714, 735
 Mexico: Baja California Sur 597
 mezofold 571
 micro habitat 649
 microbe numbers 107
 microbial activity 113, 475
 microbial biomass 395
 microbial carbon 127
 microbial contamination 10, 54,
 69, 109
 microbial pollution 10
 microbial population ecology 1072
 microbiological analysis 53
 microbiological characteristics
 530
 microclimate 768
 microclimate alteration 633
 microclimates 492
 microdepressions 462
 microhabitat 248
 microhabitat moisture 1054
 microhabitat preference 1237
 microhabitat use 606
 microhabitats 633, 764
 micromounds 462
 microorganism 1072
 microorganisms 13, 80, 475, 1226
 microsite availability 820
 microsite limitation 252
 microtopography index 462
 Microtus agrestis (Muridae):
 farming and agriculture 223
 Microtus ochrogaster 767
 Microtus richardsoni 689
 mid altitude snow tussock
 grassland reserve 1179
 mid channel gravel 177
 mid grass 523
 midges 205, 725
 midgrass 465, 1189
 migratory species 1205
 milk: dairy product 379
 Millard County 664
 mined land 828
 mineral content 386, 428, 478
- mineral fertilizers 86
 mineral soils 204
 mineral uptake 34, 970
 mineralization 45, 85, 86, 113, 318,
 336, 377, 430, 810, 817, 1072
 minerals 901
 mining 542
 Minnesota 396
 Mississippi 442
 Missouri 189, 388, 1137
 mitigation 147
 mixed conifer forest: habitat 1252
 mixed conifer forests 1273
 mixed-conifer rangelands 1064
 mixed grass prairie 107, 516
 mixed grass prairie: prescribe
 burned 771
 mixed grass rangeland: habitat
 999
 mixed grazing 346, 514, 594, 800,
 1086
 mixtures 429
 model 839
 model errors 108
 model studies 53
 modeling 536
 modeling framework 588
 models 272, 431, 550
 models and simulations 765
 moderate grazing 953
 moderately grazed meadow 530
 moist tropical forest 1094
 moisture 1170, 1199
 moisture content 355, 546
 Mojave Desert 718
 Mollisols 76, 77, 533
 Molothrus ater 676, 789, 1257
 Molothrus ater (Aves) 1234
 Molothrus ater (Icteridae) 785
 Mols Hills 210
 Monachather paradoxa 846
 monitoring 132, 515, 878, 1290
 monoculture 517
 monosaccharides 456
 Montana 583, 608, 655, 665, 741,
 841, 1026, 1097, 1102, 1128
 montane grassland 584
 montane riparian system 553
 moorhen 558
 moorland 558, 694
 moorlands 186, 377, 769
 Moran's I 1039
 morphological change 870
 mortality 375, 442, 582, 752, 776,
 805, 820, 829, 1174, 1222, 1241,
 1267, 1274, 1301
 mosaic landscapes 614
 mosaic pattern 594
 mosquitoes 205
 moss heath 821
 moss layer depth 1074
 moss productivity 361
 Motacillidae 717
 moth 658
 mound building activity 784
 mounds 531

- mountain areas** 250, 1049
mountain grasslands 250, 689, 795, 1049, 1156, 1219
mountain grasslands: habitat 993
mountain grazing lands: area enclosures, open management schemes 793
mountain habitat 223, 224
mountain pastures 223
mountain rangelands: habitat 614
Mountain States of USA 1129
mountains 239, 608
mourning dove 630
movements 599
mowing 27, 28, 45, 58, 192, 268, 289, 320, 438, 522, 704, 760, 825, 873, 1000, 1055, 1090, 1162
mowing: applied and field techniques 181, 232, 417, 953
mowing effect 235
mowing: field method 208
mowing impact 1151
mowing: management method 281, 710
mulch 483, 523, 1117
mulch applications 1117
mulching 825
mule deer 611, 668
multiple regression analysis: mathematical and computer techniques 845
multiple regression modeling: statistical method 708
multiscale modified whittaker plots 1070
multiscale vegetation sampling: sampling method 993
multivariate analysis: mathematical and computer techniques 168, 417
multivariate analysis: mathematical method 1085
Muridae 223, 758
Myriophyllum variifolium 902
Myrmeleotettix 697
Myrmeleotettix maculatus 697
myth debunking 451
N. America 681
N mineralization 107
Nahuel Huapi National Park 883
Nama Karoo grassy shrubland: composition, cover, productivity 1015
Natal 1090
national forests 1144, 1279
national park 1187
national parks 513, 871, 919, 1091
National Wetlands Inventory maps 626
nationally rare species recorded 159
native cover 408
native grass based pasture: botanical composition, stability 304
native grassland 297, 1179
native grassland community 844
native grassland ecosystem 629
native grassland remnants 573
native grasslands 616
native pasture 298, 299, 376
native plant biodiversity 883
native plant community response 1288
native range 1178
native species 341
native species decline 1057
native species systems 443
native vegetation 412
Natraqualls 76
Natraquolls 76, 77
natural enemies 201
natural grassland replacement by exotic pasture 557
natural grasslands 123, 260, 513, 623, 809
natural habitats 200
natural regeneration 317, 799, 871, 919, 1182, 1270
natural resource management 342, 383, 432, 997, 1000
natural resources 162, 551, 1257
naturalized pasture 376
nature conservation 157, 206, 231, 250, 337, 407, 615, 639, 660, 663, 672, 684, 688, 689, 697, 702, 759, 825, 882, 945, 998, 1017, 1049, 1065, 1115, 1134, 1142, 1239, 1242, 1258, 1270
nature management 1200
nature reserve 568
nature reserves 638, 663, 759, 835, 1134
NDVI 797
Nearctic Region 213, 221, 225, 565, 579, 582, 589, 602, 635, 645, 664, 681, 699, 711, 714, 716, 718, 732, 735, 770, 783, 785, 841, 897, 927, 1128, 1234, 1235, 1238, 1251, 1256, 1264
Nebraska 11, 19, 20, 575, 662, 950, 1166, 1188
Nei-Mongol 840
Nematoda 120, 225, 410
Nematoda: farming and agriculture 120, 225, 410
nematodes 120, 225, 410
Neotoma lepida 714
neotropical migrant songbirds 1257
neotropical region 557, 696, 703
Neotyphodium coenophialum 234
nest 1257
nest density 577, 587, 616
nest parasitism 1234, 1257
nest predation rates 553
nest site selection 212
nest success 553, 587, 616, 731, 1235
nest survival 731
nesting 161, 184, 374, 564, 575, 643, 754, 1257
nesting density 732
nesting habitat 587, 626
nesting on grassland 582
nesting site 582
nesting success 582, 730, 732, 1235
nesting success: grassland passerines, grazing animal impact 200
nests 157, 564, 575, 643, 1257
nests and nesting 631, 1241, 1257
net primary production 385, 1007, 1206
Netherlands 66, 171, 271, 320, 383, 1021
Netherlands Entomological Society 206, 697
neutral detergent fiber 351, 648
neutron moisture probe: field equipment 108
Nevada 509, 627, 683, 721, 766, 1129, 1191, 1204
Nevada: Ash Springs 683
Nevada: Brownie Spring 683
New England 1248
New Jersey 755
New Mexico 464, 475, 524, 525, 897, 975, 1043, 1056, 1132, 1218, 1234, 1241, 1257
new records 221
New South Wales 17, 275, 289, 297, 302, 375, 384, 447, 510, 1075, 1246, 1255
New York 221
New Zealand 16, 43, 53, 56, 61, 87, 187, 188, 267, 278, 321, 322, 323, 324, 326, 406, 410, 413
New Zealand, Morrinsville 53
New Zealand, North I., Waikato 44
New Zealand, North I., Waikato, Whatawhata 69
New Zealand, South I., Southland 43, 187
ngauge model: mathematical and computer techniques 68
niche diversity 710
nitrate 71, 512
nitrate leaching 2, 94
nitrate leaching: urine volume effects 36
nitrate nitrogen 13, 66, 152, 432, 479, 491
nitrate transport 101
nitrates 8, 19, 20, 66, 88, 95, 97, 98, 99, 128, 152, 336, 1226
nitric oxide 1226
nitric oxide emissions from soil 1226
nitrification 13, 810, 1038
nitrification inhibitor 89
nitrogen 9, 23, 24, 25, 41, 42, 44, 45, 49, 66, 67, 71, 75, 85, 86, 96, 97, 98, 111, 128, 135, 136, 149, 258, 259, 264, 318, 336, 377, 381, 409, 430, 449, 481, 491, 513, 532, 536, 683, 861, 873, 970, 972, 1005, 1080, 1114, 1202, 1277

Subject Index

- nitrogen abatement management:**
applied and field techniques 50
nitrogen availability 360
nitrogen balance 75
nitrogen compounds 44, 1226
nitrogen content 66, 80, 478, 479, 528, 540, 807, 816, 1003
nitrogen cycling 492
nitrogen deposition 821
nitrogen emissions 1226
nitrogen fertilizer 350
nitrogen fertilizers 34, 42, 45, 95, 98, 152, 166, 201, 237, 257, 271, 320, 336, 377, 409, 900, 1157
nitrogen fixation 34, 98, 353, 1296
nitrogen fixing trees 1296
nitrogen in ecosystems 1226
nitrogen loss 5
nitrogen mineralization 831
nitrogen uptake 1079
nitrogen use efficiency 270
nitrous oxide 49, 1226
nitrous oxide: emission, greenhouse gas 1284
nitrous oxide emissions from soil 1226
no grazing 21, 254
no-tillage 11
Noaea mucronata 1125
non-equilibrium 1020
non equilibrium behavior 876
non equilibrium ecosystem 1077
non equilibrium grazing model: mathematical and computer techniques 1135
non equilibrium state transition model: mathematical and computer techniques 1164
non grazed stocking system: applied and field techniques 423
non metric multidimensional scaling: nms 1078
non point source pollution 148
non selective rotational grazing system 1015
nonclay minerals 513
nonequilibrium dynamics 946
nonequilibrium plant community dynamics 1164
nongrazed mixed grass prairie 470
nonhuman mammals 1284
nonhuman vertebrates 1284
nonpoint pollution 544, 1225
nonpoint pollution sources 19, 20, 53, 54, 111, 1225
nonpoint source pollutant load reduction 102
nonpoint source pollution 42, 101
nonserpentine soils 853
north 711, 917
North America 162, 189, 203, 213, 221, 225, 565, 569, 572, 579, 582, 589, 590, 597, 602, 603, 607, 630, 631, 635, 640, 645, 651, 652, 664, 665, 668, 673, 681, 683, 699, 701, 711, 714, 716, 718, 729, 732, 735, 767, 770, 778, 783, 785, 798, 813, 841, 897, 927, 1017, 1042, 1097, 1128, 1129, 1234, 1235, 1238, 1241, 1249, 1251, 1256, 1257, 1264
North Carolina 434
North-Central Region 189
North Dakota 107, 474, 528, 564, 610, 619, 700, 701, 727, 732, 776, 792, 977, 1203
North Dakota, Southcentral 701
north east 1246
northeastern Oregon 1232
northeastern region 1220, 1241, 1257
Northeastern United States 418
Northern Ireland 13, 75
northern lapwing 558, 688
northern pintail 157
northern semiarid grasslands 470
Northern Tablelands 1255
northern wheatear 558
Northwest Frontier Province 1265
Norway 223, 224, 556
NPK fertilizers 15, 479
nuclear magnetic resonance: laboratory techniques, spectrum analysis techniques 516
nuclear magnetic resonance spectroscopy 533
Nuevo Leon 735
Numida meleagris 775
Numididae 775
Nunn 589
nutrient 41
nutrient addition 204
nutrient availability 71, 75, 430, 831, 999
nutrient balance 288
nutrient budget 1080
nutrient change 1080
nutrient concentrations 205, 449
nutrient content 124, 185, 323, 388, 1003
nutrient cycle 135
nutrient cycles 291
nutrient cycling 536, 1072, 1080
nutrient deposition 204
nutrient enrichment 1074
nutrient intake 409
nutrient loading 44, 515
nutrient loss 44, 121, 515
nutrient management 25
nutrient pools 41
nutrient regime 1170
nutrient retention 409, 464
nutrient uptake 34, 149, 320, 970, 1005
nutrients 19, 20, 39, 44, 111, 121, 127, 141, 205, 277, 377, 449, 515, 665, 836, 1097
nutrients (mineral) 61, 449, 515, 547
nutrition 176, 223, 224, 579, 590, 635, 654, 699, 703, 711, 735, 783, 841, 934, 1187, 1234, 1238, 1264
nutrition [physio.] 665
nutritional condition 1238
nutritive value 185, 312, 344, 391, 425, 437, 874
nymphal density 195
oak 798, 1300, 1303
oak savanna 636
oak woodlands 1236
objectives 788
Oceania 1065
Odocoileus 591, 655
Odocoileus hemionus 563, 591, 603, 611, 640, 659, 668, 680, 913, 1014
Odocoileus hemionus californicus 698
Odocoileus hemionus (Cervidae): farming and agriculture 711
Odocoileus hemionus (Cervidae): food plants 841, 1264
Odocoileus hemionus crooki (Cervidae): farming and agriculture 579
Odocoileus hemionus hemionus 611, 698
Odocoileus virginianus 169, 170, 185, 193, 590, 653, 673, 736, 789
Odocoileus virginianus (Cervidae): farming and agriculture 645
Odocoileus virginianus texanus (Cervidae): food plants 735
Odonata 737
OECD Countries 1017, 1065, 1129
off river watering points 1109, 1254
off stream livestock watering 110
off stream watering device 110
Ohio 62, 101, 121, 432
Oklahoma 540, 582, 912, 1005, 1087, 1211, 1238
Oklahoma: McCurtain County 590
old field pastures 679
Oligochaeta 171, 929
ombrotrophic mire 1195
on-farm research 275
on-site investigations 23
Oncorhynchus aguabonita 720
Oncorhynchus mykiss 364
Ontario 415, 836
oocysts 468
open area 763
open forests 612
open forests management 612
open habitats: burning 710
optimal stocking rate 1133
optimum fertilization rates 862
orchard meadows: habitat 181
orchards 197
ordination 373, 1282
ordination analysis: statistical method 1108
Oregon 79, 106, 154, 446, 538, 541, 545, 591, 605, 713, 719, 887, 913, 1104, 1172, 1264, 1287
organic acids and salts 456
organic C 107

- organic carbon** 23, 533, 1058
organic compounds 794
organic fertilizer inputs 211
organic matter 19, 20, 23, 344, 350, 425, 483, 498, 523, 528, 861
organic matter compaction 1227
organic nitrogen 533
organic wastes 128, 1226
orthic black chernozemic: udic haploboroll 567
Orthoptera 314, 589, 770
Orthoptera: farming and agriculture 314
Oryctolagus cuniculus 896
Oryza sativa 933
Oryzopsis hymenoides 1054, 1190
Osage County 582
Oscinella frit 230
Oscinella vastator 230
ostracods 205
ova 713
overall modeling efficiency 108
overall stocking rate 92
overgrazing 451, 465, 505, 509, 534, 809, 818, 855, 868, 946, 951, 961, 1006, 1017, 1023, 1086, 1134, 1210
overgrazing impact 1002
overland flow 42, 44, 469, 522
overland flow: events, mean suspended sediment concentration 12
overland flow volume 12
overwintering 665, 686, 760
oviposition 195
Ovis aries 896, 928
Ovis canadensis 744
Owyhee Mountains 635
oxeye daisy 367
oxidation 533
oxidoreductases 125
oystercatcher 558
Pacific Northwest 454
paddock 108
paddock age 1085
paddock layout 392
paddock size 1085
paddock system 145
paddocks 460, 1015, 1109
pair wise test: statistical method 1108
Pakistan 507, 508
Palaeartic Region 120, 159, 176, 182, 197, 210, 217, 223, 224, 263, 314, 571, 618, 717, 748, 1187
palatability 302, 951, 1067, 1091, 1210
palatable forage mass 845
pampas 482, 532, 535
pampas soils 76, 77
Panicum hemitomon 205
Panicum laxum 941
Panicum obtusum 1210
Panicum virgatum 419
Papilionoidea 182
Papilionoidea: farming and agriculture 182
parasite 765
parasites 547
parasites diseases and disorders 1234
parasitic habits 1257
parasitism rate 1252
particle size 522
particulate P 117
particulates 44
partridge 558
Pascopyrum smithii 247, 944, 985, 1107
pasim pasture model: mathematical model 385
Paspalum chaffanjonii 941
Paspalum dilatatum 84, 306
Paspalum notatum 234
Passerculus sandwichensis 676
Passeriformes 161, 162, 610, 664, 696, 717, 724, 1115, 1234, 1257
Passeriformes: agricultural activity 664
Passeriformes: farming and agriculture 1234
past and present 681
past crop management practice 1155
pastoral industry 750
pastoral land 490
pastoral landscapes 186
pastoral management 214, 408
pastoral production 1033
pastoral value 614
pastoralism 889
pasturage 1283
pasture 12, 30, 55, 99, 117, 118, 121, 140, 205, 215, 225, 235, 308, 314, 378, 410, 592, 735, 918
pasture availability 427
pasture composition 397
pasture composition management 376
pasture conditions 82, 268
pasture crop rotation: agronomic method 311
pasture degradation 394
pasture envelope concept 424
pasture: functional composition 423
pasture grazing 173
pasture growth rate 424
pasture land 31
pasture management 86, 93, 166, 213, 265, 267, 275, 351, 371, 375, 402, 410, 419, 430
pasture management and nutrient availability relationships 410
pasture management and soil community relationships 410
pasture management effects on biology 213
pasture: management, nutritive value, productivity, sequence 335
pasture management relationships 213
pasture plants 275, 419, 801, 1207
pasture production 5, 354, 355
pasture productivity 1027
pasture regeneration 394
pasture streams 215
pasture succession 857
pasture system weed populations: grazing intensity 338
pasture utilization 1033
pasture yield 73, 397
pastures 1, 8, 9, 17, 18, 19, 20, 26, 47, 49, 52, 55, 58, 60, 71, 96, 97, 98, 103, 109, 111, 116, 118, 122, 136, 141, 149, 152, 169, 199, 202, 205, 225, 231, 242, 257, 260, 275, 279, 289, 290, 296, 312, 314, 319, 321, 322, 323, 339, 356, 366, 386, 389, 391, 396, 402, 415, 419, 422, 430, 431, 434, 437, 453, 456, 481, 485, 487, 502, 600, 643, 808, 836, 850, 939, 1008, 1009, 1012, 1019, 1049, 1112, 1157, 1174, 1207, 1209, 1218, 1229
pastures: continuously grazed, rotationally grazed 74
patch dynamics: heterogeneous paddocks 1083
pathogenic bacteria 69, 109
pathogens 512, 547
peat 22, 291
peatlands 291
penetration resistance 33, 355
penetrometer measurements: field method 458
Pennsylvania 8, 96, 152, 221, 226
Pennsylvania and Vermont 221
percent cover 459
percent fines: streambed 74
percent plant cover 773
percolation 84
peregrine 558
perennial forb cover 898
perennial grass cover 869, 898
perennial grasses 1084
perennial pasture: flood irrigated 78
perennial ryegrass pasture 293
perennial species composition 1015
perennials 275, 356, 375, 850, 972, 979
permafrost soils 1074
permanent grasslands 166, 231, 294, 352, 1258
permanent plot sampling: applied and field techniques 282
permanent plots 1194
permeability 6
permethrin 155
Perognathus flavus 758
Perognathus spinatus (Heteromyidae) 714
Peromyscus eva (Muridae): farming and agriculture 714
Peromyscus leucopus 767
Peromyscus maniculatus 767

Subject Index

- persistence** 276, 298, 299, 405, 1089
pest 155, 195
pest assessment, control, and management 824, 1276
pest control 407
pest management 155, 367, 765
pesticides 407
pests 209, 407
pH 16, 629, 1114
ph level 140, 512
phalaris 341
Phalaris arundinacea 161
Phalaris tuberosa 2
Phasianidae 564, 565, 575, 723
pheasants 163
phenological deciduousness 819
phenology 211, 807
phosphoric monoester hydrolases 125
phosphorus 9, 19, 20, 25, 41, 42, 44, 60, 63, 67, 71, 85, 93, 109, 111, 132, 145, 185, 193, 251, 258, 259, 303, 312, 377, 428, 449, 471, 479, 481, 491, 512, 513, 536, 816, 873, 1005, 1080, 1114, 1136
phosphorus fertilizers 237, 251
phosphorus fixation 901
photosynthesis 247, 313, 405, 808
Phragmites 886
Phragmites australis 161, 886, 1021
physical condition 1238
physical factors 612, 699, 770, 781, 897, 1246, 1255
physical habitat: stream quality parameter 74
physical properties 6, 7, 33, 457, 720, 1223
physicochemical characteristics: cation exchange capacity, electrical conductivity, moisture 530
physicochemical properties 65, 171, 456
physics 6
physiological indices 1238
physiology 1238
phytobenthos 449
phytomass 931
pine (Coniferopsida) 1273
Pinguicula vulgaris 1170
Pinus elliotii 160, 1285, 1298
Pinus palustris 160, 170, 1285
Pinus ponderosa 1235, 1279, 1287, 1301, 1302
Pinus radiata 69
Pinus wallichiana 508
pinyon juniper forest: habitat 1252
pinyon juniper rangelands 822
pinyon pine 1257
piosphere 1085
Pipilo erythrophthalmus 1233
pitfall trapping: applied and field techniques 1245
pitfall traps 216
pitfall traps: field sampling equipment 686
plains 863
plant 2, 1072
plant animal interactions 492, 1286
plant architecture 979
plant biodiversity 530
plant biomass 318
plant breeding 234
plant communities 71, 366, 396, 402, 430, 638, 702, 764, 831, 833, 858, 879, 887, 907, 915, 921, 932, 933, 937, 951, 966, 979, 990, 1049, 1056, 1067, 1068, 1081, 1087, 1102, 1112, 1134, 1144, 1150, 1191, 1204, 1222, 1277, 1299
plant communities: biodiversity 1152
plant community 890, 1288
plant community character 1022
plant community composition 490
plant community response 1193
plant competition 375, 807, 950, 1039, 1287, 1299, 1301
plant composition 193, 425, 908, 1163
plant composition temporal changes 1015
plant control 1205
plant cover 420, 1208, 1265
plant cover impacts 633
plant coverage 819
plant cultural practices 289
plant density 251, 522, 838, 850, 888, 937, 1000, 1006, 1084, 1104, 1113, 1174, 1198, 1209
plant development 807, 1116
plant diversity 300, 993, 1070
plant ecology 274, 325, 403, 430, 871, 997, 1098, 1116, 1158
plant functional groups 382
plant functional type 819
plant functional types 235
plant genetic resources 1023, 1134
plant growth 135, 500, 902, 1136, 1168, 1185
plant height 231, 672, 759, 806, 840, 930, 1192, 1258, 1267
plant herbivore interaction 1193
plant litter 199, 226, 317, 339, 375, 430, 502, 507, 522, 610, 649, 744, 818, 888, 966, 972, 973, 977, 1016, 1114, 1167, 1172, 1193
plant livestock relations 876
plant morphology 429, 442, 951
plant mortality 1037
plant pests 702, 1049
plant population change 754
plant populations 660, 720, 833, 902, 1142, 1202, 1205, 1228
plant protection 741
plant responses 1074
plant science (general) - plant ecology 162
plant science (general) - plant production (general) - plant production (range and pasture grasses) 1257
plant species composition 826
plant species composition arable land 164
plant species conservation 784
plant species diversity 310, 439, 826
plant species patterns 1085
plant strata 610
plant succession 639, 784, 825, 998, 1134, 1141, 1177
plant trait 440
plant unit density 361
plant water relations 123
plantation forestry 613
planters 11
planting 461
plants 951, 960, 1001, 1168, 1273
plants (see also aquatic macrophytes) 1274
plastic limit 21, 254
play 173
ploughing: applied and field techniques 1093
plow layer 534
plowing 1198
Poa bulbosa 1125
Poa pratensis 9, 319, 418, 916
Poa secunda 1190
Poa trivialis 1021
Poaceae 406, 415, 1100, 1299
Poecilia 683
Poecilia mexicana 683
Poeciliidae 683
poisonous plants 975
policy 1258
policy, management, education or information 454
pollen record 1179
pollution 24, 110, 116, 453, 683, 715
pollution control 25, 149, 1066
pollution effects 1173, 1225
pollution (environmental) 1173
pollution indicators 69, 205
pollution load 44, 109, 515
pollution loads 92
pollution monitoring 515
pollution (nonpoint sources) 53, 111
pollution (water) 53
Polygonum 205
Polytrichum swartzii 1170
pond 635
ponderosa pine 1235
ponds 713, 786
ponds and streams 635
population 754
population abundance 634
population biology 820
population census 556
population decline 194

- population decline management** 1170
- population decrease** 377
- population densities and community structure** 667
- population density** 157, 175, 186, 191, 197, 203, 213, 224, 225, 410, 512, 560, 599, 605, 609, 610, 623, 628, 631, 661, 664, 667, 676, 688, 696, 714, 720, 729, 732, 770, 776, 813, 886, 917, 927, 1050, 1115, 1146, 1205, 1237
- population density and species diversity** 696
- population distribution** 803
- population dynamics** 171, 190, 197, 211, 213, 223, 224, 225, 251, 276, 287, 294, 410, 429, 532, 582, 596, 610, 618, 635, 647, 664, 667, 678, 688, 696, 699, 704, 714, 732, 765, 766, 770, 781, 897, 903, 904, 917, 927, 928, 946, 951, 1174, 1182, 1227, 1251
- population ecology** 558
- population levels** 666
- population loss** 203
- population restoration** 844
- population size** 897
- population size: local** 558
- population structure** 157, 205, 725, 1202
- population studies** 190, 219
- population sustainability** 172
- Populus** 1098
- Populus deltoides subsp. monilifera** 1098
- Populus sargentii** 1233
- Populus tremuloides** 680, 698, 766, 1299
- porosity** 6, 47, 76, 77, 520
- positive feedback loops** 1074
- post dispersal seed predation** 899
- post exclusion dynamics** 1131
- post pastoral succession** 404
- postburn productivity** 1037
- postfire vegetation composition:**
- previous grazing practice impacts** 1070
- potassium** 9, 41, 67, 71, 145, 258, 259, 377, 428, 478, 1080, 1136
- potential oviposition sites** 633
- poultry litter** 140
- poultry manure** 991
- prairie** 577, 652, 834, 1257
- prairie habitat conservation** 587
- prairie landscapes** 626
- Prairie Pothole Joint Venture [PPJV]** 587
- prairie region grazed grassland** 511
- prairie soils** 528, 533, 963, 1154
- prairies** 58, 161, 247, 456, 479, 533, 610, 630, 662, 737, 767, 776, 865, 879, 912, 963, 970, 973, 979, 1017, 1042, 1087, 1114, 1177, 1213
- pre treatment data: collection** 1131
- precipitation** 19, 112, 385, 469, 689, 773, 814, 850, 861, 898, 1056, 1116, 1146
- precipitation related output** 4
- predation** 212, 317, 729, 778, 902, 1235, 1241, 1299
- predator** 595
- predators** 201, 595, 635, 720
- predatory arthropods** 201
- predawn xylem potential** 1302
- pregnancy** 1238
- prescribed burning** 160, 185, 192, 474, 570, 657, 812, 874, 932, 979, 1140, 1240
- prescribed burning: applied and field techniques** 614, 771, 1245
- prescribed burning: management method** 1101
- prescribed fire** 804, 1248
- prescribed fires** 898
- pressure chamber** 1302
- previous grazing management**
- practice influences** 1070
- prey** 638
- prey attack manoeuvre** 1250
- prey availability** 754
- prey relationships** 595
- primary** 765
- primary production** 876, 941
- principal component analysis: pca, mathematical method** 74
- principle component analysis: mathematical and computer techniques** 229
- private ownership** 1109
- Procyon lotor** 789
- production** 603, 729, 889, 1097
- production costs** 25, 991
- production strategies** 946
- productive grazing systems** 57
- productivity** 7, 340, 413, 511, 919, 1054, 1189, 1235, 1238, 1257, 1286, 1295
- profitability** 8
- pronghorn** 599
- propagation errors** 108
- protection** 621
- protection of forests** 1270
- protective effect** 796
- protective practices** 1030
- protectorates** 1002
- protein** 193
- protein content** 344, 351, 415, 425, 428
- protein intake** 432
- protein molasses blocks: animal feed** 379
- proteins** 603
- Psathyrostachys juncea** 237
- Pseudomonas aeruginosa** 512
- Pseudoroegneria spicata** 719
- Pseudotsuga menziesii** 591, 1287, 1292, 1302
- psuedoreplication: potential effects** 1070
- public grazing lands** 588
- public health** 69
- public policy** 1066
- publications** 681, 723
- Puccinellia maritima** 1202
- Puccinellian maritima** 858
- pugging** 40
- pulse phase dynamic model** 1192
- Pyrrhocorax** 202
- Pyrrhocorax pyrrhocorax** 202
- quail, Mearns harlequin** 631
- quality** 453
- quantitative analysis** 98, 320, 406
- Quebec** 161
- Queen Elizabeth National Park** 878
- queen snake** 175
- Queensland** 309, 430, 481, 612, 917, 1157, 1277
- Quercus** 1061, 1303
- Quercus douglasii** 830, 881
- rabbit** 839, 846
- Racomitrium ericoides** 1170
- radioactive pollution** 131
- radiocesium** 416
- radiotelemetry: monitoring method** 679
- rain** 17, 119, 126, 247, 289, 302, 319, 428, 469, 719, 776, 838, 912, 933, 984, 1007, 1016, 1082, 1211, 1229
- rainfall** 30, 41, 44, 56, 65, 359, 397, 515, 768, 876, 931, 946, 1146, 1192, 1228, 1294
- rainfall distribution** 89
- rainfall duration** 468
- rainfall intensity** 132, 515
- rainfall pattern** 974
- rainfall patterns** 880
- rainfall simulation** 468
- rainfall simulators** 44, 508, 522, 1228
- Rana** 713
- Rana luteiventris** 635
- ranching** 488, 546, 882
- randomized block design** 372
- range condition** 971, 1017
- range conditions** 860
- range degradation potential** 949
- range ecology** 551
- range improvement** 1075
- range management** 9, 13, 15, 45, 67, 75, 96, 97, 98, 105, 125, 136, 152, 161, 170, 175, 256, 257, 274, 290, 320, 321, 322, 323, 325, 326, 339, 356, 374, 386, 391, 396, 403, 406, 409, 446, 447, 471, 475, 479, 481, 488, 496, 509, 510, 514, 525, 528, 538, 550, 551, 610, 619, 638, 639, 655, 661, 682, 700, 704, 727, 741, 776, 788, 799, 800, 801, 803, 806, 808, 810, 827, 829, 836, 854, 865, 866, 874, 881, 887, 888, 900, 911, 937, 952, 957, 959, 975, 979, 983, 990, 991, 997, 1007, 1009,

Subject Index

- range management (contd.)** 1011, 1016, 1017, 1019, 1021, 1023, 1026, 1032, 1040, 1044, 1046, 1055, 1056, 1066, 1067, 1068, 1073, 1075, 1082, 1099, 1100, 1129, 1134, 1137, 1139, 1141, 1157, 1159, 1160, 1176, 1183, 1203, 1204, 1207, 1218, 1278
range management--Oregon 543, 1124
range management---United States 980
range recovery 1052
rangeland 480, 537, 575, 665, 735, 768, 834, 1128
rangeland condition 954
rangeland conservation 885, 1031
rangeland degradation 1135
rangeland dynamics 876
rangeland grazing management impact on habitat quality 1128
rangeland habitat 565, 576, 783
rangeland habitat management applications 565
rangeland management 646, 846, 860
rangeland management impact on habitat quality 1128
rangeland pasture 735
rangeland quality: restoration 1015
rangeland soils 457, 977
rangelands 435, 448, 475, 486, 502, 524, 525, 526, 550, 555, 560, 564, 565, 615, 639, 770, 774, 792, 827, 840, 848, 854, 855, 865, 868, 888, 932, 951, 977, 978, 986, 990, 1003, 1007, 1009, 1017, 1019, 1032, 1044, 1062, 1082, 1086, 1091, 1129, 1134, 1140, 1150, 1158, 1159, 1165, 1191, 1204, 1210
Ranidae 635
rare species 687, 814, 882, 953, 1162
rational voisin grazing 427
RDM 455
reach 18
reclamation 535, 1296
recolonization 194, 710
recommendations 1251
recommendations to reduce impact of grazing livestock on migrants 1251
recovery timescale 1181
recreation 69
recreational caving 4
recreational trails 690
recreational waters 69
recruitment 212, 577, 726, 805, 820, 899, 928, 1257, 1274
Red Butte Canyon 798
red chromosol 298
red ferrallic soil 288
red ferrallic soil 35
red grouse 558
redshank 558, 675
reduced sprout 923
reduced stocking density 511
reefs 515
refuge 625
refuges, wildlife 813
regenerating forest 891
regeneration 321, 333, 819, 928, 983, 996, 1260, 1267, 1282
Regina septemvittata 175
regional conservation planning 1110
regional conservation programs 632
regression analysis 1107
regression model 1029
regression model: mathematical and computer techniques 78
regrowth 305, 351, 405, 639, 792, 1067, 1132, 1213
regrowth yield 369
regulatory agencies 1240
rehabilitation 277, 1226, 1294
Reithrodontomys fulvescens 758
Reithrodontomys megalotis 758
related to diet 176
relative abundance 606, 690
relict areas 822
remediation program 906
remote sensing 797
renovation 1226
replacement rate 991
reproduction 213, 235, 577, 582, 618, 645, 717, 732, 814, 829, 844, 1234, 1235, 1238, 1257, 1258
reproduction and structure 1264
reproductive behaviour 582, 1234
reproductive effort 737
reproductive energy demand 659
reproductive management 445
reproductive output 820
reproductive performance 1117
reproductive productivity 213, 582, 618, 717, 732
reptiles 175, 595, 755
Reptilia 175
research 683
research programs 666
research--rivers and streams 569, 572, 656, 936
reseeding 568
reseeding effect 906
residual dry matter 455
residual dry matter treatment levels 1164
residual effects 34
residual vegetation cover 731
residue 1072
resilience 797
resistance to penetration 6, 52, 129
resource allocation 550
resource availability 318, 1153
resource base 634
resource management 23, 142, 298, 299, 459, 741, 779, 814, 1018, 1059, 1072, 1080, 1136, 1302
resource sustainability 1176
resource utilization 1283
resources management 720
respiration 29, 505
rest period 133
rest rotation 921, 1126
rest-rotation grazing 651, 705
rest rotation grazing system 1128
resting 173
restoration 1038, 1226
restoration ecology 329, 805, 1131
restorative grazing: applied and field techniques 1127
restricted autumn grazing 411
resuspended sediments 63
revegetation 638, 906, 1129, 1296
review 681, 716, 754, 781, 785
review and management implications 723
reviews 407, 429, 431, 809, 1017, 1040, 1044, 1062, 1225
Rhinichthys 683
Rhinichthys oculus 683
rhizomes 807
richness 459
rill erosion 508
ring ouzel 558
riparian 143
riparian areas 144, 215, 226, 1063, 1064, 1132
riparian areas---Idaho---
management 484
riparian buffer management 74
riparian buffers 199, 464, 495, 541, 555, 605, 627, 766, 799, 816, 827, 850, 887, 925, 966, 1011, 1012, 1043, 1047, 1098, 1104, 1139, 1144, 1167, 1172, 1222
riparian corridor 102
riparian ecology---United States 980
riparian ecosystem 562
riparian ecosystem ecology: livestock impact susceptibility 1131
riparian environments 43, 175, 187, 436, 506, 671, 757, 773, 777, 1038, 1115, 1168, 1173, 1226, 1243
riparian forests 538, 722
riparian grasslands 191, 672, 722, 1067, 1129
riparian grazing 174, 187, 960
riparian habitat 159, 569, 572, 576, 656, 680, 681, 698, 936, 1251, 1264
riparian habitats 679, 681, 1109
riparian land 1173
riparian livestock enclosure
research: critique, recommendations 1131
riparian management 74
riparian meadow system 677
riparian pastures 315
riparian vegetation 51, 175, 449, 629, 722, 1038, 1067, 1115, 1143, 1168, 1226, 1274, 1290
riparian zone 1038
riparian zone vegetation 926

- riparian zones** 629
risk 44
Rita Blanca Natl. Grasslands 630
river bank 159
river bank fauna 159
river bank species diversity 159
river banks 43, 51, 63, 187, 493, 494, 539, 666, 777, 1168, 1173
river basin management 515, 660, 1038
river catchment 81
river discharge 142
river ecosystem management 926
river flow 515
River Itchen 159
river regulation 899
river terraces 1260
river water 515
riverbank protection 79, 541
riverine ecology 83
rivers 61, 69, 153, 449, 569, 725, 1274
rivers and streams 683
Robinia pseudoacacia 434
rock phosphate 135
Rocky Mountains 733
Rodentia 223, 703, 714, 758, 897, 927
Rodentia: farming and agriculture 897, 927
rodents 223, 729, 927, 994
root biomass 41, 1286
root colonization 873
root distribution 244
root productivity 1079
root systems 972, 1213
root turnover rates 795
roots 840, 972, 1198, 1219, 1287
rootstocks 848
Rosa multiflora 434
Rosa woodsii 730
rosette 420
rotation 483
rotation grazing 1212
rotation grazing: applied and field techniques 771, 847
rotation period 424
rotational 460
rotational cattle grazing 587
rotational grazed pastures 587
rotational grazing 9, 33, 52, 67, 72, 80, 90, 105, 123, 157, 163, 191, 199, 228, 236, 237, 269, 271, 272, 275, 276, 294, 319, 326, 343, 344, 351, 364, 374, 375, 384, 388, 391, 398, 399, 409, 415, 418, 419, 422, 425, 427, 428, 429, 432, 434, 442, 474, 478, 540, 564, 629, 655, 736, 741, 759, 776, 801, 838, 859, 868, 892, 912, 940, 944, 949, 979, 985, 987, 992, 1016, 1023, 1087, 1130, 1166, 1177, 1178, 1204, 1210, 1289
rotational grazing: agronomic method, annual forages, perennial forages 138
rotational grazing: agronomic method, dairy pasture 441
rotational grazing: applied and field techniques 30, 115, 262, 288, 753, 1083
rotational grazing: miscellaneous method 349
rotational grazing practices 445
rotational grazing simulation model: mathematical model 1148
rotational grazing system 285, 347, 765, 876
rotational grazing system: applied and field techniques 1171
rotational stocking system: applied and field techniques 423
rotationally grazed sites 753
Rotifera 9
rove beetles 216
rowan 1303
rubber band model 1131
rumen fermentation 415
ruminant nutrition 1278
ruminants 1129, 1278
ruminating 173
runoff 19, 20, 44, 47, 65, 111, 112, 118, 119, 141, 447, 452, 469, 474, 487, 496, 515, 519, 913, 1003, 1139, 1216, 1224, 1228, 1229
runoff farming 32
runoff: flow weighted nitrogen concentration, flow weighted phosphorus concentration, total kjeldahl nitrogen concentration 78
runoff water 47
rural community 852
rural development 1020
Russia 854
ryegrass 369
sagebrush 778
sagebrush habitat 723
sagebrush steppe ecosystem 908
sagebrush vegetation 596
salamanders 814
sales premium 261
Salicornia europaea 1202
saline sodic soil 1216
salinity 532, 933
salinity stress 968
salinization 482
Salix 605, 766, 816, 887, 1098, 1104, 1167, 1222, 1299
Salix boothii and Salix geyeriana 1264
Salix exigua 1104
Salix spp. 676, 698, 922
Salmo 777
Salmo gairdneri 757
salmonid habitat recovery 1220
Salmonidae 569, 666, 757
salmonids 569
salt desert shrub community 606
salt land 903
salt marsh 782
salt marshes 809, 858, 904, 997, 1000, 1142, 1202
salt tolerance 957
Saltatoria 589, 770
saltmarsh: grazing management, habitat 708
Salvelinus fontinalis 671, 757
Sambucus nigra 1021
sample depth 682
sampling 54, 69, 189, 725, 813, 1257
sampling season 682
San Luis Province 557
San Luis Valley 813
sand bluestem 1058
sand ecosystems 1127
sand vegetation complexes 1123
sandy grassland 534
sandy loam soils 47, 86, 468, 526, 533, 609, 854
sandy soil 782
sandy soils 66, 502, 1207
Sangre de Cristo Mountains 1257
Santa Cruz County 631
Santa Rita Experimental Range 579
sapling responses 1259
Saskatchewan 319
satellite image processing: mathematical and computer techniques 1069
savanna 1221, 1235
savannahs 941
savannas 710, 719, 830, 859
scale dependence analysis: mathematical and computer techniques 1135
scaling 444
scandium 131
scarification 254
Sceloporus scalaris 595
Schleswig Holstein 263
Sciomyzidae 833
Scirpus acutus 737
sclerophilly 819
Scotland 113, 256, 416, 558, 717, 932, 965, 1122
scots pine 1300
Scottish blackface sheep 909
screening cover 908
scrub 579, 696, 723
scrublands 1017, 1134
seaside sparrow 162
season long grazing 474
seasonal changes 1024
seasonal dynamic 1149
seasonal dynamics 596, 1079
seasonal enclosure 1215
seasonal-grazing 903
seasonal grazing: applied and field techniques 753
seasonal grazing enclosures 1108
seasonal grazing impact on plant species diversity and vegetation structure 934
seasonal grazing regime 1155
seasonal growth 799

Subject Index

- seasonal variation** 4, 50, 77, 93, 96, 129, 280, 320, 321, 322, 351, 388, 389, 391, 405, 415, 428, 795, 808, 816, 830, 874, 881, 931, 933, 963, 965, 972, 978, 1129, 1132, 1159, 1183, 1185, 1258
- seasonal variations** 3, 55, 56, 69, 128, 886
- seasonal wetland** 730
- seasonality** 70, 89, 170, 186, 193, 209, 244, 265, 332, 340, 459, 480, 608, 616, 648, 659, 810, 899, 1121, 1135, 1170
- seasons** 654, 978
- secondary succession** 709, 1163
- sedge meadows: long term structural characteristics, nonequilibrium dynamics, recovery** 1078
- sediment** 448, 474, 501
- sediment contamination** 109
- sediment deposition** 509, 522
- sediment erosion** 118, 122, 1228
- sediment load** 44, 102, 109, 515
- sediment loads** 83
- sediment loss** 12, 133
- sediment pollution** 109
- sediment production** 133, 467
- sediment transport** 109, 142, 452, 515
- sediment yield** 119, 447, 469, 486, 519, 1229
- sedimentation** 121, 436, 454, 506, 1050
- sediments** 44, 60, 61, 63, 118, 364, 464, 496, 506, 508, 522
- seed applications** 259
- seed bank** 273, 974, 1123
- seed bank density** 1153
- seed characteristics** 907
- seed dispersal** 238, 1026
- seed dispersal distance** 252
- seed germination** 418, 963, 974
- seed output** 639
- seed predation** 899
- seed production** 34, 252, 260, 365, 820, 904, 907, 1270
- seed productivity** 807
- seed rain** 332
- seed removal** 899
- seed set** 252, 820
- seed sowing: management method** 252
- seed weight** 907
- seedbed preparation: applied and field techniques** 365
- seeding effect** 1288
- seedling** 824
- seedling emergence** 1117
- seedling establishment** 252, 820, 1113, 1162, 1220
- seedling growth** 1104, 1279, 1301
- seedling recruitment** 1156
- seedlings** 260, 276, 881, 937, 951, 1274, 1279, 1299, 1301
- seeds** 317, 638, 829
- selective cutting: harvesting method** 923
- selective grazing** 272, 705, 824, 859, 1086
- self grooming** 173
- semi arid** 845
- semi arid chenopod shrublands** 1085
- semi arid conservation area: post pastoral change** 404
- semi arid conservation areas** 1034
- semi arid ecosystem** 934
- semi arid grassland** 557
- semi arid horqin sandy steppe** 534
- semi arid rangeland** 1149
- semi arid rangeland: habitat** 450, 1147
- semi arid rangelands: habitat** 946
- semi arid region** 534
- semi arid sandy grassland** 534
- semi arid sandy region** 955
- semi arid savanna** 753, 826, 876
- semi arid shrubland** 819
- semi arid tropical woodland** 394
- semi arid tropical woodland: pasture management** 393
- semi arid woodland** 750
- semi natural community** 942
- semi natural grassland** 216, 218, 266
- semi natural grasslands** 382
- semi natural meadows: restoration** 1184
- semiaquatic habitat** 618
- semiarid climates** 1228
- semiarid conditions** 489
- semiarid ecosystem** 908
- semiarid environment** 470
- semiarid grasslands** 809, 1007, 1082
- semiarid plant community** 1153
- semiarid shrublands: habitat** 679
- semiarid zones** 302, 475, 486, 525, 560, 848, 888, 983, 1112, 1150, 1191
- semidesert grassland** 1212
- seminatural mountain grassland** 1156
- Serengeti National Park** 934
- serpentine soil** 853
- set stocking** 21, 254, 269
- setaside** 1258
- sethoxydim** 824
- severely defoliated pasture** 78
- sewage** 715
- sex differences** 645
- shadscale rangeland** 908
- Shannon diversity** 177
- Shannon index of diversity** 1262
- sharp-tailed grouse** 575
- sheep** 9, 15, 16, 17, 22, 44, 87, 98, 126, 166, 239, 256, 257, 269, 275, 289, 291, 317, 351, 359, 360, 361, 362, 369, 375, 386, 387, 459, 465, 510, 514, 558, 591, 719, 744, 792, 829, 830, 839, 846, 855, 918, 932, 937, 949, 957, 961, 965, 997, 1099, 1125, 1139, 1140, 1141, 1142, 1162, 1170, 1214, 1291, 1299, 1301, 1303
- sheep and cattle grazing** 43
- sheep exclusion impact** 1195
- sheep feeding** 326
- sheep grazing** 4, 164, 318, 370, 667, 821
- sheep grazing effects on breeding populations and community** 664
- sheep grazing impact on mountain pasture populations** 223
- sheep grazing management** 332
- sheep grazing pressure** 571, 717
- sheep grazing short term effects relative to other environmental factors in alpine ecosystem** 224
- sheep performance** 293
- Sheeprock Mountains** 603
- shelter** 431
- shelterbelts** 431
- shoots** 242, 807
- short-duration-grazing** 519, 653, 751, 1015
- short duration grazing effects** 781
- short duration grazing use** 781
- short duration grazing use as habitat management tool** 781
- short-eared owl** 558
- short grass** 523
- short term and continuous cattle grazing** 645
- short term and continuous cattle grazing effect** 645
- short term and continuous cattle grazing effects** 645
- short term cultivation** 534
- short term effects** 1143
- short term effects of cattle grazing** 225
- short term effects of cattle grazing in pastures** 225
- short term effects of cattle grazing on community structure** 225
- short term protection** 920
- short term rainfall** 1015
- shortgrass** 465, 1189
- shrinkage** 77
- shrub** 922, 1121, 1189
- shrub carr** 1078
- shrub clearing** 1152
- shrub clearing effects** 860
- shrub cover** 916, 1254
- shrub cover gradients** 753
- shrub dominated rangeland system** 981
- shrub encroachment** 370, 637
- shrub grasslands** 602, 607
- shrub intercept** 1212
- shrub-steppe habitat** 602
- shrub volume** 614
- shrub willow floodplain: habitat** 554
- shrubland** 579
- shrubland birds** 1248
- shrubland habitats** 579

- shrublands** 579, 1181
shrubs 389, 447, 502, 523, 719, 729, 764, 855, 888, 951, 1146, 1167, 1239, 1242, 1301
La Sierra de la Laguna 714
Sierra Nevada 455, 698, 785, 1261
Sigmodon fluviiventer 758
significance for amphibian predator 635
significance of grazing intensity effects on community ecology 263
silage 92, 211, 271
silage yield 264
silt 471
silt fraction 513
silt loam soils 6, 58, 540
silviculture 928, 1224
silvopastoral systems 395, 431, 1061, 1277, 1289, 1296
simply structured grazed grass vegetation 177
simulated grassland: grazed, irrigated 146
simulated nest method: applied and field techniques 200
simulated rotational grazing: clipping, field method 270
simulation 65, 1168
simulation model: mathematical and computer techniques 596
simulation modeling: modeling method 94
simulation models 25, 66, 93, 112, 126, 383, 550, 1082
Sitanion hystrix 988
site condition 1153, 1195
site features 1085
site history 1193
site preparation 289, 1296
site specific responses 1151
six year permanent plant plot survey 1152
size 189, 531, 645, 714, 717, 778, 813
size and weight 714
size and weight relationships 714
size trait 1153
slope 31, 389, 468, 476, 481
slope aspect 360, 362
slope position 880, 1110
slope positions 12
slopes 515
slopes (topography) 515
sloping land 867
slug 658
slurry handling 381
small 634
small fenced paddocks 1085
small mammal 733
small mammals 199, 226, 600, 663, 764
small scale disturbance 784
small taxa 618, 748, 1255, 1256
small taxa community structure 1255
small watersheds 115, 118
snail 658
snow 519
snow cover 946
snow fencing 821
Snowdonia National Park 120
social conditions 946
social interaction 173
sod formation 1269
sodic soils 535
sodium 71, 513
soil 6, 7, 23, 24, 49, 65, 128, 240, 277, 352, 358, 360, 457, 485, 498, 938, 1001, 1072, 1223, 1229
soil acidification 41
soil aeration 1194
soil aggregates 77
soil alkalinity 1003
soil amendments 320
soil analysis 1000
soil and water 652
soil bacteria 15
soil biological properties 534
soil biology 929
soil bulk density 567, 862, 885
soil chemical properties 534, 1003
soil chemistry 58, 358, 479, 500, 532, 535, 811, 868, 972, 1016, 1114, 1223, 1226, 1277
soil communities 768
soil community and nutrient availability relationships 410
soil community composition and densities 410
soil community structure 120
soil compaction 6, 9, 26, 47, 52, 77, 129, 130, 474, 510, 526, 529, 817, 892, 1001, 1154, 1223, 1231, 1296
soil compaction reduction 862
soil composition 513
soil condition 860
soil conservation 11, 474, 672, 836, 848
soil cover 394, 1217
soil crust 920
soil degradation 6, 17, 52, 71, 540, 809, 1006, 1030
soil density 346, 485, 520, 1223
soil depth 71, 476, 478, 567, 1114
soil disturbance 12, 1033, 1110, 1151
soil disturbance interactions 853
soil environment 132
soil environment: biotic pressure 530
soil enzymes 125
soil erosion 8, 31, 51, 63, 65, 444, 447, 451, 460, 487, 505, 525, 908, 954, 1006, 1228, 1273
soil erosion protection 1069
soil fauna 228, 410, 667, 704, 917
soil fertility 7, 9, 13, 42, 52, 58, 67, 71, 75, 430, 479, 481, 490, 491, 513, 540, 570, 974, 1003, 1184, 1277
soil fertility gradients 968
soil fertility management 530
soil fertility status 530
soil flow pattern 908
soil fungi 15, 894
soil habitat 120, 410, 571, 667, 917
soil heterogeneity 66
soil horizons 67
soil hydrophysical properties 1216
soil infiltration 480
soil infiltration rate 1265
soil injection 416
soil invertebrates 207
soil loss 143, 465, 499
soil macropores 92
soil macroporosity 12
soil management 2, 15, 229, 929
soil mechanics 26, 47, 77, 539
soil mesofauna: soil ecosystem component 682
soil microbial analysis: laboratory techniques 530
soil microbial biomass 29
soil microorganisms 13, 113, 125, 136, 430, 475, 481, 514
soil moisture 229, 567, 941, 1302
soil monolith lysimeter: field equipment 114
soil movement 131, 908, 1229
soil nitrogen and carbon dynamics model soiln: mathematical and computer techniques 92
soil nutrient 424
soil nutrient availability 410
soil nutrient balance 25, 1278
soil nutrient dynamics 86, 818
soil nutrients 58, 408, 831, 1286, 1295
soil organic matter 45, 76, 86, 136, 320, 377, 385, 430, 456, 481, 485, 491, 513, 514, 532, 533, 540, 865, 973, 1080, 1223, 1277
soil organism activity 441
soil parameters 492
soil particle size distribution 534
soil pedestal 908
soil permeability 150
soil pH 15, 58, 67, 71, 76, 113, 125, 320, 395, 430, 478
soil physical condition 73
soil physical properties 6, 12, 26, 52, 65, 130, 328, 510, 513, 534, 872, 1003
soil physics 7, 457, 535, 868, 1223
soil-plant interactions 1277
soil pore system 76, 77, 93, 126, 520
soil porosity 65
soil properties 71, 128, 478, 535, 538, 793, 865, 868, 1001
soil properties: bulk density, hydraulic conductivity, microbial activity, organic carbon content, penetration resistance, pore geometry 137
soil properties: drainage 285

Subject Index

- soil quality** 41, 107, 113, 130, 245, 430, 456, 993, 1231
soil quality: soil structure component 137
soil resource management 534
soil respiration 475, 530
soil salination 337
soil salinity 30, 1003, 1194
soil sample chemical analysis 861
soil sampling 1058
soil science 31, 94, 328, 499, 1226
soil seed bank 238, 394, 804, 935, 1155
soil seed bank: pasture legume persistence 365
soil seed banks: abundance, composition, richness, species divergence 1156
soil seedbank size 367
soil sequestration 511
soil stability 459, 546
soil strength 38, 130, 510
soil structure 47, 546, 971
soil surface characteristics 347
soil surface condition 473
soil temperature 323, 567, 810, 1074
soil temperature gradients 753
soil test values 478
soil texture 45, 76, 513
soil transformations 517
soil transport processes 93, 126, 149
soil type 151
soil types 26, 47, 113, 123, 228, 395, 533, 855
soil types chemical 535
soil types ecological 457
soil types physiographic 486
soil water 3, 66, 76, 80, 93, 130, 247, 276, 377, 481, 508, 1114, 1223, 1287
soil water balance 123, 519, 1229
soil water conservation 470
soil water content 52, 66, 77, 126, 129, 298, 299, 320, 323, 476, 520, 868, 1082, 1222
soil water: content, patterns 108
soil water measurement: applied and field techniques 108
soil water movement 123, 485, 486, 526, 1230
soil-water-plant relationships 1228
soil water regime 138
soil water regimes 93, 1154
soil water retention 477
soil waterlogging 1194
soils 23, 128, 546, 773, 813, 1097, 1226, 1237, 1238
sol conditions 29
solar mobile fence grazing system: applied and field techniques 852
solar radiation 56
Somalia 502, 1081
songbird 1257
songbird conservation 172
songbirds 610, 1115
Sonoran Desert 824
Sorbus aucuparia 1303
Sorensen's Similarity Index: mathematical and computer techniques 707
Sorensen's qualitative similarity index 942
Sorensen's quantitative similarity measure 942
sorption 85
south 223, 565, 770
South Africa 514, 797, 949, 951, 1136
South America 557, 696, 703
south central 732
South Island 41, 1080
South Platte State Wildlife Area 1256
southeast 927
Southeastern District 631
Southeastern United States 234, 1160
southern Africa 797
southern mixed prairie soil restoration: grazing effect 914
southern pine bluestem forests 1238
Southern Plains 1058
Southwestern United States 925
sowing 11, 86, 396, 829, 1032
sowing: applied and field techniques 942
sowing density 414
sown grasslands 123, 346, 405, 1289
sown pastures 166, 1075
Spain 428, 894, 976
sparrow habitat 162
Spartina 1098
Spartina pectinata 1098
spatial autocorrelation 822
spatial biomass 1080
spatial changes 4
spatial dependence 1039
spatial distribution 66, 229, 444, 531, 817, 845, 979, 1161
spatial distribution of low density populations 770
spatial heterogeneity of low density populations 770
spatial landscape 1036
spatial relationships 1245
spatial scale 843
spatial scale variation 1089
spatial scales 214, 1245
spatial structure 190
spatial variability 139
spatial variation 140, 389, 437, 491, 769, 831, 1161, 1277
spatial variations 63
spatially dynamic model 190
spatially non uniform excretion 92
specialist 676
species abundance 177, 181, 194, 204, 273, 315, 370, 573, 584, 586, 677, 678, 750, 751, 773, 1074, 1170, 1185, 1252, 1254
species accumulation 164
species assemblages 1247
species composition 208, 233, 235, 273, 310, 332, 373, 440, 614, 649, 853, 862, 864, 880, 890, 904, 968, 974, 1125, 1126, 1185, 1215, 1262, 1271, 1273
species density 576, 693
species distribution 576, 693
species diversity 159, 161, 166, 175, 179, 199, 205, 213, 214, 226, 228, 248, 260, 263, 266, 317, 325, 366, 395, 402, 403, 404, 423, 430, 459, 557, 584, 586, 623, 638, 639, 649, 684, 686, 690, 696, 702, 707, 740, 744, 759, 764, 769, 771, 794, 832, 833, 834, 861, 863, 882, 885, 886, 888, 897, 898, 902, 924, 938, 951, 966, 968, 978, 994, 997, 998, 1001, 1017, 1020, 1021, 1036, 1050, 1066, 1089, 1091, 1110, 1114, 1132, 1140, 1142, 1171, 1172, 1185, 1202, 1205, 1219, 1237, 1239, 1242, 1254, 1295
species diversity: exotic, native 853
species dominance 649
species equitability 214
species establishment 248
species evenness 281, 1237
species frequency 863, 1194
species invasion 404, 853
species management 622
species number 208
species occurrence 208
species rich mountain grassland restoration 238
species richness 175, 177, 181, 183, 191, 196, 204, 205, 214, 248, 281, 315, 404, 408, 414, 420, 584, 592, 613, 677, 690, 693, 707, 750, 769, 784, 793, 811, 832, 833, 835, 843, 853, 867, 872, 882, 883, 885, 886, 908, 920, 926, 941, 956, 958, 962, 968, 998, 1001, 1002, 1003, 1040, 1049, 1060, 1089, 1091, 1092, 1095, 1108, 1110, 1135, 1162, 1194, 1206, 1208, 1294
species specific responses 993
species structure 996
species traits 235
specific gravity 1298
specific leaf area [SLA] 806
spectral mixture analysis: laboratory techniques, spectrum analysis techniques 822
Spergulo-Corynephorum 1123
spermatophytes 1273
Sphaeralcea coccinea 247
spider 658
spider web count 649
split block design 862

- split plot design** 923
Sporobolus 799
spray irrigated grazed grassland 380
spray irrigation: applied and field techniques 380
spring 419, 520, 655, 881, 972, 1014, 1097, 1104
spring autumn pasture 892
spring burning 1005
spring feeding 782
spring grazed area 1070
spring grazing 156
spring grazing management 286, 287
springs 3
springs (water) 966, 1053
St. Johns River Basin, Florida 162
stable isotopes 149
stand age 613
stand density 1102, 1239
stand dynamics 1273
stand size 613
stand structure 437, 998, 1091
standing crop 498, 889, 1097
standing dead biomass 1079
standing stock 777
Staphylinidae 166
state and transition model 876
state and transition model: mathematical and computer techniques 793
state subsidies 261
state transition approach 1164
statistical analysis 491
statistical analysis management 1286
statistical models 56
statistics 189, 1241
status 558
steady state 517
steelhead trout 504
steepland soils 486
steers 13, 343, 352, 388, 799, 838, 985, 987, 1100, 1165, 1207
stems 719, 1104
steppe 931
steppes 702, 808, 818, 855, 982, 1017, 1023
sterile loam 332
Stipa comata 1107, 1190
Stipa lettermanii 1190
Stipa nitida 846
Stipa thurberiana 988
Stipa viridula 730, 1107
stochastic weather 1077
stock density 946
stock husbandry 315
stock management: changes, management method 849
stock ponds 626, 1232
stocking 498, 833, 1024
stocking densities 791
stocking density 129, 205, 248, 315, 331, 469, 833, 1057, 1082
stocking intensities 78
stocking intensity 1238
stocking level 604
stocking levels 1106
stocking rate 8, 17, 25, 52, 80, 87, 123, 130, 152, 163, 166, 183, 201, 256, 289, 298, 299, 316, 326, 335, 343, 344, 347, 354, 375, 388, 397, 424, 425, 426, 428, 432, 437, 445, 465, 479, 481, 510, 514, 525, 528, 537, 540, 550, 693, 719, 838, 859, 876, 881, 912, 913, 932, 939, 949, 952, 963, 970, 975, 979, 983, 984, 985, 987, 991, 1007, 1013, 1018, 1019, 1021, 1062, 1073, 1087, 1100, 1140, 1145, 1157, 1165, 1177, 1189, 1207, 1209, 1210, 1211, 1213, 1218, 1230
stocking rate reduction 172
stocking rates 205, 771, 1085, 1109, 1245, 1254
stockposts 820
stocks 205
stolon 267
stolons 405, 442
stomatal conductance 1302
storage 291
storm runoff 109
storm seepage 56
storms 56, 469, 627
stormwater runoff 515, 1228
stratified quantitative sampling: sampling method 214
straw 34, 95
stream 39, 635
stream bank stability 629
stream banks 63, 175, 1168
stream channel 4, 629
stream channel changes 542
stream conservation---Idaho 484
stream depth 773
stream erosion 105, 364, 448, 627, 1167
stream flow 69, 495, 544
stream pollution 109
stream quality 74
stream restoration 74
streambank erosion 501
streambank fencing 175
streamflow 539
streams 10, 18, 43, 51, 53, 61, 63, 69, 72, 98, 102, 144, 154, 187, 199, 357, 364, 446, 448, 449, 464, 493, 506, 509, 541, 569, 627, 774, 827, 850, 913, 1043, 1047, 1167, 1168, 1173, 1225
streams and ponds 635
streams (in natural channels) 1173, 1274
streamwater quality 4
Streptococcus 54, 55
Strigidae 785
Strigiformes 785
strip grazing: applied and field techniques 852
Strix nebulosa (Strigidae) 785
structural change 1153
structural complexity 211
structural deterioration 21
structural heterogeneity 229
structurally complex herbaceous vegetation 177
stubble 944
study popularization 1131
Stylosanthes 1100
Suaeda maritima 1202
sub alpine habitat 1089
sub-Saharan Africa 797
subalpine grassland 280
subalpine meadows 281
subalpine wood pasture 331
subsoiling 1296
substrates 794
subtropical condition 363
subtropical grasslands: habitat 1110
subtropical pasture 225
subtropics 274
succession 85, 345, 373, 408, 438, 858, 1022, 1050, 1078, 1179, 1199
successional stability 1190
successive flood irrigation events 78
succulent karoo: biome 820
Sudanian savannah silviculture 923
suitable sward structure 222
sulfur 67, 251
sulfur fertilizers 251
sulfur hexafluoride tracer technique: applied and field techniques 379
summer 419, 469, 520, 655, 881
summer grazing 942
summer irrigation 328
summer rainfall environment 308
summer vegetation 498
super phosphate 359
superphosphate 360, 361, 362, 1075
supplementary feeding 250
surface area 713, 794
surface-groundwater relations 54
surface layers 11, 58
surface roughness 26, 474, 522
surface runoff 31, 62, 132, 499
surface water 10, 109
surface water quality 81
surveys 201, 296, 366, 1241, 1257
survival 4, 56, 252, 276, 689, 729, 820, 1113, 1117
susceptibility 687
suspended sediments 63, 515
sustainability 64, 127, 395, 424, 429, 513, 533, 982, 1065, 1067
sustainable agriculture 1055, 1066, 1278
sustainable dynamics 890
sustainable grazing management 1077
sustainable grazing system 426
sustainable pastoral use 41
sustainable use 693

Subject Index

- sustained yield management** 800
sward 13, 75, 100, 166, 256, 339, 351, 428, 932
sward composition 293
sward defoliation 211
sward dynamics 392
sward height 416, 890
sward stability 1090
sward structure 909
swards: unfertilized, ungrazed 273
Sweden 904
sweep sampling: applied and field techniques 707, 1245
sycamore 1303
Sylvilagus auduboni 574
symbiosis 98
Symphoricarpos occidentalis 730, 916
synecology 438
system productivity 1164
tail autotomy 637
tall threetip sagebrush bunchgrass plant community 1070
tall threetip sagebrush steppe 1070
tallgrass prairie 552, 707, 873
tallgrass prairie establishment 329
tallgrass prairie habitat 699
tallgrass prairie preserve 582
Tamaulipan Biotic Province 679
Tanzania 934
target species response 238
Tasmania 275
taxonomy 806
Tayassu tajacu 789
Tbilisi area 314
telemetry 778
temperate eucalypt forest: dell woody understory flora 1263
temperate grasslands 32, 1049
temperate humid grasslands: habitat 968
temperate pastures 341
temperate subhumid upland grasslands: habitat 806
temperate vegetation 1108
temperate zones 32, 402, 431
temperature 56, 276, 512, 773, 946, 1082
temperature effects 187, 814
temporal response 1179
temporal variation 281, 389, 437, 769, 1082
temporal variations 876
terrestrial adult phase 177
terrestrial communities 1246
terrestrial ecology 29, 328, 552, 553, 878, 1080, 1235
terrestrial fine woody debris 926
terrestrial habitat 120, 159, 176, 182, 210, 213, 217, 221, 223, 224, 225, 263, 297, 314, 410, 565, 571, 579, 582, 589, 612, 664, 667, 681, 696, 699, 711, 718, 723, 735, 748, 770, 781, 783, 785, 841, 897, 917, 927, 934, 1128, 1246, 1251, 1255, 1256, 1264
terrestrial phases 177
territory 668
Texas 25, 86, 169, 178, 496, 537, 560, 565, 601, 607, 609, 630, 643, 644, 645, 646, 670, 736, 746, 747, 752, 789, 791, 939, 940, 1158, 1165, 1207, 1209
Texas, southern 607
Texas: Zavala County 673
textural soil types 76
Thailand 1100
Thamnophis sirtalis 175
thesis 642
thin leaf alder 1220
thinning law 361
thornscrub ecosystems 679
threatened species 602
Thymelaea hirsuta 570
tillage 456
tillage agriculture 626
tillage impact 489
tiller density 287
tiller production 348
tillering 326, 422, 428, 429
tillers 251, 276, 368, 429, 838, 985, 1166
timber industry 1292
timber management 1261
timber treatment: field method, pasture management method 393
time series analysis 452
tissue turnover 286
toads 660
Tonto Basin 729
topographic effects 515
topography 112, 531, 532, 763, 805, 879, 920, 944, 1150, 1237
topping 9
topsoil 16, 63
total soil carbon 139
total soil nitrogen 139
total viable count [TVC] 530
totara-matai forests 1260
toxicity 416
Toxostoma rufum 1233
tracheid length 1298
Tracheophyta 1142
traditionally managed sward 258, 259
trails 448
trampling 6, 21, 26, 32, 47, 49, 52, 129, 130, 254, 268, 284, 328, 366, 389, 412, 448, 480, 546, 600, 658, 817, 924, 938, 1015, 1074, 1091, 1175, 1194, 1223, 1265, 1267
trampling by cattle 159, 582
trampling effects 499
trampling: nest damage 200
trampling simulation: applied and field techniques 417
transect method 233
transgenic plants 234
transpiration 1005
trapping 778
trapping success 909
treading 40, 64, 117, 352, 353
treading damage 361
tree clearing 1295
tree grade 1298
tree growth 1283
tree planting 102
tree recovery 1220
tree species composition 613
treeline lowering 891
treelines 907
trees 389, 729, 1296
trends 558
Trichachne californicum 1121
Trifolium 86, 406
Trifolium ambiguum 419
Trifolium dubium 362
Trifolium pratense 362, 396
Trifolium repens 9, 13, 84, 152, 166, 257, 271, 306, 326, 362, 416, 418, 428, 442
Trifolium subterraneum 333, 362, 947
Tringa totanus 675
triticale 119, 129, 478, 479, 972
Triticosecale-wittmark 129
Triticum aestivum 38
Triticum dicoccoides 869
Troglodytes aedon 1233
trophic level interaction 634
trophic niche 703
trophic relationships 1042
trophic resources 784
trophic structure 263, 703
tropical alpine 901
tropical dry forest 1262
tropical forests 1277
tropical grasslands 481, 860
tropical montane rainforest 248
trout 720
true bugs 224
true cattle 1226
true flies 224
Tunisia 1187
turbidity 74, 629
Turdus migratorius 676, 1233
turkeys 643
tussock grass 901
tussock grasslands 41, 1080
tussock structure 1110
twinspan: classification method 1200
twinspan: two way indicator species analysis, computer software 686
two way indicator species analysis: twinspan, applied and field techniques 1164
tympanuchus phasianellus 575
Tympanuchus phasianellus (Phasianidae): farming and agriculture 732
typha 726, 1205
Typic Dystrochrept 135
Uganda 871

- UK** 416
Ulmo rubetum ulmifolii 438
Ultisols 123
understorey 1182, 1239, 1242
understory 687, 1143
ungrazed 1120
ungrazed areas 1070
ungrazed exclosure 534
ungrazed pastures 633
Ungulata 834, 928
ungulates 565, 783, 834, 928, 934, 1128, 1129, 1161
unifying conceptual framework 1131
United Kingdom 93, 95, 120, 159, 176, 182, 207, 217, 558, 717, 961, 1122
United States 162, 189, 203, 569, 572, 590, 603, 607, 630, 631, 640, 651, 652, 665, 668, 673, 683, 701, 729, 767, 778, 788, 798, 813, 1010, 1017, 1042, 1068, 1097, 1116, 1129, 1241, 1257
univariate analysis: mathematical and computer techniques 168
Universal Soil Loss Equation 508
unmanaged alpine meadow 200
unsaturated flow 66
unsaturated hydraulic conductivity 17, 510
upland areas 1106
upland conifer forests: habitat 315
upland forests 1273
upland grassland vegetation: continuous grazing effect, rotational grazing effect 282
upland grasslands 945
upland livestock production: long term effects 371
upland sandpiper 1248
upland sandpipers 1248
upland soils 15, 16, 26
upland sown grassland 273
upland stream 4
Upper Meadow Creek 1264
upstream distances 1109
urea 75, 96
urea and corn [URC]: animal feed 379
urease 125
urinary nitrogen 350
urination 1015
urine 89, 100, 128, 339, 381, 817
urine affected areas 94
Urtica dioica 1021
US EPA: government agency 151
USA 62, 101, 170, 175, 213, 221, 225, 305, 537, 565, 575, 579, 582, 589, 602, 608, 635, 645, 646, 652, 659, 664, 668, 673, 698, 699, 711, 716, 718, 732, 733, 755, 770, 783, 785, 789, 791, 841, 897, 927, 1005, 1024, 1121, 1128, 1175, 1212, 1225, 1234, 1235, 1238, 1251, 1256, 1261, 1264
USA, Appalachia 1226
USA, Appalachian Mts. 1226
USA, Arizona 1115, 1146
USA, Arizona, San Pedro R. 1115
USA, Arkansas, Northwest 55
USA, California 506, 720, 814, 882
USA, California, Central Valley 882
USA, Colorado 10
USA, Colorado, Sheep Creek 777
USA, Florida 205
USA, Georgia 109
USA, Idaho 1168
USA, Idaho, Summit Creek 757
USA, Kansas 1205
USA, Kentucky 54, 111
USA, Montana 539
USA, Montana, Missouri R. 1274
USA, Nevada 488
USA, New Mexico, Vacas R. 666
USA, North Dakota 647
USA, Ohio 118, 121
USA, Ohio, Coshocton 122
USA, Oregon 725, 1038
USA, Oregon, Catherine Creek 493
USA, Pennsylvania 128
USA, Tennessee 51
USA, Texas 786
USA, Texas, east 142
USA, Utah, Bonneville Basin 794
USA, west 1173
USA, west virginia 3, 153
USA, West Virginia, Greenbrier R. 153
USA, western 1173
USA, Wisconsin 436
USA, Wyoming 671
USDA Forest Service 773
use efficiency 1007
USEPA 54
UT 664
Utah 459, 463, 518, 603, 627, 664, 711, 734, 745, 764, 772, 774, 798, 915, 1014, 1174, 1175, 1214
Utah: Fish Lake Natl. Forest 651
utilization 100, 603, 1097
Valeriana 1299
valley grassland 1164
Vanellus vanellus 688
varied grazing management 649
vascular plant 459
vascular plants 377, 1273
VB2000 model: mathematical and computer techniques 108
vector 765
vegetation 19, 20, 63, 167, 181, 189, 203, 211, 214, 258, 259, 296, 316, 319, 329, 389, 420, 440, 474, 492, 506, 603, 639, 651, 729, 737, 778, 780, 786, 798, 809, 813, 833, 856, 858, 871, 896, 928, 933, 945, 971, 990, 997, 1002, 1006, 1017, 1018, 1021, 1050, 1080, 1097, 1131, 1156, 1168, 1202, 1204, 1205, 1210, 1214, 1216, 1218, 1229, 1238, 1241, 1257
vegetation biomass 124
vegetation change 273, 281, 439, 1015, 1193, 1194, 1195
vegetation change: grazing exclusion, intermittent burning 1196
vegetation changes 921
vegetation: changes, development, succession 1060
vegetation changes: grazing induced 1070
vegetation colonisation 22
vegetation composition 315, 553, 793, 811, 820, 864, 926, 974, 1052, 1059, 1106, 1151
vegetation: composition, nutritional quality, structure 204
vegetation cover 43, 51, 61, 63, 157, 187, 275, 500, 506, 515, 626, 666, 720, 786, 797, 811, 812, 818, 822, 833, 858, 1085, 1101, 1202, 1205, 1206, 1218, 1228, 1235, 1294
vegetation damage 768
vegetation density 753
vegetation development 1200
vegetation dynamics 382, 400, 1149, 1155, 1282
vegetation effects 370, 1001, 1168, 1228
vegetation fragmentation 594
vegetation height 811, 1143
vegetation heterogeneity 1045
vegetation management 229, 588
vegetation measurement: applied and field techniques 1070
vegetation model 1282
vegetation parameters 1015
vegetation patterns 886
vegetation preservation 1033
vegetation reduction 1261
vegetation removal 654
vegetation resource 845
vegetation response 235, 1208
vegetation responses 804
vegetation restoration 1215
vegetation species composition 996
vegetation stability 1181
vegetation structure 194, 553, 649, 676, 811, 822, 826, 901, 926
vegetation succession 1185, 1194, 1197
vegetation succession: management effects, sowing effects 942
vegetation survey: survey method 1194
vegetation surveys 968
vegetation transitions: twinspan created 1164
vegetation types 679, 722, 868, 915, 1081, 1270
vegetation yield 931
vegetational composition 710
vegetational structure 710
vegetative cover 215, 423, 885
vegetative ground cover 751

Subject Index

- vegetative performance 1117
 vegetative structure 215, 1059
 vegetative tiller 930
 veld type 949
 Venezuela 941
Veratrum californicum 698
 Vermont 9, 221
 versatile soil moisture budget
 model: mathematical and computer
 techniques 108
 vertebrate pests 1049
 vertebrate response 750
 vertebrates 176, 213, 223, 565,
 579, 582, 618, 635, 645, 664, 696,
 699, 703, 711, 714, 717, 723, 732,
 735, 748, 781, 783, 785, 841, 897,
 927, 934, 1128, 1129, 1187, 1234,
 1251, 1255, 1256, 1264, 1284
Vertigo moulinsiana 886
 vertisol: cracking, self mulching
 458
 vesicular arbuscular mycorrhizae
 873
 vesper sparrow 1248
 vesper sparrows 1248
 viability 264, 807
 Victoria 333, 1065
 Victoria (Australia) 275
 violet-green swallow 1236
 violon caninae stand 238
 Virginia 105
 visual obstruction reading: VOR,
 applied and field techniques 587
 volatilisation loss 50
 volatilization 236, 409
 vole mound effects 784
 voles 932
 volume 717, 888, 951
 vulnerability 814
 wader 674
 wadis 1002
 Waite-Nicolson rangeland
 management method: management
 method 1085
 Wales 98, 113, 120, 125, 166, 317
 wandoo woodland 938
 wapiti 651, 652, 665
 warm season 1024
 Wasatch Mountains 798
 Washington 569, 602, 652, 738,
 1103
 Washington, southeastern 652
 water 116, 453, 521, 1005
 water balance 861
 water chemistry 543
 water chemistry: stream quality
 parameter 74
 water column 205
 water conservation 496, 836
 water content 546, 941
 water deficit 123
 water depth 902
 water distribution 610
 water enrichment 1110
 water erosion 79, 474, 489, 508,
 522
 water extraction 899
 water flow 76, 468
 water holding capacity 478
 water infiltration rates 872
 water inflow sampling sites 4
 water level 813
 water management 32, 515, 854,
 933
 water movement 483
 water pollution 54, 66, 69, 93, 98,
 101, 126, 149, 150, 453, 468, 1173
 water pollution sources 19, 20, 53,
 109, 132
 water quality 3, 8, 10, 14, 19, 20,
 36, 56, 67, 72, 83, 90, 105, 106, 109,
 110, 121, 141, 146, 152, 153, 154,
 175, 364, 446, 449, 454, 494, 515,
 660, 720, 722, 737, 1038, 1139,
 1173, 1224, 1225
 water quality control 56, 153
 water quality---Idaho 484
 water quality (natural waters) 141,
 1173
 water quality standards 55
 water relations 32
 water resources 109, 153, 1047
 water source introduction 750
 water status 1024
 water stress 1287
 water supply 54, 105, 109, 450
 water table 1222
 water table depths 315
 water troughs 105, 154
 water use 123
 water use efficiency 138
 water wells 153
 watercourses 515
 waterfowl 161, 231, 700, 780
 waterlogged 23
 waterpoints 1085
 watershed 62, 74, 628
 watershed condition 498
 watershed management 23, 51,
 502, 508, 509, 1010, 1139
 watersheds 112, 116, 118, 121,
 142, 153, 446, 449, 452, 468, 469,
 488, 494, 502, 549, 689, 757, 1010
 weak study designs 1131
 weaning weight 991
 weather 150, 230, 1097
 weed 333
 weed control 242, 246, 367, 375,
 434, 937, 1026, 1099, 1276, 1292,
 1299
 weed invasion 363, 993, 1250
 weeds 242, 294, 360, 396, 407,
 415, 998, 1026, 1041, 1299
 weight 714, 717, 807, 972, 1238
 weight gain 347, 799
 Weilheim 197
 west 681, 716
 West Midlands 176
 western amager 748
 Western Australia 667, 957, 983
 western bluebird 1236
 western curlew 558
 Western European region 1000
 western jumping mouse 733
 western kingbird 1236
 western meadowlark 630
 western ragweed 1058
 western region 603, 778
 Western States of USA 1129
 Western United States 1046, 1051
 Western USA 1273
 wet environmental conditions 831
 wet grassland 674
 wet heaths: habitat 1106
 wet meadow restoration 862
 wet meadows 618
 wetland 625, 755, 780
 wetland conservation---United
 States 980
 wetlands 56, 205, 215, 231, 291,
 546, 626, 660, 663, 684, 726, 737,
 780, 794, 813, 814, 882, 886, 902,
 933, 1011, 1012, 1053, 1137, 1168,
 1205, 1226
 wheat 34
 wheatear 558
 whinchat 558
 white clover 303, 361
 white clover pasture 293
 white fir 1261
 white-tailed deer 673, 1238
 white wagtail 558
 whole farm management 443
 width 364
 wild animals 231, 550, 638, 639,
 663, 705, 1067, 1270
 wild birds 161, 163, 207, 231, 623,
 638, 639, 657, 684, 1257, 1258
 wild plants 697
 wilderness 1102
 wildfire 1070, 1221
 wildfires 710, 1134
 wildlife 19, 20, 551, 555, 557, 558,
 575, 590, 602, 603, 619, 630, 640,
 651, 652, 665, 668, 673, 675, 727,
 760, 766, 767, 779, 807, 925, 994,
 1042, 1104, 1182, 1205, 1235, 1238,
 1239, 1242, 1257, 1299
 wildlife conservation 202, 692, 769
 wildlife habitat 412
 wildlife habitat improvement 551
 wildlife-habitat relationships 599,
 798
 wildlife habitats 207
 wildlife-livestock relations 655,
 724, 741
 wildlife-livestock relationships
 599, 603, 631, 798
 wildlife management 157, 160,
 161, 169, 342, 551, 560, 602, 616,
 655, 657, 659, 700, 724, 733, 741,
 744, 913, 944, 1011, 1238
 wildlife restoration 908
 willow grouse 558
 Wilson's warbler 733
 wind damage 840
 wind effects 840

Environmental Effects of Conservation Practices on Grazing Lands

wind erosion 462, 513, 534, 840, 848
windbreaks 431
winter 623, 652, 881, 1014
winter grazing 101, 1092
winter habitat manipulation by livestock grazing 711
winter range habitat 728
winter seed predation 899
wiregrass 1285
Wisconsin 72, 163, 203, 213, 364, 391
wood buffer 74
woodland 420
woodland climax 631
woodland grasslands 1229

woodland: habitat 956
woodlands 317, 448, 817, 881, 1062, 1229, 1239, 1242, 1257, 1269, 1270, 1277
woodlands: fragmentation, restoration 964
woodlands: grazing, shifting mosaics 1293
woody encroachment 822
woody plants 807, 850, 957, 1140
woody vegetation 1146
woody weeds 302, 855, 1032
wool production 892
wounding 268
Wyoming 247, 526, 850, 987
xeric environment 885

xeric habitat 1121
Yass Area 297
yield 254
yield growth 38
yields 271, 279, 430, 1207
Yucca glauca 475
Zapus princeps 733
Zea mays 11
Zenaida macroura 574, 789
zinc 71
zonal community 1189
Zonotrichia leucophrys 676
zoobenthos 61, 187, 205, 725
Zygoptera 737