

Bird Inventory of Carl Sandburg Home 2003-2004

Scott M. Pearson and Alan B. Smith

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INTRODUCTION

This document reports on the results of an inventory of breeding and winter birds at the Carl Sandburg National Historic Site conducted in the period of May 2003 – February 2005 by the authors. The purpose of this inventory was document bird species found in this park during these two seasons as part of the National Park Service Inventory and Monitoring program. Breeding season surveys were conducted using a point count method at locations used for inventories of vascular plants and other vertebrates. The winter surveys were designed to encounter as many wintering species as possible by visiting all habitat types of the park in a day-long effort. This report provides a brief summary of the resulting data which are provided in an electronic database along with the original hard-copy field datasheets.

METHODS

Breeding birds were censused using point counts centered on established vegetation plots within the park. Each point count was 10 min in duration, and the first detection of each species was noted as occurring within 0-3 min, 4-5 min, or 5-10 min segments of the count period. Estimated distance from the observer to the detected bird was recorded as being 0-25 m, 25-50 m, 50-100 m or >100 m. Plots were censused twice per year during 2003 and 2004 between the dates of May 10 – June 30. Consecutive counts at a point were at least two weeks apart. Counts were conducted in acceptable weather (no precipitation and light or no wind) between dawn and 10:15 am. Data were recorded in the field on datasheets provided by National Park Service Inventory and Monitoring program. In general, point count locations should be located at least 250 m apart. Points 6013 and 6004 were only about 70 m apart because vegetation plots were used for point count locations (Figure 1). Therefore, some double counting of individuals likely occurred at these points for individuals >50 m from the census point.

Species abundances at individual census points were calculated by taking the maximum number of individuals for a given species recorded within 100 m of the census point in a given breeding season. Total detections for each species were calculated by summing the species abundances, as defined above, over all census points over both breeding seasons. The metric of total detections is intended as a rough indicator of the relative abundance of each species in the park. Records from flyovers or detections before or after the 10-min count were not included in this analysis.

Wintering birds were surveyed using transect sampling and timed area searches in all primary habitats of the park. Two day-long inventories were conducted early- and mid-winter in each of the 2003-04 and 2004-05 winter seasons. Transects were oriented along trails, park roadways, across open habitats such as pastures or through woodlands between 8:00 am and 4:30 pm when birds were most active on cold days. Inventories were conducted on days with no precipitation and light to no wind. The beginning and ending time and locations were recorded on the datasheet (Figure 2) and using a Garmin 12 global positioning system (GPS) (Figure 3). While the detection distances varied with the density of vegetation along a given transect, detection probabilities of active individuals were typically high within 30 m of the observer in open habitats, 20 m in woodlands, and 10-15 m in shrubby habitats. Care was taken not double

count individuals on multiple transects. Each area of the park was surveyed only once during a single day-long inventory.

Habitats encountered along each winter transect were recorded on the winter datasheet. Habitat characteristics included the percent coverage of canopy deciduous forest, coniferous forest, sapling trees, heath shrubs, blackberry shrubs. The primary purpose of these categories was to provide information on the amount and vertical complexity of the habitat structure provided by these woody plants. In open habitats, we recorded the percent coverage of grasses that were <20 cm, 20-50 cm, 50-100 cm, and >100 cm tall. The coverage of fescue (*Festuca* spp.), as opposed to other grass species, was also estimated.

RESULTS and DISCUSSION

The inventory surveys detected 371 individuals of 53 species during the breeding season (Tables 1-2) point counts and 533 individuals of 40 species during the winter surveys (Table 3). The most common breeding birds were associated with edge (i.e., Northern Cardinal, Eastern Rufous-sided Towhee) or woodland habitats (Blue Jay, Scarlet Tanager, Hooded Warbler, Ovenbird). The census points with the greatest species diversity (6007, 6008, 6009, 6010) were found in and around the open areas in the northern one third of the park. These points recorded a mixture of birds associated with grassland, shrub, forest edge, and woodland habitats.

Three species recorded on the breeding counts, Cape May Warbler and Black-throated Blue Warbler and Swainson's Thrush, were encountered during first counts of the season that occurred during the late stages of the spring migration in May. These migrant species were not encountered on subsequent surveys; therefore, they should not be considered breeding species in this park.

The most abundant wintering species were associated with shrubby edge habitats (Song Sparrow, Rufous-sided Towhee), woodlands (Carolina Chickadee, Tufted Titmouse), or both (Dark-eyed Junco). Species abundances varied between years and were likely influenced by local and regional weather patterns. In particular, the count on January 31, 2004 occurred in cold weather following recent wet snow. There was 5-10 cm of snow with a hard icy crust in the woodlands and north-facing slopes that prevented foraging on the ground. Ground foraging birds were observed only in open areas on south-facing slopes where the snow had melted. The area having the greatest species richness and abundance of wintering birds was found along the stream corridor and around Side Lake in the pastures north of the Goat Barn. The mosaic of grasses, fruiting shrubs, trees, and water features of this area attracted many species of birds.

Database Description

The data are provided in a MS Access (2003) database which holds the results from the breeding season point counts and winter bird surveys. In addition to the information provided below, see comments provided in the field descriptions visible in Access' table Design View.

The breeding bird data are recorded in two tables: **CARL_Breed_plots** lists information about the locations used for point counts including UTM coordinates and ecological community type. **CARL_Point_Counts** contains the species recorded during each point count and their abundances. Moreover, these data indicate the distance category (i.e., 0-25 m, 25-50 m, 50-100 m, & >100 m) and time period (1-3 min, 3-5 min, 5-10 min) in which individuals were first detected as well as the count time and date. There is one record for each species for each point

count. The *Call* field, if checked 'yes', indicates that species was not engaged in territorial song and was detected visually or by call notes. The *Flyovers* field lists the number of individuals detected flying over the point and not on the ground during the count. The *Bef/Aft* lists individuals detected prior to or after but not during the 10-min count period.

Results of the winter surveys are contained in three tables: **CARL_Wint_plots** provides information on individual surveys. Each record in this table represents a single survey. Each record contains a unique *Plot_ID*, date, beginning and ending time, beginning and ending GPS waypoints, weather conditions, habitat information, and verbal description of areas surveyed within the park. The *Plot_ID* field links records in the three tables. **CARL_Wint_GPS** contains the geographic coordinates for locations at the beginning, end, and at intermediate locations along the survey route. These coordinates were obtained in the field using a GARMIN 12 global positioning system (GPS), a recreational grade GPS receiver typically accurate within ± 20 m. **CARL_Wint_birds** lists the bird species and their abundances recorded for each survey. The *Flyovers* field, if checked 'yes', indicates that these individuals were detected flying over the point and not on the ground or in vegetation during the count.

In both breeding season and winter data, species are identified using four-letter species codes from the North American Bird Banding Laboratory. See the **CodesBBL** table for a list of these codes and the species common names.

Management Implications

The avian diversity of this park depends on maintaining a mixture of woodland, shrub, edge, and open habitats. Woodland habitats cover most of the park property and include oak forests and mixed oak-pine that vary with respect to the density of evergreen shrubs and coniferous trees. These forests, grassland pastures, and water features are present in sufficient amounts to provide breeding territories and wintering sites for a variety of bird species. At this point in time, management to maintain the historical aspects of the Sandburg property seems consistent with providing a mix of habitats for birds. However, management activities that would enhance or reduce bird diversity are foreseeable. For example, reducing the amount of riparian trees or shrubs along edges and fence rows would reduce habitat availability for wintering birds in particular. Reducing the amount of fescue (*Festuca* spp.) and increasing the amount of native warm-season grasses in pastures would likely benefit grassland birds.

Table 1. Species richness and total abundance of breeding birds at census points. Species richness is the count of species detected at a point over two years of census effort. Species abundance was computed by summing species abundances all species detected at a given census point.

Census point	Species Richness	Abundance	Vegetation group¹
6001	13	14	Appalachian Montane Oak-Hickory Forests
6002	15	16	Appalachian Highlands Rock Outcrops
6003	11	15	Appalachian Highlands Rock Outcrops
6004	11	11	Appalachian Montane Oak-Hickory Forests
6005	6	8	Appalachian Highlands Xeric Oak Forests
6006	12	12	Appalachian Montane Oak-Hickory Forests
6007	19	20	Exotic Species Dominated Herbaceous Upland Vegetation
6008	17	22	Exotic Species Dominated Herbaceous Upland Vegetation
6009	21	24	Exotic Species Dominated Herbaceous Upland Vegetation
6010	19	21	Semi-natural Wooded Uplands
6011	15	15	Appalachian Highlands Upland Pine Forests
6012	14	14	Appalachian Montane Oak-Hickory Forests
6013	8	10	Appalachian Highlands Pitch and Table Mountain Pin
6014	11	11	Appalachian Highlands Hemlock-Hardwood Forests
6015	12	13	Appalachian Montane Oak-Hickory Forests

¹Vegetation grouping was provided by the NPS Inventory and Monitoring program based on vascular plant surveys.

Table 2. Total number of detections of breeding species. Detections were calculated summing abundances of a given species across all census points and over two breeding seasons. Species are listed in taxonomic order.

BBL Code¹	Detections	Common Name	Scientific Name
modo	10	Mourning Dove	<i>Zenaida macroura</i>
rtha	1	Red-tailed Hawk	<i>Buteo jamaicensis</i>
ybcu	2	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
hawo	2	Hairy Woodpecker	<i>Picoides villosus</i>
dowo	6	Downy Woodpecker	<i>Picoides pubescens</i>
piwo	6	Pileated Woodpecker	<i>Dryocopus pileatus</i>
rbwo	8	Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
ysfl	2	Northern “Yellow-shafted” Flicker	<i>Colaptes auratus</i>
eaki	2	Eastern Kingbird	<i>Tyrannus tyrannus</i>
gcfl	4	Great Crested Flycatcher	<i>Myiarchus crinitus</i>
eaph	2	Eastern Phoebe	<i>Sayornis phoebe</i>
acfl	1	Acadian Flycatcher	<i>Empidonax virescens</i>
blja	27	Blue Jay	<i>Cyanocitta cristata</i>
amcr	3	American Crow	<i>Corvus brachyrhynchos</i>
bhco	1	Brown-headed Cowbird	<i>Molothrus ater</i>
rwbl	11	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
oror	1	Orchard Oriole	<i>Icterus spurius</i>
cogr	3	Common Grackle	<i>Quiscalus quiscula</i>
amgo	2	American Goldfinch	<i>Carduelis tristis</i>
chsp	2	Chipping Sparrow	<i>Spizella passerina</i>
sosp	10	Song Sparrow	<i>Melospiza melodia</i>
eato	33	Eastern Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>
noca	20	Northern Cardinal	<i>Cardinalis cardinalis</i>
blgr	1	Blue Grosbeak	<i>Guiraca caerulea</i>
inbu	7	Indigo Bunting	<i>Passerina cyanea</i>
scta	14	Scarlet Tanager	<i>Piranga olivacea</i>
revi	9	Red-eyed Vireo	<i>Vireo olivaceus</i>
ythi	2	Yellow-throated Vireo	<i>Vireo flavifrons</i>
sovi	5	Solitary Vireo	<i>Vireo solitarius</i>
wevi	1	White-eyed Vireo	<i>Vireo griseus</i>
baww	3	Black-and-White Warbler	<i>Mniotilta varia</i>
wewa	3	Worm-eating Warbler	<i>Helmitheros vermivorus</i>
cmwa	1	Cape May Warbler	<i>Dendroica tigrina</i>
btbw	1	Black-throated Blue Warbler	<i>Dendroica caerulescens</i>
ytwa	4	Yellow-throated Warbler	<i>Dendroica dominica</i>
piwa	5	Pine Warbler	<i>Dendroica pinus</i>
oven	14	Ovenbird	<i>Seiurus aurocapillus</i>
howa	25	Hooded Warbler	<i>Wilsonia citrine</i>
cawa	1	Canada Warbler	<i>Wilsonia canadensis</i>
amre	4	American Redstart	<i>Setophaga ruticilla</i>
grca	2	Gray Catbird	<i>Dumetella carolinensis</i>
brth	7	Brown Thrasher	<i>Toxostoma rufum</i>
carw	14	Carolina Wren	<i>Thryothorus ludovicianus</i>

BBL Code¹	Detections	Common Name	Scientific Name
wbnu	3	White-breasted Nuthatch	<i>Sitta carolinensis</i>
etti	35	Eastern Tufted Titmouse	<i>Baeolophus bicolor</i>
cach	31	Carolina Chickadee	<i>Poecile carolinensis</i>
bggn	4	Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>
woth	8	Wood Thrush	<i>Hylocichla mustelina</i>
swth	3	Swainson's Thrush	<i>Catharus ustulatus</i>
amro	4	American Robin	<i>Turdus migratorius</i>
eabl	1	Eastern Bluebird	<i>Sialia sialis</i>

¹Four letter code used to denote species in database. Codes derived from Bird Banding Laboratory, USGS Patuxent Wildlife Research Center.

Table 3. Abundances of wintering species by season summed over all surveys in the park. Listed in taxonomic order.

Code	Species	2003-04	2004-05
mall	Mallard	7	2
cago	Canada Goose	11	5
gbhe	Great Blue Heron	1	0
modo	Mourning Dove	10	3
tuvu	Turkey Vulture	1	1
coha	Cooper's Hawk	0	1
rtha	Red-tailed Hawk	0	1
beki	Belted Kingfisher	1	1
hawo	Hairy Woodpecker	1	3
dowo	Downy Woodpecker	11	9
ybsa	Yellow-bellied Sapsucker	2	3
piwo	Pileated Woodpecker	8	3
rbwo	Red-bellied Woodpecker	3	5
ysfl	Northern "Yellow-shafted" Flicker	5	2
eaph	Eastern Phoebe	0	4
blja	Blue Jay	0	7
amcr	American Crow	11	4
hofi	House Finch	0	4
amgo	American Goldfinch	12	6
wtsp	White-throated Sparrow	15	5
scju	Dark-eyed "Slate-colored" Junco	0	37
sosp	Song Sparrow	19	40
swsp	Swamp Sparrow	1	1
fosp	Fox Sparrow	0	1
eato	Eastern Rufous-sided Towhee	5	20
noca	Northern Cardinal	13	14
mywa	Myrtle Warbler	9	1
nomo	Northern Mockingbird	2	2
brth	Brown Thrasher	2	0
carw	Carolina Wren	9	11
wiwr	Winter Wren	1	7
brcr	Brown Creeper	5	2
wbnu	White-breasted Nuthatch	6	11
etti	Eastern Tufted Titmouse	8	34
cach	Carolina Chickadee	13	29
gcki	Golden-crowned Kinglet	33	1
rcki	Ruby-crowned Kinglet	4	3
heth	Hermit Thrush	1	1
amro	American Robin	1	0
eabl	Eastern Bluebird	6	12
Species richness		33	37
Number of individuals		237	296

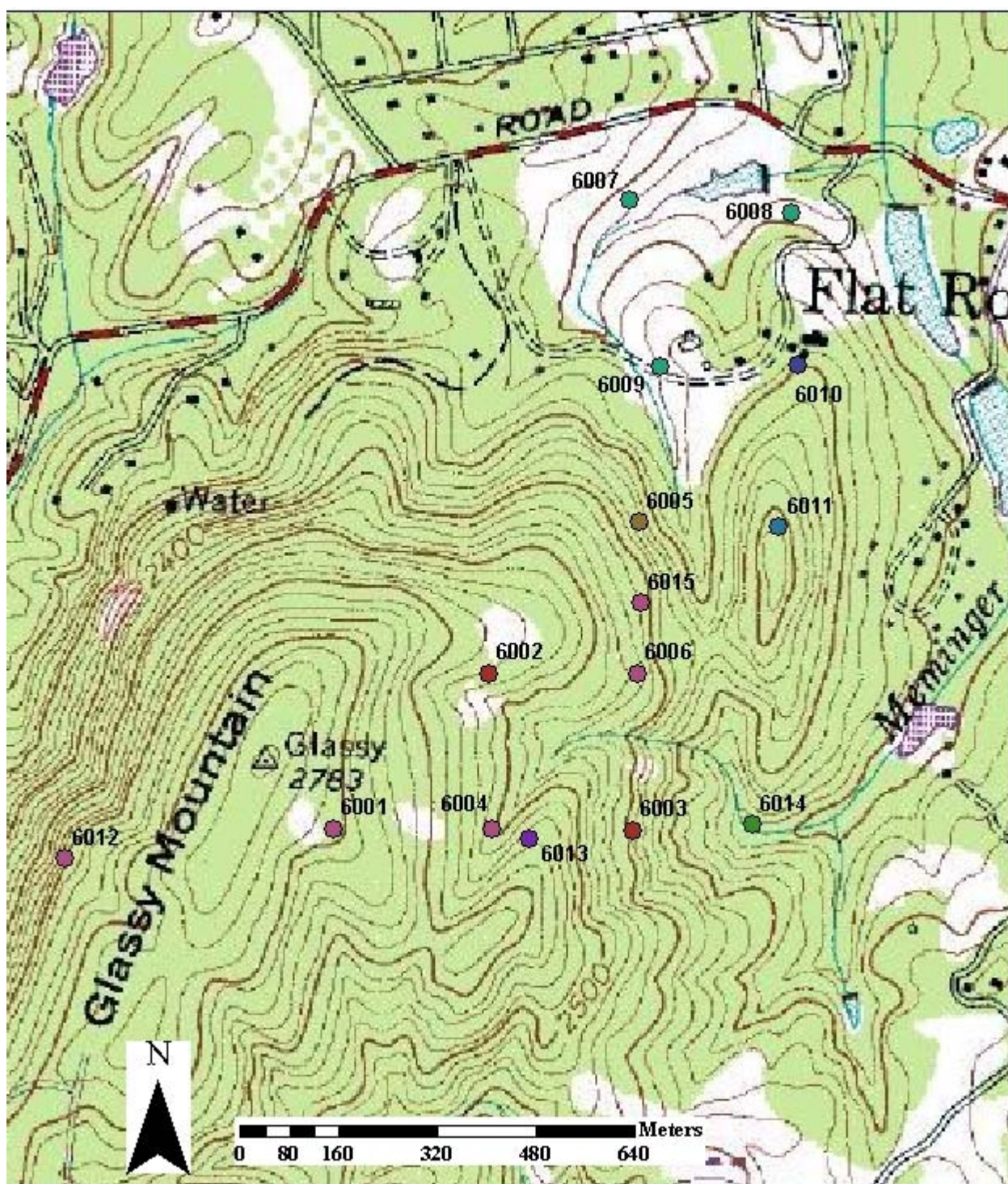


Figure 1. Locations of point counts for breeding bird inventory.

Winter Bird Surveys – NPS – A. B. Smith & S. M. Pearson			
Location: _____		Observer: _____	
Date: _____			
Temp: _____		Wind: _____	
Habitat(s): _____		Sky: _____	

Time	Waypoint	Bird Species (count):	
Begin: _____	Begin: _____		
End: _____	End: _____		
Transect _____			
Time Search _____			
Point Cnt _____			
Trail/Road _____			

Habitat Description: Notes:	<u>Percent Cover</u> Forest deciduous _____ conifer _____	Shrub heath _____ tree _____ blackberry _____	Grass (height) <20 cm _____ 20-50 cm _____ 50-100 cm _____ >1 m _____ Fescue _____
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Time	Waypoint	Bird Species (count):	
Begin: _____	Begin: _____		
End: _____	End: _____		
Transect _____			
Time Search _____			
Point Cnt _____			
Trail/Road _____			

Habitat Description: Notes:	<u>Percent Cover</u> Forest deciduous _____ conifer _____	Shrub heath _____ tree _____ blackberry _____	Grass (height) <20 cm _____ 20-50 cm _____ 50-100 cm _____ >1 m _____ Fescue _____
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Figure 2. Datasheet used for winter surveys.

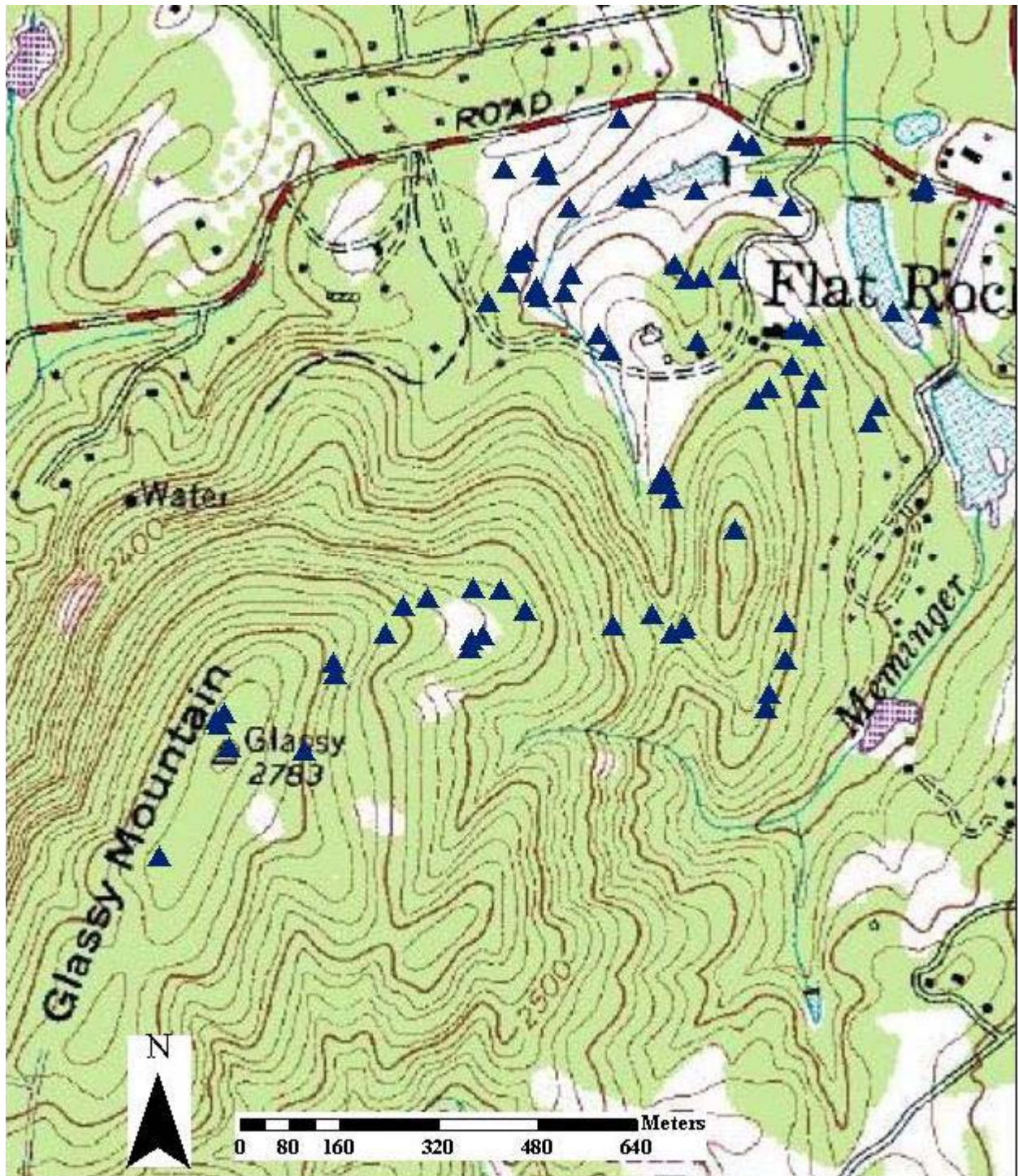


Figure 3. Waypoints showing locations of winter bird surveys. Coordinates for these waypoints are listed in the electronic database.