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A PRELIMINARY SURVEY OF THE LAND AND
FRESHWATER GASTROPODA OF CAPE BRETON,
NOVA SCOTIA, CANADA

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During the summer of 1950 I spent the month of August on a collecting trip throughout Cape Breton, gathering land and freshwater mollusca at eleven localities in three counties. This expedition had a twofold purpose: (1) to make a preliminary survey of the land and freshwater mollusca of Cape Breton Island, that portion of the Province of Nova Scotia that had practically been neglected conchologically, and (2) to study the effects of isolation upon speciation of the land and freshwater mollusca as Cape Breton Island has been separated from the mainland some 25,000 years ago by the flooding of the St. Lawrence Valley. The Strait of Canso, parting Cape Breton from the mainland of Nova Scotia, is one-quarter to one mile in width, creating thus quite a formidable barrier to the migration and distribution of a number of forms of animal life.

There may be a third objective resulting from this survey of the land and freshwater gastropoda of Cape Breton, that of tying up the results of this study with those obtained by Dr. S. T. Brooks with a similar project in Newfoundland.

From a cursory survey of the land and freshwater gastropoda obtained during the summer of 1950 it can be stated that the shells so far collected and studied have shown such a basic genetic strength as to have retained their specific identity with those forms now living in Europe and in other sections of North America north of Mexico. This is perhaps due to the great similarity in climate and vegetation with that of the

northern part of the mainland of North America. It must be borne in mind that this is only a superficial conclusion drawn from the study of a few hundred specimens collected at only eleven localities. No conclusive evidence can definitely be drawn until a more thorough and extensive survey had been made, not only throughout Cape Breton itself, but also on Prince Edward Island, Anticosti Island, Magdalen Island, and some of the islands of the Atlantic, all separated from the mainland at practically the same period of time during the Pleistocene Epoch.

In the section of "The List of Species" nearly all of the species and varieties of shells enumerated have been collected by myself. Acknowledgements have been made in cases where other collectors gathered shells or where the information has been obtained from various museums in eastern Canada. Where there are duplicates of localities by other collectors and myself the initials GKM refer to myself. The initials after the localities at which shells have been found are those of the collectors and references to the following list will indicate their identity. These symbols are used throughout this paper.

O & W—MURIEL J. ORD and ANNE H. G. WATTS.
 ROMZ—ROYAL ONTARIO MUSEUM OF ZOOLOGY.
 HBB—HOPE B. BRIDGEFORD.

Before many species and varieties will be found 1, 2, or 3 asterisks, which have definite indications to the species and localities.

LIST OF SPECIES

Class GASTROPODA

Subclass PROSOBRANCHIATA

Order Mesogastropoda

Family Hydrobiidae

Amnicola limosa limosa (Say)

Baddeck, Victoria County, Lagoon and Town Reservoir.

Amnicola limosa porata (Say)

Sydney, Cape Breton County, Mill Dam Pond.

Amnicola lustrica Pils.

Baddeck, Victoria County, Lagoon.

Subclass PULMONATA

Order Basommatophora

Family Carychiidae

Carychium exile exile Lea

***Whycocomagh, Inverness County, fields, along Whycocomagh Brook. This species was very common under a log resting among the short grasses and weeds in a rather damp section of the field near the mouth of the brook. This constitutes not only a new record for Cape Breton but also for Nova Scotia.

Carychium exile canadense Clapp

Baddeck Bay, Victoria County, swampy area, along Baddeck Bay Brook.

Whycocomagh, Inverness County, fields, along Whycocomagh Brook. *C. e. canadense* was associated with *C. exile* at Whycocomagh. Its habitat at Baddeck Bay was in the layer of damp leaves in the swampy area of the woods.

Family Physidae

Physa gyrina Say

Baddeck, Victoria County, Town Reservoir and Widdow Lake, Baddeck Bay, Victoria County, Baddeck Bay Brook, Northwest Arm, Cape Breton County, Frenchvale Creek Sydney, Cape Breton County, Mill Dam Pond Whycocomagh, Inverness County, Whycocomagh Brook.

Physa heterostropha (Say)

Bayfield, Inverness County (HBB).
 Glendale, Inverness County (HBB).
 Judique, Inverness County (HBB).
 Kingsville, Inverness County (HBB).
 Margaree, Inverness County (HBB).
 Whycocomagh, Inverness County, Whycocomagh Brook.

*Indicates a new locality record for Cape Breton as that species has been found elsewhere throughout the Island but not at that particular locality.

**Indicates that this is a new addition to the fauna of Cape Breton although the species has been recorded from the mainland of Nova Scotia.

***Indicates that this species is new to both the fauna of Cape Breton and the mainland of Nova Scotia.

Family Lymnaeidae

Stagnicola catascopium (Say)

Chapel Bridge, Inverness County, Margaree River
(ROMZ)

Stagnicola palustris (Mueller)

Baddeck, Victoria County, Lagoon and Town Reservoir.
Baddeck Bay, Victoria County, pools in swampy area,
along Baddeck Bay Brook.

Glendale, Inverness County (HBB).

Kingsville, Inverness County (HBB).

Whycocomagh, Inverness County, Whycocomagh Brook.

Pseudosuccinea columella (Say)

Baddeck, Victoria County, Town Reservoir.

Sydney, Cape Breton County, Mill Dam Pond.

Fossaria modicella modicella (Say)

Baddeck, Victoria County, small pools in woods.

Fossaria modicella rustica (Lea)

Whycocomagh, Inverness County, Whycocomagh Brook

Fossaria obrussa (Say)

Baddeck, Victoria County, Town Reservoir.

Sydney, Cape Breton County, Mill Dam Pond.

Fossaria umbilicata (C.B. Ad.)

Baddeck, Victoria County, small pools in woods.

Northwest Arm, Cape Breton County, Frenchvale Creek

Family Planorbidae

Helisoma anceps (Menke)

Baddeck, Victoria County, Town Reservoir.

Scottsville, Inverness County, Southwest Margaree River
(ROMZ).

Helisoma campanulatum (Say)

Scottsville, Inverness County, Gilles Creek (ROMZ).

Gyraulus hirsutus (Gould)

Baddeck, Victoria County, Town Reservoir and Widdow Lake.

Northwest Arm, Cape Breton County, small pools of Frenchvale Creek.

Family Ancyliidae

Ferrissia parallela (Hald.)

Baddeck, Victoria County, Town Reservoir and Widdow Lake.

This species was found mainly attached to the underside of the lily pads near the shore of Town Reservoir; a few empty shells were also collected in the drift along the shore, or under the trash further inland that had once been covered by water.

Order Stylommatophora

Family Succineidae

Succinea aurea Lea

***Baddeck, Victoria County, shores of Lagoon and environs of Town Reservoir.

***Baddeck Bay, Victoria County, swampy area, along Baddeck Bay Brook.

Succinea avara (Say)

Baddeck, Victoria County, woods, along Lagoon; environs of Town Reservoir; Widdow Lake Valley.

Baddeck Bay, Victoria County, swampy area, along Baddeck Bay Brook.

Sydney, Cape Breton County, banks, along Mill Dam Pond.

Whyecomagh, Inverness County, swampy area, along Whyecomagh Brook.

Succinea decampi gouldi (Pilsbry)

Baddeck, Victoria County, shore of Lagoon; environs of Town Reservoir.

Baddeck Bay, Victoria County, swampy area, along Baddeck Bay Brook.

Succinea ovalis (Say)

Baddeck, Victoria County, shore of Lagoon.
 Whycomomagh, Inverness County, swampy area, along
 Whycomomagh Brook.

Succinea verrilli Bland

- ***Baddeck, Victoria County, woods; Widdow Lake Valley; environs of Town Reservoir; shore of Lagoon.
- ***Baddeck Bay, Victoria County, swampy area, along Baddeck Bay Brook.
- ***Sydney, Cape Breton County, banks, along Mill Dam Pond.
- ***Whycomomagh, Inverness County, swampy area, along Whycomomagh Brook.

Family Cionellidae

Cionella lubrica (Mueller)

Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.
 Sydney, Cape Breton County, banks, along Mill Dam Pond; small, open deciduous woods.
 Whycomomagh, Inverness County, woods, along Whycomomagh Brook.

Family Pupillidae

Vertigo gouldi gouldi (A. Binney)

- ***Baddeck, Victoria County, woods; environs of Town Reservoir.
- ***Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

Vertigo gouldi paradoxa Sterki

- ***Baddeck, Victoria County, environs of Town Reservoir.

Vertigo modesta (Say)

- ***Whycomomagh, Inverness County, woods, along Whycomomagh Brook.

Vertigo ovata (Say)

- ***Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Vertigo ventricosa (Morse)

- **Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

Vertigo pygmaea (Draparnaud)

- **Baddeck, Victoria County, woods; environs of Town Reservoir.
 **Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.
 **Whycocomagh, Inverness County, woods and fields, along Whycocomagh Brook.

Vertigo nylanderii Sterki

- ***Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

The various species and varieties of *Vertigo* were found in damp and shaded places. Occasionally they occurred on the underside of bark, logs, and trash, such as large pieces of cardboard or empty burlap sacks, in exposed places which were overgrown with medium grasses.

Gastrocopta pentodon (Say)

- Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Family Valloniidae

Vallonia excentrica Sterki

- **Baddeck, Victoria County, fields; environs of Town Reservoir; shore of Lagoon.
 **Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 **Sydney, Cape Breton County, banks, along Mill Dam Pond.
 **Whycocomagh, Inverness County, woods and fields, along Whycocomagh Brook.

Vallonia pulchella (Mueller)

Sydney, Cape Breton County, small, open deciduous woods.

Zoogenetes harpa (Say)

Baddeck, Victoria County, woods; shore of Lagoon.
Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

Whyecomagh, Inverness County, woods, along Whyecomagh Brook.

Zoogenetes harpa seems to prefer the shelter of mats of mosses where it is found more abundantly than in any other type of habitat.

Family Strobilopsidae

Strobilops aenea Pilsbry

***Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

The chief habitation of this species, as with others of the genus, is under the loose or starting bark of logs.

Strobilops labyrinthica labyrinthica (Say)

***Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

Strobilops labyrinthica virgo Pilsbry

***Whyecomagh, Inverness County, woods, along Whyecomagh Brook.

Family Punctidae

Punctum minutissimum (Lea)

***Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.

***Whyecomagh, Inverness County, woods, along Whyecomagh Brook.

This species, very easily overlooked due to its extremely small size, can best be collected in the forest loam, the fine earth beneath logs and stones, and in the layers of damp leaves.

Family Helicodiscidae

Helicodiscus parallelus (Say)

**Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

- **Sydney, Cape Breton County, banks, along Mill Dam Pond; small, open deciduous woods.

Family Endodontidae

Discus cronkhitei crinkhitei (Newc.)

- **Baddeck, Victoria County, woods; Widdow Lake Valley.
 **Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 **Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.
 **Whycocomagh, Inverness County, woods and fields, along Whycocomagh Brook.

Discus cronkhitei catskillensis (Pilsbry)

- ***Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 ***Marble Mountain, Inverness County (HBB).
 ***Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Family Anguispiridae

Anguispira alternata (Say)

- ***Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Family Zonitidae

Retinella binneyana (Morse)

- ***Baddeck, Victoria County, environs of Town Reservoir.
 ***Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 ***Leitche Creek, Cape Breton County, woods, along small branch of George River.
 ***Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Retinella electrina (Gould)

- Baddeck, Victoria County, woods; environs of Town Reservoir.

Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.
 Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Oxychilus cellarius (Mueller)

Baddeck, Victoria County, woods.
 Sydney, Cape Breton County, banks, along Mill Dam Pond; small, open deciduous woods.

Oxychilus draparnaudi (Beek)

***Baddeck, Victoria County, Widdow Lake Valley.
 ***Sydney, Cape Breton County, banks, along Mill Dam Pond.

These two species of *Oxychilus* seem to occur in situations not far from human habitations, probably having been imported with ornamental flowers and shrubs from Europe.

Striatura exigua (Stimp.)

**Baddeck, Victoria County, woods; Widdow Lake Valley.
 **Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.
 **Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Striatura ferrea Morse

**Baddeck, Victoria County, woods.

Striatura milium (Morse)

***Baddeck, Victoria County, woods.
 ***Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.
 ***Sydney, Cape Breton County, small, open deciduous woods.
 ***Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Zonitoides arboreus (Say)

Baddeck, Victoria County, woods; Widdow Lake Valley; shore of Lagoon; environs of Town Reservoir.

- Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
 Finlayson, Victoria County (HBB).
 Ironville, Cape Breton County, small woods on embankment of CNR.
 Leitch Creek, Cape Breton County, woods, along small branch of George River.
 Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.
 Glendale, Inverness County (HBB).
 Kingsville, Inverness County (HBB).
 Malagawatch, Inverness County (HBB).
 N. E. Margaree, Inverness County (HBB).
 Whycocomag, Inverness County, woods and fields, along Whycocomag Brook.

Zonitoides nitidus (Mueller)

- Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.

Vitrina limpida Gould

- ***Baddeck, Victoria County, Widdow Lake Valley.
 ***Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.
 ***Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.
 ***Whycocomag, Inverness County, woods, along Whycocomag Brook.

Family Arionidae

Arion circumscriptus Johnston

- **Baddeck, Victoria County, woods and fields (GKM)
 **Boularderie Island, Victoria County (O&W).
 **Glendale, Inverness County (O&W).
 **Kingsville, Inverness County (O&W).
 **Malagawatch, Inverness County (O&W)
 **Whycocomag, Inverness County, woods and fields, along Whycocomag Brook.
 **East Bay, Cape Breton County (O&W).
 **Louisburg, Cape Breton County (O&W).
 **Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.

**Sydney, Cape Breton County, banks, along Mill Dam Pond; small, open deciduous woods.

Arion subfuscus (Drap.)

***Kingsville, Inverness County (O&W).

***Malagawatch, Inverness County (O&W).

***Port Hastings, Inverness County (O&W).

***Louisburg, Cape Breton County (O&W).

***Sydney, Cape Breton County, banks, along Mill Dam Pond.

***Sydney River, Cape Breton County (O&W).

***Port Hawkesbury, Richmond County (O&W).

**River Bourgeois, Richmond County (O&W).

Family Limacidae

Deroceras laevé (Mueller)

Baddeck, Victoria County, woods and fields.

Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.

Big Harbour, Victoria County (O&W).

Finlayson, Victoria County (O&W).

Dunvegan, Inverness County (O&W).

Glencoe, Inverness County (O&W).

Glendale, Inverness County (O&W).

Judique, Inverness County (O&W).

Kingsville, Inverness County (O&W).

Malagawatch, Inverness County (O&W).

Marble Mountain, Inverness County (O&W).

Melford, Inverness County (O&W).

N. E. Margaree, Inverness County (O&W).

Whycocomagh, Inverness County, woods and fields, along Whycocomagh Brook.

Louisburg, Cape Breton County (O&W).

Northwest Arm, Cape Breton County, woods, along Frenchvale Creek.

Sydney, Cape Breton County, banks, along Mill Dam Pond; small, open deciduous woods.

Oban, Richmond County (O&W).

Deroceras reticulatum (Mueller)

***Baddeck, Victoria County, woods and fields (GKM) (O&W).

- ***Baddeck Bay, Victoria County, woods and swampy area, along Baddeck Bay Brook.
- ***Big Harbour, Victoria County (O&W).
- ***Boularderie Island, Victoria County (O&W).
- ***Finlayson, Victoria County (O&W).
- ***Big Pond, Cape Breton County (O&W).
- ***East Bay, Cape Breton County (O&W).
- ***Irish Cove, Cape Breton County (O&W).
- ***Louisburg, Cape Breton County (O&W).
- ***Sydney River, Cape Breton County (O&W).
- ***Dunvegan, Inverness County (O&W).
- ***Glencoe, Inverness County (O&W).
- ***Glendale, Inverness County (O&W).
- ***Judique, Inverness County (O&W).
- ***Kingsville, Inverness County (O&W).
- ***Long Point, Inverness County (O&W).
- ***Malagawatch, Inverness County (O&W).
- ***Marble Mountain, Inverness County (O&W).
- ***Melford, Inverness County (O&W).
- ***N. E. Margaree, Inverness County (O&W).
- ***Port Hastings, Inverness County (O&W).
- ***Whycocomagh, Inverness County (O&W).
- ***The Points, West Bay, Inverness County (O&W).
- ***Louisdale, Richmond County (O&W).
- ***Oban, Richmond County (O&W).
- ***Port Hawkesbury, Richmond County (O&W).
- ***River Bourgeois, Richmond County (O&W).
- ***Soldiers' Cove, Richmond County (O&W).

Family Kaliellidae

Euconulus fulvus (Mueller)

- Baddeck, Victoria County, woods; Widdow Lake Valley.
- Baddeck Bay, Victoria County, woods, along Baddeck Bay Brook.
- Leitche Creek, Cape Breton County, woods, along small branch of George River.
- Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Family Helicidae

Hygromia hispida (Linne)

- **Baddeck, Victoria County, woods; shore of Lagoon.

- **Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
- **Sydney, Cape Breton County, bank, along Mill Dam Pond; small, open deciduous woods.
- **Whycocomagh, Inverness County, fields, along Whycocomagh Brook.

Cepaea hortensis (Mueller)

- Baddeck, Victoria County, woods; Widdow Lake Valley.
- Baddeck Bay, Victoria County, woods and road embankment, along Baddeck Bay Brook.
- Gillie Point, Victoria County (ROMZ).
- Ironville, Cape Breton County, small woods, on embankment of CNR.
- Sydney, Cape Breton County, small open deciduous woods.
- Margaree Harbour, Inverness County (ROMZ).
- Whycocomagh, Inverness County, woods, along Whycocomagh Brook.

Only two of the six sets of this species collected in Cape Breton during the summer of 1950 have banded specimens. Two specimens having these bands were found in the small woods on the embankment of the CNR at Ironville, Cape Breton County. The set from the woods, Baddeck, Victoria County, contains two banded individuals. These banded forms, 3-5 bands, are juveniles, except one from Ironville, which is an adult. All the remaining specimens are of a yellow (primrose yellow to olive-yellow according to Dr. H. A. Pilsbry) color with a white lip. In the lots containing the uniform colored specimens the range is from juveniles to adults.

The following charts show the distribution of the land snails collected by the author throughout the eleven localities in the three counties of Cape Breton.

In addition to the land and freshwater gastropoda collected during the summer of 1950 in Cape Breton Island there were a number of sets of *Sphaeriidae* (finger-nail clams). The species of these were identified by the Rev. H. B. Herrington, Keene, Ontario, to whom I am greatly indebted. The species are as follows:-

Pisidium casertanum (Poli)

Baddeck, Victoria County, small pools; Town Reservoir
Baddeck Bay, Victoria County, swampy area, along
Baddeck Bay Brook.
Sydney, Cape Breton County, Mill Dam Pond.
Whycocomagh, Inverness County, swampy area, along
Whycocomagh Brook.

Pisidium nitidum Jenyns

Baddeck, Victoria County, Widdow Lake

Sphaerium lacustre lacustre (Mueller)

Northwest Arm, Cape Breton County, pools, along
Frenchvale Creek.

Sphaerium lacustre ryckholti (Norman)

Baddeck, Victoria County, Town Reservoir

I wish to express my appreciation to Dr. H. A. Pilsbry, Academy of Natural Sciences, Philadelphia, Pennsylvania, who was kind enough to verify the identification of a number of sets of shells sent him, and also for correcting the identity of some of the species and varieties that I had made.

	Sydney			Baddeck					Whyecocomagh	
	Mill Dam Pond	Deciduous Woods	Leitche Creek	North-west Arm	Woods and Fields	Widow Lake	Town Reservoir	Lagoon		Baddeck Bay
<i>Punctum minutissimum</i>									X	X
<i>Helicodiscus parallelus</i>	X	X							X	
<i>Discus cronkhitei</i>				X	X	X			X	X
<i>c. catskillensis</i>									X	
<i>Anguispira alternata</i>										X
<i>Retinella electrina</i>				X	X		X		X	X
<i>binneyana</i>			X				X		X	X
<i>Orychilus draparnaudi</i>	X					X				
<i>cellarius</i>	X	X			X					
<i>Striatura exigua</i>					X	X	X		X	X
<i>milium</i>		X			X				X	X
<i>ferrea</i>					X					

	Sydney		Leithe Creek	North-west Arm	Woods and Fields	Baddeck				Baddeck Bay	Whycomagh
	Mill Dam Pond	Deciduous Woods				Widow Lake	Town Reservoir	Lagoon			
<i>Zonitoides¹ arboreus</i>			X	X	X	X		X		X	X
<i>nitidus</i>										X	
<i>Vitrina limpida</i>				X		X				X	
<i>Arion circumscriptus</i>	X	X		X	X						X
<i>subfuscus</i>	X										
<i>Deroceras laeve</i>	X	X		X	X					X	X
<i>reticulatum</i>	X			X	X					X	X
<i>Euconulus fulvus</i>			X		X	X				X	X
<i>Hygromia hispida</i>	X	X			X			X		X	X
<i>Cepaea hortensis²</i>		X			X					X	X

1. collected also at Ironville.

2. found also at Ironville.

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