
An Annotated Checklist (Based Mostly on Literature Records) and Bibliography of the Recent Terrestrial Mollusca of Alberta

Compiled by Robert G. Forsyth
Last revised: 22 October 2006

SUMMARY

Sixty-two species of terrestrial molluscs (snails and slugs) are recorded from, or inferred for, the province of Alberta, Canada. This annotated checklist is based primarily on the literature record over the last 130 years. Additional comments based on limited personal collecting and examination of museum records are also included.

CONTENTS

Introduction	2	Family Gastrodontidae Tryon 1866	8
Annotated Checklist	3	Family Euconulidae H. B. Baker 1928	9
Family Ellobiidae L. Pfeiffer 1854 (1822)	3	Family Oxychiliidae Hesse <i>in</i> Geyer 1927 (1879)	9
Family Succineidae Beck 1837	3	Family Pristilomatidae Cockerell 1891	10
Family Cionellidae Clessin 1879	4	Family Agriolimacidae Wagner 1935	10
Family Pupillidae Turton 1831	4	Family Vitrinidae Fitzinger 1833	10
Family Valloniidae Morse 1864	5	Family Binneyidae Cockerell 1891	10
Family Vertiginidae Fitzinger 1833	6	Family Polygyridae Pilsbry 1895	11
Family Punctidae Morse 1864	7	Family Thysanophoridae Pilsbry 1926	11
Family Discidae Thiele 1931 (1866)	8	Bibliography & Literature Cited	11
Family Oreohelicidae Pilsbry 1939	8		

INTRODUCTION

The first published record from present-day Alberta of a terrestrial mollusc was by George M. Dawson (1875) who described *Helix limitaris* from Waterton Lake, collected during the British North American Boundary Commission's survey along the forty-ninth parallel. This nominal species, now regarded as a subspecies of *Oreohelix subrudis* following Pilsbry (1939), is one of three Recent land snails that have from described as new from Alberta. The other two are *Vertigo gouldi lagganensis* Pilsbry (1899), from Laggan (now Lake Louise), now regarded as a synonym of *Vertigo elatior* by Pilsbry (1948), and *Oreohelix strigosa* var. *stantoni* Dall (1905) from 33 mi southeast of Medicine Hat near the top of Cypress Hills, treated as a synonym of *O. strigosa cooperi* by Pilsbry (1939).

After the British North American Boundary Commission report by Dawson, nothing appears in the literature on Alberta land snails or slugs for about two decades when George W. Taylor (1893, 1895) published two short papers, the results of collections made in Alberta by him and correspondents at Laggan (now Lake Louise) and along the Red Deer River. In 1905 Dall recapped what was known up to that time for the newly established province of Alberta and published his a broadly encompassing checklist of the "Land and Freshwater Mollusks of Alaska and Adjoining Regions" (actually, including all of Canada). Records of snails collected by Joseph B. Tyrrell in 1883, and later John Macoun in 1885, were recorded in *The Ottawa Field-Naturalist* by Whiteaves (1905, 1906) and later by Berry (1922) in a short publication published by the Victoria Memorial Museum.¹

Interest in the terrestrial molluscs of the Rocky Mountains was ongoing, and the majority of the early records were from these mountains and their foothills. In addition to the works already mentioned, Edward G. Vanatta (1906) reported on a small collection of land snails made, not in Alberta, but in nearby Field, British Columbia. Three papers report on the terrestrial molluscs of Jasper National Park, first by Alan Mozley (1926a, 1930) and more recently by Platt (1980). However other areas of the Alberta were also collected and papers published. For example, Taylor (1895), already mentioned, included records from river drift of the Red Deer River, and Russell (1954) listed snails found in the Cypress Hills of southeast Alberta and southwest Saskatchewan.

All of the early literature was primarily focussed on recording species in lists. Most of the more recent literature, has is concerned with the ecology of terrestrial molluscs in forests and grasslands (Platt 1980, Van Es & Boag 1981, Locasciulli & Boag 1987, Kralka 1996) and as vectors for parasitic lungworms in bighorn sheep and other ruminants (Boag & Wishart 1982, Robb & Samuel 1990).

Purely taxonomic works on the terrestrial mollusc fauna are few; the most recent work has been done by Harris & Hubricht (1982) who discussed speciation in the genus *Oxyloma*, citing Alberta as well as other western Canadian material, and Gerber (1986) who in his worldwide monograph of the *Vallonia* included many Alberta records of two species of this genus. A recent species compilation for Alberta by D. Lepitzki (2001) listed 48 species of terrestrial molluscs compiled from the literature and is the first publication to attempt a complete list for the province; it assigned provincial conservation ranks to most species.

Thus, there is a little over 130 years of published records from Alberta of terrestrial snails and slugs, but there has never been a comprehensive checklist of the terrestrial molluscs of the province. The annotated checklist below is mainly compiled from the literature and serves to cross-reference species with the published works in which they appear. The references under most species refer to places in the literature that document, discuss or otherwise indicate that these species occur in Alberta. At this time, there are no species of land snails or slugs that can be classified as endemic to the province.

Care must be taken to consider the source of literature records and the taxonomic group referenced. The shortcomings of this list is that authors' identifications have not been checked and that I have only seen a very small amount of material from Alberta myself, and collections in the Canadian Museum of Nature, and elsewhere, need to be studied to impart a greater level of accuracy to this list. The family Succineidae are in general very poorly known across large areas of North America. Although the family as a whole is conchologically quite distinct among other terrestrial snails, identification of species- and genera-level taxa by shells characters alone is difficult or unreliable. Determination of genera and species usually requires that characters of the reproductive system be observed, but for a number of North American nominal species, anatomical characters remain unknown or poorly described. In general, all unsubstantiated

¹*The Ottawa Naturalist* was to become *The Canadian Field-Naturalist* some years later, and the Victoria Memorial Museum, was the predecessor of the national museums of Canada, including the Canadian Museum of Nature.

identifications are very suspect if not confirmed anatomically, and even then, determinations could be wrong. I have not tried to determine whether literature records are correct in this group. Species are shown in this List generally as they appeared in the literature, with only generic placement and nomenclatural synonyms substituted. Records identified only to genus (i.e., *Succinea* sp., *Oxyloma* sp., etc.) have not been included in this List since there is no way of determining, in most cases, what these represent, and little information is added by their inclusion.

The systematics of higher taxa follows the working classification of the Gastropoda by Bouchet *et al.* (2005). Species that are introduced and known to be established out-of-doors are indicated as such (following the species name), and all other species (not marked) are believed to be native. It should be noted that there is a strong likelihood that exotic snails and slugs are under-recorded in Alberta, as was the case in British Columbia until quite recently (Forsyth 1999).

The following abbreviations are used for collections: CMN, Canadian Museum of Nature, Ottawa; RBCM, Royal British Columbia Museum Victoria; and RGF, personal collection of Robert Forsyth.

ANNOTATED CHECKLIST

Phylum Mollusca Cuvier 1795
Class Gastropoda Cuvier 1797
Subclass Orthogastropoda Ponder & Lindberg 1996
Clade Heterobranchia
Informal Group Pulmonata Cuvier 1817
Clade Eupulmonata Haszprunar & Huber 1990
Superfamily Ellobioidea L. Pfeiffer 1854

Family Ellobiidae L. Pfeiffer 1854 (1822)

Subfamily Carychiinae Jeffreys 1830

Genus *Carychium* Müller 1774

- 1 *Carychium exiguum* (Say 1822)
Harris & Pip 1973; Lepitzki 2001.
- 2 *Carychium exile* H.C. Lea 1842
Van Es & Boag 1981; Lepitzki 2001.

Clade Stylommatophora Schmidt 1855
Subclade Elasmognatha
Superfamily Succineoidea Beck 1837

Family Succineidae Beck 1837

Subfamily Succineinae Beck 1837

Genus *Oxyloma* Westerlund 1885

- 3 *Oxyloma gouldi* Pilsbry 1948
Harris & Pip 1973; Lepitzki 2001, in part [?].
- 4 *Oxyloma hawkinsii* (Baird 1863)
Harris 1978; Harris & Hubricht 1982; Lepitzki 2001.
- 5 *Oxyloma haydeni* Binney 1858
Harris 1978; Harris & Hubricht 1982; Lepitzki 2001.

- 6 ***Oxyloma kanabense* Pilsbry 1948**
Harris & Hubricht 1982; Lepitzki 2001, in part [?].
- 7 ***Oxyloma retusum* (I. Lea 1834)**
Dall 1905, as *Succinea retusa*; Mozley 1926a, 1930, 1934, all as *Succinea retusa*; Harris & Pip 1973; Platt 1980; Lepitzki 2001.

Genus *Succinea* Draparnaud 1801
- 8 ***Succinea grosvenorii* I. Lea 1864**
Taylor 1895b; Dall 1905; Pilsbry 1948; La Rocque 1953; Lepitzki 2001.
- 9 ***Succinea indiana* Pilsbry 1905**
Harris 1978.

Genus *Novisuccinea* Pilsbry 1948
- 10 ***Novisuccinea ovalis* (Say 1824)**
Taylor 1893, 1895b, both as *Succinea ovalis*; Harris & Pip 1973, as *Succinea ovalis*.
This seems rather doubtful.

Subfamily Catinellinae Odhner 1950
Genus *Catinella* Pease 1871
Subgenus *Mediappendix* Pilsbry 1948
- 11 ***Catinella vermeta* (Say 1829)**
Taylor 1893, 1895b, both as *Succinea avara*; Dall 1905, as *Succinea avara*; Berry 1922, as *Succinea avara*; Mozley 1926a, as *Succinea avara*, *S. vermeta*; Mozley 1930, as *Succinea avara*, *S. a. vermeta*; Pilsbry 1948, as *Succinea avara*; La Rocque 1953, as *Succinea avara avara* and *S. a. vermeta*; Harris & Pip 1973, as *Succinea avara*; Lepitzki 2001.

Subclade Orthurethra
Superfamily Cionelloidea Clessen 1879

Family Cionellidae Clessin 1879

Genus *Cochlicopa* Férussac 1821
Subgenus *Cochlicopa* Férussac 1821

- 12 ***Cochlicopa lubrica* (Müller 1774)**
Taylor 1893, 1895b, both as *Ferussacia subcylindrica*; Dall 1905; Mozley 1930, 1934; La Rocque 1953, as *Cionella lubrica*; Harris & Pip 1973, as *Cionella lubrica*; Harris 1978; Van Es & Boag 1981, as *Cionella lubrica*; Boag & Wishart 1982, as *Cionella lubrica*; Kralka 1986; Neckheim 1997; Lepitzki 2001, as *Cionella lubrica*.

Superfamily Pupilloidea Turton 1831

Family Pupillidae Turton 1831

Genus *Pupilla* Leach in Fleming 1828
Subgenus *Pupilla* Leach in Fleming 1828

- 13 ***Pupilla blandii* Morse 1865**
Taylor 1895a, 1895b, both as *Pupa blandii*; Dall 1905; Pilsbry 1948; La Rocque 1953; Lepitzki 2001.
The species seems to have been uniquely recorded from drift of the Red Deer River, east of Red Deer (Taylor 1895b).

14 *Pupilla hebes* (Ancey 1881)

Harris 1978.

This species has recently been found (2004) at Lac des Arcs, in the Rocky Mountain Foothills (RGF coll.) and appears to be the same as material from northwestern British Columbia that Forsyth (2004b) has identified as *Pupilla hebes*.

15 *Pupilla muscorum* (Linnaeus 1758)

Dall 1905; Harris & Pip 1973; Harris 1978; Lepitzki 2001.

Family Valloniidae Morse 1864

Genus *Pupisoma* Stoliczka 1873

16 *Pupisoma* sp.

Platt 1980; Lepitzki 2001.

Platt (1980) reported an unidentified species of *Pupisoma* from near Jasper, but it has not been subsequently found in Alberta to my knowledge. It was allegedly believed to be an introduction, but until confirmed, it seems more likely that this record represents a misidentification, perhaps a juvenile pupillid, vertiginid, or *Zoogenetes harpa*. The genus *Pupisoma* occurs in the humid tropics and subtropics of both hemispheres (Schileyko 1998).

Genus *Zoogenetes* Morse 1864

17 *Zoogenetes harpa* (Say 1824)

Van Es & Boag 1981; Kralka 1986; Lepitzki 2001.

Genus *Vallonia* Risso 1826

Van Es & Boag (1981) documented an unidentified species of *Vallonia* from Alberta, but just what this refers to is unknown; their specimens are apparently in the collection of the CMN, but these have not been studied.

18 *Vallonia costata* (Müller 1774)

Mozley 1926a, 1934; La Rocque 1953; Harris & Pip 1973; Harris 1978; Neckheim 1997; Lepitzki 2001.

Records of this species from Alberta need verification, especially since Pilsbry (1948) and Gerber (1996) did not list any Canadian records west of Manitoba. These records may refer instead to *Vallonia gracilicosta*.

19 *Vallonia cyclophorella* Sterki 1892

Harris & Pip 1973; Harris 1978; Gerber 1996; Lepitzki 2001.

20 *Vallonia excentrica* Sterki 1893

Harris 1978.

21 *Vallonia gracilicosta* Reinhardt 1883

Taylor 1893, 1895b, both as *V. costata* form *gracilicosta*; Mozley 1930, as *V. albula*; La Rocque 1953; Harris & Pip 1973; Harris 1978; Van Es & Boag 1981; Gerber 1996, as *V. gracilicosta gracilicosta*, *V. g. albula*; Lepitzki 2001, as *V. gracilicosta*, *V. g. albula*.

22 *Vallonia parvula* Sterki 1893

Harris & Pip 1973; Harris 1978; Lepitzki 2001.

Records of this species from Alberta require verification; Gerber (1996) did not record this species from western Canada.

23 *Vallonia perspectiva* Sterki 1892

Harris 1978.

24 *Vallonia pulchella* (Müller 1774)

Harris & Pip 1973; Harris 1978; Lepitzki 2001.

Family Vertiginidae Fitzinger 1833

Subfamily Vertigininae Fitzinger 1833

Tribe Vertiginini Fitzinger 1833

Genus *Vertigo* Müller 1774

Subgenus *Vertigo* Müller 1774

25 *Vertigo arthuri* von Martens 1882

Lepitzki 2001; Forsyth 2004b.

Material referable to this species is known to me from near Drumheller and along Hwy 40 at Smoky River (RGF collection) and is the source of the statement in Forsyth (2004b) that it occurs in Alberta. T. Frest (pers. comm., 4 June 2002; Lepitzki 2001) also has recognizes this species from the province.

26 *Vertigo binneyana* Sterki 1890

Harris 1978.

27 *Vertigo cristata* Sterki 1919 in Pilsbry & Cooke 1919

Lepitzki 2001; Forsyth 2004b.

Material referable to this species was collected along Hwy 40 at Smoky River (RGF collection) and is the source of the statement in Forsyth (2004b) that this species occurs in Alberta.

28 *Vertigo elatior* Sterki 1894

Pilsbry 1899, as *V. gouldi lagganensis*; Dall 1905, as [*Vertigo ventricosa*] var. *elatior*; Pilsbry 1948; Harris 1978; Lepitzki 2001.

29 *Vertigo gouldii* (A. Binney 1843)

Taylor 1893, as *Vertigo* sp. "closely resembling *gouldii*"; Mozley 1926b; Van Es & Boag 1981; Boag 1982, as *Vertigo* spp. in part; Boag & Wishart 1982; Kralka 1986; Locasciulli & Boag 1987; Robb & Samuel 1990; Neckheim 1997; Lepitzki 2001.

30 *Vertigo milium* (Gould 1840)

Harris 1978.

In the absence of other records from northwestern North America, the identity of Harris' record seems suspect and requires confirmation.

31 *Vertigo modesta* (Say 1824) sensu lato

Taylor 1893, as *Pupa hoppii*; Pilsbry 1898, as *Pupa hoppii*; Pilsbry 1899, as *Pupa decora*; Pilsbry & Vanatta 1900; Dall 1905; Berry 1922; Mozley 1926a, 1930, the latter, both as *V. modesta* and *V. m. parietalis*; Harris & Pip 1973; Harris 1978; Platt 1980; Van Es & Boag 1981; Boag 1982, as *Vertigo* spp. in part; Boag & Wishart 1982; Locasciulli & Boag 1987; Robb & Samuel 1990; Lepitzki 2001.

Berry (1922) commented on specimens from Kananaskis, remarking that he noted no specimens with an angular lamella. Records of *Pupa* (= *Vertigo*) *hoppii* from Alberta are erroneous according to Dall (1905), Pilsbry & Cooke (1918–1920) and La Rocque (1953). *Vertigo hoppii* is described from Greenland.

32 *Vertigo ovata* Say 1822

Taylor 1895b; Dall 1905; Mozley 1926a, 1930, 1934; Platt 1980; Kralka 1986; Lepitzki 2001.

33 *Vertigo paradoxa* Sterki in Nylander 1900

Harris 1978; Lepitzki 2001.

34 *Vertigo ventricosa* (Morse 1865)

Taylor 1895b; Harris 1978.

In the absence of other records from northwestern North America, Harris' record seems unlikely and requires confirmation. Moreover, this species and *V. elatior* are similar enough in appearance that they could be confused.

Tribe Truncatellinini Steenberg 1925

Genus *Columella* Westerlund 1878

Locasciulli & Boag (1987) and Robb & Samuel (1990) did not distinguish between species, identifying their material only as *Columella* spp.

35 *Columella columella* (von Martens 1830)

Taylor 1893, 1895b, as *Pupa alticola*; Dall 1905, as *Sphyradium edentulum* (in part); Berry 1922, as *C. alticola*; Mozley 1926a, as *C. alticola*; Pilsbry 1948, as *C. alticola*; La Rocque 1953, as *C. alticola*; Harris & Pip 1973, as *C. alticola*; Harris 1978, as *C. alticola*; Boag & Wishart 1982, as *Columella aticolla* [sic]; Locasciulli & Boag 1987, as *C. alticola*; Lepitzki 2001.

Berry (1922) doubtfully referred the Taylor's (1895b) records of "*Pupa simplex*" and Whiteave's (1905) records of "*Sphyradium edentulum*" to this species.

36 *Columella edentula* (Draparnaud 1805)

Taylor 1895b, as *Pupa simplex*; Dall 1905, as *Sphyradium edentulum* (in part); Harris 1978; Platt 1980; Van Es & Boag 1981, as *C. simplex*; Boag & Wishart, as *C. simplex*; Kralka 1986; Locasciulli & Boag 1987; Lepitzki 2001.

Berry (1922) doubtfully referred the Alberta records of *Pupa simplex* by Taylor (1895b) and *Sphyradium edentulum* by Whiteaves (1905) and Vanatta (1906) to *Columella alticola* (= *C. columella*).

Subfamily Gastrocoptinae Pilsbry 1918

Genus *Gastrocopta* Wollaston 1878

Subgenus *Albinula* Sterki 1892

37 *Gastrocopta armifera* (Say 1821)

Taylor 1895b, as *Pupa armifera*; Dall 1905, as *Bifidaria armifera*; Pilsbry 1948; La Rocque 1953; Lepitzki 2001.

38 *Gastrocopta similis* (Sterki 1909)

Harris 1978.

Harris (1978) mentioned that this species is present at Fort Normandeau, above Red Deer, Alberta, and noted that the nearest locality is Devils Lake, North Dakota, USA, according to L. Hubricht. The status of *G. similis* as a species that is distinct from *G. armifera* is questionable, even though *G. similis* has been generally accepted as a valid for some time (e.g., Turgeon et al. 1998) following the paper by Hubricht (1972).

39 *Gastrocopta holzingeri* (Sterki 1889)

Taylor 1895b, as *Pupa holzingeri*; Dall 1905, as *Bifidaria holzingeri*; Lepitzki 2001.

Subgenus *Vertigopsis* Sterki 1893

40 *Gastrocopta pentodon* (Say 1822)

Taylor 1893, 1895b, both as *Pupa pentodon*; Pilsbry 1898, as *Bifidaria pentodon*; Dall 1905, as *B. pentodon*; Pilsbry 1948; Harris & Pip 1973; Harris 1978; Lepitzki 2001.

Pilsbry (1898: 118) recorded this species from "Laggan, B.C." in error. However, Laggan (now Lake Louise) is in Alberta (see Forsyth 2004a).

41 *Gastrocopta tappaniana* (C. B. Adams 1842)

Van Es & Boag 1981; Lepitzki 2001.

The only records of this species in Alberta are from the study of Van Es & Boag (1981) near Edmonton.

Superfamily Punctoidea Morse 1864

Family Punctidae Morse 1864

Genus *Punctum* Morse 1864

Subgenus *Punctum* Morse 1864

42 *Punctum minutissimum* (I. Lea 1841)

Berry 1922, as *P. pygmaeum*; Mozley 1926b, as *P. pygmaeum*; Harris 1978; Van Es & Boag 1981; Boag & Wishart 1982, as *P. pygmaeum*; Kralka 1986; Locasciulli & Boag 1987, as *P. pygmaeum*; Robb & Samuel 1990; Neckheim 1997; Lepitzki 2001.

Family Discidae Thiele 1931 (1866)

Genus *Anguispira* Morse 1864

Subgenus *Zonodiscus* Pilsbry 1948

43 *Anguispira kochi occidentalis* (von Martens 1882)

La Rocque 1953, questionably, as *A. kochi kochi*.

La Rocque (1953) queried whether the species is in Alberta. I know of no bonafide records from Alberta. Shells of *Oreohelix subrudis* have been wrongly identified as *A. kochi occidentalis* in collections.

Genus *Discus* Fitzinger 1833

Subgenus *Antediscus* H. B. Baker in Pilsbry 1948

44 *Discus shimekii* (Pilsbry 1890)

Berry 1922, as *Gonyodiscus shimekii*; Pilsbry 1948; La Rocque 1953; Harris 1978; Platt 1980; Lepitzki 2001.

Subgenus *Discus* Fitzinger 1833

45 *Discus whitneyi* (Newcomb 1864)

Taylor 1893, 1895b, both as *Patula striatella*; Dall 1905, as *Pyramidula striatella*; Berry 1922, as *Gonyodiscus cronkhitei*; Mozley 1926a, as *G. c. anthonyi*; Mozley 1926b, as *Pyramidula c. anthonyi*; Mozley 1930, 1934, both as *Gonyodiscus c. anthonyi*; Pilsbry 1948, as *D. cronkhitei*; Harris & Pip 1973, as *D. cronkhitei*; Harris 1978, as *D. cronkhitei*; Platt 1980, as *D. cronkhitei*; Van Es & Boag 1981, as *D. cronkhitei*; Boag 1982, as *D. cronkhitei*; Boag & Wishart 1982, as *D. cronkhitei*; Kralka 1986, as *D. cronkhitei*; Locasciulli & Boag 1987, as *D. cronkhitei*; Robb & Samuel 1990, as *D. cronkhitei*; Neckheim 1997, as *D. cronkhitei*; Lepitzki 2001.

Family Oreohelicidae Pilsbry 1939

Genus *Oreohelix* Pilsbry 1904

46 *Oreohelix strigosa cooperi* (W. G. Binney 1858)

Dall 1905, as *Oreohelix strigosa* var. *stantoni*; Pilsbry 1939; Russell 1951, as *O. strigosa stantoni*; La Rocque 1953.

47 *Oreohelix subrudis subrudis* (Reeve 1854)

Russell 1951; Lepitzki 2001.

48 *Oreohelix subrudis limitaris* (Dawson 1875)

Dawson 1875, as *Helix limitaris*; Taylor 1895b, as *Patula strigosa*; Dall 1905, as *Pyramidula solitaria* var. *limitaris*; Berry 1922, as *O. cooperi limitaris*; Pilsbry 1939; La Rocque 1953; Lepitzki 2001, as *O. subrudis s.l.*

Dawson (1875) described this subspecies from Waterton Lake.

Superfamily Gastrodontoidea Tryon 1866

Family Gastrodontidae Tryon 1866

Subfamily Gastrodantinae Tryon 1866

Genus *Striatura* Morse 1864

Subgenus *Striaturops* H. B. Baker 1928

49 *Striatura ferrea* Morse 1864

Platt 1980; Lepitzki 2001.

Although reported from near Jasper, this species has not been subsequently found in Alberta to my knowledge and this record may represent a misidentification. Except for this anomalous record, *Striatura ferrea* is not known west of Lake Superior (Pilsbry 1946, Hubricht 1985). The whereabouts of the material, of which the identification needs verification, is unknown but perhaps could be housed in the CMN collection.

Genus *Zonitoides* Lehmann 1862
Subgenus *Zonitoides* Lehmann 1862

50 *Zonitoides arboreus* (Say 1816)

Taylor 1893, 1895b, as *Hyalina arborea*; Dall 1905; Berry 1922; Mozley 1926a, 1930, 1934; Pilsbry 1946; Harris & Pip 1973; Harris 1978; Platt 1980; Van Es & Boag 1981; Boag & Wishart 1982; Kralka 1986; Locasciulli & Boag 1987; Robb & Samuel 1990; Lepitzki 2001.

51 *Zonitoides nitidus* (Müller 1774)

Harris 1978; Platt 1980; Lepitzki 2001.

Family Euconulidae H. B. Baker 1928

Subfamily Euconulinae H. B. Baker 1928

Genus *Euconulus* Reinhardt 1883

Subgenus *Euconulus* Reinhardt 1883

52 *Euconulus fulvus* (Müller 1774)

Taylor 1893, 1895b, both as *Conulus fulvus*; Dall 1905, as *E. trochiformis*; Berry 1922, as *Petasina fulva alaskensis*; Mozley 1926a, as *E. fulvus polygyratus*; Mozley 1926b; Mozley 1930, as *E. chersinus polygyratus*; Mozley 1934, as *E. fulvus fulvus*; La Rocque 1953, as *E. fulvus fulvus*; Harris & Pip 1973; Harris 1978, as *E. f. alaskensis*, *E. fulvus*; Platt 1980; Van Es & Boag 1981; Boag 1982; Boag & Wishart 1982; Kralka 1986; Locasciulli & Boag 1987; Robb & Samuel 1990; Neckheim 1997; Lepitzki 2001, as *E. fulvus*, *E. polygyratus*.

It is possible that some of these records may in fact be the next species. It is very unlikely that *E. polygyratus* occurs in Alberta; Mozley's records of this species (repeated by Lepitzki 2001) are placed here.

53 *Euconulus praticola* (Reinhardt 1883)

Neckheim 1997, inferred as *Euconulus alderi*.

Neckheim (1997: 7) mentions that at Smoky Lake, AB, he found both reddish brown and larger, yellowish shells. While not clearly stating that he believed that the smaller, reddish species is *E. alderi* [= *E. praticola*], he does infer this. Recently, two species have been recognized in British Columbia: a ubiquitous, catholic species predominantly in xeric to mesic habitats (*E. fulvus*) and a widespread but sporadic species living in hygric habitats (*E. praticola*) (Forsyth 2004b). I suggest that Neckheim had both of these species in his Smoky Lake collection.

Family Oxychiliidae Hesse in Geyer 1927 (1879)

Subfamily Godwiniinae C. M. Cooke 1921

Genus *Nesovitrea* C. M. Cooke 1921

Subgenus *Perpolita* H. B. Baker 1928

54 *Nesovitrea binneyana binneyana* (Morse 1864)

Harris 1978, as *N. binneyana*.

The occurrence of the nominal subspecies in Alberta requires confirmation, especially since H. B. Baker (1930) recognized only *N. binneyana occidentalis* from the province.

55 *Nesovitrea binneyana occidentalis* (H. B. Baker 1930)

Mozley 1926a, 1930, both as *Polita binneyana*; Baker 1930, as *Retinella binneyana occidentalis*; Pilsbry 1946, as *Retinella binneyana occidentalis*; La Rocque 1953, as *Retinella binneyana occidentalis*; Harris 1978, as *Nesovitrea occidentalis*; Boag & Wishart 1982, as *Nesovitrea occidentalis*; Neckheim 1997; Lepitzki 2001.

56 *Nesovitrea electrina* (Gould 1841)

Taylor 1893, 1895b, both as *Hyalina radiata*; Dall 1905, as *Vitrea radiatula*; Berry 1922, as *Helicella (Retinella) hammonis*; Mozley 1926a, 1930, both as *Polita hammonis*; Mozley 1934, as *Retinella electrina*; Harris & Pip 1973; Platt 1980, as *Retinella electrina*; Van Es & Boag 1981, as *Retinella electrina*; Kralka 1986; Locasciulli & Boag 1987, as *Retinella electrina*; Robb & Samuel 1990; Neckheim 1997; Lepitzki 2001.

Family Pristilomatidae Cockerell 1891

Genus *Hawaia* Gude 1911

57 *Hawaia minuscula* (A. Binney 1840)

Harris 1978.

Superfamily Limacoidea Lamarck 1801

Family Agriolimacidae Wagner 1935

Subfamily Agriolimacinae Wagner 1935

Genus *Deroceras* Rafinesque 1820

Subgenus *Deroceras* Rafinesque 1820

58 *Deroceras laeve* (Müller 1774)

Taylor 1893, 1895b, both as *Limax hyperboreus*; Dall 1905, as *Agriolimax hyperboreus*; Mozley 1930, as *Agriolimax hyperboreus*; La Rocque 1953, questionably, as *D. hyperboreus*; Platt 1980; Van Es & Boag 1981; Boag & Wishart 1982; Kralka 1986; Barker 1999; Lepitzki 2001.

59 *Deroceras reticulatum* (Müller 1774) Introduced

Not previously recorded in the literature.

I have photographed slugs at Lac des Arcs, in the Rocky Mountain Foothills in 2004; additionally, there is a museum lot collected at Waterton Lake National Park (RBCM cat. no. 006-082-005) that is verified anatomically as *Deroceras reticulatum*.

Family Vitrinidae Fitzinger 1833

Genus *Vitrina* Draparnaud 1801

60 *Vitrina angelicae* Beck 1837

Taylor 1893, 1895b, both as *V. limpida*; Dall 1905, as *V. limpida*; Mozley 1926a, 1930, 1934, all as *V. limpida*; Pilsbry 1946, as *V. limpida*; La Rocque 1953, as *V. limpida*; Harris & Pip 1973, as *V. limpida*; Harris 1978, as *V. limpida*; Platt 1980, as *V. limpida*; Robb & Samuel 1990, as *V. limpida*; Lepitzki 2001.

None of the literature records above were determined to my knowledge on anatomical grounds, and most of these records are from the Rocky Mountains and the foothills where I have identified *Vitrina pellucida* from. Unless there are both species in the same area (as purported by Harris 1978), the majority (or all?) of these records probably were *V. pellucida*.

61 *Vitrina pellucida* (Müller 1774)

Harris 1978, as *V. alaskana*; Van Es & Boag 1981, as *V. alaskana*; Boag & Wishart 1982, as *V. alaskana*; Kralka 1986, as *V. alaskana*; Lepitzki 2001.

Based on anatomical differences between this species and *Vitrina angelicae*, I have confirmed that *V. pellucida* does occur in Alberta. One specimen from Lac des Arcs, near Canmore (RGF coll.), was dissected. To my knowledge no other material has been anatomically studied. See my comments under *Vitrina angelicae*, above.

Superfamily Arionoidea Gray in Turton 1840

Family Binneyidae Cockerell 1891

Genus *Hemphillia* Bland & W. G. Binney 1872

62 *Hemphillia camelus* Pilsbry & Vanatta 1897

La Rocque 1953; Lepitzki 2001.

La Rocque (1953) gave the range of this species as Alberta and Idaho, without any further details or references literature or specimens.

Superfamily Helicoidea Rafinesque 1815

Family Polygyridae Pilsbry 1895

Subfamily Polygyrinae Pilsbry 1895

Tribe Allogonini Emberton 1995

Genus *Allogona* Pilsbry 1939

Subgenus *Dysmedoma* Pilsbry 1939

– *Allogona ptychophora* (A. D. Brown 1870)

[Harris 1978].

Although mentioned by Harris (1978), *Allogona ptychophora* was not found in Alberta by him (pers. comm., 10 March 2006).

Family Thysanophoridae Pilsbry 1926

Genus *Microphysula* Pilsbry 1926

63 *Microphysula ingersollii* (Bland 1875)

Harris 1978.

BIBLIOGRAPHY & LITERATURE CITED

References marked with an asterisk are included here as they are cited in the introduction or annotations, but do not form part of the body of published work on the Recent terrestrial molluscs of Alberta.

- BAKER, H. B. 1930. The North American Retinellae. *Proceedings of the Academy of Natural Sciences of Philadelphia* 83: 193–219.
- BARKER, G. M. 1999. Naturalised terrestrial Stylommatophora (Mollusca: Gastropoda). *Fauna of New Zealand/Ko te Aitanga Pepeke o Aotearoa* 38: 1–253.
- BERRY, S. S. 1922. Land snails from the Canadian Rockies. *Victoria Memorial Museum, Bulletin* 36: 1–19.
- BOAG, D. A., & W. D. WISHART. 1982. Distribution and abundance of terrestrial gastropods on a winter range of big-horn sheep in southwestern Alberta. *Canadian Journal of Zoology* 60: 2633–2640.
- *BOUCHET, P., J. FRÝDA, B. HAUSDORF, W. PONDER, Á. VALDÉS, & A. WARÉN. 2005. Working classification of the Gastropoda. Pages 240–368 in P. BOUCHET & J.-P. ROCROI (eds.), *Classification and nomenclator of gastropod families*. *Malacologia* 47 (1–2).
- DALL, W. H. 1905. Land and fresh water mollusks. *Harriman Alaska Expedition* 13: 1–171, pls. 1–2.
- DAWSON, G. M. 1875. Appendix E. — Land and fresh-water Mollusca, collected during the summers of 1873–74, in the vicinity of the forty-ninth parallel — Lake of the Woods to the Rocky Mountains. Pages 347–350 in *British North American Boundary Commission, Report on the geology and resources of the region in the vicinity of the forty-ninth parallel, from the Lake of the Woods to the Rocky Mountains. With lists of plants and animals collected, and notes on the fossils*.
- *FORSYTH, R. G. 1999. Distributions of nine new or little-known exotic land snails in British Columbia. *The Canadian Field-Naturalist* 113 (4): 559–568.
- *FORSYTH, R. G. 2004. *Gastrocopta* in British Columbia (Mollusca: Pulmonata: Vertiginidae). *The Festivus* 36 (5): 53–55.
- *FORSYTH, R. G. 2004. *Land Snails of British Columbia*. *Royal BC Museum Handbook*. Royal British Columbia Museum, Victoria. iv, 188 pp., [8] pl.
- GERBER, J. 1996. Revision der Gattung *Vallonia* Risso 1826 (Mollusca: Gastropoda: Valloniidae). *Schriften zur Malakozoologie aus dem Haus der Natur – Cismar* 8: 1–227.
- HARRIS, S. A. 1978. Vertical zonation of land snails in the Iraqi slopes of the Persian Mountains and in the Rocky Mountains of Alberta, Canada. *Arctic and Alpine Research* 10 (2): 457–463.
- HARRIS, S. A., & L. HUBRICHT. 1982. Distribution of the species of the genus *Oxyloma* (Mollusca, Succineidae) in southern Canada and the adjacent portions of the United States. *Canadian Journal of Zoology* 60: 1607–1611.

- HARRIS, S. A., & E. PIP. 1973. Molluscs as indicators of late- and post-glacial climatic history in Alberta. *Canadian Journal of Zoology* 51: 209–215.
- *HUBRICHT, L. 1972. *Gastrocopta armifera* (Say). *The Nautilus* 85 (3): 73–78.
- *HUBRICHT, L. 1985. The distributions of the native land mollusks of the eastern United States. *Fieldiana, Zoology* (n.s.) 24: i–viii, 1–191.
- KRALKA, R.A. 1986. Population characteristics of terrestrial gastropods in boreal forest habitats. *American Midland Naturalist* 115: 156–164.
- LA ROCQUE, A. 1953. Catalogue of the Recent Mollusca of Canada. *National Museum of Canada, Bulletin* 129: i–x, 1–406.
- LEPITZKI, D.A.W. 2001. Gastropods: 2000 preliminary status ranks for Alberta. Edmonton: Alberta Sustainable Resource Development, Fish and Wildlife Division. 126 pp.
- LOCASCIULLI, O., & D. A. BOAG. 1987. Microdistribution of terrestrial snails (Stylommatophora) in forest litter. *The Canadian Field-Naturalist* 101 (1): 76–81.
- MOZLEY, A. 1926a. Preliminary list of the Mollusca of Jasper Park, Alberta. *The Nautilus* 40: 53–56.
- MOZLEY, A. 1926b. Some mollusks of western Canada. *The Nautilus* 40: 56–63.
- MOZLEY, A. 1930. Reports of the Jasper Park Lakes investigations, 1925–26. The Mollusca of Jasper Park. *Transactions of the Royal Society of Edinburgh* 56 (3): 647–669, pl. 1, 2.
- MOZLEY, A. 1934. Mollusca from the provinces of Saskatchewan and Alberta, Canada. *Proceedings of the Malacological Society of London* 21: 138–145.
- NECKHEIM, C. M. 1997. A visit to Canada with notes on molluscs from the vicinity of Vancouver and Edmonton. *The Papustyla* 11 (3): 1–10.
- PILSBRY, H. A. 1898. A classified list of American land shells, with localities. *The Nautilus* 11 (10): 117–120.
- PILSBRY, H.A. 1899. Notes on a few northwest American land snails. *Proceedings of the Academy of Sciences of Philadelphia* 51 (1899): 314–315.
- PILSBRY, H. A. 1939. Land Mollusca of North America (north of Mexico), 1 (1). *The Academy of Natural Sciences of Philadelphia, Monographs* 3: i–xvii + 1–573 + i–ix.
- PILSBRY, H. A. 1946. Land Mollusca of North America (north of Mexico), 2(1). *The Academy of Natural Sciences of Philadelphia, Monographs* 3: frontis., i–vi, 1–520.
- PILSBRY, H. A. 1948. Land Mollusca of North America (north of Mexico). *The Academy of Natural Sciences of Philadelphia, Monographs* 3: Vol. 2 (2): i–xlvi + 521–1113 pp.
- *PILSBRY, H. A., & C. M. COOKE. 1918–1920. [Pupillidae: Gastrocoptinae, Vertigininae]. *Manual of Conchology* (2) 25: 1–404, 34 pls.
- PILSBRY, H. A., & E. G. VANATTA. 1900. A partial revision of the pupae of the United States. *Proceedings of the Academy of Natural Sciences of Philadelphia* 1900: 582–611, pl. 22.
- PLATT, T. R. 1980. Observations on the terrestrial gastropods in the vicinity of Jasper, Alberta. *The Nautilus* 94: 18–21.
- ROBB, L. A., & W. M. SAMUEL. 1990. Gastropod intermediate hosts of lungworms (Nematoda: Protostrongylidae) on a bighorn sheep winter range: aspects of transmission. *Canadian Journal of Zoology* 68: 1976–1982.
- RUSSELL, L. S. 1951 [1952]. Land snails of the Cypress Hills and their significance. *The Canadian Field-Naturalist* 65: 174–175.
- *SCHILEYKO, A. A. 1998. Treatise on Recent terrestrial pulmonate molluscs. Part 1, Achatinellidae, Amastridae, Oriculidae, Strobilopsidae, Spelaeodiscidae, Valloniidae, Cochlicopidae, Pupillidae, Chondrinidae, Pyramidulide. *Ruthenica Supplement* 2: 1–128
- TAYLOR, G. W. 1893. Land and fresh water shells in the Rocky Mountains. *The Nautilus* 7 (8): 85–86.
- TAYLOR, G.W. 1895a. The present state of Canadian conchology. *The Ottawa Naturalist* 8: 143–159.
- TAYLOR, G. W. 1895b. The land and freshwater shells of Alberta. *The Ottawa Naturalist* 9 (9): 173–178.
- VAN ES, J., & D. A. BOAG. 1981. Terrestrial molluscs of central Alberta. *The Canadian Field-Naturalist* 95 (1): 75–79.
- *VANATTA, E. G. 1906. British Columbia shells. *The Nautilus* 20 (8): 95.

INDEX

A		G		pentodon, Gastrocopta 7	
AGRIOLIMACIDAE 10		Gastrocopta 7		Perpolita 9	
Agriolimacinae 10		Gastrocoptinae 7		perspectiva, Vallonia 5	
Albinula 7		GASTRODONTIDAE 8		POLYGYRIDAE 11	
Allogona 11		Gastrodontae 8		Polygyrinae 11	
Allogonini 11		Gastrodontoidea 8		praticola, Euconulus 9	
angelicae, Vitrina 10		Godwiniinae 9		PRISTILOMATIDAE 10	
Anguispira 8		gouldii, Vertigo 6		ptychophora, Allogona 11	
Antediscus 8		gracilicosta, Vallonia 5		pulchella, Vallonia 5	
arboreus, Zonitoides 9		grosvenori, Succinea 4		PUNCTIDAE 7	
Arionoidea 10				Punctoidea 7	
armifera, Gastrocopta 7		H		Punctum 7	
arthuri, Vertigo 6		Hawaiia 10		Pupilla 4	
avara, Catinella 4		hawkinsii, Oxyloma 3		PUPILLIDAE 4	
		haydeni, Oxyloma 3		Pupilloidea 4	
		hebes, Pupilla 5			
		Helicoidea 11		R	
B		holzingeri, Gastrocopta 7		reticulatum, Deroceras 10	
binneyana, Nesovitrea binneyana 9				retusum, Oxyloma 4	
binneyana, Vertigo 6		I			
Binneyidae 10		indiana, Succinea 4		S	
blandii, Pupilla 4		ingersollii, Microphysula 11		shimekii, Discus 8	
				Striatura 8	
C		K		Striaturops 8	
camelus, Hemphillia 10		kanabense, Oxyloma 4		strigosa, Oreohelix cooperi 8	
Carychiinae 3				subrudis, Oreohelix limitaris 8	
Carychium 3		L		subrudis, Oreohelix subrudis 8	
Catinella 4		laeve, Deroceras 10		Succinea 4	
CIONELLIDAE 4		Limacoidea 10		SUCCINEIDAE 3	
Cionelloidea 4		lubrica, Cochlicopa 4		Succineinae 3	
Cochlicopa 4				Succineoidea 3	
Columella 6		M			
columella, Columella 7		Mediappendix 4		T	
costata, Vallonia 5		Microphysula 11		tappaniana, Gastrocopta 7	
cristata, Vertigo 6		miliun, Vertigo 6		THYSANOPHORIDAE 11	
cyclophorella, Vallonia 5		minuscula, Hawaiia 10		Truncatellininae 6	
		minutissimum, Punctum 7			
D		modesta, Vertigo modesta 6		V	
Deroceras 10		muscorum, Pupilla 5		Vallonia 5	
Discidae 8				VALLONIIDAE 5	
Discus 8		N		ventricosa, Vertigo 6	
Dysmedoma 11		Nesovitrea 9		VERTIGINIDAE 6	
		nitidus, Zonitoides 9		Vertigininae 6	
E		Novisuccinea 4		Vertigo 6	
edentula, Columella 7				Vertigopsis 7	
elatior, Vertigo 6		O		Vitrina 10	
electrina, Nesovitrea 9		occidentalis, Anguispira kochi 8		VITRINIDAE 10	
Ellobiidae 3		occidentalis, Nesovitrea binneyana 9			
Ellobioidea 3		OREOHELICIDAE 8		W	
EUCONULIDAE 9		Oreohelix 8		whitneyi, Discus 8	
Euconulinae 9		ovata, Vertigo 6			
Euconulus 9		OXYCHILIIDAE 9		Z	
excentrica, Vallonia 5		Oxyloma 3		Zonitoides 9	
exiguum, Carychium 3				Zonodiscus 8	
exile, Carychium 3		P		Zoogenetes 5	
		paradoxa, Vertigo 6			
F		parvula, Vallonia 5			
ferrea, Striatura 8		pellucida, Vitrina 10			
fulvus, Euconulus 9					