



*Eucobresia diaphana* (Draparnaud, 1805)

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## **Fifth report on Vitrinidae (Gastropoda) and other molluscs in Parc national de la Vanoise in the French Alps.**

**Report from short research in July and August 2017, August 2018 and July and August 2019.**

### **Résumé**

En juillet et août 2017, août 2018 et juillet et août 2019, une étude a été menée sur la présence des Vitrinidae dans 24 sites du Parc national de la Vanoise. Des recherches ont été faites sur les animaux vivants et les coquilles vides, les autres mollusques présents ont également été recensés. Au cours de ces trois années, au total, 54 espèces ont été observées, y compris les cinq espèces de Vitrinidae: *Vitrina pellucida* (Semilimace commune), *Phenacolimax stabilei* (Semilimace des alpages), *Eucobresia nivalis* (Semilimace des neiges), *Eucobresia glacialis* (Semilimace recouverte) et *Oligolimax annularis* (Semilimace globuleuse).

De 2012 à 2019, un total de 68 espèces de mollusques ont été trouvées dans les limites du Parc national de la Vanoise, y compris les 5 espèces de Vitrinidae. Avec les sept espèces trouvées dans la zone tampon du parc national (AOA = Aire Optimale d'Adhésion), cela porte le total à 75 espèces inventoriées.

Key words: Parc national, Vanoise, Gastropoda, *Eucobresia*, *Vitrina*, *Phenacolimax*, *Oligolimax*.

### **Introduction**

In July 2012, July 2013, July & August 2015 and August 2016, parts of Parc national de la Vanoise in the French Alps were investigated on the occurrence of Molluscs. In these studies the attention was focussed on Vitrinidae (Margry, 2013a, 2014, 2016a, 2016b, 2017). Because of a personal interest in glass snails, the study was continued in 2017, 2018 and 2019. Again, an emphasis was placed on vitrinid semislugs. In addition, attention was paid to the keeled species, which could not be identified in 2016 (Margry, 2017: 9).

Data on molluscs in the French Alps are available in several references (Falkner et al., 2002; Audibert, 2010a, 2010b; Welter-Schultes, 2012; Audibert & Bertrand, 2015). However, the occurrence of some Vitrinidae species in the French Alps is still uncertain. Some species are found close to the French border in neighbouring countries; in Italy (*Phenacolimax locardi*) and Switzerland (*Eucobresia pegorarii*) (Gavetti et al., 2008; Boschi, 2011). The status of threat on the Red List (Cuttelod et al., 2011; Neubert et al., 2019), remained undetermined for some vitrinid species because to insufficient data is available.

Research performed in the last few years confirms that it is worthwhile to keep searching for new records of Vitrinid species in the Alps and other parts of Europe as well (Brugel, 2014; Ghezzi, 2016; Margry & Thomas, 2016; Hey, 2017; Bertrand, 2018). Because the obtained scientific permit for the present study also allows for the collection of other molluscs, a list of species was made in the same way as previous years.

### **Methods**

In 2017, Kees and Ingrid Margry visited the National Park between July 25<sup>th</sup> and August 8<sup>th</sup>. The sampling areas were in the region of Aussois, Col de l'Iseran and Termignon. In August 7<sup>th</sup> and 8<sup>th</sup>, 2018, Col de l'Iseran and the forest close to La Thuile were visited. Between July 23<sup>th</sup> and August

4<sup>th</sup>, 2019, the investigation was concentrated on Col de l'Iseran and east of la réserve naturelle nationale du Plan de Tuéda (Table 1, Figs 1-16, 18). The sampling method was the same as previous years (Margry, 2013a, 2014, 2016a, 2017). In 2018, the plot in the forest close to La Thuile was sampled for the second time. In 2012, because of an upcoming thunderstorm this plot was only visited shortly (Margry, 2013). In 2018, in the forest of La Thuile sieve samples of floor litter were taken as well.

Living Vitrinidae were preserved in 70% ethanol/water solution if this was required for identification. Slugs were collected incidentally and dissected and identified.

The nomenclature used is according to Gargominy et al. (2011). Please refer to appendix 1a and 1b for the French names and the scientific names with authors.

Measurements of the shells were taken with a calliper to the nearest 0.1 mm. The collected shells and alcohol samples are kept in the collection of the author. Photos are taken by Ingrid Margry (IM) and Kees Margry (KM).

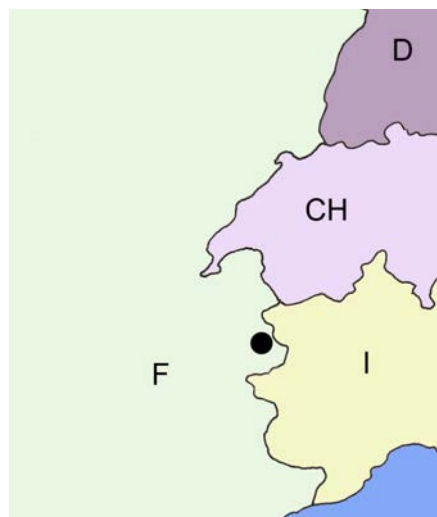


Fig. 1.  
The research area in the French Alps. Black circle = Parc national de la Vanoise.

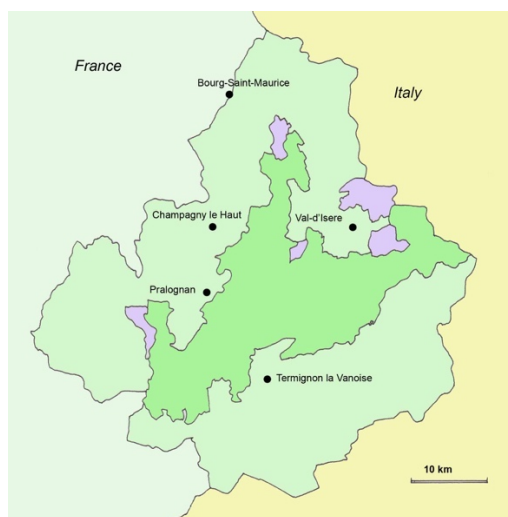


Fig. 2.  
Parc national de la Vanoise.  
dark green = National Park; light green = buffer zone; purple = Nature reserve.

Locality	sampling site	Fig.	Coordinates Lambert 93	Altitude (m)	Vegetation belt <sup>1</sup>	sampling nr.
Aussois	close to parking Monolithe		994803 - 6467938	1750	montane	20170725.1
	close to parking Monolithe	4	994803 - 6467938	1700-1800	montane	20170728.1
	close to parking Monolithe		994917 - 6467838	1700-1770	montane	20170806.1
	La Turra	5	994808 - 6469019	2364	alpine	20170805.2
	La Turra	6	994231 - 6468913	2264	alpine	20170805.3
Col de l'Iseran	Col de l'Iseran	7	1016161 - 6488084	2739	nival	20170729.1
	Col de l'Iseran		1016161 - 6488084	2739	nival	20180807.1
	Col de l'Iseran		1016161 - 6488084	2739	nival	20190729.1
	Col de l'Iseran		1016391 - 6487870	2768	nival	20190729.2
	Col de l'Iseran	8	1017401 - 6487225	2914	nival	20190729.3
	Col de l'Iseran		1016504 - 6487854	2806	nival	20190729.4
Termignon	Lanserlia, pointe sud	9	1001318 - 6478048	2870	nival	20170803.1
	Col de Lanserlia	10, 18	1001765 - 6478124	2769	nival	20170803.2
	south of Col de Lanserlia		1001578 - 6477592	2660	nival	20170803.3
	south of Col de Lanserlia	11	1000985 - 6477074	2381	alpine	20170803.4
La Thuile	about 1 km south of the village	12, 13	1002753 - 6503505	1251	montane	20180808.1
Vallon et Col du Fruit	southwest of Col du Fruit	14	982819 - 6479730	2081	alpine	20190725.2
	Vallon du Fruit		982522 - 6478781	1994	alpine	20190725.3
	south of Col du Fruit		983391 - 6480114	2493	alpine	20190730.1
	south of Col du Fruit	16	983347 - 6479838	2353	alpine	20190730.2
	Lac des Fées, Vallon du Fruit		983181 - 6478287	2023	alpine	20190803.1
Champagny le haut	La Louza		996220 - 6489590	1807	alpine	20190726.1
	North of le Grand Chalet	15	997397 - 6488907	1975	alpine	20190726.2
	La Louza		996324 - 6489233	1726	montane	20190726.3

Table 1. Localities and sampling sites, all within the boundaries of Parc national de la Vanoise.

<sup>1</sup>Vegetation belt according to Nagy & Grabherr (2009). montane = forest, alpine = alpine meadow, nival = scree, rocks and snow level, scant patchy vegetation.

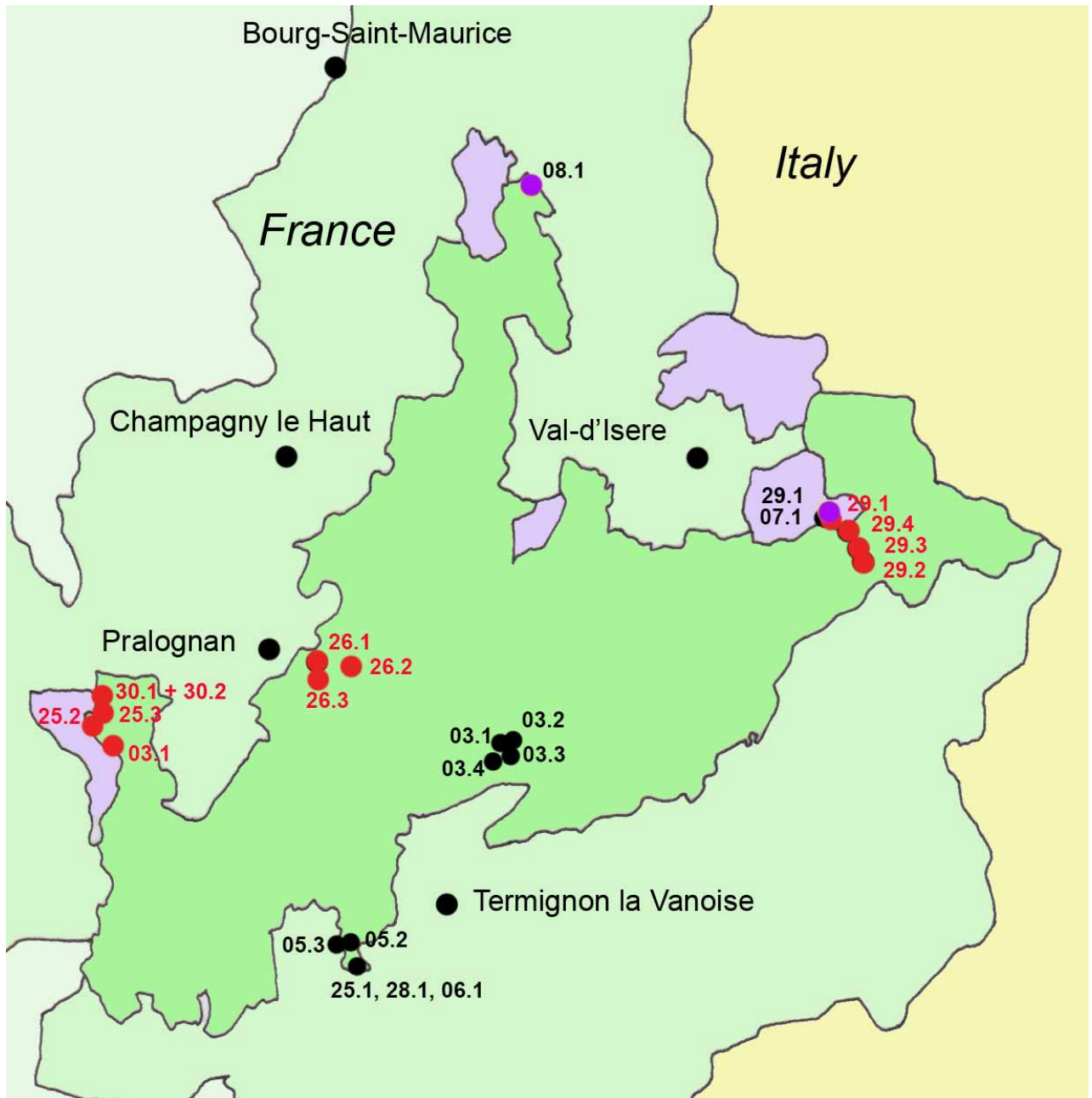


Fig. 3. Parc national de la Vanoise with the 24 sampling sites. Black = 2017, purple = 2018, red = 2019.



Fig. 4. Sampling site 2017728.1 (photo KM)



Fig. 5. Sampling site 20170805.2 (photo KM)



Fig. 6. Sampling site 20170805.3 (photo KM)



Fig. 7. Sampling site 20170729.1 (photo KM)



Fig. 8. Sampling site 20190729.3 (photo KM)



Fig. 9. Sampling site 20170803.1 (photo KM)



Fig. 10. Sampling site 20170803.2 (photo IM)



Fig. 11. Sampling site 20170803.4 (photo IM)





Fig. 12. View on sampling site 20180808.1 (photo KM)



Fig. 13. Sampling site 20180808.1 KM (photo KM)



Fig. 14. Sampling site 20190725.2 (photo KM )



Fig. 15. Sampling site 20190726.2 (photo KM)



Fig. 16. Sampling site 20190730.2 (photo KM)

## Results

Table 2 and 3 provide a list of species for each locality. In table 2 Vitrinidae species are shown only, table 3 contains the other molluscs in alphabetical order. All records are from within the boundaries of the National Park. In total, 54 species were found. In the first four columns of the tables, the results of 2012, 2013, 2015 and 2016 are summarized as well.

In 2017, 2018 and 2019, the Vitrinidae species were collected on altitudes between 1251 and 2914 m.a.s.l. Samples that contained other species were collected between 1251 and 2660 m.a.s.l.

Samples that contained Vitrinidae species only were collected in samples between 2381 and 2914 m.a.s.l.

### Vitrinidae

Vitrinidae were recorded in 18 out of 24 sampling sites. On nine sampling sites only Vitrinidae were found. In total 42 live animals and 518 empty shells were collected. From those 518 empty shells, only one specimen could not be identified.

		2012	2013	2015	2016	Aussois	Col de l' Iseran	Termignon	La Thuile	Vallon and Col du Fruit	Champgany le Haut	sum total 2017 , 2018 and 2019
sampling nr						25.1 28.1 06.1 05.2 05.3	29.1# 07.1# 29.1# 29.2# 29.3# 29.4#	03.1" 03.2" 03.3 03.4"	08.1	25.2 25.3 30.1 30.2 03.1	26.1 26.2 26.3	
<b>Vitrinidae</b>												
<i>Vitrina pellucida</i>	a	1	0	3	2	2	7		1			10
	d	2	30	33	240	18	275		1	1	1	296
<i>Phenacolimax stabilei</i>	a	0	0	4	0		2	1				3
	d	0	36	39	1		21	64				85
<i>Eucobresia glacialis</i>	a	15	0	5	0		7	8				15
	d	25	3?	51	0		11	19		3		33
<i>Eucobresia nivalis</i>	a	0	4	2	2		10					10
	d	12	48	133	59	1	30	1				32
<i>Oligolimax annularis</i>	a	0	0	0	2	4						4
	d	0	0	18	60	71						71
not identified	a				0							0
	d	0	0	46	28		1					1
sum total		55	121	334	392	96	364	93	2	4	1	560

Table 2. List of Vitrinidae species for each locality with combined sampling sites. a = alive, d = empty shell.

# Sampling sites where only Vitrinidae were found.

Five vitrinid species were identified within the National Parc:

*Vitrina pellucida* Semilimace commune

In total 10 living specimens and 296 empty shells from 10 sampling sites in the region of Aussois, Col de l'Iseran, Termignon, La Thuile, Vallon and Col du Fruit and Champagny le Haut.

*Phenacolimax stablei* Semilimace des alpages

In total 3 living specimens and 85 empty shells from 6 sampling sites in the region of Col de l'Iseran and Termignon.

*Eucobresia nivalis* Semilimace des neiges

In total 10 living specimens and 32 empty shells from 5 sampling sites in the region of Aussois, Col de l'Iseran and Termignon.

*Eucobresia glacialis* Semilimace recouverte

In total 15 living specimens and 33 empty shells from 5 sampling sites in the region of Col de l'Iseran, Termignon (Fig. 17) and Col du Fruit.



Fig. 17. *Eucobresia glacialis* from Sampling site 20170803.2 (photo IM)



Fig. 18. Detail of sampling site 20170803.2 where *E. glacialis* was found (photo IM)

*Oligolimax annularis* Semilimace globuleuse (Figs 19a-d)

In total 4 living specimens and 71 empty shells from 3 sampling sites, all in the region of Aussois.



Fig. 19a. (photo IM)



Fig. 19b. (photo IM)

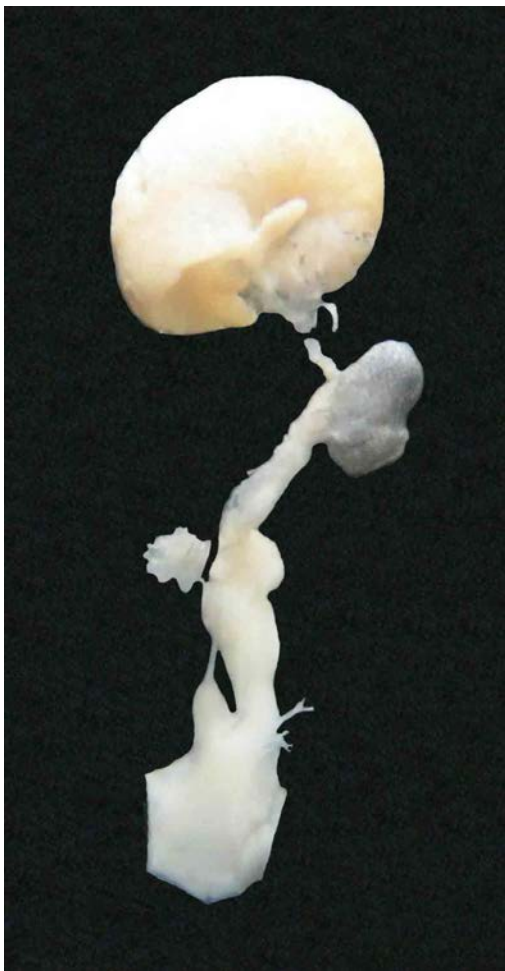


Fig. 19c. (photo KM)

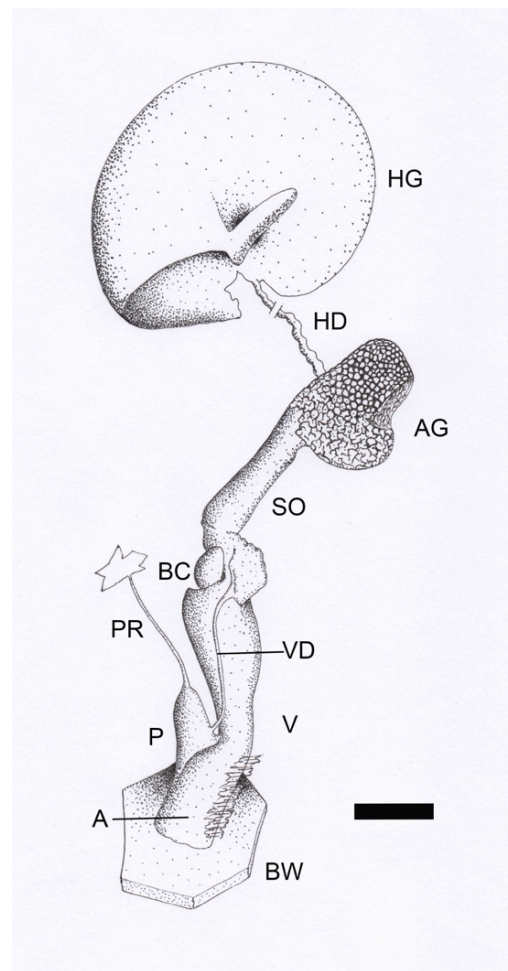


Fig. 19d. (drawing KM)

Figs 19a-d. *Oligolimax annularis* nr 20170805.2.1a from La Turra, Aussois. a = living snail, b = living snail in shell, c = genitals, d = genitals. A = atrium, AG = albumen gland, BC = bursa copulatrix, BW = body wall, HD = hermaphrodite duct, HG = hermaphrodite gland, P = penis, PR = penial retractor muscle, SO = spermoviduct, V = vagina, VD = vas deferens. Scale bar = 1 mm.



#### Other molluscs (Figs 20-23)

On 15 out of the 24 sampling sites, 49 mollusc species other than Vitrinidae were recorded. On 6 sampling sites only other mollusc species were found.

For the difference between *Arion fuscus* (Müller, 1774) and *A. subfuscus* (Draparnaud, 1805) an anatomical study was performed to determine the size and colour of the hermaphrodite gland of a specimen from Aussois. According to Pinceel et al. (2004), this specimens with a small and dark and imbedded gland should be identified as *A. fuscus*. For that reason, the identification of the slug specimen from Champagny le Haut from 2013 with the same gonad (Margry, 2014: fig. 19, 20) has been adjusted as well. For this reason, *A. subfuscus* in table 3 has been replaced by *A. fuscus*. None of the specimens from the genus *Euconulus* could be identified using Falkner et al. (2002: 120-122) and Gargominy & Ripken (2011: 48) and were listed as *Euconulus* spec. According to research by Horsáková et al. (2020), these yellow specimens should be identified as *E. fulvus*.



Fig. 20. *Ciliella ciliate* from sampling site 20170728.1 (photo IM)



Fig. 21. *Malacolimax tenellus* from sampling site 20170806.1 (photo KM)



Fig. 22. *Macrogastrea plicatula* from sampling site 20190730.2 (photo IM)

Among a few specimens of *Clausilia bidentata* (Strøm, 1765) one aberrant shell was found (Figs 23a-b). After damage, this sinistral shell formed a second aperture and a new last whorl which rotates dextral instead of to the left. This restoration is described in Margry (2018).



Fig. 23a.



Fig. 23b.

Figs 23a-b. aberrant shell of *Clausilia cf. bidentata* (photos IM)

	2012	2013	2015	2016	Aussois	Col de l' Iseran	Termignon	La Thuile	Vallon and Col du Fruit	Champagne le Haut	New in 2017 2018 and 2019
Sampling nr					25.1 28.1 06.1 05.2 05.3*	29.1 07.1 29.1 29.2 29.3 29.4	03.1 03.2 03.3 03.4	08.1	25.2 25.3* 30.1* 30.2 03.1*	26.1* 26.2* 26.3	
<b>Other molluscs</b>											
<i>Acanthinula aculeata</i>										X	X
<i>Aegopinella minor</i>			X	X	X				X	X	
<i>Aegopinella nitens</i>		X		X	X			X		X	
<i>Aegopinella pura</i>	X	X		X	X			X	X		
<i>Arianta arbustorum</i>	X	X		X				X	X		
<i>Arion fuscus</i>		X		X	X						
<i>Candidula unifasciata</i>			X	X	X						
<i>Carychium tridentatum</i>								X			X
<i>Causa holosericea</i>				X	X			X			
<i>Cepaea sylvatica</i>		X	X	X	X					X	
<i>Chilostoma fontenillii alpinum</i>		X	X						X		
<i>Chilostoma glaciale</i>	X			X							
<i>Chilostoma zonatum flavovirens</i>	X	X	X								
<i>Condrina avenacea</i>					X						X
<i>Ciliella ciliata</i>					x						X
<i>Clausilia bidentata</i>					X						X
<i>Clausilia dubia</i>		X						X			
<i>Cochlicopa lubrica</i>		X		X				X			
<i>Cochlicopa lubricella</i>	X	X	X	X	X					X	
<i>Cochlodina laminata</i>	X							X			
<i>Columella columella</i>	X	X			X				X		
<i>Columella edentula</i>								X			X
<i>Deroceras agreste</i>			X	X							
<i>Discus rotundatus</i>	X			X				X			
<i>Discus ruderatus</i>		X	X	X	X						
<i>Ena montana</i>	X	X			X			X		X	
<i>Euconulus spec.</i>	X	X	X	X	X				X	X	
<i>Euglesa casertana</i>			X	X					X		
<i>Euglesa obtusalis</i>				X							
<i>Euomphalia strigella</i>									X	X	X
<i>Galba truncatula</i>				X							
<i>Granaria stabilei</i>				X							
<i>Helix pomatia</i>		X	X	X	X					X	
<i>Isognomostoma isognomostoma</i>		X									
<i>Jaminia quadridens</i>		X		X						X	
<i>Lehmannia rupicola</i>			X								
<i>Limax cinereoniger</i>		X			X						
<i>Macrogastra plicatula</i>	X			X	X			X	X		
<i>Malacolimax tenellus</i>	X				X						
<i>Merdigera obscura</i>		X		X	X			X	X	X	
<i>Morlina glabra</i>		X								X	
<i>Nesovitrea hammonis</i>		X		X	X			X			
<i>Nesovitrea petronella</i>	X	X		X				X	X	X	
<i>Oxychilus cellarius</i>								X			X
<i>Oxychilus clarus</i>				X							
<i>Petasina edentula</i>		X		X	X			X			

<i>Punctum pygmaeum</i>	X	X			X			X			
<i>Pupilla muscorum</i>				X							
<i>Pupilla sterrii</i>				X					X		
<i>Pupilla triplicata</i>					X				X		X
<i>Pyramidula pusilla</i>	X	X	X	X	X		X		X		
<i>Radix cf. labiata</i>			X	X							
<i>Succinella oblonga</i>				X							
<i>Tandonia rustica</i>		X									
<i>Trochulus hispidus</i>					X						X
<i>Truncatellina cylindrica</i>									X		X
<i>Urticicola glabellus</i>				X							
<i>Vallonia costata</i>			X	X	X						
<i>Vitrea contracta</i>					X						X
<i>Vitrea crystallina</i>				X	X						
<i>Vitrea subrimata</i>	X	X						X	X	X	
Hygromiidae indet	X				X						
unidentified keeled species				X	X						
Sum total	17	27	15	36	31	0	1	19	15	15	12

Table 3. List of other mollusc species than Vitrinidae for each locality with combined sampling sites from within the boundaries of the Parc national de la Vanoise, in alphabetical order. In the first indicated columns the previously recorded results are given (2012, 2013, 2015 and 2016).

\* Sampling sites where no vitrinid snails were found.

## Discussion

From 2012 to 2019, a total of 68 species (including all unidentified Hygromiidae as one species) were found within the boundaries of Parc national de la Vanoise; 5 Vitrinidae species and 63 other mollusc species.

### Vitrinidae:

Just like in earlier years, hardly any living animals were found inside the National Park.

Nonetheless, multiple empty shells were collected.

After the short researches from 2012 to 2019, no new species of Vitrinidae have been found.

However more information on the occurrence of these five species has been described.

In the research of 2015, *Oligolimax annularis* was recorded for the first time (2326 m.a.s.l.). In 2016 more specimens were found at lower altitudes; 1750 m (06.2), 1905 m (11.1), 2024 (11.4) and 2102 m.a.s.l. (11,3). In 2017, specimens were found at altitudes between 1700 and 2364 m.a.s.l. All records for this species are from the southern slopes of the Vanoise in the Maurienne valley.

The dissected *O. annularis* specimen from La Turra (Figs 19a-d) had a strikingly large shell with a width of 7.2 mm. Much larger than the measurements given by Forcart (1944: 4.2-5.2 mm) Kerney et al. (1983: 4-5 mm), Hausser (2005: 4-5 mm), Egorov (2011: 4.5-6) and Welter-Schultes (2012: 4-6.5 mm). Wiese (2014) gives a width of 5-7 mm.

For records of *Phenacolimax major*, it will be necessary to search in the lower parts of the valleys and preferably outside the summer months. It would be possible that *Phenacolimax locardi* occurs in the French part of the Susa valley. This would be in line with the distribution indicated by Gavetti et al. (2008).

Audibert (2010a) has put *Eucobresia diaphana* on the list of both department 74 (Haut-Savoie) and 73 (Savoie). Until present, *Eucobresia diaphana* was not found in Parc national de la Vanoise. In the French Alps, *E. diaphana* is found in the Beaufortain (Margry & Thomas, 2016), Col de Balmes (Aiguilles Rouges) and Petit col d'Anterne, north of Chamonix (the last two legit. A. Thomas).

### Other molluscs:

The list of 63 other mollusk species contains one unidentified species with a keeled shell. In 2016, this keeled species was found for the first time (Margry, 2017: fig 21). In 2017, five other empty shells have been collected. Because the similar species *Ciliella ciliata* was collected at the same sampling site, it could be confirmed that it concerns a different taxon. Live specimens of the species with the keeled shell would have to be collected in order to identify this species..

From 2017 to 2019, 12 species were found for the first time: *Acanthinula aculeata*, *Carychium tridentatum*, *Chondrina avenacea*, *Ciliella ciliate*, *Clausilia bidentate*, *Columella edentula*, *Euomphalia strigella*, *Oxychilus cellarius*, *Pupilla triplicate*, *Trochulus hispidus*, *Truncatellina*

*cylindrica* and *Vitrea contracta*.

Three species were found in the bufferzone only (AOA = Aire Optimale d'Adhésion): *Cepaea nemoralis* in 2017 and 2018, *Euglesa milium* in 2017 and *Truncatellina callicratis* in 2017. Together with 4 species (*Fruticola fruticum*, *Helicodonta obvoluta*, *Macrogastrea attenuata lineolata* and *Zebrina detrita*) that were found only in the buffer zone in earlier years, a total of 75 species are now recorded in the National Parc if the buffer zone is included as well.

Except for *Lehmannia rupicola* all those species are known from la région Rhône-Alpes, although *Aegopinella pura*, *Clausilia bidentate*, *Truncatellina callicratis* and *Vitrea crystallina* not are listed for the departement Savoie (n° 73) (Audibert, 2010a, 2010b)

In the department 74, Molluscs have hardly been sought outside the national park. Because the species list is still growing it is still worthwhile to continue exploring the buffer zone as well.

## Acknowledgements

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## References

- AUDIBERT, C., 2010a. Liste commentée des mollusques terrestres et dulcicoles de la région Rhône-Alpes. – Folia Conchyliologica 2: 5–29.
- AUDIBERT, C., 2010b. Corrigenda : liste des mollusques de la Région Rhône-Alpes. – Folia Conchyliologica 3: 21.
- AUDIBERT, C. & BERTRAND, A., 2015. Guide des mollusques terrestres. Escargots et limaces. 1-232. Guides de Fous de Nature. Belin, Paris.
- BERTRAND, A., 2018. *Semilimax pyrenaicus* (A. Férussac, 1821) en France (Gastropoda: Vitrinidae). – Folia Conchyliologica 46: 23-29.
- BOSCHI, C., 2011. Die Schneckenfauna der Schweiz. Ein umfassendes Bild- und Bestimmungsbuch. 1-624. Haupt, Bern.
- BRUGEL, E., 2014. Découverte de la Semilimace alpine *Semilimax kotulae* (Westerlund, 1883) dans les Vosges saônoises (Haute-Saône) – MalaCo 10 (1): 1.
- CUTTELOD, A., SEDDON, M. & NEUBERT, E., 2011. European Red List of non-marine molluscs. i-x, 1-97. European Union, Luxembourg.
- EGOROV, R., 2011. Vitrinidae. – Treasure of Russian shells 9: 1-34.
- FALKNER, G., RIPKEN, T.E.J. & FALKNER, M., 2002. Mollusques continentaux de France. Liste de référence annotée et bibliographie — Patrimoines Naturels 52: 1-350. MNHN, Paris.
- FORCART, L., 1944. Monographie der schweizerischen Vitrinidae. (Moll. Pulm.). – Revue Suisse de Zoologie 51 (29) : 629 – 678, pl. 1 - 2.
- GARGOMINY, O. & RIPKEN, T.E.J., 2011. Une collection de référence pour la malacofaune terrestre de France. – MalaCo Hors Série 1: 1-108.
- GARGOMINY, O., PRIE, V., BICHAIN, J.M., CUCHERAT, X. & FONTAINE, B., 2011. Liste de référence annotée des mollusques continentaux de France. – MalaCo 7: 307-382.
- GAVETTI, E., BIRINDELLI, S., BODON, M. & MANGANELLI, G., 2008. Molluschi terrestri e d'acqua dolce della Valle di Susa. Monografie XLIV, 1-273. Museo Regionale di Scienze Naturali, Torino.

GHEZZI, D., 2016. Presenza di molluschi vitrinidi nella pianura lombarda. – Pianura - Scienze e storia dell'ambiente padano. 34: 39-68.

HAUSSER, J., 2005. Bestimmungsschlüssel der Gastropoden der Schweiz, Fauna Helvetica 10. 1 – 191. Centre suisse de cartographie de la Faune, Schweizerische Entomologische Gesellschaft, Neuchâtel.

HEY, P., 2017. Données nouvelles sur *Vitrinobrachium breve* (A. Férussac 1821) en France (Mollusca, Gastropoda, Vitrinidae). – Folia Conchylologica 38: 9-12.

HORSÁKOVÁ, V., NECOLA, J.C. & HORSÁK, M., 2020. Integrative taxonomic consideration of the Holarctic *Euconulus fulvus* group of land snails (Gastropoda, Stylommatophora). – Systematics and Biodiversity, published online. <https://dx.doi.org/10.1080/14772000.2020.1725172>.

KERNEY, M.P., CAMERON, R.A.D. & JUNGBLUTH, J.H., 1983. Die Landschnecken Nord- und Mitteleuropas. 1-384. Paul Parey, Berlin.

MARGRY, C.J.P.J., 2013a. Vitrinidae (Gastropoda) and other molluscs in Parc national de la Vanoise in the French Alps. A report from a short research in July 2012. 1-12. [http://www.parcnational-vanoise.fr/fr/documentation-en-ligne/cat\\_view/16-documents-publics/29-etudes/50-rapports-detudes.html](http://www.parcnational-vanoise.fr/fr/documentation-en-ligne/cat_view/16-documents-publics/29-etudes/50-rapports-detudes.html)

MARGRY, C.J.P.J., 2014. Second report from Vitrinidae (Gastropoda) and other molluscs in Parc national de la Vanoise in the French Alps. Report from a short research in July 2013. 1-12. [www.parcnational-vanoise.fr](http://www.parcnational-vanoise.fr)

MARGRY, C.J.P.J., 2016a. Third report from Vitrinidae (Gastropoda) and other molluscs in Parc national de la Vanoise in the French Alps. Report from a short research in July and August 2015. 1-13. [www.parcnational-vanoise.fr](http://www.parcnational-vanoise.fr)

MARGRY, C.J.P.J., 2016b. A blister pearl formation in *Eucoberesia glacialis* (Forbes, 1937) (Gastropoda, Pulmonata, Vitrinidae). – Folia Conchylologica 36: 17-20.

MARGRY, C.J.P.J., 2017. Fourth report on Vitrinidae (Gastropoda) and other molluscs in Parc national de la Vanoise in the French Alps. Report from a short research in August 2016. 1-13. [www.parcnational-vanoise.fr](http://www.parcnational-vanoise.fr)

MARGRY, C.J.P.J., 2018. Verdraaid! Herstel van een *Clausilia* (Gastropoda, Clausiliidae) tegen de gangbare windingsrichting in. – Spirula 414: 39-40.

MARGRY, K. & THOMAS, A., 2016. *Eucoberesia diaphana* (Draparnaud, 1805) en andere Vitrinidae in de Beaufortain in Frankrijk. – Spirula 406: 55-59.

NAGY, L., & GRABHERR, G., 2009. The biology of alpine habitats. i-xi, 1-376. Oxford University Press, New York.

NEUBERT, E., SEDDON, M.B., ALLEN, D.J., ARRÉBOLA, J., BACKELJAU, T., BALASHOV, I., BANK, R., CAMERON, R., DE FRIAS MARTINS, A.M., DE MATTIA, W., DEDOV, I., DUDA, M., FALKNER, G., FALKNER, M., FEHÉR, Z., GARGOMINY, O., GEORGIEV, D., GIUSTI, F., GÓMEZ MOLINER, B.J., GROH, K., IBÁÑEZ, M., KAPPES, H., MANGANELLI, G., MARTÍNEZ-ORTÍ, A., NARDI, G., NEIBER, M.T., PÁLL-GERGELY, B., PARMAKELIS, A., PRIÉ, V., REISCHÜTZ, A., REISCHÜTZ, P.L., ROWSON, B., RÜETSCHI, J., SLAPNIK, R., SON, M., ŠTAMOL, V., TEIXEIRA, D., TRIANTIS, K., VARDINOYANNIS, K., VON PROSCHWITZ, T. AND WALTHER, F., 2019. European Red List of terrestrial molluscs: snails, slugs and semi-slugs. IUCN: Cambridge, UK and Brussels, Belgium. <https://portals.iucn.org/library/node/48439>

PINCEEL, J., JORDAENS, K., VAN HOUTTE, N., DE WINTER, A.J. & BACKELJAU, T., 2004. Molecular and morphological data reveal cryptic taxonomic diversity in the terrestrial slug complex *Arion subfuscus/fuscus* (Mollusca, Pulmonata, Arionidae) in continental north-west Europe. – Biological Journal of the Linnean Society 83: 23-38.

WELTER-SCHULTES, F.W., 2012. European non-marine molluscs, a guide for species identification. A1-A3, 1-679, Q1-Q78. Planet Poster edition, Göttingen.

WIESE, V., 2014. Die Landschnecken Deutschlands. Finden - Erkennen - Bestimmen. 1-352. Quelle & Meyer, Wiebelsheim.

## Appendix 1a. French names of the Vitrinidae in this report.

Vitrinid species which are not found in Parc national de la Vanoise are marked in bleu.

Vitrinidae	
<i>Eucobresia diaphana</i> (Draparnaud, 1805)	Semilimace aplatie
<i>Eucobresia nivalis</i> (Dumont & Mortillet, 1854)	Semilimace des neiges
<i>Eucobresia pegorarii</i> (Pollonera, 1884)	(not available)
<i>Eucobresia glacialis</i> (Forbes, 1837)	Semilimace recouverte
<i>Vitrina pellucida</i> (O.F. Müller, 1774)	Semilimace commune
<i>Phenacolimax major</i> (A. Férussac, 1807)	Semilimace des plaines
<i>Phenacolimax stabilei</i> (Lessona, 1880)	Semilimace des alpages
<i>Phenacolimax locardi</i> (Pollonera, 1884)	(not available)
<i>Oligolimax annularis</i> (S. Studer, 1820)	Semilimace globuleuse

## Appendix 1b. French names of the other molluscs in this report.

Species which are found in the buffer zone only are marked in green

other molluscs	
<i>Acanthinula aculeata</i> (O.F. Müller, 1774)	Escargotin hérisson
<i>Aegopinella minor</i> (Stabile, 1864)	Luisantine intermédiaire
<i>Aegopinella nitens</i> (Michaud, 1831)	Luisantine ample
<i>Aegopinella pura</i> (Alder, 1830)	Petite luisantine
<i>Arianta arbustorum alpicola</i> (A. Férussac, 1821)	Hélice des Alpes
<i>Arion fuscus</i> (O.F. Müller, 1774)	Loche rousse
<i>Arion subfuscus</i> (Draparnaud, 1805)	Loche roussâtre
<i>Candidula unifasciata</i> (Poiret, 1801)	Hélicette du thym
<i>Carychium tridentatum</i> (Risso, 1826)	Auriculette commune
<i>Causa holosericea</i> (S. Studer, 1820)	Fausse veloutée plane
<i>Cepaea nemoralis</i> (Linnaeus, 1758)	Escargot des haies
<i>Cepaea sylvatica</i> (Draparnaud, 1801)	Escargot des forêts
<i>Chilostoma fontenillii alpinum</i> (Michaud, 1831)	Hélicon des préalpes
<i>Chilostoma glaciale</i> (A. Férussac, 1832)	Hélicon des Alpes
<i>Chilostoma zonatum flavovirens</i> (Dumont & Mortillet, 1852)	Hélicon des granites
<i>Chondrina avenacea</i> (Bruguère, 1792)	Maillot avoine
<i>Ciliella ciliate</i> (W. Hartmann, 1821)	Veloutée ciliée
<i>Clausilia bidentate</i> (Strøm, 1765)	Clausilie commune
<i>Clausilia dubia</i> Draparnaud, 1805	Clausilie douteuse
<i>Cochlicopa lubrica</i> (O.F. Müller, 1774)	Brillante commune
<i>Cochlicopa lubricella</i> (Porro, 1838)	Petite brillante
<i>Cochlodina laminata</i> (Montagu, 1803)	Fuseau commun
<i>Columella columella</i> (G. von Martens, 1830)	Columelle alpine
<i>Columella edentula</i> (Draparnaud, 1805)	Columelle édentée
<i>Deroceras agreste</i> (Linnaeus, 1758)	Loche blanche
<i>Discus rotundatus</i> (O.F. Müller, 1774)	Bouton commun
<i>Discus ruderatus</i> (W. Hartmann, 1821)	Bouton montagnard
<i>Ena montana</i> (Draparnaud, 1801)	Bulime Montagnard
<i>Euconulus spec.</i> Reinhardt, 1883	Conule
<i>Euglesa casertana</i> (Poli, 1791)	Pisidie robuste
<i>Euglesa milium</i> (Held 1836)	Pisidie des rives
<i>Euglesa obtusalis</i> (Lamarck, 1818)	Pisidie de Lamarck
<i>Euomphalia strigella</i> (Draparnaud, 1801)	Moine de Draparnaud
<i>Fruticola fruticum</i> (O.F. Müller, 1774)	Hélice cerise
<i>Galba truncatula</i> (O.F. Müller, 1774)	Limnée épaulée
<i>Granaria stabilei</i> (E. von Martens, 1865)	Maillot montagnard
<i>Helicodonta obvoluta</i> (O.F. Müller, 1774)	Veloutée plane
<i>Helix pomatia</i> Linnaeus, 1758	Escargot de Bourgogne
<i>Isognomostoma isognomostoma</i> (Schröter, 1784)	Hélice grimace
<i>Jaminia quadridens</i> (O.F. Müller, 1774)	Bulime inverse
<i>Lehmannia rupicola</i> Lessona & Pollonera, 1882	Limace des montagnes
<i>Limax cinereoniger</i> Wolf, 1803	Grande limace
<i>Macrogastra attenuata lineolata</i> (Held, 1836)	Massue orientale
<i>Macrogastra plicatula</i> (Draparnaud, 1801)	Massue costulée
<i>Malacolimax tenellus</i> (O.F. Müller, 1774)	Limace jaune
<i>Merdigera obscura</i> (O.F. Müller, 1774)	Bulime boueux

<i>Morlina glabra</i> (Rossmässler, 1835)	Luisant étroit
<i>Nesovitrea hammonis</i> (Strøm, 1765)	Luisantine striée
<i>Nesovitrea petronella</i> (L. Pfeiffer, 1853)	Luisantine brune
<i>Oxychilus cellarius</i> (O.F. Müller, 1774)	Luisant des caves
<i>Oxychilus clarus</i> (Held, 1838)	Luisant cryptique
<i>Petasina edentula</i> (Draparnaud, 1805)	Veloutée alpine
<i>Punctum pygmaeum</i> (Draparnaud, 1801)	Escargotin miniscule
<i>Pupilla muscorum</i> (Linnaeus, 1758)	Maillot des mousses
<i>Pupilla sterrii</i> (Voith, 1840)	Maillot des rochers
<i>Pupilla triplicate</i> (S. Studer, 1820)	Maillot pygmée
<i>Pyramidula pusilla</i> (Vallot, 1801)	Pyramidule commun
<i>Radix labiata</i> (Rossmässler, 1835)	Limnée radis
<i>Succinella oblonga</i> (Draparnaud, 1801)	Ambrette terrestre
<i>Tandonia rustica</i> (Millet, 1843)	Pseudolimace chagrinée
<i>Trochulus hispidus</i> (Linnaeus, 1758)	Veloutée commune
<i>Truncatellina callicratis</i> (Scacchi, 1833)	Maillotin denté
<i>Truncatellina cylindrica</i> (A. Férussac, 1807)	Maillotin mousseron
<i>Urticicola glabellus</i> (Draparnaud, 1801)	Fausse-veloutée des vallées
<i>Vallonia costata</i> (O.F. Müller, 1774)	Vallonie costulée
<i>Vitrea contracta</i> (Westerlund 1871)	Cristalline ombiliquée
<i>Vitrea crystallina</i> (O.F. Müller, 1774)	Cristalline commune
<i>Vitrea subrimata</i> (Reinhardt, 1871)	Cristalline méridionale
<i>Zebrina detrita</i> (O.F. Müller, 1774)	Bulime zébré



View from the surroundings of L'Ouille Noire in the direction of Col de l'Iseran (July 29<sup>th</sup>, 2019 photo KM)