

Survey of Caledon Natural Area State Park

David A. Perry
316 Taylor Ridge Way
Palmyra, VA 22963

Introduction

Caledon Natural Area was originally established as Caledon plantation in 1659 by the Alexander family, founders of the city of Alexandria, Virginia. It remained in private hands until it was donated to the Commonwealth in 1974 by Mrs. Ann Hopewell Smoot. In 1981, the Caledon Task Force was appointed by Governor Robb to develop a management plan for Caledon to help protect the summering bald eagle population. A no-boating zone along the Potomac shoreline, limited public access trails and buffer zones were created to help protect bald eagle habitat. These limits have remained basically in place through August 2012, with some amendments. With the delisting of the bald eagle as an endangered species, plans were developed and approved on April 25, 2012 to expand public access at Caledon. Most likely these plans will be initiated in 2013.

Located in King George County, Caledon Natural Area is approximately 37 km (23 miles) east of Fredericksburg and about 97 km (60 miles) northwest of the confluence of the Potomac River and Chesapeake Bay. Within the park boundaries are a total of 1,044 hectares (2,579 acres) of diverse habitat; 953 hectares (2,355 acres) are forested (majority are mixed hardwood with some isolated softwood stands), 10.1 hectares (25 acres) are in old fields, 26.3 hectares (65 acres) are ponds and streams, 28.3 hectares (70 acres) are marshes, 6.1 hectares (15 acres) in Potomac shore and beach and 19.4 hectares (48 acres) are considered the original home site. Some of the marsh and pond areas were dry on 18 August, 2012, the day of the survey. The forested areas had many downed trees and logs, and the ground level was often dominated by the invasive plant species *Microstegium vimineum* (Japanese stiltgrass).

The Virginia Herpetological Society chose Caledon Natural Area because it had not previously been surveyed by the VHS, it provides a diversity of wildlife habitat with limited human imprint, and is located in King George County which has a plethora of likely but undocumented amphibian and reptile species. We had 20 volunteers on 18 August 2012 organized into four teams to survey four of the five habitat zones within the park. Mid-August was chosen for the survey because several VHS spring surveys were already scheduled and the potential for finding juvenile specimens was more likely at this time of year.

Survey Sites

The following were general descriptions of the survey sites. Coordinates were either taken from the published Caledon State Park map or were specific GPS coordinates provided by the survey team leaders. No GPS readings or map coordinates were available for Zone 5.

Zone 1-Area 1- Jones Pond and Loop (38°21.5932, -77°08.6431)

This area included Jones Pond, a freshwater impoundment adjacent to Potomac shoreline and beach and a loop trail through mixed woodlands and dry marsh, west of the pond. The pond water level was mostly low, but dry in the southwesterly portion. A wooded area lined the edge of the dry portion of the pond bed.

Zone 1 -Area 2-Crotank Creek (38°21.2291, -77°03.4906)

This area was wetland/stream habitat with typical wetland/marsh vegetation of reeds and tall grass.

Zone 2-Area 1- Boyd's Hole (38°21.5932, -77°08.6044)

This area was primarily Potomac shoreline and beach and adjacent trails into mostly upland mixed hardwood stands of *Quercus phellos* (willow oaks), *Quercus alba* (white oaks), *Liriodendron tulipifera* (tulip poplar), *Cornus* (dogwood), *Liquidambar styraciflua* (sweet gum) and *Ilex opaca* (American holly). Ground vegetation included Japanese stiltgrass. Within the woods were some low and moist areas.

Zone 2-Area 2- Triangle Field (38°20.3730, -77°09.4030)

This area was an old field and meadow bordered by woods consisting of some *Pinus taeda* (Loblolly Pine) and *Pinus virginiana* (Virginia pines) and hardwoods such as *Fagus sylvatica* (Common beech), *Quercus* (oaks), *Acer rubrum* (red maple) and American holly. Ground vegetation included *Mitchella repens* (partridge berry) and *Galutheria procumbens* (wintergreen). A low spot in the woods contained an intermittent stream with puddles of water.

Zone 3- Loop Trails (First Trail -Fern Hollow) (38°20.0370, -77°08.5820)

This area consisted of 11.43 km (7.1 miles) of 6 interconnected trails through mixed hardwood forest. The trails became slightly more elevated moving east. The other 5 trails and their coordinates were identified in the Caledon State Park map, which was available on the Caledon website.

Zone 4- Caledon Marsh (38°20.4073, -77°09.4182)

This area was a relatively deep brackish water marsh directly affected by Potomac River tidal flow. The marsh boundary contained deep stands of tall reeds.

Zone 5-Area 1 Mount Stuart

This hardwood forest area contained tulip poplar, oak, sweet gum stands and had steep ravines that contained a couple of intermittent streams which were dry but with puddles in a few locations. The forest floor was littered with logs and downed trees. Japanese stiltgrass was the predominant ground cover.

Zone 5- Beaver Pond

This area was mixed hardwood forest which contained a freshwater beaver pond fed by an intermittent stream. The intermittent stream was dry but the beaver dam was intact and the pond was full. The pond contained many downed logs and dead trees (both standing and down) and the pond bordered tall grasses, shrubs and other marsh vegetation.

Materials and Methods

Twenty volunteers participated in the survey for five hours (from 09:00 to 14:00) in the field on 18 August 2012 for a total of about 100 man hours. Due to the large acreage and diverse habitat to be surveyed, four teams were organized to survey four of the five habitat zones within the park. The first team consisted of five people and was tasked to survey Zone 1. The second team included four people who surveyed Zone 2. The third team surveyed Zone 3 with nine people. Zone 5 was considered the steepest and most strenuous area and was surveyed by two people. On 17 August 2012, two turtle traps were positioned within Caledon Marsh (the habitat Zone 4 that was not surveyed) and one turtle trap was positioned in Jones Pond. Ten people stayed for an extra hour (from 15:00 to 16:00) to observe the pulling of turtle traps from Jones Pond and Caledon Marsh. Throughout the day, the skies were mostly sunny with light winds and temperatures ranged from 22.2°C (72°F) to about 29.4°C (85°F).

Caledon Natural Area State Park Survey

Table 1 provides the amount of survey effort for each Zone. Survey participants used multiple collecting methods to find amphibians and reptiles, including visual observation, listening for calling anurans, hand capture, and over-turning objects with the use of snake hooks and field sticks. All captured animals were observed to identify possible malformations, injuries or disease and other unique markings and characteristics. Digital photos were taken of many of the captured animals including specimens of all of the King George County records identified. Survey group leaders summarized and submitted all relevant data on VHS survey group data sheets. Group leaders for survey Zones 1 & 3 also recorded specific GPS coordinates for many of the animals captured or observed within their survey zone. This information has been tabulated and will be included in the final report for park personnel.

Table 1-Effort per Survey Zone

Caledon	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
No. of people	5	4	9	Traps Only (2)	2
Hours surveyed	5	5	5	0.5	4.5
Man-hours expended	25	20	45	1	9

Results

During the survey a total of 22 species were captured or positively observed, including 11 each from the Class Amphibia and Reptilia. The survey produced a total of 8 frog, 3 salamander, 4 lizard, 3 turtle and 4 snake species. More than 143 individual animals were positively identified. In addition 8 King George County records were documented and digitally photographed. Frogs dominated the list of animals captured or observed with more than 111 animals positively identified. In addition, many toads were captured but could not be positively identified to species, also an abundance of frogs were observed but could not be captured for positive identification. Table 2 summarizes the survey results; King George County records are denoted with an asterisk. Most of the county records (7) are of species with wide distribution in Virginia.

Table 2. Results of the Caledon Natural Area State Park. (Site 1A=Jones Pond, Site 1B=Crotank Creek, Site 2A=Boyd's Hole, Site 2B=Triangle, Site 3=Five Loop Trail, Site 5A=Mount Stuart, Site 5B=Beaver Pond). *Indicates new King George County records.

Site/Species	1A	1B	2A	2B	3	5A	5B	Sub-Total
Class Amphibia								
* <i>Lithobates sphenoccephalus</i>		>3	20		15			>38
<i>Acris crepitans</i>	>4	>3	>20	>10	2		1	>40
<i>Pseudacris crucifer</i>					1	1		2
<i>Lithobates palustris</i>					2			2
<i>Lithobates clamitans</i>		>4	2		1		4	>11
<i>Lithobates catesbeianus</i>		>3					>2	>5

<i>Anaxyrus americanus</i>			1		6	1		8
* <i>Notophthalmus viridescens</i>			1				1	2
<i>Desmognathus fuscus</i>				2 larvae	2			4
<i>Ambystoma maculatum</i>			2					2
* <i>Hyla cinerea</i>					3			3
Sub-Total	>4	>13	>46	>14	32	2	>8	>117
Class Reptilia								
<i>Sceloporus undulatus</i>							1	1
* <i>Plestiodon laticeps</i>				1				1
<i>Plestiodon fasciatus</i>	1	1	1	1	4		1	9
* <i>Scincella lateralis</i>			1					1
<i>Terrapene carolina</i>					2			2
* <i>Kinosternon subrubrum</i>	1 (shell)							1
* <i>Chelydra serpentina</i>	1							1
<i>Carphophis amoenus</i>					2			2
* <i>Coluber constrictor</i>		1	1					2
<i>Pantherophis alleghaniensis</i>	1	1						2
<i>Nerodia sipedon sipedon</i>	1	1					2	4
Sub-Total	5	4	3	2	8		4	26

Annotated Check List Amphibians

1. *Lithobates sphenoccephalus utricularius** (Southern Leopard Frog)

At least 38 Southern Leopard Frogs were observed in Zones 1, 2 and 3. Most were adults and were observed in marsh/wetland environments and in low damp wooded areas. Many were jumping prior to capture. Digital photos were deposited in the VHS Archive (#244) to document this record.

2. *Acris crepitans* (Eastern Cricket Frog)

At least 40 Eastern Cricket frogs were observed with at least one specimen within each of the zones surveyed. Many were found in grass near wetlands and within marshy areas. One specimen in Zone 5 was captured near a dry streambed. Most were actively jumping.

3. *Pseudacris crucifer* (Spring Peeper)

Two adult individuals were identified. The specimens in both Zone 3 and 5 were captured while jumping among tall plants in marshy areas.

4. *Lithobates palustris* (Pickerel Frog) Two adult specimens were observed in Zone 3 jumping in marsh drainage areas. An abundance of anurans were observed jumping from tall grasses into the beaver pond in Zone 5 but capture and positive ID could not be established between *Lithobates sphenoccephala* or *Lithobates palustris*.

Caledon Natural Area State Park Survey

5. *Lithobates clamitans* (Green Frog) More than 13 specimens were identified, all of which were adults. At least one individual was found in each of the four zones surveyed. Four were sitting on logs and in the beaver pond in Zone 5 and at least one of these could be heard calling. Individuals identified in Zones 1, 2 & 3 were in marshy wet areas.

6. *Lithobates catesbeianus* (American Bullfrog) More than 3 American Bullfrogs were identified within the marshy areas along Crotank Creek in Zone 1. Two adult specimens were observed at the water's edge of the beaver pond in Zone 5 and one of these could also be heard calling.

7. *Hyla cinerea** (Green Treefrog)

Three adult Green Tree frogs were identified in Zone 3 sitting on the stalks of tall plants in a marsh drainage area. A Digital photograph was deposited in the VHS Archive (#242) to document this record.

8. *Anaxyrus americanus americanus* (Eastern American Toad)

One young adult Eastern American Toad was found in Zone 2 hopping alongside a wooded edge next to a road. Three young adults and 3 mature adults were found in Zone 3 in and alongside mixed hardwoods. One juvenile was found in Zone 5 alongside a dry streambed. All were active and jumping/hopping.

9. *Notophthalmus viridescens viridescens** (Red Spotted Newt)

One red eft was captured in Zone 5 while wriggling out of a hole in a log near a dry stream bed that fed the beaver pond in Zone 5. A young adult in Zone 2 was found resting under a log in a moist wooded area. Digital photographs were taken of both the eft and the young adult. A digital photograph was deposited in the VHS Archive (#243) to document this record.

10. *Desmognathus fuscus* (Northern Dusky Salamander) Two clutches of larvae were observed in the water in the Triangle Field area and a sample of one of the clutches was taken for positive identification. Two young adults were found in the water in a marshy area within Zone 3.

11. *Ambystoma maculatum* (Spotted Salamander)

One sub-adult and one adult Spotted Salamander were found resting under logs in the woods at the edge of the woods in Zone 2.

Reptiles

12. *Sceloporus undulates* (Eastern Fence Lizard)

One adult Eastern Fence Lizard was found just north of the beaver dam in Zone 5 resting on a tree stump.

13. *Plestiodon laticeps** (Broad-Headed Skink)

One adult female Broad-Headed Skink was identified in Zone 3 running and basking within a marshy area within the woods. It appeared that the skink had mites or chiggers. A digital photograph was deposited in the VHS Archive (#241) to document this record.

14. *Plestiodon fasciatus* (Common Five Lined Skink)

Nine Common Five Lined Skinks were found with at least 1 specimen within each survey zone. Two adults in Zone 1 were found basking on dead/rotten trees. Two young adults were found basking/running on oak trees. Of the 4 found in Zone 3, three juveniles were found hiding under log/tree bark. The adult observed in Zone 5 was basking on a stump at the beaver pond edge and missing its tail.

15. *Scincella lateralis** (Little Brown Skink)

A young adult Little Brown Skink was located resting under a log and leaf litter in Zone 2. A digital photograph was deposited in the VHS Archive (#245) to document this record.

16. *Terrapene carolina carolina* (Eastern Box Turtle)

Two adult Eastern Box Turtles were found in Zone 3. Both were out of their shells with one resting next to a dead tree and the other resting next to a log.

17. *Kinosternon subrubrum subrubrum** (Eastern Mud Turtle)

The shell of an Eastern Mud Turtle was found in Zone 1 in the vicinity of Jones Pond. A digital photograph was deposited in the VHS Archive (#249) to document this record.

18. *Chelydra serpentina** (Snapping Turtle)

A young adult Snapping Turtle was caught in the turtle trap positioned in about 0.5 m (1.5 feet) of muddy water at the eastern end of Jones Pond. The turtle was missing its right eye but appeared healthy otherwise. A digital photograph was deposited in the VHS Archive (#225) to document this record.

19. *Carphophis amoenus amoenus* (Eastern Wormsnake)

Two adult Eastern Wormsnakes were found in Zone 3. One was found hiding under a log in an upland wooded area and the other under a log near a marsh.

20. *Coluber constrictor constrictor** (Northern Black Racer)

A large adult Northern Black Racer was identified moving in high grass near a marsh in Zone 1. Another adult Northern Black Racer was found basking in a small open patch within a wooded area of Zone 2. A digital photograph was taken of the Zone 2 specimen and deposited in the VHS Archive (#246) to document this record.

21. *Pantherophis alleghaniensis* (Eastern Ratsnake)

One adult Eastern Ratsnake was found basking on the gravel road near a gazebo and where the survey cars were parked near Jones Pond. A juvenile Eastern Ratsnake was found in Crotank Creek wetland area on a tree by the road.

22. *Nerodia sipedon sipedon* (Common Watersnake)

One adult common watersnake was found resting on a log alongside Jones Pond. Another adult was identified in the marsh area near Crotank Creek. One adult and one young adult (clear pattern) were found near the beaver dam in the vegetation on the banks of the Beaver Pond.

Discussion

On the single day survey of Caledon Natural Area, the VHS found more than 143 specimens representing 22 species (Table 2). There were 11 species of amphibians (8 anurans and 3 salamanders) and 11 species of reptiles (3 turtles, 4 lizards and 4 snakes).

Of the species observed on the Caledon survey, eight represented King George County records: *Lithobates sphenoccephalus utricularius*, *Hyla cinerea*, *Notophthalmus viridescens viridescens*, *Plestiodon laticeps*, *Scincella lateralis*, *Kinosternon subrubrum subrubrum*, *Chelydra serpentina* and *Coluber constrictor constrictor*. Despite the fact that they were not previously documented for King George County, some of these county records are found widely distributed throughout Virginia and could be expected in most surveys

Caledon Natural Area State Park Survey

(Mitchell and Reay, 1999). These widespread species would include: *Notophthalmus viridescens viridescens*, *Chelydra serpentina* and *Coluber constrictor constrictor*. *Lithobates sphenoccephalus utricularis* is abundant and *Scincella lateralis*, *Kinosternon subrubrum subrubrum* and *Hyla cinerea* are common in the coastal plain and eastern Virginia. *Plestiodon laticeps* has a spotty distribution statewide.

Other species found during the survey which have widespread distribution statewide include: *Acris crepitans*, *Pseudacris crucifer*, *Lithobates palustris*, *Lithobates clamitans melanota*, *Lithobates catesbeianus*, *Anaxyrus americanus americanus*, *Desmognathus fuscus*, *Ambystoma maculatum*, *Sceloporus undulates*, *Plestiodon fasciatus*, *Terrapene carolina carolina*, *Carphophis amoenus amoenus*, *Pantherophis alleghaniensis* and *Nerodia sipedon sipedon*.

Anurans are abundant within Caledon Natural Area. More than 111 of the positively identified specimens were anurans and many others were sighted that could not be captured or positively identified. Healthy populations were encountered in all of the wet environments within all of the zones surveyed. Two of the anuran species documented in King George County, i.e. *Hyla chrysoscelis* (Cope's Gray Treefrog) and *Hyla versicolor* (Gray Treefrog) were not found or heard during the survey.

Several species of salamanders known to occur in King George County were not found during the survey. *Ambystoma opacum* (Marbled Salamander), *Plethodon cinereus* (Eastern Red-backed Salamander), *Eurycea cirrigera* (Southern Two-Lined Salamander), *Pseudotriton montanus montanus* (Eastern Mud Salamander), *Pseudotriton ruber ruber* (Northern Red Salamander) and *Plethodon cylindraceus* (White Spotted Slimy Salamander) were not found during the survey. Perhaps this can be explained by the dry conditions in the park and/or the time of year.

In addition to the new King George County records found for the lizard species *Plestiodon laticeps* and *Scincella lateralis*, both of the previously known lizard species *Sceloporus undulatus* and *Plestiodon fasciatus* were also identified.

Aquatic turtle species were notably lacking. One shell (*Kinosternon subrubrum subrubrum*) was found and one live animal (*Chelydra serpentina*) was trapped. Not a single basking turtle was sighted at Jones Pond, Caledon Marsh or the Beaver Pond. Water levels in Jones Pond were low and Caledon Marsh is a brackish wetland, which might explain the lack of sightings there. The Beaver Pond was full of water however, with many basking sites on downed trees and logs. *Chrysemys picta picta* (Eastern Painted Turtle) has been documented in King George County. The absence of sightings of this species during the VHS survey (especially within the Beaver Pond area) is hard to explain. However, one vacated turtle nest (unknown species) was found near the beaver dam. Two specimens of *Terrapene carolina carolina* were located in Zone 3.

Three snake species observed in 2012 at Caledon by State Park personnel, *Agkistrodon contortrix mokasen* (Northern Copperhead), *Heterodon platirhinos* (Eastern Hog-nosed Snake) and *Opheodrys aestivus aestivus* (Northern Rough Greensnake) were not found during this survey. These species may be less common than the other snakes encountered. Although known within the park, each of these species might escape detection during a one day survey. Other snake species known from King George County but not observed during the survey include: *Diadophis punctatus edwardsii* (Northern Ring-necked Snake), *Pantheropsis guttatus* (Red Cornsnake), *Lampropeltis getula getula* (Eastern Kingsnake), *Storeria dekayi dekayi* (Northern Brownsnake) and *Storeria occipitomaculata occipitomaculata* (Northern Red-bellied Snake). Most of these species are highly secretive and are not often turned-up in any VHS survey. The one exception is *Diadophis punctatus edwardsii*, which is common, widespread and surprisingly absent from this survey at Caledon.

There are several relatively common species with statewide or eastern state distribution that are likely but not yet known within King George County. Some of these are: *Anaxyrus fowleri* (Fowler's Toad), *Plestiodon inexpectatus* (Southeastern Five-lined Skink), *Regina septemvittata* (Queen Snake), *Thamnophis sirtalis sirtalis* (Eastern Gartersnake), *Thamnophis sauritus sauritus* (Common Ribbonsnake), *Virginia valeriae valeriae* (Eastern Smooth Earthsnake), *Sternotherus odoratus* (Eastern Musk Turtle) and *Pseudemys rubriventris* (Northern Red-bellied Cooter). With the heightened awareness for the need for county record documentation created during the VHS survey, we can expect that State Park personnel and members of the local chapter of the Master Naturalist's Association (who participated in the VHS survey) might be able to document the presence of some of these species in the future.

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