United States
Department of
Agriculture

Forest Service

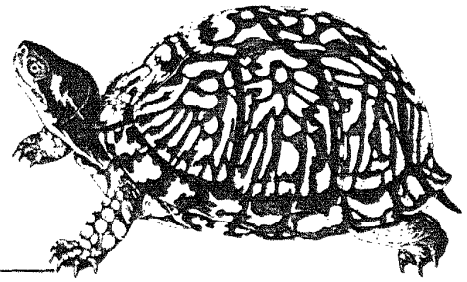
**Northeastern Forest
Experiment Station**

General Technical
Report NE-108

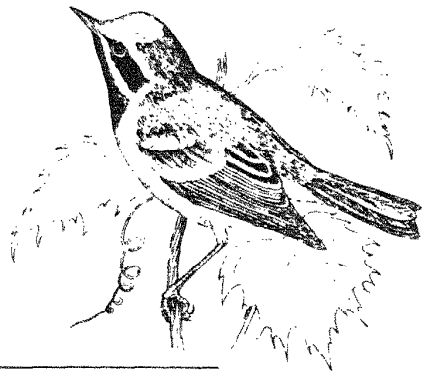
New England Wildlife: Habitat, Natural History, and Distribution

Richard M. DeGraaf
Deborah D. Rudis

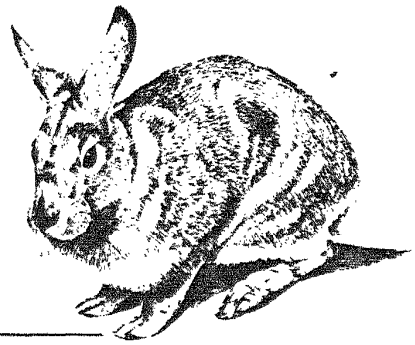
Amphibians



Reptiles



Birds



Mammals

ABSTRACT

Describes natural history profiles of New England wildlife species and their associations with forested and nonforested habitats. Provides a data base that will enable forest managers or wildlife biologists to describe the species or groups to be found in a given habitat.

THE AUTHORS

Richard M. DeGraaf is principal research wildlife biologist and leader of the wildlife habitat research unit, Northeastern Forest Experiment Station, Amherst, Massachusetts. He has conducted research on urban wildlife and forest wildlife habitat associations in the White Mountains of New Hampshire.

Deborah D. Rudis is a wildlife biologist with the Annapolis field office, Ecological Services, U.S. Fish and Wildlife Service, Annapolis, Maryland. Her background includes fieldwork on small mammal distributions, bird censusing, and graduate work on the occurrence and distribution of amphibians in the White Mountains.

Manuscript received for publication
23 September 1983

ACKNOWLEDGMENTS

Illustrations of amphibians and reptiles by Abigail Rorer are reprinted from "Amphibians and Reptiles of New England" by Richard M. DeGraaf and Deborah D. Rudis, copyright (c) 1983 by The University of Massachusetts Press. Illustrations of birds are by Charles Joslin, Charlemont, Massachusetts. Illustrations of mammals by Roslyn A. Alexander, D.V.M., BSc., are reprinted from "Mammals of Ontario" by Anne Innis Dagg, copyright (c) 1974 by Anne Innis Dagg. Used with permission of the publisher, Otter Press, Waterloo, Ontario, Canada.

Slightly revised June 1987

CONTENTS

Introduction 1
  Species Included 13
  Species/Habitat Matrices 13
  Special Habitat Features 14
  Forest Cover Types 15
  Terrestrial, Wetland, and Other Nonforest
    Habitat Types 19
  Species Activities/Season of Occurrence 20
  Habitat Suitability 20
  Species Accounts/Distribution Maps 20
Using the Publication 23
  Application of Information 23
  Accuracy of Information 23
Literature Cited 24
Amphibians and Reptiles 26
  Species and Subspecies 27
  Matrix 28
  Literature Cited 102
Birds 112
  Species List 113
  Matrix 117
  Literature Cited 372
Mammals 386
  Species List 387
  Matrix 388
  Literature Cited 462
Appendix 472
  Special Status Designations 472
  Coastal and Migrant Species 475
  Guild Designations for Inland Wildlife
    of New England 480
Index 488

BIRDS

This section provides information on the life history, distribution, and habitat associations of birds in New England. Nomenclature is from the 6th edition of the *Checklist of North American Birds* (American Ornithologists' Union 1983), and species are arranged in phylogenetic order. A.O.U. (American Ornithologists' Union) numbers are also provided; originally used to standardize the marking of collected sets of eggs, they have long been used to code bird species' names. The increased use of computer data bases makes these numbers vitally important today. All inland species are included, as are marshland birds that occur along the Atlantic Coast. We have omitted the strictly marine species, but have included some species usually associated with the coast in New England but that also occur inland, such as the Yellow-crowned Night Heron *(Nycticorax violaceus)*, Northern Pintail (*Anas acuta*), and Herring Gull (*Larus argentatus*).

Information in this section comes from extensive literature searches, reviews by acknowledged experts, and, for forests birds particularly, continuing research. Birds are by far the best known class of vertebrates included in this publication—New England has a rich avifauna that has been studied for many years by eminent ornithologists. The dedication that drove William Brewster, Edward Howe Forbush, and Ludlow Griscom continues to the present day; New England's birdlife has probably been studied more fully than that of any other region in the continental United States.

Gaviiformes
Gaviidae
Common Loon (*Gavia immer*) 151

Podicipediformes
Podicipedidae
Pied-billed Grebe (*Podilymbus podiceps*) 152

Ciconiiformes
Ardeidae
American Bittern (*Botaurus lentiginosus*) 153
Least Bittern (*Ixobrychus exilis*) 154
Great Blue Heron (*Ardea herodias*) 155
Green-backed Heron (*Butorides striatus*) 156
Black-crowned Night-Heron (*Nycticorax nycticorax*) 157
Yellow-crowned Night-Heron (*Nycticorax violaceus*) 158

Threskiornithes
Threskiornithidae
Threskiornithinae
Glossy Ibis (*Plegadis falcinellus*) 159

Anseriformes
Anseres
Anatidae
Anserinae
Cygnini
Mute Swan (*Cygnus olor*) 160

Anserini
Canada Goose (*Branta canadensis*) 161

Anatinae
Cairinini
Wood Duck (*Aix sponsa*) 162

Anatini
Green-winged Teal (*Anas crecca*) 163
American Black Duck (*Anas rubripes*) .164
Mallard (*Anas platyrhynchos*) 165
Northern Pintail (*Anas acuta*) 166
Blue-winged Teal (*Anas discors*) 167
Northern Shoveler (*Anas clypeata*) 168
Gadwall (*Anas strepera*) 169
American Wigeon (*Anas americana*) . .170

Aythyini
Canvasback (*Aythya valisineria*) 171
Ring-necked Duck (*Aythya collaris*) . . .172

Mergini
Common Goldeneye (*Bucephala clangula*) 173
Bufflehead (*Bucephala albeola*) 174
Hooded Merganser (*Lophodytes cucullatus*) 175
Common Merganser (*Mergus merganser*) 176
Red-breasted Merganser (*Mergus serrator*) 177

Falconiformes
Cathartae
Cathartoidea
Cathartidae
Turkey Vulture (*Cathartes aura*) . . . . . .

Accipitres
Accipitroidea
Accipitridae
Pandioninae
Osprey (*Pandion haliaetus*) . . . . . .

Accipitrinae
Bald Eagle (*Haliaeetus leucocephalus*) . . .
Northern Harrier (*Circus cyaneus*) . . . . . .
Sharp-shinned Hawk (*Accipiter striatus*) .
Cooper's Hawk (*Accipiter cooperii*) . . . . .
Northern Goshawk (*Accipiter gentilis*) . . .
Red-shouldered Hawk (*Buteo lineatus*) . . .
Broad-winged Hawk (*Buteo platypterus*) .
Red-tailed Hawk (*Buteo jamaicensis*) . . . .
Rough-legged Hawk (*Buteo lagopus*) . . . .
Golden Eagle (*Aquila chrysaetos*) . . . . . .

Falcones
Falconidae
Falconini
American Kestrel (*Falco sparverius*) 1
Merlin (*Falco columbarius*) 1
Peregrine Falcon (*Falco peregrinus*) 1

Galliformes
Phasianoidea
Phasianidae
Phasianinae
Perdicini
Gray Partridge (*Perdix perdix*) 1
Phasianini
Ring-necked Pheasant (*Phasianus colchicus*) 1
Tetraoninae
Spruce Grouse (*Dendragapus canadensis*) 1
Ruffed Grouse (*Bonasa umbellus*) 1
Meleagridinae
Wild Turkey (*Meleagris gallopavo*) 1
Odontophorinae
Northern Bobwhite (*Colinus virginianus*) .1

Gruiformes
Rallidae
Rallinae
King Rail (*Rallus elegans*) 2
Virginia Rail (*Rallus limicola*) 2
Sora (*Porzana carolina*) 2
Common Moorhen (*Gallinula chloropus*) . . .2
American Coot (*Fulica americana*) 2

Charadriiformes
Charadrii
Charadriidae
Charadriinae
Killdeer (*Charadrius vociferus*) 205
Scolopacoidea
Scolopacidae
Scolopacinae
Tringini
Spotted Sandpiper (*Actitis macularia*) . . 206
Numeniini
Upland Sandpiper (*Bartramia longicauda*) 207
Gallinagoini
Common Snipe (*Gallinago gallinago*) . 208
Scolopacini
American Woodcock (*Scolopax minor*) 209

Lari
Laridae
Larinae
Ring-billed Gull (*Larus delawarensis*) . . .210
Herring Gull (*Larus argentatus*) 211
Great Black-backed Gull (*Larus marinus*) 212
Sterninae
Common Tern (*Sterna hirundo*) 213
Black Tern (*Chlidonias niger*) 214

Columbiformes
Columbidae
Columbidae
Rock Dove (*Columba livia*) 215
Mourning Dove (*Zenaida macroura*) 216

Cuculiformes
Cuculidae
Coccyzinae
Black-billed Cuckoo (*Coccyzus erythropthalmus*) 217
Yellow-billed Cuckoo (*Coccyzus americanus*) 218

Strigiformes
Tytonidae
Common Barn-Owl (*Tyto alba*) 219
Strigidae
Eastern Screech-Owl (*Otus asio*) 220
Great Horned Owl (*Bubo virginianus*) 221
Snowy Owl (*Nyctea scandiaca*) 222
Northern Hawk Owl (*Surnia ulula*) 223
Barred Owl (*Strix varia*) 224
Great Gray Owl (*Strix nebulosa*) 225
Long-eared Owl (*Asio otus*) 226
Short-eared Owl (*Asio flammeus*) 227
Boreal Owl (*Aegolius funereus*) 228
Northern Saw-whet Owl (*Aegolius acadicus*) . .229

Caprimulgiformes
Caprimulgidae
Chordeilinae
Common Nighthawk (*Chordeiles minor*) 230
Caprimulginae
Whip-poor-will (*Caprimulgus vociferus*) . . .231

Apodiformes
Apodidae
Chaeturinae
Chimney Swift (*Chaetura pelagica*) 232
Trochilidae
Ruby-throated Hummingbird (*Archilochus colubris*) 233

Coraciiformes
Alcedines
Alcedinoidea
Alcedinidae
Cerylinae
Belted Kingfisher (*Ceryle alcyon*) 234

Piciformes
Pici
Picidae
Picinae
Red-headed Woodpecker (*Melanerpes erythrocephalus*) 235
Red-bellied Woodpecker (*Melanerpes carolinus*) 236
Yellow-bellied Sapsucker (*Sphyrapicus varius*) 237
Downy Woodpecker (*Picoides pubescens*) 238
Hairy Woodpecker (*Picoides villosus*) 239
Three-toed Woodpecker (*Picoides tridactylus*) 240
Black-backed Woodpecker (*Picoides arcticus*) 241
Northern Flicker (*Colaptes auratus*) 242
Pileated Woodpecker (*Dryocopus pileatus*) 243

Passeriformes
Tyranni
Tyrannoidea
Tyrannidae
Fluvicolinae
Olive-sided Flycatcher (*Contopus borealis*) 244
Eastern Wood-Pewee (*Contopus virens*) 245
Yellow-bellied Flycatcher (*Empidonax flaviventris*) 246
Acadian Flycatcher (*Empidonax virescens*) 247
Alder Flycatcher (*Empidonax alnorum*) 248
Willow Flycatcher (*Empidonax traillii*) .249
Least Flycatcher (*Empidonax minimus*) .250
Eastern Phoebe (*Sayornis phoebe*) 251

Tyranninae
Great Crested Flycatcher (*Myiarchus crinitus*) 252
Eastern Kingbird (*Tyrannus tyrannus*) .253

Passeres
Alaudidae
Horned Lark (*Eremophila alpestris*) 254
Hirundinidae
Hirundininae
Purple Martin (*Progne subis*) 255
Tree Swallow (*Tachycineta bicolor*) 256
Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) 257
Bank Swallow (*Riparia riparia*) 258
Cliff Swallow (*Hirundo pyrrhonota*) 259
Barn Swallow (*Hirundo rustica*) 260

Corvidae
Gray Jay (*Perisoreus canadensis*) 261
Blue Jay (*Cyanocitta cristata*) 262
American Crow (*Corvus brachyrhynchos*) 263
Fish Crow (*Corvus ossifragus*) 264
Common Raven (*Corvus corax*) 265
Paridae
Black-capped Chickadee (*Parus atricapillus*) .266
Boreal Chickadee (*Parus hudsonicus*) 267
Tufted Titmouse (*Parus bicolor*) 268
Sittidae
Sittinae
Red-breasted Nuthatch (*Sitta canadensis*) . .269
White-breasted Nuthatch (*Sitta carolinensis*) 270
Certhiidae
Certhiinae
Brown Creeper (*Certhia americana*) 271
Troglodytidae
Carolina Wren (*Thryothorus ludovicianus*) . . .272
House Wren (*Troglodytes aedon*) 273
Winter Wren (*Troglodytes troglodytes*) 274
Sedge Wren (*Cistothorus platensis*) 275
Marsh Wren (*Cistothorus palustris*) 276
Muscicapidae
Sylviinae
Sylviini
Golden-crowned Kinglet (*Regulus satrapa*) 277
Ruby-crowned Kinglet (*Regulus calendula*) 278
Polioptilini
Blue-gray Gnatcatcher (*Polioptila caerulea*) 279
Turdinae
Eastern Bluebird (*Sialia sialis*) 280
Veery (*Catharus fuscescens*) 281
Gray-cheeked Thrush (*Catharus minimus*) .282
Swainson's Thrush (*Catharus ustulatus*) 283
Hermit Thrush (*Catharus guttatus*) 284
Wood Thrush (*Hylocichla mustelina*) 285
American Robin (*Turdus migratorius*) 286
Mimidae
Gray Catbird (*Dumetella carolinensis*) 287
Northern Mockingbird (*Mimus polyglottos*) . . .288
Brown Thrasher (*Toxostoma rufum*) 289
Bombycillidae
Bohemian Waxwing (*Bombycilla garrulus*) . . .290
Cedar Waxwing (*Bombycilla cedrorum*) 291

Laniidae
Laniinae
Northern Shrike (*Lanius excubitor*) 292
Loggerhead Shrike (*Lanius ludovicianus*) . .293
Sturnidae
Sturninae
European Starling (*Sturnus vulgaris*) 294
Vireonidae
Vireoninae
White-eyed Vireo (*Vireo griseus*) 295
Solitary Vireo (*Vireo solitarius*) 296
Yellow-throated Vireo (*Vireo flavifrons*) 297
Warbling Vireo (*Vireo gilvus*) 298
Philadelphia Vireo (*Vireo philadelphicus*) . .299
Red-eyed Vireo (*Vireo olivaceus*) 300
Emberizidae
Parulinae
Blue-winged Warbler (*Vermivora pinus*) . . .301
Golden-winged Warbler (*Vermivora chrysoptera*) 302
Tennessee Warbler (*Vermivora peregrina*) .303
Nashville Warbler (*Vermivora ruficapilla*) . .304
Northern Parula (*Parula americana*) 305
Yellow Warbler (*Dendroica petechia*) 306
Chestnut-sided Warbler (*Dendroica pensylvanica*) 307
Magnolia Warbler (*Dendroica magnolia*) . . .308
Cape May Warbler (*Dendroica tigrina*) 309
Black-throated Blue Warbler (*Dendroica caerulescens*) 310
Yellow-rumped Warbler (*Dendroica coronata*) 311
Black-throated Green Warbler (*Dendroica virens*) 312
Blackburnian Warbler (*Dendroica fusca*) . . .313
Pine Warbler (*Dendroica pinus*) 314
Prairie Warbler(*Dendroica discolor*) 315
Palm Warbler (*Dendroica palmarum*) 316
Bay-breasted Warbler (*Dendroica castanea*) 317
Blackpoll Warbler (*Dendroica striata*) 318
Cerulean Warbler (*Dendroica cerulea*) 319
Black-and-White Warbler (*Mniotilta varia*) .320
American Redstart (*Setophaga ruticilla*) . . .321
Prothonotary Warbler (*Protonotaria citrea*) .322
Worm-eating Warbler (*Helmitheros vermivorus*) 323
Ovenbird (*Seiurus aurocapillus*) 324
Northern Waterthrush (*Seiurus noveboracensis*) 325
Louisiana Waterthrush (*Seiurus motacilla*) . .326

Mourning Warbler (*Oporornis philadelphia*) 327
Common Yellowthroat (*Geothlypis trichas*) 328
Hooded Warbler (*Wilsonia citrina*) 329
Wilson's Warbler (*Wilsonia pusilla*) 330
Canada Warbler (*Wilsonia canadensis*) 331
Yellow-breasted Chat(*Icteria virens*) 332
Thraupinae
Thraupini
Scarlet Tanager (*Piranga olivacea*) 333

Cardinalinae
Northern Cardinal (*Cardinalis cardinalis*) 223
Rose-breasted Grosbeak (*Pheucticus ludovicianus*) 335
Indigo Bunting (*Passerina cyanea*) 336
Emberizinae
Rufous-sided Towhee (*Pipilo erythrophthalmus*) 337
American Tree Sparrow (*Spizella arborea*) ...338
Chipping Sparrow (*Spizella passerina*) 339
Field Sparrow (*Spizella pusilla*) 340
Vesper Sparrow (*Pooecetes gramineus*) 341
Savannah Sparrow (*Passerculus sandwichensis*) 342
Grasshopper Sparrow (*Ammodramus savannarum*) 343
Henslow's Sparrow (*Ammodramus henslowii*) .344
Fox Sparrow (*Passerella iliaca*) 345
Song Sparrow (*Melospiza melodia*) 346
Lincoln's Sparrow (*Melospiza lincolnii*) 347
Swamp Sparrow (*Melospiza georgiana*) 348
White-throated Sparrow (*Zonotrichia albicollis*) 349
Dark-eyed Junco (*Junco hyemalis*) 350
Lapland Longspur (*Calcarius lapponicus*) 351
Snow Bunting (*Plectrophenax nivalis*) 352

Icterinae
Dolichonychini
Bobolink (*Dolichonyx oryzivorus*) 353
Agelaiini
Red-winged Blackbird (*Agelaius phoeniceus*) 354
Eastern Meadowlark (*Sturnella magna*) 355
Rusty Blackbird (*Euphagus carolinus*) 356
Common Grackle (*Quiscalus quiscula*) ... **357**
Brown-headed Cowbird (*Molothrus ater*) ...358
Icterini
Orchard Oriole (*Icterus spurius*) 359
Northern Oriole (*Icterus galbula*) 360
Fringillidae
Carduelinae
Pine Grosbeak (*Pinicola enucleator*) 361
Purple Finch (*Carpodacus purpureus*) 362
House Finch (*Carpodacus mexicanus*) 363
Red Crossbill (*Loxia curvirostra*) 364
White-winged Crossbill (*Loxia leucoptera*) .365
Common Redpoll (*Carduelis flammea*) 366
Hoary Redpoll (*Carduelis hornemanni*) 367
Pine Siskin (*Carduelis pinus*) 368
American Goldfinch (*Carduelis tristis*) 369
Evening Grosbeak (*Coccothraustes vespertinus*) 370
Passeridae
House Sparrow (*Passer domesticus*) 371

SPECIES OCCURRENCE AND UTILIZATION, BY HABITAT
FORESTED

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Great Blue Heron *Ardea herodias*	Undisturbed traditional rookery	B																	●																												
			BF																																												
			W																																												
			WF																																												
	Green-backed Heron *Butorides striatus*		B														●		●	●																												
			BF																																												
			W																																												
			WF																																												
	Wood Duck *Aix sponsa*	Trees at least 16" dbh with large cavities and 4" diameter entrance holes	B																	●																												
			BF																																												
			W																																												
			WF																																												
	American Black Duck *Anas rubripes*	Wooded wetlands, stream banks (inland)	B																																												
			BF																																												
			W																																												
			WF																																												
	Common Goldeneye *Bucephala clangula*	Cavity trees with minimum dbh of 20"; clear, cold, shallow water	B												●					●				●								●								●				●				
			BF																																												
			W																																												
			WF																																												
	Bufflehead *Bucephala albeola*	Cavity trees, usually with holes made by flickers or pileated woodpeckers	B																																												
			BF																																												
			W																																												
			WF																																												
	Hooded Merganser *Lophodytes cucullatus*	Undisturbed wooded areas with cavity trees (15" dbh min.); clear fresh water	B												●					●												●								●								
			BF																																												
			W																																												
			WF																																												
	Common Merganser *Mergus merganser*	Large cavity trees at water's edge	B												●					●																												
			BF																																												
			W																																												
			WF																																												
	Turkey Vulture *Cathartes aura*	Forest clearings	B																								●																				
			BF																																												
			W																																												
			WF																																												
▲	Bald Eagle *Haliaeetus leucocephalus*	Large, undisturbed water bodies containing fish, large living trees near shore	B																																												
			BF																																												
			W																																												
			WF																																												
	Sharp-shinned Hawk *Accipiter striatus*	Extensive undisturbed open mixed woodlands	B											●	●	●											●	●										●	●									
			BF											●	●	●											●	●										●	●									
			W											●	●	●											●	●										●	●									
			WF											●	●	●											●	●										●	●									

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Cooper's Hawk *Accipiter cooperii*		B																				●	●			●	●																			
			BF																				●	●			●	●																			
			W																				●	●			●	●																			
			WF																				●	●			●	●																			
	Northern Goshawk *Accipiter gentilis*	Extensive mature mixed woodlands	B							●	●			●	●																																
			BF											●	●																																
			W																																												
			WF																																												
	Red-shouldered Hawk *Buteo lineatus*	Cool, moist, mature forest, wooded wetlands	B							●	●								●	●																											
			BF																●	●																											
			W																																												
			WF																																												
	Broad-winged Hawk *Buteo platypterus*	Extensive woodlands with roads or clearings	B							●	●			●	●				●	●							●	●																			
			BF																																												
			W																																												
			WF																																												
	Red-tailed Hawk *Buteo jamaicensis*	Mature forest-field ecotone	B																								●	●																			
			BF														●																														
			W																																												
			WF														●																															
	Golden Eagle *Aquila chrysaetos*	Cliffs and wide expanses of open land	B																																												
			BF																																												
			W																																												
			WF																																												
	American Kestrel *Falco sparverius*	Tall trees with cavities (dbh at least 12"); open country with low relief	B																																												
			BF																																												
			W																																												
			WF																																												
	Merlin *Falco columbarius*	Natural cavities or old woodpecker holes in open woodlands	B																																			●	●								
			BF																																			●	●								
			W																																			●	●								
			WF																																			●	●								
	Peregrine Falcon *Falco peregrinus*	High cliffs	B																																												
			BF																																												
			W																																												
▲			WF																																												
	Spruce Grouse *Dendragapus canadensis*	Coniferous forest	B																										●	●	●						●	●	●		●	●	●				
			BF																										●	●	●						●	●	●		●	●	●				
			W																										●	●	●						●	●	●		●	●	●				
			WF																										●	●	●						●	●	●		●	●	●				
	Ruffed Grouse *Bonasa umbellus*	Fallen logs amidst dense saplings	B		●																																										
			BF		●																																										
			W		●	●	●																																								
			WF		●	●	●																																								

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Wild Turkey *Meleagris gallopavo*	Open, mast-producing woodlands, large conifers for roosting, woodland clearings	B																						●		●	●																				
			BF																						●																							
			W											●	●	●							●	●			●	●																				
			WF											●	●	●							●	●			●	●																				
	Northern Bobwhite *Colinus virginianus*	Brushy field edges, well-drained sandy or loamy soils	B																						●																							
			BF																						●																							
			W																						●			●																				
			WF																						●			●																				
	American Woodcock *Scolopax minor*	Fertile mosit soil containing earthworms, clearings and dense swales	B	●	●								●					●																													
			BF																																												
			W																																												
			WF																																												
	Mourning Dove *Zenaida macroura*	Open land with bare ground	B																							●	●	●																				
			BF																																												
			W																																												
			WF																																												
	Black-billed Cuckoo *Coccyzus erythropthalmus*	Low, dense thickets	B																		●			●				●																				
			BF																		●			●				●																				
			W																																												
			WF																																												
	Yellow-billed Cuckoo *Coccyzus americanus*	Low, dense thickets	B																						●			●																				
			BF																						●			●																				
			W																																												
			WF																																												
	Eastern Screech-Owl *Otus asio*	Cavity trees (12" dbh minimum)	B																●	●																												
			BF														●		●	●																												
			W																●	●																												
			WF														●		●	●																												
	Great Horned Owl *Bubo virginianus*	Large abandoned hawk nests, large tree cavities	B																●	●																										●	●	
			BF																																												
			W																																												
			WF																																												
	Northern Hawk-Owl *Surnia ulula*	Open coniferous or mixed woodland, burns with standing stubs	B																																		●	●	●								
			BF																																		●	●	●								
			W																																												
			WF																																												
	Barred Owl *Strix varia*	Cool, damp lowlands; cavity trees with minimum dbh of 20"	B												●					●								●																				
			BF												●					●								●																				
			W												●					●								●																				
			WF												●					●								●																				
	Great Gray Owl *Strix nebulosa*	Meadows, swamps near woodlands	B																																												
			BF																																												
			W																	●																												
			WF														●												●																				

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Long-eared Owl *Asio otus*	Dense conifer thickets in open country	B																																														
			BF																																														
			W																																														
			WF																																														
	Boreal Owl *Aegolius funereus*	Cavity trees, often with large woodpecker holes	B																																														
			BF																																														
			W																																														
			WF																																														
	Northern Saw-whet Owl *Aegolius acadicus*	Cavity trees with minimum dbh of 12" near forest clearings	B																																														
			BF																																														
			W																																														
			WF																																														
	Common Nighthawk *Chordeiles minor*		B																																														
			BF																																														
			W																																														
			WF																																														
	Whip-poor-will *Caprimulgus vociferus*	Ungrazed woodlands with openings	B																																														
			BF																																														
			W																																														
			WF																																														
	Ruby-throated Hummingbird *Archilochus colubris*	Flowers, preferably red	B																																														
			BF																																														
			W																																														
			WF																																														
	Red-headed Woodpecker *Melanerpes erythrocephalus*	Cavity trees in savanna or open country	B																																														
			BF																																														
			W																																														
			WF																																														
	Red-bellied Woodpecker *Melanerpes carolinus*	Extensive mature woodlands with dead trees or trees with large dead limbs	B																																														
			BF																																														
			W																																														
			WF																																														
	Yellow bellied Sapsucker *Sphyrapicus varius*	Trees with minimal dbh of 10" especially aspens containing sound decayed wood	B																																														
			BF																																														
			W																																														
			WF																																														
	Downy Woodpecker *Picoides pubescens*	Trees, limbs with decay column (minimum dbh 6")	B																																														
			BF																																														
			W																																														
			WF																																														
	Hairy Woodpecker *Picoides villosus*	Trees, limbs with decay column (minimum dbh 10")	B																																														
			BF																																														
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Three-toed Woodpecker *Picoides tridactylus*	Spruce, fir trees with column of decayed wood (minimum dbh 12"); dead trees with loose bark	B																												●	●																
			BF																												●	●																
			W																												●	●																
			WF																												●	●																
	Black-backed Woodpecker *Picoides arcticus*	Spruce, fir trees with column of decayed wood (minimum dbh 10"); dead trees with loose bark, often near water	B																												●	●						●	●				●	●					
			BF																												●	●						●	●				●	●					
			W																												●	●						●	●				●	●					
			WF																												●	●						●	●				●	●					
	Northern Flicker *Colaptes auratus*	Open areas; trees with column of decayed wood (minimum dbh 12"), forest edges	B																								●	●																				
			BF	●				●				●													●								●															
			W																																														
			WF																						●								●															
	Pileated Woodpecker *Dryocopus pileatus*	Mature forest; trees with column of decayed wood at least 20" dbh	B												●	●				●				●				●								●													
			BF												●	●				●				●				●								●													
			W												●	●				●				●				●								●													
			WF												●	●				●				●				●								●													
	Olive-sided Flycatcher *Contopus borealis*	Low, wet coniferous forest, bog, etc. with high song perch	B																										●									●	●									
			BF																										●									●	●									
			W																																														
			WF																																														
	Eastern Wood-Pewee *Contopus virens*	Forest edge or open woods	B																																													
			BF																																													
			W																																														
			WF																																														
	Yellow-bellied Flycatcher *Empidonax flaviventris*	Low, wet coniferous forest	B																										●									●					●	●					
			BF																										●									●					●	●					
			W																																														
			WF																																														
	Acadian Flycatcher *Empidonax virescens*	Mature woodlands with openings in the canopy	B																																													
			BF																																													
			W																																														
			WF																																														
	Alder Flycatcher *Empidonax alnorum*	Thickets, low shrubs and clearings	B														●																																
			BF														●																																
			W																																														
			WF																																														
	Willow Flycatcher *Empidonax traillii*	Low deciduous trees and shrubs with clearings, thick hardwood seedlings	B									●																																					
			BF									●																																					
			W																																														
			WF																																														
	Least Flycatcher *Empidonax minimus*	Open deciduous or mixed forest, edges	B									●	●	●	●			●								●	●	●																					
			BF									●	●	●	●			●								●	●	●																					
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Eastern Phoebe *Sayornis phoebe*	Exposed perches; cliffs or ledges in streamside clearings, woodland edges	B																																														
			BF																																														
			W																																														
			WF																																														
	Great Crested Flycatcher *Myiarchus crinitus*	Mature cavity trees, deciduous forest, edges	B																																														
			BF																																														
			W																																														
			WF																																														
	Eastern Kingbird *Tyrannus tyrannus*	Clearings, fields, orchards	B																																														
			BF																																														
			W																																														
			WF																																														
	Purple Martin *Progne subis*	Martin houses near ponds, lakes	B																																														
			BF																																														
			W																																														
			WF																																														
	Tree Swallow *Tachycineta bicolor*	Cavity trees (minimum dbh 10"); open areas, especially near water	B																																														
			BF																																														
			W																																														
			WF																																														
	Northern Rough-winged Swallow *Stelgidopteryx serripennis*	Sandy or clay banks stabilized by a grassy, overhanging top	B																																														
			BF																																														
			W																																														
			WF																																														
	Bank Swallow *Riparia riparia*	Sandy or clay banks stabilized by a grassy overhang	B																																														
			BF																																														
			W																																														
			WF																																														
	Cliff Swallow *Hirundo pyrrhonota*	Open areas; mud; vertical wall with an overhang	B																																														
			BF																																														
			W																																														
			WF																																														
	Barn Swallow *Hirundo rustica*	Abandoned or little-used buildings	B																																														
			BF																																														
			W																																														
			WF																																														
	Gray Jay *Perisoreus canadensis*	Coniferous forests	B																																														
			BF																																														
			W																																														
			WF																																														
	Blue Jay *Cyanocitta cristata*		B																																														
			BF																																														
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	American Crow *Corvus brachyrhynchos*		B																																														
			BF																																														
			W																																														
			WF																																														
	Common Raven *Corvus corax*	Cliffs	B																																														
			BF																																														
			W																																														
			WF																																														
	Black-capped Chickadee *Parus atricapillus*	Cavity trees or stubs in small woodlands; clearings or open woodlands	B																																														
			BF																																														
			W																																														
			WF																																														
	Boreal Chickadee *Parus hudsonicus*	Softwood snags, stubs	B																																														
			BF																																														
			W																																														
			WF																																														
	Tufted Titmouse *Parus bicolor*	Cavity trees at least 8" dbh	B																																														
			BF																																														
			W																																														
			WF																																														
	Red-breasted Nuthatch *Sitta canadensis*	Cavity trees in mixed or coniferous woods (minimum dbh 12")	B																																														
			BF																																														
			W																																														
			WF																																														
	White-breasted Nuthatch *Sitta carolinensis*	Cavity trees in hardwoods or mixed woods (minimum dbh 12")	B																																														
			BF																																														
			W																																														
			WF																																														
	Brown Creeper *Certhia americana*	Woodlands containing trees with sloughing or loose bark	B																																														
			BF																																														
			W																																														
			WF																																														
	Carolina Wren *Thryothorus ludovicianus*	Cavity trees amid brushy vegetation, thickets, swamps	B																																														
			BF																																														
			W																																														
			WF																																														
	House Wren *Troglodytes aedon*	Cavity trees, shrubs	B																																														
			BF																																														
			W																																														
			WF																																														
	Winter Wren *Troglodytes troglodytes*	Moist, mixed or coniferous woodlands with down logs; low woody vegetation	B																																														
			BF																																														
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Golden-crowned Kinglet *Regulus satrapa*	Dense conifer thickets or stands, esp. spruce	B																																														
			BF																																														
			W																																														
			WF																																														
	Ruby-crowned Kinglet *Regulus calendula*	Conifer stands, or mixed stands with a predominance of softwoods, esp. spruce or fir	B																										●	●	●						●	●	●		●	●	●					
			BF																										●	●	●						●	●	●		●	●	●					
			W																																														
			WF																																														
	Blue-gray Gnatcatcher *Polioptila caerulea*	Open deciduous woodland	B															●	●	●							●	●																					
			BF															●	●	●							●	●																					
			W																																														
			WF																																														
	Eastern Bluebird *Sialia sialis*	Low cavities, open country	B									●													●																								
			BF									●													●																								
			W																																														
			WF																																														
	Veery *Catharus fuscescens*	Moist woodlands with understory of low trees and shrubs	B										●					●	●	●																													
			BF										●					●	●	●																													
			W																																														
			WF																																														
	Gray-cheeked Thrush *Catharus minimus*	Young coniferous forest at high elevations	B																																						●	●							
			BF																																						●	●							
			W																																														
			WF																																														
	Swainson's Thrush *Catharus ustulatus*	Coniferous or mixed forest	B									●																			●							●					●						
			BF									●																			●							●					●						
			W																																														
			WF																																														
	Hermit Thrush *Catharus guttatus*	Coniferous or mixed woodlands with dense undergrowth	B													●																			●	●			●	●								●	
			BF													●																			●	●			●	●								●	
			W																								●	●																						
			WF																								●	●																						
	Wood Thrush ***Hylocichla mustelina***	Cool, moist, mature deciduous or mixed forest	B											●	●	●											●	●																					
			BF											●	●	●											●	●																					
			W																																														
			WF																																														
	American Robin *Turdus migratorius*		B																																														
			BF																																														
			W																																														
			WF																																														
	Gray Catbird ***Dumetella carolinensis***	Shrubs, thickets in open country or forest understory	B																	●					●																								
			BF																	●					●																								
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Northern Mockingbird *Mimus polyglottos*	Low thickets; high perches; persistent fruits	B														●																																
			BF														●																																
			W														●																																
			WF														●																																
	Brown Thrasher *Toxostoma rufum*	Hardwood forest-field ecotone	B																						●																								
			BF																						●																								
			W																						●																								
			WF																						●																								
	Bohemian Waxwing *Bombycilla garrulus*	Open country, shrubs, trees, thickets with persistent fruits (winter)	B																																														
			BF																																														
			W																																														
			WF																																														
	Cedar Waxwing *Bombycilla cedrorum*	Open country with scattered trees, thickets with persistent fruits (winter)	B														●																																
			BF					●									●																																
			W														●																																
			WF														●																																
	Northern Shrike *Lanius excubitor*	Scattered trees or shrubs in an open country	B																																														
			BF																																														
			W																																														
			WF																																														
	Loggerhead Shrike *Lanius ludovicianus*	Open country with short grasses, scattered trees, shrubs	B																																														
			BF																																														
			W																																														
			WF																																														
	European Starling *Sturnus vulgaris*	Cavity trees with 10″ minimum dbh	B																																														
			BF																																														
			W																																														
			WF																																														
	White-eyed Vireo *Vireo griseus*	Low shrubs, thickets	B														●																																
			BF														●																																
			W																																														
			WF																																														
	Solitary Vireo *Vireo solitarius*	Mixed or predominantly coniferous woodland	B																															●	●			●	●			●	●			●	●
			BF																															●	●			●	●			●	●			●	●
			W																																														
			WF																																														
	Yellow-throated Vireo *Vireo flavifrons*	Mature deciduous forest	B																●	●							●	●																					
			BF																●	●							●	●																					
			W																																														
			WF																																														
	Warbling Vireo *Vireo gilvus*	Scattered deciduous trees, shade trees	B																●	●																													
			BF																●	●																													
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Philadelphia Vireo *Vireo philadelphicus*	Hardwood forest edges	B					●																																								
			BF					●																																								
			W																																													
			WF																																													
	Red-eyed Vireo *Vireo olivaceus*		B										●	●	●	●																																
			BF									●	●	●	●	●																																
			W																																													
			WF																																													
	Blue-winged Warbler *Vermivora pinus*	Old fields with scattered shrubs and small trees	B					●																	●																							
			BF					●																	●																							
			W																																													
			WF																																													
	Golden-winged Warbler *Vermivora chrysoptera*	Open areas with saplings in deciduous woodlands	B																																													
			BF																																													
			W																																													
			WF																																													
	Tennessee Warbler *Vermivora peregrina*	Brushy, semi-open country	B					●				●																																				
			BF					●				●																																				
			W																																													
			WF																																													
	Nashville Warbler *Vermivora ruficapilla*	Scattered trees interspersed with brush, thickets, slash	B	●				●																														●										
			BF	●				●																														●										
			W																																													
			WF																																													
	Northern Parula *Parula americana*	Presence of bearded lichen	B											●	●	●																						●	●	●			●	●	●				
			BF											●	●	●																						●	●	●			●	●	●				
			W																																													
			WF																																													
	Yellow Warbler *Dendroica petechia*	Scattered small trees or dense shrubs, esp. near water	B														●												●																			
			BF														●												●																			
			W																																													
			WF																																													
	Chestnut-sided Warbler *Dendroica pensylvanica*	Sprouts and brush at wood margins; hardwood seedling stands	B	●				●				●					●																															
			BF	●				●				●					●																															
			W																																													
			WF																																													
	Magnolia Warbler *Dendroica magnolia*	Young stands of spruce or fir, sometimes of hemlock	B																										●								●	●			●	●							
			BF																										●								●	●			●	●							
			W																																													
			WF																																													
	Cape May Warbler *Dendroica tigrina*	Spruce forest	B																												●							●					●					
			BF																												●							●					●					
			W																																													
			WF																																													

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Black-throated Blue Warbler *Dendroica caerulescens*	Hardwood or mixed woodlands with well-developed understory	B											●	●	●																																
			BF											●	●	●																																
			W																																												
			WF																																												
	Yellow-rumped Warbler *Dendroica coronata*	Coniferous trees (summer), bayberry thickets (winter)	B															●	●	●																	●	●										
			BF															●	●	●																												
			W																																												
			WF																																												
	Black-throated Green Warbler *Dendroica virens*	Coniferous or mixed woodlands	B											●	●	●																													●	●		
			BF											●	●	●																													●	●		
			W																																												
			WF																																												
	Blackburnian Warbler *Dendroica fusca*	Coniferous forest, mixed woodlands	B																			●	●							●	●							●	●			●	●					
			BF																			●	●							●	●							●	●			●	●					
			W																																												
			WF																																												
	Pine Warbler *Dendroica pinus*	Pine forest	B																															●														
			BF																															●														
			W																																												
			WF																																												
	Prairie Warbler *Dendroica discolor*	Coniferous cover in old fields, hardwood saplings, slash	B					●																	●																							
			BF					●																	●																							
			W																																												
			WF																																												
	Palm Warbler *Dendroica palmarum*	Scattered trees, thick shrub growth	B																																												
			BF																																												
			W																																												
			WF																																												
	Bay-breasted Warbler *Dendroica castanea*	Thick stands of spruce, fir, spruce-fir	B																											●	●							●	●			●	●					
			BF																											●	●							●	●			●	●					
			W																																												
			WF																																												
	Blackpoll Warbler *Dendroica striata*	Stunted spruce, esp. at high elevations	B																																			●				●						
			BF																																			●				●						
			W																																												
			WF																																												
	Cerulean Warbler *Dendroica cerulea*	Mature deciduous woodland	B																								●																				
			BF																								●																				
			W																																												
			WF																																												
	Black-and-white Warbler *Mniotilta varia*		B												●	●												●																				
			BF												●	●												●																				
			W																																												
			WF																																												

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	American Redstart *Setophaga ruticilla*		B									●																																					
			BF									●																																					
			W																																														
			WF																																														
	Prothonotary Warbler *Protonotaria citrea*	Tree cavities in moist hardwood forest	B																	●																													
			BF																	●																													
			W																																														
			WF																																														
	Worm-eating Warbler *Helmitheros vermivorus*	Well-developed understory	B																								●																						
			BF																								●																						
			W																																														
			WF																																														
	Ovenbird *Seiurus aurocapillus*		B										●	●	●	●						●	●	●			●	●																					
			BF										●	●	●	●						●	●	●			●	●																					
			W																																														
			WF																																														
	Northern Waterthrush *Seiurus noveboracensis*	Cool, shaded, wet ground with shallow pools	B																●	●																													
			BF																●	●																													
			W																																														
			WF																																														
	Louisiana Waterthrush *Seiurus motacilla*	Woodlands with flowing water	B																●	●																													
			BF																●	●																													
			W																																														
			WF																																														
	Mourning Warbler *Oporornis philadelphia*	Extensive stands hardwood regeneration	B	●				●				●					●																																
			BF	●				●				●					●																																
			W																																														
			WF																																														
	Common Yellowthroat *Geothlypis trichas*		B									●					●			●					●			●																					
			BF									●					●			●					●			●																					
			W																																														
			WF																																														
	Hooded Warbler *Wilsonia citrina*	Dense understory	B														●																																
			BF														●																																
			W																																														
			WF																																														
	Wilson's Warbler *Wilsonia pusilla*	Cold shrub swamps, bogs	B																																														
			BF																																														
			W																																														
			WF																																														
	Canada Warbler *Wilsonia canadensis*	Dense deciduous or ericaceous understory	B																				●	●						●	●	●						●	●	●			●	●	●					
			BF																				●	●						●	●	●						●	●	●			●	●	●					
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Yellow-breasted Chat *Icteria virens*	Dense thickets and vines with scattered young trees, often near water	B																																												
			BF																																												
			W																																												
			WF																																												
	Scarlet Tanager *Piranga olivacea*		B																																												
			BF																																												
			W																																												
			WF																																												
	Northern Cardinal *Cardinalis cardinalis*	Thickets, vines	B																																												
			BF																																												
			W																																												
			WF																																												
	Rose-breasted Grosbeak *Pheucticus ludovicianus*	Forest-field ecotone, thickets, sapling stands of hardwoods	B																																												
			BF																																												
			W																																												
			WF																																												
	Indigo Bunting *Passerina cyanea*	Forest-field ecotones	B																																												
			BF																																												
			W																																												
			WF																																												
	Rufous-sided Towhee *Pipilo erythrophthalmus*	Dense, brushy understory, well-drained soils	B																																												
			BF																																												
			W																																												
			WF																																												
	American Tree Sparrow *Spizella arborea*	Open country, weed fields (winter)	B																																												
			BF																																												
			W																																												
			WF																																												
	Chipping Sparrow *Spizella passerina*	Clearings with bare ground, conifers or thorny shrubs	B																																												
			BF																																												
			W																																												
			WF																																												
	Field Sparrow *Spizella pusilla*	Old fields	B																																												
			BF																																												
			W																																												
			WF																																												
	Fox Sparrow *Passerella iliaca*		B																																												
			BF																																												
			W																																												
			WF																																												
	Song Sparrow *Melospiza melodia*		B																																												
			BF																																												
			W																																												
			WF																																												

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Lincoln's Sparrow *Melospiza lincolnii*	Brushy thickets 4 to 8 feet high with grass or sedge openings	B																																														
			BF																																														
			W																																														
			WF																																														
	Swamp Sparrow *Melospiza georgiana*		B																																														
			BF																																														
			W																																														
			WF																																														
	White-throated Sparrow *Zonotrichia albicollis*		B																																														
			BF																																														
			W																																														
			WF																																														
	Dark-eyed Junco *Junco hyemalis*	Woods road with cut bank, uprooted tree, etc. for nest site	B																																														
			BF																																														
			W																																														
			WF																																														
	Red-winged Blackbird *Agelaius phoeniceus*	Grasslands, marshes	B																																														
			BF																																														
			W																																														
			WF																																														
	Rusty Blackbird *Euphagus carolinus*	Northern woodland swamps, alder swales	B																																														
			BF																																														
			W																																														
			WF																																														
	Common Grackle *Quiscalus quiscula*	Wet, open country, shrub swamps, pond edges	B																																														
			BF																																														
			W																																														
			WF																																														
	Brown-headed Cowbird *Molothrus ater*		B																																														
			BF																																														
			W																																														
			WF																																														
	Orchard Oriole *Icterus spurius*	Open country with scattered deciduous trees	B																																														
			BF																																														
			W																																														
			WF																																														
	Northern Oriole *Icterus galbula*	Tall scattered deciduous (preferably elm) trees	B																																														
			BF																																														
			W																																														
			WF																																														
	Pine Grosbeak *Pinicola enucleator*	Northern conifer forest	B																																														
			BF																																														
			W																																														
			WF																																														

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Aspen				Paper birch				Northern hardwoods					Red maple				Northern red oak				White pine—Northern red oak—Red maple				Balsam fir				Eastern white pine				Red spruce-Balsam fir				Red spruce				Eastern hemlock			
				S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	U	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L	S	Sp	St	L
	Purple Finch *Carpodacus purpureus*	Coniferous trees	B																										●								●				●							
			BF																										●								●				●							
			W																																		●											
			WF																																		●											
	House Finch *Carpodacus mexicanus*	Open ground with low seed-producing plants	B																																													
			BF																																													
			W																																													
			WF																																													
	Red Crossbill *Loxia curvirostra*	Northern coniferous trees	B																																			●	●			●	●					
			BF																																			●	●			●	●					
			W																																			●	●			●	●					
			WF																																			●	●			●	●					
	White-winged Crossbill *Loxia leucoptera*	Northern coniferous trees	B																																			●	●			●	●					
			BF																																			●	●			●	●					
			W																																			●	●			●	●					
			WF																																			●	●			●	●					
	Common Redpoll *Carduelis flammea*	Open country	B																																													
			BF																																													
			W						●																																							
			WF						●																																							
	Hoary Redpoll *Carduelis hornemanni*	Open country	B																																													
			BF																																													
			W						●																																							
			WF						●				●																																			
	Pine Siskin *Carduelis pinus*	Conifers	B																										●	●	●							●	●	●		●	●	●					
			BF																										●	●	●							●	●	●		●	●	●					
			W																																													
			WF																																													
	American Goldfinch *Carduelis tristis*	Open, weedy fields with scattered small trees	B														●																															
			BF														●																															
			W															●	●	●																													
			WF															●	●	●																													
	Evening Grosbeak *Coccothraustes vespertinus*	Spruce and fir forest (breeding season).	B																																						●	●	●					
			BF																																						●	●	●					
			W																																													
			WF																																													
			B																																													
			BF																																													
			W																																													
			WF																																													
			B																																													
			BF																																													
			W																																													
			WF																																													

SPECIES OCCURRENCE AND UTILIZATION, BY HABITAT
NONFORESTED

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Common Loon *Gavia immer*	Large undisturbed bodies of water with stable water levels and islands.	B																●											
			BF																●											
			W																						●					
			WF																						●					
	Pied-billed Grebe *Podilymbus podiceps*	Marshes with water and emergent vegetation.	B											●	●															
			BF											●	●															
			W																						●					
			WF																						●					
	American Bittern *Botaurus lentiginosus*	Undisturbed tall marsh vegetation.	B											●																
			BF											●																
			W																											
			WF																											
	Least Bittern *Ixobrychus exilis*	Deep marshes with clumps of emergent vegetation.	B											●																
			BF											●																
			W																											
			WF																											
	Great Blue Heron *Ardea herodias*	Tall trees.	B											●																
			BF											●																
			W																											
			WF																											
	Green-backed Heron *Butorides striatus*		B											●																
			BF											●																
			W																											
			WF																											
	Black-crowned Night-Heron *Nycticorax nycticorax*		B													●														
			BF																				●							
			W																				●							
			WF																				●							
	Yellow-crowned Night-Heron *Nycticorax violaceus*		B													●							●							
			BF																				●							
			W																											
			WF																											
	Glossy Ibis *Plegadis falcinellus*		B													●														
			BF																											
			W																											
			WF																											
	Mute Swan *Cygnus olor*	Shallow ponds, rivers with abundant aquatic vegetation.	B																				●							
			BF																				●							
			W																				●							
			WF																				●							
	Canada Goose *Branta canadensis*		B											●																
			BF											●																
			W																				●							
			WF																				●							

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Wood Duck *Aix sponsa*	Trees at least 16" dbh with large cavities and 4" diameter entrance holes.	B																			●							
			BF																			●							
			W																										
			WF																										
	Green-winged Teal *Anas crecca*		B											●															
			BF											●															
			W																										
			WF																										
	American Black Duck *Anas rubripes*		B											●															
			BF											●															
			W											●									●						
			WF											●									●						
	Mallard *Anas platyrhynchos*		B											●															
			BF											●															
			W																										
			WF																										
	Northern Pintail *Anas acuta*	Drakes need mudbanks or exposed shorelines.	B																										
			BF																										
			W																				●						
			WF																				●						
	Blue-winged Teal *Anas discors*		B											●															
			BF											●															
			W																										
			WF																										
	Northern Shoveler *Anas clypeata*	Shallow water with muddy bottom, surrounded by dry grassy areas.	B											●															
			BF											●															
			W																				●						
			WF																				●						
	Gadwall *Anas strepera*	Moderate to large bodies of water, with submerged aquatic plants.	B												●														
			BF												●														
			W																										
			WF																										
	American Wigeon *Anas americana*		B																●										
			BF																●										
			W																				●						
			WF																				●						
	Canvasback *Aythya vallisineria*	Stretches of open water and emergent vegetation.	B																										
			BF																										
			W																						●				
			WF																						●				
	Ring-necked Duck *Aythya collaris*	Expanse of open water.	B																●										
			BF																●										
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial: Upland field: Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Wetland/Deep Water: Palustrine: Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Riverine: Stream	River	Riparian	Estuary/salt marsh	Marine: Coastal beach/rocks	Bay, ocean	Other: Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Common Goldeneye *Bucephala clangula*	Cavity trees with minimum dbh of 20"; clear, cold, shallow water.	B																											
			BF																											
			W																●											
			WF																●											
	Bufflehead *Bucephala albeola*		B																											
			BF																											
			W																											
			WF																											
	Hooded Merganser *Lophodytes cucullatus*	Undisturbed wooded areas with cavity trees (15" dbh min.); clear fresh water.	B																●											
			BF																●											
			W																●											
			WF																●											
	Common Merganser *Mergus merganser*		B																●											
			BF																●											
			W																											
			WF																											
	Red-breasted Merganser *Mergus serrator*		B																●											
			BF																●											
			W																						●					
			WF																						●					
	Turkey Vulture *Cathartes aura*	Forest openings, fields, large stubs of dead tree trunks.	B																											
			BF		●			●																						
			W																											
			WF																											
	Osprey *Pandion haliaetus*	Clear lakes, rivers containing fish.	B																				●							
			BF																				●							
			W																											
			WF																											
▲	Bald Eagle *Haliaeetus leucocephalus*	Large, undisturbed water bodies containing fish, large living trees near shore.	B																●											
			BF																●											
			W																											
			WF																											
	Northern Harrier *Circus cyaneus*	Marshes or open country with low vegetation.	B											●																
			BF											●																
			W																											
			WF																											
	Sharp-shinned Hawk *Accipiter striatus*	Extensive undisturbed open mixed woodlands.	B																											
			BF																											
			W																											
			WF																											
	Cooper's Hawk *Accipiter cooperii*		B																											
			BF																											
			W																											
			WF																											

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine						Lake	Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond		Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Northern Goshawk *Accipiter gentilis*	Extensive mature mixed woodlands.	B																										
			BF																										
			W																										
			WF																										
	Red-shouldered Hawk *Buteo lineatus*	Cool, moist, mature forest.	B																			●							
			BF													●						●							
			W																			●							
			WF																			●							
	Broad-winged Hawk *Buteo platypterus*	Extensive woodlands with roads or clearings.	B																										
			BF		●			●																					
			W																										
			WF																										
	Red-tailed Hawk *Buteo jamaicensis*	Mature forest-field ecotone.	B																										
			BF		●			●																					
			W																										
			WF																										
	Rough-legged Hawk *Buteo lagopus*	Open country.	B																										
			BF																										
			W		●			●															●						
			WF	●	●			●															●						
	Golden Eagle *Aquila chrysaetos*	Cliffs and wide expanses of open land.	B																								●		
			BF																										
			W																										
			WF																										
	American Kestrel *Falco sparverius*	Tall trees with cavities (dbh at least 12"); open country with low elevation.	B					●																					
			BF		●																								
			W		●																								
			WF	●	●																								
	Merlin *Falco columbarius*		B																										
			BF																										
			W																										
			WF																										
▲	Peregrine Falcon *Falco peregrinus*	High cliffs.	B																								●		
			BF																										
			W																										
			WF																				●						
	Gray Partridge *Perdix perdix*	Grasslands, grain crops.	B		●																								
			BF		●																								
			W		●																								
			WF		●																								
	Ring-necked Pheasant *Phasianus colchicus*	Cultivated fields, farmland.	B		●																								
			BF		●																								
			W				●																						
			WF	●			●																						

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine						Lake	Riverine			Marine						
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond		Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Spruce Grouse *Dendragapus canadensis*	Coniferous forest.	B																										
			BF																										
			W																										
			WF																										
	Ruffed Grouse *Bonasa umbellus*	Fallen logs amidst dense saplings.	B																										
			BF																										
			W																										
			WF																										
	Wild Turkey *Meleagris gallopavo*	Open, mast-producing woodlands, large conifers for roosting, woodland clearings.	B																										
			BF																										
			W																										
			WF																										
	Northern Bobwhite *Colinus virginianus*	Brushy field edges, well-drained sandy or loamy soils.	B		●																								
			BF		●																								
			W		●																								
			WF		●																								
	King Rail *Rallus elegans*	Stable water levels.	B											●															
			BF											●															
			W																										
			WF																										
	Virginia Rail *Rallus limicola*	Wetlands with sedge and cattails.	B											●															
			BF											●															
			W											●															
			WF											●															
	Sora *Porzana carolina*		B											●															
			BF											●															
			W																										
			WF																										
	Common Moorhen *Gallinula chloropus*	Emergent vegetation in water 1 to 3 feet deep.	B											●															
			BF											●															
			W																										
			WF																										
	American Coot *Fulica americana*	Emergent vegetation in water 1 to 4 feet deep.	B												●														
			BF												●														
			W																				●	●					
			WF																				●	●					
	Killdeer *Charadrius vociferus*	Bare ground, sparse vegetation.	B	●																									
			BF	●																									
			W																										
			WF																										
	Spotted Sandpiper *Actitis macularia*		B																	●	●								
			BF																	●	●								
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine			Marine						
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Upland Sandpiper *Bartramia longicauda*		B					●																						
			BF					●																						
			W																											
			WF																											
	Common Snipe *Gallinago gallinago*	Moist organic soils, low scattered vegetation, bogs, swamps, large open spaces.	B													●														
			BF													●														
			W													●														
			WF													●														
	American Woodcock *Scolopax minor*	Fertile moist soil containing earthworms, small clearings and dense swales.	B																											
			BF					●																						
			W																											
			WF																											
	Ring-billed Gull *Larus delawarensis*		B																											
			BF																											
			W																											
			WF																											
	Herring Gull *Larus argentatus*		B																											
			BF																											
			W																											
			WF																											
	Great Black-backed Gull *Larus marinus*		B																											
			BF																											
			W																											
			WF																											
	Common Tern *Sterna hirundo*		B																					●						
			BF																						●					
			W																											
			WF																											
	Black Tern *Chlidonias niger*	Fresh marsh in breeding season.	B											●	●															
			BF											●	●															
			W																											
			WF																											
	Rock Dove *Columba livia*		B																										●	●
			BF	●																										
			W																										●	●
			WF	●																										
	Mourning Dove *Zenaida macroura*	Open land with bare ground.	B																											
			BF	●																										
			W																											
			WF	●																										
	Black-billed Cuckoo *Coccyzus erythropthalmus*	Low, dense, thickets.	B																											
			BF																											
			W																											
			WF																											

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Yellow-billed Cuckoo *Coccyzus americanus*	Low, dense, thickets.	B																										
			BF																										
			W																										
			WF																										
	Common Barn-Owl *Tyto alba*	Barns, silos, deserted buildings, tree cavities.	B																										●
			BF	●																									●
			W																										●
			WF	●																									●
	Eastern Screech-Owl *Otus asio*	Cavity trees (12" dbh minimum).	B																			●							
			BF																			●							
			W																			●							
			WF											●								●							
	Great Horned Owl *Bubo virginianus*	Large abandoned hawk nests, large tree cavities.	B																										
			BF																										
			W																										
			WF																										
	Snowy Owl *Nyctea scandiaca*	Open country	B																										
			BF																										
			W	●																				●					
			WF	●																				●					
	Northern Hawk-Owl *Surnia ulula*		B																										
			BF																										
			W														●												
			WF														●												
	Barred Owl *Strix varia*	Cool, damp lowlands; cavity trees with minimum dbh of 20".	B																			●							
			BF																			●							
			W																			●							
			WF																			●							
	Great Gray Owl *Strix nebulosa*		B																										
			BF																										
			W																										
			WF														●												
	Long-eared Owl *Asio otus*	Dense conifer thickets in open country.	B																										
			BF																										
			W																										
			WF																										
	Short-eared Owl *Asio flammeus*	Extensive open grasslands, dunes.	B																				●						
			BF																				●						
			W																				●						
			WF																				●						
	Boreal Owl *Aegolius funereus*		B																										
			BF																										
			W														●												
			WF														●												

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Northern Saw-whet Owl *Aegolius acadicus*	Cavity trees with minimum dbh of 12".	B																										
			BF																										
			W																										
			WF																										
	Common Nighthawk *Chordeiles minor*		B																										
			BF																										
			W																										
			WF																										
	Whip-poor-will *Caprimulgus vociferus*		B																										
			BF																										
			W																										
			WF																										
	Chimney Swift *Chaetura pelagica*	Chimneys.	B																									●	●
			BF																										
			W																										
			WF																										
	Ruby-throated Hummingbird *Archilochus colubris*	Flowers, preferably red.	B																										
			BF																										
			W																										
			WF																										
	Belted Kingfisher *Ceryle alcyon*	Perches over streams, ponds; banks for nest sites.	B																						●				
			BF																		●								
			W																		●								
			WF																		●								
	Red-headed Woodpecker *Melanerpes erythrocephalus*	Cavity trees in savanna or open country.	B																										
			BF																										
			W																										
			WF																										
	Red-bellied Woodpecker *Melanerpes carolinus*	Extensive mature woodlands with dead trees or trees with large dead limbs.	B																		●								
			BF																		●								
			W																		●								
			WF																		●								
	Yellow-bellied Sapsucker *Sphyrapicus varius*	Trees with minimum dbh of 10".	B																										
			BF																										
			W							●																			
			WF							●																			
	Downy Woodpecker *Picoides pubescens*	Trees, limbs with decay column (minimum dbh 6").	B																										
			BF																										
			W																										
			WF																										
	Hairy Woodpecker *Picoides villosus*	Trees, limbs with decay column (minimum dbh 10").	B																										
			BF																										
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial: Upland field: Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Wetland/Deep Water: Palustrine: Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Riverine: Stream	River	Riparian	Estuary/salt marsh	Marine: Coastal beach/rocks	Bay, ocean	Other: Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Three-toed Woodpecker *Picoides tridactylus*	Spruce, fir trees with decay (minimum dbh of 12"); dead trees with loose bark.	B																											
			BF																											
			W																											
			WF																											
	Black-backed Woodpecker *Picoides arcticus*	Spruce, fir trees with decay (minimum dbh of 10"); dead trees with loose bark.	B																											
			BF																											
			W																											
			WF																											
	Northern Flicker *Colaptes auratus*	Open areas; trees with heartrot (minimum dbh of 12").	B																											
			BF	●																										
			W																											
			WF	●																										
	Pileated Woodpecker *Dryocopus pileatus*	Mature forest; trees with decay at least 20" dbh.	B																											
			BF																											
			W																											
			WF																											
	Olive-sided Flycatcher *Contopus borealis*	Tall perch adjacent to low, wet thicket.	B														●													
			BF														●													
			W																											
			WF																											
	Eastern Wood-Pewee *Contopus virens*		B																			●								
			BF																			●								
			W																											
			WF																											
	Yellow-bellied Flycatcher *Empidonax flaviventris*	Low, wet coniferous forest.	B													●														
			BF													●														
			W																											
			WF																											
	Acadian Flycatcher *Empidonax virescens*	Mature, woodlands with open spaces in the canopy.	B																											
			BF																											
			W																											
			WF																											
	Alder Flycatcher *Empidonax alnorum*	Thickets, low shrubs and clearings.	B													●						●								
			BF													●						●								
			W																											
			WF																											
	Willow Flycatcher *Empidonax traillii*	Low deciduous trees and shrubs with clearings, thick hardwood seedlings.	B				●																							
			BF				●																							
			W																											
			WF																											
	Least Flycatcher *Empidonax minimus*	Open deciduous or mixed forest, edges.	B																											
			BF																											
			W																											
			WF																											

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Eastern Phoebe *Sayornis phoebe*	Exposed perches; cliffs or ledges in streamside clearings.	B																										●	●
			BF																											
			W																											
			WF																											
	Great Crested Flycatcher *Myiarchus crinitus*	Mature cavity trees, deciduous forest, edges.	B																											
			BF																											
			W																											
			WF																											
	Eastern Kingbird *Tyrannus tyrannus*	Clearings, fields, orchards.	B							●																				
			BF							●																				
			W																											
			WF																											
	Horned Lark *Eremophila alpestris*	Bare, exposed soil.	B		●																									
			BF		●																									
			W	●																										
			WF	●																										
	Purple Martin *Progne subis*	Martin houses near ponds, lakes.	B																											
			BF																											
			W																											
			WF																											
	Tree Swallow *Tachycineta bicolor*	Cavity trees (minimum dbh 10"); open areas.	B																											
			BF											●																
			W																											
			WF																											
	Northern Rough-winged Swallow *Stelgidopteryx serripennis*		B																			●								
			BF	●	●																	●								
			W																											
			WF																											
	Bank Swallow *Riparia riparia*	Sandy or clay banks stabilized by a grassy overhang.	B																							●				
			BF	●																										
			W																											
			WF																											
	Cliff Swallow *Hirundo pyrrhonota*	Open areas; mud; vertical wall with an overhang.	B																										●	●
			BF		●																									
			W																											
			WF																											
	Barn Swallow *Hirundo rustica*	Abandoned or little-used buildings.	B																										●	●
			BF		●																									
			W																											
			WF																											
	Gray Jay *Perisoreus canadensis*	Coniferous forests.	B																											
			BF																											
			W																											
			WF																											

Local occurrence	SPECIES	Special habitat needs·	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field					Savanna	Orchard	Krummholz	Alpine	Palustrine						Lake	Riverine			Estuary/salt marsh	Marine		Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
				Cultivated	Grass	Forb	Shrub/old field	Pasture					Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond		Stream	River	Riparian		Coastal beach/rocks	Bay, ocean					
	Blue Jay *Cyanocitta cristata*		B																											
			BF																											
			W																											
			WF																											
	American Crow *Corvus brachyrhynchos*		B																											
			BF	●																										
			W																											
			WF	●																										
	Fish Crow *Corvus ossifragus*		B																											
			BF																											
			W																											
			WF																											
	Common Raven *Corvus corax*	Cliffs.	B																								●			
			BF																											
			W																											
			WF															●												
	Black-capped Chickadee *Parus atricapillus*	*Cavity trees or stubs in* small woodlands, clearings or open woodlands.	B																											
			BF																											
			W																											
			WF																											
	Boreal Chickadee *Parus hudsonicus*	Softwood snags, stubs.	B																											
			BF																											
			W																											
			WF																											
	Tufted Titmouse *Parus bicolor*	Cavity trees at least 8" dbh.	B																			●								
			BF																			●								
			W																			●								
			WF																			●								
	Red-breasted Nuthatch *Sitta canadensis*	Cavity trees in mixed or coniferous woods (minimum dbh 12").	B																											
			BF																											
			W																											
			WF																											
	White-breasted Nuthatch *Sitta carolinensis*	Cavity trees in hardwoods or mixed woods (minimum dbh 12").	B																											
			BF																											
			W							●																				
			WF							●																				
	Brown Creeper *Certhia americana*	Woodland trees with sloughing or loose bark.	B																											
			BF																											
			W																											
			WF																											
	Carolina Wren *Thryothorus ludovicianus*	Cavity tree amid brushy vegetation.	B																											
			BF																											
			W																											
			WF																											

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	House Wren *Troglodytes aedon*	Cavity trees, shrubs.	B																										●
			BF																										
			W																										
			WF																										
	Winter Wren *Troglodytes troglodytes*	Moist, mixed or coniferous woodlands with down logs; low woody vegetation.	B																										
			BF																										
			W																										
			WF																										
	Sedge Wren *Cistothorus platensis*	Sedge meadows.	B										●																
			BF										●																
			W																										
			WF																										
	Marsh Wren *Cistothorus palustris*	Marshes.	B																				●						
			BF																				●						
			W																										
			WF																										
	Golden-crowned Kinglet *Regulus satrapa*		B																										
			BF																										
			W																										
			WF																										
	Ruby-crowned Kinglet *Regulus calendula*		B																										
			BF																										
			W																										
			WF																										
	Blue-gray Gnatcatcher *Polioptila caerulea*		B																										
			BF																										
			W																										
			WF																										
	Eastern Bluebird *Sialia sialis*	Low cavities, open country.	B							●																			
			BF							●																			
			W																										
			WF																										
	Veery *Catharus fuscescens*	Moist woodlands with understory of low trees and shrubs.	B																			●							
			BF																			●							
			W																										
			WF																										
	Gray-cheeked Thrush *Catharus minimus*	Stunted coniferous forest at high elevations.	B								●																		
			BF								●																		
			W																										
			WF																										
	Hermit Thrush *Catharus guttatus*	Coniferous or mixed woodlands with dense undergrowth.	B																										
			BF																										
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Wood Thrush *Hylocichla mustelina*	Cool, moist, mature deciduous or mixed forest.	B																										
			BF																										
			W																										
			WF																										
	American Robin *Turdus migratorius*		B																										
			BF	●																									
			W																										
			WF																										
	Gray Catbird *Dumetella carolinensis*	Shrubs, thickets in open country or forest understory.	B																			●							
			BF																			●							
			W																										
			WF																										
	Northern Mockingbird *Mimus polyglottos*	Low thickets; high perches; persistent fruits.	B				●																						
			BF																										
			W																										
			WF																										
	Brown Thrasher *Toxostoma rufum*	Hardwood forest-field ecotone.	B					●																					
			BF					●																					
			W																										
			WF																										
	Bohemian Waxwing *Bombycilla garrulus*		B																										
			BF																										
			W																										
			WF																										
	Cedar Waxwing *Bombycilla cedrorum*		B																										
			BF																										
			W																										
			WF																										
	Northern Shrike *Lanius excubitor*	Scattered trees or shrubs in open country.	B																										
			BF																										
			W					●	●																				
			WF		●			●	●																				
	Loggerhead Shrike *Lanius ludovicianus*	Open country with short grasses; scattered trees, shrubs.	B						●																				
			BF						●																				
			W																										
			WF																										
	European Starling *Sturnus vulgaris*	Cavity trees with 10" minimum dbh.	B																										●
			BF																										
			W																										●
			WF	●																									
	White-eyed Vireo *Vireo griseus*	Low shrubs, thickets.	B													●													
			BF													●													
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Yellow-throated Vireo *Vireo flavifrons*	*Mature deciduous forest.*	B																										
			BF																										
			W																										
			WF																										
	Warbling Vireo *Vireo gilvus*	Scattered deciduous trees, shade trees.	B																										
			BF																										
			W																										
			WF																										
	Philadelphia Vireo *Vireo philadelphicus*	Hardwood forest edges.	B																										
			BF																										
			W																										
			WF																										
	Red-eyed Vireo *Vireo olivaceus*		B																										
			BF																										
			W																										
			WF																										
	Blue-winged Warbler *Vermivora pinus*	Old fields with scattered shrubs and small trees.	B				●																						
			BF				●																						
			W																										
			WF																										
	Golden-winged Warbler *Vermivora chrysoptera*	Open areas with saplings in deciduous woodlands.	B				●																						
			BF				●																						
			W																										
			WF																										
	Tennessee Warbler *Vermivora peregrina*	Brushy, semi-open country.	B																										
			BF																										
			W																										
			WF																										
	Nashville Warbler *Vermivora ruficapilla*	Scattered trees interspersed with brush, thickets.	B																										
			BF																										
			W																										
			WF																										
	Northern Parula *Parula americana*	Presence of bearded lichen.	B																										
			BF																										
			W																										
			WF																										
	Yellow Warbler *Dendroica petechia*	Scattered small trees or dense shrubs.	B																			●							
			BF																			●							
			W																										
			WF																										
	Chestnut-sided Warbler *Dendroica pensylvanica*	Sprouts and brush at wood margins; hardwood seedling stands.	B																										
			BF																										
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Yellow-rumped Warbler *Dendroica coronata*	Coniferous trees (summer), bayberry thickets (winter).	B																										
			BF																										
			W																										
			WF																										
	Prairie Warbler *Dendroica discolor*	Coniferous cover in old fields.	B																										
			BF																										
			W																										
			WF																										
	Palm Warbler *Dendroica palmarum*		B														●												
			BF														●												
			W																										
			WF																										
	Bay-breasted Warbler *Dendroica castanea*	Thick stands of spruce, fir, spruce-fir.	B																										
			BF																										
			W																										
			WF																										
	Blackpoll Warbler *Dendroica striata*	Stunted spruce, esp. at high elevations.	B								●																		
			BF								●																		
			W																										
			WF																										
	Cerulean Warbler *Dendroica cerulea*		B																			●							
			BF																			●							
			W																										
			WF																										
	Black-and-white Warbler *Mniotilta varia*		B																										
			BF																										
			W																										
			WF																										
	American Redstart *Setophaga ruticilla*		B																										
			BF																										
			W																										
			WF																										
	Prothonotary Warbler *Protonotaria citrea*	Tree cavities in moist, hardwood forest.	B																			●							
			BF																			●							
			W																										
			WF																										
	Northern Waterthrush *Seiurus noveboracensis*	Cool, shaded, wet ground with shallow pools.	B																			●							
			BF																			●							
			W																										
			WF																										
	Louisiana Waterthrush *Seiurus motacilla*	Woodlands with flowing water.	B																			●							
			BF																			●							
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Mourning Warbler *Oporornis philadelphia*	Hardwood regeneration	B																										
			BF																										
			W																										
			WF																										
	Common Yellowthroat *Geothlypis trichas*		B					●								●						●							
			BF					●								●						●							
			W																										
			WF																										
	Hooded Warbler *Wilsonia citrina*	Dense understory.	B													●													
			BF													●													
			W																										
			WF																										
	Wilson's Warbler *Wilsonia pusilla*		B														●												
			BF														●												
			W																										
			WF																										
	Canada Warbler *Wilsonia canadensis*		B																										
			BF																										
			W																										
			WF																										
	Yellow-breasted Chat *Icteria virens*	Dense thickets and vines with scattered young trees, often near water.	B					●														●							
			BF					●														●							
			W																										
			WF																										
	Northern Cardinal *Cardinalis cardinalis*	Thickets, vines.	B																										
			BF																										
			W																										
			WF																										
	Rose-breasted Grosbeak *Pheucticus ludovicianus*	Forest-field ecotone, thickets, hardwood regeneration.	B																										
			BF																										
			W																										
			WF																										
	Indigo Bunting *Passerina cyanea*	Forest-field ecotones.	B																										
			BF		●																								
			W																										
			WF																										
	Rufous-sided Towhee *Pipilo erythrophthalmus*	Dense, brushy understory, well-drained soils.	B																										
			BF																										
			W																										
			WF																										
	Tree Sparrow *Spizella arborea*		B																										
			BF																										
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine			Marine						
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Chipping Sparrow *Spizella passerina*		B						●																				
			BF						●																				
			W																										
			WF																										
	Field Sparrow *Spizella pusilla*	Old fields.	B					●																					
			BF					●																					
			W		●																								
			WF		●																								
	Vesper Sparrow *Pooecetes gramineus*	Open country with short, herbaceous vegetation; conspicuous perches.	B		●																								
			BF		●																								
			W																										
			WF																										
	Savannah Sparrow *Passerculus sandwichensis*	Herbaceous cover of moderate height.	B		●																		●						
			BF		●																		●						
			W		●																		●						
			WF		●																		●						
	Grasshopper Sparrow *Ammodramus savannarum*	Continuous tall herbaceous cover; conspicuous perches.	B		●																								
			BF		●																								
			W																										
			WF																										
	Henslow's Sparrow *Ammodramus henslowii*	Dense herbaceous vegetation, moist ground litter, perches.	B			●							●																
			BF			●							●																
			W																										
			WF																										
	Fox Sparrow *Passerella iliaca*		B																										
			BF																										
			W				●																						
			WF				●																						
	Song Sparrow *Melospiza melodia*		B		●											●						●							
			BF		●											●						●							
			W		●																								
			WF		●																								
	Lincoln's Sparrow *Melospiza lincolnii*	Brushy thickets 4 to 8 feet high with grass or sedge openings.	B														●												
			BF														●												
			W																										
			WF																										
	Swamp Sparrow *Melospiza georgiana*		B													●													
			BF													●													
			W																										
			WF																										
	White-throated Sparrow *Zonotrichia albicollis*		B								●																		
			BF								●																		
			W				●																						
			WF				●																						

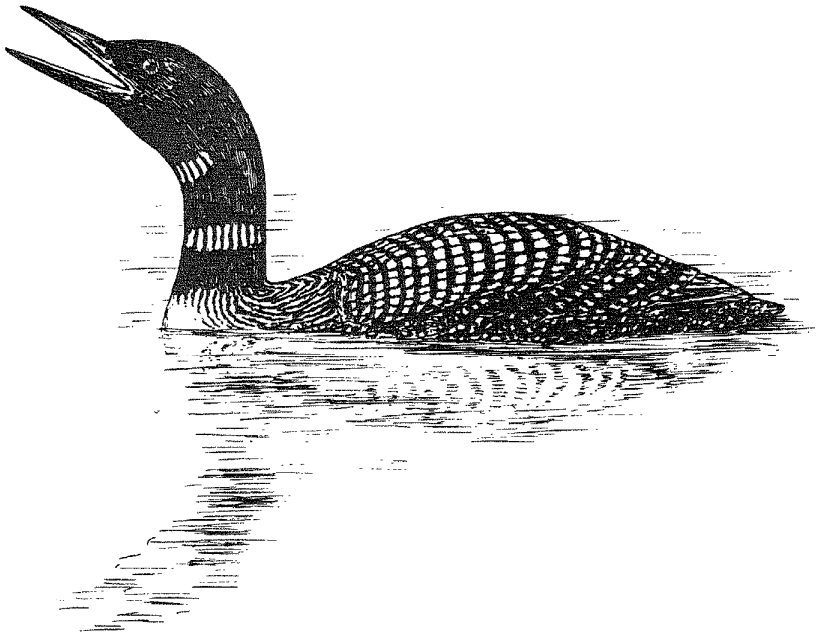
Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Dark-eyed Junco *Junco hyemalis*		B								●																		
			BF								●																		
			W																										
			WF																										
	Lapland Longspur *Calcarius lapponicus*		B																										
			BF	●																									
			W	●																									
			WF																										
	Snow Bunting *Plectrophenax nivalis*		B																										
			BF																										
			W	●																									
			WF	●																									
	Bobolink *Dolichonyx oryzivorus*	Wide expanses of grassland.	B		●																								
			BF		●																								
			W																										
			WF																										
	Red-winged Blackbird *Agelaius phoeniceus*		B											●															
			BF											●															
			W																										
			WF	●																									
	Eastern Meadowlark *Sturnella magna*	Grasslands, elevated perches.	B		●																								
			BF		●																								
			W		●																								
			WF		●																								
	Rusty Blackbird *Euphagus carolinus*		B														●												
			BF														●												
			W																										
			WF																										
	Common Grackle *Quiscalus guiscula*		B													●													
			BF	●												●													
			W																										
			WF	●																									
	Brown-headed Cowbird *Molothrus ater*		B																										
			BF	●																									
			W																										
			WF	●																									
	Orchard Oriole *Icterus spurius*		B							●																			
			BF							●																			
			W																										
			WF																										
	Northern Oriole *Icterus galbula*	Tall scattered deciduous (preferably elm) trees.	B						●																				
			BF						●																				
			W																										
			WF																										

Local occurrence	SPECIES	Special habitat needs	Seasonal use	Terrestrial									Wetland/Deep Water												Other				
				Upland field									Palustrine							Riverine				Marine					
				Cultivated	Grass	Forb	Shrub/old field	Pasture	Savanna	Orchard	Krummholz	Alpine	Sedge meadow	Shallow marsh	Deep marsh	Shrub swamp	Bog	Pond	Lake	Stream	River	Riparian	Estuary/salt marsh	Coastal beach/rocks	Bay, ocean	Stable bank	Ledge, cliff	Cave	Structure, building	Derelict building, debris
	Pine Grosbeak *Pinicola enucleator*	Northern conifer forest.	B								●																		
			BF								●																		
			W																										
			WF																										
	Purple Finch *Carpodacus purpureus*	Coniferous trees.	B																										
			BF																										
			W																										
			WF																										
	House Finch *Carpodacus mexicanus*	Open ground with low seed-producing plants.	B																										
			BF																										
			W																										
			WF																										
	Red Crossbill *Loxia curvirostra*	Northern coniferous trees.	B																										
			BF																										
			W																										
			WF																										
	White-winged Crossbill *Loxia leucoptera*	Northern coniferous trees.	B																										
			BF																										
			W																										
			WF																										
	Common Redpoll *Carduelis flammea*		B																										
			BF																										
			W		●	●																							
			WF		●	●																							
	Hoary Redpoll *Carduelis hornemanni*		B																										
			BF																										
			W		●	●																							
			WF		●	●																							
	Pine Siskin *Carduelis pinus*	Conifers.	B																										
			BF																										
			W																										
			WF		●	●																							
	American Goldfinch *Carduelis tristis*	Open, weedy fields with scattered small trees.	B					●						●		●													
			BF					●						●		●													
			W																			●							
			WF																			●							
	Evening Grosbeak *Coccothraustes vespertinus*	Spruce and fir forest (breeding season).	B																										
			BF																										
			W																										
			WF																										
	House Sparrow *Passer domesticus*		B																										●
			BF	●																									
			W																										●
			WF	●																									

Common Loon

(Gavia immer)

A.O.U. No. 007.0



RANGE: Breeding: Alaska and n. Canada s. to c. Massachusetts, Montana, and California. Winter: Atlantic coast from Newfoundland to the Gulf of Mexico.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to locally common in breeding season. Common along coast in winter. Subadults common along northeast coast in summer.

HABITAT: Breeding: Large and small freshwater lakes in both open and densely forested areas. Nest on lakes as small as 2 acres. Wintering: Coastal bays and inlets from Maritime Provinces south. Occasional on fresh water inland in southern New England until freeze-up.

SPECIAL HABITAT REQUIREMENTS: Bodies of water with stable water levels and little or no human disturbance. Long stretch of water for flight take-off. Islets for nesting; shallow coves for rearing of young (Hammond and Wood 1977).

NESTING: Egg dates: May 15 to July 16. Peak: June, New York (Bull 1974:51). Clutch size: 1 to 3, typically 2. Incubation period: 28 to 29 days. Nestling period: 1 day (precocial). Broods per year: 1. Age at sexual maturity: 2 or more years. Nest site: Nest is placed on ground at water's edge, usually on sand, rocks, or other firm substrate. Prefers small islands to shore but nests along protected bays, on promontories and small peninsulas. Islands provide better protection from mammalian predators than shore sites.

TERRITORY SIZE: 15 to 100 or more acres (6.1 to 40.5 ha) per pair in Minnesota (Olson and Marshall 1952), to 25 ha (62 acres) (Sjolander and Agren 1972).

HOME RANGE: Probably same as territory.

SAMPLE DENSITIES: Average 2 birds per square mile (0.8 birds/km^2) over a 60-square-mile (155-km^2) area in Minnesota (Olson and Marshall 1952) but highly variable depending on nest site availability.

FORAGING: Major foods: Fish (staple), amphibians, insects, aquatic plants, crustaceans, mollusks, leeches. Substrates: Water, pond and lake bottoms. Techniques: Swimming; diving in deep water; extending head and neck below surface, goose-like, in shallow water.

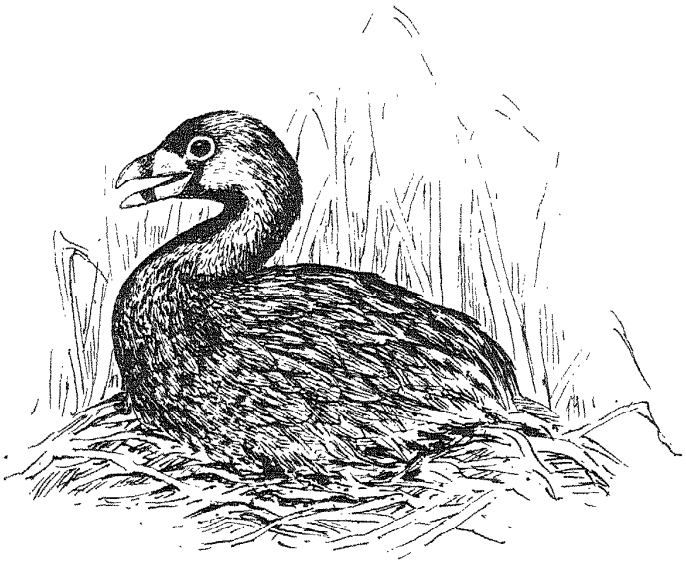
COMMENTS: Most feeding is done on the territory which probably accounts for the large territory. Although fish is eaten in quantity when available, it does not seem to be a required food because loons are known to breed at fishless ponds (Pough 1951:3). Same nest sites are often occupied year after year, presumably by same pair. Disturbance by canoeists and fishermen is a serious problem during nesting. Nesting is often unsuccessful if water level fluctuates.

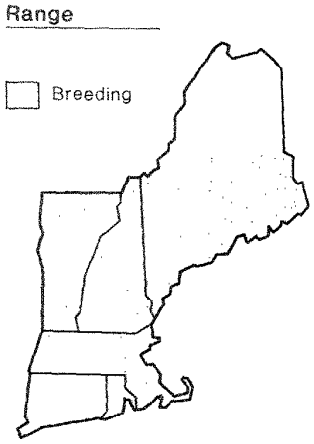
KEY REFERENCES: Bent 1919, Hammond and Wood 1977, Palmer 1962, Vermeer 1973.

Pied-billed Grebe

(Podilymbus podiceps)

A.O.U. No. 006.0





RANGE: Breeding: Throughout most of the United States (excluding Alaska) and s. Canadian provinces. Winter: New York s. along Atlantic coast; inland across coastal states. Occasional in winter in s. New England.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common throughout range in the Northeast during breeding season.

HABITAT: Breeding: Ponds with heavy emergent vegetation, marshes and marshy inlets with areas of open water (Faaborg 1976), sluggish streams with protective vegetation overhanging banks, reed-bordered swamps with open water. Wintering: Interior rivers and open lakes, tidal creeks and estuaries. Prefers fresh water.

SPECIAL HABITAT REQUIREMENTS: Birds need open water to become airborne, some aquatic vegetation (type not important) (Palmer 1962:108).

NESTING: Egg dates: April 21 to July 2, New York (Bull 1974:56). Clutch size: 2 to 10, typically 4 to 7. Incubation period: 23 to 24 days. Nestling period: 1 or 2 days (precocial). Broods per year: 1. Nest site: Usually built over shallow water anchored to the stems of emergent vegetation, less often located in shrubs such as sweet gale and buttonbush. A solitary nester but occasionally several nests are widely spaced at large ponds (Palmer 1962:108).

TERRITORY SIZE: Defends area within a 150-foot (45.7 m) radius (or more) of nest in Iowa potholes (Glover 1953).

HOME RANGE: About twice the size of nesting territory (Glover 1953).

SAMPLE DENSITIES: Generally 1 pair on ponds up to 10 acres (4 ha) (Palmer 1962:108). Nests may be spaced 15 to 30 feet (4.6 to 9.1 m) apart at larger ponds.

FORAGING: Major foods: Aquatic insects, small fish, snails, aquatic worms, crayfish, shrimp, amphibians, leeches. Minor feed: aquatic vegetation. Substrates: Water, bottoms of bodies of water. Techniques: Swimming, diving.

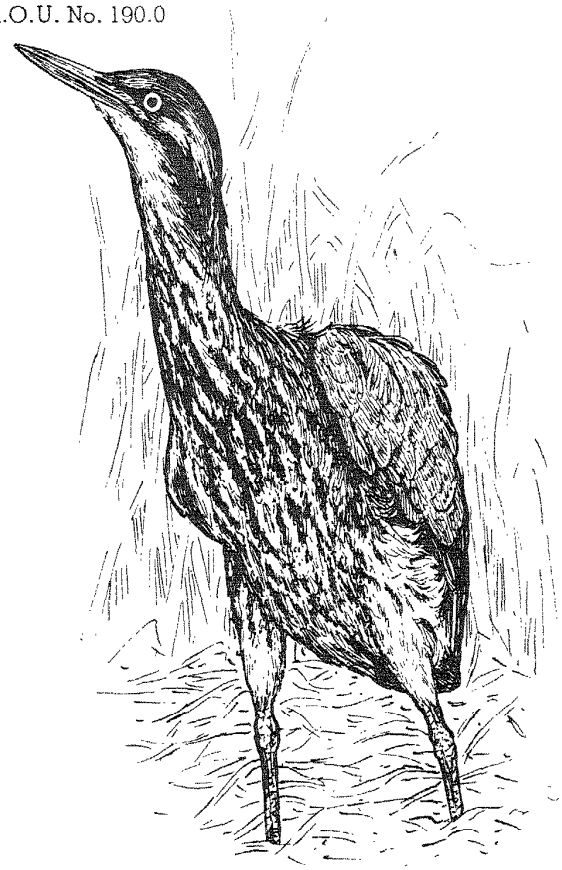
COMMENTS: Birds are solitary or seen in pairs or small groups (to 10 individuals) outside of breeding season.

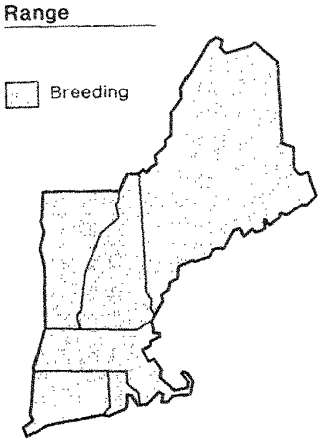
KEY REFERENCES: Bent 1919, Chabreck 1963, Forbush 1929, Glover 1953, Palmer 1962.

American Bittern

(Botaurus lentiginosus)

A.O.U. No. 190.0





RANGE: Breeding: Newfoundland w. to British Columbia, s. to New Jersey, Arizona, and s. California. Winter: Coastal New York, w. to s. British Columbia, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common and widespread.

HABITAT: Breeding: Fresh (sometimes brackish and salt water) marshes, meadows, swamps and bogs, especially areas having tall vegetation such as cattails and bulrushes, sluggish rivers and streams with dense border vegetation. Wintering: Coastal wetlands.

SPECIAL HABITAT REQUIREMENTS: Tall marsh vegetation such as cattails and bulrushes in areas with little or no human disturbance.

NESTING: Egg dates: May 10 to June 29, New York (Bull 1974:90). Clutch size: 3 to 7, typically 4 to 5. Incubation period: About 24 days. Nestling period: About 14 days. Broods per year: Probably 1. Age at sexual maturity: Unknown (Palmer 1962:502). Nest site: Dry or wet ground near or in marshes, bogs, swamps. Usually well hidden in tall vegetation such as reeds, cattails, and so on, usually several inches above the water. Rarely in bushes or trees. Solitary nester.

SAMPLE DENSITIES: 5 nests on one slough less than 160 acres (64.8 ha) in Saskatchewan (Bent 1926:75). 2 nests on 5 acres (2.0 ha) of cordgrass meadow in Minnesota (Vesall 1940).

FORAGING: Major foods: Frogs (preferred), reptiles, crustaceans (crayfish, crabs), shellfish, insects, small fish, small mammals, spiders. Substrates: Water, shallow bottoms, aquatic vegetation. Techniques: Stand and wait, walk slowly (Kushlan 1976).

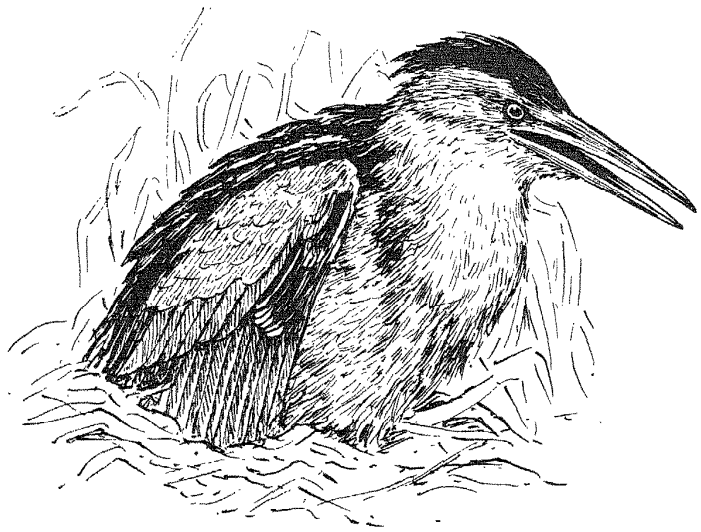
COMMENTS: So shy, bitterns are seldom seen. They are known to abandon a marsh at the slightest disturbance.

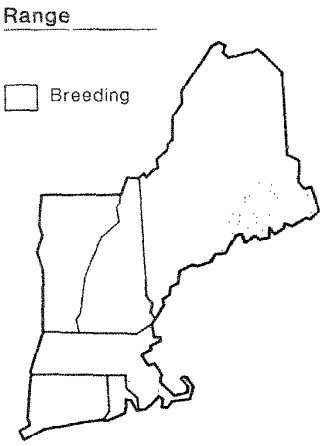
KEY REFERENCES: Bent 1926, Forbush 1929, Palmer 1962.

Least Bittern

(Ixobrychus exilis)

A.O.U. No. 191.0





RANGE: Breeding: New Brunswick w. to Oregon, s. to South America. Winter: Georgia s. to Florida, w. to Texas and s. California, southward.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to rare.

HABITAT: Breeding: Fresh, brackish and, less frequently, salt water wetlands. Prefers marshes with tall vegetation such as cattails, sedges, and scattered bushes.

SPECIAL HABITAT REQUIREMENTS: Deep marshes with clumps of emergent vegetation.

NESTING: Egg dates: May 15 to July 10, New York (Bull 1974:91). Clutch size: 3 to 6, typically 4 to 5. Incubation period: 17 to 18 days. Nestling period: 10 to 14 days. Broods per year: 1 or 2. One in New England (Forbush 1929 V. 1:322). Age at sexual maturity: Unknown (Palmer 1962:496). Nest height: To 20 feet (6.1 m), typically 8 to 14 inches (20.3 to 35.6 cm) above water level. Nest site: Probably chosen by male. Usually located in dense stand of reeds, cattails, sedges or other marsh vegetation close to open water. The Least Bittern is usually a solitary nester.

TERRITORY SIZE: There is limited evidence of territoriality in Least Bitterns (Weller 1961).

SAMPLE DENSITIES: 15 nests were found in a 2-acre (0.8 ha) patch of rushes in Michigan (Wood 1951), but this was exceptional. 19 nests were found in a 44-acre (17.8 ha) marsh (Kent 1951 in Palmer 1962:496). 1 nest per 4 acres (1.6 ha) of useable vegetation (Beecher 1942).

FORAGING: Major foods: Small fishes, crustaceans (mainly crayfish), frogs and salamanders, reptiles, insects, occasionally shrews and mice. Substrates: Mud, marsh vegetation, shallow water. Techniques: Stand and wait, walk slowly (Kushlan 1976).

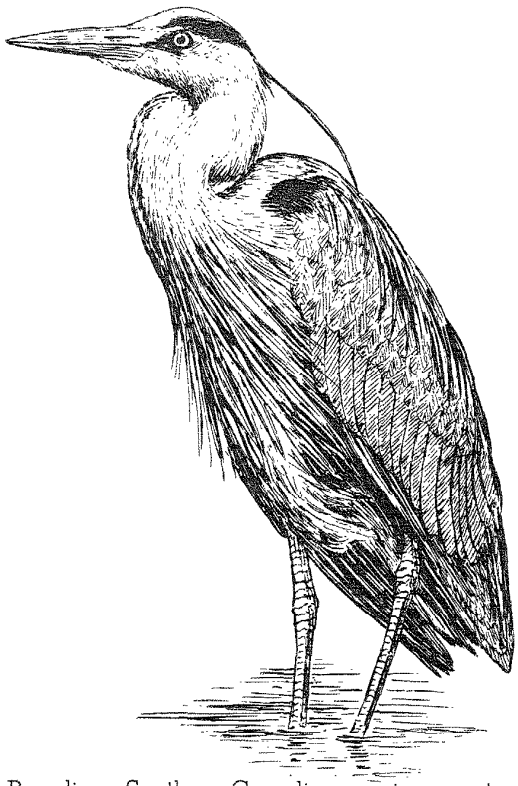
COMMENTS: Usually nests singly but may be colonial with other Least Bitterns in favorable habitat. Marsh drainage, pollution, and insecticides have adversely affected parts of its range.

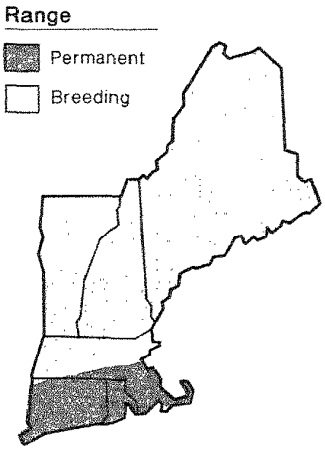
KEY REFERENCES: Bent 1926, Forbush 1929, Palmer 1962, Weller 1961.

Great Blue Heron

(Ardea herodias)

A.O.U. No. 194.0





RANGE: Breeding: Southern Canadian provinces, s. to s. Mexico. Winter: Massachusetts s. through coastal states, w. across the s. half of the United States, s. to n. South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common (Maine) to rare (Massachusetts) in breeding season.

HABITAT: Breeding: Shallow shores of ponds, lakes, streams, rivers, wet meadows, wooded swamps, fresh bays, and marshes. Wintering: Mainly coastal areas with bare (snow-free) ground and open water.

SPECIAL HABITAT REQUIREMENTS: Generally require tall tree for nesting.

NESTING: Egg dates: April 15 to June 9, New York (Bull 1974:73). Clutch size: 3 to 7, typically 4. Incubation period: About 28 days (Bent 1926:106). Nestling period: About 60 days (Pratt 1970). Broods per year: 1. Age at sexual maturity: 2 years (Bent 1926:108). Nest height: To 130 feet (39.6 m), typically high in large trees. Nest site: Varies with habitat. Usually in tall trees but may be built on ground, rock ledges, and sea cliffs, or in shrubs. Birds are typically colonial nesters but may be solitary. Same nest often repaired for use each season. Nest may be miles from food sources.

TERRITORY SIZE: Sizes vary with habitat and stage of reproductive cycle. Colonial nesters defend small areas often restricted to the distance the bird can extend its neck and bill from the nest.

SAMPLE DENSITIES: Dozens of nests may be built in crown of a single tree. 131 active nests per 0.36 ha (0.9 acre) in Oregon (Werschkul et al. 1976).

FORAGING: Major foods: Aquatic and terrestrial insects, fishes, amphibians, reptiles, crustaceans, occasionally small birds and mammals. Substrates: Shallow water, muddy bottoms, grasses and weeds. Techniques: Stand and wait (Kushlan 1976, Willard 1977), walk slowly. Active pursuit is infrequent. Occasionally floats (Pough 1951:40). Preferred feeding habitat: Wet meadows, pastures.

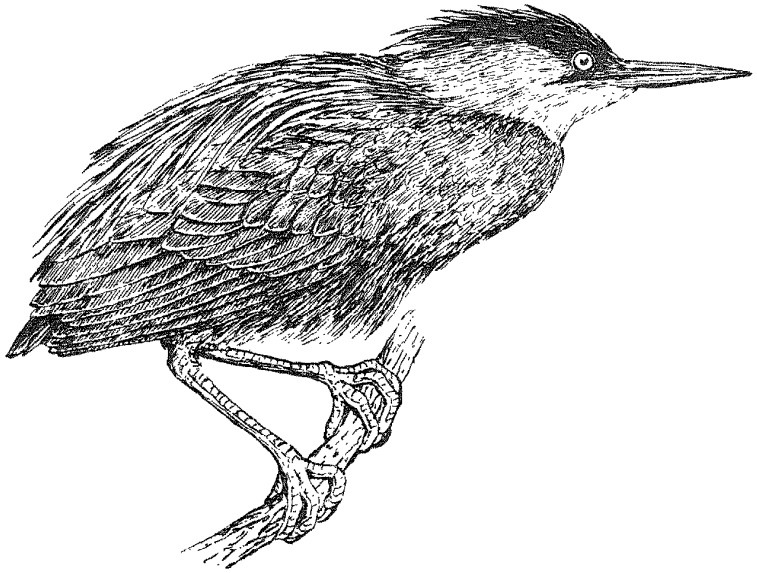
COMMENTS: Individual feeding territories may be strongly defended during the nonbreeding season. Birds occasionally nest miles from food source. Commonly seen feeding on tidal flats during migration.

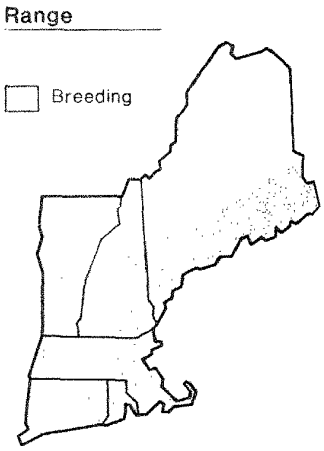
KEY REFERENCES: Bent 1926, Cottrille and Cottrille 1958, Palmer 1962, Pratt 1970.

Green-backed Heron

(Butorides striatus)

A.O.U. No. 201.0





RANGE: Breeding: Nova Scotia w. to Oregon, s. to Central America. Winter: South Carolina to Florida, w. along Gulf States, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to common and widespread.

HABITAT: Breeding: Widely distributed—makes use of nearly all fresh and salt water habitats: ponds, lakes, rivers, streams, sloughs, marshes, wooded swamps, wet meadows.

NESTING: Egg dates: April 29 to August 4, New York (Bull 1974:85). Clutch size: 3 to 6, typically 4 to 5. Incubation period: 19 to 21 days. Nestling period: 16 to 17 days. Fledge when about 21 days old. Broods per year: 1 (rarely 2). Age at sexual maturity: 1 year. Nest height: 1 to 30 feet (0.3 to 9.1 m), typically 10 to 15 feet (3 to 4.5 m). Nest site: Varies, often nests near water—on a hummock in a marsh or in a tree—but also may nest away from water in trees of dry woodlands and orchards. Often chooses conifers but uses many hardwood trees or shrubs. Sometimes uses old nest.

TERRITORY SIZE: Male defends a large area upon arrival but territory decreases to within a few feet of the nest as season progresses. Female helps defend.

SAMPLE DENSITIES: Green Herons are solitary or colonial, nesting in small groups of up to 30 pairs (Pough 1951:47). Larger groups are unusual, although 70 breeding pairs were found on an area 240 feet (73.2 m) by 1,500 feet (457.3 m) long on Long Island, New York (Palmer 1962:419).

FORAGING: Major foods: Small fishes, crustaceans, mollusks, terrestrial and aquatic insects, reptiles, amphibians, spiders, leeches. Substrates: Shallow water, shallow bottoms, wetland vegetation. Techniques: Stand and wait, walk slowly (Kushlan 1976).

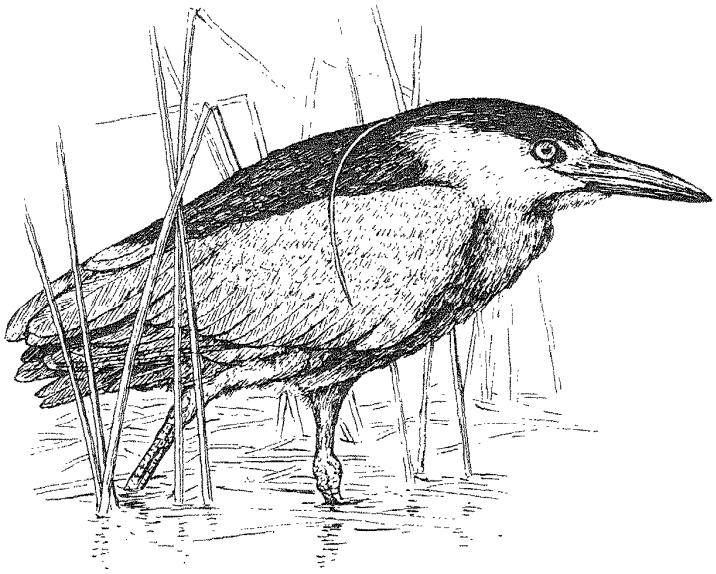
COMMENTS: Separate feeding territories are vigorously defended by some individuals. Occasionally many birds use a common feeding ground.

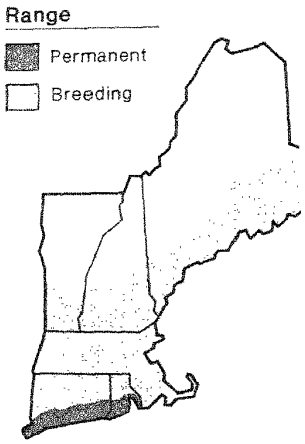
KEY REFERENCES: Bent 1926, Kushlan 1976, Palmer 1962.

Black-crowned Night-Heron

(Nycticorax nycticorax)

A.O.U. No. 202.0





RANGE: Breeding: Quebec w. to Oregon, s. to the Gulf of Mexico (excluding parts of Appalachian mountains) and South America. Winter: Southern New England w. to n. California, s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (coast) to rare (inland).

HABITAT: Breeding: Extremely varied. Occupies fresh, brackish, and salt water areas. Formerly very common in the Northeast breeding in large colonies. Almost disappeared in the 1960's, presumably from pesticides, today the Black-crowned Night-Heron is found mainly along the coast. Wintering: Coastal wetlands and islands.

NESTING: Egg dates: April 1 to July 12, New York (Bull 1974:86). Clutch size: 2 to 6, typically 3 to 5. Incubation period: 24 to 26 days. Age at first flight: About 42 days. Broods per year: 1 (possibly 2). Age at sexual maturity: 2 to 3 years (occasionally 1 year, Gross 1923). Nest height: To 160 feet (48.8 m) (Oregon), typically 20 to 30 feet (6.1 to 9.1 m). Nest site: Varies from wooded areas and groves of pitch pine, spruce, red maple, and red oak to swamps of alder and cedar and cattail marshes (prairies), known to breed in city parks. Occasionally constructs floating nest but most often builds in shrubs or trees.

TERRITORY SIZE: Unknown. Birds defend area immediately surrounding nest. Communal feeding areas reported on Long Island. Some birds defend feeding territories and roosting sites (Palmer 1962:478, 479).

SAMPLE DENSITIES: 400 pairs on Pea Patch Island in th Delaware River in 1976 (Buckley et al. 1976).

FORAGING: Major foods: Fishes, crustaceans, mollusks worms, aquatic terrestrial insects, reptiles and amphib ians, occasionally young birds and mammals. Sub strates: Shallow water, muddy and sandy bottoms, dr ground. Techniques: Stand and wait, walk slowl (Kushlan 1976).

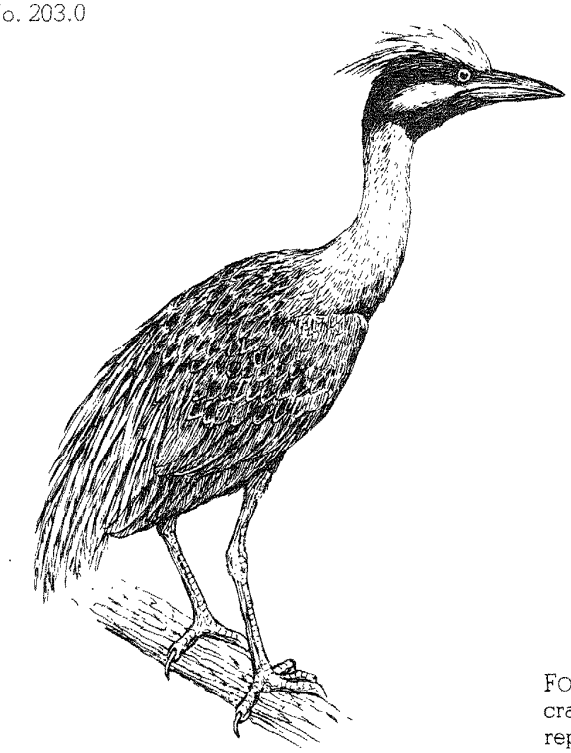
COMMENTS: Feeding activity is greatest at dawn an dusk with activity continuing into the early hours of dark ness. Gregarious in all seasons.

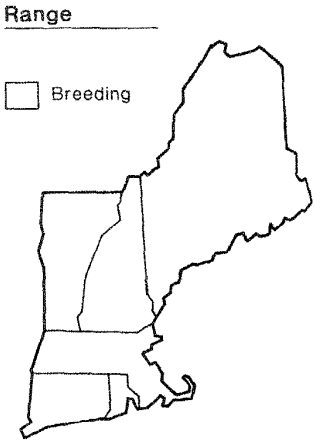
KEY REFERENCES: Bent 1926, Forbush 1929, Gross 1923 Noble et al. 1938, Palmer 1962.

Yellow-crowned Night-Heron

(Nycticorax violaceus)

A.O.U. No. 203.0





RANGE: Breeding: Eastern Massachusetts w. to Michigan (a few) and California s. to South America. May be extending breeding range in the Northeast—reports of sightings have increased in recent years. Winter: Central Florida w. to California, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common (coast) to rare inland.

HABITAT: Breeding: Islands in fresh and salt water, marshes, ponds, and wooded swamps where it nests in isolated groves of trees or bushes.

NESTING: Egg dates: April 30 to June 10, New York (Bull 1974:90). Clutch size: 3 to 6, typically 4 to 5. Incubation period: 24 days (Forbush 1929:342). Broods per year: Probably 1. Age at sexual maturity: Unknown (Palmer 1962:488). Nest height: To 50 feet (15.2 m). Nest site: Builds nest in isolated grove of trees or in brushy tangle at edge of pond, marsh, swamp. Rarely nests on the ground. Usually nests in small groups of 2 to 6 pairs at the edge of large heronries. Sometimes uses old nests.

TERRITORY SIZE: Sizes not known; birds defend an area for display, copulation, and nesting.

SAMPLE DENSITIES: 40 pairs on Pea Patch Island in Delaware River in 1976 (Buckley et al. 1976).

FORAGING: Major foods: Mainly crustaceans, especially crabs and crayfish, mollusks. Sometimes takes leeches, reptiles, amphibians, small birds and mammals, insects, fishes. Substrates: Shallow water, shallow bottoms. Techniques: Stand and wait; walk slowly (Kushlan 1976).

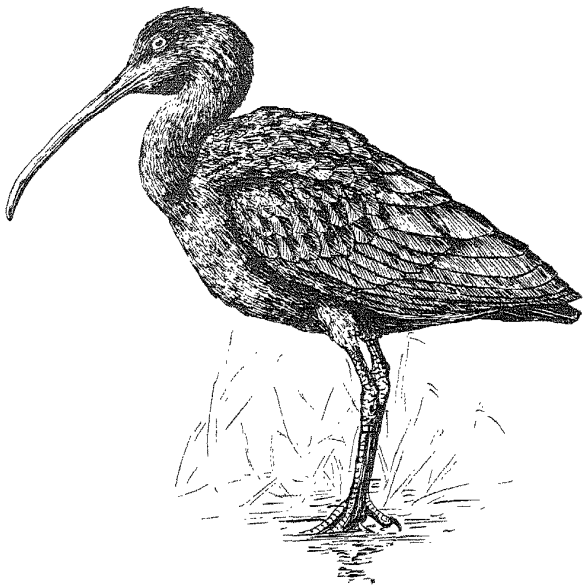
COMMENTS: Birds feed during the day and at night, singly or in twos or threes.

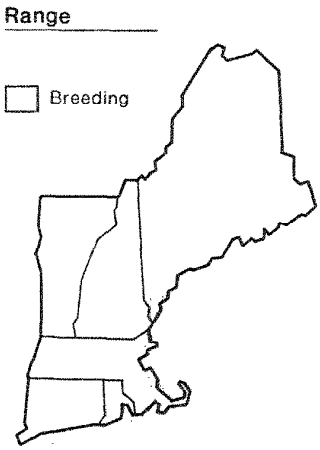
KEY REFERENCES: Bent 1926, Palmer 1962, Pough 1951.

Glossy Ibis

(Plegadis falcinellus)

A.O.U. No. 186.0





RANGE: Breeding: Locally in Maine s. along the Atlantic coast to Florida. Winter: Florida and the Gulf States s. to Mexico.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to uncommon.

HABITAT: Breeding: Fresh, brackish, and salt water. On New Jersey coast, birds nest in mixed stands of holly, red cedar, sumac, salt myrtle, bayberry, wild cherry, grape and cat brier that grow on barrier beaches. Favor shallow pools bordered by shrubs and emergent vegetation.

NESTING: Egg dates: March to late May (Palmer 1962:521). Clutch size: 3 to 5, typically 3 to 4. Incubation period: 21 days. Nestling period: About 14 days. Broods per year: 1. Age at sexual maturity: Unknown (Palmer 1962:520). Nest height: To 10 feet (3.0 m). Nest site: On ground in tall, dense vegetation such as cattails and reeds, in low bushes or in tops of low trees growing in water. Birds are colonial nesters—associating with herons and other ibises.

SAMPLE DENSITIES: 600 pairs on Pea Patch Island in Delaware River in 1976 (Buckley et al. 1976).

FORAGING: Major foods: Crustaceans (especially crayfish), small snakes, cutworms and other grubs, grasshoppers, leeches. Substrates: Soft earth, shallow water, mud flats. Techniques: Probing. Preferred feeding habitat: Mud flats, flooded fields.

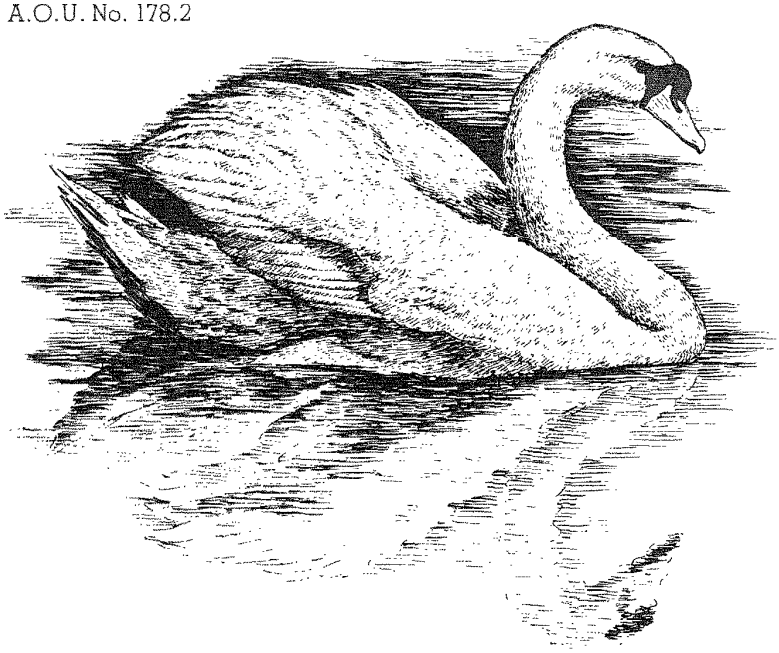
COMMENTS: The Glossy Ibis is extending its breeding range in the Northeast. It nested in Massachusetts in 1973 (new record) and over 100 pairs nested on coastal islands of the state in 1977 (Massachusetts Audubon Society 1977). Little is known about the birds' feeding habits in the Northeast.

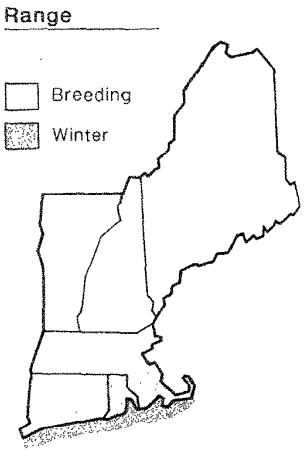
KEY REFERENCES: Bent 1926, Miller and Burger 1978, Palmer 1962, Williams 1975a.

Mute Swan

(Cygnus olor)

A.O.U. No. 178.2





RANGE: Breeding: Small colonies exist in the Eastern United States, mainly along the northeastern coastline with largest numbers occurring in the Long Island area. Smaller groups range locally from New Hampshire and Massachusetts to Virginia. Winter: Same as above.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common (coast) to rare inland.

HABITAT: Breeding: Coastal bays, marshes and ponds having dense aquatic vegetation. Wintering: Inland birds may be forced to move to brackish or salt water areas if fresh waters freeze. Otherwise, birds remain in breeding territories.

SPECIAL HABITAT REQUIREMENTS: Shallow waters with abundant aquatic vegetation.

NESTING: Egg dates: March 25 to June 15. Peak: May, Atlantic coast (Palmer 1976 V. 2:45). Clutch size: 2 to 11, typically 5 to 7. Incubation period: 35 to 36 days. Nestling period: 1 day (precocial). Broods per year: 1. Age at sexual maturity: 2 to 6. Nest site: Nest on the ground, preferably on small islands along secluded shores, in marshes, or at ponds. Favors shallow, clean, weed-filled waters. Sometimes colonial. Nest is typically placed in a clump of cattails surrounded by water.

TERRITORY SIZE: 4 to 10 acres (1.6 to 4.0 ha) in Michigan (Wood and Gelston 1972). 12 territories ranged from 0.5 to 11.8 acres (0.2 to 4.8 ha) in Rhode Island (Willey 1968 in Palmer 1976). When a pond is chosen for nesting, the male defends the entire pond against intruders (Palmer 1976 V. 2:44).

SAMPLE DENSITIES: Many scores of semi-domesticated pairs nested on 25 acres (10.1 ha) in England indicating that these birds will usually tolerate closer nesting (Bannerman 1958 in Palmer 1976 V. 2:44).

FORAGING: Major foods: Fish, crustaceans and aquatic insects (adults and larvae). Substrates: Water, bottoms of shallow bodies of water. Techniques: Immersing head and neck, up-ending in dabbling-duck fashion. Preferred feeding habitat: Areas with abundant submerged vegetation.

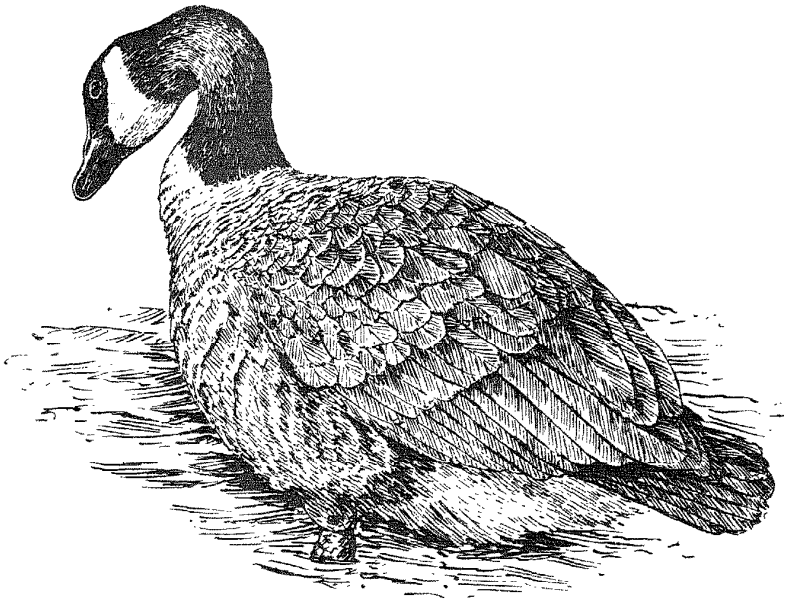
COMMENTS: Pair bond—life-long monogamy. Diet consists of nearly 100 percent vegetable material. Willey (1968 in Palmer 1976 V. 2:46) found by experiment that a swan consumed 8.4 pounds of wet vegetation per day over a 7-day period.

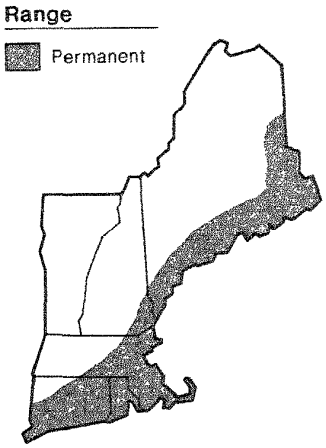
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V. 2.

Canada Goose

(Branta canadensis)

A.O.U. No. 172.0





RANGE: Breeding: Coastal regions from Labrador to North Carolina. Scattered populations in inland refuges. Winter: Coast of Newfoundland s. to n. Mexico. Probably as much as 75 percent of the population winters from New Jersey to North Carolina (Palmer 1976 V. 2:192).

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Massachusetts) to uncommon (Maine) in breeding season. Common (Maine) in winter.

HABITAT: Breeding: Coastal salt marshes, shores of ponds and lakes, grassy fields. Wintering: Ice-free lakes, rivers, ponds, and coastal marshes that provide resting and feeding sites and agricultural lands that provide additional grazing areas.

SPECIAL HABITAT REQUIREMENTS: Shallow water, abundant plant foods.

NESTING: Egg dates: March 28 to May 14, New York (Bull 1974:99). Clutch size: 4 to 10, typically 5 or 6. Incubation period: 28 days. Nestling period: 1 day (precocial). Age at first flight: More than 50 days. Broods per year: 1. Age at sexual maturity: 2 or 3 years. Nest site: Typically near water in a grass-lined depression on ground. Occasionally in tree on abandoned nest of Osprey.

TERRITORY SIZE: Varies considerably. Size seems to be influenced by aggressiveness of defending male, type of habitat, amount of protective cover and density of breeding population (Bellrose 1976:159).

SAMPLE DENSITIES: Breeding densities vary greatly and seem to be influenced by availability of suitable nest sites rather than by territorial behavior (Johnsgard 1975:142).

FORAGING: Major foods: Tender shoots of grasses, sedges and other marsh plants, submerged vegetation, cultivated grains, and wild seeds and fruits. Substrates: Wet and dry ground water. Techniques: Ground gleaning, grazing, immersing head and neck. Preferred feeding habitat: Mud flats, grain fields, salt marshes, shallow waters of bays.

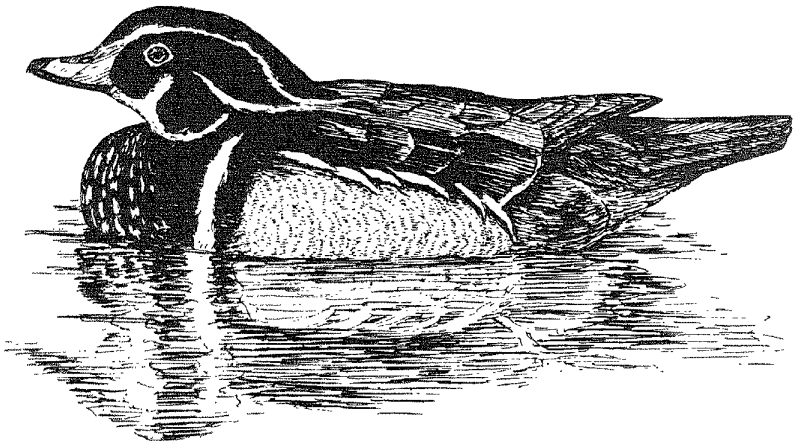
COMMENTS: Pair bond—life-long monogamy. Diet consists almost entirely of vegetable material.

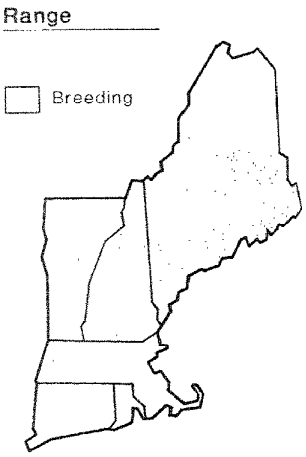
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V. 2.

Wood Duck

(Aix sponsa)

A.O.U. No. 144.0





RANGE: Breeding: Northern Nova Scotia, s. to the s. tip of Florida, w. to the midwestern states. Winter: Maryland s. to Florida, w. to e. Texas.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to uncommon in breeding season, rare in winter.

HABITAT: Breeding: Shallow waters of ponds, lakes, or marshes having abundant floating and emergent vegetation. Wooded swamps or open flooded lowland forests where food is available. Shuns salt water. Wintering: Few birds winter in New England.

SPECIAL HABITAT REQUIREMENTS: Trees at least 16 inches d.b.h. with large cavities for nesting (minimum entrance hole 4 inches in diameter) (Scott et al. 1977, McGilvrey 1968).

NESTING: Egg dates: March 28 to July 15, New York (Bull 1974:108). Clutch size: 6 to 15, typically 9 to 14. Incubation period: 28 to 37 days, average 30 days. Nestling period: 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 2 to 65 feet, (0.6 to 19.5 m). Typically 20 to 50 feet (6.1 to 15.2 m). Nest site: In cavity of living (occasionally dead) deciduous or coniferous tree, usually within several hundred yards of water. Prefers water with brushy overstory for concealment and stumps and fallen logs for perching. Accepts nest boxes but usually occupies natural cavities and those excavated by Pileated Woodpeckers.

TERRITORY SIZE: Wood Ducks apparently do not defend an area around the nest. Drakes prevent other males from approaching mates for a short period prior to nesting (Grice and Rogers 1965:20).

HOME RANGE: No size information. Range seems to be unstable with dimensions and boundaries changing during the nesting season (Bellrose 1976:186).

SAMPLE DENSITIES: 63 nests (next boxes) per 150 acres (60.7 ha) in open marsh in Massachusetts (Grice and Rogers 1965:20). 1 nest per 12 acres (4.9 ha) (Bellrose et al. 1964).

FORAGING: Major foods: Aquatic and terrestrial insects, acorns (favorite food), hickory nuts, waste grains, seeds of aquatic plants, fleshy fruits. Substrates: Shallow water, forest floor, fields. Techniques: Grazing, immersing head and neck, up-ending. Preferred feeding habitat: Water less than 18 inches deep that is still or slow-flowing (Johnsgard 1975:173).

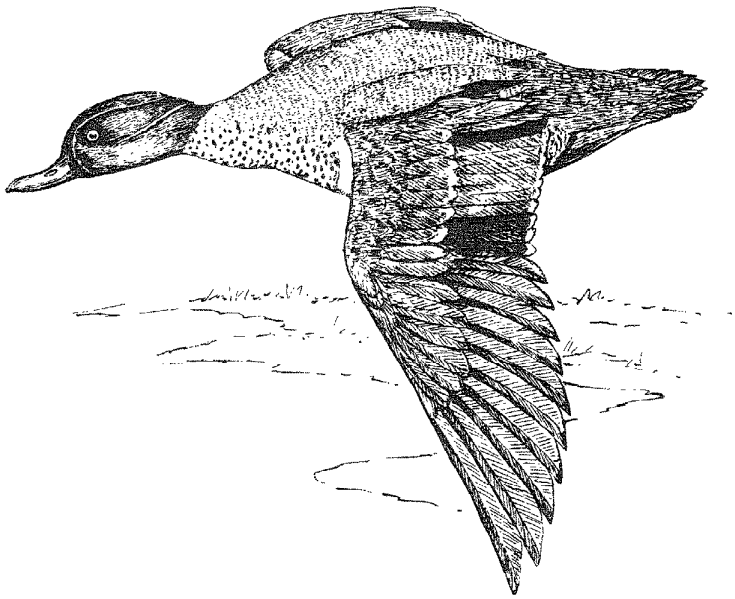
COMMENTS: Draining and clearing of lowlands destroy breeding and wintering Wood Duck habitat. Wood Ducks in Ontario find good breeding habitat in areas with beaver ponds and cavities made by Pileated Woodpeckers. Diets of Maine birds consisted of 95 percent vegetable and 5 percent animal material (Coulter 1957).

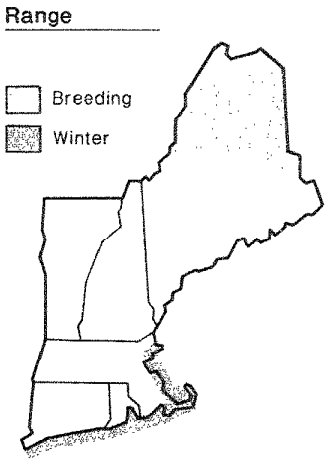
KEY REFERENCES: Bellrose 1976, Coulter 1957, Grice and Rogers 1965, Hester and Dermid 1973, Palmer 1976 V. 3.

Green-winged Teal

(Anas crecca)

A.O.U. No. 139.0





RANGE: Breeding: Labrador, w. to n. Alaska, s. to the mountains of n. New England, s. Colorado and California. Occasionally breeds at inland ponds in Massachusetts, New Jersey, Maryland, and Pennsylvania. Winter: Southern New England w. to s. Alaska, s. In the Atlantic flyway, most birds winter between New Jersey and Florida. Small numbers winter n. to s. Canada.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare and local (Vermont) to common (Maine) breeder. Uncommon in winter.

HABITAT: Breeding: Ponds, lakes, sedge meadows, marshes near grasslands, dry hillsides with bushy thickets or adjacent open woodlands. Generally an upland nester. Wintering: Tidal creeks and ponds bordered by mud flats, estuaries, coastal brackish marshes. Avoids open salt water.

NESTING: Egg dates: May 25 to July 15, New York (Bull 1974:123). Clutch size: 5 to 16, typically 10 to 12. Incubation period: 21 to 23 days. Nestling period: Less than 1 day (precocial). Age at sexual maturity: 1 year. Broods per year: 1. Nest site: Prefers dense stands of grass, weeds, brush, 2 to 300 feet (0.6 to 91.4 m) from water (average 95 feet, 29 m) (Bellrose 1976:223). Nests are so well hidden they are difficult to find.

SAMPLE DENSITIES: 1 pair per 60 acres (24.3 ha) in grasslands in Alberta (Keith 1961). 20 pairs per square mile (8 pairs/km^2) in favorable habitat in North Dakota (Stewart and Kantrud 1972).

FORAGING: Major foods: Seeds (staple) of wetland plants especially millets, smartweed, and nutgrasses; insects, crustaceans, mollusks. Substrates: Shallow water, mud. Techniques: Dabbling, grazing, gleaning. Preferred feeding habitat: Prefers mudflats. Also forages in flooded or dry grain fields and woodlands.

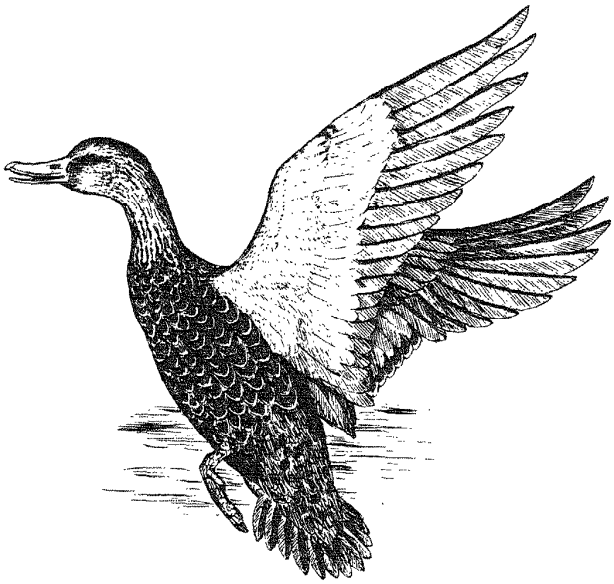
COMMENTS: Birds do not commonly nest in the Northeast. Occasionally they raise broods at inland ponds and marshes and along coast in the New Jersey-Long Island area. They are uncommon in winter but may appear in large groups locally. Occasionally they are seen in company of Eurasian Green-winged Teal *(A. c. crecca)*.

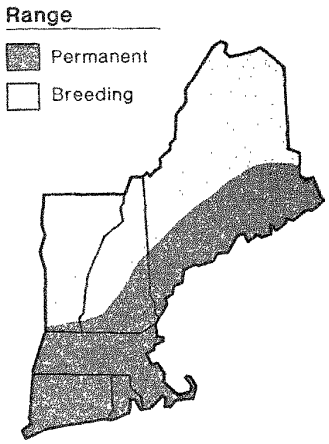
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V.2.

American Black Duck

(Anas rubripes)

A.O.U. No. 133.0





RANGE: Breeding: Quebec and Labrador s. to Cape Hatteras, North Carolina. Greatest densities occur in coastal marshes. Winter: East coast—from Canadian border s. to Florida with about two-thirds remaining between Long Island and North Carolina. Inland—Lake Erie marshes and large river valleys.

RELATIVE ABUNDANCE IN NEW ENGLAND: Abundant to uncommon.

HABITAT: Breeding: Marshy borders of ponds, lakes, rivers, and streams, wooded swamps, fresh, salt and brackish marshes and meadows. Wintering: Extensive open marshes of coast and interior. Blacks commonly return to same wintering areas year after year.

NESTING: Egg dates: April 2 to June 22, New York (Bull 1974:112). Clutch size: 6 to 11, typically 8 to 10. Incubation period: 26 to 28 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Usually on ground. Most nests are well hidden in vegetation (grasses, shrubs, briers, etc.) and are close to water. In uplands, nests may be a mile or more from water (Palmer 1976 V.2:329). Occasionally uses old crows and hawks nests, natural or excavated (pileated woodpecker) cavities in trees or tops of rotted stumps.

TERRITORY SIZE: 6 acres (2.4 ha) in Lake Erie marsh (Trautman 1947 in Palmer 1976 V. 2:338).

HOME RANGE: Up to 5 square miles (13 km^2) in New England (Coulter and Miller 1968).

SAMPLE DENSITIES: 1 nest per 20 to 40 acres (8.1 to 16.2 ha) in bogs in Maine (Coulter and Miller 1968). 21.4 nests per acre (0.4 ha) on islands in Chesapeake Bay (Stotts 1957). 5 nests per acre (0.4 ha) on islands in Lake Champlain (Coulter and Miller 1968). 5.3 pairs per hundred acres (40 ha) of brackish marsh in Maryland (Stewart 1962).

FORAGING: Major foods: Mollusks (coastal staple), submerged aquatic plants, waste grains, acorns, seeds of marsh plants, crustaceans, earthworms, amphibians, fishes. Substrates: Shallow water, grain fields. Techniques: Dabbling, grazing, gleaning.

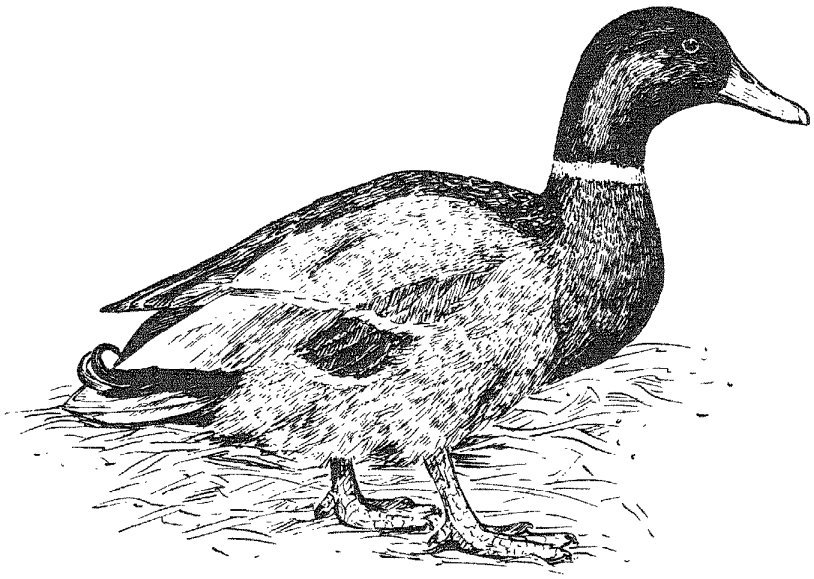
COMMENTS: Foods vary widely in different habitats. Plants comprise most of diet in fresh and brackish areas and animals are principal foods in marine environs. In late fall and winter, birds may leave their rest areas early in the day and just before sunset to travel to waste corn fields up to 25 miles (40 km) away (Bellrose 1976:261). Interbreeds with mallards—3 percent of blacks in the Atlantic flyway show plumage feathers of both species (Bellrose 1976:253).

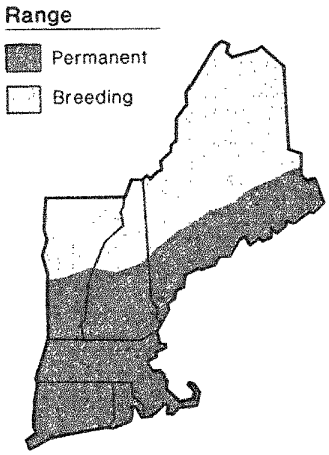
KEY REFERENCES: Bellrose 1976, Coulter and Miller 1968, Palmer 1962, Stotts 1957.

Mallard

(Anas platyrhynchos)

A.O.U. No. 132.0





RANGE: Breeding: Very broad breeding range covering the n. half of the United States, s. to n. Virginia in the East and Kansas and n. New Mexico in the West. Winter: Coast from Nova Scotia Inland from Maryland w. to c. Alaska and s. to s. Mexico. Feral stock in Massachusetts through winter.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common: (Massachusetts) to uncommon (Maine).

HABITAT: Breeding: Ponds, lakes, rivers, streams, marshes, wet meadows, wooded swamps. Prefers water less than 16 inches (41 cm) deep (Pough 1951:77). Avoids salt water. Wintering: Coastal marshes, inland ice-free ponds and rivers.

SPECIAL HABITAT REQUIREMENTS: Shallow water (less than 16 inches (41 cm) deep) that enables duck to bottom feed by tipping up (Pough 1951:77).

NESTING: Egg dates: March 25 to July 1, New York (Bull 1974:110). Clutch size: 6 to 15, typically 7 to 10. Incubation period: 26 to 30 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year (some individuals breed later). Nest site: Nest is usually located within 100 yards of water (Bellrose 1976:237) typically near water's edge in places where ground is dry or slightly marshy and vegetation is plentiful. Rarely nests in cavities, on hollowed tops of stubs or in tree crotches.

TERRITORY SIZE: About 2 square miles (5.2 km^2) at onset of breeding season (Palmer 1976 V.2:298). Territory coincides with home range early in breeding season and becomes progressively smaller as season advances. Drake probably defends mate rather than land area (Dzubin 1969 in Palmer 1976, V. 2:298).

HOME RANGE: About 2 square miles (5.2 km^2) at onset of breeding season (Palmer 1976 V.2:298). 700 acres (283.4 ha) in Manitoba (Dzubin 1955).

SAMPLE DENSITIES: 93 pairs per square mile (36 pairs/km^2) in Canadian Parklands (Dzubin 1969 in Palmer 1976, V. 2:300). 6.1 pairs per square mile (2 pairs/km^2) in prairie pothole habitat (Drewien and Springer 1969). 29 nests per 5.7-acre (2.3-ha) island in Lake Champlain (Coulter and Miller 1968).

FORAGING: Major foods: Seeds of sedges, grasses and smartweed are staples; also eats leaves, stems and seeds of other marsh plants, waste grain, snails, insects. Substrates: Shallow water, grain fields, meadows, bottoms of bodies of water. Techniques: Dabbling, grazing, gleaning.

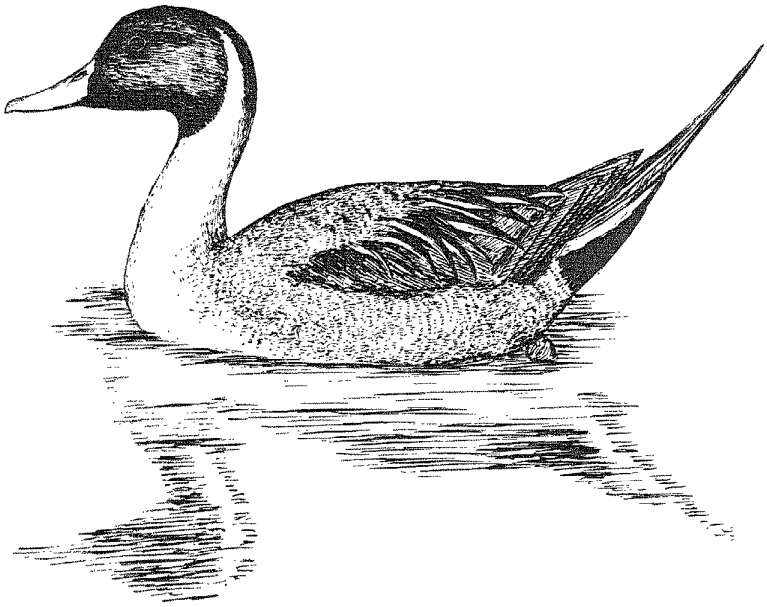
COMMENTS: About 40,000 Mallards winter between Massachusetts and Chesapeake Bay. Another 40,000 winter in the Chesapeake Bay itself (Bellrose 1976:235). It is presently the most abundant duck in North America but is not common throughout the Northeast.

KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V. 2.

Northern Pintail

(Anas acuta)

A.O.U. No. 143.0



RANGE: Breeding: Hudson Bay w. to n. Mackenzie, s. to w. Iowa, n. New Mexico and s. California. Scattered breeding in Massachusetts (Monomoy). Winter: Atlantic coast—coastal Massachusetts and s. New England (occasionally) and mainly New Jersey s. to Florida.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare breeder, locally common in winter.

HABITAT: Breeding: Shallow freshwater areas such as marshes, swamps and ponds generally in open country with low vegetation. Wintering: Fresh, brackish, and salt water marshes; large numbers occur in the Chesapeake Bay area and southward.

SPECIAL HABITAT REQUIREMENTS: Drakes need mudbanks or exposed water margins (Palmer 1976 V. 2:446).

NESTING: Egg dates: April to July (Bellrose 1976). Clutch size: 3 to 14, typically 7 to 9. Incubation period: 21 to 22 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Often in a hollow on dry ground; may or may not be concealed by grasses or shrubs, usually within 100 yards (average 40 yards) from water (Bellrose 1976:271).

TERRITORY SIZE: Pintails have shown little evidence of territoriality (Johnsgard 1975).

SAMPLE DENSITIES: 5.6 pairs per square mile (2 pairs per km^2) in South Dakota (Drewien and Springer 1969). About 12 pairs per 100 acres (40 ha) of water in Alberta (Keith 1961). 32 pairs per square mile (12 pairs per km^2) in favorable habitat in North Dakota (Stewart and Kantrud 1972).

FORAGING: Major foods: The Pintail is chiefly a seed-eater, preferring seeds of pondweeds, sedges, grasses, smartweeds and cultivated grains. Substrates: Shallow water, marsh vegetation. Techniques: Dabbling, gleaning, grazing. Preferred feeding habitat: Shallow waters of marshes, ponds, meadows, and grain fields.

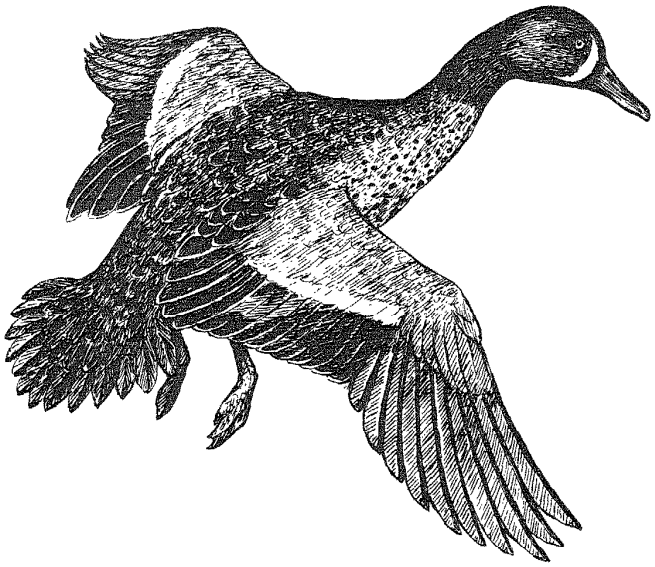
COMMENTS: On wintering grounds, Pintails feed in uplands on mast or grain or on tidal flats where they pick up marine animals (Pough 1951:82). Anderson (1959 in Palmer 1976 V. 2:458) found that the contents of 881 stomachs taken in Illinois consisted of 97 percent vegetable and 3 percent animal matter.

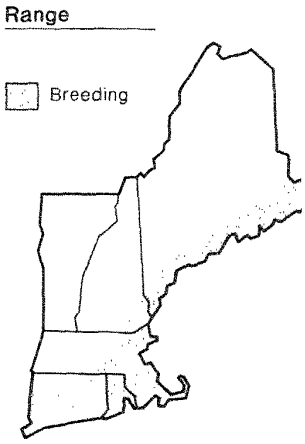
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Munro 1944, Palmer 1976 V. 2.

Blue-winged Teal

(Anas discors)

A.O.U. No. 140.0





RANGE: Breeding: New Brunswick, s. to Tennessee and North Carolina, w. to s. Yukon and California. Winter: Southern Maryland, s. to Florida, w. to Mexico.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common in breeding season. Rare in winter.

HABITAT: Breeding: Fresh water coastal marshes, fresh meadows, rivers, ponds, and lakes. Prefers shorelines to open water and prefers calm water or sluggish currents to fast water. Rarely uses salt or brackish areas (pough 1951:86). In New York, birds favor large freshwater marshes and ponds with emergent vegetation (Bull 1974:126). Wintering: Shallow inland fresh water marshes, coastal brackish and salt water marshes.

NESTING: Egg dates: May 3 to July 4, New York (Bull 1974:126). Clutch size: 6 to 15, typically 8 to 11. Incubation period: About 24 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Prefers dense grassy sites, such as blue grass, hayfields, are sedge meadows, or ground under bushes within a mile of water's edge. Occasionally builds on a sedge tussock or muskrat house surrounded by water.

TERRITORY SIZE: Male appears to defend the female rather than an area of land (Johnsgard 1975:278, Bellrose 1976:281).

HOME RANGE: 250 acres (101.2 ha) in Manitoba (Dzubin 1955). 1.4 to 78.6 acres (0.6 to 31.8 ha) (average 17 acres (6.9 ha)) in Manitoba (McHenry 1971 in Bellrose 1976:281). 89 acres (36 ha) in South Dakota (Evans and Black 1956).

SAMPLE DENSITIES: 18 pairs per 100 acres (40, ha) on impoundments in Alberta (Keith 1961). 17.4 to 63.6 pairs per 100 acres (40, ha) on a variety of ponds in South Dakota (Drewien and Springer 1969). 4 to 22 pairs per 100 acres (40, ha) of wetland at 4 wetlands in Wisconsin (Jahn and Hunt 1964).

FORAGING: Major foods: Seeds of sedges, grasses, pondweeds, and smartweeds (staple foods); also eats leaves of aquatic plants, snails, crustaceans, and insects. Substrates: Water, mud, short grasses. Techniques: Dabbling, grazing, gleaning. Preferred feeding habitat: Mud flats, shallow water, fields.

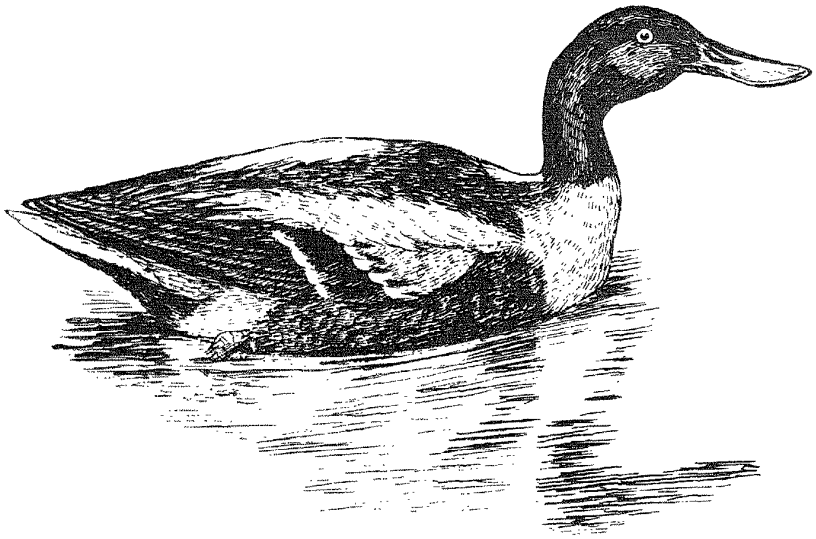
COMMENTS: Mabbott (1920 in Palmer 1976 V. 2:481) found that 70 percent of the diet is vegetable and 30 percent is animal. Blue-winged Teal are often seen feeding with green-winged Teal, but they have different food habits. Blue-winged Teal eat fewer seeds and more of the vegetative (leaves and stems) parts and more animal matter than do Green-winged Teal.

KEY REFERENCES: Bellrose 1976, Bennett 1938, Johnsgard 1975, Palmer 1976 V.2.

Northern Shoveler

(Anas clypeata)

A.O.U. No. 142.0



RANGE: Breedings: Hudson Bay w. to w. Alaska, s. to n. Illinois, Oklahoma and s. California. Breeds very locally and irregularly in the Northeast, Lake Erie marshes in Ohio, Montezuma Marsh in New York. Winter: Long Island, New York w. to s. British Columbia, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare and local breeder, rare in winter.

HABITAT: Breeding: Sloughs, marshes, shallow ponds with open water and abundant aquatic vegetation. Apparently tolerates water pollution or stagnation. Wintering: Coastal bays and marshes, tidal flats.

SPECIAL HABITAT REQUIREMENTS: Shallow bodies of water with muddy bottoms, surrounded by dry grassy areas for nesting.

NESTING: Egg dates: Early April to early May, Delaware (Palmer 1976 V. 2:512). Clutch size: 8 to 13, typically 9 to 11. Incubation period: 22 to 24 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Prefers to nest in short grasses on dry ground. If unavailable, birds will use hayfields and meadows. Seldom nests in weedy patches and avoids woody vegetation such as willows. Nests are usually 75 to 200 feet (23 to 61 m) from waiting areas (Bellrose 1976:297). Shallow prairie marshes are preferred habitats (Johnsgard 1975:292).

TERRITORY SIZE: Males may defend mates rather than area of land (Hori 1963).

HOME RANGE: 8 home ranges ranged from 20 to 128 acres (8.1 to 51.8 ha) (average 76 acres, (30.8 ha)) (Poston 1969). 6 home ranges ranged from 15 to 90 acres (6.1 to 36.4 ha) average 49.7 acres (20.1 ha) (Poston 1969).

SAMPLE DENSITIES: 4.5 birds per square mile (2 pairs/km^2) in mixed prairie habitat (Bellrose 1976:293). 12.7 pairs per square mile (5 pairs/km^2) on a 3-square-mile (7.8 km^2) study area (Poston 1969). 44 pairs per square mile (17 pairs/km^2) in favorable habitat in North Dakota (Stewart and Kantrud 1972).

FORAGING: Major foods: Aquatic insects, snails, fish, crustaceans, seeds of aquatic plants, plankton. Substrates: Shallow water (surface and bottom), deep water (surface). Techniques: Immersing neck (rarely upending).

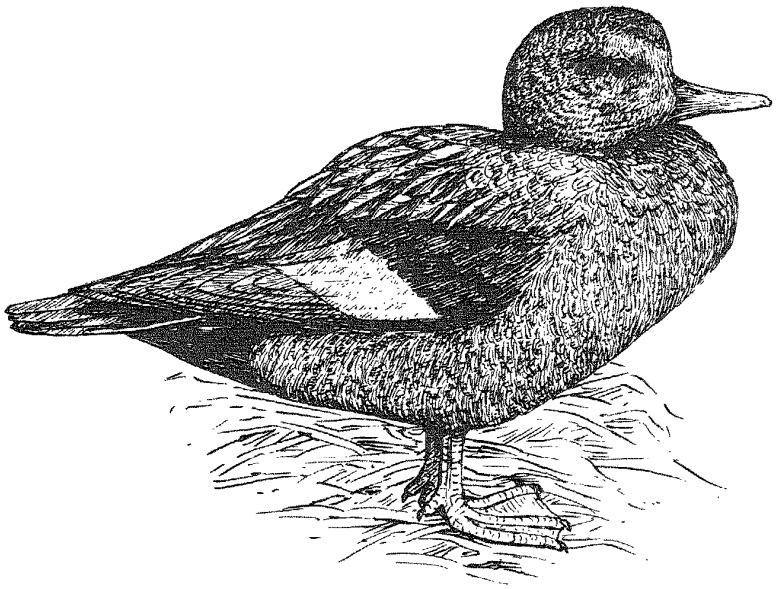
COMMENTS: Shovelers strain water through the lamellae of mandibles in order to separate and consume plankton.

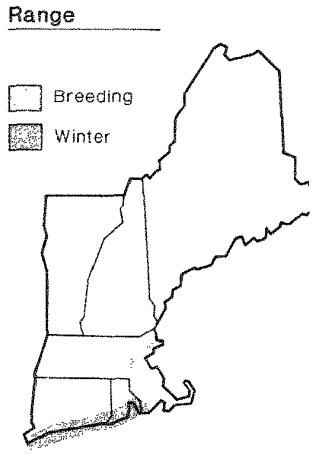
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V.2, Poston 1969.

Gadwall

(Anas strepera)

A.O.U. No. 135.0





RANGE: Breeding: Main breeding range is in the West. Since 1939 gadwalls have been increasing in the East but breeding colonies are scattered. Lake Erie marshes in Ohio, Montezuma Marsh, New York, and a marsh near Concord, Massachusetts, are locations of a few eastern colonies. Winter: Coastal areas New York to Florida. Greatest numbers occur from Chesapeake Bay, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (Massachusetts) to rare (Maine).

HABITAT: Breeding: Mainly on fresh water impoundments created on the brackish marshes of coastal national wildlife refuges and state management areas. Also inland on shallow to deep, open-water marshes. Wintering: Coastal bays and marshes that remain free of ice; occasionally ice-free, wooded lakes.

SPECIAL HABITAT REQUIREMENTS: Moderate to large bodies of water. Submerged aquatic plants for food.

NESTING: Egg dates: May 30 to July 25, New York (Bull 1974:114). Clutch size: 5 to 13, typically 8 to 11. Incubation period: 24 to 27 days. Nestling period: 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year (late-hatched young may breed the second year). Nest site: Tends to be colonial nester. Prefers small islands and dikes in marshes, fields, and meadows usually within a few feet from water. Prefers uplands to nesting over water and uses dense vegetation (especially bulrush (Scirpus) and willow (Salix)) for cover (Williams and Marshall 1938).

HOME RANGE: Ranged from 34 to 87 acres (13.8 to 35.2 ha) (average 67 acres—27.1 ha) at Ogden Bay Marsh, Utah (Gates 1962).

SAMPLE DENSITIES: This is primarily a prairie pothole resident. Sample densities are: average 6.3 birds per square mile (2 pairs/km^2) in mixed prairies of North Dakota (Bellrose 1976:209). 200 nests per acre (0.4 ha) (island) Lower Souris National Wildlife Refuge, North Dakota (Henry 1948 in Palmer 1976 V. 2:394). 1 pair per 60 to 80 acrews (24.3 to 32.4 ha) in pothole areas of Dakotas (Palmer 1976 V. 2:394). New England densities are unknown, but would not approach these concentrations.

FORAGING: Major foods: Submerged aquatic plants (seeds or soft parts)—pondweeds, naiads, widgeon grass, eelgrass, filamentous algae, etc. Substrates: Shallow water. Techniques: Dabbling, diving.

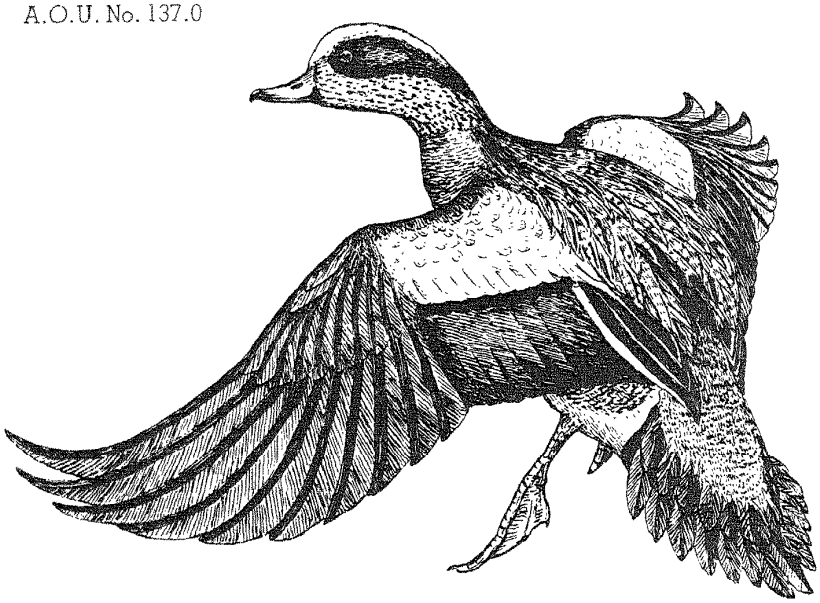
COMMENTS: Mabbott (1920 in Palmer 1976 V. 2:400) found that 98 percent of the contents of 362 stomachs was vegetable and 2 percent animal matter. Gadwalls prefer succulent stems to seeds. They rarely graze in pastures or grain fields.

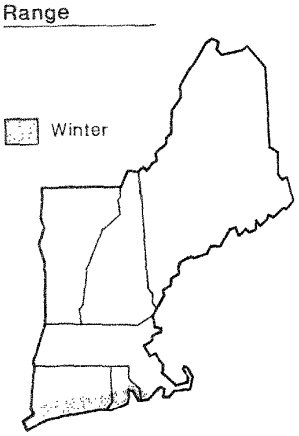
KEY REFERENCES: Bellrose 1976, Gates 1962, Palmer 1976 V. 2.

American Wigeon

(Anas americana)

A.O.U. No. 137.0





RANGE: Breeding: Hudson Bay, w. to Alaska, s. to w. Pennsylvania and Nebraska. Scattered breeding has occurred in New York, Delaware, Massachusetts, and w. Pennsylvania. Winter: Southern New England, Ohio Valley, se. Alaska, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare and local breeder. Range is spreading eastward. Common along coast in winter.

HABITAT: Breeding: Isolated breeder. Perhaps large lakes or marshes with abundant open, shallow water and emergent vegetation especially sedges (*Carex* spp.) and rushes (*Juncus* spp.). Wintering: Shallow fresh and brackish ponds, wet meadows, coastal marshes, and bays.

NESTING: Clutch size: 3 to 11, typically 8 or 9. Incubation period: 22 to 24 days. Nestling period: Less than 1 day (Precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Nest may be close to water on an island or shore or as far as 400 yards (366 m) from water in open grassland or woodland. Usually on dry ground (Bellrose 1976:203).

SAMPLE DENSITIES: 16.6 birds per square mile (6 birds/km^2) at Mackenzie River Delta (Bellrose 1976:199). 9.4 birds per square mile (4 birds/km^2) at Yukon Flats in Alaska (Bellrose 1976:199). 7.4 birds per square mile (3 birds/km^2) in parklands (Bellrose 1976:199). 1.66 birds per square mile (0.6 birds/km^2) in closed boreal zone of Ontario (Bellrose 1976).

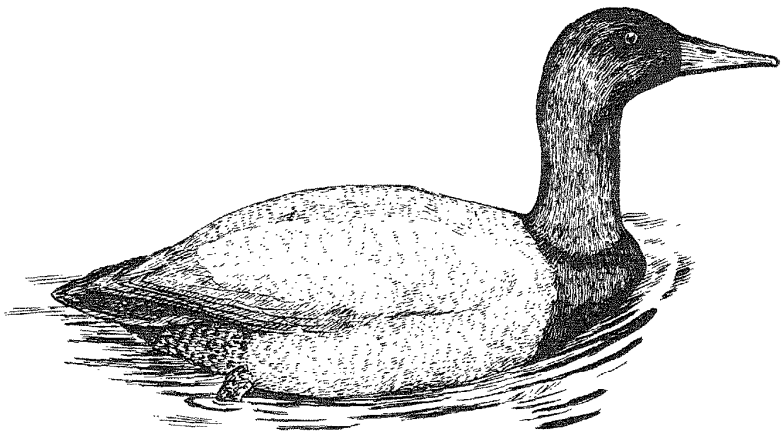
FORAGING: Major foods: Almost wholly vegetarian eating quantities of leaves, stems, and buds on pondweed, widgeon grass (staples), and wild celery, also eats tender shoots of grasses and occasionally snails. Substrates: Shallow water. Techniques: Dabbling, grazing, bottom and plant gleaning. Preferred feeding habitat: Large open water areas with abundant submerged plants.

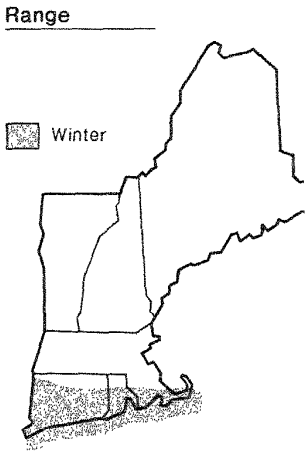
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Munro 1949, Palmer 1976 V. 2.

Canvasback

(Aythya valisineria)

A.O.U. No. 147.0





RANGE: Breeding: Southern Wisconsin nw. to Mackenzie delta and c. Alaska, s. to New Mexico and Nebraska. Winter: Southern New England and e. New York, s. along the coast to Florida and w. through the Gulf States. Greatest numbers winter from New York to the Chesapeake Bay.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon and local in winter.

HABITAT: Wintering: Coastal areas, with greatest concentrations occurring in the Chesapeake Bay area. Prefers fresh and brackish estuarine bays with submerged plants, especially wild celery and eelgrass.

SPECIAL HABITAT REQUIREMENTS: Water areas with emergent vegetation. Stretches of open water for taking off and landing.

FORAGING: Major foods: Seeds and vegetative parts of aquatic plants, especially wild celery (*Vallisneria* spp.) and pondweeds (*Potomogeton* spp.), aquatic invertebrates. Substrates: Water. Techniques: Diving. Preferred feeding habitat: Large, permanent bodies of water.

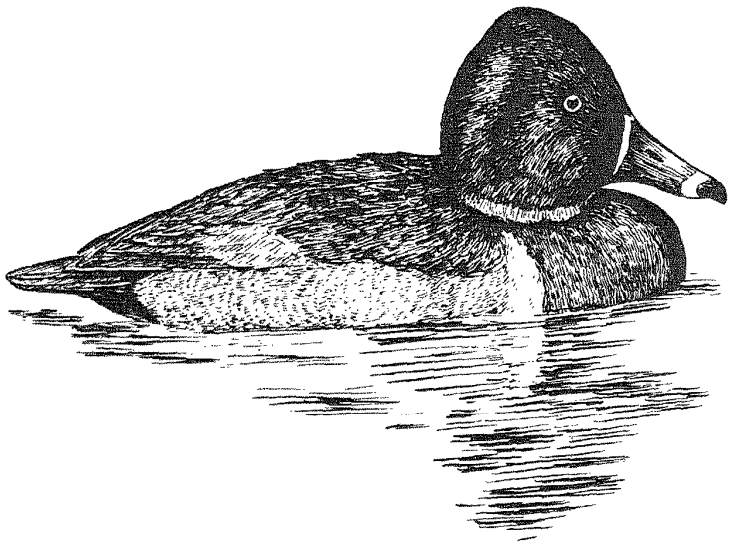
COMMENTS: Winter surveys in the United States have shown a decline in Canvasbacks over the past 20 years.

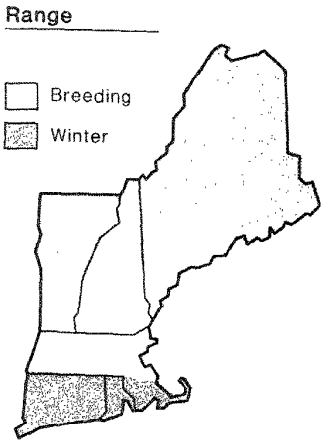
KEY REFERENCES: Bellrose 1976, Hochbaum 1944, Johnsgard 1975.

Ring-necked Duck

(Aythya collaris)

A.O.U. No. 150.0





RANGE: Breeding: Interior Newfoundland s. to n. New England and New York State (Adirondacks). Has nested in Massachusetts sporadically and rarely. Winter: Southern New England s. to Florida.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Maine) to rare (Massachusetts).

HABITAT: Breeding: Flooded swamps, fresh water marshes, and bogs with abundant sedge, sloughs and beaver flowages near larger wooded lakes or rivers with submerged and emergent vegetation, often in heavily forested areas. Wintering: Fresh or brackish marshes and rivers. Seldom uses strictly saline water.

SPECIAL HABITAT REQUIREMENTS: Needs an expanse of open water to become airborne.

NESTING: Egg dates: Mid-May to early July. Peak: Mid-May (Maine) (Mendall 1958). Clutch size: 5 to 14, typically 9. Incubation period: 25 to 29 days. Nestling period: 1 day (precocial). Age at first flight: 49 to 56 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest site: In Maine, nests are typically on a floating mat of vegetation, but often in clumps of herbaceous or shrubby growth or on islands. Common cover plants are sedges, sweet gale, and leather leaf. Most nests are within a few feet of open areas with water (Bellrose 1976:332).

TERRITORY SIZE: Pairs space themselves but show little aggression. In Maine, Mendall (1958) observed ducks nesting as closely as 5 or 6 feet (1.5 to 1.8 m).

SAMPLE DENSITIES: 1 pair per 6 acres (2.4 ha) to 1 pair per 23 acres (9.3 ha) in various habitats (Mendall 1958:65). 6 nests were found on a 1/4-acre (0.1 ha) island in Maine (Mendall 1958). Average (6 years) 9 pairs per 100 acres (40 ha) in northern Wisconsin wetlands (Jahn and Hunt 1964).

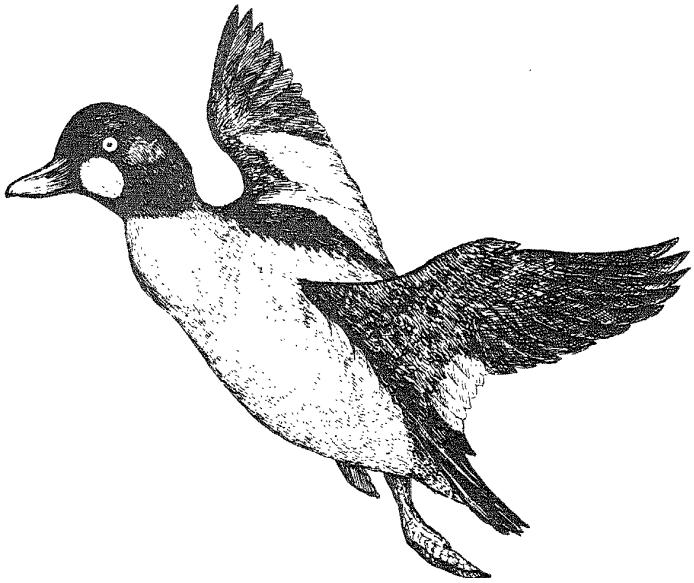
FORAGING: Major foods: Seeds and vegetative parts of submergent and emergent plants — 75 percent of diet; insects, mollusks, and so on — 25 percent of diet (Bellrose 1976:334). Substrates: Water, sandy and muddy bottoms. Techniques: Diving. Preferred feeding habitat: Shallow water, usually less than 6 feet deep (Bellrose 1976:334).

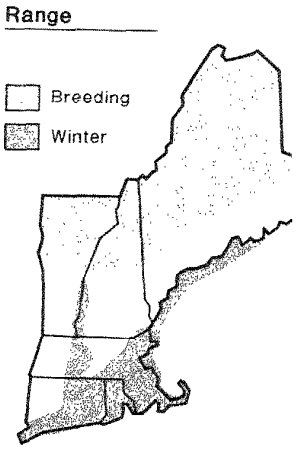
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Mendall 1958, Palmer 1976 V. 3.

Common Goldeneye

(Bucephala clangula)

A.O.U. No. 151.0





RANGE: Breeding: Northern New England and New York, w. to n. Michigan and Minnesota and n. throughout much of Canada. Winter: Newfoundland to Florida. Most wintering birds are located on the coast between Long Island and North Carolina.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon in the breeding season but common along coast in winter.

HABITAT: Breeding: Ponds, lakes, shallow rivers, floodplain forests and bogs, slowly flowing streams with weedy margins, usually near or in open wooded areas with large cavity-bearing trees. Wintering: Atlantic coast — on brackish or salt water estuarine bays. Inland — a few winter on large rivers.

SPECIAL HABITAT REQUIREMENTS: Large trees, minimum d.b.h. 20 inches (Thomas et al. 1979) with cavities for nesting and clear, cold, shallow water for feeding.

NESTING: Egg dates: April 7 to May 25, New Brunswick (Carter 1958). Clutch size: 5 to 15, typically 7 to 10. Incubation period: About 30 days. Nestling period: 1 to 2 days (precocial). Broods per year: 1. Age at sexual maturity: 2 years. Nest height: 6 to 60 feet (1.8 to 18.3 m), typically 20 feet (6.1 m). Nest sites: Cavities in trees in forested areas (often in silver maple or American elm in the Northeast). Open bucket-type cavities are commonly used and in New Brunswick proved better nest sites than enclosed cavities (Prince 1968). Also occupies cavity made by other species or uses natural cavities. Occasionally birds use terrestrial cavities among rocks. Accept nest boxes.

TERRITORY SIZE: No size information. The male defends small area surrounding the nest site.

SAMPLE DENSITIES: Approximately 1 pair per 100 acre (40 ha) of hardwood swamp in New Brunswick (Carte 1958).

FORAGING: Major foods: Crustaceans; larvae of aquati insects; mollusks; seeds, fruits, roots, and stems c aquatic plants. Substrates: Clear water, hard sandy bot toms. Techniques: Diving, drift-feeding (in currents) overturning stones on bottom with bill. Preferred feed ing habitat: Shallow water 3 to 12 feet (0.9 to 3.7 m) deep (less than 5 feet (1.5 m) preferred).

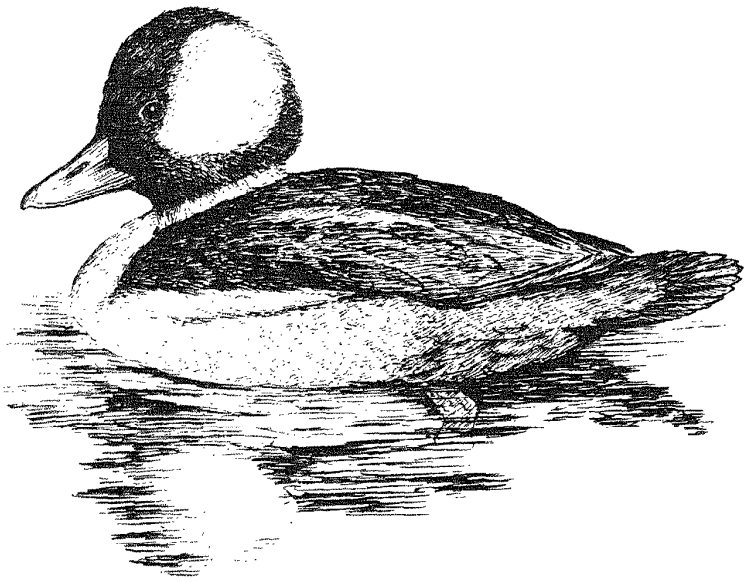
COMMENTS: 16 cavities in New Brunswick were located a an average height of 23 feet (7.0 m) above the ground ir trees that averaged 26 inches (66 cm) in diameter. The trees were about 60 years old (Prince 1968). Cottar (1939 in Palmer 1976 V. 3:397) found that the contents o 395 stomachs contained 74 percent animal and 26 per cent vegetable matter.

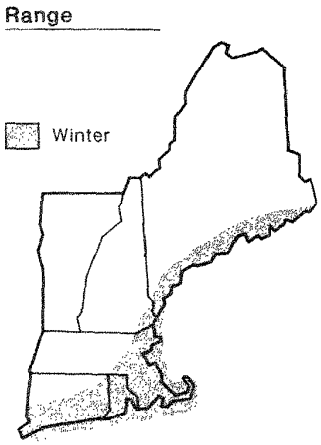
KEY REFERENCES: Bellrose 1976, Carter 1958, Palmer 1976 V. 3, Prince 1968.

Bufflehead

(Bucephala albeola)

A.O.U. No. 153.0





RANGE: Breeding: James Bay, w. and n. Winter: Atlantic Coast from s. Newfoundland to s. Florida.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common in winter.

HABITAT: Wintering: Offshore and in sheltered salt and brackish waters of harbors and bays, interior impoundments and tributaries.

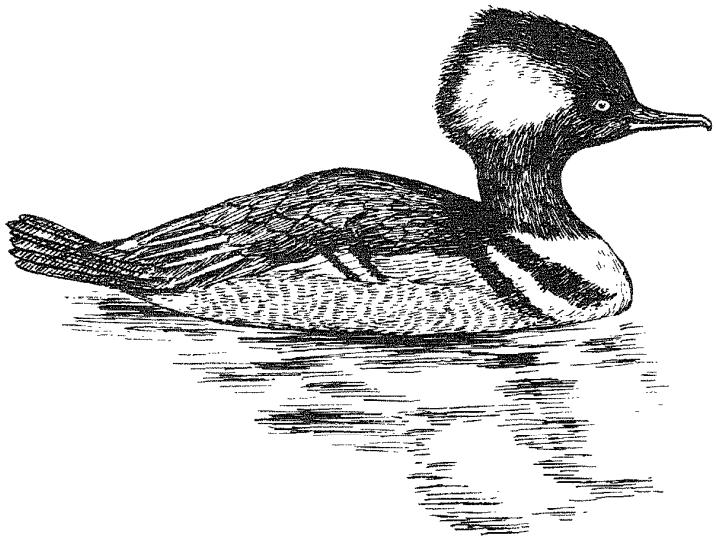
FORAGING: Major foods: Winter — crustaceans and mollusks (90 percent of diet), fish, seeds of pondweeds (Potomogeton), widgeon grass (Ruppia), and bulrush (Scirpus) (Erskine 1971). Substrates: Water. Techniques: Diving. Preferred feeding habitat: Shallow water 4 to 15 feet (1.2 to 4.6 m) deep over tidal flats and in large open bodies of water.

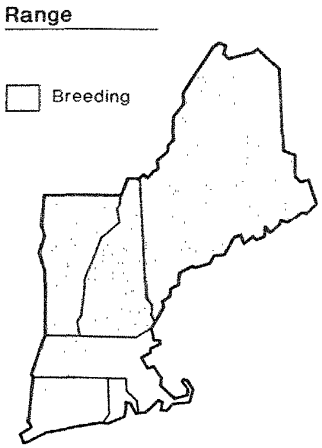
KEY REFERENCES: Bellrose 1976, Erskine 1971, Palmer 1976 V. 3.

Hooded Merganser

(Lophodytes cucullatus)

A.O.U. No. 131.0





RANGE: Breeding: Southern Nova Scotia s. to Florida, w. to the Great Plains and British Columbia. Winter: Nova Scotia (few) s. to Florida. Largest numbers winter s. of Connecticut. Also inland open water.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon and very local in breeding season.

HABITAT: Breeding: Heavily wooded ponds, lakes, rivers, streams, wooded swamps. Flooded shores with dead standing trees and stumps and wooded clear water streams are ideal habitat. Wintering: Ponds, fresh and brackish marshes, coastal brackish bays. Avoids salt water.

SPECIAL HABITAT REQUIREMENTS: Wooded areas with cavities for nesting. Clear fresh water containing small fish and invertebrates. Little or no human disturbance. Minimum diameter of suitable nest tree is 15 inches (38.1 cm) (Thomas et al. 1979).

NESTING: Egg dates: April 25 to July 2, New York (Bull 1974:152). Clutch size: 8 to 12, typically 10. Incubation period: 29 to 37 days. Nestling period: 1 day (Precocial). Broods per year: 1. Age at sexual maturity: Probably 2 years. Nest site: Normally nests in a natural tree cavity or old Pileated Woodpecker hole. The size, shape, and height of cavity seem to be unimportant (Bent 1923:23). Readily accepts nest boxes. Nest site is usually over water or close to the water's edge.

SAMPLE DENSITIES: Average 2.14 broods per mile (0.6 km) of river. Highest densities occurred on heavily wooded rivers — lowest densities were found on marshy rivers (Kitchen and Hunt 1969). Density may be related to availability of food rather than nest sites (Kitchen and Hunt 1969).

FORAGING: Major foods: Cottam and Uhler (1937 in Palmer 1976:459) found that the contents of 138 stomachs contained: fishes (44 percent), crayfish (22 percent), other crustaceans (10 percent), aquatic insects (13 percent), and vegetable matter (4 percent). Substrates: Water, muddy and stony bottoms. Technique: Diving. Preferred feeding habitat: Clear shallow water, usually less than 25 inches (63.5 cm) deep.

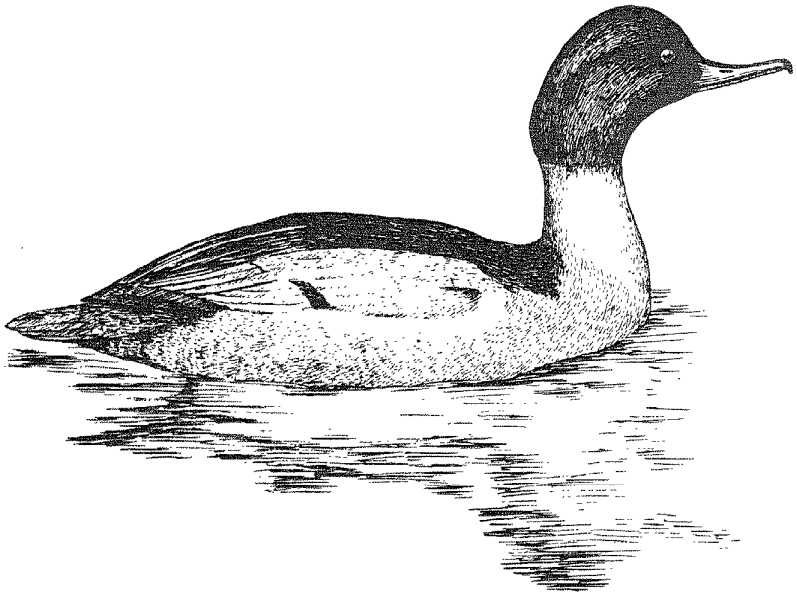
COMMENTS: The draining of wetlands, removal of snags, and pollution of water are human activities that have contributed to habitat loss.

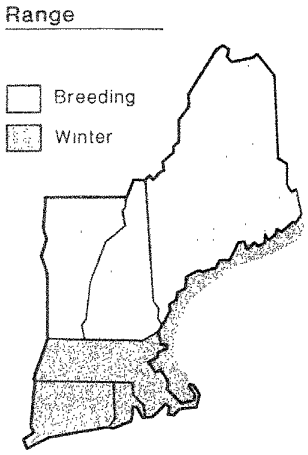
KEY REFERENCES: Bellrose 1976, Bent 1923, Johnsgard 1975, Palmer 1976 V. 3.

Common Merganser

(Mergus merganser)

A.O.U. No. 129.0





RANGE: Breeding: Northern Maine, n. New Hampshire, n. Vermont and n. New York w. to n. Michigan and Minnesota, into Canada. Occasionally s. to c. Massachusetts. Rarely to Catskill and Pocono Mountains. Winter: Maritime provinces s. to Virginia (few to Florida). Greatest concentrations occur in Lake Ontario and Niagara River regions of New York, and open inland water in New Hampshire.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to uncommon.

HABITAT: Breeding: Clear water ponds, lakes and rivers with forested shorelines. Wintering: Prefers fresh and brackish waters of rivers, lakes, ponds, and bays.

SPECIAL HABITAT REQUIREMENTS: Clear water for visibility while feeding. Large trees (minimum diameter 20 inches) with cavities for nesting (Thomas et al. 1979). Little or no human disturbance.

NESTING: Egg dates: May 5 to July 10, New York (Bull 1974:155). Clutch size: 6 to 17, typically 9 to 12. Incubation period: 32 to 35 days. Nestling period: 1 to 2 days (precocial). Broods per year: 1. Age at sexual maturity: Probably 2 years. Nest height: To 50 feet (15 m) or more. Nest site: Usually in a natural tree cavity or abandoned Pileated Woodpecker hole at any height. Sometimes on ground in holes in banks, on cliffs or piles of rocks. Ground nests are well hidden under low limbs, overhanging rocks or dense shrubs. Nests are usually placed close to water. Accepts nest boxes.

HOME RANGE: No size information. Pairs are generally widely spaced, probably because of feeding requirements.

SAMPLE DENSITIES: 1 or 2 pairs per 16 mile (25.6 km) stretch of river in Michigan (Parmalee 1954). 34 pairs per 2.3 square miles (34 pairs/6 km^2) on islands off Finnish coast (Hilden 1964).

FORAGING: Major foods: Fishes (staple), mollusks (winter). Substrates: Water, submerged terrain. Techniques: Diving, immersing head. Preferred feeding habitat: Calm to rapid flowing shallow water 1.5 to 6 feet (0.5 to 1.8 m) deep (Johnsgard 1975:514).

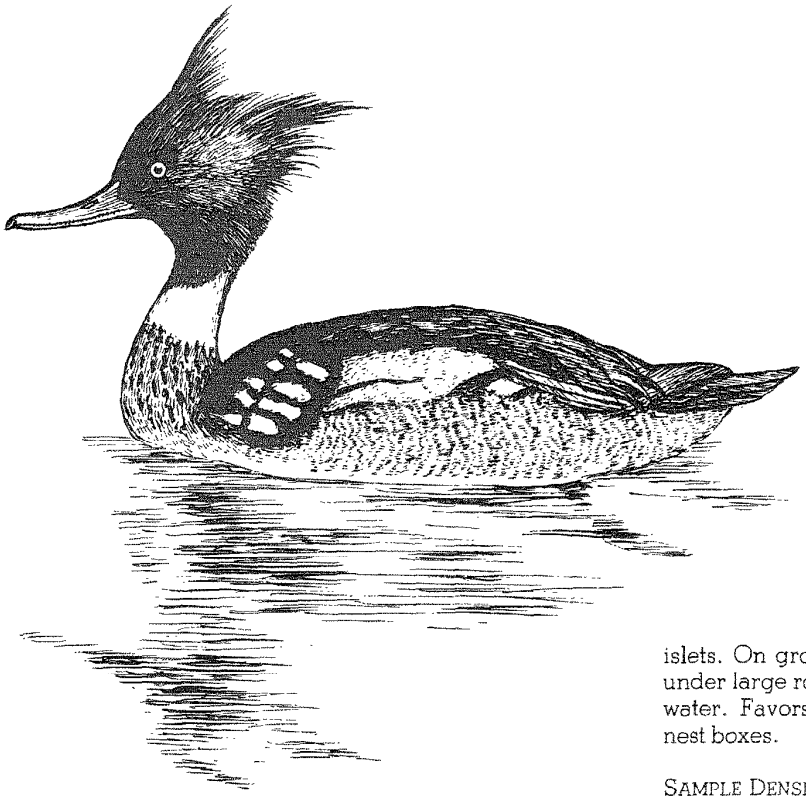
COMMENTS: Small groups have been known to cooperatively drive small fish into shallow water for easy capture (Johnsgard 1975:514).

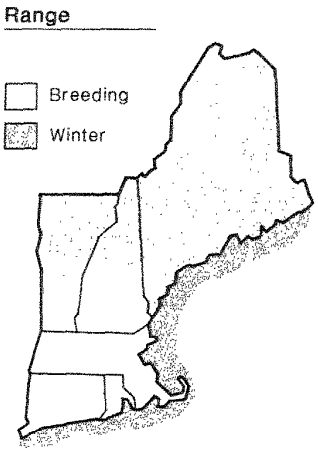
KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V. 3.

Red-breasted Merganser

(Mergus serrator)

A.O.U. No. 130.0





RANGE: Breeding: Northern Maine, New Hampshire, Vermont, and New York w. to n. Minnesota, n. into Canada. Atlantic coast s. to Massachusetts and Long Island (rarely) (Bull 1974:158). Winter: Atlantic coast from the Maritime Provinces s. to Florida. Greatest numbers in the Northeast occur in the Long Island area.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon in breeding season, common in winter.

HABITAT: Breeding: Rivers, streams, ponds, and lakes in forested areas and on coastal islands. Ideal habitat is a small island with low woody growth or low-hanging conifer limbs. Wintering: Mainly coastal waters, bays and inlets, but avoids deep or rough water. Less commonly on open inland waters.

SPECIAL HABITAT REQUIREMENTS: Clear water for visibility when feeding.

NESTING: Clutch size: 5 to 16, typically 8 to 10. Incubation period: 26 to 28 days. Nestling period: 1 day (precocial). Broods per year: 1. Age at sexual maturity: 2 years. Nest site: Highly variable from marshes to rocky, treeless islets. On ground under shrubs or in terrestrial cavity under large rocks or driftwood. Usually within 25 feet of water. Favors areas with scattered boulders. Accepts nest boxes.

SAMPLE DENSITIES: Birds are usually solitary, but at an ideal site 6 to 10 birds will nest closely. Greater densities have been found on islands than on mainland of Iceland (Bengtson 1970).

FORAGING: Major foods: Fishes (staple), crustaceans, aquatic insects, worms, fish eggs. Substrates: Water, submerged terrain. Techniques: Diving, immersing head. Preferred feeding habitat: Shallow, sandy shores just beyond breakers (coast), inlets and river mouths.

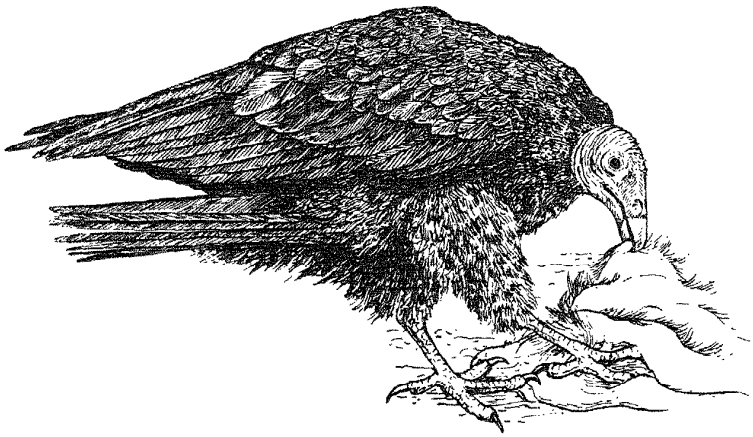
COMMENTS: Groups engage in cooperative feeding by driving schools of fish into shallow water where they can be caught more easily (Bellrose 1976:453).

KEY REFERENCES: Bellrose 1976, Johnsgard 1975, Palmer 1976 V. 3.

Turkey Vulture

(Cathartes aura)

A.O.U. No. 325.0



RANGE: Breeding: Central New York, Connecticut and w. Massachusetts, w. to British Columbia, s. to South America. Winter: Maryland and New Jersey, w. to Ohio.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common, numbers increasing.

HABITAT: Breeding: Various habitats, including wet, dry, open, and wooded. Wooded habitat is dominated by deciduous or mixed trees. Wintering: Similar to breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Clearings such as fields and roads in which carrion can be easily sighted.

NESTING: Egg dates: May 4 to June 30, New York (Bull 1974:166). Clutch size: 1 to 3, typically 2. Incubation period: About 30 days. Nestling period: 70 to 84 days (Kempton 1927—2 broods). Broods per year: 1. Nest site: On rocky outcrops or ledges or in rocky caverns, in hollow tree trunks or logs in open deciduous woodlands. Eggs are usually well hidden from view and inaccessible to predators. Females show attachment to old nest sites.

SAMPLE DENSITIES: Probably fewer than 2 or 3 birds per square miles (1 bird/km^2) at southern part of range (Forbush and May 1939:95). 0.3 pairs per 100 acres (40 ha) in mixed habitat (forest-brush-farmland) in Maryland (Stewart and Robbins 1958:105).

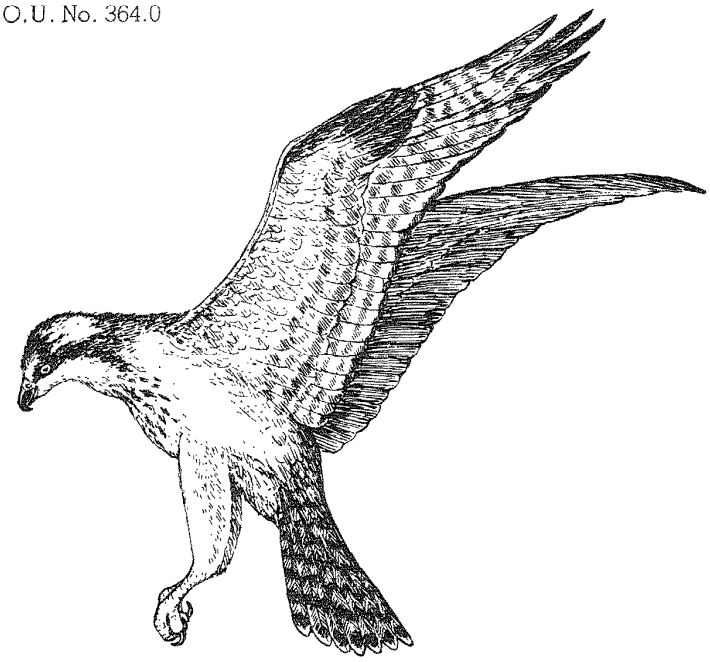
FORAGING: Major foods: Carrion of amphibians, reptiles, birds, mammals, and fish; also eats small quantities of plant material. Substrates: So variable that no single substrate can be emphasized except perhaps roadways because of their many road kills. Technique: Soaring. Preferred feeding habitat: Open fields, ridges.

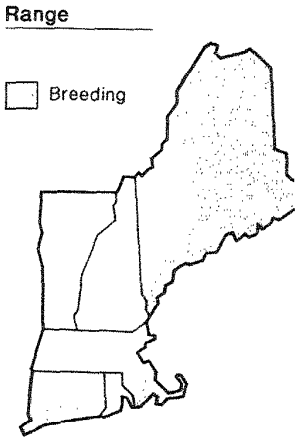
COMMENTS: The Turkey Vulture's recent range extension and population increase in the Northeast may be related to warmer climate, more deer, and more highways to cause road kills (Bull 1964:148). Birds frequent mountain ridges and valleys in search of food. They use tall snags for roosting and preening.

KEY REFERENCES: Bent 1937, Forbush and May 1939, Kempton 1927, Todd 1940, Work and Wool 1942.

Osprey
(Pandion haliaetus)

A.O.U. No. 364.0





RANGE: Breeding: Practically worldwide. In the Eastern United States, birds breed from Maine to Florida. Ospreys are scattered and uncommon except at traditional coastal breeding areas where scores may nest. Winter: Florida and the Gulf States, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common but generally uncommon to rare.

HABITAT: Breeding: Near large bodies of water that support abundant fish. Birds nest along rivers and lakes but greatest densities occur along the coast at estuaries.

SPECIAL HABITAT REQUIREMENTS: Clean water with adequate supply of fish. Elevated nest sites.

NESTING: Egg dates: April 27 to June 21, New York (Bull 1974:169). Clutch size: 2 to 5, typically 3. Incubation period: About 28 days. Age at first flight: 8 to 10 weeks. Broods per year: 1. Age at sexual maturity: 3 years. Nest height: To 130 feet (39.6 m). Nest site: A variety of places — tall dead trees are most often chosen. Other sites include rocky ledges, sand dunes, telephone pole crossarms, and artificial platforms. All are taller than surrounding land and provide good vantage points. Sometimes loosely colonial.

TERRITORY SIZE: Undetermined. A pair defends the immediate nest site from other Ospreys (Ogden 1975).

SAMPLE DENSITIES: Nests may be grouped as close as 65 feet (20 m) (Ogden 1975). Active nests in the Adirondacks (New York) ranged from 4.5 to 20 miles (7.2 to 32 km) apart (Singer 1974).

FORAGING: Major food: Fish. Substrate: Water. Techniques: Hovering and diving, slow level flying 50 to 10(feet (15.2 to 30.5 m) above water. Preferred feeding habitat: Shallow water areas of streams, shoals of lake: (where fish are close to surface).

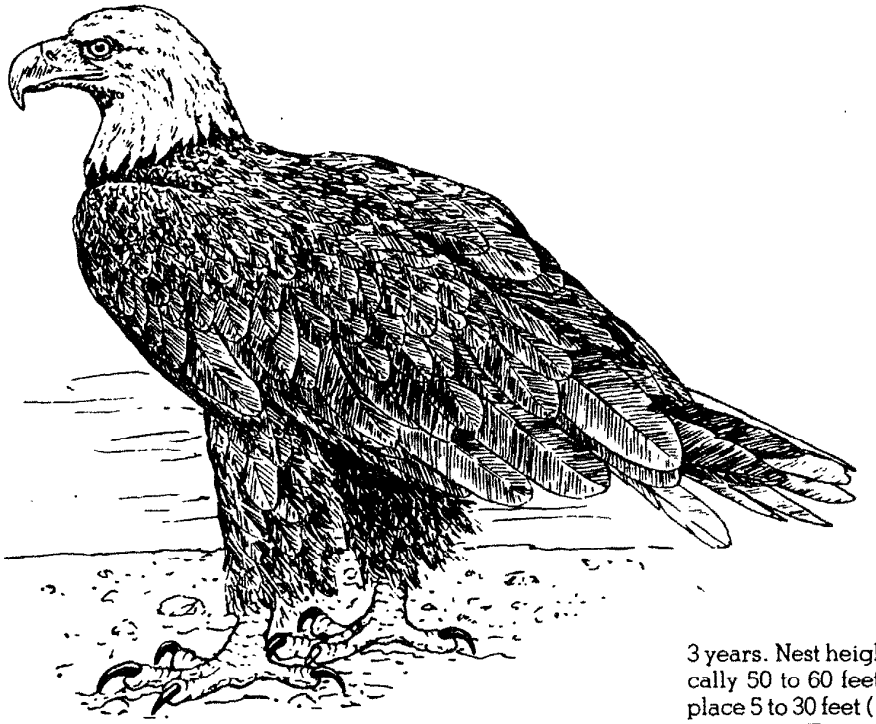
COMMENTS: Ospreys show strong attachment to breeding grounds, returning to the same nest or area year afte year. The Osprey population in the lower Connecticu River-Long Island area is increasing in response to the DDT ban and egg transplants from Maryland birds.

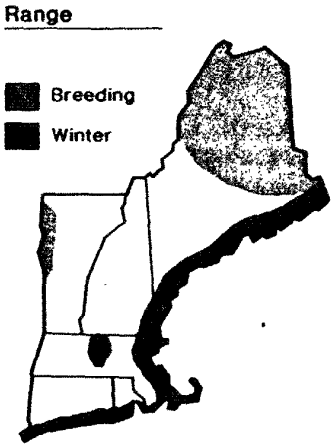
KEY REFERENCES: Bent 1937, Forbush 1929, Ogden 1975.

Bald Eagle

(Haliaeetus leucocephalus)

A.O.U. No. 352.0





RANGE: Breeding: Once bred throughout North America, but today occurs mainly in Alaska, near the Great Lakes, Chesapeake Bay and in s. Florida. In Maine nests s. to Merrymeeting Bay and on Swan Island (P. Cross, personal communication). Winter: Southern Canada, w. to Alaska, s. to Florida and s. California.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare and endangered.

HABITAT: Breeding: Forests and open areas, mountains, usually near large bodies of water with abundant fish. Wintering: Coast, and inland where ice-free waters allow access to fish. Also ice-bound lakes where birds feed on carrion such as deer carcasses. Birds congregate at night roosts and feeding areas.

SPECIAL HABITAT REQUIREMENTS: Large bodies of water that contain fish, large living trees for nesting. Pilot tree (access points to and from nest) and perch trees are important. Insolation from human disturbance may be a habitat requirement (U.S. Forest Service 1977).

NESTING: Egg dates: March 6 to May 14, New York (Bull 1974:174). Clutch size: 1 to 3, typically 2. Incubation period: About 35 days. Nestling period: 72 to 74 days (Bent 1937). Broods per year: 1. Age at sexual maturity: 3 years. Nest height: 35 to 100 feet (10.7 to 30.5 m). Typically 50 to 60 feet (15.2 to 18.3 m). Nest site: An eyrie place 5 to 30 feet (1.5 to 9.1 m) below the top of a very tall living tree. Tree species is not as important as size, shape and proximity to other nesting Eagles. Sites with unobstructed view of surrounding terrain are preferred. Same nest is often used year after year. Occasionally uses cliffs for nesting.

TERRITORY SIZE: A pair of southern Bald Eagles defended an area that extended 0.5 mile (0.8 km) in all directions from the nest (Broley 1947). Usually a minimum of several square miles in area (Pough 1951:158).

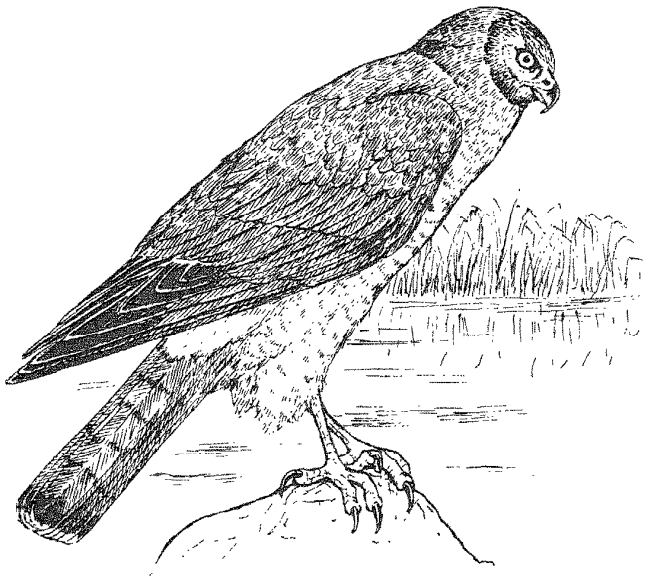
FORAGING: Major foods: Fish (staple), small to medium mammals, large birds, turtles, carrion. Substrates: Water, ground. Techniques: Soaring, hawking, hovering and diving, wading. Preferred feeding habitat: Lakes, rivers, coastal bays, and inlets.

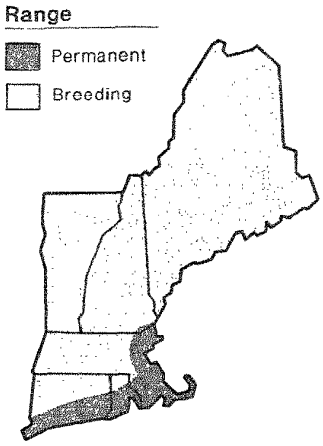
COMMENTS: Bald eagles use snags for perching. They show strong attachment to old nesting territories and nest sites. When nest is destroyed they often rebuild nearby. When suitable trees are lacking, they may resort to using small weak trees (Broley 1947).

KEY REFERENCES: Bent 1937, Broley 1947, Forbush 1929.

Northern Harrier
(Circus cyaneus)

A.O.U. No. 331.0





RANGE: Breeding: Quebec, s. to se. Virginia and w. Winter: Southern New England, w. across the continent and s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to locally common at coastal marshes.

HABITAT: Breeding: Open country, fresh or salt marshes, swamps and bogs, wet meadows. Wintering: Coastal marshes.

SPECIAL HABITAT REQUIREMENTS: Open country with herbaceous or low woody vegetation for nest concealment.

NESTING: Egg dates: April 20 to June 25, New York (Bull 1974:177). Clutch size: 3 to 9, typically 4 to 6. Incubation period: About 24 days. Age at first flight: 5 to 6 weeks. Broods per year: 1. Nest site: On ground in tidal marshes, dry fields, cut-over areas, swamps with low shrubs and clearings, sometimes built up over water on a stick foundation, sedge tussock or willow clump. Foundation of nest may be 18 inches (45.7 cm) high in wet situations (Harrison 1975:39).

TERRITORY SIZE: Unknown. Birds defend nest areas from marsh hawks and other species.

HOME RANGE: 0.38 square mile (.98 km^2) to 3.89 square miles (10.1 km^2) in Michigan (Craighead and Craighead 1969:259, 260). Winter range: 0.55 square mile (1.4 km^2) and 0.63 square mile (1.6 km^2) for a pair and a single hawk, respectively (Craighead and Craighead 1969:26).

SAMPLE DENSITIES: 3 pairs nested within 400 yards (366 m) of each other (Bent 1937). 4 pairs per square mile (1.5 pairs/km^2) in favorable habitat in North Dakota (Stewart and Kantrud 1972).

FORAGING: Major foods: Small mammals (staple), especially rodents, shrews and lagomorphs, small birds, amphibians, reptiles, insects, and occasionally carrion. Substrate: Meadow grasses. Techniques: Hovering and diving, quartering low over the ground.

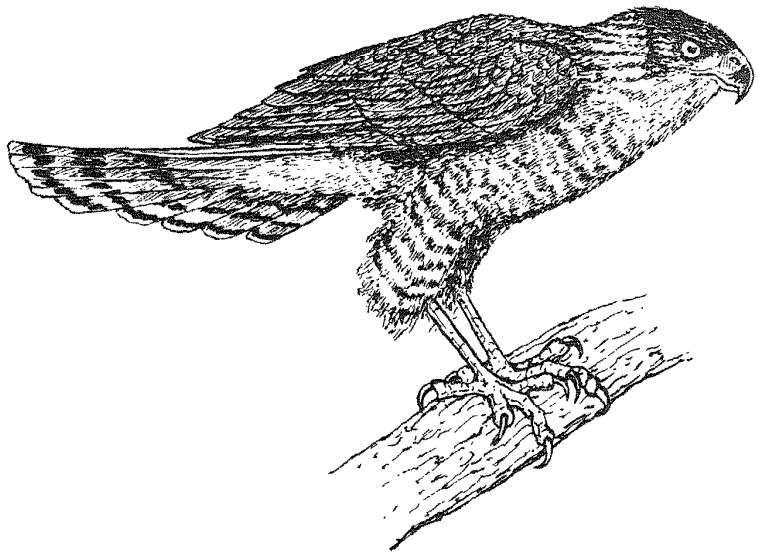
COMMENTS: Possibly mates for life. Males are occasionally polygynous, defending two nests in the same area. Marsh hawks generally roost on ground or perch on very low objects such as fence posts and tree strumps. Populations have recently declined in New York State (Bull 1974:177).

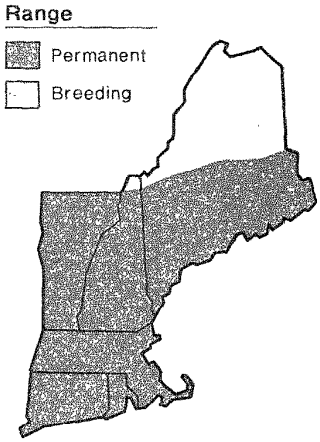
KEY REFERENCES: Bent 1937, Hausman 1966, Hecht 1951, Randall 1940.

Sharp-shinned Hawk

(Accipiter striatus)

A.O.U. No. 332.0





RANGE: Breeding: Newfoundland s. to Georgia (mountains), and w. Winter: Central New England w. to Ohio and s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (Maine) in breeding season. Uncommon to rare in winter.

HABITAT: Breeding: Open mixed or coniferous woodlands, clearing, edges. A bird of cold-temperate conifer forests and temperate deciduous woodlands. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Extensive open mixed woodlands that are free from human disturbance.

NESTING: Egg dates: April 16 to June 21, New York (Bull 1974:179). Clutch size: 3 to 8, typically 4 or 5. Incubation period: 21 to 24 days. Nestling period: 24 to 27 days (males 24 days, females 27 days (Platt 1976). Broods per year: 1. Nest height: 6 to 90 feet (1.8 to 27.4 m), typically 30 to 35 feet (9.1 to 10.7 m). Nest site: Most often in a conifer (white pine in Massachusetts, hemlock in New York) (Bent 1937:96, Bull 1974:179). Seldom in a deciduous tree (oak, beech). Nest is typically placed on a limb against the trunk of a medium tree and is well concealed. Nest tree is often at the edge of a clearing. Sometimes repairs and uses an old nest.

HOME RANGE: 0.26 square mile to 0.51 square miles in Moose, Wyoming (Craighead and Craighead 1969:263).

FORAGING: Major foods: Small to medium birds (staple); small mammals, mainly rodents, shrews, moles and young lagomorphs. Substrates: Forest floor, meadow grasses, bushy pastures. Techniques: Hawking, diving to ground and pouncing. Preferred feeding habitat: Generally forages over open country — avoids hunting in heavily wooded areas.

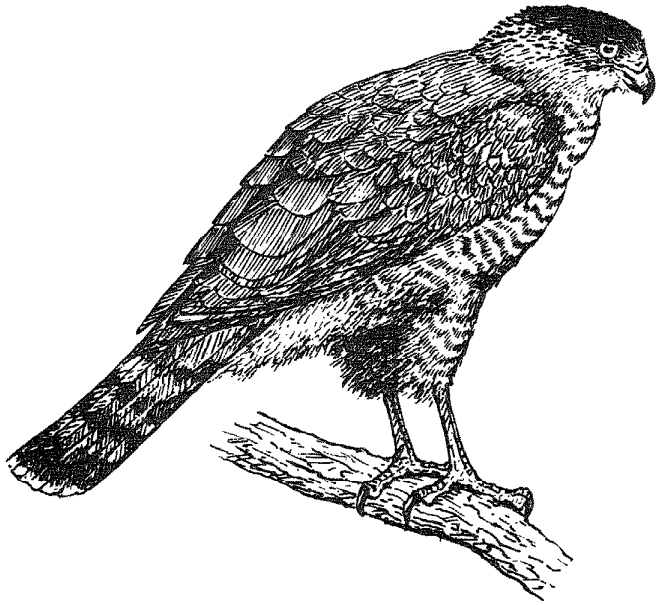
COMMENTS: Platt (1976) found that Sharp-shinned Hawks' nests in Utah were most often placed in dense, small conifer groves that were surrounded by deciduous trees. Often in heavily wooded areas in New York State (Bull 1974:179).

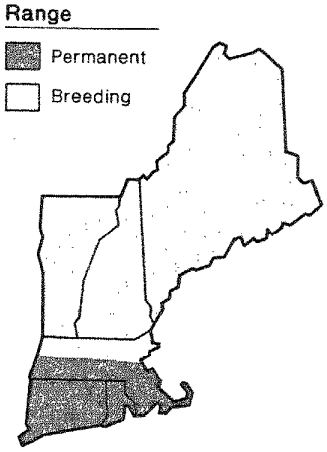
KEY REFERENCES: Bent 1937, Craighead and Craighead 1969, Mendall 1944, Platt 1976.

Cooper's Hawk

(Accipiter cooperii)

A.O.U. No. 333.0





RANGE: Breeding: Nova Scotia w. to w. Ontario, s. to Florida and the Gulf Coast. Winter: Southern New England and Ohio, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon in winter (Massachusetts) to rare (Maine) in breeding season.

HABITAT: Breeding: Extensive deciduous or mixed woodlands that are dense or open, scattered woodlots interspersed with open fields. Occupies similar forest niche as Sharp-shinned Hawk but has broadened its habitat by moving into more open agricultural areas. Floodplain forests and wooded swamps. Wintering: Similar to breeding habitat.

NESTING: Egg dates: April 20 to June 16, New York (Bull 1974:179). Clutch size: 3 to 6, typically 4 or 5. Incubation period: 24 days. Nestling period: 21 to 25 days. Broods per year: 1. Nest height: 20 to 60 feet (6.1 to 18.3 m), typically 35 to 45 feet (10.7 to 13.7 m). Nest site: In a conifer (often white pine), but more often in a hardwood tree. Nest is commonly placed on a horizontal branch or in a crotch near the trunk. Frequently uses old crow nests. Cooper's Hawks often return to same nest site year after year (Bull 1974:179).

HOME RANGE: 0.07 square mile (0.2 km^2) to 2.05 square miles (5.3 km^2) in Michigan (Craighead and Craighead 1969:258, 260). Average winter range: 1.5 to 2 miles (2.4 to 3.2 km) in diameter (Craighead and Craighead 1969).

SAMPLE DENSITIES: 0.2 pairs per 100 acres (40 ha) in mixed forest-farmland habitat in Maryland (Stewart and Robbins 1958:110).

FORAGING: Major foods: Small to medium birds and small mammals, especially rodents and young lagomorphs; occasionally eats insects and amphibians. Substrates: Forest floor, meadow grasses. Techniques: Hawking, diving to ground and pouncing. Preferred feeding habitat: Cooper's Hawks hunt primarily in woodlots away from nest area and in open areas near woodland.

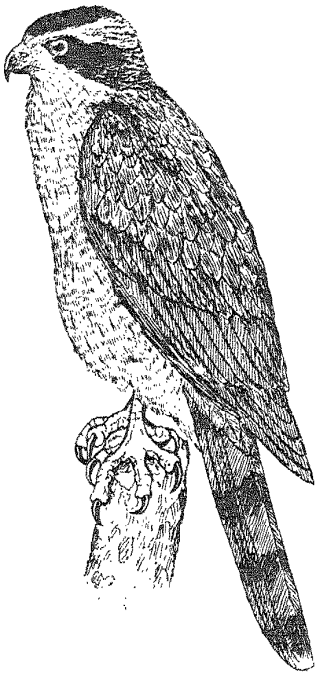
COMMENTS: Cooper's hawks usually hunt on the wing low to the ground or just above tree-top level.

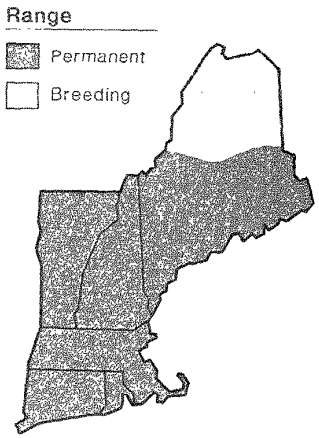
KEY REFERENCES: Bent 1937, Craighead and Craighead 1969, Forbush 1929.

Northern Goshawk

(Accipiter gentilis)

A.O.U. No. 334.0





RANGE: Breeding: Canada s. to New York, nw. Connecticut and Pennsylvania and w. to Lake Erie. Winter: Southern Canada, s. to Virginia and Illinois.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to rare.

HABITAT: Breeding: Interiors of remote and heavily forested areas, coniferous and mixed forests. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Extensive mixed woodlands with large trees for nesting.

NESTING: Egg dates: April 20 to May 15, New York (Bull 1974:182). Clutch size: 2 to 5, typically 3 or 4. Incubation period: About 28 days. Nestling period: About 42 days. Broods per year: 1. Nest height: 20 to 75 feet (6.1 to 22.9 m), typically 30 to 40 feet (9.1 to 12.2 m). Nest site: Prefers to nest in a hardwood tree in mixed woodlands. Nest may be placed in crotch close to trunk or out on a limb. Often builds in beech, birch, poplar, or occasionally pine or hemlock. Builds on top of old nest (own or other hawk's) or makes new nest.

HOME RANGE: 0.82 square miles (2.1 km^2) (observed area) in Moose, Wyoming, in 1947 (Craighead and Craighead 1969:263).

FORAGING: Major foods: Small to medium birds (staple); mammals, especially rodents and lagomorphs. Substrates: Ground, trees and shrubs, air. Techniques: Hawking, diving to ground and pouncing. Preferred feeding habitat: Clearings and brushy openings.

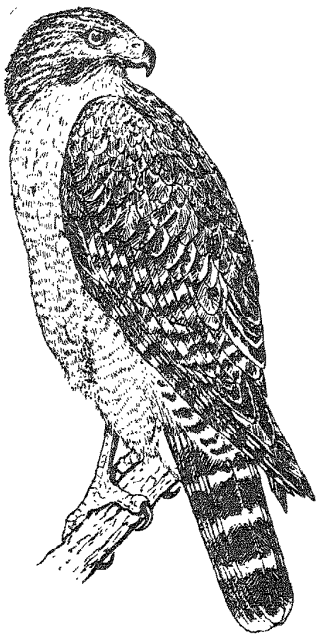
COMMENTS: Caches food. Birds are able to maneuver in dense woods in search of prey. 28 of 37 (76 percent) goshawk stomachs in Maine contained the remains of birds (Mendall 1944). Numbers of breeding birds have recently increased greatly in the mountains of New York (Bull 1974:180).

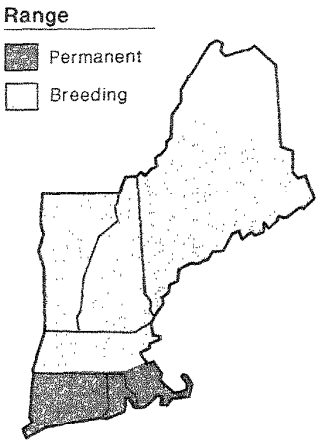
KEY REFERENCES: Bent 1937, Craighead and Craighead 1969, Forbush and May 1939.

Red-shouldered Hawk

(Buteo lineatus)

A.O.U. No. 339.0





RANGE: Breeding: Throughout the Eastern United States. Winter: Southern New England w. to Michigan, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Moist hardwood or mixed woodlands, wooded swamps, bottomlands and wooded margins of marshes often close to cultivated fields. Rare in mountains. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Cool, moist, lowland forests with tall trees for nesting.

NESTING: Egg dates: March 25 to May 26, New York (Bull 1974:186). Clutch size: 2 to 4, typically 3. Incubation period: 28 days. Nestling period: 35 to 42 days. Broods per year: 1. Nest height: 20 to 60 feet (6.1 to 18.3 m), typically 35 to 45 feet (10.4 to 13.7 m). Nest site: Shows little preference for any one species of tree for nesting but usually chooses one that is tall. Nest is typically placed in a main fork close to trunk. May repair and use old nest but usually builds new one. Birds show strong attachment to nest site by returning year after year.

HOME RANGE: 180 acres (72.9 ha) in Kansas (Fitch 1958). 0.03 square mile to 0.60 square mile (0.07 to 1.6 km^2) in Michigan. Winter ranges in Michigan were usually between 1.5 and 2 square miles (3.8 to 5.2 km^2) (Craighead and Craighead 1969:24).

SAMPLE DENSITIES: 1 pair per 0.8 square miles (1 pair/2.1 km^2) in floodplain forest in Maryland (Stewart 1949). About 1 pair per 120 acres (48.6 ha) of floodplain in Maryland (Henny et al. 1973).

FORAGING: Major foods: Amphibians, reptiles, crustaceans (crayfish), insects, mammals such as small rodents, shrews, and moles. Also takes young birds of many species. Substrates: Forest floor, meadow grasses. Techniques: Hawking (while soaring or sallying from a perch), diving to ground and pouncing. Preferred feeding habitat: In addition to foraging in nesting habitat, birds hunt in drier woodland clearings and fields.

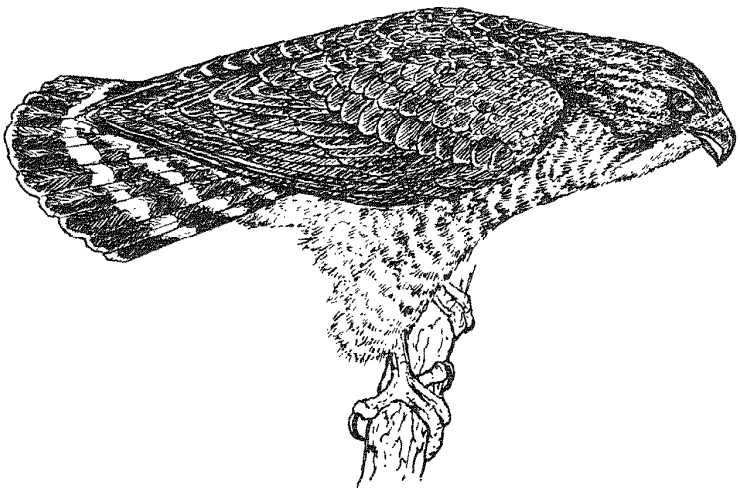
COMMENTS: Pairs may remain mated for life. In Massachusetts, Red-shouldered Hawks nested in dry woods both near and away from water (Bent 1937:184).

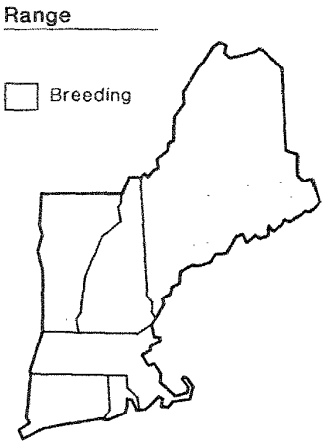
KEY REFERENCES: Bent 1937, Craighead and Craighead 1956, Ernst 1945, Henny et al. 1973, Stewart 1949.

Broad-winged Hawk

(Buteo platypterus)

A.O.U. No. 343.0





RANGE: Breeding: Throughout the Eastern United States from s. Canada to the Gulf States. Winter: Southern tip of Florida, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common to uncommon.

HABITAT: Breeding: Dry forests (mostly deciduous and mixed, occasionally in conifers), wooded hillsides generally away from human habitations. Prefers continuous woods, shuns open country. Seems to prefer to nest along untraveled woods roads, at least in New England.

SPECIAL HABITAT REQUIREMENTS: Extensive woodlands (Bull 1974:188).

NESTING: Egg dates: April 27 to June 26, New York (Bull 1974:188). Clutch size: 1 to 4, typically 2 or 3. Incubation period: 28 to 35 days. Nestling period: 29 to 30 days. Broods per year: 1. Age at sexual maturity: 2 years. Nest height: 3 to 80 feet (1.0 to 24.4 m). Typically 24 to 40 feet (7.3 to 12.2 m). Nest site: Shows little preference for kind of nest tree — generally choosing one of the largest and most abundant species. Typically locates nest in crotch next to trunk.

FORAGING: Major foods: Amphibians, reptiles, insects, small mammals such as shrews (staple) and mice, occasionally takes young birds. Substrate: Forest floor. Techniques: Hawking, soaring, diving, and pouncing. Preferred feeding habitat: Prefers deep, shady woodlands, sometimes ventures out over meadows.

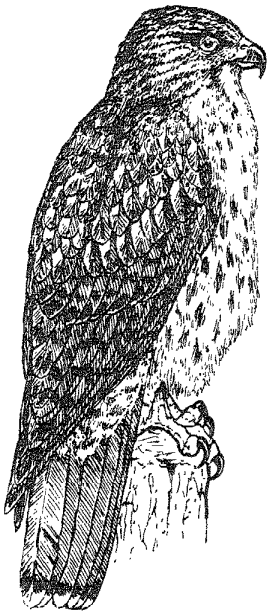
COMMENTS: Possibly mates for life. 14 trees supporting nests in deciduous woods in New York had a mean d.b.h. of 21.3 inches (54.1 cm) (range 16.6 to 29.2 inches) (42.1 to 74.2 cm). The hawks showed a preference for nesting in yellow birch (Matray 1974).

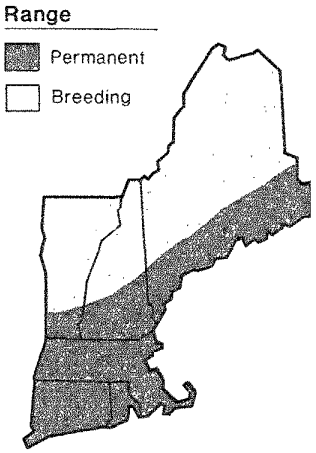
KEY REFERENCES: Bent 1937, Burns 1911, Matray 1974.

Red-tailed Hawk

(Buteo jamaicensis)

A.O.U. No. 337.0





RANGE: Breeding: Alaska and Canada s. to Central America and the West Indies. Winter: Withdraws from northern portions of breeding range to c. New England and s. Michigan, s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Massachusetts) to uncommon (Maine) in breeding season. Locally common to uncommon in winter.

HABITAT: Breeding: Deciduous and mixed woodlands interspersed with meadows, brushy pastures, open bogs, and swampy areas. Common to both the cold-temperature conifer forests and temperate deciduous woodlands. Wintering: Similar to breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Large trees for nesting and perching.

NESTING: Egg dates: March 8 to May 16, New York (Bull 1974:184). Clutch size: 1 to 5, typically 2 or 3. Incubation period: About 28 days. Broods per year: 1. Age at first flight: 4 to 5 weeks. Nest height: 35 to 90 feet (10.7 to 27.4 m). Nest site: Usually in a tall tree in or at the edge of a woodland, or in isolated tree in an open situation. Oak or white pine is often used as nest tree in Massachusetts. In New York, beech, birch, and maple are commonly used (Bent 1937:151-152).

TERRITORY SIZE: 80 to 200 acres (32.4 to 81.0 ha) (excluding peripheral areas) in California (Fitch et al. 1946).

HOME RANGE: Breeding season: 0.30 square mile (minimum) to 2.15 square miles (maximum) (0.8 to 5.6 km^2) in Wyoming and Michigan, respectively. Winter: Ranges of up to 4 square miles (10.4 km^2) were measured in Michigan (Craighead and Craighead 1969:24, 260, 263).

SAMPLE DENSITIES: 1 pair per 2.2 square miles (1 pair/5.7 km^2) in deciduous woodland in New York (Hagar 1957). 1 pair per 4.1 square miles (1pair/10.6 km^2) in fields and woodlands (Gates 1972). 1 pair per 0.5 square mile (1 pair/1.3 km^2) in pine-oak habitat in California (Fitch et al. 1946).

FORAGING: Major foods: Small mammals, especially rodents such as meadow mice, chipmunks, and squirrels, also takes amphibians, reptiles, nestling birds, insects and carrion; occasionally kills domestic animals (Orians and Kuhlman 1956). Substrates: Short meadow grasses. Techniques: Soaring, diving, and pouncing. Preferred feeding habitat: Open field with short grasses and weeds and scattered trees for perching.

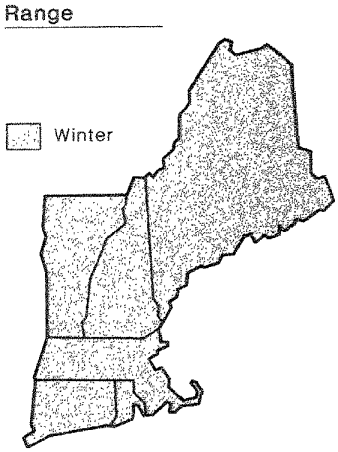
COMMENTS: Birds possibly mate for life. Red-tails generally select the largest and tallest trees for nesting (over 35 feet (10.7 m) tall). They utilized small woodlots in New York State, the smallest being 15 acres (6.1 ha). Occasionally they used isolated trees up to 50 yards (45.7 m) from woods (Hagar 1957). Gregarious in winter.

KEY REFERENCES: Craighead and Craighead 1969, Fitch et al. 1946, Gates 1972, Hagar 1957, Orians and Kuhlman 1956.

Rough-legged Hawk

(Buteo lagopus)

A.O.U. No. 347.0



RANGE: Breeding, Arctic North America. Winter: Arctic, s. to North Carolina.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare but sometimes very common in winters when northern foods are scarce.

HABITAT: Wintering: Restricted to open areas, bushy fields, open meadows and marshes, especially in coastal areas. Generally very infrequent inland in southern New England. Needs open snowless areas (C. Anderson, personal communication).

SPECIAL HABITAT REQUIREMENTS: Open country.

HOME RANGE: Winter: Ranges of two birds in Michigan were 0.68 square miles (1.8 km^2) and 1.69 square miles (4.4 km^2). The usual range may be 6 square miles (10.4 to 15.5 km^2) (Craighead and Craighead 1969:23).

FORAGING: Major foods: Winter — mammals, especially mice and shrews (staple). Also feeds on carrion. Substrates: Open ground — fields, pastures. Techniques: Hovering, hawking, pouncing. Preferred feeding habitat: Grassy areas, fallow fields.

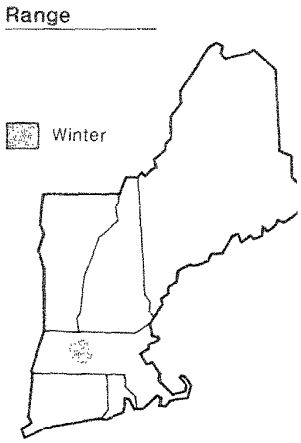
COMMENTS: Numbers declined in the early part of the 20th century because of wholesale slaughter brought about by the belief that all raptors were chicken and game bird killers. Rough-legged Hawk populations are highly irruptive with largest numbers generally occurring during years of meadow mouse (Microtus) abundance (Bull 1974:189). This species is more numerous from central New York west to the Lakes Region.

KEY REFERENCES: Bent 1937, Craighead and Craighead 1969, Forbush 1929.

Golden Eagle

(Aquila chrysaetos)

A.O.U. No. 349.0



RANGE: Breeding: Edge of arctic tundra across North America, s. to the mountains of North Carolina, Mexico, and California. Has nested in Vermont, New Hampshire, and Maine. Winter: Withdraws from northernmost parts of breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Very rare in all seasons.

HABITAT: Breeding: Cold-temperate conifer forests, rugged mountain ranges near open land for hunting. Wintering: Timbered portions of New England with open expanses for hunting.

SPECIAL HABITAT REQUIREMENTS: Elevated nest sites, especially cliffs. Broad expanses of open land for hunting.

NESTING: Clutch size: 1 to 4, typically 2 or 3. Incubation period: About 43 days. Age at first flight: 12 weeks. Broods per year: 1. Nest site: Usually on a cliff, crag, or less commonly in a large tree. Pairs often attend alternate unoccupied nests in the vicinity of active nest, until the eggs are laid.

TERRITORY SIZE: 20 to 60 square miles (51.8 to 155.4 km^2) with an average of about 36 square miles (93.2 km^2) (Pough 1951:155).

HOME RANGE: 50 to 100 square miles (130 to 259 km^2 (Spofford 1971).

SAMPLE DENSITIES: 56 breeding pairs per 240-km (149 mile) stretch of Snake River in Idaho. 1 pair per 8 km (5.(miles) of river (Craighead and Craighead 1969). 1 pai per 5 km (3.1 miles) of river (Spofford 1971). Density i probably a function of availability of suitable nest sites adequate prey, and minimum nesting territory size (Beecham and Kochert 1975).

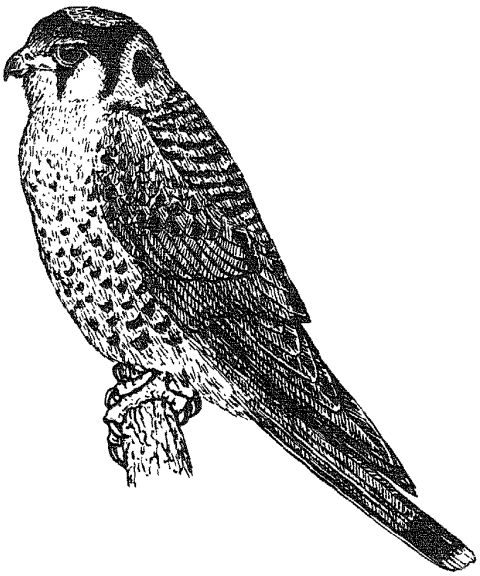
FORAGING: Major foods: Small to medium mammals (preferred), medium to large birds, reptiles, carrion (when live food is scarce). Substrate: ground. Techniques: Soaring, diving, and pouncing. Preferred feeding habitat: Open country — burns, marshes, bogs, hillside meadows, bald knobs, and fields.

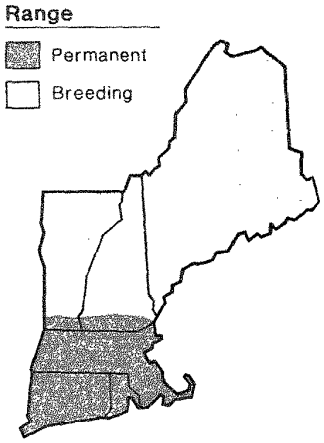
COMMENTS: Pairs probably mate for life. A few Golden Eagles breed in the Adirondacks of New York but very few young fledge (Spofford 1971). The bird is an irregular winter wanderer in the Northeast.

KEY REFERENCES: Beecham and Kochert 1975, McGahan 1968, Singer 1974, Woodgerd 1952.

American Kestrel

(Falco sparverius)





RANGE: Breeding: Newfoundland and Quebec, w. to Alaska, s. to South America. Winter: Central New England, w. and s. Northern limit of wintering population depends on snow depth.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Open areas with a few trees containing cavities, wet meadows, forest edges near open ground, orchards, farm buildings, cities. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Nest trees with d.b.h. greater than 12 inches (30.5 cm) for nesting (Thomas et al. 1979). Open country with low vegetation. Elevated perches from which to sight prey. Snags.

NESTING: Egg dates: April 5 to June 29, New York (Bull 1974:202). Clutch size: 3 to 6, typically 4 or 5. Incubation period: 29 to 31 days. Nestling period: 30 to 31 days. Broods per year: 1. Nest height: 4 to 50 feet (1.2 to 15.2 m), typically 10 to 35 feet (3.0 to 10 m). Nest site: In cavities of trees, under eaves of buildings, cliffs, rarely in old nests of other birds. Accepts man-made nest boxes. Roest (1957) found that kestrels frequently nested in abandoned flicker holes or natural cavities located 6.5 to 35 feet (2 to 10 m) above the ground.

TERRITORY SIZE: 351 acres (142 ha) (Hardin and Evans 1977).

HOME RANGE: Breeding and winter home ranges were of similar sizes in Wyoming. Both covered about 2 square miles (5.2 km^2) (Craighead and Craighead 1969). Average diameter of 7 home ranges was 0.31 mile (0.5 km) (Smith et al. 1972). Average diameter of 1.4 miles (2.2 km) for 4 nests in farming area (Enderson 1960).

SAMPLE DENSITIES: 33 pairs per 6.9 square miles (33 pair/18 km^2) in nest boxes in Holland (Brown 1976). 6 pairs per 0.5 square mile (6 pairs/1.3 km^2) in nest boxes in Pennsylvania (Nagy 1963). Maximum pairs 0.28 per 100 acres (40 ha) (Hardin and Evans 1977). 45 pairs per square mile (45 pairs/2.6 km^2) in central Utah (Smith et al. 1972). 0.44 pairs per square mile (0.16 pairs/km^2) in Michigan (Craighead and Craighead 1969).

FORAGING: Major foods: Insects (staple) especially grasshoppers, crickets and beetles; mammals such as small mice, shrews; small birds; reptiles, and amphibians. Substrates: Meadow grasses, air. Techniques: Hawking, hovering, diving to ground.

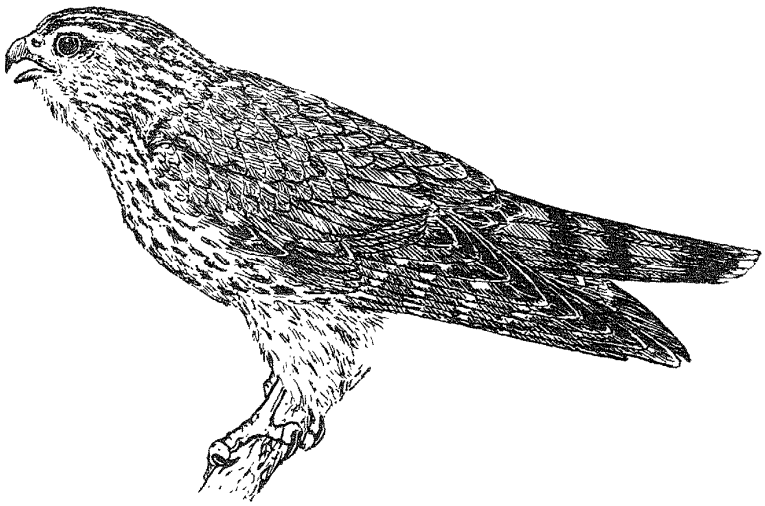
COMMENTS: Pairs possibly remain mated for life. Occasionally polygamy may occur (Roest 1957). Food caching is commonly practiced.

KEY REFERENCES: Balgooyen 1976, Bent 1938, Roest 1957, Smith et al. 1972, Willoughby and Kape 1964.

Merlin

(Falco columbarius)

A.O.U. No. 357.0



RANGE: Breeding: Below timberline in Alaska and Canada s. to South Dakota and the tip of n. New York. Winter: Gulf states and s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare.

HABITAT: Breeding: Open coniferous forest, marshes, fields in migration.

NESTING: Egg dates: May through June. Clutch size: 4 to 5. Incubation period: 30 days. Nest height: 35 to 60 feet (10 to 15 m). Nest site: On ledges, in tree cavities, on old nests of other birds (Harrison 1975:47).

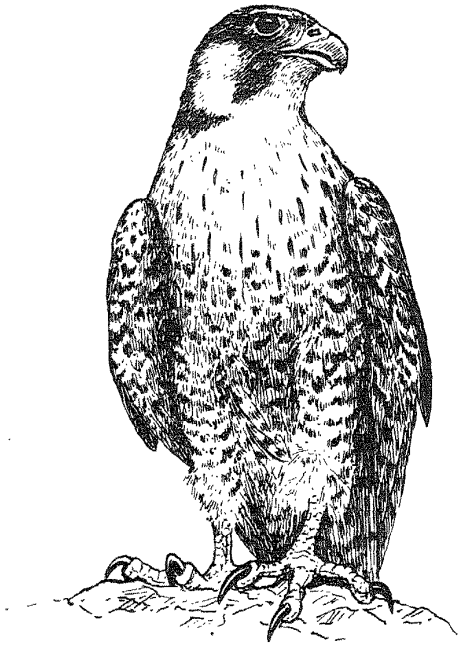
FORAGING: Major foods: Small birds, small mammals, and insects. Substrates: Air, ground (grassy areas). Techniques: Perch and pounce or hawking. Preferred feeding habitat: hunts in a variety of open habitats—marshes, beaches, mudflats, and fields (Godfrey, 1979:103).

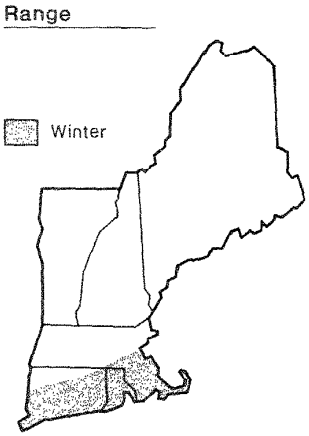
KEY REFERENCES: Bent 1938, Hausman 1966.

Peregrine Falcon

(Falco peregrinus)

A.O.U. No. 356.0





RANGE: Breeding: Arctic North America, formerly s. to n. Georgia, and Texas but now believed to be extinct (as a breeding bird) in the Eastern United States. Winter: Massachusetts (rarely), w. to British Columbia, s. to n. South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare and endangered.

HABITAT: Breeding: Typically on high, rocky cliffs of mountains; often near a river, stream, or other body of water; coastal bays. Sometimes breeds in cities. Birds commonly return to same nest site in successive years. Wintering: Birds winter primarily along the Atlantic Coast on barrier beaches. A few winter in cities, roosting on tall buildings.

SPECIAL HABITAT REQUIREMENTS: High cliffs for nesting, a clear view of surroundings, habitats free of harmful pesticides, ready supply of prey species, water within 0.5 to 1.0 mile (0.8 to 1.6 km) of nest site. Small amounts of gravel or soil in nest hollow may be required for laying (Bull 1974:196).

NESTING: Egg dates: March 26 to May 31, New York (Bull 1974). Clutch size: 2 to 6, typically 4. Incubation period: 30 days. Age at first flight: 5 to 7 weeks. Broods per year: 1. Nest site: Builds little or no nest. Lays eggs in a scraped depression on a rocky shelf on side of a high ledge, cliff, bluff, or crag. Occasionally lays eggs on the broken top of a very large tree, roof or ledge of tall building.

SAMPLE DENSITIES: Hickey (1942) listed 19 pairs per 10,000 square miles (19 pairs/25,900 km^2) around New York City. Average distance between pairs was about 1 mile (1.6 km) in an unusually dense island population along coast of British Columbia (Beebe 1960 in Hickey and Anderson 1969). About 1 pair per 2,000 square miles (1 pair/5,180 km^2) was estimated for parts of w. North America where Peregrine was considered common and less than 1 pair per 20,000 square miles (1 pair/51,800 km^2) where rare (Bond 1946 in Hickey and Anderson 1969).

FORAGING: Major foods: Small to large birds (staple), occasionally takes mammals or dead fish. Substrate: Air. Techniques: Hawking (grasping in midair) or striking in midair and recovering prey on ground.

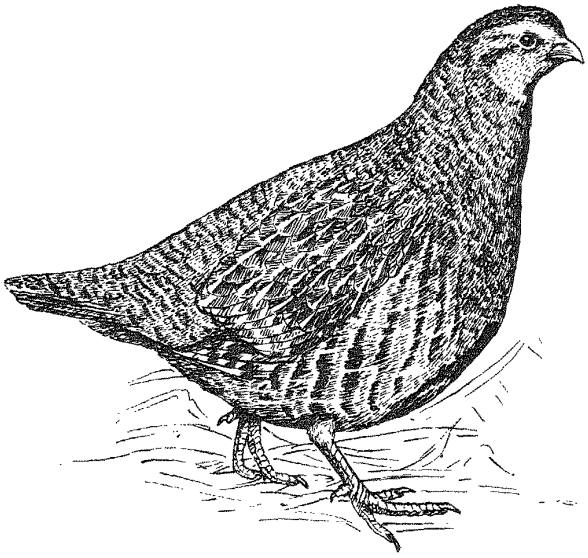
COMMENTS: Presently Peregrines are breeding in the Northeast only in coastal areas of New Jersey and one cliff site in New Hampshire. Recovery plans are under way to restore birds to their original breeding ranges. Releases have been made at a number of sites in Massachusetts, Vermont, New Jersey, New Hampshire, and New York.

KEY REFERENCES: Brown 1976, Hausman 1966, Hickey 1942 and 1969.

Gray Partridge

(Perdix perdix)

A.O.U. No. 288.1



RANGE: Breeding: A profusely stocked species with the highest populations in the northern Great Plains region from w. Wisconsin, w. to c. Montana and through s. Manitoba to se. Alberta. The northwest populations inhabit the agricultural areas of Washington, Oregon, and Idaho. Disjunct populations are in s. Wisconsin, n. Illinois, s. Michigan, ne. Indiana and nw. Ohio. Smaller colonies are established in n. New York, nw. Vermont, c. Pennsylvania, Nova Scotia, s. New Brunswick, and Prince Edward Island. Winter: same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Near the edges of hayfields and grain fields. Winter: Same as breeding habitat. Typically remain in open areas, but may seek shelter during periods of strong winds.

SPECIAL HABITAT REQUIREMENTS: Availability of grain crops and grasslands for nesting and brooding cover.

NESTING: Nest dates: Late April a nest is made in grassy cover. Edge is a strong influence on nest sites (Yeatter 1934). Egg dates: Mid- to late June (Edminster 1954:372). Clutch size: 16.4 average. Incubation period: 24 to 25 days. Brood period: The young are fully plumaged and grown in about 10 weeks (Edminster 1954:373).

SAMPLE DENSITIES: On three 160-acre study areas in Michigan, Yeatter (1934) reported one bird for 4.4, 11, and 13.3 acres. Some evidence of Gray Partridge populations following 10-year cycles of abundance, similar to native grouse species (Aldrich 1947).

FORAGING: Major foods: Green leafy materials, seeds of weedy herbs and cultivated grains. Insects occasionally taken by adults. Chicks insectivorous during the first 2 weeks of life (Edminster 1954:378). Grit required throughout the year.

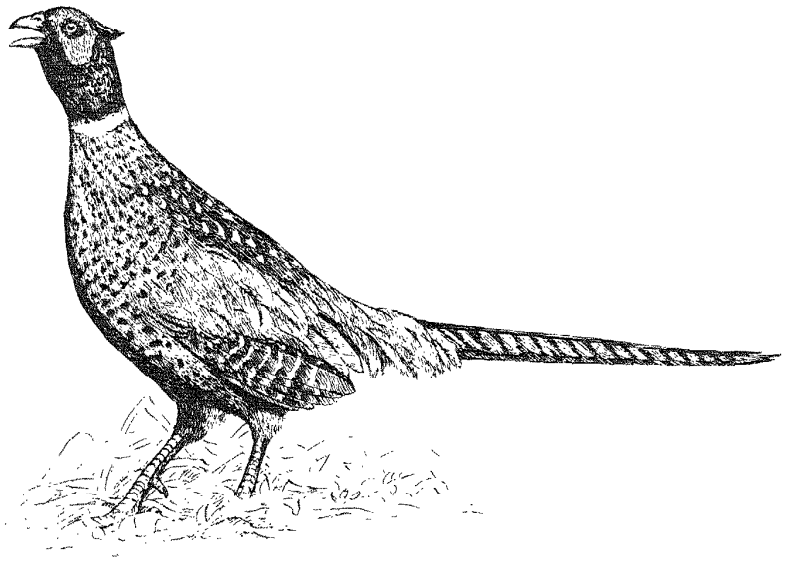
COMMENTS: A native species of Europe and southwestern Asia. Originally introduced in the United States in the late 18th century.

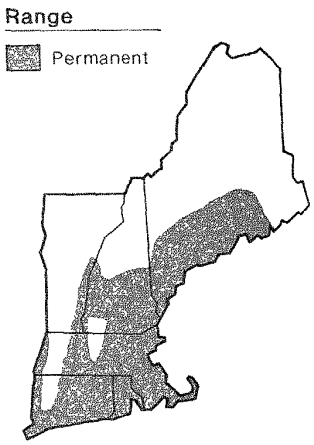
KEY REFERENCES: Edminster 1954, Johnsgard 1973.

Ring-necked Pheasant

(Phasianus colchicus)

A.O.U. No. 309.1





RANGE: Breeding: Central Maine, w. to British Columbia, s. to Maryland and Kentucky. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Massachusetts) to uncommon (Maine).

HABITAT: Breeding: Open cultivated fields of grass or grain, fallow fields, bushy pastures, hedgerows by roadsides, cut-over land, open ungrazed woodlots. Agricultural lands provide the best habitat. Absent in mountains, avoids forested areas. Wintering: Birds seek areas with dense protective cover, often swamps interspersed with thickets.

NESTING: Egg dates: April 14 to July 28, New York (Bull 1974:205). Clutch size: 6 to 15, typically 10 to 12. Incubation period: 23 to 25 days. Nestling period: Less than 1 day (precocial). Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest site: On ground in the open among weeds or cultivated hay or in bushy pastures.

TERRITORY SIZE: The male defends an area for courting, mating, and feeding (females may nest nearby or elsewhere). 11 territories ranged from 3 to 13 acres (1.2 to 5.3 ha) (Twining 1946).

SAMPLE DENSITIES: In the Northeast, densities ranged from less than 1 bird per 100 acres (40. ha) in poor habitat to more than 50 birds per 100 acres (40. ha) in optimum habitat (Allen 1956). At Pelee Island, Ontario, Stokes (1956:367) noted the following densities: 6.2 birds per acre (0.4 ha) in hayfield, 5.7 birds per acre (0.4 ha) in abandoned pasture and 12.4 birds per acre (0.4 ha) in weeds. In autumn, good habitat probably supports 10 to 15 birds per 100 acres (40. ha) (Studholme and Benson 1956).

FORAGING: Major foods: Cultivated grains and weed seeds (staple), buds and soft parts of herbaceous vegetation, fleshy fruits, insects. Substrates: Ground litter, grasses and other low-growing plants, soft earth. Techniques: Gleaning, scratching, and pecking. Preferred feeding habitat: Grain fields and weed fields bordered by hedgerows which afford protective travel lanes.

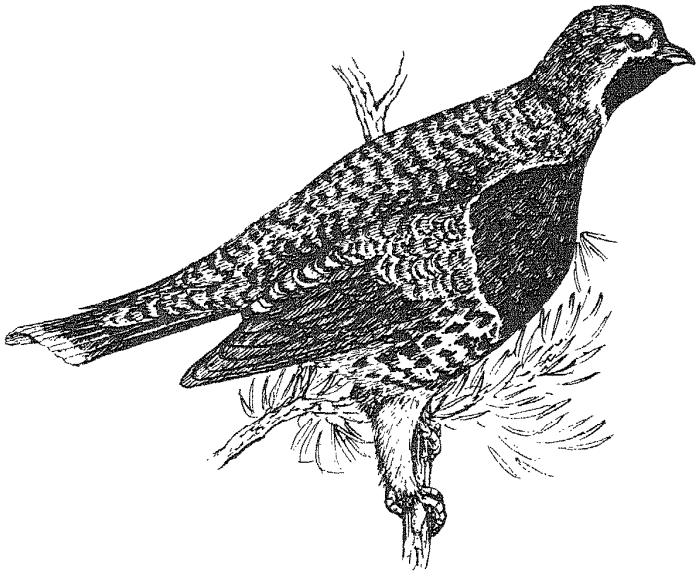
COMMENTS: Pheasants were first successfully introduced from China to Oregon in 1881, but from England to the Northeast (Governor's Island, New York) as early as 1733. Males generally are polygnous; some have monogamous tendencies.

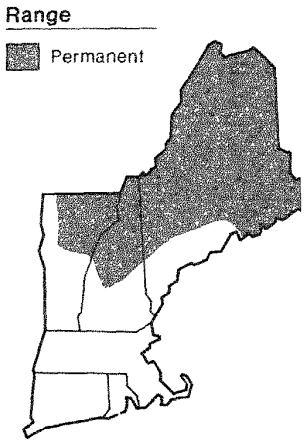
KEY REFERENCES: Allen 1956, Bent 1932.

Spruce Grouse

(Dendragapus canadensis)

A.O.U. No. 298.0





RANGE: Breeding: Northern Quebec, w. to Alaska, s. to n. Vermont, c. New Hampshire, Maine, n. Michigan, and n. Washington. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Wooded tamarack swamps, cedar bogs and muskegs, lowlands bordering sluggish streams in coniferous forests. Rarely uses open meadows or clearings. Wintering: Same as breeding habitat, but birds seek denser areas of forests in extreme cold.

SPECIAL HABITAT REQUIREMENTS: Dense conifers for food and shelter.

NESTING: Egg dates: May 5 to June 24, se. Canada and Maine (Bent 1932: 129). Clutch size: 4 to 10, typically 6 to 8. Incubation period: 22 to 25 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: On ground in brush heaps or under low-hanging conifer branches in open and dense conifer stands.

TERRITORY SIZE: 3 to 21 acres (1.2 to 8.5 ha) per territorial male in white spruce and paper birch habitat in Alaska (Ellison 1971)—these areas were used exclusively by males but were not necessarily defended.

HOME RANGE: May be as large as 100 ha (247 acres) for territorial males and 100 to 150 ha (247 to 370 acres) for hens that have nested (Ellison 1973).

SAMPLE DENSITIES: Possibly 10 males per square mile (4 males/km^2) in spruce-birch habitat in Alaska (Ellison 1971). 7 to 11 birds per 0.4 square mile (7 to 11 birds/km^2) (spring density); 20 to 36 birds per 0.4 square mile (20 to 36 birds/km^2) (autumn density) (Ellison 1973).

FORAGING: Major foods: Buds and needles of conifers (winter staple), insects, seeds, fruits and tender leaves of herbaceous plants, mushrooms. Substrates: Leaf litter of forest floor, high limbs of spruce (normally at least 15 to 20 feet (4.6 to 6.1 m)). Techniques: Scratching and pecking, budding.

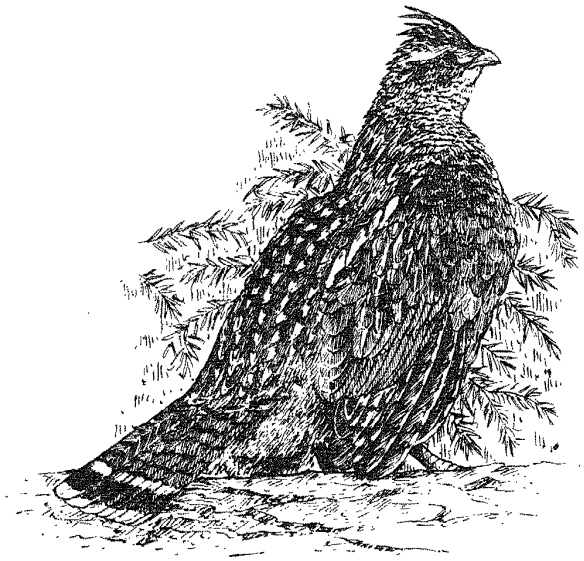
COMMENTS: Diet shifts in late summer and early autumn from nonconiferous materials to primarily coniferous ones.

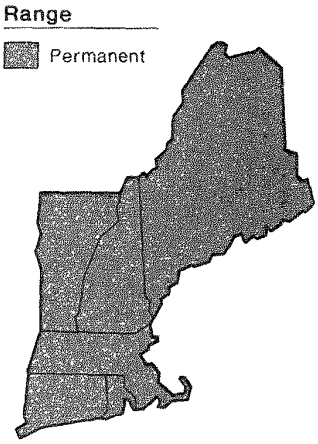
KEY REFERENCES: Bent 1932; Ellison 1971, 1973; Forbush and May 1939; Fritz 1977.

Ruffed Grouse

(Bonasa umbellus)

A.O.U. No. 300.0





RANGE: Breeding: Southern Quebec w. to Alaska, s. to Virginia and the mountains of n. Georgia. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common to uncommon.

HABITAT: Breeding: Broods prefer areas with dense woody cover overhead and fairly open herbaceous ground cover. Broods frequent regenerating stands of aspen, birch, and other hardwoods. Alder thickets, recently logged areas next to shrubby wetlands, and abandoned farmlands in the shrub and sapling stage are particularly attractive to broods. In extensive stands of pole and sawtimber, broods frequent logging roads, small clearings, and recently disturbed sites. Wintering: Daytime activity usually occurs in shrubby thickets and dense stands of hardwood saplings. Birds prefer to roost in snow burrows in open pole-size hardwood stands. When snow is unsuitable for roosting, birds concentrate in dense brush or closed-canopy conifer stands.

SPECIAL HABITAT REQUIREMENTS: Drumming logs in hardwood saplings, small poles, brushy escape cover, hardwood stands for nesting and feeding, sunny openings for dusting (Pough 1951:176). Strongly associated with the aspen type, especially in the Lake States (Gullion 1972). Grouse also occur in New England woodlands in which aspens exist only as scattered trees, or are absent. Old orchards are ideal fall habitat in New England.

NESTING: Egg dates: April 1 to June 22, New York (Bull 1974:206). Clutch size: 8 to 15, typically 9 to 12. Incubation period: About 24 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Usually on dry ground in dense cover in the shelter of a fallen log, rock, root, or low-hanging conifer limb near base of tree. Very often located at edge of a path or clearing and close to a source of water.

HOME RANGE: For males, the home range may be as small as 6 to 10 acres (2.4 to 4.0 ha) (Gullion 1972).

SAMPLE DENSITIES: Maximum density under optimum conditions seems to be about 1 pair per 6 to 8 acres (2.4 to 3.2 ha) (Gullion 1972).

FORAGING: Major foods: Seeds, insects, fruit, leaves; buds of birch, aspen, hazel, hophornbeam, and cherry are staples in fall and winter. Substrate: Leaf litter. Techniques: Scratching and pecking, browsing. Preferred feeding habitat: Aspen stands are favorite feeding spots in winter especially in the boreal forest zone (Svoboda and Gullion 1972).

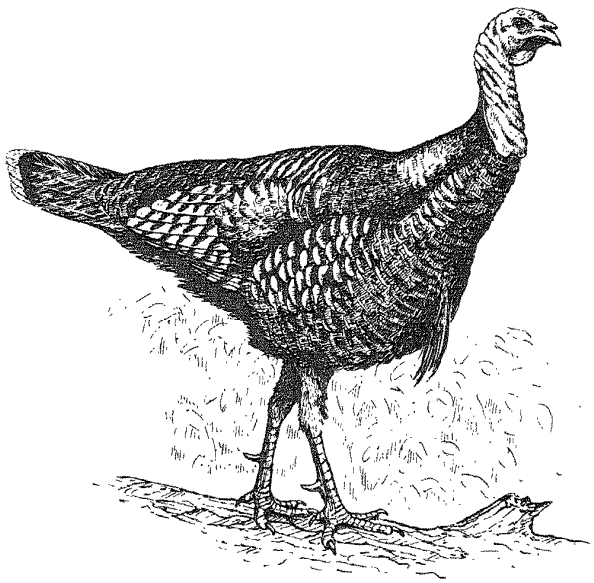
COMMENTS: Males are polygamous. In winter, birds may roost in small groups. In severely cold weather, grouse burrow-roost in snow if not crusted.

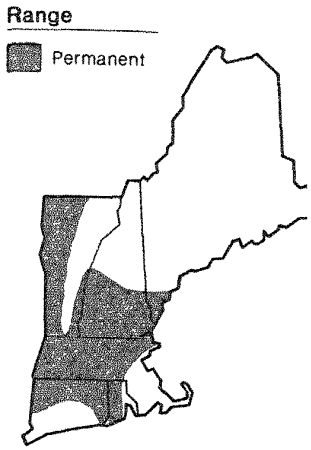
KEY REFERENCES: Bent 1932, Bump et al. 1947, Gullion 1972, Svoboda and Gullion 1972.

Wild Turkey

(Meleagris gallopavo)

A.O.U. No. 310.0





RANGE: Breeding: Resident in parts of Vermont, New Hampshire, Maine, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Maryland, and West Virginia. Largest numbers occur in southern New York and southward in the Appalachian highlands through Pennsylvania and West Virginia. Range is expanding in New England where a population was recently reestablished via trapping and transplanting. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to rare.

HABITAT: Breeding: Forests, woodland clearings mostly in hilly or mountainous regions where food is available, open fields with trees nearby for roosting and cover. Ideal habitat is a network of open, mixed forests and fields. The conifers provide roosting sites, and the hardwoods provide feeding areas. Wintering: In woodlands, flocks prefer south slopes with mast producing hardwoods and abundant springs and seeps. In New England, turkeys readily use agricultural habitats such as cornfields, dairy farms, orchards, and pastures with abundant barberry or other fruiting shrubs.

SPECIAL HABITAT REQUIREMENTS: Mast-producing woodlands. Large conifers or hardwoods for roosting, open woodlands, abundant water (Schorger 1966:224-225).

NESTING: Egg dates: April 26 to July 9, New York (Bull 1974:212). Clutch size: 8 to 15, typically 10. Incubation period: 28 days. Nestling period: 1 day (precocial). Broods per year: 1, but hens renest if the first clutch is destroyed. Age at sexual maturity: Usually 1 year for females and 2 years for males. Nest site: Turkeys lay their eggs in a simple depression or dry ground, usually in dead leaves. Nests are usually under low, shrubby cover, near water, and next to a tree or stump. Hens exhibit no forest-type preference, but often nest in cut-over areas.

HOME RANGE: The annual range includes 4 or 5 square miles (1.5 to 1.9 km^2) (Pough 1951:190), but seasonal ranges are smaller and often distinct from one another. Home ranges are often restricted to 100 to 200 acres (40 to 80 ha) during the winter and nesting seasons. Large movements often occur in early spring, late summer, and fall.

SAMPLE DENSITIES: 7.7 birds per square mile (3 birds/km^2) on forested refuge land in West Virginia (Uhlig 1950). 15 to 20 birds per square mile (6 to 8 birds/km^2) under ideal conditions (Pough 1951:189).

FORAGING: Major foods: Acorns and beechnuts are staple foods; turkeys will eat the fruits and seeds of most trees and shrubs, also fruits, flowers, and leaves of herbaceous plants, tubers, roots, and insects. Substrates:

Leaf litter, plants. Techniques: Scratching and pecking, gleaning, grazing. Preferred feeding habitat: Mast-producing woodlands during fall and winter; fields, pastures, and woodlands with rich, herbaceous ground cover during summer.

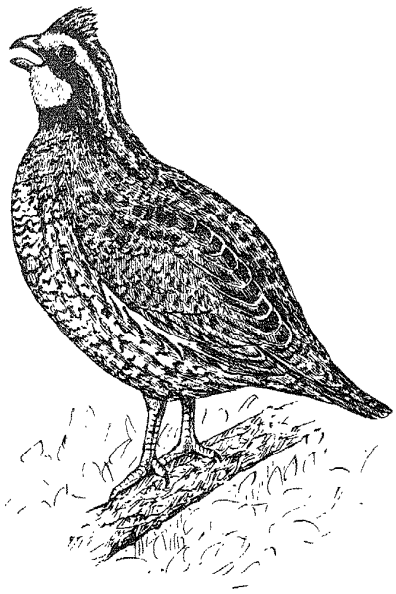
COMMENTS: A nomadic feeder—may visit feeding areas a half-mile or more apart. Males are polygamous. Elevation, topography, general location, and accessibility of forested areas may be more important to turkeys than forest types alone (Uhlig and Bailey 1952).

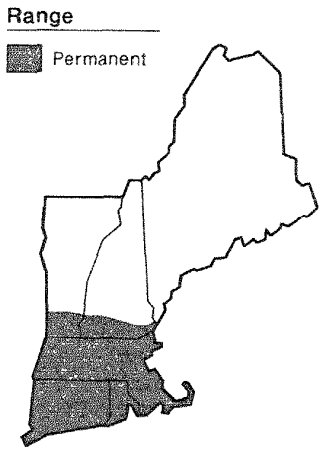
KEY REFERENCES: Bent 1932, Mosby and Handley 1943, Schorger 1966.

Northern Bobwhite

(Colinus virginianus)

A.O.U. No. 289.0





RANGE: Breeding: Southwestern Maine, w. to South Dakota, s. to the Gulf of Mexico. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to uncommon. Birds in s. New Hampshire and Maine probably are released stock.

HABITAT: Breeding: Open pastures, meadows with abundant weedy growth, open woodlands. Favors cultivated and fallow agricultural lands with hedgerows and dense brush for cover. Avoids deep woods. Wintering: Prefers areas with an edge of protective vegetative cover; pastures and brushy open woods, cultivated and fallow fields.

SPECIAL HABITAT REQUIREMENTS: Edges, well-drained sandy or loamy soils, woodland (10 to 90 percent) (Rosene 1969). Dense cover within 150 feet of feeding areas is essential in winter (Pough 1951:184).

NESTING: Egg dates: May 25 to September 24, New York (Bull 1974:203). Clutch size: 12 to 20, typically 14 to 16. Incubation period: 23 to 24 days. Nestling period: 1 or less days (precocial). Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest site. Usually among dead or growing grasses surrounded by patches of bare ground, often along fence rows or in neglected corners of pastures within 50 feet (15 m) of a clearing. Standing vegetation is usually less than 20 inches (0.5m) high and upright stems thin enough for birds to pass between (Rosene 1969:63).

TERRITORY SIZE: Approximately 1.1 acres (0.4 ha) in fallow field in Kansas (Fitch 1958). During several hundred observations, whistling males were seen no closer than 50 feet (15 m) (Rosene 1969:61).

HOME RANGE: Coveys generally remain within an area about 0.5 mile (0.8 km) in diameter (Stoddard 1931). Winter ranges are from 4 to 77 acres (1.6 to 31.2 ha) (averages 8.2 to 17.9 acres (3.3 to 7.2 ha)) on two plantations in South Carolina (Rosene 1969:88).

SAMPLE DENSITIES: Stockard (1905:149) found 16 nests in a 30-acre (12.1-ha) field of sedge in Mississippi. 5 pairs per 100 acres (40 ha) in field and edge habitat. 1.5 pairs per 100 acres (40 ha) in pine-deciduous forest and farmland in Maryland (Stewart and Robbins 1958:125).

FORAGING: Major foods: Soft herbaceous parts of plants, buds, seeds, fruits, insects. Substrates: Bare ground, litter layer of light movable material less than 2 inches (5 cm) thick. Techniques: Gleaning, scratching, pecking. Preferred feeding habitat: Cultivated fields and open areas near protective cover.

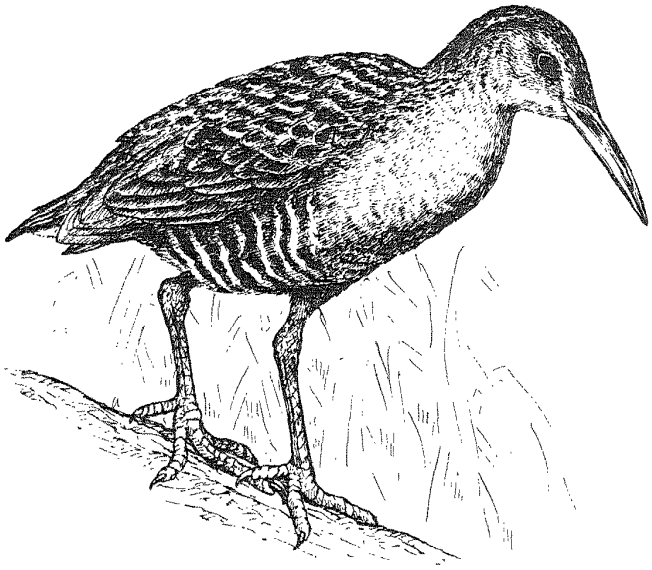
COMMENTS: Breeding pairs use wooded areas mainly for escape cover in summer but coveys of 6 to 25 individuals may remain in woods all winter if trees are scattered and canopy is open. Judd (1905 in Bent 1932:18) found that 917 stomachs contained 84 percent vegetable and 16 percent animal matter.

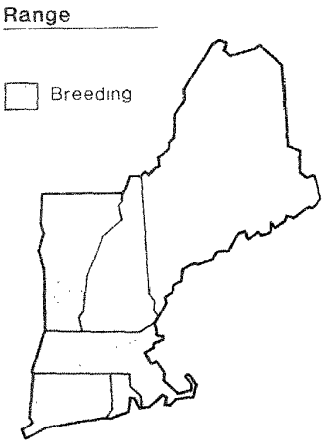
KEY REFERENCES: Bent 1932, Rosene 1969, Stoddard 1931.

King Rail

(Rallus elegans)

A.O.U. No. 208.0





RANGE: Breeding: Southern New Hampshire and Vermont w. to s. Minnesota, s. to the Gulf Coast. Winter: Atlantic coast from New York.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to rare.

HABITAT: Breeding: Coastal and inland brackish to freshwater marshes with abundant vegetation (favors areas with sedges, bulrushes, and cattails), roadside ditches, and tidal rivers. Not known to breed in salt marshes. Wintering: Coastal brackish, salt, and fresh water marshes.

SPECIAL HABITAT REQUIREMENTS: Adequate vegetation for nesting and protection with fairly constant water levels throughout the breeding season (no deep flooding or drying).

NESTING: Egg dates: May 24 to July 3, New York (Bull 1974:218). Clutch size: 6 to 15, typically 10 or 11. Incubation period: 21 to 23 days. Nestling period: Less than 1 day (precocial). Broods per year: 1 (possibly 2 in southern states). Nest height: To 1.5 feet (0.5 m). Typically 0.5 to 1.5 feet (0.2 to 0.5 m). Nest site: Usually 6 to 18 inches (0.1 to 0.5 m) above water, often on a hummock among cattails, marsh grasses, rushes, or other aquatic vegetation, the stalks and leaves of which form a natural canopy. Water depth surrounding nest is usually less than 2 feet (0.6 m).

TERRITORY SIZE: Size not known. Male establishes and defends territory against King and other Rail species.

SAMPLE DENSITIES: 3 nests per 464 feet (141.5 m) of roadside ditch 30 feet (9.1 m) wide in Arkansas (Meanley 1969:49). 30 birds per 100 acres (40 ha) of inland fresh marsh in Florida (Bateman 1977).

FORAGING: Major foods: Aquatic and terrestrial insects, amphibians, crustaceans, mollusks, seeds of marsh plants, waste grain. Substrates: Marsh vegetation, very shallow water (2 or 3 inches deep (5.1 to 7.6 cm)), mudflats exposed by low tide. Techniques: Probing with bill, pecking, immersing head and neck, dabbling. Preferred feeding habitat: Feeds within breeding habitat but also ranges into nearby hay and grain fields.

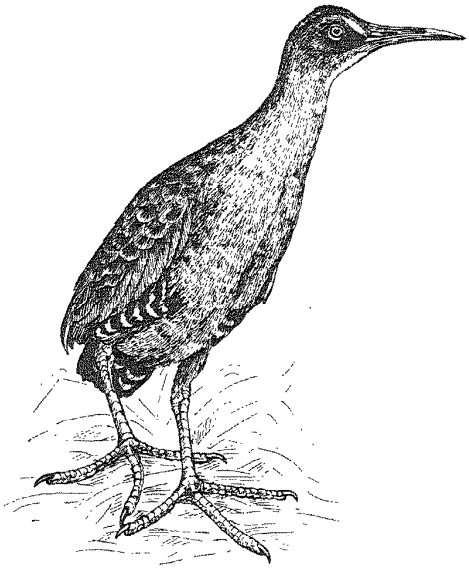
COMMENTS: Animal food component of 118 stomachs collected in Arkansas was 90 percent for spring and summer birds, 74 percent for fall birds, and 58 percent for winter birds (Meanley 1969). Wetland protection measures that prevent loss of habitat are important for maintaining the small populations of King Rails in the Northeast.

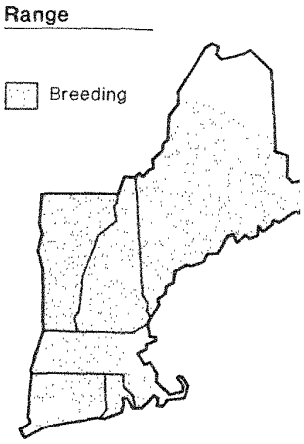
KEY REFERENCES: Bateman 1977, Blandin 1963, Meanley 1969.

Virginia Rail

(Rallus limicola)

A.O.U. No. 212.0





RANGE: Breeding: Nova Scotia and Quebec, s. to North Carolina, w. to California. Winter: Southern New Jersey, w. and s. Rarely n. to Massachusetts and New York.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Maine) to uncommon (Massachusetts) during the breeding season.

HABITAT: Breeding: Fresh water marshes with abundant vegetation such as sedges and cattails. Occasionally found in brackish and salt marshes. Widespread breeder at lower elevations. Wintering: Mainly in tidal marshes.

SPECIAL HABITAT REQUIREMENTS: Wetlands with sedge and cattail edge.

NESTING: Egg dates: May 5 to July 15, New York (Bull 1974:219). Clutch size: 6 to 13, typically 8 to 10. Incubation period: 19 days. Nestling period: Less than 1 day (precocial). Broods per year: 1 or 2. Nest height: To 1 foot (0.3 m), typically less than 1 foot (0.3 m). Nest site: Nest is usually 2 to 12 inches (5.1 to 30.5 cm) above water level in marsh vegetation. Usually well anchored to plant stalks and protected from above by leaves that form a canopy. Water depth near nest is typically 3 to 10 inches (7.6 to 25.4 cm).

TERRITORY SIZE: Does not seem to be territorial.

SAMPLE DENSITIES: 1 bird per acre (0.4 ha) in marsh in Colorado (Zimmerman 1977:50). 1.2 pairs per ha (2.5 acres) in marsh in New York (Post and Enders 1970). 5 pairs per 0.5 acre (1.2 ha) in Michigan (Berger 1951).

FORAGING: Major foods: Small fish, insects, seeds of marsh plants, berries, snails, crustaceans, worms. Substrates: Soft mud, tops and undersides of floating plants, pond debris. Techniques: Probing, gleaning. Preferred feeding habitat: Weed fields adjacent to breeding area.

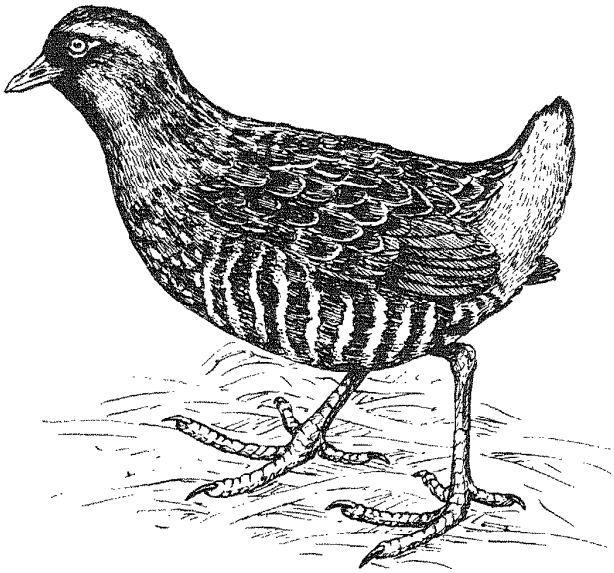
COMMENTS: Protection of existing wetlands is essential to the welfare of the Virginia Rail. Virginia Rails benefit from marsh management techniques employed for other game birds and mammals.

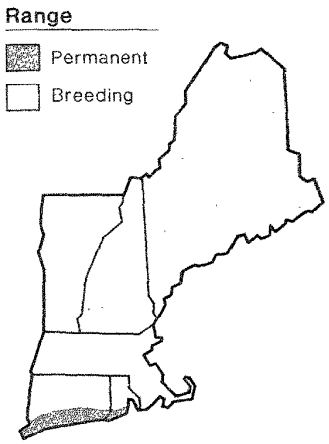
KEY REFERENCES: Berger 1951, Post and Enders 1970, Walkinshaw 1937, Zimmerman 1977.

Sora

(Porzana carolina)

A.O.U. No. 214.0





RANGE: Breeding: Nova Scotia and Quebec, w. to British Columbia and s. to Maryland and Ohio. Winter: Northern Florida and the Gulf Coast, s. Rarely n. to s. New England.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Maine).

HABITAT: Breeding: Marshes (favors fresh water), ponds, swamps, bogs, wet grassy meadows, sloughs having abundant and dense vegetation. Prefers sedges or cattails where mud and water are deep. Wintering: Tidal marshes.

NESTING: Egg dates: April 30 to July 17, New York (Bull 1974:220). Clutch size: 6 to 13, typically 10 to 12. Incubation period: 16 to 19 days (about 14 days (Odum 1977)). Nestling period: Less than 1 day (precocial). Broods per year: 1. Nest site: Nest is usually located on a platform of vegetation about 6 inches to more than 1 foot (15.2 to 30.5+ cm) above water level and is concealed from above by plants. Typically nests in the sedge zone of the marsh.

SAMPLE DENSITIES: Thought to be about 12 birds per acre (0.4 ha) at a reservoir in Colorado (Odum 1977). 35 nests per 107 acres (43.3 ha) in Iowa (Tanner and Hendrickson 1956). 4 pairs per 0.5 acre (0.2 ha) in cattail and sedge marsh in Michigan (Berger 1951).

FORAGING: Major foods: Aquatic and terrestrial insects (larvae and adults); cultivated grains and seeds (fall) especially those of sedge, wild rice, and bulrush; mollusks, crustaceans. Substrates: Shallow water, mud, marsh vegetation. Techniques: Probing, gleaning. Preferred feeding habitat: Wetlands, grain fields, dense seed-producing weeds.

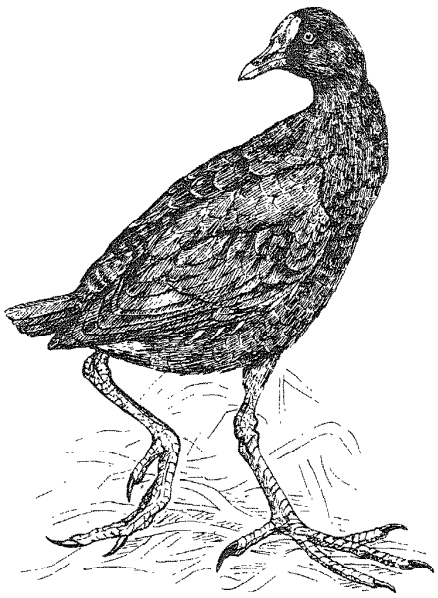
COMMENTS: Birds rely heavily on seeds in the fall, particularly in fresh water habitats. In brackish water areas, animals are the principal food items (Webster 1964). The Sora has been steadily decreasing in the Northeast since the turn of the century.

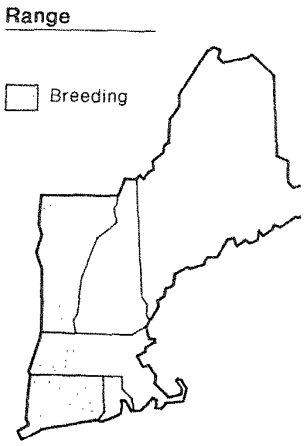
KEY REFERENCES: Bent 1926, Odum 1977, Tanner and Hendrickson 1956, Walkinshaw 1940, Webster 1964.

Common Moorhen

(Gallinula chloropus)

A.O.U. No. 219.0





RANGE: Breeding: Western New England and c. Maine, w. to Minnesota, s. to South America. Winter: South Carolina, w. to California, s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Freshwater marshes, ponds, lakes, canals, reservoirs, nearly any body of water with emergent vegetation growing in water 1 foot (0.5 m) deep or deeper (Pough 1951).

SPECIAL HABITAT REQUIREMENTS: Emergent vegetation growing in water 1 to 3 feet (0.5 to 0.9 m) deep (Krauth 1972 in Strohmeyer 1977). Requires some open water (Bull 1974:224).

NESTING: Egg dates: May 14 to July 25, New York (Bull 1974:224). Clutch size: 6 to 17, typically 10 to 12. Incubation period: 21 days. Nestling period: Probably less than 1 day (precocial). Broods per year: 1 or 2. Nest height: To 2 feet (0.6 m), typically less than 1 foot (0.3 m). Nest site: Typically nests on a hummock or other clump of emergent vegetation. Occasionally nests in shrubs such as willow or alder. Nest is usually over water 1 to 3 feet deep (0.3 to 0.9 m) and is well concealed by a canopy formed from surrounding taller plants.

FORAGING: Major foods: Vegetation leaves and stems of underwater plants, duckweed, leaves of grass and herbs, seeds and berries are staples. Animal foods include: snails, insects, and worms. Substrates: Water, surfaces of aquatic plants, mud. Techniques: Diving, dabbling, wading.

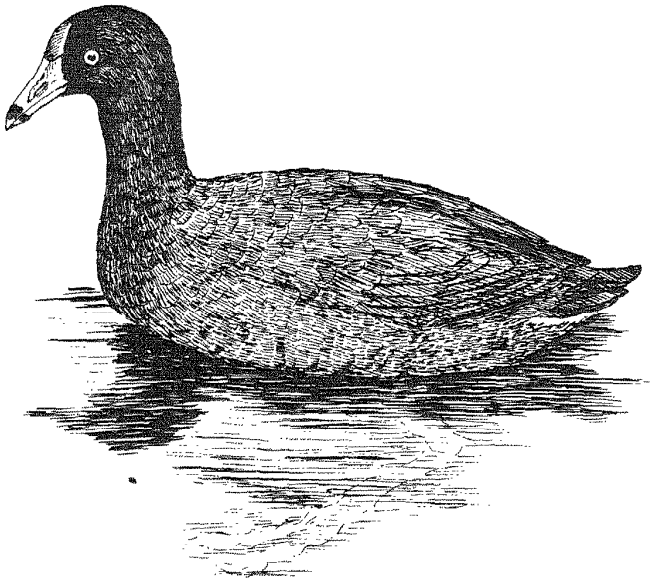
COMMENTS: Wetmore (1916) found 97 percent vegetable matter and 3 percent animal matter in 4 stomachs taken in May in Puerto Rico. Prefers the cattail zone of marshes (Allen 1939). Occurs in cattail-sedge marshes (Strohmeyer 1977) as well as *Phragmites* and *Sparganium*. Formerly Common Galinule.

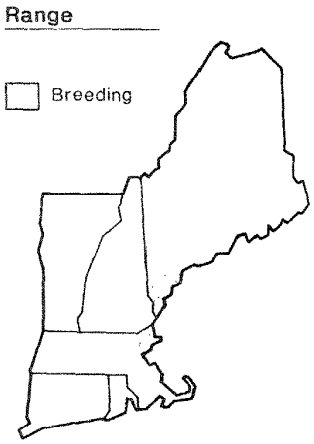
KEY REFERENCES: Bent 1926, Fredrickson 1971, Strohmeyer 1977.

American Coot

(Fulica americana)

A.O.U. No. 221.0





RANGE: Breeding: New Brunswick and s. Quebec, w. to British Columbia, s. to New Jersey, Ohio, Tennessee. Winter: Southern New Jersey, Maryland, s. Illinois, w. to Arizona, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare (Massachusetts) in breeding season. Uncommon to rare at coast in winter.

HABITAT: Breeding: Freshwater marshes, ponds, wet meadows, lakes, reservoirs, sewage lagoons, marshy borders of creeks and rivers with abundant emergent vegetation. Wintering: Ice-free fresh and brackish marshes along the coast.

SPECIAL HABITAT REQUIREMENTS: Shallow water 1 to 4 feet (0.3 to 1.2 m) deep with emergent vegetation.

NESTING: Egg dates: April 25 to July 14, New York (Bull 1974:224). Clutch size: 4 to 17, typically 9 or 10. Incubation period: 23 to 24 days. Nestling period: 1 to several days (precocial). Age at first flight: Probably 7 to 8 weeks. Age at sexual maturity: Probably 1 year. Nest site: Usually floating on surface of water 1 to 4 feet (0.3 to 1.2 m) deep and anchored to surrounding emergent vegetation (often cattails or bulrushes). Coots build platforms of vegetation for resting and brood rearing, and use muskrat houses for the same purposes.

TERRITORY SIZE: Average about 1 acre (0.4 ha) for 5 pairs in California (Gullion 1953). Coots are strongly territorial during the breeding season, defending nest against both coots and other marsh birds.

SAMPLE DENSITIES: 432 pairs per mile (166 pairs/km^2) under ideal conditions in the prairies of North Dakota (Stewart and Kantrud 1972). 1 nest per 0.54 acre (0.2 ha) in Iowa (Friley et al. 1938).

FORAGING: Major foods: Underwater plants are staples as well as algae, grass shoots, grains, aquatic insects; bulk of diet is vegetable matter but takes fish, tadpoles, worms, and crustaceans. Substrate: Shallow water. Techniques: Diving, grazing, dabbling. Preferred feeding habitat: In winter, coots often graze on lawns, golf courses, pastures, and cultivated fields.

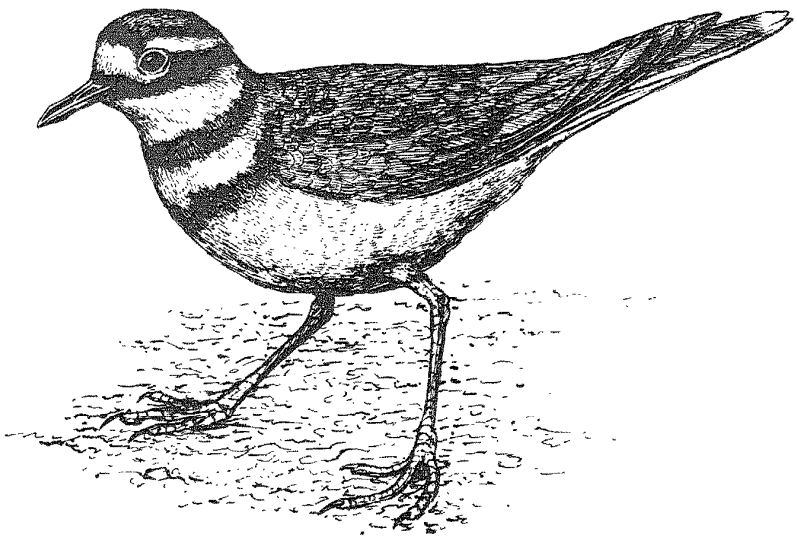
COMMENTS: Highest breeding densities of coots in Iowa were noted where 50 percent of marsh was open water and remaining 50 percent was emergent vegetation (Weller and Fredrickson 1973).

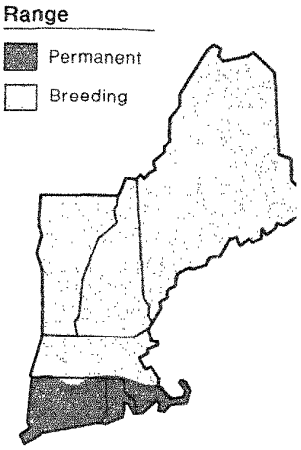
KEY REFERENCES: Bent 1926, Fredrickson 1970, Gullion 1953, Stewart and Kantrud 1972.

Killdeer

(Charadrius vociferus)

A.O.U. No. 273.0





RANGE: Breeding: Southern Canada, w. to British Columbia, s. to South America. Winter: Southern New England and New York, s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common in breeding season. Common along coast in winter.

HABITAT: Breeding: Heavily grazed meadows, edges of pasture ponds, dry uplands. Often close to human habitation such as on lawns, golf courses, cemeteries, unpaved parking lots and driveways, airports, cultivated fields, waste places. Wintering: Plowed or sparsely vegetated moist fields. Coastal flats and beaches, river and lake shores that are free of ice.

SPECIAL HABITAT REQUIREMENTS: Open fields or waste areas with closely cropped or sparse vegetation.

NESTING: Egg dates: April 3 to July 4, New York (Bull 1974:239). Clutch size: 3 to 5, typically 4. Incubation period: 24 to 29 days. Nestling period: Less than 1 day (precocial). Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest site: Eggs are deposited on bare, often gravelly ground in a depression hollowed out by the female. Often a few small stones, wood chips, or other plant debris is placed inside. Pastures, meadows, and cultivated fields are favorite sites.

SAMPLE DENSITIES: 24 pairs per square mile (9 birds/km^2) maximum density) in North Dakota (Stewart and Kantrud 1972). 3.9 pairs per 100 acres (40 ha) in plowed field and wheat field in Maryland (Stewart and Robbins 1958:136).

FORAGING: Major foods: Insects--especially beetle: and grasshoppers; centipedes, spiders, worms, snails crayfish, weed seeds. Substrates: Bare soil, shor grasses. Techniques: Robin-like running and pausing gleaning.

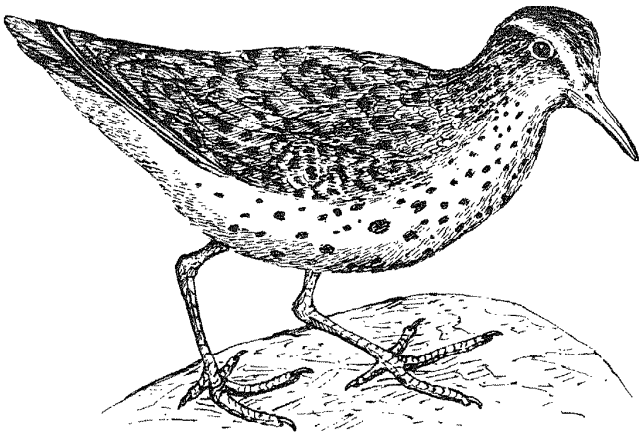
COMMENTS: Killdeer are solitary feeders. They spreac out over an area rather than feed in compact groups lik sandpipers. Habitat trends: increasing in Maine, Ohio decreasing in Massachusetts, New Hampshire, Rhod Island; static in Connecticut, Delaware, and Vermont unknown in New Jersey (Jurek and Leach 1977).

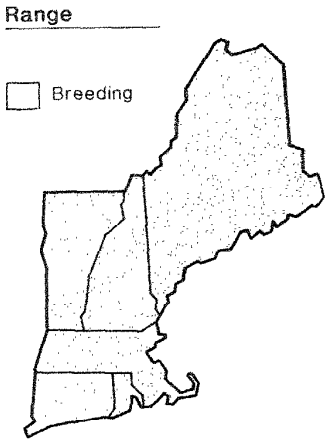
KEY REFERENCES: Bent 1929, Nickell 1943, Pough 1951.

Spotted Sandpiper

(Actitis macularia)

A.O.U. No. 263.0





RANGE: Breeding: Newfoundland, Quebec w. to Mackenzie District, Northwest Territory, and Alaska, s. to South Carolina, Texas, and New Mexico. Winter: South Carolina, the Gulf States, s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common to uncommon and widespread.

HABITAT: Breeding: Breeds in vicinity of fresh water often along edges of ponds, lakes, rivers or far from water in dry fields, pastures, and weedy shoulders of roads. Also uses coastal beaches and dunes. Prefers open terrain.

NESTING: Egg dates: May 6 to July 26, New York (Bull 1974:251). Clutch size: 3 to 5, typically 4. Incubation period: 20 to 24 days. Nestling period: Less than 1 day (precocial). Age at first flight: 15 to 16 days. Age at sexual maturity: 1 year. Nest site: Nests are solitary or in loose colonies. Eggs are laid in a depression in the ground that is lined with grass. Often under shrubs or weeds or in tall grass up to 30 inches high (76.2 cm).

TERRITORY SIZE: Little or no defended area.

SAMPLE DENSITIES: 43 pairs per 17.6 acres (7.1 ha) of dry meadow-rocky shore-sandy beach habitat in Michigan (Miller and Miller 1948).

FORAGING: Major foods: Insects, especially grasshoppers and crickets, small fish (occasionally), and crustaceans. Substrates: Mud, wet and dry sand, short grasses. Techniques: Walking slowly and gleaning, occasionally catching insects on the wing, swimming and diving.

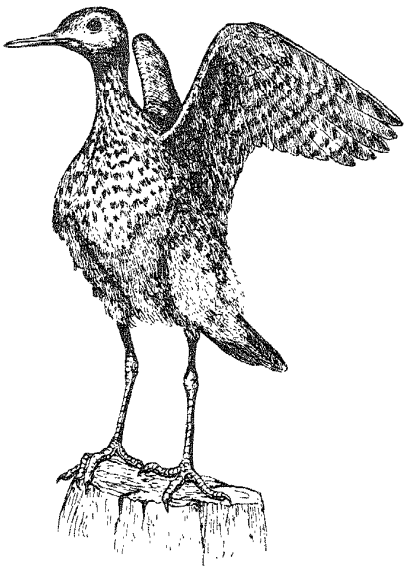
COMMENTS: Pair bond is both monogamous and polygamous. Females often polyandrous (Hays 1972). Spotted Sandpiper numbers are static throughout most of the Northeast but seem to be decreasing in Massachusetts (Jurek and Leach 1977).

KEY REFERENCES: Bent 1929, Hays 1972, Miller and Miller 1948.

Upland Sandpiper

(Bartramia longicauda)

A.O.U. No. 261.0



RANGE: Breeding: Central Maine (few), w. to Alaska, s. to Virginia, Illinois, Oklahoma. Winter: South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (Maine) to rare (Massachusetts, Vermont).

HABITAT: Breeding: Wide open pastures or grassy fields, often hayfields of alfalfa or clover; occasionally opening in forest.

NESTING: Egg dates: April 23 to June 15, New York (Bull 1974:254). Clutch size: 4 to 5, typically 4. Incubation period: 21 to 24 days. Nestling period: Less than 1 day (precocial). Age at first flight: About 30 to 31 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Well hidden in a depression in grass covered by nearby vegetation. Usually nests in loosely spaced colonies.

TERRITORY SIZE: Two pairs had territories of 20 to 30 acres (8.1 to 12.1 ha) each in grassland in Wisconsin (Wiens 1969:41).

HOME RANGE: For a nesting male and female, the mean distance travelled from nest was 241 m (263.6 yards) and 869 m (950.3 yards), respectively. The female home range was 8 ha (19.8 acres), the male home range was 86 ha (212.4 acres) (Ailes and Toepfer 1977).

SAMPLE DENSITIES: 1 nest per 1.5 to 15 acres (0.6 to 6.1 ha) (Harrison 1975:70). 20 pairs per square mile (8 pairs/km^2) (maximum density) in North Dakota (Stewart and Kantrud 1972). 7 nests were found in a 17-acre (6.9 ha) timothy field (Buss and Hawkins 1939).

FORAGING: Major foods: Insects — especially grasshoppers and crickets, waste grains and seeds of grasses and weeds. Animal 97 percent, vegetable 3 percent (McAtee 1912 in Bent 1929). Substrate: Grasses. Techniques: Robin-like alternate running and pausing.

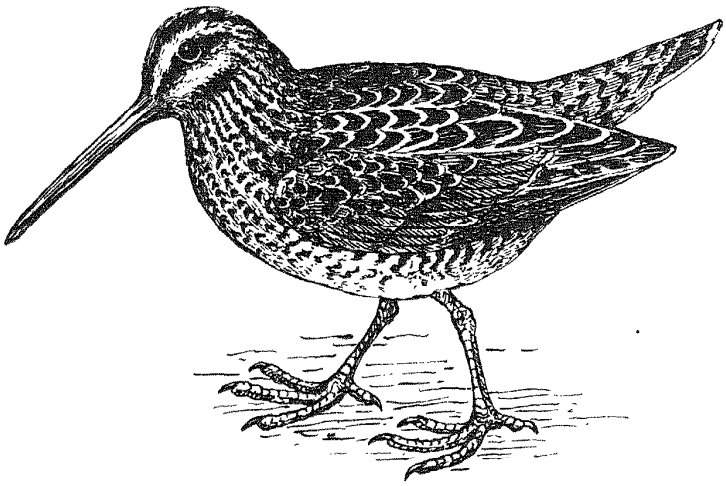
COMMENTS: Logging and small-scale farming have created good habitat for the Upland Sandpiper in the Northeast, enabling the bird to expand its range. Hayfields and old pastures are favored nesting habitat in New York State (Bull 1974:254). Extensive plowing and cultivating has destroyed much habitat in the prairies of the Midwest. Birds are decreasing in New Hampshire and Massachusetts where they are rare, and in Maryland, where uncommon (Jurek and Leach 1977).

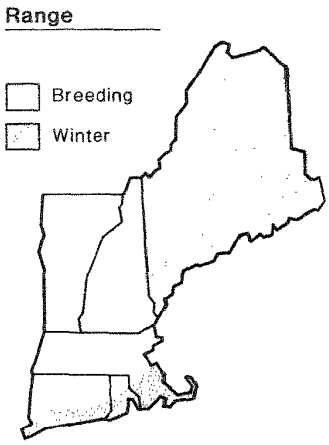
KEY REFERENCES: Bent 1929, Buss and Hawkins 1939.

Common Snipe

(Gallinago gallinago)

A.O.U. No. 230.0





RANGE: Breeding: Most of Canada, s. to n. New England, Pennsylvania, and n. New Jersey. Winter: Coastal New England to Virginia and inland to California, s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (c. and w. Maine) to uncommon (Vermont) in breeding season.

HABITAT: Breeding: Marshes with short vegetation, sedge bogs, alder and willow swamps, pond margins and lowlands associated with brooks and rivers where soils are mucky and the vegetation is sparse, wet meadows. Wintering: Near coast at small open creeks, springs and streams, marshes, fallow fields, cow pastures.

SPECIAL HABITAT REQUIREMENTS: Moist organic soils. Low scanty vegetation for nest and brood cover. Bogs, swamps. Large open spaces for courtship activities.

NESTING: Egg dates: April 20 to June 16, New York (Bull 1974:242). Clutch size: 3 to 5, typically 4. Incubation period: 18 to 20 days. Nestling period: Less than 1 day (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Nest is concealed among grasses or other vegetation on dry ground, sometimes on a tussock of grass or sedge.

TERRITORY SIZE: Unknown. Male selects and defends an area against other snipes. Size decreases as incubation advances. Defense ceases after chicks hatch.

SAMPLE DENSITIES: Breeding: Up to 17 pairs per 100 ha (247 acres) on peatland in Newfoundland (Tuck 1972). Spring: 11.6 birds per 100 acres (40 ha) in Oregon (Fogarty and Arnold 1977). Winter: 275 birds per 100 acres (40 ha) in Florida (Fogarty and Arnold 1977).

FORAGING: Major foods: Larvae of aquatic insects (about 50 percent of diet), earthworms (staple), snails, small crustaceans, seeds of marsh plants. Substrates: Mud, shallow water, dry and wet grasses, surfaces of marsh plants. Techniques: Probing, gleaning. Preferred feeding habitat: Winter-marshes where taller vegetation dies back exposing bare mud.

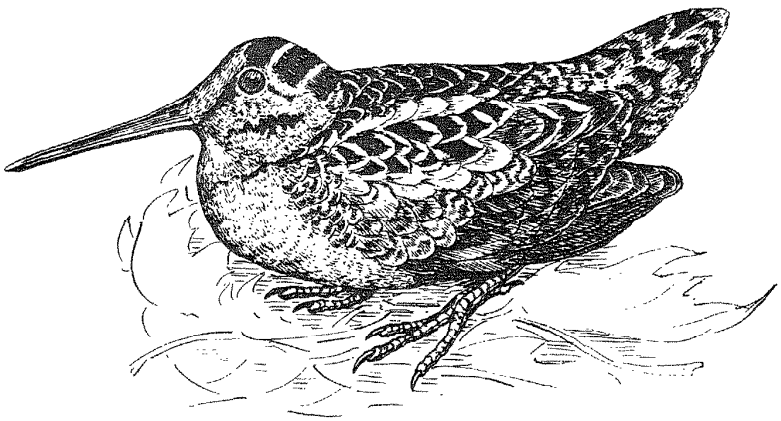
COMMENTS: Males and females are promiscuous. Erickson (1941) found that animal matter accounted for 61.5 percent of the contents of 76 stomachs. White and Harris (1966) and Sperry (1940) found animal matter in more than 80 percent of the diet.

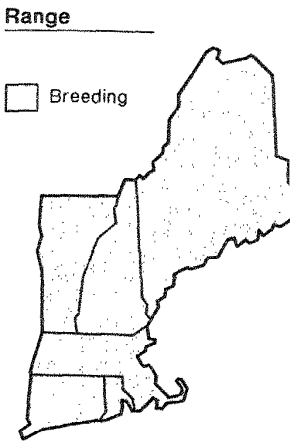
KEY REFERENCES: Bent 1927, Erickson 1941, Fogarty and Arnold 1977, Tuck 1972, White and Harris 1966.

American Woodcock

(Scolopax minor)

A.O.U. No. 228.0





RANGE: Breeding: Southern Newfoundland, s. Quebec, w. to se. Manitoba, s. to Florida and Texas. Winter: Southern New Jersey and the Ohio Valley, s. to c. Florida and se. Texas.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Maine) to uncommon. Rare in winter along coast.

HABITAT: Breeding: Moist woodlands in early stages of succession, swamps, stream banks, bogs, rich bottomlands, often in thickets of alder, willow or maple, brushy edges of woods, dry open woods and fields. Wintering: Concentrate along rivers and streams.

SPECIAL HABITAT REQUIREMENTS: Fertile, moist soil that contains earthworms. Fields or small forest openings for courtship activities and nocturnal roosting. Dense brushy swales for diurnal cover.

NESTING: Egg dates: March 24 to June 17, New York (Bull 1974:240). Clutch size: 3 to 5, typically 4. Incubation period: 20 to 21 days. Nestling period: Several days (precocial). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: On forest floor or abandoned field in slight depression lined with a few dead leaves. Usually located within 50 yards (45.7 m) of an edge. Hidden in a variety of cover from grasses to young or middle-aged hardwoods of light to medium density (Owen 1977).

TERRITORY SIZE: Females do not defend nests. The singing ground of the male may range in size from about 0.25 acre (0.1 ha) to more than 100 acres (40 ha) (Owen 1977).

SAMPLE DENSITIES: 4 to 7 males per mile (1.6 km) in New Hampshire and Maine singing ground surveys in 197 and 1972 (Owen 1977). 5.6 territorial males per 100 acre (40 ha) in brushy abandoned farmland in Maryland. 1.! territorial males per 100 acres (40 ha) in cut and burnec woodland in Maryland (Stewart and Robbins 1958:139).

FORAGING: Major foods: Earthworms accounted for 50 tc 90 percent of diet (Sperry 1940). Larvae of beetles, flie: and other insects form the balance. Leaves, seeds, anc fruits are occasionally taken. Substrates: Soft earth mud, leaf litter, dry grasses. Techniques: Probing gleaning. Preferred feeding habitat: Open pastures cultivated fields, stream banks.

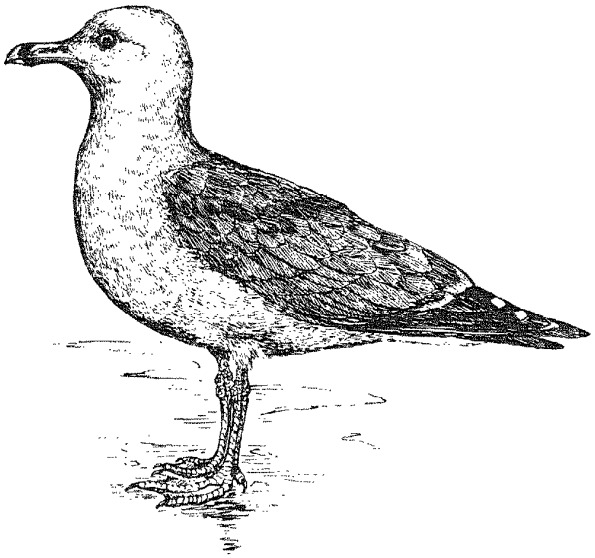
COMMENTS: Males typically have polygynous matinc habits. Courtship takes place only where there are scattered woody plants 1 to 2 feet (0.3 to 0.6 m) high, in early succession (Sheldon 1967:64). Estimated carrying capacity under best breeding conditions is about 1 pair per 5.5 to 6.0 acres (2.2 to 2.4 ha) (Mendall and Aldous 1943).

KEY REFERENCES: Bent 1927, 1929, Mendall and Aldous 1943, Owen 1977, Sheldon 1967.

Ring-billed Gull

(Larus delawarensis)

A.O.U. No. 054.0



RANGE: Breeding: Alaska and Labrador s. to the Great Lakes and California. Winter: Atlantic coast from Nova Scotia to Gulf of Mexico and Mississippi River and major tributaries.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common locally.

HABITAT: Breeding: Lakes and rivers, open beaches, mudflats and harbors. Wintering: near salt water.

NESTING: Egg dates: June 20 to 30, Labrador (Bent 1921). Clutch size: 2 to 4 usually 3. Incubation period: 21 days. Broods per year: 1. Nest height: On the ground, occasionally in low trees. Nest site: Often on lake islands.

FORAGING: Major foods: insects, worms, grubs, and sometimes bird eggs and mice; they also scavenge.

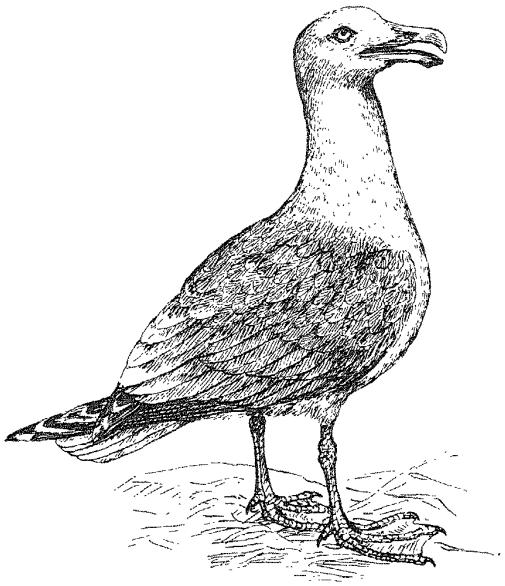
TERRITORY SIZE: Colonial nester 85,000 pairs nest on an island in Lake Ontario (Bull and Farrand 1977:447).

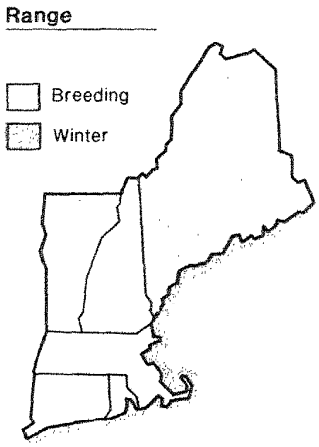
KEY REFERENCES: Bent 1921, Burleigh 1958.

Herring Gull

(Larus argentatus)

A.O.U. No. 051.0





RANGE: Breeding: Northern North American and along the Atlantic coast as far s. as North Carolina. Winter: Along the Atlantic and Gulf Coasts.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Mainly on islands in lakes, rivers, and estuaries, also on coastal beaches. Wintering: same as breeding habitat except where bodies of water freeze over.

NESTING: Egg dates: May 4 to August 8. Clutch size: 2 to 4, typically 3. Incubation period: 25 to 28 days. Broods per year: 1. Nest site: On the ground, also on cliff ledges, and occasionally in trees.

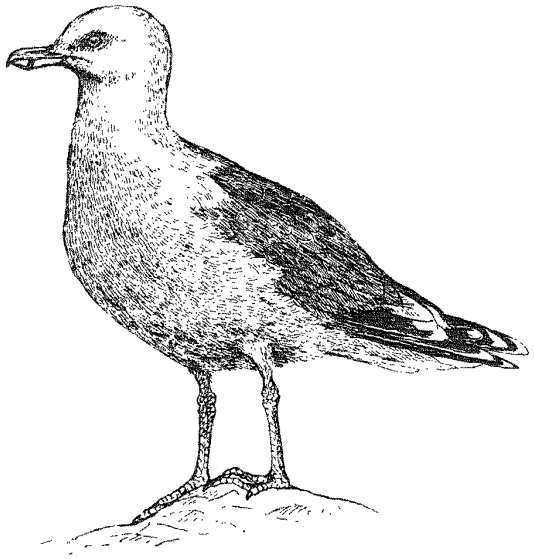
FORAGING: Major foods: Fish and shell fish, offal from fishing boats and fish processing plants. They also scavenge along shorelines and at garbage dumps. Substrates: Surface and shoreline of bodies of water, landfills.

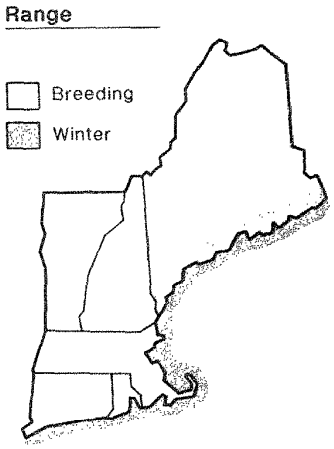
COMMENTS: In recent years it has become abundant, probably due to the amount of food available at garbage dumps, and has extended its range southward along the Atlantic Coast, often to the detriment of colonial birds such as Terns and Laughing Gulls (Bull and Farrand 1977:445).

Great Black-backed Gull

(Larus marinus)

A.O.U. No. 047.0





RANGE: Breeding: From Labrador to New York along the North American East coast. Winter: As far s. as North Carolina.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Cliffs and on islands in freshwater lakes. Wintering: Usually rivers and freshwater lakes near the coast and coastal islands.

NESTING: Egg dates: May through June. Clutch size: 3, sometimes 2. Incubation period: 27 days. Nestling period: 42 to 56 days. Broods per year: 1. Nest height: On the ground on coastal islands or on cliff ledges.

TERRITORY SIZE: Nests may be solitary or in colonies of various sizes.

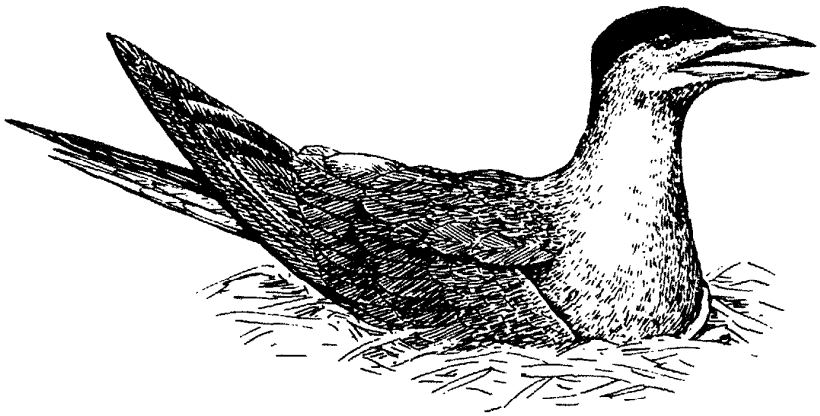
FORAGING: Major foods: Eggs and young of seabirds, carrion, and garbage from human dumps.

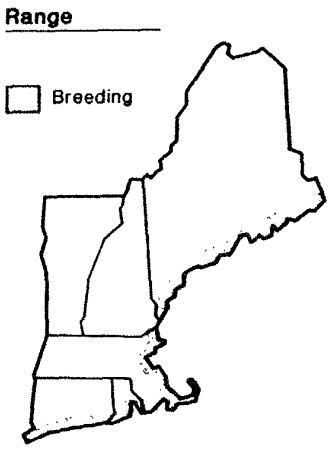
KEY REFERENCES: Godfrey 1979.

Common Tern

(Sterna hirundo)

A.O.U. No. 070.0





RANGE: Breeding: Alberta s. to Wisconsin and e. to Labrador; s. generally along the coast to Louisiana. Winter: South Carolina s. to the Straits of Magellan.

RELATIVE ABUNDANCE IN NEW ENGLAND: Abundant locally.

HABITAT: Breeding: Gravelly and sandy beaches, grassy uplands, on rocky shores of islands (Harrison 1975:80). Winter: Coasts from southern limit of breeding range (on Atlantic coast to South Carolina).

NESTING: Egg dates: May through July. Clutch size: 2 or 4, usually 3. Incubation period: 24 to 26 days. Nestling period: 3 to 4 days. Broods per year: 1. Nest site: Often a slight hollow in sand, shells, or pebbles (Harrison 1975:80).

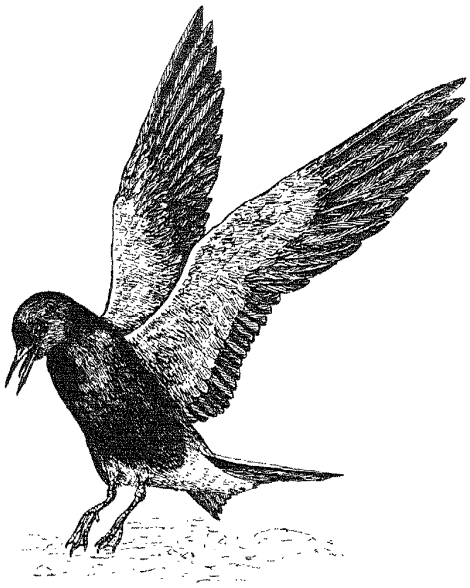
TERRITORY SIZE: Nest in loose colonies.

FORAGING: Major foods: Small fish. Substrates: Water surface. Techniques: Diving from air to water surface.

KEY REFERENCES: Godfrey 1979, Harrison 1975.

Black Tern
(Chlidonias niger)

A.O.U. No. 077.0



RANGE: Breeding: Southern Canada s. to Pennsylvania, into w. New York and Maine. Winter: Generally s. of the United States.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common.

HABITAT: Coastal and inland marshes, wet meadows.

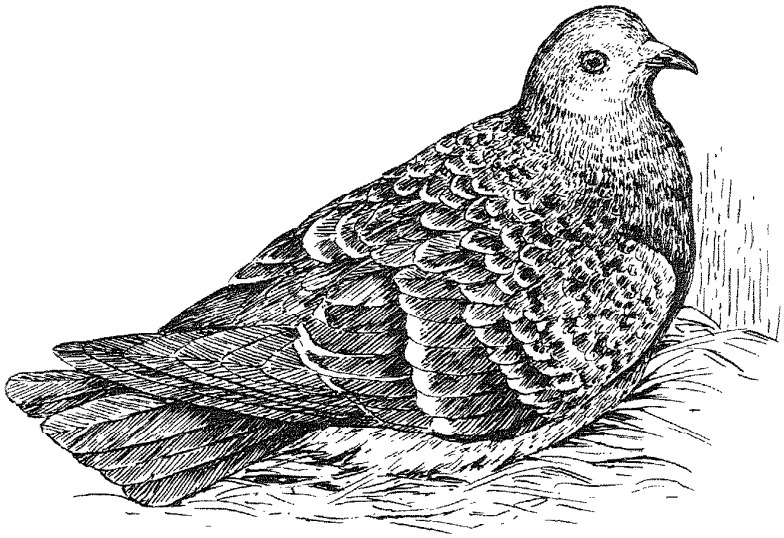
NESTING: Egg dates: May through July. Clutch size: 3. Incubation period: 21 to 24 days. Nestling period: 2 to 3 days. Broods per year: 1. Nest site: Often on islands of rotting, floating vegetation. Eggs are often wet (Harrison 1975:78).

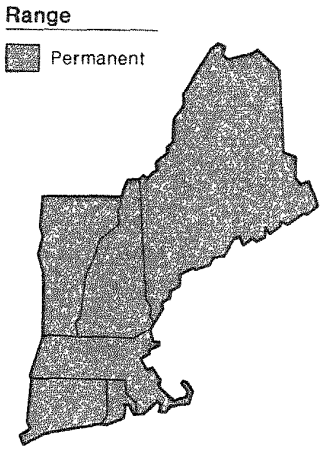
FORAGING: Major foods: Insects, fish, and small crustaceans. Substrates: Over grasses and water. Techniques: Hawking.

KEY REFERENCES: Burleigh 1958, Harrison 1975.

Rock Dove
(Columba livia)

A.O.U. No. 313.1





RANGE: Breeding: Throughtout temperate North America. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Abundant.

HABITAT: Breeding: Feral birds are found in open country, sometimes near cliffs and ledges that have roosting sites but are more common near human habitations, especially cities and farms. Wintering: Same as breeding habitat.

NESTING: Egg dates: Throughout the year (Bull 1974:316). Clutch size: 1 to 2, typically 2. Incubation period: 17 to 19 days. Nestling period: 21 to 28 days. Brood per year: 2 or 3. Age at sexual maturity: 1 year. Nest site: Usually on or in buildings or bridges or other man-made structures in semi-dark cavities. Rock Doves nest singly or in colonies.

FORAGING: Major foods: Seeds of weeds and grasses, grains, bread crumbs, and other human handouts. Substrates: Pavement, sparsely vegetated ground. Techniques: Gleaning. Preferred feeding habitat: Sidewalks and parking lots in cities, city parks, cultivated fields, wastelands.

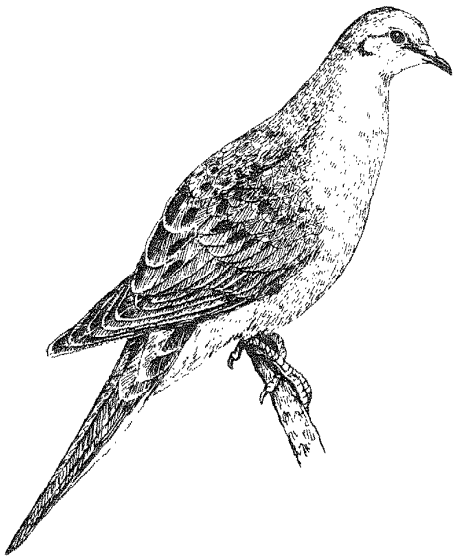
COMMENTS: Rock Doves prefer to roost in groups in areas that are sunny and sheltered from winds. Believed to mate for life.

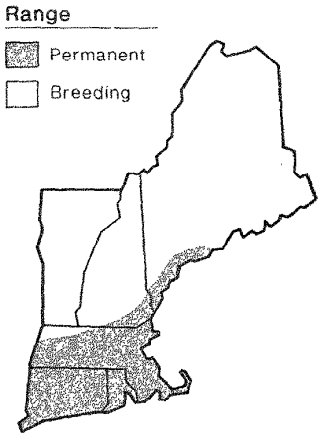
KEY REFERENCES: Forbush 1929, Goodwin 1977.

Mourning Dove

(Zenaida macroura)

A.O.U. No. 316.0





RANGE: Breeding: Central Maine, New Hampshire, Vermont and New York, w. to British Columbia, s. to the Bahamas and Mexico. Winter: Southern Maine, New Hampshire and Vermont, w. to Oregon, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Open mixed woodlands and woodland edges, evergreen plantations, orchards and farmlands, suburbs, cities. Avoids dense forests and high elevations (mountains). Birds nest most frequently in agricultural and residential areas. Wintering: Similar to breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Open land with bare ground that produces adequate food (seeds).

NESTING: Egg dates: March 9 to September 28, New York (Bull 1974:320). Clutch size: 1 to 3, typically 2. Incubation period: 13 to 14 days. Nestling period: 12 to 14 days. Broods per year: 2 or more (as many as 6 clutches per season in temperate areas (Keeler 1977)). Age at sexual maturity: 1 year. Nest height: to 50 feet (15.2 m), typically 10 to 25 feet (3.0 to 7.6 m). Nest site: Often in a coniferous tree. Also in tangles of shrubs or vines. Occasionally uses old nest of other bird to support its twig platform. Nest is typically placed on a horizontal limb. Solitary or loosely colonial. DeGraaf (1975:29) found coniferous vegetation 0 to 35 feet (10.7 m) high important to Mourning Dove occurrence.

SAMPLE DENSITIES: Relative densities of breeding Mourning Doves based on the mean number heard per 20-mile (32 km) survey route: 0 to 9.9 birds—Maine, New Hampshire, Vermont, w. Pennsylvania, e. Ohio, West Virginia (Keeler 1977); 10.0 to 29.9 birds—Massachusetts, Rhode Island, Connecticut, New Jersey, e. Pennsylvania, Maryland (Keeler 1977); 30.0 to 59.9 birds—w. Ohio (Keeler 1977). 76 pairs per square mile (29 pairs/km^2) in favorable habitat in North Dakota (Stewart and Kantrud 1972).

FORAGING: Major foods: Weed seeds and waste grain of agriculture, occasionally takes small snails. Substrates: Open, bare ground; short grasses. Techniques: Walking and ground gleaning. Preferred feeding habitat: Cultivated fields.

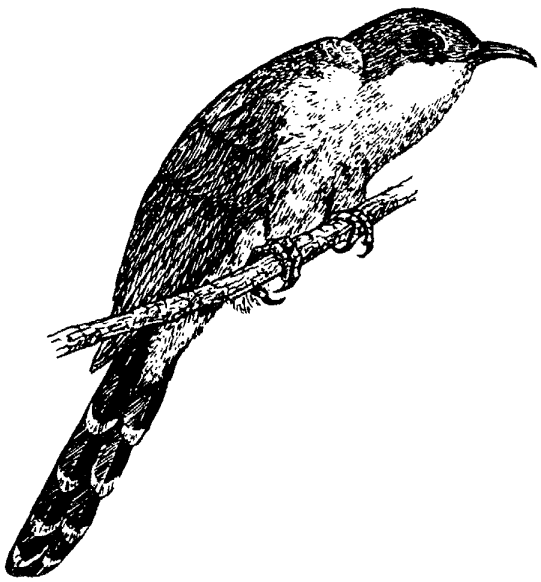
COMMENTS: Pair bond is usually life-long monogamy. Birds generally increase their range and numbers in areas with secondary growth, cultivated fields and pastures (Goodwin 1977:206).

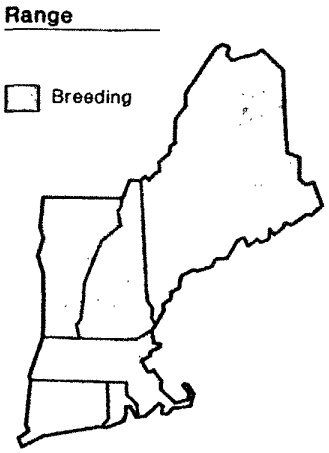
KEY REFERENCES: Goodwin 1977, Hanson and Kossack 1962, Keeler 1977, Lehner 1965.

Black-billed Cuckoo

(Coccyzus erythropthalmus)

A.O.U. No. 388.0





RANGE: Breeding: Prince Edward Island, w. to se. Alberta, s. to South Carolina. Winter: nw. South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Brushy pastures, shrubby hedgerows at edges of fields, dry, open upland woods and groves.

SPECIAL HABITAT REQUIREMENTS: Low, dense, shrubby vegetation.

NESTING: Egg dates: May 20 to August 28, New York (Bull 1974:325). Clutch size: 2 to 5, typically 2 to 4. Incubation period: 14 days. Nestling period: 7 to 9 days (young perch on branches, unable to fly). Age at first flight: Unknown. Age at sexual maturity: 1 year. Nest height: 2 to 20 feet (0.6 to 6.1 m), typically 4 to 6 feet (1.2 to 1.8 m). Nest site: Usually low in shrub or on branch of deciduous or coniferous tree, well concealed among the leaves.

FORAGING: Major foods: Caterpillars (staple); also eats beetles, grasshoppers, crickets, and other insects; is fond of fleshy fruits. Substrates: Upper and lower leaf surfaces. Technique: Leaf gleaning.

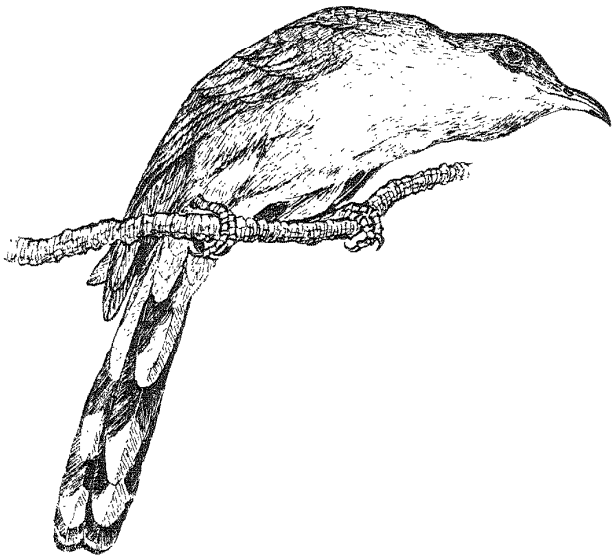
COMMENTS: The feeding habits of the Yellow-billed and Black-billed Cuckoos appear to be similar. Black-billed Cuckoos seem to use extensive woodlands more than Yellow-billed Cuckoos do (Pough 1949:5).

KEY REFERENCES: Bent 1940, Miller 1934, Spencer 1943.

Yellow-billed Cuckoo

(Coccyzus americanus)

A.O.U. No. 387.0



RANGE: Breeding: New Brunswick, w. to British Columbia, s. to the Florida Keys, Gulf Coast, and Mexico. Winter: South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Open woods, overgrown weedy fields, roadsides, abandoned orchards, streambanks with dense thickets, brushy pastures with small trees and vines. Seldom seen at high elevations.

SPECIAL HABITAT REQUIREMENTS: Low, dense, shrubby vegetation.

NESTING: Egg dates: May 26 to August 19, New York (Bull 1974:324). Clutch size: 1 to 5, typically 3 or 4. Incubation period: About 14 days. Nestling period: 7 to 9 days (young perch on branches, unable to fly). Age at first flight: Unknown. Broods per year: Probably 1. Age at sexual maturity: 1 year. Nest height: 2 to 20 feet (0.6 to 6.1 m), typically 4 to 10 feet (1.2 to 3.0 m). Nest site: Prefers to nest in thick bushes overgrown with grape vines or in trees on horizontal limbs. Nest is usually well concealed by surrounding foliage.

SAMPLE DENSITIES: 8 territorial males per 100 acres (40 ha) in upland oak forest in Maryland. 6 territorial males per 100 acres (40 ha) in floodplain forest in Maryland. 4 territorial males per 100 acres (40 ha) in hedgerows, active and abandoned farmland in Maryland (Stewart and Robbins 1958:177).

FORAGING: Major foods: Caterpillars (staple) and other insects; many kinds of fruits such as grapes, mulberries, and elderberries. Substrates: Upper and lower leaf surfaces. Technique: Leaf gleaning.

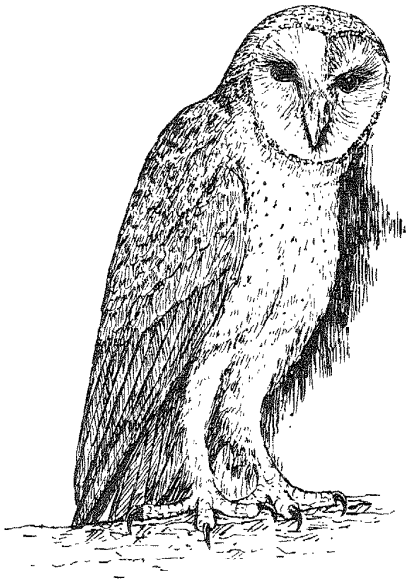
COMMENTS: Frequently consumes larvae of gypsy moth, tent caterpillar, and fall webworm. Parasitism is not a common practice as it is in the European Cuckoo.

KEY REFERENCES: Bent 1940, Preble 1957.

Common Barn-Owl

(Tyto alba)

A.O.U. No. 365.0



RANGE: Breeding: Mainly coastal s. New England, w. to British Columbia, s. Winter: Same as breeding range except that many of the northern birds migrate s. for the winter.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare and local breeder (Vermont, Massachusetts). Rare in winter.

HABITAT: Breeding: Almost anywhere in open country but prefers vicinity of farms and villages. Avoids woodlands and higher elevations. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Abundant supply of rodents for food. Barns, silos, deserted buildings, cavities or covered duck blinds for nesting.

NESTING: Egg dates: February to December. Peak: April to June, New York (Bull 1974:328). Clutch size: 3 to 11, typically 5 to 7. Incubation period: 32 to 34 days (Harrison 1975). Nestling period: 50 to 60 days. Broods per year: 1 or 2. Double-brooded in s. New York (Bull 1974:328). Age at sexual maturity: 1 year. Nest site: Barns, abandoned buildings, silos, tree cavities, church steeples, and artificial nest sites such as bird houses, baskets, and barrels. Also nests in burrows in cliffs or banks.

FORAGING: Major foods: Rodents (especially mice) are staples; also takes other small mammals and occasionally takes small birds. Substrates: Meadow grasses. Techniques: Diving and grasping, quartering low (a few meters above ground). Preferred feeding habitat: Marshes, meadows, fields, barnyards, brushy areas, garbage dumps that attract rodents.

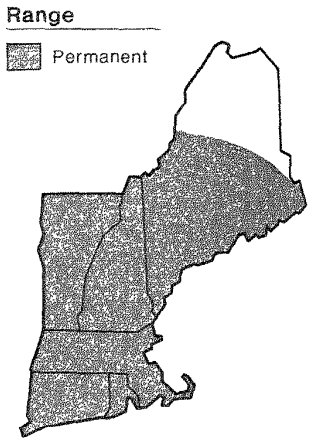
COMMENTS: Birds are nocturnal, roosting by day and hunting by night, hence, they are seldom observed even in thickly settled towns and cities. Barn-Owls have been observed roosting in cedar groves (Georgia) and pine plantations (Michigan). Breeding is irregular, depending on availability of food. Wallace (1948) in Michigan found that 80 to 90 percent of diet consisted of meadow mice *(Microtus)*.

KEY REFERENCES: Bent 1938, Stewart 1952, Wallace 1948.

Eastern Screech-Owl

(Otus asio)

A.O.U. No. 373.0



RANGE: Breeding: New Brunswick, w. to s. Alaska, s. to the Florida Keys and c. Mexico. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (Massachusetts) to rare (Maine).

HABITAT: Breeding: Shade trees in towns, orchards, small woodlots, and open woodlands, Wintering: Same as building habitat.

SPECIAL HABITAT REQUIREMENTS: Cavities for nesting and roosting in trees with a minimum d.b.h. of 12 inches (30.5 cm) (Thomas et al. 1979).

NESTING: Egg dates: March 23 to May 11, New York (Bull 1974:329). Clutch size: 3 to 7, typically 4 or 5. Incubation period: 21 to 30 days. Nestling period: About 30 days. Broods per year: 1. Age at sexual Maturity: 1 year (a small percentage breed at 2 years of age). Nest height: 5 to 50 feet (1.5 to 15.2 m), typically 5 to 30 feet (1.5 to 9.1 m). Nest site: Natural cavities and abandoned woodpecker holes, especially those of the Flicker and Pileated Woodpecker. Cavities are also used for roosting and caching food.

TERRITORY SIZE: Variable. Adjacent territories are usually separated by a nondefended area (Burton 1973:101).

SAMPLE DENSITIES: 1 pair per 2.5 square miltes (1 pair 6.5 km^2) in Michigan (Craighead and Craighead 1969:214). 1 pair per 4 square miles (1 pair/10.4 km^2) in Wyoming (Craighead and Craighead 1969:215).

FORAGING: Major foods: Rodents (especially meadow mice) and insects are staples; crayfish, snails, reptiles, amphibians, birds, and fish are also taken. Substrates: Forest floor, meadow grasses. Techniques: Swooping and pounching. Preferred feeding habitat: Grassy openings among widely spaced trees, open fields, meadows, or, in New England, along wooded field margins or streams.

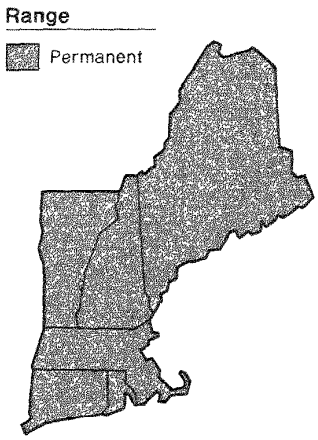
COMMENTS: Nocturnal feeders. Cavities and nest boxes are used by the owls during winter months as feeding stations (food caches). The birds are opportunistic predators, generally consuming animal forms most readily available. May have historically occupied most of northern New England, now rarely found in southern New Hampshire (C. Anderson, personal communication).

KEY REFERENCES: Bent 1938, Van Camp and Henny 1975. Earhart and Johnson 1970.

Great Horned Owl

(Bubo virginianus)

A.O.U. No. 375.0



RANGE: Breeding: Northern tree limit in Canada, s. to s. South America. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to uncommon.

HABITAT: Breeding: Deep woods remote from populated areas, large farm woodlots, often in deep swamps near a large stream or woodland pond. Mixed countryside of forest and fields. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Large abandoned birds' nests or large cavities for nesting.

NESTING: Egg dates: January 28 to April 18, New York (Bull 1974:331). Clutch size: 1 to 3, typically 2. Incubation period: 28 to 35 days (various reports of 28, 30, and 35 days). Nestling period: 40 to 45 days. Broods per year: 1. Age at sexual maturity: 2 years (about 25 percent breed when 1 year old). Nest height: 30 to 70 feet (1.1 to 21.3 m). Nest site: Commonly uses the old nest of a large bird such as heron, crow, or hawk. Also nests in large natural cavities in trees and on ledges.

SAMPLE DENSITIES: 1 pair per 5.3 square miles (1 pair/13.7 km^2) in Michigan (Craighead and Craighead 1969:214). 1 pair per 3 square miles (1 pair/7.8 km^2) in Wyoming (Craighead and Craighead 1969:215). 1 pair per 1.1 square miles (1 pair/2.8 km^2) in Kansas. Optimum habitat probably supports from 1 to 3 pairs per square mile (0.4 to 1 pair/km^2 (Baumgartner 1939). 1 pair per 4.4 square miles (1 pair/11.4 km^2) in deciduous woodland in New York (Hagar 1957).

FORAGING: Major foods: Lagomorphs and rodents are staple foods; other prey includes birds, small carnivorous mammals, reptiles. Substrate: Forest floor. Techniques: Silent approach to prey via silent, direct, rapid flight, swooping, and pouncing. Preferred feeding habitat: Sometimes leaves woodlands to hunt over meadows and salt marshes.

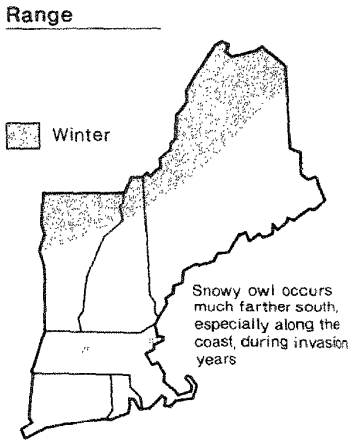
COMMENTS: Crepuscular hunter. Extensive wooded areas with mature trees are preferred over small woodlots with second-growth trees. Birds may have become more tolerant of human activity and occasionally are seen at parks in cities and towns.

KEY REFERENCES: Bent 1938, Earhart and Johnson 1970, Forbush 1929.

Snowy Owl

(Nyctea scandiaca)

A.O.U. No. 376.0



RANGE: Breeding: Arctic tundra n. of the tree line in n. hemisphere. Winter: As far s. as n. New York, Vermont, New Hampshire, and Maine, occasionally occurs s. to n. Alabama and Georgia.

RELATIVE ABUNDANCE IN NEW ENGLAND: Birds move s. periodically in response to crash of lemming population, otherwise, rare in the Northeast.

HABITAT: Open areas along coast, including areas along airport runways.

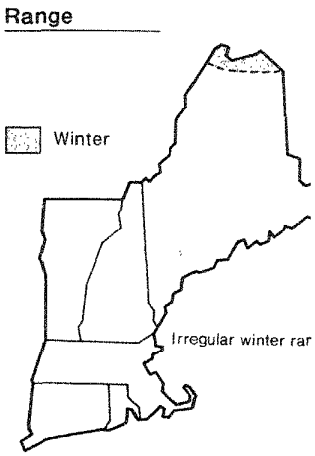
FORAGING: Major foods: Lemmings, other small mammals and small birds. Substrate: snow-covered fields, inland and coastal marshes. Techniques: Hawking, hovering, pouncing.

KEY REFERENCES: Bent 1968, Burton 1973.

Northern Hawk-Owl

(Surnia ulula)

A.O.U. No. 377.0



RANGE: Breeding Boreal forest of n. hemisphere. Winter: same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare. Winter: Occasionally trickles down into northeastern states.

HABITAT: Coniferous forest.

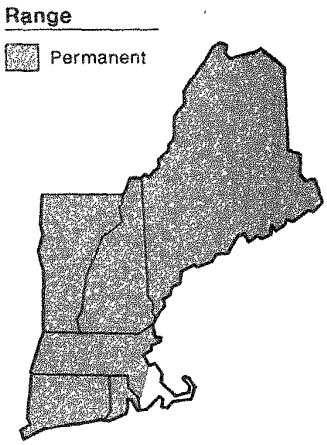
FORAGING: Major foods: Small mammals, and small to medium birds. Substrate: ground. Technique: Hovering and pouncing.

KEY REFERENCES: Bent 1938, Hausman 1966.

Barred Owl

(Strix varia)

A.O.U. No. 368.0



RANGE: Breeding: Newfoundland, w. to Alberta, s. to Florida and the Gulf Coast. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon and scattered.

HABITAT: Breeding: Low, wet deep woods, heavily wooded swamps often near open country where it may hunt for food. Frequently uses mixed or coniferous woods for nesting and roosting. Prefers mature oak woods for nesting and feeding (Hardin and Evans 1977). Wintering: In times of food shortage, birds often migrate south in search of food.

SPECIAL HABITAT REQUIREMENTS: Cool, damp lowlands, large trees with cavities for nesting. Minimum d.b.h. of suitable trees is 20 inches (50.8 cm) (Thomas et al. 1979).

NESTING: Egg dates: March 23 to May 3, New York (Bull 1974:334). Clutch size: 2 to 4, typically 2 or 3. Incubation period: 28 to 33 days. Nestling period: 28 to 35 days. Broods per year: 1. Nest height: To 80 feet (24.4 m). Nest site: Typically in a large natural cavity in a dead tree. Where cavities are scarce, it may use old bird or squirrel nests. In New York, owls often roost in dense stands of hemlock or pines (Bull 1974:333).

HOME RANGE: Average size for 9 owls was 565 acres (228.7 ha) (range 213 to 912 acres (86.2 to 369.2 ha)) in deciduous woodland—open field—marsh habitat in Minnesota (Nicholls and Warner 1972).

SAMPLE DENSITIES: 3 pairs per 36 square miles (3 pairs/ 93.2 km^2) in extensive deciduous woodlots in Michigan (Craighead and Craighead 1969:92). 0.5 pair per 100 acres (40 ha) in lowland forest in Maryland (Stewart and Robbin 1958: 180).

FORAGING: Major foods: Mice (staple) and other small mammals, frogs, birds, insects, crayfish. Substrates: Forest floor, meadow grasses. Techniques: Swooping and pouncing. Preferred feeding habitat: Open fields surrounded by woodland.

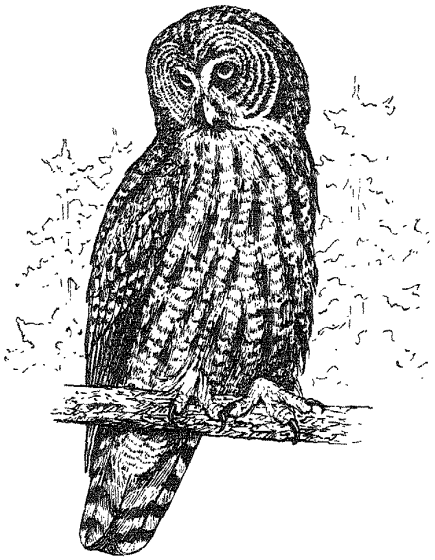
COMMENTS: Barred Owls are nocturnal hunters, but birds with broods may hunt during daylight hours.

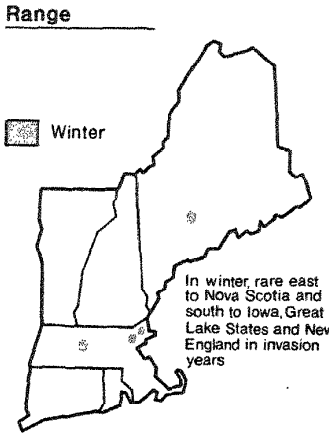
KEY REFERENCES: Bent 1938, Errington and McDonald 1937, Forbush 1929.

Great Gray Owl

(Strix nebulosa)

A.O.U. No. 370.0





RANGE: Breeding: Boreal forest throughout the n. hemisphere. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare. May invade the Northeastern United States in large numbers when the snow is deep and food is in low supply farther north.

HABITAT: While wintering in settled parts of the country, various woodland types, frequently deciduous are used. Often hunts meadow mice in open fields using fence posts, low trees, shrubbery, and wooded edges as lookouts. (Godfrey 1979:217)

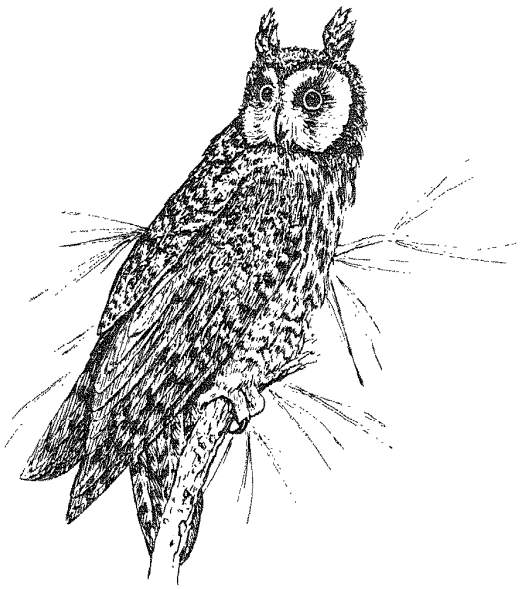
FORAGING: Major foods: Small mammals, small birds. Substrate: Ground. Technique: Swooping and pouncing. Preferred feeding habitat: Meadows.

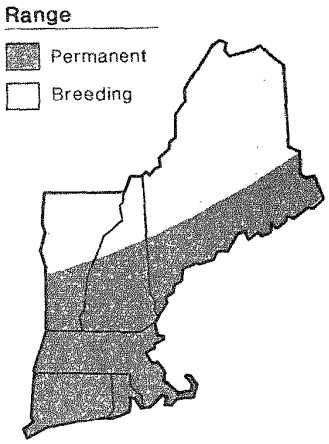
KEY REFERENCES: Burton 1973, Godfrey 1979.

Long-eared Owl

(Asio otus)

A.O.U. No. 366.0





RANGE: Breeding: Newfoundland, Quebec, w. to British Columbia, s. to Virginia and Arkansas. Winter: Central Maine w. to British Columbia, s. to Florida and c. Mexico.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (Maine) to rare (Massachusetts) in breeding season. Uncommon in winter.

HABITAT: Breeding: Deciduous or coniferous (coniferous preferred) and open or dense woodlands, wooded parks, sometimes in small woodlots. Wooded swamps, evergreen plantations. Wintering: Birds roost deep within groves of evergreens that may be several miles from extensive forest.

SPECIAL HABITAT REQUIREMENTS: Dense vegetation for nesting and roosting cover.

NESTING: Egg dates: March 21 to May 23, New York (Bull 1974:336). Clutch size: 3 to 8, typically 4 to 5. Incubation period: About 28 days. Age at first flight: 23 to 24 days. Broods per year: 1. Nest site: Often in old crow, hawk, or squirrel nest, sometimes in natural tree cavities or on top of broken stubs. Rarely on ground or ledges.

SAMPLE DENSITIES: 1 pair per 37 square miles (1 pair/95.8 km^2) in Michigan. 1 pair per 4 square miles (1 pair/10.4 km^2) in Wyoming (Craighead and Craighead 1969:212, 215). 1 pair per 0.1 to 0.4 square mile (1 pair/0.3 to 1.0 km^2) in Wyoming (Craighead and Craighead 1969:264).

FORAGING: Mice (staple) and other small mammals, reptiles, amphibians, insects, occasionally takes small birds. Substrates: Forest floor, meadow grasses. Techniques: Swooping and pouncing. Preferred feeding habitat: Both wooded and open country.

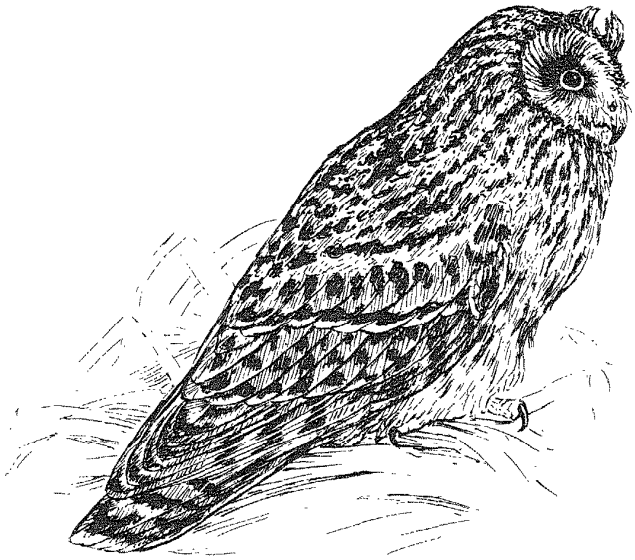
COMMENTS: Birds are gregarious in winter with flocks of 5 to 25 occupying communal roosts (Pough 1949:19). Their quiet and nocturnal habits make them difficult to observe in all seasons.

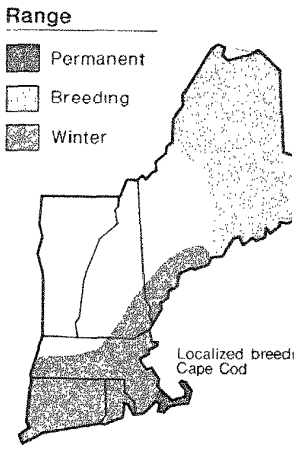
KEY REFERENCES: Armstrong 1958, Bent 1938, Forbush 1929.

Short-eared Owl

(Asio flammeus)

A.O.U. No. 367.0





RANGE: Breeding: Arctic, s. to New Jersey, Ohio and c. California. Winter: Massachusetts, Ohio, s. British Columbia, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon in general but occasionally locally common along coast in breeding season. Winters locally throughout.

HABITAT: Breeding: Open grasslands, plains, marshes, dunes. Wintering: Same as breeding habitat generally preferring to winter in localities with little or no snow.

SPECIAL HABITAT REQUIREMENTS: Extensive open grasslands with abundant rodents.

NESTING: Egg dates: April 12 to May 19, New York (Bull 1974:338). Clutch size: 4 to 9, typically 5 to 7. Incubation period: About 21 days. Age at first flight: About 28 days. Nestling period: 12 to 16 days. Broods per year: 1. Nest site: On the ground in clumps of weeds or grasses; rarely in burrows.

TERRITORY SIZE: 73.9 to 121.4 ha (182.5 to 299.8 acres) in sedges and rushes in New York (Clark 1975:43).

FORAGING: Major foods: Mice, insects, occasionally birds. Substrates: Grass—fields, dunes. Techniques: Hawking, hovering, and pouncing.

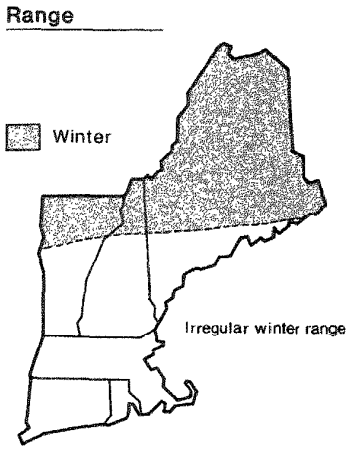
COMMENTS: In winter, birds tend to roost in groups i open field or close to ground in conifers or brush if sno is deep. Birds often hunt by day (especially dawn an dusk) and depend almost totally on rodents.

KEY REFERENCES: Bent 1939, Clark 1975, Short an Drew 1962, Stegeman 1957.

Boreal Owl

(Aegolius funereus)

A.O.U. No. 371.0



RANGE: Breeding: Boreal forests of western hemisphere. Winter: same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Occasionally winters in northeastern border states.

HABITAT: Mixed hardwoods and coniferous forests.

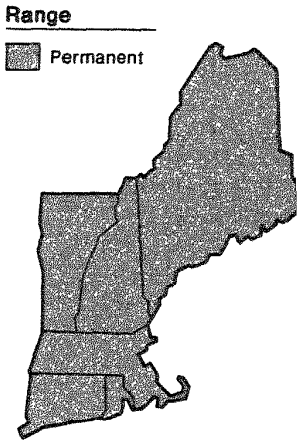
FORAGING: Major foods: Small mammals and small birds. Substrate: Forest floor. Technique: Swooping and pouncing.

KEY REFERENCE: Burton 1973.

Northern Saw-whet Owl

(Aegolius acadicus)

A.O.U. No. 372.0



RANGE: Breeding: Nova Scotia, w. to se. Alaska, s. to c. Ohio and s. New England. Breeds in the mountains from Maryland to Missouri. Winter: Regularly s. to Virginia and casually to s. California.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Uses a variety of habitats, including woodlots, roadside shade trees, coniferous and deciduous forests. Swampy areas in deep conferous forests are preferred over dry deciduous woods (Pough 1949:23). Mature mixed forests with scattered dead trees are preferred nesting habitats (Angell 1974). Wintering: When deep snow makes food unavailable, birds may move s. in search of prey. Birds roost in conifers at edge or interior of extensive woodlands. Also in coniferous thickets in parks and isolated pines.

SPECIAL HABITAT REQUIREMENTS: Cavity in tree with a minimum d.b.h. of 12 inches (30.5 cm) (Thomas et al. 1979).

NESTING: Egg dates: March 31 to June 11, New York (Bull 1974:340). Clutch size: 4 to 7, typically 5 or 6. Incubation period: 21 to 28 days. Broods per year: 1 (Terrill 1931). Nest height: 14 to 60 feet (4.3 to 18.3 m). Typically 20 to 40 feet (6.1 to 12.2 m). Nest site: Usually in cavity of dead tree. Prefers old deserted Woodpecker holes, especially those of Flickers. Birds accept nest boxes with a layer of straw or sawdust inside.

HOME RANGE: Approximately 350 acres (141.7 ha) in Minnesota (Simpson 1972).

SAMPLE DENSITIES: 1 bird per 1.86 square miles (1 bird/ 4.8 km^2) in spruce-fir in mountains of North Carolina (Simpson 1972). Maximum 1 pair per 40 ha (100 acres) (Hardin and Evans 1977).

FORAGING: Major foods: Mainly small mammals—especially mice, young squirrels, shrews, chipmunks; also takes insects and occasionally small birds. Substrate: Forest floor. Techniques: Swooping and pouncing.

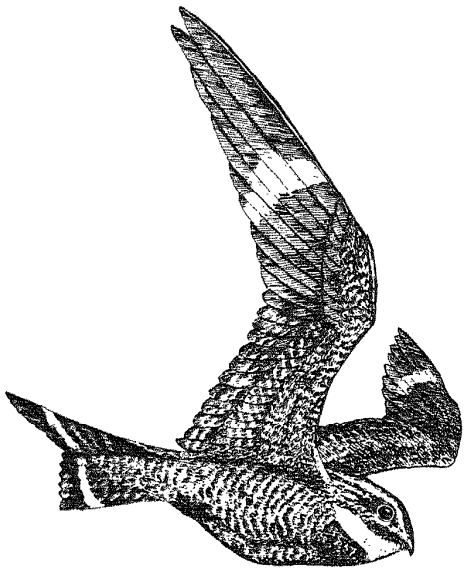
COMMENTS: Saw-whet Owls hunt and roost close to the ground. They are nocturnal and so are seldom seen.

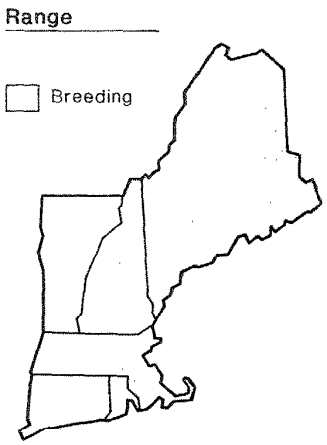
KEY REFERENCES: Bent 1938, Mendall 1944, Randle and Austing 1952.

Common Nighthawk

(Chordeiles minor)

A.O.U. No. 420.0





RANGE: Breeding: Newfoundland, Quebec, w. to s. Yukon, s. to the Gulf States and n. Mexico. Winter: South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to rare.

HABITAT: Breeding: Open areas such as plowed fields, gravel beaches, barren areas with rocky soil, railroad right-of-ways, large woodland clearings, cities. Nesting in cities restricted to gravel roofs. Most Massachusetts birds nest on gravel roofs.

NESTING: Egg dates: May 25 to July 25, New York (Bull 1974:345). Clutch size: 1 or 2, typically 2. Incubation period: 19 days. Age at first flight: About 3 weeks. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest site: Builds no nest. Lays eggs on bare ground usually on gravel or partially vegetated soil, roof tops; always in open.

TERRITORY SIZE: Armstrong (1965) found that territories coincided with breeding home ranges in Michigan (see Home Range).

HOME RANGE: 4.1 to 22.8 ha (10.1 to 56.3 acres) (average 10.4 ha (25.7 acres)) per pair in Michigan (Armstrong 1965).

SAMPLE DENSITIES: 13 birds per 130 ha (321.1 acres) in Michigan (Armstrong 1965).

FORAGING: Major foods: Flying insects, especially flying ants, mosquitos, moths, grasshoppers. Substrate: Air. Technique: Air screening.

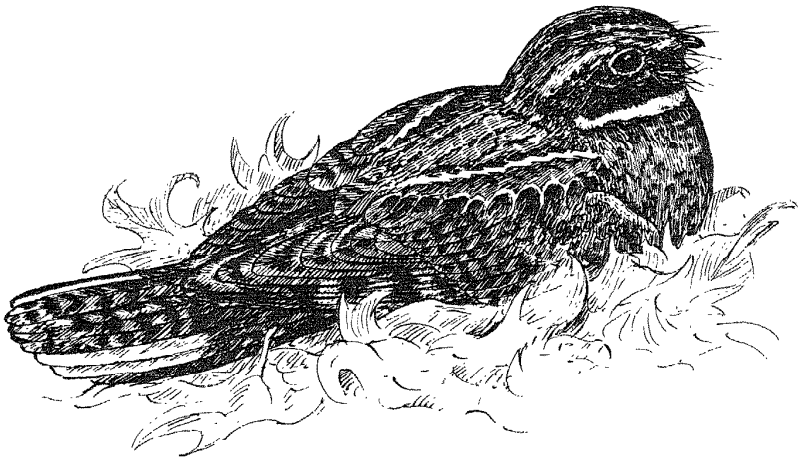
COMMENTS: Birds are mainly crepuscular and nocturnal but occasionally feed during the day. Numbers seem to be declining in New Hampshire (C. Anderson, personal communication).

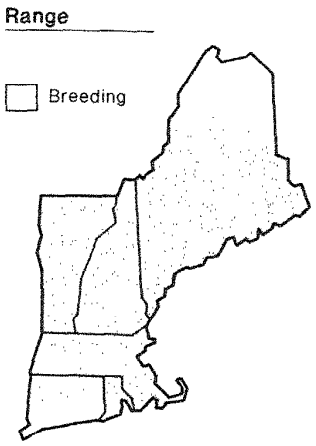
KEY REFERENCES: Armstrong 1965, Bent 1940, Rust 1963.

Whip-poor-will

(Caprimulgus vociferus)

A.O.U. No. 417.0





RANGE: Breeding: Nova Scotia and s. Quebec, w. to c. Saskatchewan, s. to e. Virginia (coast), Alabama, Georgia (mountains), and Texas. Winter: South Carolina, w. to the Gulf States and s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to uncommon.

HABITAT: Breeding: Dry, open, predominantly deciduous woodlands—often with small to medium trees of pine, oak, and beech. Less common breeder in mature forests; avoids mountains.

NESTING: Egg dates: May 16 to June 30, New York (Bull 1974:344). Clutch size: 1 or 2, typically 2. Incubation period: 20 days. Broods per year: 1 or 2 (Bull 1974:344). Age at sexual maturity: 1 year. Nest site: Builds no nest. Eggs are laid on well-drained ground in the open or under a bush. Often among trees at edge of clearing or path.

TERRITORY SIZE: 14.9 acres (6 ha), 25.5 acres (11.1 ha), and 6.9 acres (2.8 ha) in oak, hickory, elm woodlands in Kansas (Fitch 1958).

SAMPLE DENSITIES: 1.4 territorial males per 100 acres (40 ha) in upland forest and brush habitat in Maryland (Stewart and Robbins 1958:184).

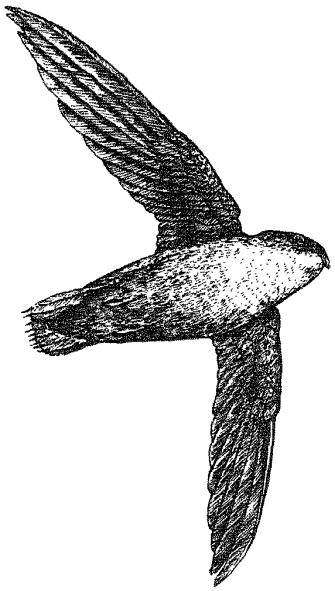
FORAGING: Major foods: Mainly flying insects but occasionally takes crickets, ants, and beetles from the ground (Bent 1940). Substrates: Air, leaf litter. Technique: Air screening.

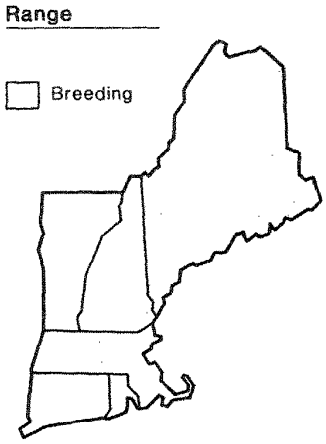
KEY REFERENCES: Bent 1940, Raynor 1941.

Chimney Swift

(Chaetura pelagica)

A.O.U. No. 423.0





RANGE: Breeding: Southern Canadian provinces, s. to Florida and the Gulf Coast. Winter: South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Abundant.

HABITAT: Breeding: The vicinity of buildings in towns, cities, farms.

SPECIAL HABITAT REQUIREMENTS: Chimneys.

NESTING: Egg dates: May 30 to July 27, New York (Bull 1974:347). Clutch size: 3 to 6, typically 4 or 5. Incubation period: 18 to 21 days. Nestling period: 1 or 2 days (able to crawl out of nest but unable to fly). Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Formerly nested in hollow trees but has adapted to chimneys, silos, building walls, rafters, airshafts, old wells. At Kent, Ohio, birds typically nested in ventilation shafts at an average depth of about 20 feet (6 m) (Dexter 1977). Solitary or colonial nesters.

SAMPLE DENSITIES: 0.6 pair per 100 acres (40 ha) in mixed forest, brush and field, and near buildings with chimneys (Stewart and Robbins 1958:187).

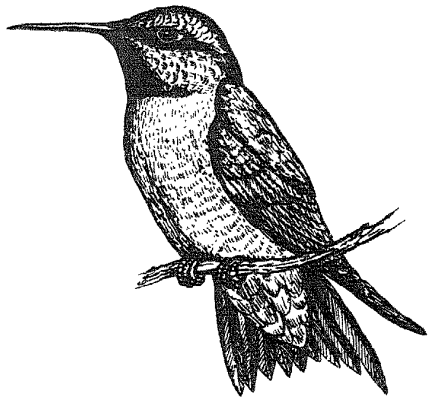
FORAGING: Major foods: Flying insects. Substrate: Air. Technique: Air screening.

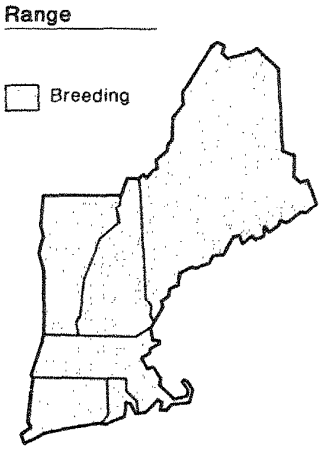
KEY REFERENCES: Bent 1940, Dexter 1977, Fischer 1958.

Ruby-throated Hummingbird

(Archilochus colubris)

A.O.U. No. 428.0





RANGE: Breeding: Nova Scotia, w. to s. Alberta, s. to Florida and Texas. Winter: Mexico and Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Mixed woodlands, shade trees in residential landscapes, orchards. Often near streams and wooded swamps.

SPECIAL HABITAT REQUIREMENTS: Abundant flowers, preferably red.

NESTING: Egg dates: May 21 to August 16, New York (Bull 1974:348). Clutch size: Invariably lays 2 eggs. Incubation period: 11 to 16 days. Nestling period: 14 to 28 days (Bent 1940). Broods per year: 1. Nest height: 6 to 50 feet (1.8 to 15.2 m), typically 10 to 20 feet (3.0 to 6.1 m). Nest site: Nest is usually built in the saddle of a drooping limb of a shrub or tree often near, and sometimes directly over, water or near a woodland trail. It is usually sheltered above by leaves and branches and exposed to the ground below.

TERRITORY SIZE: Female alone defends immediate area of surrounding nest. A male in Ohio defended a feeding territory of 0.25 acre (0.1 ha) (Pitelka 1942).

SAMPLE DENSITIES: Maryland—15 pairs per 100 acres (40 ha) in well-drained floodplain forest. 8 pairs per 100 acres (40 ha) in upland oak forest. 6 pairs per 100 acres (40 ha) in mature northern hardwood forest. 4 pairs per 100 acres (40 ha) in hedgerows and active and abandoned farmland (Stewart and Robbins 1958:188).

FORAGING: Major foods: small insects, nectar, sap. Substrate: Flowers. Techniques: Hovering, hawking. Preferred feeding habitat: Wherever there are abundant flowers.

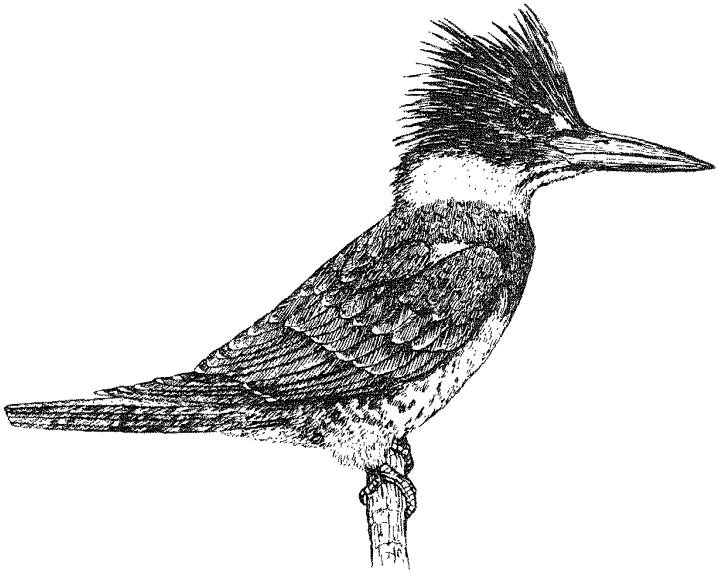
COMMENTS: Pair bond: males are polygynous. Sexes migrate separately with males arriving in the Northeast several days before the females. In fall, males leave for wintering grounds a month before females and young.

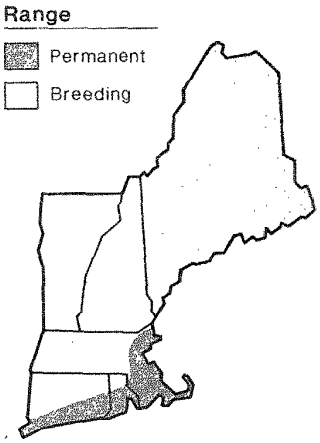
KEY REFERENCES: Bent 1940, Pickens 1936, Pitelka 1942.

Belted Kingfisher

(Ceryle alcyon)

A.O.U. No. 390.0





RANGE: Breeding: Mackenzie district, Northwest Territories and n. Alaska, s. to Florida, Texas, and s. California. Winter; Great Lakes and s. New England, s. to South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common in breeding season. Uncommon in winter.

HABITAT: Breeding: Banks near ponds, lakes, rivers, and streams that contain fish. Wintering: Near ice-free waters that allow access to food.

SPECIAL HABITAT REQUIREMENTS: Banks for nest sites within a mile of water. Water with low turbidity and adequate food supply. Perches near water for sighting prey.

NESTING: Egg dates: May 1 to June 10, New York (Bull 1974: 349). Clutch size: 5 to 8, typically 6 or 7. Incubation period: 23 to 24 days. Nestling period: 31 to 32 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest site: Typically 3 to 6 feet (1 to 2 m) deep in a burrow in a bank of sandy clay or gravel near water. Banks may be up to a mile from water forcing birds to travel to distant feeding areas.

HOME RANGE: 2 pairs on 2 lakes used 0.5 mile (0.8 km) of shoreline (Sayler and Lagler 1946). 0.5 to 5 miles (0.8 to 8 km) from nest site (Cornwell 1963).

SAMPLE DENSITIES: 1 pair per 1.8 square miles (1 pair/ 4.7 km^2) in Minnesota (Cornwell 1963).

FORAGING: Major foods: Fish (staple), crayfish, insects, mollusks, tadpoles, occasionally takes fleshy fruits. Substrates: Shallow water (less than 2 feet (0.6 m) deep). Techniques: Diving, skimming water surface. Preferred feeding habitat: Shallow borders of bodies of water.

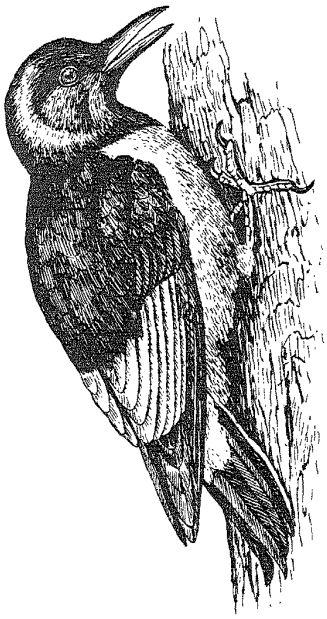
COMMENTS: Large lakes that become turbid due to wave action have fewer Kingfishers than small clear bodies of water.

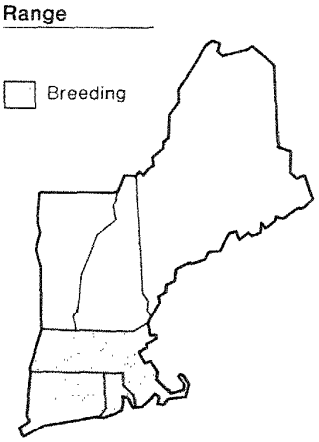
KEY REFERENCES: Bent 1940, Cornwell 1963, Sayler and Lagler 1946, White 1953.

Red-headed Woodpecker

(Melanerpes erythrocephalus)

A.O.U. No. 406.0





RANGE: Breeding: Southwestern Quebec, w. to se. Alberta, s. to the Gulf Coast. Does not breed in n. New England. Winter; Southeastern Pennsylvania, w. to Oklahoma and s.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to rare.

HABITAT: Breeding: Lowland and upland habitats, river bottoms, wooded swamps, beaver ponds, open deciduous woods, groves of dead and dying trees, orchards, open agricultural country. Prefers savanna-like grasslands with scattered trees and forest edges. Wintering: Birds move from forest interior. Oaks and maples that provide mast may be important components of winter habitat (Willson 1970, Reller 1972).

SPECIAL HABITAT REQUIREMENTS: Prefers open areas with snags and lush herbaceous ground cover (Hardin and Evans 1977).

NESTING: Egg dates: May 16 to June 19, New York (Bull 1974:355). Clutch size: 4 to 7, typically 5. Incubation period: About 14 days. Broods per year: 1 or 2. Age at sexual maturity: 1 year. Nest height: 8 to 80 feet (2.4 to 24.4 m), typically 23 to 40 feet (7 to 12.4 m). Nest site: Tree cavity usually excavated in dead tree or limb without bark that is surrounded by open space, utility poles, avoids bird houses. Prefers open woods with dead trees and herbaceous ground cover.

TERRITORY SIZE: In winter the birds restrict their activities to small, well-defined territories (Kilham 1958b).

SAMPLE DENSITIES: 9 to 12 birds per 100 acres (40 ha) in bottomland woods with much edge and large internal openings (oak-hickory-hackberry-elm community) (Graber et al. 1977). 25 birds per 100 acres (40 ha) in suburban-residential habitat (Cooke 1916 in Graber et al. 1977). 28 birds per 100 acres (40 ha) in shrub area (Graber and Graber 1963).

FORAGING: Major foods: Insect larvae and adults, wild fruits, acorns (especially those of pin oak), beechnuts, corn. Substrates: Ground, trunks, and limbs. Techniques: Drilling, probing, ground gleaning, hawking. Preferred feeding habitat: Open areas adjacent to woodlots (Connor 1976); upper parts of trees in winter (Williams 1975b).

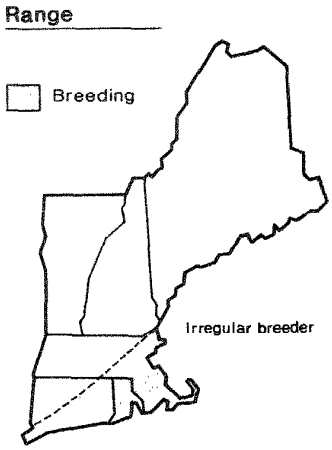
COMMENTS: Reller (1972) found that Red-headed Woodpeckers favored cavities in trunks rather than limbs. Red-headed populations have increased following the death of trees over a large area by fire, flood, or disease (Graber et al. 1977). Woodlots used for nesting in sw. Virginia ranged from 0.5 to 20.0 ha (1.2 to 50 acres) (Conner 1976).

KEY REFERENCES: Bent 1939, Conner 1976, Graber et al. 1977, Reller 1972.

Red-bellied Woodpecker

(Melanerpes carolinus)

A.O.U. No. 409.0



RANGE: Breeding: New Jersey, Pennsylvania, New York, w. to s. Minnesota, s. to the Gulf Coast. Occasionally breeds in s. New England. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Locally common to rare.

HABITAT: Breeding: Deciduous and coniferous forests and edges; frequents uplands but prefers bottomlands, woodlots near farms and villages, orchards. Wintering: Similar to breeding habitat. Birds are sedentary, remaining on breeding grounds year-round.

SPECIAL HABITAT REQUIREMENTS: Extensive mature woodlands with dead trees or trees with large dead limbs for nesting.

NESTING: Egg dates: April 26 to June 28, New York (Bull 1974:354). Clutch size: 3 to 8, typically 4 to 6. Incubation period: 14 days. Broods per year: 1 (north), 2 (south). Age at sexual maturity: 1 year. Nest height: 5 to 70 feet (1.5 to 21.3 m). Nest site: Cavity in sound or soft wood, often in limb at edge of woodland, less often in trunk of dying or dead tree, building, utility pole, or stump. Frequently uses nesting boxes. May excavate a cavity or occupy an existing one (Kilham 1958a).

TERRITORY SIZE: Average 6.1 acres (2.5 ha) (3 territories) in virgin floodplain forest in Illinois. Average 4.4 acres (1.8 ha) (2 territories) in mature upland forest in Illinois (Graber et al. 1977). Winter: 3 to 4 acres (1.2 to 1.6 ha) (Kilham 1963).

SAMPLE DENSITIES: 23 birds per 100 acres (40 ha) in virgin floodplain (elm-maple) forest in Illinois. 6 birds per 100 acres (40 ha) in bottomland forest in Illinois (Graber et al. 1977). 19 pairs per 100 acres (40 ha) in white oak, tulip-poplar forest in Maryland (Stewart and Robbins 1958:193).

FORAGING: Major foods: Insects, especially ants and beetles; beech and acorn mast, corn, wild fruits. Substrates: Upper dead limbs of trees, ground. Techniques: Scaling, probing, gleaning tree surfaces, drilling, ground foraging. Preferred feeding habitat: Lowlands (Williams 1975). Birds may seek food in areas outside of breeding habitat (such as cornfields) (Reller 1972).

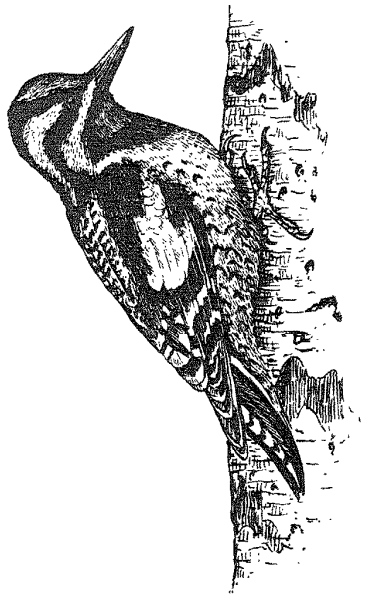
COMMENTS: Reller (1972) found that Red-bellied Woodpeckers favored dead limbs in living trees for nest sites—birds compete with starlings for cavities. Birds often store food in crevices for later use (Kilham 1963). Yeager (1955) noted that populations increased where flooding had killed trees.

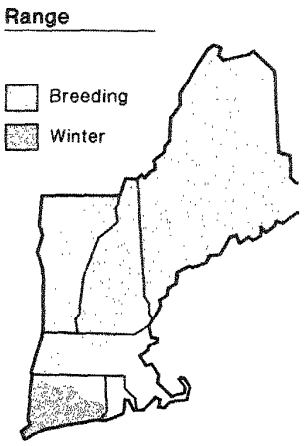
KEY REFERENCES: Bent 1939, Graber et al. 1977, Kilham 1963, Reller 1972.

Yellow-bellied Sapsucker

(Sphyrapicus varius)

A.O.U. No. 402.0





RANGE: Breeding: Newfoundland, w. to Alaska, s. to the mountains of Massachusetts, Virginia, Georgia, Missouri, and New Mexico. Winter: Southern New England w. to Kansas and s. British Columbia, s. to Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon (se. New York) to common (Maine).

HABITAT: Breeding: Mixed hardwood-conifer forests, especially near water and small clearings, woodlots, occasionally in orchards. Wintering: Floodplain forest and mature ornamental conifers.

SPECIAL HABITAT REQUIREMENTS: Trees with a d.b.h. of 10 inches (25.4 cm) or more are most suitable for nesting (Thomas et al. 1979).

NESTING: Egg dates: April 29 to June 19, New York (Bull 1974:358). Clutch size: 4 to 7, typically 5 or 6. Incubation period: 12 to 14 days. Nestling period: 24 to 26 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 8 to 40 feet (2.4 to 12.2 m) Nest site: Excavates a cavity in a dead or living tree with rotten heartwood. Nests in a variety of trees but prefers aspen when available (Lawrence 1967, Howell 1952). Favors trees infected with *Fomes* (Kilham 1971).

TERRITORY SIZE: Varies from immediate vicinity of nest to 150 yards (137.2 m) or more (Howell 1952).

HOME RANGE: 5.1 acres (2.1 ha) and 5.4 acres (2.2 ha) for 2 pairs in mature second-growth forest in Ontario (Lawrence 1967).

SAMPLE DENSITIES: Winter — 12 birds per 100 acres (40 ha) in bottomland forest in Illinois (Graber et al. 1977).

FORAGING: Major foods: Inner bark of trees, sap, insects (excluding wood-boring larvae), fruits and berries. Substrates: Smooth bark on trunks of small and large living trees and limbs of larger trees. Techniques: Drilling, hawking, probing.

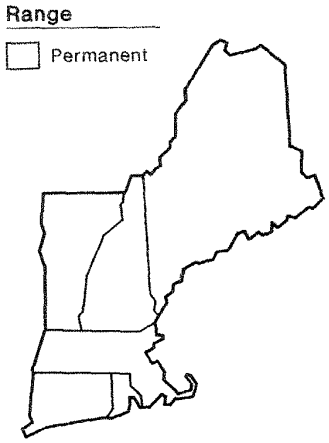
COMMENTS: Beal (1911 in Graber et al. 1977) found that the contents of 313 stomachs contained 49 percent animal and 51 percent vegetable matter. Poison ivy berries are an important winter food during prolonged subfreezing weather (Robbins, personal communication).

KEY REFERENCES: Bent 1939, Graber et al. 1977, Howell 1952, Kilham 1962, Lawrence 1967.

Downy Woodpecker

(Picoides pubescens)

A.O.U. No. 394.0



RANGE: Breeding: Newfoundland, w. to nw. Alaska, s. to Florida and New Mexico. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Interior and edges of open mixed woodlots and forests (prefers bottomlands), orchards, shade trees in towns, suburbs. Prefers habitat with living and dead medium-sized trees 10 to 22 inches (25.4 to 55.9 cm) d.b.h. Shugart et al. (1974) found a high correlation between downy distribution and sapling density, indicating that sapling removal may decrease downy habitat. Wintering: Bottomland forest, shrub habitat, upland areas with large trees, forest edges. Birds on high mountains move to lower elevations.

SPECIAL HABITAT REQUIREMENTS: Trees greater than 6 inches (15.2 cm) d.b.h. for nesting (Thomas et al. 1979).

NESTING: Egg dates: May 6 to June 30, New York (Bull 1974:359). Clutch size: 3 to 6, typically 4 or 5. Incubation period: 12 days. Nestling period: 20 to 22 days (post-fledgling care continues for 3 weeks) (Lawrence 1967). Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 3 to 50 feet (0.9 to 15.2 m), typically 20 feet (6.1 m). Nest site: Cavity in living or dead tree, in sound or rotting wood, stump, often on underside of limb. Conner and others (1975) found nests in trees 8 to 12 inches (20 to 30 cm) d.b.h. Prefers to nest in open woodlands in upper parts of dead trees (Scott et al. 1977). Cavity excavated for courtship activity and nesting. A separate cavity is excavated in fall for winter roosting (Harrison 1975). Often re-excavates same tree year after year (Hardin and Evans 1977).

TERRITORY SIZE: 1.3 to 3.1 acres (0.5 to 1.3 ha) (average 2.0 acres (0.8 ha)) for 9 pairs in mature lowland forest in Illinois (Calef 1953 in Graber et al. 1977).

HOME RANGE: 5 to 8 acres (2.0 to 3.2 ha) is estimated size for 2 pairs in second-growth forest in Ontario (Lawrence 1967).

SAMPLE DENSITIES: 36 birds per 100 acres (40 ha) in virgin floodplain forest in Illinois (Snyder et al. 1948). Maximum 13 pairs per 40 ha (100 acres) (Hardin and Evans 1977).

FORAGING: Major foods: Insects, especially wood-boring ants and beetle larvae. Substrates: Bark crevices, trunks and branches of living and dead trees, under loose bark. Techniques: Scaling, drilling, probing, gleaning, flight-gleaning, hawking. Preferred feeding habitat: Woodlands with elms and oaks. Downies generally feed on lower branches and trunk.

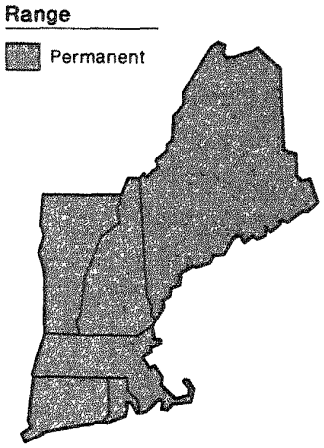
COMMENTS: Females tend to forage on small branches less than 5 cm (2 inches) in diameter; males tend to forage on trunks (Jackson 1970). Beal (1911 in Bent 1939) found 76 percent animal and 24 percent vegetable material in 723 stomachs.

KEY REFERENCES: Conner et al. 1975, Graber et al. 1977, Jackson 1970, Lawrence 1967.

Hairy Woodpecker

(Picoides villosus)

A.O.U. No. 393.0



RANGE: Breeding: Newfoundland, w. to Alaska, s. to Central America. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Open coniferous, deciduous and mixed woodlands with mature living and dead trees, wooded swamps. Prefers bottomland areas with large trees. Wintering: A shift to more residential habitat occurred in s. Illinois (Graber et al. 1977). Birds may move to more open country (Pough 1949).

SPECIAL HABITAT REQUIREMENTS: Trees with a d.b.h. of 10 inches (25.4 cm) or more are most suitable for nesting (Thomas et al. 1979).

NESTING: Egg dates: April 23 to May 19, New York (Bull 1974:359). Clutch size: 3 to 6, typically 4. Incubation period: 11 to 12 days. Nestling period: 28 to 30 days. Broods per year: 1 (north), 2 (south). Age at sexual maturity: 1 year. Nest height: 15 to 45 feet (4.6 to 13.7 m), typically 35 feet (10.7 m). Nest site: Cavity in living (often) or dead tree, in trunk or underside of large limb. Favors trees with decayed interiors. Conner and others (1975) found nests in trees with d.b.h. range of 12 to 18 inches (30.5 to 45.7 cm). Nests were in both dead trees and dead parts of living trees in sparsely to fully stocked stands.

TERRITORY SIZE: 6.5 acres (2.6 ha) (one territory) in mature upland forest in Illinois (Allison 1947 in Graber et al. 1977). 1.6 to 3.7 acres (0.6 to 1.5 ha) (average 2.6 acres, 1.1 ha) in mature bottomland in Illinois (Calef 1953 in Graber et al. 1977).

HOME RANGE: 6 to 8 acres (2.4 to 3.2 ha) (estimated minimum sizes of 2 ranges) in second growth forest in Ontario (Lawrence 1967).

SAMPLE DENSITIES: 17 to 24 birds per 100 acres (40 ha) in mature bottomland forest in Illinois (Calef 1953 in Graber et al. 1977). 4 birds per 100 acres (40 ha) in upland oak-hickory forest in Illinois (Franks and Martin 1967).

FORAGING: Major foods: Adults and larvae of beetles, ants and caterpillars are staples, but also eats fruits, nuts, corn. Substrates: Bark crevices of living and dead trees, trunks, branches, rotting stumps, under loose bark. Techniques: Gleaning, drilling, scaling.

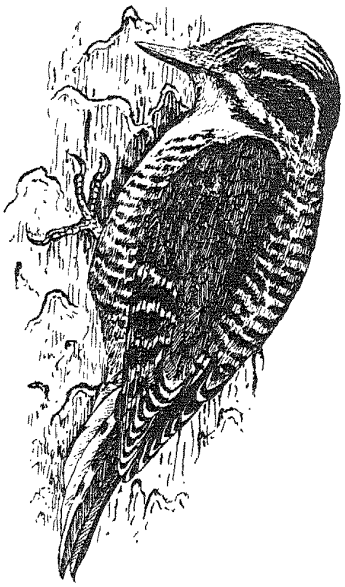
COMMENTS: Birds are highly sedentary and may remain on home range for life. Females tend to feed lower on different species of trees than males and forage by different technique (Kilham 1965, 1968a), a behavior that lessens competition.

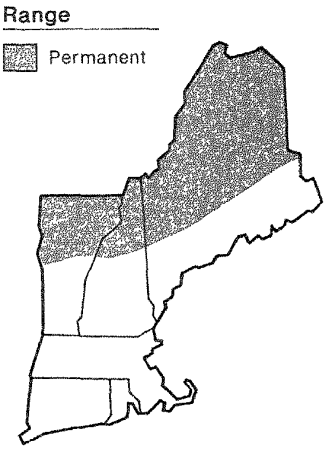
KEY REFERENCES: Bent 1939, Conner et al. 1975, Graber et al. 1977, Kilham 1960, Lawrence 1967.

Three-toed Woodpecker

(Picoides tridactylus)

A.O.U. No. 401.0





RANGE: Breeding: Northern edge of Canadian boreal forest s. to n. New England, Arizona, and New Mexico. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Rare.

HABITAT: Breeding: Coniferous forests, especially where fires have left large stands of dead timber. Also favors logged areas and swamps with scattered dead trees.

SPECIAL HABITAT REQUIREMENTS: Trees with a minimum d.b.h. of 12 inches (30.5 cm) for nesting (Thomas et al. 1979).

NESTING: Egg dates: May 14 to June 14, New York (Bull 1974:363). Clutch size: Typically 4. Incubation period: About 14 days. Broods per year: 1. Nest height: 5 to 12 feet (1.5 to 3.7 m), rarely to 40 feet (12.2 m). Nest site: A cavity in a living or dead tree, often in a burned stand. Loosely colonial in areas with abundant food.

FORAGING: Major foods: Wood-boring larvae of moths and beetles, cambium. Substrates: Trunks of trees (bark crevices). Short (1974) observed birds in New York feeding mainly in the upper parts of live conifers. Techniques: Probing bark, drilling.

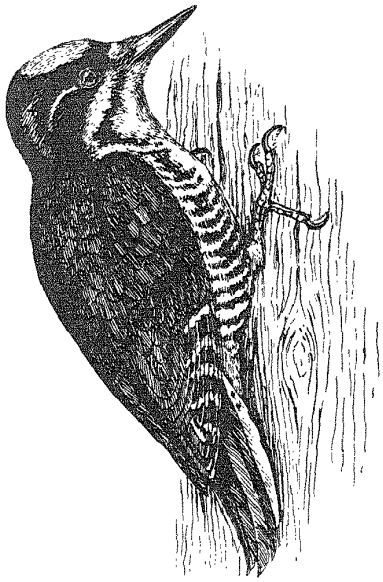
COMMENTS: Birds are sedentary, rarely leave home ranges. Seldom venture far from deep woods. Diet is greater than 90 percent animal matter and less than 10 percent vegetable matter. 75 percent of the animal portion consists of wood boring larvae (Bent 1939:118).

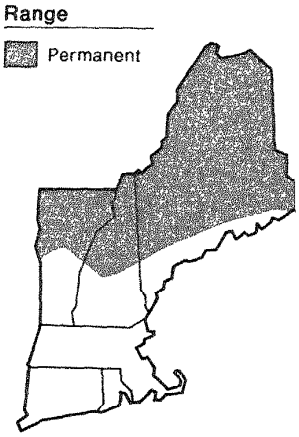
KEY REFERENCES: Bent 1939, Harrison 1975, Short 1974.

Black-backed Woodpecker

(Picoides arcticus)

A.O.U. No. 400.0





RANGE: Breeding: Newfoundland, w. to c. Alaska, s. to n. New England, nw. Wyoming and c. California. Winter: Same as breeding range, occurs irregularly s. to s. New England, Long Island, and n. New Jersey.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Coniferous forests, especially where burned or logged where swampy conditions predominate. Favors spruce-fir and larch. Also prefers large tracts of balsam fir killed by spruce-budworm. Wintering: Same as breeding habitat.

SPECIAL HABITAT REQUIREMENTS: Dead trees with loose bark for feeding. Trees with a minimum d.b.h. of 12 inches (30.5 cm) for nesting (Thomas et al. 1979).

NESTING: Egg dates: May 18 to June 12, New York (Bull 1974:360). Clutch size: 2 to 6, typically 4. Incubation period: About 14 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 2 to 15 feet (0.6 to 4.6 m). Usually excavates a new cavity each year as part of courtship activity, as well as for roosting. Nest site: Excavates a cavity in a living tree with a decayed interior or a dead tree or stub (often balsam fir). Sometimes used old utility poles. Birds in New York nested in small open areas with windfalls and dead trees (Bent 1939:106). Birds in New York almost invariably nested in dead trees (Bull 1974:361).

FORAGING: Major foods: Bark-boring beetle larvae and other insects, cambium. Substrates: Under loose bark, decayed heartwood, crevices in bark, lower parts of dead trees. Techniques: Probing bark, scaling off loose bark, drilling. Preferred feeding habitat: Beaver swamps and other places where there are recently killed trees with loose bark. Short (1974) observed black-backs feeding mainly in dead trees bordering a bog.

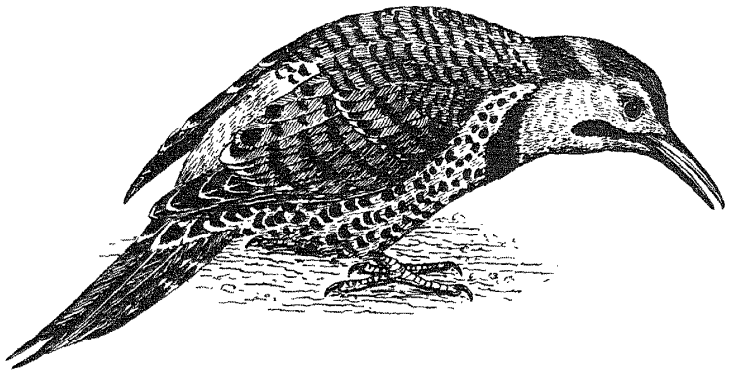
COMMENTS: Bark-boring beetle larvae account for 75 percent of the volume of animal food. The remaining 25 percent consists of other insects and spiders, and plant materials.

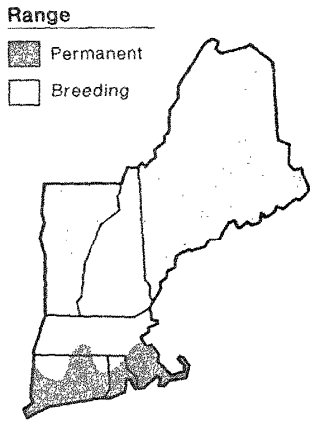
KEY REFERENCES: Bent 1939, England 1940, Harrison 1975, Short 1974.

Northern Flicker

(Colaptes auratus)

A.O.U. No. 412.0





RANGE: Breeding: Labrador w. to Alaska (northern tree limit) s. to Florida, the Gulf Coast, and Central America. Winter: Central New England, w. to South Dakota, s. to the Gulf Coast.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Open deciduous, coniferous, or mixed woods, woodland edges (preferred), suburbs, farm woodlots, clearcuts in dense forests, fields, meadows. Wintering: Occasionally seeks protection from cold in coniferous woods or swamps.

SPECIAL HABITAT REQUIREMENTS: Medium to large dead or dying trees for nesting. Open areas for foraging. Trees 12 inches (30.5 cm) d.b.h. or more are most suitable for nesting (Thomas et al. 1979).

NESTING: Egg dates: April 20 to June 19, New York (Bull 1974:351). Clutch size: 3 to 10, typically 6 to 8. Incubation period: 11 to 12 days. Nestling period: About 23 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 2 to 60 feet (0.6 to 18.3 m). Typically 10 to 30 feet (3.0 to 9.1 m). Nest site: Cavity often near top of medium to large tree that is usually dead or dying. Flickers accept bird houses with proper dimensions and often use old vacant woodpecker holes. Nests in forests are usually located in snags near recent clearcuts. Forest edges or groves bordering fields are preferred nest sites.

TERRITORY SIZE: 1.55 acres (0.6 ha) in Illinois (Calef 1953 in Graber et al. 1977). Territorial defense is limited to nest site during the incubation period. During this period, other Flickers may occupy original territory (Kilham 1973). Kilham (1973) observed 3 pairs on less than one acre (0.4 ha).

SAMPLE DENSITIES: Average 33.3 birds per 100 acres (40 ha) in second growth hardwoods in Illinois (Fawks 1937, 1938 in Graber et al. 1977). 13 birds per 100 acres (40 ha) in oak-hickory type in Illinois (Franks and Martin 1967). 19 pairs per 100 acres (40 ha) in white pine woodland on Nantucket Island (Dennis 1969).

FORAGING: Major foods: Ants (staple) and a variety of other insects, especially ground beetles, crickets, and grasshoppers. Also commonly takes wild fruits. Substrates: (surface and depths not exceeding the length of the bird's bill), leaf litter, short grasses, bark, under surface of bark. Techniques: Probing, gleaning. Preferred feeding habitat: Grassy areas such as lawns, pastures, openings in woods, cornfields (especially in winter).

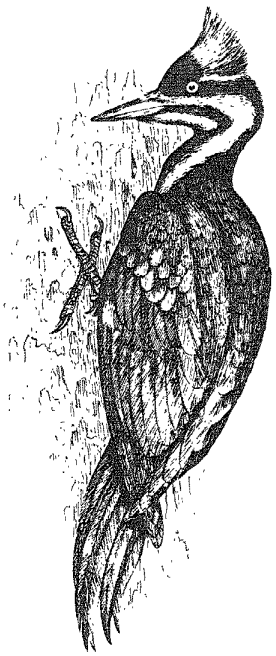
COMMENTS: Beal (1911 in Bent 1939:277) found that about 61 percent of the diet consisted of animal food and about 39 percent vegetable food. Ants represented about 75 percent of the volume of animal material.

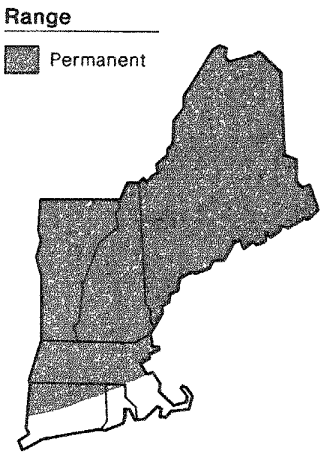
KEY REFERENCES: Bent 1939, Dennis 1969, Graber et al. 1977, Lawrence 1967.

Pileated Woodpecker

(Dryocopus pileatus)

A.O.U. No. 405.0





RANGE: Breeding: Southeastern Canada, nw. to Mackenzie district, Northwest Territories, s. to Florida and Texas. Winter: Same as breeding range.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon.

HABITAT: Breeding: Extensive second growth and mature coniferous, deciduous, or mixed forests, often in lowlands near rivers and wooded swamps; woodlots near farms and residential areas. Prefer areas with high basal area and high stem density (Conner et al. 1975). Wintering: Birds are permanent residents, generally remaining in breeding habitat year round (Hoyt 1941). Birds have recently been found breeding in city parks with large trees (Bull 1974:352).

SPECIAL HABITAT REQUIREMENTS: Mature forest with large dead or dying trees greater than 14.2 inches (36 cm) for nesting and feeding. Trees with heart rot that attract carpenter ants, a winter staple (Conner et al. 1975).

NESTING: Egg dates: April 22 to May 19, New York (Bull 1974:352). Clutch size: 3 to 4, typically 4. Incubation period: 18 days. Nestling period: 26 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 15 to 70 feet (4.6 to 21.3 m), typically 45 feet (13.7 m). Nest site: Cavity in trunk of dead or, less often, living tree; sometimes in large dead limbs, preferably near water. Conner and others (1975) found pileated nests in trees with a d.b.h. range of 13 to 35.8 inches (33 to 91 cm) (average 21.5 inches) 54.6 cm). They most often nested in trees 14.2 to 20.1 inches (36 to 51 cm) d.b.h. in oak-hickory woodland and favored trees with smooth trunks and fungal activity. Hoyt (1957) observed that they rarely reuse old nest holes.

SAMPLE DENSITIES: 3 birds per 100 acres (40 ha) in virgin bottomland forest in Illinois (Snyder et al. 1948). 3 birds per 100 acres (40 ha) in mature bottomland forest in Illinois (Graber et al. 1977). 0 to 0.5 birds per 100 acres (40 ha) in mature upland forest in Illinois (Graber et al. 1977). 1 pair per 1,643 acres (665 ha) in ponderosa pine, Douglas-fir, and larch habitat in Oregon (Bull 1975). Maximum 1 pair per 98.8 acres (40 ha) (Hardin and Evans 1977).

FORAGING: Major foods: Larvae and adults of many kinds of insects, especially ants, which account for more than 50 percent of the diet. Also eats wild fruits, acorns, beechnuts (Bent 1939:183). Substrates: Trunks, bark, branches, decayed heartwood of living and dead standing trees. Most feeding is done in decayed wood (Tanner 1942). Techniques: Drilling, gleaning. Preferred feeding habitat: Feeding is restricted to forest interiors and, less commonly, edges (Bent 1939:184).

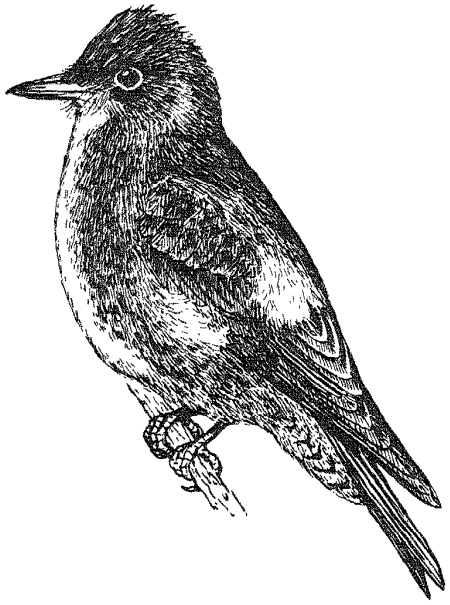
COMMENTS: Beal (1911 in Bent 1939:183) found that the contents of 80 stomachs contained 73 percent animal and 27 percent vegetable matter. The winter diet consists mainly of carpenter ants. Hoyt (1957) found that pileated woodpeckers have a feeding territory of 98.8 to 197.6 acres (40 to 60 ha).

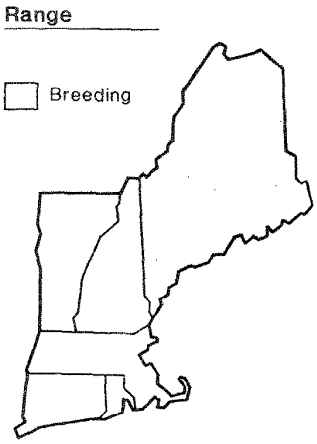
KEY REFERENCES: Bent 1939, Bull 1975, Conner et al. 1975, Graber et al. 1977, Hoyt 1957.

Olive-sided Flycatcher

(Contopus borealis)

A.O.U. No. 459.0





RANGE: Breeding: Newfoundland, w. to Alaska, s. in mountains to Pennsylvania, Wisconsin, Arizona, and s. California. Winter: South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Uncommon to rare.

HABITAT: Breeding: Coniferous (spruce) forests near edges and clearings, often along wooded streams and borders of northern bogs and muskegs, burned-over areas with a few dead trees for perches. Prefers to be near water.

NESTING: Egg dates: June 9 to June 27, New York (Bull 1974:378). Clutch size: 2 to 4, typically 3. Incubation period: 16 to 17 days. Nestling period: About 23 days. Broods per year: 1. Age at sexual maturity: 1 year. Nest height: 5 to 50 feet (2.1 to 15.2 m). Nest site: Usually well hidden on a horizontal branch high in a conifer, usually far out from the trunk.

TERRITORY SIZE: Breeding birds require an area of several acres (Harrison 1975:127).

FORAGING: Major foods: Insects, especially hymenopterans. Substrates: Air, surfaces of leaves. Techniques: Hawking, flight-gleaning.

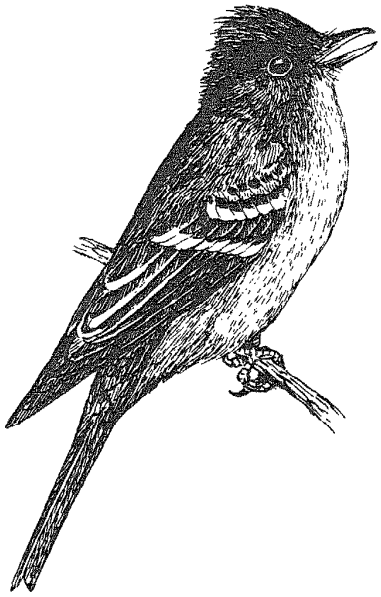
COMMENTS: Typically perches in tree tops and on high, exposed (often) dead limbs for hawking.

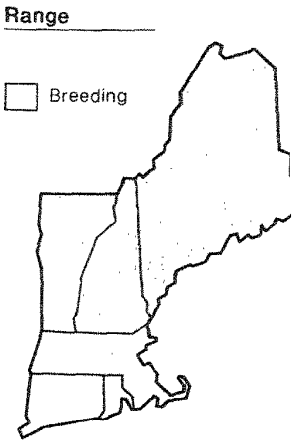
KEY REFERENCES: Bent 1942.

Eastern Wood-Pewee

(Contopus virens)

A.O.U. No. 461.0





RANGE: Breeding: Nova Scotia w. to s. Manitoba, s. to Florida and Texas. Winter: Central and South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Interiors and edges of deciduous and coniferous forests, bottomlands, uplands, farm woodlots, roadsides, parks. Seems to be strongly associated with oaks (Graber et al. 1974), but occurs in more northern forests as well. Probably requires predominance of hardwoods.

NESTING: Egg dates: May 30 to July 20, New York (Bull 1974:378). Clutch size: 2 to 4, typically 3. Incubation period: 12 to 13 days. Nestling period: 15 to 18 days. Broods per year: 1, possibly 2. Nest height: 9 to 65 feet (2.7 to 19.7 m), typically 25 feet (7.6 m). Nest site: Typically saddled on horizontal limb of tree usually far from trunk. Sometimes on dead limb of living tree.

TERRITORY SIZE: 1.4 to 3.1 acres (0.6 to 1.3 ha) in lowland forest in Illinois (Fawver 1947 and Calef 1953 in Graber et al. 1974).

HOME RANGE: 10.8 acres (4.4 ha) Odum and Kuenzler 1955).

SAMPLE DENSITIES: Maryland — 19 pairs per 100 acres (40 ha) in virgin hardwood forest. 7 pairs per 100 acres (40 ha) in unsprayed apple orchard. 6 pairs per 100 acres (40 ha) in upland oak forest. 5 pairs per 100 acres (40 ha) in pine-oak forest (Stewart and Robbins 1958:207).

FORAGING: Major foods: Insects. Substrates: leaf sur faces, air. Techniques: Hawking, flight-gleaning gleaning. Preferred feeding habitat: Woodland clear ings, edges of fields, marshes; generally feeds in mid t lower tree canopy.

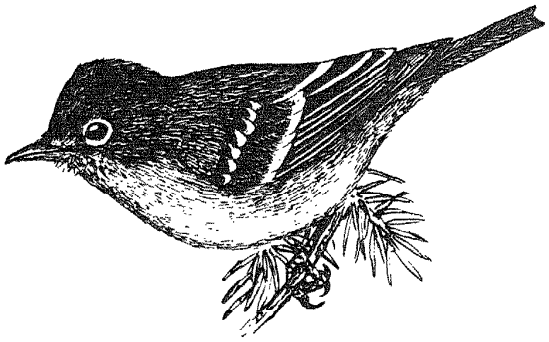
COMMENTS: Wood-Pewees occur in deciduous wood lands with relatively open understories. The nests ar usually associated with openings. They will nest in a for est with a dense understory if canopy above is incom plete or sparse.

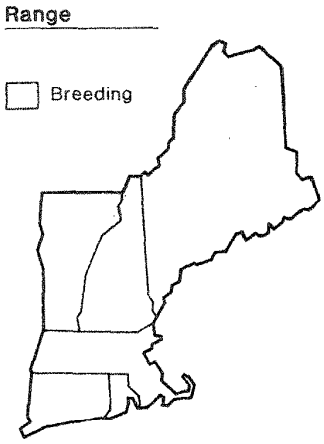
KEY REFERENCES: Bent 1942, Graber et al. 1974, Johnstor 1971.

Yellow-bellied Flycatcher

(Empidonax flaviventris)

A.O.U. No. 463.0





RANGE: Breeding: Newfoundland, w. to s. Mackenzie district, Northwest Territories, s. to n. New England, n. Pennsylvania (rarely) and c. Alberta. Winter: Mexico and Central America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common (Maine).

HABITAT: Breeding: Coniferous forests; low, wet, swampy thickets bordering ponds, streams and bogs, spruce and alder swamps, cool moist mountainsides.

SPECIAL HABITAT REQUIREMENTS: Coniferous forests, low wet areas.

NESTING: Egg dates: June 10 to June 27, New York (Bull 1974:371). Clutch size: 3 to 5, typically 3 or 4 (Harrison 1975:121). Incubation period: 15 days. Nestling period: 13 days. Age at sexual maturity: 1 year. Nest site: On or near the ground, sometimes at the base of a tree in a cavity formed by roots, but more often beside a hummock or mound and well hidden in sphagnum moss or other vegetation.

FORAGING: Major foods: Flying insects, fruits (occasionally). Substrate: Air. Technique: Hawking.

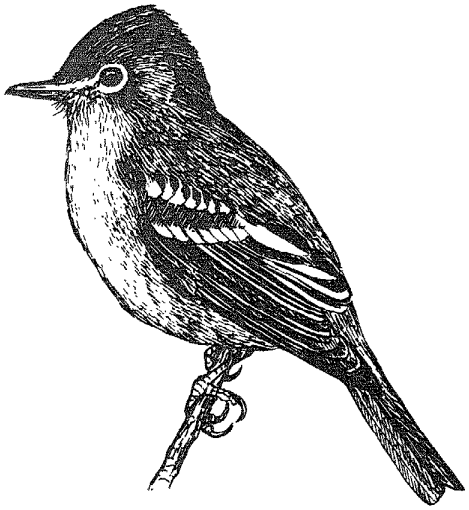
COMMENTS: Birds perch and feed close to ground. Food habit studies indicate a predominance of animal food (97 percent) over vegetable food (3 percent) (Beal 1912 in Bent 1942:178).

KEY REFERENCES: Bent 1942, Walkinshaw 1957.

Acadian Flycatcher

(Empidonax virescens)

A.O.U. No. 465.0



RANGE: Breeding: Most of e. North America, including ne. Pennsylvania, sw. and se. New York and casually to s. New England. Winter: Costa Rica to n. South America.

RELATIVE ABUNDANCE IN NEW ENGLAND: Common.

HABITAT: Breeding: Deciduous woodlands, shaded ravines, heavily wooded bottomlands, river swamps, hammocks of cypress ponds (Harrison 1975:122).

NESTING: Egg dates: April to July. Clutch size: Usually 2 to 4. Incubation period: 13 to 14 days. Nestling period: 13 to 15 days (Newman 1958). Broods per year: 1. Age at sexual maturity: 1. Nest height: 8 to 20 feet (2.4 to 6 m).

NEST SITE: Usually suspended in hammock-like structure from the fork of a branch frequently near water (Godfrey 1979:255). Nests are often far out from the truck and shaded (Harrison 1975:122).

FORAGING: Major foods: Moths, caterpillars, beetles, wasps, bees, and some wild berries (Terres 1980:381). Substrate: Air. Technique: Sallier.

KEY REFERENCES: Godfrey 1979, Harrison 1975, Mumford 1964.