

Monitoring Avian Productivity and Survivorship (MAPS) at
Royal Roads University and Rocky Point,
2005 Field Season Report

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Summary

An inventory of breeding songbirds was conducted for the third consecutive year at Royal Roads University and Rocky Point by using mist nets and recording observations of birds during the breeding season. The inventory methodology followed the Monitoring Avian Productivity and Survivorship project developed by the Institute for Bird Populations. Sampling was conducted between 3 June and 8 August (MAPS periods 4 to 10), resulting in each study site being sampled seven times—once in each 10 day MAPS period. The Royal Roads site continued to have fewer birds and less species diversity than that of Rocky Point: 163 individuals were banded of 25 species, vs. 316 banded of 35 species at the Rocky Point site. Species' breeding status was determined by observing advanced breeding condition of adults while in the hand, by the location of active nests, and by the formulae prescribed by the Institute for Bird Populations. 31 species were defined as breeding at the Royal Roads site and 38 species were defined at Rocky Point. Observations of birds also show a higher diversity at the Rocky Point site with 73 species observed vs. 65 species at Royal Roads. The MAPS Habitat Structure Assessment is conducted every five years in order to document alterations in each study area's habitat structure, which may subsequently influence demographic trends (Desante, et al.). As this requirement was completed in 2004, another Habitat Structure Assessment will not be necessary until 2009. More than 500 person-hours were committed to this project by Rocky Point Bird Observatory volunteers and a hired field technician, or "Bander-In-Charge". Although the contractor's main role involved the collection and preparation of MAPS data (for submittal to the Institute for Bird Populations), volunteer training was incorporated into the field-schedule when appropriate.

Report

The purpose of the MAPS project at Royal Roads and Rocky Point is to inventory the breeding songbird populations using standardized methodology, and to record sightings of other species occurring at these locations to facilitate comparisons of populations and avian diversity at the two sites. The data is submitted to both Bird Studies Canada (banding data) and to the Institute for Bird Populations (banding, observation, breeding status, and habitat structure) to be made available to researchers and others.

2005 marked the third season of Monitoring Avian Productivity and Survivorship (MAPS) at Royal Roads and Rocky Point. In comparing the 2003 MAPS pilot-season to

that of 2004, a notable increase in capture rates at both sites was apparent. The cause of this increase in banding totals was likely due to the relocation of several nets prior to the 2004 effort (Nightingale 2004). In 2005, however, a decrease of 24% in captures was noted at the Royal Roads study site; from 214 new birds in 2004 to 163 in 2005. A decrease of 7% at Rocky Point proved to be less dramatic (316 in 2005 vs. 339 new birds in 2004). The MAPS Manual 2005 Protocol (Desante et al. 2005) requires that all mist-net sites remain constant with those implemented in the year succeeding the pilot-year for the program. Therefore, the 2005 net locations remained congruent with those of 2004. As this is only the second year of standard monitoring at both sites (i.e. the net locations have remained unaltered), presently there are no significant conclusions which can be drawn from this temporal change in abundance. The completion of a 5-year minimum study period is required until any legitimate demographic parameters can be derived from the collected data (Desante et al 2005). A basic between-year comparison of the 10 most abundant species banded in 2005 and 2004 is provided in Appendix A.

A remarkable one third, or 29% of all birds banded at Rocky Point in 2005 can be attributed to Net #12, initially introduced to the project in 2004. It appears that the net's location amongst dense rose thickets (*Rosa nutkana*) and proximity to a small pond allow it to yield high capture rates. Many swallows frequent the standing water in order to feed, and are occasionally captured in the adjacent net. This presents us with the rare opportunity to monitor such species within the designations of a MAPS protocol. This year, a total of 21 swallows of 4 species were banded at Rocky Point, 95% of which were captured in this single net.

The highest single day total of new birds banded was on July 19 at Rocky Point with 74 individuals. The least productive day was at Royal Roads: July 6 produced only 12 new birds. A summary of captures during the 2005 MAPS season is presented in Appendix B.

In 2005, volunteers continued efforts to observe bird behaviours and locate evidence of breeding birds. Thirty-one species of birds were identified as breeders at the Royal Roads site, while 38 were confirmed as breeders at Rocky Point. A number of other species were defined as "likely breeders". Continuation of the MAPS program should see several additional species added to the list of breeders. A list of species observed and their breeding status is included in Appendix C. As is expected during breeding season, the proportion of hatch year birds captured was greater than adult birds. At Royal Roads, 69% of the birds for which age was determined were hatch year birds. At Rocky Point, 71% were hatch year.

One of the key components of the MAPS program is the recapture of previously banded birds. Recaptures of adult birds banded earlier in the same season provide evidence of local breeding. Recapture data of birds banded in previous seasons is used in conjunction with banding of new second year birds to determine species survivorship. The number of recaptures at the Royal Roads site in 2005 was 34, while at the Rocky Point site a total of 48 were encountered. Under the MAPS protocol, recaptures include birds trapped more than once on the same day, so these numbers refer to captures rather than to individual birds. Several of the Rocky Point recaptures continued to be birds which were banded

during migration monitoring over a number of years. Thirteen of the recaptures were birds banded during the MAPS program in 2004, and 6 were banded during previous years of migration monitoring.

Recaptures of note in 2005 included:

- A male Orange-crowned Warbler on June 5, originally banded as an adult bird at Rocky Point on August 26, 1999. It was also previously recaptured at the Rocky Point MAPS station in 2004. At the time, this bird was just three months shy of the current North American longevity record. Since the precise hatching-year of this bird remains unknown, this particular individual either ties or surpasses the present record for longevity of 8 years and 5 months.
- A female Wilson's Warbler on July 29, banded as an adult bird during the migration monitoring program at Rocky Point in 2000. This bird has reached at least 7 years of age, tying it with the current longevity record for North America.
- A female Chestnut-backed Chickadee banded as a hatch-year bird at Rocky Point in 2001.

Captured but un-banded birds were also recorded. These include birds which escaped during the mist-net extraction procedure or during banding, birds deliberately released because they appeared stressed, and hummingbirds released without banding or banded under the auspices of another project.

Methods

As in previous years, the methodology followed the MAPS Manual 2005 Protocol where songbirds are captured and banded in mist nets during standardized sampling sessions. The sampling sessions were conducted once in every ten day period from the beginning of June to the first ten days of August. The safe handling and banding of birds followed the applicable sections of the Rocky Point Bird Observatory's banding protocol (Derbyshire 2000) and the MAPS 2005 Protocol; nets were closed in poor weather with winds exceeding 15 km/h or significant precipitation. Nets were checked every 30 minutes.

Appendix D contains site plans for the two MAPS monitoring areas.

Each sampling session involved using ten mist nets (12 x 2.8 m, with a 30 mm mesh size) for a six-hour period commencing at dawn. Captured birds were removed from the nets and taken to a central location for processing. Each bird was then identified to species, assigned an age class according to Pyle (1997) and banded with an aluminum U.S. Fish and Wildlife leg band with a unique nine-digit number. From each bird a series of morphometric measurements were collected including wing chord, stage of breeding development, amount of fat deposit, age of each feather tract, feather wear and mass. Sex was determined according to criteria in the MAPS protocol. Date, time and capture net-code were also recorded in order to facilitate analysis. Once processed, birds were released near their capture site to facilitate regrouping of family units.

Comments

The MAPS protocol advises that a five to ten year period of data collection is required before meaningful analysis can be initiated. Being the second year of the Royal Roads/Rocky Point MAPS project where a hired specialist was available, volunteers continued to be provided with additional training opportunities in data collection procedures; ranging from mist-net set-up and basic handling skills, to more complex techniques such as bird extraction, banding, ageing and sexing.

The MAPS program at Rocky Point and Royal Roads provides baseline data for breeding bird populations in two environmentally similar but otherwise different habitats in Victoria. There is great potential for data from this project to be used in studies investigating disturbance and habitat size as well as in the expected longitudinal population studies.

Poor weather did not affect monitoring efforts in 2005, allowing the maximum amount of mist-netting hours to be achieved at both the Royal Roads and Rocky Point locations. The capture rate for new birds was .39 per net hour at Royal Roads University and .75 birds per net hour at Rocky Point.

The MAPS project requires a considerable amount of effort, particularly at the Royal Roads site. As the grounds are generally open to the public, it is unsafe to leave the mist-nets erected between banding days. At the Royal Roads site, the nets were set up the afternoon or evening before each monitoring session and were removed immediately after the conclusion of each banding day.

The MAPS program provides an excellent opportunity for new banders and volunteers to improve their skills. Environmental science students at the Royal Roads University have been involved in past MAPS efforts. Although their participation in 2005 was incidentally of a limited nature, the program will continue to offer opportunities to such students interested in broadening their understanding of ornithological fieldwork.

Recommendations

Despite the considerable effort required to operate the MAPS stations, I believe this is a worthwhile project. I would recommend that RPBO continue this program for at least the five year minimum recommended by the Institute for Bird Populations. Expansion of the program would require more physical resources (banding kits, nets, etc.) and a commitment by volunteers and others.

Acknowledgements

A Bander-In-Charge was hired to oversee mist-netting, banding and data collection processes in 2005. However, volunteers will continue to play an essential role for the realization of this project. Ann Nightingale and Rick Schortinghuis coordinated the organizational and technical aspects of the project. Monitoring efforts were completed with the volunteer help of David Allinson, Tracy Anderson, Denise Gubersky, Chris Harris, David Kelly, Adrian Koolman, Dominique LeJour, Cheryl Mackie, David and Geoffray Newell, Ann Nightingale, Ed Pellizzon, Mary Robichaud, Donna Ross, Rick Schortinghuis, and Steve Stobart. Ann Nightingale entered all of the collected data into MAPSPROG and submitted it to the Institute for Bird Populations. More than 500 person hours of fieldwork were completed for the 2005 MAPS season.

Literature Cited

Desante, et al. 2005. MAPS Manual 2005 Protocol; Instructions for the Establishment and Operation of Constant-Effort Bird-Banding Stations as Part of the Monitoring Avian Productivity and Survivorship (MAPS) Program. The Institute for Bird Populations, Point Reyes Station, California.

Nightingale, A. Monitoring Avian Productivity and Survivorship (MAPS) at Royal Roads and Rocky Point, 2004 Field Season Report.

Appendix A.

Table 1. The 10 most abundant species banded in 2005 at Rocky Point compared to 2004.

Rank	Species	2005	Species	2004
1	White-crowned Sparrow	36	Chestnut-backed Chickadee	48
2	Song Sparrow	32	Orange-crowned Warbler	37
3	Chestnut-backed Chickadee	30	Red-winged Blackbird	36
4	Red-winged Blackbird	24	White-crowned Sparrow	31
5	American Robin	22	Song Sparrow	25
6	Orange-crowned Warbler	22	Chipping Sparrow	25
7	Common Yellowthroat	18	American Robin	22
8	Pacific-slope Flycatcher	14	Wilson's Warbler	10
9	Wilson's Warbler	13	Cliff Swallow	10
10	House Wren	9	Common Yellowthroat	8

Table 2. The 10 most abundant species banded in 2005 at Royal Roads compared to 2004.

Rank	Species	2005	Species	2004
1	Bewick's Wren	29	Bewick's Wren	48
2	Chestnut-backed Chickadee	26	Chestnut-backed Chickadee	42
3	American Robin	24	American Robin	25
4	Song Sparrow	12	Bushtit	20
5	Chipping Sparrow	10	Chipping Sparrow	11
6	Bushtit	9	Orange-crowned Warbler	11
7	Orange-crowned Warbler	9	Spotted Towhee	9
8	Spotted Towhee	9	Swainson's Thrush	9
9	Pacific-slope Flycatcher	5	Oregon Junco	6
10	Wilson's Warbler	5	Wilson's Warbler	6

Appendix B. Bird banding results for MAPS 2005.

	Rocky Point Bird Observatory				Royal Roads University				Grand Total
	New band	Recapture	Unbanded	RPBO Total	New band	Recapture	Unbanded	RRU Total	
Species									
California Quail			2	2			3	3	10
Anna's Hummingbird							12	12	24
Rufous Hummingbird			19	19			5	5	48
Downy Woodpecker	2	1		3					6
Willow Flycatcher	4			4	1			1	10
Pacific-slope Flycatcher	14	1	1	16	5			5	42
Hutton's Vireo	1			1					2
Warbling Vireo					4			4	8
Steller's Jay					5	1	1	7	14
Violet-green Swallow	3			3					6
N. Rough-winged Swallow	6			6					12
Cliff Swallow	7			7					14
Barn Swallow	5			5					10
Chestnut-backed Chickadee	30	3	1	34	26	5		31	130
Bushtit	2		1	3	9	4		13	32
Brown Creeper	7			7					14
Red-breasted Nuthatch	1			1					2
Bewick's Wren	5	2		7	29	11		40	94
House Wren	9	1	1	11					22
Winter Wren	2			2					4
Swainson's Thrush	2	1		3	2			2	10
American Robin	22	3		25	24	5	2	31	112
Cedar Waxwing	2			2					4
Orange-crowned Warbler	22	7		29	9	2		11	80
Yellow Warbler	4			4					8
Audubon's Warbler	3			3					6
Townsend's Warbler	3			3	1			1	8
MacGillivray's Warbler	7			7	2			2	18
Common Yellowthroat	18	3		21	1			1	44
Wilson's Warbler	13	3		16	5		1	6	44
Western Tanager					1			1	2
Spotted Towhee	2	1		3	9	1		10	26
Chipping Sparrow	7	3	1	11	10			10	42
Song Sparrow	32	14		46	12	4		16	124
White-crowned Sparrow	36	2		38	2	1		3	82
Black-headed Grosbeak	1			1	2		1	3	8
Red-winged Blackbird	24	3	2	29					58
Brown-headed Cowbird	7			7	1			1	16
Purple Finch	8			8					16
House Finch					1			1	2
Pine Siskin	1			1	1			1	4
American Goldfinch	4			4	1			1	10
Grand Total	316	48	28	392	163	34	25	222	1228

Appendix C.

Breeding status of birds observed during MAPS 2005.

Rocky Point	2005	Royal Roads University	2005
<u>Species</u>	<u>Breeding Status</u>	<u>Species</u>	<u>Breeding Status</u>
Canada Goose	Transient	Great Blue Heron	Transient
Mallard	Transient	Turkey Vulture	Transient
Double-crested Cormorant	Transient	Mallard	Transient
Great Blue Heron	Transient	Canada Goose	Transient
Turkey Vulture	Transient	Osprey	Transient
Osprey	Transient	Bald Eagle	Transient
Bald Eagle	Transient	Cooper's Hawk	Transient
Red-tailed Hawk	Transient	Red-tailed Hawk	Transient
California Quail	Breeder	California Quail	Breeder
Killdeer	Transient	Killdeer	Transient
Greater Yellowlegs	Migrant	California Gull	Migrant
Least Sandpiper	Migrant	Glaucous-winged Gull	Transient
Glaucous-winged Gull	Transient	Band-tailed Pigeon	Transient
Western Gull	Migrant	Barred Owl	Transient
Band-tailed Pigeon	Transient	Anna's Hummingbird	Breeder
Mourning Dove	Migrant	Rufous Hummingbird	Breeder
Great-horned Owl	Breeder	Belted Kingfisher	Transient
Common Nighthawk	Transient	Red-breasted Sapsucker	Breeder
Rufous Hummingbird	Breeder	Downy Woodpecker	Breeder
Belted Kingfisher	Transient	Hairy Woodpecker	Likely Breeder
Downy Woodpecker	Breeder	Red-shafted Flicker	Breeder
Hairy Woodpecker	Breeder	Pileated Woodpecker	Breeder
Red-shafted Flicker	Breeder	Olive-Sided Flycatcher	Breeder
Pileated Woodpecker	Transient	Willow Flycatcher	Breeder
Olive-Sided Flycatcher	Breeder	Pacific-slope Flycatcher	Breeder
Willow Flycatcher	Breeder	Cassin's Vireo	Breeder
Pacific-slope Flycatcher	Breeder	Hutton's Vireo	Likely Breeder
Cassin's Vireo	Transient	Warbling Vireo	Breeder
Hutton's Vireo	Likely Breeder	Steller's Jay	Transient
Warbling Vireo	Breeder	Northwestern Crow	Transient
Northwestern Crow	Likely Breeder	Common Raven	Transient
Common Raven	Transient	Purple Martin	Transient
Purple Martin	Transient	Violet-Green Swallow	Likely Breeder
Violet-Green Swallow	Breeder	Cliff Swallow	Transient
Northern Rough- winged Swallow	Breeder	Barn Swallow	Transient

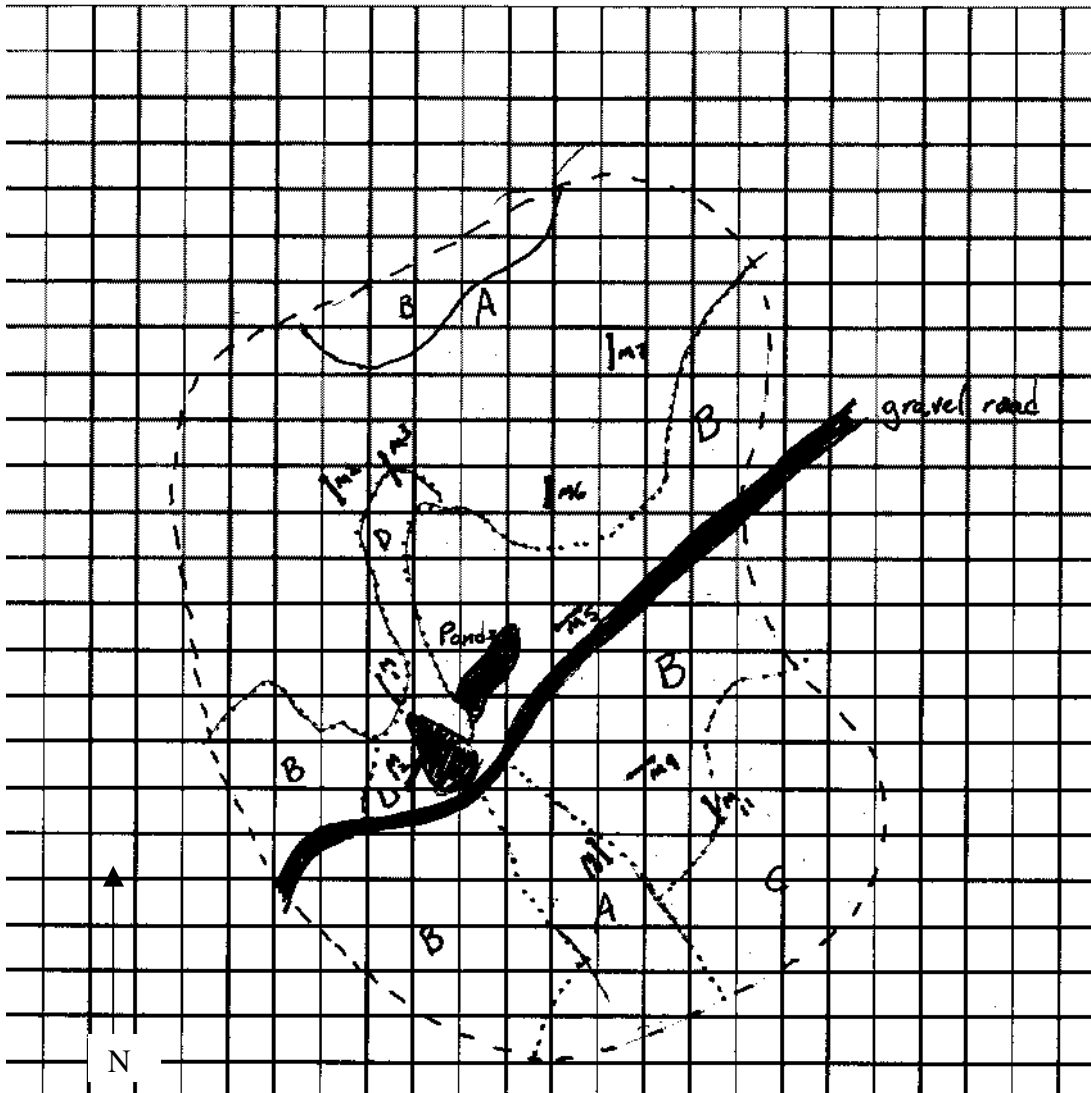
Rocky Point	2005	Royal Roads University	2005
<u>Species</u>	<u>Breeding Status</u>	<u>Species</u>	<u>Breeding Status</u>
Cliff Swallow	Breeder	Chestnut-backed Chickadee	Breeder
Barn Swallow	Breeder	Bushtit	Breeder
Chestnut-backed Chickadee	Breeder	Red-breasted Nuthatch	Breeder
Bushtit	Likely Breeder	Brown Creeper	Breeder
Red-breasted Nuthatch	Breeder	Bewick's Wren	Breeder
Brown Creeper	Breeder	Winter Wren	Breeder
Bewick's Wren	Breeder	Golden-crowned Kinglet	Breeder
House Wren	Breeder	Swainson's Thrush	Breeder
Winter Wren	Breeder	American Robin	Breeder
Golden-crowned Kinglet	Likely Breeder	Cedar Waxwing	Likely Breeder
Swainson's Thrush	Breeder	Orange-crowned Warbler	Breeder
American Robin	Breeder	Yellow Warbler	Transient
Varied Thrush	Transient	Yellow-rumped Warbler	Transient
European Starling	Likely Breeder	Townsend's Warbler	Likely Breeder
Cedar Waxwing	Likely Breeder	Common Yellowthroat	Breeder
Orange-crowned Warbler	Breeder	Wilson's Warbler	Breeder
Yellow Warbler	Breeder	Western Tanager	Transient
Yellow-rumped Warbler	Breeder	Spotted Towhee	Breeder
Black-throated Gray Warbler	Likely Breeder	Chipping Sparrow	Breeder
Townsend's Warbler	Breeder	Song Sparrow	Breeder
MacGillivray's Warbler	Breeder	White-crowned Sparrow	Breeder
Common Yellowthroat	Breeder	Oregon Junco	Likely Breeder
Wilson's Warbler	Breeder	Black-headed Grosbeak	Likely Breeder
Spotted Towhee	Breeder	Red-winged Blackbird	Transient
Chipping Sparrow	Breeder	Brown-headed Cowbird	Likely Breeder
Song Sparrow	Breeder	Purple Finch	Breeder
White-crowned Sparrow	Breeder	House Finch	Breeder
White-crowned sparrow	Breeder	Red Crossbill	Transient
Oregon Junco	Transient	Pine Siskin	Transient
Black-headed Grosbeak	Breeder		

Rocky Point <u>Species</u>	2005 <u>Breeding Status</u>	Royal Roads University 2005 <u>Species</u>	<u>Breeding Status</u>
Red-winged Blackbird	Breeder	American Goldfinch	Likely Breeder
Brown-headed Cowbird	Breeder		
Purple Finch	Likely Breeder		
House Finch	Likely Breeder		
Red Crossbill	Transient		
Pine Siskin	Likely Breeder		
American Goldfinch	Breeder		
Evening Grosbeak	Transient		

Appendix D.

Site plans for Victoria (VICT) MAPS monitoring stations.

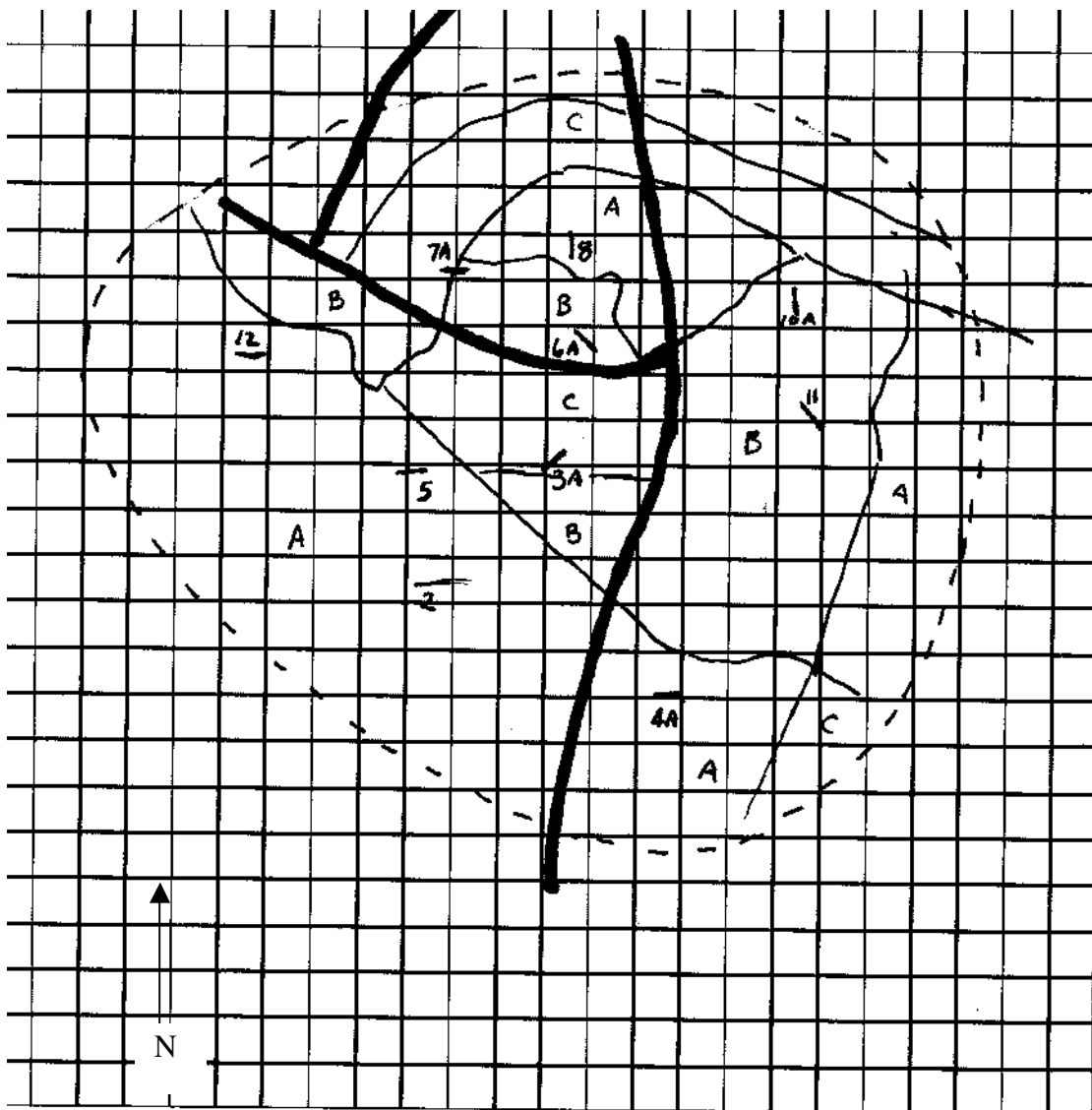
Rocky Point (RPBO) 48° 19' 20" N; 123° 32' 59" W



Each gridline represents 30m.

Habitat Zones

- A – Mixed Forest – Deciduous dominant
- B – Cleared/Invasives
- C – Mixed Forests – Coniferous dominant
- D – Native shrub



Each gridline represents 30 m.

Habitat Zones

A – Mixed Forest – Deciduous dominant

B – Cleared/Invasives

C – Mixed Forest – Coniferous dominant