2004 Camera Trap Survey at Guthrie-Bancroft Parcel, Colby Hill, Lincoln, Vermont

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Introduction

For the first time in 2004 an automatic camera trap was used successfully at the Guthrie-Bancroft parcel to obtain images of wildlife from different localities. This adds another more visual, non-invasive survey technique, particularly for medium and large size mammals, to confirm data obtained from the track survey routes. Camera traps have come into more serious scientific use since about the mid 1990's (Sunquist 1997). Recently several international scientific journals have published articles based on camera trap results (Maffei et al., 2004, Silver et al. 2004, Súquin et al. 2003).

Materials and Methods

The camera employed is the standard film-based "Wildlife Pro Camera System" developed by Camtrakker (http://www.camtrakker.com/) and purchased through Forestry Suppliers, Inc. It uses a modified Yashica T4 point-and–shoot camera with a high quality Carl Zeiss Vario-Tessar T* 28-70mm, F 4.5-8.0 Zoom lens, although the lens is only used at the wide-angle (28 mm) end in order to fit into the waterproof housing. The camera has a built-in flash, which has a separate window in the weatherproof housing, a date or time imprint option and it runs on 4 C-cell batteries located in the housing. I used Fuji or Kodak 200 ASA 35mm color print film with 24 exposures. Camera trapping was started in May when nights were mostly frost-free. This year's survey was designed to test the capability of such a camera system in a number of locations which were subjectively considered "good spots" frequented by wildlife. At most locations a commercial lure (Fisher - *Martes pennanti* - paste) was used.

Results

Camera trapping lasted from 19 May until 11 November 2004. The camera was used at 14 different locations (see Appendix 1 and 3). Camera checks took place every 7-14 days. Eleven 24-exposure rolls of color print film were removed from the camera after

partial exposure, i.e. whenever the number of exposures appeared to exceed the number of test shots that were taken routinely upon arrival and departure from the camera trap. Twenty-one exposures were triggered by wildlife, 18 by mammals and 3 by birds (see photos, Appendix 2). Table 1 presents an overview of the number of photographs per species.

Common Name	Scientific Name	Order, Family	Number of Photographs
M a m m a l s			
Black Bear	*Ursus americanus*	Carnivora, Ursidae	9
Raccoon	*Procyon lotor*	Carnivora, Procyonidae	1
Coyote	*Canis latrans*	Carnivora, Canidae	1
Moose	*Alces alces*	Artiodactyla, Cervidae	5
East. Cottontail	*Sylvilagus floridanus*	Lagomorpha, Leporidae	1
Deer or White-footed Mouse	*Peromyscus* sp.	Rodentia, Muridae	1
B i r d s			
Wild Turkey	*Meleagris gallopavo*	Galliformes, Phasianidae	1
Ruffed Grouse	*Bonasa umbellus*	Galliformes, Phasianidae	1
White-breasted Nuthatch	*Sitta carolinensis*	Passeriformes, Sittidae	1

Table 1: Wildlife recorded by one camera trap moved between 14 locations at Guthrie–Bancroft parcel, Colby Hill, Lincoln, from 19 May and 11 November 2004.

Discussion

These first results from a single camera placed in more or less arbitrary locations at the Guthrie-Bancroft parcel attest to the capability and the amount of detail that can be obtained from automated photographic recording devices. Many photos show details that make it possible to identify individual animals if several camera traps were to be used in a more statistically rigorous design. Recently developed camera trapping techniques have even been used for making mark- recapture estimates of individually identifiable animals by using several cameras in a grid system (Carbone et al. 2001,

Silver et al. 2004). Long-term monitoring of three or four ecosystems with small mammal traps could easily be coupled with the simultaneous use of several (3+?) camera traps in future years. Other baits should also be tried based on recent experiences from a camera trap survey in Vermont's Northeast Kingdom, which used several more affordable types of camera traps with good results (L. Farrell and C. W. Kilpatrick pers. comm.). Bait type and camera position should be fine-tuned to capture more pictures of medium-sized mammals such as fisher, weasels, mink, skunk and porcupine.

Acknowledgments

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Appendix 1

2004 Camera Trap Locations at Guthrie-Bancroft Parcel with Coordinates, Ecosystems, and Wildlife photographed

Location Code	Period	Coordinate	Ecosystem	Bait	Results
CA01	19 May – 28 May	44°08'57.4"N, 73°01'05.3"W	ES 4	yes	Wild Turkey
CA02	28 May – 4 June	44°09'57.4"N, 73°01'05.6"W	ES4	yes	-
CA03	4 June – 12 Jun	44°08'58.2"N, 73°01'05.8"W	ES 4	yes	Black bear
CA04	12 Jun – 18 Jun	44°08'58.3"N, 73°01'04.2"W	ES 4	?	Black bear
CA05	18 Jun – 26 Jun	44°08'53.8"N, 73°01'07.0"W	ES 14	?	-
CA06	26 Jun – 6 Jul	44°08'55.6"N, 73°01'01.2"W	ES 14	yes	-
CA07	6 Jul – 20 Jul	44°08'56.1"N, 73°01'02.1"W	ES 4	yes	Coyote, Raccoon
CA08	20 Jul–11 Aug	44°09'08.6"N, 73°01'28.7"W	ES 20	yes	Black Bear, Moose, Ruffed Grouse
CA09	11 Aug – 27 Aug	44°09'09.9"N, 73°01'28.9"W	ES 2	yes	Black Bear, Eastern Cottontail
CA10	27 Aug – 18 Sept	44°09'08.5"N, 73°01'47.7"W	ES 10 (creek)	?	-
CA11	18 Sep – 8 Oct	44°09'08.3"N, 73°01'45.9"W	ES 10 (creek)	yes	-
CA12	8 Oct – 22 Oct	44°09'11.0"N, 73°01'23.0"W	ES 12 (Amer. Chestnut)	yes	-
CA13	22 Oct – 11 Nov	44°09'11.2"N, 73°01'14.4"W	ES 21/14 (Stone wall)	yes	*Peromyscus* sp., White-breasted Nuthatch

Appendix 2

Camera Trap Images

1. Mammals

Fig. 1. *Ursus americanus* (American Black Bear)
Date: 8 Jun 2004   Location Code: 04CA03
GPS: 44°08'57.5"N, 73°01'08.1"W, ES 14

Fig. 2 *Ursus americanus* (American Black Bear)
Date: 14 Jun 2004   Location Code: 04CA04
GPS: 44°08'58.3"N, 73°01'04.2"W, ES 14

Fig. 3 *Ursus americanus* (Black Bear)
Date: 20 July 2004   Location Code: 04CA08
GPS: 44°09'08.6"N, 73°01'28.7"W Habitat: Edge of Beaver Pond, ES 20

Fig 4 *Ursus americanus* (Black Bear)
        Date: 20 July 2004   Location Code: 04CA08
        GPS: 44°09'08.6"N, 73°01'28.7"W Habitat: Edge of Beaver Pond, ES 20

Fig. 5 *Ursus americanus* (Black Bear)
        Date: 31 July 2004   Location Code: 04CA08
        GPS: 44°09'08.6"N, 73°01'28.7"W Habitat: Edge of Beaver Pond, ES 20

Fig. 6 *Ursus americanus* (Black Bear)
Date: 17 Aug 2004   Location Code: 04CA09
GPS: 44°09'09.9"N, 73°01'28.9"W Habitat: West Side of Beaver Pond, ES 2

Fig. 7 *Canis latrans* (Coyote)
Date: 9 July 2004   Location Code: 04CA07
GPS: 44°08'56.1"N, 73°01'02.1"W Habitat: ES 4, Old Logging Road

Fig. 8 *Procyon lotor* (Raccoon)
Date: 13 July 2004   Location Code: 04CA07.
GPS: 44°08'56.1"N, 73°01'02.1"W   Old Logging Road, ES 4

Fig. 9 *Alces alces* (Moose)
Date: 20 July 2004   Location Code: 04CA08
GPS: 44°09'08.6"N, 73°01'28.7"W Habitat: Edge of Beaver Pond, ES 20

Fig. 10 *Alces alces* (Moose)
Date: 21 July 2004   Location Code: 04CA08
GPS: 44°09'08.6''N, 73°01'28.7''W   Edge of Beaver Pond, ES 20

Fig 11 *Alces alces* (Moose)
Date: 21 July 2004   Location Code: 04CA08
GPS: 44°09'08.6''N, 73°01'28.7''W Habitat: Edge of Beaver Pond, ES 20

Fig. 12 a *Alces alces* (Moose)
Date: 21 July 2004   Location Code: 04CA08
GPS: 44°09'08.6"N, 73°01'28.7"W Edge of Beaver Pond, ES 20

Fig. 12 b *Alces alces* (Moose)   Same as above, showing detail with sores and gun (arrow) shot scar (behind leaves).

Fig. 13 *Alces alces* (Moose)
Date: 21 July 2004   Location Code: 04CA08
GPS: 44°09'08.6"N, 73°01'28.7"W Edge of Beaver Pond, ES 20

Fig. 14 *Sylvilagus floridanus* (Eastern Cottontail)
Date: 16 Aug 2004   Location Code: 04CA09
GPS: 44°09'09.9"N, 73°01'28.9"W West Side of Beaver Pond, ES2

Fig. 15   *Peromyscus* sp. (Deer our White-footed Mouse)
        Date: 24 Oct 2004   Location Code: 04CA14
        GPS: 44°09'11.2"N, 73°01'14.4"W
        Hedgerow / Stonewall dividing large meadow, ES 14 / ES 21

2. Birds

Fig. 16. *Meleagris gallopavo* (Wild Turkey)
Date: 20 May 2004   Location Code: 04CA01
GPS: 44°08'57.4"N, 73°01'05.3"W, ES 14

Fig. 17. *Bonasus umbellus* (Ruffed Grouse)
Date: 11 Aug 2004   Location Code: 04CA08
GPS: 44°09'08.6"N, 73°01'28.7"W Edge of Beaver Pond, ES 20

Fig. 18 White-breasted Nuthatch *(Sitta carolinensis)*
Location Code: 04CA13   GPS: 44°09'11.2"N, 73°01'14.4"W
Hedgerow / stonewall dividing large meadow ES 14 / ES 21

Fig. 19 Mammalogist *(Homo sapiens scientificensis)* testing camera trap. Invasive
species. Location Code: 04CA04   18 June 04
GPS: 44°08'53.8"N, 73°01'07.0"W , ES 14