Collecting land and freshwater molluscs during a visit to Canada in 2010. Part two: British Columbia

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Land- en zoetwatermollusken verzamelen tijdens een bezoek aan Canada in 2010. Deel 2: British Columbia

Samenvatting. In de zomer van 2010 werd er naar weekdieren gezocht in British Columbia, Canada. Op 16 plaatsen werden mollusken op 't oog verzameld, op vijf van die 16 plaatsen werden bodemmonsters genomen en van één plaats werd een monster van aanspoelsel meegenomen. In totaal werden er 30 soorten landslakken en 13 soorten zoetwatermollusken verzameld. Intrigerend is de vondst van een *Oxyloma* soort bij Osoyoos Lake die door Baird in 1863 van deze plaats als *Succinea hawkinsii* werd beschreven. Verder werd in Surrey een *Succinea* gefotografeerd die we in Nederland zonder aarzeling als *S. putris* zouden benoemen – maar voor Surrey zou het de eerste vondst van deze soort zijn.

Introduction

This is the second of two papers describing my observations on, and collecting of land and freshwater molluscs during my 2010 holidays in Canada. I collected in British Columbia between 7 and 17 August. In part one of this twin paper I reported on the molluscs observed and collected in Alberta (Neckheim, 2013); this part deals with British Columbia.

Materials and methods

In British Columbia I inspected 16 sites that I considered chanceful for finding terrestrial snails and slugs. I also looked for freshwater molluscs but I gave this group less attention. For terrestrial molluscs I looked in particular in natural habitats under wood and stones for small species of snails like *Vertigo*. I collected by handpicking and by soil sampling. Five soil samples (litter samples) and one sample of drift debris were taken. Living animals of large species such as *Cepaea nemoralis* and slugs were not collected but documented by photographs. Soil samples were slowly dried at room temperature prior to sorting. Samples were passed through a series of three sieves of 5, 1 and 0.5 mm mesh respectively. The material passing the 0.5 mm screen was not retained.

All data and habitat photos were put in an MS Excel document which was made available to the Royal British Columbia Museum in Victoria. Shells collected are in the collection of the author and some samples were donated to the Royal BC Museum.

I used the malacological books of Grimm et al. (2009), Clarke (1981) and Burch (1989) to identify molluscs. Scientific names of the land snails were taken from Forsyth (2004).

Through Toporama and Google Earth I added latitude and longitude coordinates for most of the sites.

Collecting sites

During our holidays in Canada we made a round trip by car from Edmonton (Alberta) to Surrey (British Columbia) via Highway 1 and back via Highway 3. In the summer of 2010 British Columbia was dry: there was few rain and forest fires were a concern. Below the sites are described where I collected or made observations.

1. Spillimacheen; Columbia River; small road along the river, drift along lake with marshland, 07-08-2010.
50° 54' 12" N 116° 22' 23" W.
This sample, taken from drift debris along a lake in marshland, contained numerous shells of freshwater molluscs and some land snails. Nearby I collected some molluscs along a brook.

2. Rogers Pass; along Highway 1, near time zone change (parking place); mixed forest on hillside, 07-08-2010.
The hillside was very steep with large trees and lots of undergrowth on stony ground. I took several small soil samples within a 10 m^2 area. I expected a rich mollusc fauna, but there was not. No shell was found in the soil samples!

3. Revelstoke; along the Columbia River; on a garden dump; Douglas Street; under paper, 08-08-2010.
51° 0' 8.42" N 118° 12' 24.22" W.
One living *Cepaea nemoralis* (Linnaeus, 1758) was found and photographed. Another one was crushed.

4. Near Hope; beside bridge along Hunter Creek; rest area along Highway 1, 08-08-2010.
49° 21' 20.20" N 121° 34' 29.01" W.
I found one black-coloured *Arion rufus* (Linnaeus, 1758) crawling on moss near the bridge. It was photographed.

Fig. 1. Abundance of snails cf. *Succinea putris* in High Knoll Park, Langley. Photo: Tello Neckheim.

5. East of Kamloops; rest area with gas station along Highway 1; along railway under dry wood, 08-08-2010.
50° 40' 40" N 120° 14' 47" W.
Searching under every piece of wood I just found one living *Vertigo elatior* Sterki, 1894. The area was very dry.

6. Langley; High Knoll Park; in grassland along Nicomekl River, near footbridge, 09-08-2010.
49° 5' 45" N 122° 40' 46" W.
This park is well-known for its Bald eagles. I saw one young eagle on a nest.
In the morning *Arion rufus* and probably *Succinea putris* (Linnaeus, 1758) were abundant, creeping along the footpath. I took some pictures. No other snails or slugs were observed (fig. 1).

7. Surrey; 194th Street; remnant of native forest between houses. I looked under wood and took a leave litter sample, 10-08-2010.
49° 7' 20" N 122° 41' 0" W.
This small remnant of a forest looked very natural and the snail fauna confirmed this. The site yielded among others *Vertigo columbiana* (Pilsbry et Vanatta, 1900) (fig. 2).

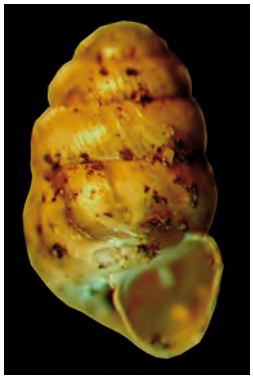

Fig. 2. *Vertigo colombiana* from 194th Street, Surrey. Photo: Tello Neckheim.

8. White Rock; along the beach/boulevard 8th Avenue; in gardens beside the parking lot, 10-08-2010.
49° 1' 8" N 122° 47' 52" W.
Along the boulevard, on the soil in the gardens of the parking areas I found living *Oxychilus draparnaudi* (Beck, 1837) which I photographed. This is an introduced species in Canada. I collected five empty shells. No other snails were found in these gardens.

9. Surrey; 194 Street/64th Av.; remnant of forest.
49° 7' 10" N 122° 41' 30" W.
This is another native forest patch between roads and houses. Along the street rubbish is deposited and there I found snails. I did not take a soil sample but photographed snails and picked up empty shells.

10. Vancouver; Stanley Park; West of Pipeline Road, under a plate of wood near Rhododendron shrubs, 11-08-2010.
49° 17' 54.56" N 123° 8' 14.57" W.
I did not particularly look for snails in Stanley Park, but this big slab of wood could not be neglected. In 1923 C.F. Mant went several times to Stanley Park to collect land snails but only found four native species and classified this yield as disappointing (Mant, 1923). I found four mollusc species, three of which are introduced.
Oxychilus draparnaudi was lost when it fell in a hole in the ground. The *Prophysaon* slug species was slender and orange-brown; the slime was orange. Because this slug is variable in colour and I do not have enough experience to identify slugs from Canada, I am not sure whether the identification is correct.

11. Osoyoos; along the Eastern Shore Drive; under fruit trees, 12-08-2010.
49° 0' 9.46" N 119° 25' 46.92" W.
Returning back to Edmonton we stopped in Osoyoos and stayed there for a few days. High up above Osyoos lake, near the US border the scene resembles a desert but along the lake there is a lot of agriculture, especially fruit trees. In the dry areas I could not find snails. A fast look in an orchard (all the land is private property) brought some snails and slugs, but I presume there are many more species.

12. Osoyoos; Haynes Point wetlands trail; near footbridge; on mud, 13-08-2010.
49° 0' 50.43" N 119° 27' 17.94" W.
Near the footbridge it was the most convenient place to look for snails because there was some mud and fallen leaves. Here I found *Zonitoides nitidus* (Muller, 1774), an *Oxyloma* species (see Remarks below) and some empty shells of freshwater molluscs.

13. Castlegar; forest on hill along parking place behind the Bank of Montreal building, 15-08-2010.
49° 17' 42.02" N 117° 39' 19.72" W.
I found *Cepaea nemoralis* and *Zonitoides arboreus* under rubbish and I collected a soil sample in the forest under ferns and fallen branches which yilded, among others, *Cryptomastix mullani* (Bland et J.G. Cooper, 1861) (fig. 3).

Fig. 3. *Cryptomastix mullani* from Castlegar. Photo: Tello Neckheim.

14. Cranbrook; along small creek near shore of Elisabeth Lake; on mud near eco-track, 16-08-2010.
49° 30' 0.46" N 115° 47' 19.40" W.
Elisabeth Lake is a bird sanctuary and I saw a lot of birds like Eared grebe, ducks and stilts, but also ground squirrels and a White-tailed dear. In mud under grass I found only two fresh shells of an *Oxyloma* species. I photographed the live species. The empty shells found are depicted in fig. 4.

Fig. 4. An *Oxyloma*-like species from Cranbrook.
Photo: Tello Neckheim.

Remarks

Family **Lymnaeidae**

I elected to use the name *Galba truncatula* instead of *Fossaria truncatula* following ICZN (1998).

Family **Physidae**

Probably the *Physella* species collected in Spillimacheen and Osoyoos is *P. gyrina*.

Family **Succineidae**

Following Forsyth (in Grimm et al., 2010) there are in Canada five genera: *Mediappendix* (sometimes included in *Catinella*), *Novisuccinea*, *Oxyloma*, *Succinea* and *Succinella* (introduced). It is well known that identification of the shells of this genus is almost impossible. Dissection is required for identification, but it was not my intention to collect living animals for dissection. The North American species need much work done to sort out the complicated taxonomy.

Fig. 5. Another snail cf. *Succinea putris*, here from Surrey.
Photo: Tello Neckheim.

Fig. 6. *Oxyloma hawkinsii*?
from Osoyoos.
Photo: Tello Neckheim.

In Surrey I photographed a species which to me looks similar to *Succinea putris*. The snails were crawling together with *Arion rufus* (also a European species) on moist ground and plants in a moist meadow, a habitat similar to where *S. putris* is found in the Netherlands. *S. putris* is a European species which has not yet been identified in British Columbia (fig. 5).

The shells of the *Oxyloma* species collected and photographed in Osoyoos were slender and long. The animal of this Amber snail was spotted with brown. Baird (1863) mentioned from Osoyoos Lake: *Succinea hawkinsii* [= *Oxyloma hawkinsii* (Baird, 1863)]. "This shell is of an elegant form, and of a pinkish colour, with the interior of a pearly lustre. It is smooth and shining, but marked with waved striae of lines of growth. It resembles very much in figure the *Succinea pfeifferi* [= *Oxyloma sarsii* (Esmark, 1886)] of Europe, but is still more elegant in shape, and of a brighter hue."

Until now this species was not recently collected and, as far as Robert Forsyth knows, its anatomy is unknown. It would be highly rewarding if the collected shells and photographed animals proved identical with the species described by Baird (fig. 6).

Family **Boettgerillidae**

At two sites *Boettgerilla pallens* was found in Metro Vancouver. Along a remnant of native forest, under cardboard near garbage a juvenile specimen was found in Surrey. Also under a plate of wood in bushes in Stanley park a specimen was found. Although this European slug is mainly living underground it is known that it disperses fast in new areas (Reise et al., 2000). Human activities promote its dispersal but probably the quick adjustment of the species to new habitats, including natural habitats, also plays a role.

Family **Agriolimacidae**

Deroceras panormitanum was found in Osoyoos under fruit trees, together with *Deroceras reticulatum*. Probably these species are common slugs in those habitats. It was not possible to look more extensively for snails and slugs in those fruit tree plantations because they are private property.

Family **Helicidae**

I searched for *Cepaea nemoralis* in gardens in Surrey but could not find this originally European species there. However, I did find *Cepaea nemoralis* in Revelstoke and Castelgar. All shells were brown-coloured, without bands.

Corrections of identifications of snails collected in 1996

After reviewing my collection I corrected some identifications that I reported earlier (Neckheim, 1997). *Haplotrema sportella* (= *Ancotrema sportella*) should be *Haplotrema vancouverensis*. *Pristiloma arcticum* turned out to be a juvenile *Pristiloma lansingi*.

Acknowledgements

I am indepted to Dr. Robert Forsyth (Research Associate, Royal BC Museum) for sending me literature on Canadian snails and slugs and for supporting my collecting in British Columbia. I also want to thank Robert Forsyth and Gerard Majoor for editing the English language. I thank Jean-Paul Raymond (professional gardener) for giving me information about slugs in gardens in the surroundings of Surrey. He told me that *Arion rufus* is a common species in gardens but that he also encounters *Ariolimax columbianes* there.

Table 1. List of terrestrial molluscs observed and collected in British Columbia.

		Location:												
	Scientific name	**1**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	*Ancotrema sportella* (Gould, 1846)								x					
2	*Ariolimax columbianus* (Gould in A. Binney, 1851)								x					
3	*Arion rufus* (Linnaeus, 1758)			x		x			x					
4	*Boettgerilla pallens* Simroth, 1912								x	x				
5	*Cepaea nemoralis* (Linnaeus, 1758)		x										x	
6	*Cochlicopa lubrica* (Müller, 1774)												x	
7	*Cryptomastix mullani* (Bland & J.G. Cooper, 1861)												x	
8	*Deroceras panormitanum* (Lessona & Pollonera, 1882)										x			
9	*Deroceras reticulatum* (Müller,1774)									x	x			
10	*Deroceras* spec.											x		
11	*Euconulus praticola* (Reinhardt, 1883)	x												
12	*Euconulus fulvus* (Müller, 1774)	x												
13	*Nesovitrea binneyana* (Morse, 1864)						x							
14	*Oxychilus draparnaudi* (Beck, 1837)							x		x				
15	*Oxyloma* spec.	x									x	x		x
16	*Planogyra clappi* (Pilsbry, 1898)						x							
17	*Pristilops lansingi* (Bland, 1875)						x							
18	*Prophysaon andersonii* (J.C. Cooper, 1872)								x	x				
19	*Punctum randolphii* (Dall, 1895)						x						x	
20	Slug spec.								x					
21	*Striatura pugetensis* (Dall, 1895)						x							
22	*Succinea putris* Linnaeus, 1758 (?)					x								
23	*Vallonia excentrica* Sterki, 1893												x	
24	*Vertigo columbiana* Pilsbry & Vanatta, 1900						x							
25	*Vertigo elatior* Sterki, 1894				x									
26	*Vertigo ovata* Say, 1822	x												
27	*Vespericola columbianus* (I. Lea, 1839)						x		x					
28	*Vitrina pellucida* (Müller, 1774)												x	
29	*Zonitoides nitidus* (Müller, 1774)											x		
30	*Zonitoidus arboreus* (Say, 1817)												x	

Table 2. List of freshwater molluscs collected in British Columbia.

		Location:	
	Scientific name	**1**	**12**
1	*Aplexa hypnorum* (Linnaeus, 1758)	x	
2	*Galba decampi* (Streng, 1896)	x	
3	*Galba parva* (Lea, 1841)	x	
4	*Gyraulus circumstriatus* (Tryon, 1866)	x	
5	*Helisoma trivolvis* Say, 1816)	x	
6	*Musculium lacustre* (Müller, 1774)	x	
7	*Physella* spec.	x	x
8	*Pisidium* spec.	x	
9	*Sphaerium nitidum* Clessin, 1876	x	
10	*Stagnicola elodes* (Say, 1821)	x	
11	*Stagnicola* spec.	x	x
12	*Valvata sincera sincera* Say, 1824	x	
13	*Valvata tricarinata* (Say, 1870)	x	

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Toporama: http://atlas.nrcan.gc.ca/site/english/maps/topo/map/

Website

More literature about British Columbian landsnails is found on: http://www.mollus.ca/canada/bibliography/data.php?prov=bc

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De Gekielde loofslak (*Hygromia cinctella*) in Limburg: niet in Gennep, maar in Bergen

Gerard van der Velde, Peter F. Klok en Stef M.A. Keulen

The Girdled snail *Hygromia cinctella* in the province of Limburg: not in Gennep, but in Bergen

Summary. The first two authors recently reviewed the known dispersal of *Hygromia cinctella* in the Netherlands. There was, however, confusion about the location of the species in the Province of Limburg. Gennep, Limburg was erroneously mentioned instead of the accurate site: Genneper parken, a green area south of Eindhoven, Province of North Brabant. This implies that the first record of *Hygromia cinctella* in Limburg originates from the border of the Gelderns-Nierskanaal in the municipality of Bergen.

Onlangs publiceerden de eerste twee auteurs een artikeltje over het voorkomen van de Gekielde loofslak *Hygromia cinctella* (Draparnaud, 1801) in Nijmegen, waarin tevens de opmars van deze soort in Nederland werd beschreven (Van der Velde & Klok, 2013). Abusievelijk verwarden zij de plaats Gennep in Limburg met het groengebied Gennep, dat ingeklemd tussen de stadsdelen Stratum en Gestel gelegen is aan de zuidzijde van Eindhoven (Noord-Brabant). Daar is de soort aangetroffen in het heempark 'Frater Simon Deltour' (Kronenberg, 1996); de soort is in Eindhoven ook buiten het heempark aangetroffen (Kronenberg, 2006). Achteraf zou dus geconcludeerd moeten worden dat de soort bekend was van de provincies Noord-Holland, Friesland, Utrecht, Flevoland, Gelderland en Noord-Brabant, maar nog niet van de provincie Limburg.

Toch blijkt de Gekielde loofslak reeds in Limburg waargenomen te zijn. Tijdens een excursie van de Mollusken Studiegroep Limburg op 6 september 2008 langs het Gelderns-Nierskanaal (gemeente Bergen) zijn enkele honderden exemplaren aangetroffen in een ruigtevegetatie op de oever van een sterk verbreed gedeelte van het kanaal. Behalve op de grond komt de soort hier voor op Grote Brandnetel *Urtica dioica*, Reuzenbalsemien *Impatiens glandulifera* en Liesgras *Glyceria maxima*. Hier en daar staan bomen als Zwarte Els *Alnus glutinosa* en Wilg *Salix* spec., die enige beschaduwing geven. De bodem is geaccidenteerd, in de laagten is het grondwater zichtbaar. In dit vochtige, voedselrijke milieu gedijt de Gekielde loofslak uitstekend.

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